

General Classroom Techniques

The Syllabus as a Contract

Frank Vorhies, The World Conservation Union

Each student should receive a syllabus on the first day of class and asked to think about its terms. If they agree with its conditions they are invited to stay in the class. The syllabus is a powerful contract concerning the reading, lectures, and testing requirements. Contracts are a fundamental element of voluntary exchange. The syllabus is an excellent example.

Making Choices Relevant

Bernard Rose, Rocky Mountain College

Students need to learn that making choices affects learning; they are more likely to get something out of a course which they have helped to "design." In a normal semester of Principles of Microeconomics I find that I have about two to two and a half weeks of time left to cover "applications" after covering the required components of the course. For a while I chose the chapters that I wanted to cover, but I quickly realized that it didn't really matter which chapters were covered. The object was to show the students that the microeconomics we had learned during the semester was relevant and useful in answering real world problems. What I do now is in the original syllabus I show the last few weeks of class as "open." Then when we have four or so weeks left in the semester, I hand out a questionnaire like the one below. The students are told to select three or four chapters and then I pick the chapters with the highest number of votes and issue a supplementary schedule with the chapters selected and times for them to be covered.

I think this works well. The students get an increased sense of ownership of the course and I get some variety in what is taught.

Pretest of Macroeconomic Concepts

Richard C. Schiming, Mankato State University

On the first day of a macro class, I hand out a sheet of paper with questions on it such as: (1) what is the present rate of inflation in the U.S.? (2) what is the current rate of unemployment? (3) what is the present real rate of economic growth? (4) what is the current level of GDP? (5) what percentage of the average family's income goes to government in taxes? The instructor may add any others that may be relevant at the time (i.e., what is the current prime rate?). For each question, I give five possible answers so that the students' guesses are focused over a range. After the students have given their best guesses, the correct answers are given and discussed.

This approach is useful because: (1) it introduces students to the current state of the U.S. economy; (2) it allows the instructor to gauge the level of economic knowledge of the class; (3) it permits instructors to introduce the magnitude of millions and billions that will be used more casually later; and (4) it interests the students in some important economic statistics.

Assignments for Beginning Macroanalysis

Carolyn Shaw Bell, Wellesley College

Beginning macroanalysis applies generally although most texts deal only with the United States. Ask each student to study another country throughout the course. Assign short (maximum two pages) papers to answer very specific questions, and get the cooperation of your library before you start!

Suggestions: (1) Describe the country's basic inputs: labor force (age and sex distribution of population, education) natural resources, capital. What is the current allocation of each to agriculture, manufacturing, and services? (2) Analyze current gross domestic product percentages to consumption, investment, defense, foreign trade. Trace these back 10 or 20 years. How big is government in GDP? (3) Explain the country's monetary system: definition of currency unit, central bank powers, financial markets, their use by business and individuals. (4) Chart inflation and unemployment for 15 years or longer. Explain how inflation is measured. What has been the impact of international transactions and exchange rates? (5) What is the major economic policy confronting your country? What economic policy do you recommend to resolve this problem?

These techniques broaden students' understanding of basic analysis and of the world economy. They are also very helpful to students from abroad.

Personalizing Economic Concepts

Hugh H. Macaulay, Clemson University

One way to personalize economic theory to aid students in remembering certain principles or laws of the discipline is: Instead of simply explaining some principle (e.g., the Law of Diminishing Marginal Utility), I use the Socratic method with one student so that he or she arrives at a statement of the principle by answering my leading questions. (Would you enjoy your second milkshake of the day as much as your first? Your third as much as your second? etc.) Then I name the principle after the student has helped me to arrive at the principle (Kilroy's Law of Diminishing Marginal Utility). Thereafter, that is the name of the economic principle for the purposes of that class, even for purposes of examination.

Debating the Issues

Hugh K. Himan, Warren Wilson College

For a number of years I have devoted 6-9 class meetings in the Principles of Economics course to class debates on current economic issues.

Objectives:

- 1) to acquaint students with the reality the economists as well as people in general do not think alike on economic issues;
- 2) to have students realize that disagreements on issues reflect both different positive economic views (cause and effect) as well as normative difference (values)
- 3) to challenge their own thinking about economic issues
- 4) to have each student experience through a debate on the beliefs and values of the three major paradigms of Conservative, Liberal and Radical.

Method:

- 1) Students are placed on 2-3 person debate teams and are assigned three topics to debate, once as a conservative, once as a liberal and once as a radical.
- 2) A book of readings are made available in which the three major paradigms are presented in summary form as well as their arguments on each of a number of specific issues. The teams are expected to do further research in preparation for each debate.
- 3) The format of each debate consists of four-minute introductions from each of the three teams followed by 3 minute rebuttals and 3 more minutes of re-rebuttals. The next segment consists of directed questions from the students not debating this round followed by what we refer to as unstructured "free for all" in which questions, counterarguments etc. can take place between team members as well as those in the audience.
- 4) The debates are evaluated by the students and instructor on the basis of specific criteria with final scores tabulated on a 100 point scale. The evaluations are based upon how well the team presented their assigned position, not whether the evaluator agrees or disagrees with that particular paradigm.

It has been my experience that the students truly get involved with these debates, well beyond the proportion of the final grade their scores represent. Most enjoy the role playing, some even dressing as they think a Conservative, Liberal or Radical would appear.

Beyond the enjoyment many experience, I like to think that they have gained deep insight into issues i.e., that problems can be viewed differently based upon one's belief as to "truth" causes and effects as well as on the basis of values (no good vs. bad but in terms of relative priorities). For so many students I have taught over the years who tend to think there are single, simple answers to such problems as poverty, unemployment, national defense, acid rain, exposure to the complexity of such issues is important to their education.

Encouraging Student Participation

Rodney H. Mabry, University of Texas, Tyler

Many students have difficulty overcoming peer pressure or fear so that they can respond to questions in class. Here are two techniques I've found effective in overcoming their reluctance:

- a. Whenever I pose a difficult question to the class and suspect that some students know the answer but no one responds, I offer the question at auction to the person who will bid the lowest number of bonus points towards the semester grade. Bidders who correctly answer the question receive the points; if incorrect, the points are subtracted from their total bonus points. However, no one will have negative points at the end of the semester. This technique not only stimulates class participation--it also teaches them about bidding processes and strategic behavior.
- b. When a class is unsuited to this auction system, I commonly offer \$1 to the student who correctly answers a question that no one volunteers to answer immediately. At a cost to me of less than \$20 dollars a semester, this technique helps keep classroom discussion going. It also shows students the nature of supply curves--at zero prices, the number who volunteer to try to answer questions is much smaller than when \$1 per correct answer is offered. If you use this technique in your class, you might even try varying the pay in relation to the difficulty of the question.

Microeconomics as a Foreign Language

Jim Cobbe, Florida State University

This idea works best with older students or those with jobs, rather than full-time students straight from high school. Right at the beginning of the course, explain that there is nothing in microeconomics that is counter-intuitive or "difficult"; it is simply common sense made precise. Explain that "good" jargon is a way of making concepts precise, and that microeconomics is very dependent on jargon in this good sense, i.e., words with precise definitions that permit efficient communication. Put these two assertions together, and conclude that for people who have jobs, manage their own money, and have some interest in how the real world works, studying microeconomics is like learning a foreign language: they already "know" what the answers to the real questions are, but they have to learn to express them in the appropriate words, i.e., the jargon (language) of microeconomics. Then throughout the course, clearly identify all the terms that are "new words" that have to be learned. In micro principles courses, this can work very well, especially if coupled with respect for the "street smarts" of students: get students to express answers to problems, explanations of phenomena, in their own words, and then "translate" them into the language of microeconomics.

Students as Economic Consultants

Robert H. Chambers, Endicott College

Dividing your class into small groups (3-4 principles students per group) that act as economic consultants is an excellent way to emphasize the importance of thorough analysis for sound decision making. Each "economics consulting firm" must develop an approach that it perceives as the most advantageous solution for a hypothetical client faced by an economic problem.

You should counsel the students that the best way to get one's point accepted is to describe its benefits to someone else or to society as a whole; the least likely path for gaining acceptance of a "solution" is to stress only the direct benefits to one's clients. For example, a group might try to persuade members of a legislature to fund a low-income housing unit. In so doing, the group will emphasize the many advantages to society of such a project, even though the group may in fact be representing a contractor likely to be awarded the construction contract.

I limit presentations to about twelve minutes and emphasize careful planning. In so doing, two presentations can be completed in a 50-minute period, and the pace is kept moving so as to maintain good interest. As always with class presentations, select a group of the better students to begin. The better students help inspire groups that follow, and this helps ensure a productive learning experience. To prepare for the presentation, students should be encouraged to do good research. Also, effective techniques for presenting economic information should be discussed. Students should be encouraged to use overhead transparencies to present key points, and computer-developed graphics should be utilized to effectively communicate economic data.

At the time of the presentation, the group will be requested to identify the role of its audience. Thus, class members may be designated as board members of a corporation, members of the state legislature, voters considering a local referendum, etc. However, the group should not divulge its client. This is most important. At the end of the presentation, select three members of the audience to indicate their agreement or disagreement. Then, ask the same individuals to indicate who the group represented. This particular approach then gets the audience involved and can lead to some very excellent discussions. "Winner-loser" analysis can be conducted.

Encourage as much creativity as possible. Some of my students have filmed video interviews, some have conducted simple opinion surveys, and some have found very effective (and humorous) ways to appeal to the audience's emotions.

Current Events and Economic Principles

Sanford V. Berg, University of Florida

College students typically do less writing now than a few years ago. Crowded classes, multiple-choice exams, and the decline of the term paper provide fewer opportunities for them to formulate tightly reasoned economic arguments. For several years, I have required my students to apply economic principles to current affairs in letters to the editors of a local commercial newspaper or the student paper.

Writing and submitting such letters yields numerous benefits. The editorial page is a unique forum that most students ignore. Only those who are issues-oriented ever seem to read top commentators. Editorials, when read, are often read uncritically, and letters that reflect citizens'

views are seldom noticed. Yet this page represents a rich vein for the application of economic analysis--separating valuable insights about efficiency and fairness from blends of prejudice and ignorance. By drawing heavily from the editorial page for examples during the term and by assigning a "letter", the teacher underscores how economic principles apply to current events and the importance of an informed and involved citizenry.

Introductory economics is the second most important course offered to college students; the most important one teaches them how to write a coherent paragraph. Applying the latter skill to economics is an ideal vehicle for involving students more deeply in the process of analysis. I require students to discuss their topic with me, briefly after class for most students, or during office hours for highly motivated students. Most need much more guidance in the selection of an appropriate topic than might be supposed. Students in my introductory micro class, for example, will often offer broad generalizations about the monetary system or unemployment. Usually, such interests can be channeled into more specific market topics.

Then an outline is submitted, so that I can discuss its logic, identify other supporting examples, and suggest ways to make the letter interesting. Although it may seem a violation of the principle of efficient division of labor, some emphasis on topic sentences are often well worth the effort. For many students, this assignment represents their first task of this nature--a task which will be repeated in later life through memoranda and concise reports.

It should be stressed to students that the assignment does not involve a research paper. Since the ultimate audience consists of such people as classmates and parents, a premium is placed on clarity, balanced presentation, logic, supporting examples, and a solid conclusion. The conclusion might even be that not all the necessary evidence is in, or that "There is no such thing as a free lunch." Another contribution the professor can make is to ensure that value judgments are explicit. The boundary between principles and preferred policy can then be drawn, while at the same time an artificial separation between the two is avoided.

The reinforcement received by the "published" students is a joy to behold; their work has found favor with an editor and their names have appeared in print. Many send copies to their parents. This participation as a citizen often carries over into later years. Several students have returned to show me letters they were submitting to editors. Although the best letters are not always published, when I bring a newspaper to class, the published student basks in the attention--a rare kind of reinforcement in my teaching experience. To achieve this kind of positive feedback, the mechanics of this assignment need to be carefully developed. A copy of the original letters should be turned in by mid-term so that some can be published. Early submissions should be encouraged, since a few successes reinforce all the students.

In conclusion, this type of current affairs assignment can involve students in local issues (electricity rates facing fraternities, sororities, or apartment dwellers) or national problems (oil prices decontrol). Students see that economics is not simply diagrams on blackboards, but a way of thinking that emphasizes what is given up when choices are made. Rational decision-making is central to what we can offer the student. Assignments such as the one suggested here can strengthen both their writing and their analytical skills.

Economics Writing

Kenneth Small, University of California-Irvine

Panning the writing skills of college students has become a national pastime, certainly justified within the economics major. But how many of us spend class time teaching students how to write well? Here are three 20-minute in-class exercises that have been successful.

1. Ask students to bring a published article from a recent class. Explain the purpose of an abstract, and then have them write one for their article. Divide them into pairs; have them exchange papers and discuss each other's success.
2. Early in a term project, ask students to imagine they have finished. Have them write a short letter to their British uncle (educated lay person, lively curiosity, no economics training, particular about grammar) explaining what interesting things they discovered. This prompts students to think about what they might discover and, by implication, what sort of research is needed. It also encourages them to write about economics in an informal yet grammatical style, which is easier on both of you than the self-conscious pomp often thought required for an academic paper.
3. Project a paragraph you have written onto the wall and let the class edit it.

Adding Relevance

By Allen Prindle, Otterbein College

Most of our students would benefit from increased familiarity with business and economics periodicals. To introduce students to some of these publications, I require students to write a short report related to 10 publications during the term. The assignment asks the student to evaluate the target audience of the publication by looking at the ads and how technical the writing is. Then the student is to review (summarize) an article in the publication. I give 3 due dates for the 10 reports to stagger the due date around midterm exams and to allow me time to read them. It also allows students feedback related to their reports.

I require that 5 of the 10 reports be from specific publications, such as the *Wall Street Journal*, *Economist*, etc. Then I make a list of acceptable other publications and the student may choose from the list. I've learned that the best students will voluntarily choose more challenging publications, such as *Challenge*. Students who write well will prepare an excellent report. Other students will benefit from writing assignments related to their major classes. All students are pleased to note the professor's recognition of their achievements.

Students are especially pleased to volunteer a discussion in class about a topic they have read something about in this assignment. They are surprised to find articles about topics of interest to them (such as fashion, sports, autos, food, etc.) in economics publications. Many students say this assignment is excellent in joining economic theory and current issues.

One term, a couple students wrote that most of the publications were "male-oriented". I added *Working Woman* to my list and have been interested in the reaction of female students who have read this publication. Some say this magazine is not adequately "professional". Others say that it is just what they were looking for. Most have strong opinions.

When I can, I write responses on the reports before I turn them back to the student. It becomes a dialogue between the student and me and it helps me to get better acquainted and to gain a level of trust I could not generate in other ways.

Although this assignment is loss of work to read and grade, I think its purpose (to introduce students to life-long ways of learning) is met. During the last year, I have added a TV program (such as the "Nightly Business Report") to the list of required reports. Most students put this off till the last due date, but are surprised at how much of the content of the program they can understand because of the class. And that certainly makes me feel good!

Peer Review of Writing Assignments

Malcolm Getz, Vanderbilt University

Students can improve their writing skills by reviewing essays written by other students and by having their own essays reviewed in turn. To critique another student's work forces a reviewer to think about writing technique, a first step to improved writing. My students enjoy the experience of peer review, and their writing tends to improve as a consequence. The form below is used for these reviews.

PEER REVIEW AUTHOR _____ REVIEWER _____

I. Read the essay quickly. Mark only in pencil. Mark spelling and obvious grammatical errors.

II. Reread essay and give brief remarks here on presentation.

1. Does the opening paragraph contain a thesis sentence that describes what the essay hopes to achieve?
2. Does each paragraph contain a topic sentence indicating the main idea of the paragraph?
3. Do the paragraphs come in a logical order suggested by the opening thesis? Does the conclusion follow from the material presented in the essay?
4. Does each paragraph provide specific arguments, examples, or illustrations supporting the main idea of the paragraph?
5. Are the sentences easy to read?
6. Is the essay marred by misspellings, errors in syntax, poorly chosen words, or excessive quotations?
7. Are references adequate?

III. Comment briefly on the following.

1. How well does the essay satisfy the assignment? Is anything important left out?
2. How imaginative is the presentation? Does it show clear insight and careful thought?
3. Is the essay interesting to read? Are important ideas given emphasis?
4. On a scale of 1 (weakly) to 10 (superb) with 5 as marginally adequate and an 8 as very good, what score would you give this essay?

Why Do We Teach Economic Analysis This Way?

Salvatore Schiavo-Campo, Economic Research Services

Students frequently express frustration when faced with analytical models based on obviously unrealistic assumptions--whether pure competition, no transport cost, perfect geographic mobility, or whatever. We have all been asked: "What does this have to do with the real world?" The following illustrations may help justify the way we build and teach economic analysis.

"Why am I assuming such clearly unrealistic conditions as pure competition, no risk, or whatever? Am I blind, foolish, or guilty of wishful thinking about what ought to be rather than what is? I think not. There are good reasons--and you deserve to know them--why we teach economics

this way, why we start from a set of assumptions, some of which clearly are not valid in a real life economy and try to draw logical conclusions from those assumptions. There are at least two good reasons for doing it this way. Let me give you an illustration of the first and most important reason.

"What is the earth's shape? (Answers vary from puzzlement at the apparently silly question to round or spherical.) Then proceed: OK, let's say it is round. But how do we know? This building is not round, nor are the mountains, nor . . . you nor me. The first time that we had visual proof that the earth is round was when pictures of it were beamed back by the astronauts. Actually seeing earth's overall shape required putting ourselves at a great distance from it, in order to not be confused by the mass of non-round shapes that make up the planet--in other words, to move away from the trees in order to see the forest. Of course economics assumes a much simpler world than actually exists. Economic reality is so complex that it is hopeless to try and understand it in its totality. We must first ask: 'What would happen if, and if, and if?' Only after arriving at strong logical conclusions do we then have the chance to find out, step by step, how those conclusions are likely to be affected by progressively introducing into the picture, step by step, more and more 'real life' elements. At the end of the process, we hope to arrive at a much better understanding of the whole phenomenon precisely because we have first dissected it into its major parts.

"There is another reason for the way we teach economics. Some of you must have come across a jogger some early morning, bleary-eyed, slogging through slush, and not really looking too happy. Why do they do it? They are not necessarily accomplishing anything practical, like getting to work early or catching a bus. Why, of course, they do it because jogging is good physical exercise and make one better able to deal with various everyday demands on the body. Well, to a large extent, studying economics is like 'jogging for the mind.' It is not always pleasant because it stretches and strengthens certain 'muscles' that are rarely used. But we ask that you study it this way because it's good mental exercise and makes you better able to deal with the various everyday demands on reasoning ability. I am not saying that 'a medicine must taste bad to be good.' On the contrary, many students, like many joggers, eventually come to enjoy the exercise itself."

Worthwhile Review Sessions

Richard C. Schiming, Mankato State University

Students want review sessions before exams but usually there aren't enough questions or the questions are trivial. To structure the review and make it more enjoyable, I pattern my reviews on a quiz show. The class is divided in half and books and notes are put away. Each team picks one student per round to go to the board to answer questions posed by the instructor. If that student is stumped, I allow other team members to come to his or her aid. Although we keep score, the key value is that the questions highlight important concepts and show students what they need to review. This has proved to be an entertaining way to conduct a beneficial review session. It has worked well for classes from 20 to 40 students.

Handling the "Overhead" Problem

James A. Kurre, The Penn State University - Erie

Economics instructors inevitably find themselves using a table of data to demonstrate the relationship between two variables such as price and quantity demanded, or GDP and consumption. Using actual numbers helps students see the relationship more clearly but also poses a problem. It's easy for students to fall into the trap of trying to copy the data exactly from an overhead, instead of attending to the explanation that's being given. Waiting for students to accurately copy the table wastes valuable time. Handing out photocopies would solve the problem, but tight budgets and large class sizes frequently prohibit this approach.

A solution that was suggested by a colleague in another discipline is to put photocopies of the overheads in a binder in the library on closed reserve. Students can make a note at that point in their notebooks to "See Overhead #12" and can pay attention to the explanation, secure in the knowledge that they can get an exact copy of the overhead later. Of course, they may choose to simply reproduce the table by hand in the library or photocopy it, whichever they prefer. I put one copy of the binder in the library for each 20 to 30 students in a class.

My library binder has grown from copies of overheads to include other related material that doesn't warrant mention in class. These materials include clippings from the Wall Street Journal illustrating class topics, answers to assigned problems, extra practice problems, explanations for especially difficult topics, and copies of previous exams. It's clear from the library's checkout slips that students find the binder quite useful.

Open-Book/Notes Review for Comprehensive Final Exams

Virginia B. Wright, Eastern Kentucky University

I give open-book/notes quizzes in the last one or two regular classes to encourage students to review key concepts covered in comprehensive final exams. Students are given a list of concepts each quiz will cover at least one class in advance. To complete and score well on these quizzes, most students must study concepts on the review list in advance. I generally emphasize (a) graphs or (b) number problems or (c) words in a single quiz. Each quiz takes a full 60-minute class period. I use short-answer questions for rapid grading, and do count scores in final grades. I encourage students to come by my office to discuss their graded quiz papers before the final exam. I do not, however, allow students to keep their papers because I plan to use similar questions in later semesters.

Carbon Copies of Class Notes

John J. Gregor, Plymouth State College

The lag time between when a lecture is presented and when the instructor receives feedback on the lecture through quizzes or exams can be quite significant. In order to overcome this problem I periodically, for certain key lectures, have the students insert a piece of carbon paper in their notebooks and then take notes as usual. When they leave class they turn in the carbon copies. After reviewing these carbon copies it is possible to gauge the success of the lecture. The carbons will point out misunderstandings immediately and thus allow the instructor to spend part of the next class correcting students' misconceptions. This approach also allows one to update class notes and emphasize presentations that work.

A Hint on Drawing Tangencies

Don Fullerton, University of Texas-Austin

When teaching consumer choice theory, many make the mistake of drawing the indifference curve first. It is then difficult to draw the budget constraint by starting on the vertical axis with a certain slope so that it is just tangent. The slope of that budget constraint may be drawn unevenly to make it tangent. Instead, always draw the budget constraint first, as a straight line. It is then much easier to draw the indifference curve sloping in to a tangency and moving away again, especially at a blackboard. This technique is also useful when constructing Edgeworth-Bowley boxes or drawing tangencies to show equilibria for producers (e.g., average cost curves and price lines for pure competitors), etc.

Great Ideas from Graduate Students

W. Douglas Morgan, University of California-Santa Barbara

I have assigned Ph.D. students in my graduate course the task of writing a "Great Idea for Teaching Economics." Many of them will soon be teaching economics, and this assignment helps prepare them for this important part of their careers. I have submitted the best of these for possible inclusion in this volume, and some have been accepted. Thus, undergraduate students at other schools should benefit from my graduate students' insights, and my graduate students are rewarded with a bit of experience in publishing early in their careers. (Many grad students will also benefit by spending some time with *Great Ideas for Teaching Economics*, and most Harper Collins book representatives will be happy to provide these supplements *gratis* to those who are acting as teaching assistants.)

Chapter One

Economics: The Study of Scarcity

Economics and Theory

Economic Models

Watches as Models of Time

Donald Elliott, Southern Illinois University-Edwardsville

How to introduce the concept of a "model"--its purpose and evaluation. Hold up your watch. Ask: (a) Is a watch a model? (Yes) (b) Of what? (The passage of time.) (c) Must the watch duplicate the actual process of the passage of time? (Of course not; it simplifies this complex process by providing an acceptable representation of the process.) (d) Is there a unique model? (No; consider the many different mechanisms used in watches to stimulate this process--springs and balance wheels, tuning forks, quartz crystals, etc.) (e) How can one evaluate the relative performance of different models? (If the models (watches) yield different predictions (times) over some period of observation, they can be evaluated relative to some benchmark which is considered to represent reality.)

Realism in Airplane Models

Regan Whitworth, American University of Armenia

Bring to class in separate boxes an elaborate plastic model airplane and a balsa glider. Display the plastic model to the class, pointing out all the "realistic" features of the model: gray color, rivets, visible seams between plates, markings, etc. Then point out that it's really NOT realistic: it's made of plastic, not metal; has no seats; is not big enough to get into; and moreover, it won't do the one thing which airplanes must do: FLY!!! Remove balsa model from box. Point out that this model, which many people would regard as much less realistic, will fly. A demonstration is sometimes a useful diversion.

It can then be pointed out that no model is realistic, in the sense that it can't do everything the original does, or it wouldn't be a model. The kind of model one chooses depends on what one is trying to find out. Both models have their uses, but neither is "realistic" if put to the wrong use.

What Is an Abstraction or Model?

Herbert M. Bernstein, Drexel University

To emphasize the need for abstracting or constructing a model when explaining economic relationships, I draw a crude face on the board.



Figure 1-1

I ask what the drawing is, and students respond that it is a face. I ask them to describe this face, and if they have ever met anyone who looks like this caricature. The point is made that they do not need a Rembrandt depiction to ascertain certain information and that relevance, rather than realism, is the essence of theorizing.

Models of Prospective Spouses

Joe A. Garwood, Valencia Community College

Early in the Principles course we all usually deal with the concept of abstracting and its importance to economics. We need to do this to show why it's necessary to abstract, and to allay student apprehensions about our simplified examples and heavy use of models, theories, principles, etc.

I ask a student whom I know to be single whether or not he or she ever intends to marry. If the answer is yes, I point out that there are roughly three billion people of the opposite sex to choose from and that finding "Mr. or Ms. Right" could be quite a chore. I then ask how the student intends to go about finding the ideal mate. In response, the student will indicate that certain criteria are used to reduce the sample to manageable proportions, e.g., appearance, education, location, personality, religion, or special interests.

After going through this process I point out that the student has been abstracting and emphasize how necessary it is to the final outcome. I also point out that the criteria used represent theories about what will make the ideal mate for that student. Conclusion - abstractions and theories are absolutely essential if we are to make any sense out of the real world. This is a real interest grabber and it develops an appreciation for the need to abstract.

Introducing the Concept of Economic Models

Rose M. Rubin, University of North Texas

Students often have difficulty initially grasping the concepts of modeling and of economic models as representations of theory. I find that this idea can be presented in a readily comprehensible way by using what is probably the most instantly recognized "model" a paper airplane.

I follow a standard discussion of "What is Economics?," by discussing the methodology of economics. As I proceed, I very ostentatiously pick up a large piece of paper (preferably colored, which is easily visible to the entire class) and start folding what the students quickly recognize to be a simple paper airplane. At the proper point in the discussion to introduce the concept of a "model," I hold it up and ask, "What is this?" Someone in the class inevitably responds, "A paper airplane," so that I can then ask, "How do you know it is an airplane?" The usual response is in terms of, "It looks like an airplane." or "It has wings." (Sometimes, a member of the class will come up with the word "model"). Then, I introduce the idea that there are certain, specific variables or factors which indicate that this is a "model" of a plane. While it is clearly a "plane," it does not include all the details of an actual plane, i.e. no motor, no propeller or jets, no wheels, etc. Nonetheless, it has been clearly recognized as a paper airplane or model of an airplane.

Then I draw the analogy between the "plane" and economic models or theories as abstractions from reality, which are nonetheless representations and which describe the entire economy (macro) or specific areas of the economy, such as markets (micro). Further, these abstractions may contain only key variables, (give examples) and still represent a complex economy, just as the paper airplane is recognizable by its wings.

The second stage of this demonstration is to ask, "Will it fly?" Of course, the students know that it potentially will and usually respond, "Try it" or "Test it." This leads into a discussion of the use and usefulness of models not only for initial description of the economy, but also to show that change in the variables permits analysis of resulting changes which occur in the system. At this point, add ailerons on the wings or a paper-clip ballast to the paper airplane and see what happens to the direction of flight to demonstrate changing or adding variables to the system.

Why New Economic Models Replace Old Economic Models

Ray Prince, University of Colorado-Boulder

Students in principle classes are often surprised that economists do not always agree with each other. It is as if students expected that one explanation or model would be accepted by everyone. To demonstrate that economists are not the only "experts" that disagree and that differences of opinion can be productive, I include the following examples in our discussion of models.

Models are attempts to explain the changing world we live in. If the predictions of a model are frequently incorrect, or if it claims that certain events should not occur that do, then people begin to search for a new model. In many fields of knowledge, including economics, new models replace old models because the new ones provide a more complete explanation of the world or because their predictions are more accurate.

Perhaps the most famous example of a new model superseding an old one is when the Copernican model replaced the Ptolemaic model as the accepted explanation of how the solar system operates. The adoption of the Copernican model is famous because the choice was based on its consistency with empirical data rather than the elegance of the logic from which it was derived. The acceptance of the Copernican model signaled, therefore, the ascendancy of the scientific method of empirical verification over the deductive method used by Aristotle.

The Ptolemaic model of the solar system is geocentric, i.e., assumes that other bodies orbit around the earth. As incomprehensible as this theory may seem today, the assumption is not inconsistent with the observed fact that the sun rises in the east and sets in the west. In fact, working models of a geocentric solar system were used well into the sixteenth century and even later to predict the location of the known planets.

The telescope was responsible for the eventual rejection of the Ptolemaic model in favor of Copernicus' heliocentric (sun-centered) model. With the invention and improvement of the telescope, more of the solar system could be seen. Eventually, it was no longer possible to construct a working model of a geocentric system, no matter how elaborate, that could predict where in the sky an astronomer would find each of the planets observable with a telescope.

Often doubts about an economic model first arise when its predictions and explanations appear inconsistent with observable events. The simple version of the Keynesian cross model, which had been used in textbook presentations for years, is a recent - an important example. Three mutually exclusive states of the world are possible in the simple version: unemployment (where aggregate demand equals aggregate supply at a point inside the production possibility boundary), full employment (a point on the curve), and inflation (where the aggregate supply would be sufficient to satisfy aggregate demand at a point outside the curve). Rapid inflation and high unemployment should not occur at the same time according to such reasoning because it is impossible to be both inside and outside the production possibility curve simultaneously. The event which led economists to question this model, therefore, was stagflation, which began in the 1970s.

The onset of this stagflation is thought to be due to the increases in commodity prices following the Soviet wheat deal, the devaluation of the dollar, and OPEC oil price increases in 1972. The inability of the simple Keynesian cross model to explain rising prices along with increasing unemployment resulted in a number of proposed replacement models that included both supply and demand. Eventually the presentation of the Keynesian model in economics textbooks was modified to allow for changing prices and, thus, for stagflation. Today the modified Keynesian model is presented in many textbooks along with an alternative aggregate demand or aggregate supply model. In this case, the old model was not replaced but modified. Nevertheless, the example serves to demonstrate the process by which a field of knowledge such as economics can utilize empirical information to resolve differences in opinion and to improve its ability to explain and predict.

Video Games and Economic Models

Gary M. Galles, Pepperdine University

Students often enter principles courses expecting economics to be dry, uninteresting, and often unintelligible theory with little relevance to their lives (an unfortunate but common impression among the uninitiated). Unless that expectation can be quickly dispelled by showing just how useful the economic way of thinking and economic theory will be for them, such students may remain both uninterested and unmotivated, and the class will be largely wasted on them. Therefore, I emphasize that economic theory will enable them to make better decisions and will be invaluable in understanding the world around them. Since very few lower division students have encountered much of the "real world," however, it makes it difficult to devise illustrations of this that they can all relate to. So I turn to something they all can relate to--video games--for an analogy.

I begin my illustration by asking how many students have ever played Pac-Man. Virtually everyone's hand will go up in a typical freshman class. I then ask one of them how he did the first time he played. The inevitable answer is that he did poorly. I proceed to ask him why he did poorly. His answer will usually be that he "didn't know what he was doing," which I rephrase into a statement that he had no theory of how Pac-Man worked. He didn't have much idea of what to expect in a given situation, and so he didn't do a very good job of achieving his goal (a high score). I then ask how many students got better at Pac-Man, trying to get them to see that it was better theory--a better understanding of how things work--that allowed them to do better. I ask if they can become proficient by reading the game instructions. They can't because those only reveal very rudimentary information about the game. I ask them what the quickest way to improve at Pac-Man is, then paraphrase the various answers by saying that "we all know that the quickest way to improve at Pac-Man is to watch an 8-year old at an arcade and memorize the patterns he follows." I ask why that works, in order to get across the point that someone had to figure out how Pac-Man works (i.e., form a theory) in order to develop a pattern that is successful. Once the pattern is known, all we need to do is memorize the pattern, not the theory. This is because the game program doesn't change. But if the pattern is broken, so that we have to make new decisions, we're in a lot of trouble if we don't know how things work. You need theory to guide decisions whenever you're in an unfamiliar situation.

To continue the analogy, I move from Pac-Man to more complicated video games, trying to get across the idea that the more complex the game becomes, the more you need to understand theory. I point out that Pac-Man is a very simple game: you only control one thing (the Pac-Man); you only have a single decision at any point (which way to go); all movements follow clearly defined corridors; nothing unexpected can happen to alter the game; all characters outside your control can be easily characterized by their degree of aggressiveness.

I ask the students how much more important theory becomes as the game gets more complex by giving them other video game examples. Almost all other games involve firing at opponents as well as avoiding their fire. Many involve a force shield from opponents (but you can't shoot with the shield on and it only lasts a little while). Some games have many types of weapons and many types of opponents (Defender is the best example here). Almost all the more complex games involve movements in any direction, not just in neat corridors (Asteroids is a good example). So many patterns are possible that you cannot deal with them by rote memorization. The best ways to score points become hard to figure out in these complex games. Every added complexity is shown as adding new variables both under your control and outside your control, new decisions, new interdependencies, etc. Without understanding how the game works, it becomes almost impossible to do well as the games get more complex.

I then ask them how even the most complex games compare with trying to achieve their goals in life. I point out that the world is so complicated and interrelated that the facts cannot possibly organize themselves into any coherent patterns without a theory of causation. I tell them that economics is at root a theory of causation, where people respond to their constraints and incentives in predictable ways. No set of instructions tell me what to expect my fellow humans to do, but economics tells me that they can be expected to pursue what they consider to best further their own interests, often with total disregard for mine.

Unlike games, continual changes in ways both unexpected and expected put us in ever new situations that can't be properly dealt with as just like past situations. There are so many variables in the real world that you could not even memorize the permutations, much less how to deal with them. We have many more goals than 'high scores', many of which conflict, so that choices among them must also be made. Economics is about making such choices well. Not all the relevant information is immediately conveyed to us on a TV screen as in video games, but people interacting on markets in pursuit of their own interests provide much of the information we need in terms of prices. Our current actions can affect us far into the future, and all such decisions (job choice, education, investment) are made before we can find out if they are good ones--our problems don't go away simply by shooting at the other players. Our social interdependence means that I must find ways to induce other players to cooperate with me if I wish to achieve my goals-- economics points out that one of the best such inducements is often to make such cooperation in others' interests, as well through incentives (also conveyed in prices).

I wind up this illustration by pointing out that life is a very complex "game." This means that to achieve what you want as well as possible, you need some theory of how the game works: how to make good choices, what others can be expected to do, what kind of information is available, etc. Economics is about all of these, allowing us to make sense of much of how the world works. This is why it is both important and interesting.

Logical Fallacies

Illustrating the Fallacy of Composition

Steven T. Call, Metropolitan State College-Denver

Failure to avoid the fallacy of composition accounts for many errors in economic analysis, both by professional economists and by laymen. I use variants of the following two examples to illustrate the fallacy. They are particularly effective in large classes.

- a. Place your class notes where they are difficult to see from the rear of the room. Ask a student somewhere near the middle or rear of the class if he can see your notes. If done properly, the student will say no. Ask him to stand. He should now be able to see the notes. Since the class is simply the sum of individual students, it should follow that if everyone stands up, everyone should be able to see your notes better. Ask the class to rise. In large classes, no one can see anything. This is a powerful demonstration.
- b. Ask a student to quietly drop his or her desk top (where feasible). This can be done with very little disturbance to the class. Again, since any one student can do it, and since the class is just the sum of students, everyone should be able to lower their desk tops simultaneously without disturbance. In a large class, the sound is deafening and very effective. This technique sets up the class for a wide variety of policy and theoretical issues where aggregation and externalities are important.

Common Logical Fallacies

John P. Cochran, Metropolitan State College-Denver

One way to enrich a discussion of scientific methods and the process of theorizing is to discuss some of the more common logical fallacies. Among these are:

- a. Appeals to authority, or *ad hominem* arguments. Albert Einstein (or the *Bible*, or the president, or my Mother) said that "...". Therefore, it must be true that "...". Alternatively, communists (or the devil) believe that "...". Therefore, "..." is obviously wrong. Or, Keynes was a communist and therefore, his suggestion that "..." must be wrong. Such appeals are, of course, not compatible with logical or scientific approaches to solving problems.
- b. *Post hoc ergo propter hoc*. Precedence does not imply causation. To make this point, suggest that if the idea that anything that follows another is necessarily caused by the first, then roosters would be justified in believing that early morning crowing causes the sun to rise. Similarly, union wage hikes or big government deficits, or growth in the money supply do not necessarily cause price inflation simply because they precede it. Nor does victory by the National Football Conference team in the Super Bowl necessarily portend an increase in the Dow Jones index, etc. These are simply statistical artifacts until more scientific causal explanations are developed and tested.
- c. Composition and Decomposition. The whole may be either greater than (synergy) or less than the sum of its parts. If you buy all of a cow's components at your local butcher shop, you will still be unable to assemble a cow. Similarly, a crowd of people may behave very differently than any of the individuals that comprise it would alone (e.g., a lynch mob). A basketball player who tries to play against a five member team is unlikely to score one-fifth as many points as any team composed of five individuals, even if they are less talented on average. Nor would two teams of 50 players each be likely to score 10 times as many baskets as two standard 5-member teams.

Logical Errors in Rain Dancing

Gary M. Galles, Pepperdine University

It is often difficult to impress students with the necessity to consistently apply the logic of opportunity cost thinking to reach correct conclusions. To drive this point home, I ask how accurate the results of a string of implications $A \rightarrow B \rightarrow \dots \rightarrow Z$ would be if an error were made somewhere in the chain. They see that the conclusion can be way off, and farther off the earlier in the chain the error comes (even if all the other links are logically correct), which I use to emphasize the special importance of examining the beginning assumptions of a chain of logic as well as each implication step. I then illustrate the point with the example of rain dancing.

I ask the students why rain dancing could arise and persist for over a century when it does not affect whether rain falls. All it takes is a view of God as one who needs appeasement and a post hoc, ergo propter hoc fallacy. Once I get the idea of dancing to appease the rain god (whose anger is shown by the fact that it hasn't rained when it should have), and it rains after such a dance, the post hoc ergo propter hoc conclusion that the dancing caused the rain could easily be reached. Once this is established as a theory, there is no natural tendency to correct the error. If the tribe dances long enough, it will rain; if it doesn't rain, they didn't dance well enough, or long enough, or their hearts weren't in it or it wasn't enough like the ancestors did it. Further steps in logic are taken, starting from the error rather than examining the initial error.

Correlation vs. Causality

Bienvenido S. Cortes, Pittsburg State University

Much has been said about the common fallacy in economic methodology that association is causation. Simply because two variables are found to be statistically correlated does not necessarily imply that they are causally related. A high correlation may reflect a spurious or nonsensical relationship. Some classic examples include the "Super Bowl Predictor" (Stovall, 1988) which contends that when the NFC team wins the Super Bowl, the stock market goes up, and Jevons' theory that sunspots cause the business cycle. In beginning principles and more so in advanced economics courses which require students to formulate and test cause-and-effect relationships, it is also very important to emphasize the causality must be based on sound economic theory. Even if the movements of two variables are causally related, the direction of causation may be altogether different from what was expected. It is possible that the direction of causality may be reverse or even two-way. With or without getting into a discussion of Granger (1969) causality tests, the instructor will be able to demonstrate the significance as well as the difficulty of inferring causal relationship by asking the class:

What variable causes what? (Or alternatively, which one comes first?)

- advertising and consumption
- government spending and income
- sunspots and economic activity
- the chicken and the egg

Possible answers:

- consumption causes advertising (Ashley, et al, 1980)
- government spending causes national income (Holmes & Hutton, 1990)
- economic activity causes sunspots (Sheehan & Grieves, 1982)
- the egg causes the chicken (Thurman & Fisher, 1988)

Graphical literacy

Michael Kuehlwein, Pomona College

Graphs can be very informative and we draw heavily on them in introductory courses. But I try to warn my students graphical evidence can only suggest, not prove, the existence of a relationship between two variables. Take the relationship between the number of guns distributed annually in the United States and the number of homicides involving a gun between the years 1965 and 1980. A graph of this relationship every five years looks like the following:

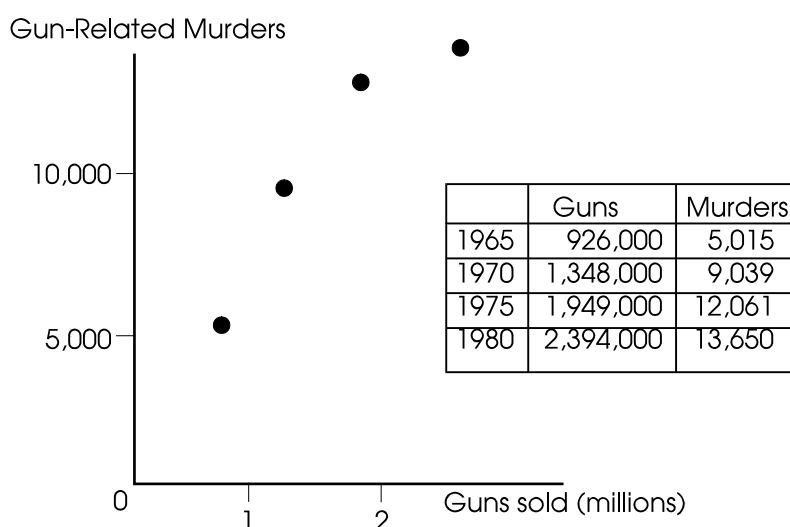


Figure 1-2

The graph appears to imply the increasing the number of guns in our society leads to more murders.

That may be true, but there are alternative interpretations of these data as well. First, the causation may to the other way: rising murder rates may spur citizens to buy guns to protect themselves. That would be an example of reverse causation. Second, these two variables may not be directly related to each other, but may both be influenced by an omitted third variable. One possibility is a growing population, which would naturally boost both gun-related homicides and the number of guns sold in the US. The rate of increase in our two series appears too high to be completely explained by population growth, but other factors could be involved as well. Perhaps growing exposure to guns in our society has reduced apprehensions about both owning and using them.

Finally, our two variables may be unrelated to each other, but chance has created the appearance of a significant correlation. Perhaps the real reason homicides have risen is a burgeoning drug problem. This would be an example of spurious correlation between two variables. The watchword is caution in interpreting graphical evidence.

Introducing Graphical Analysis

Ralph Byrns

At the start of a course, students want to hear about class requirements, grading standards, etc. This discussion can be used to show mathophobic students that graphs are not intrinsically difficult, and can be very useful in portraying relationships among variables. The following lecture can be extended to show that economics is concerned with how people respond to incentives, and how incentives can be structured to alter human behavior in a desired fashion. (This discussion works best if you are a bit of a ham, and act as though negotiating the grade scale with students.)

Graphing Grades and Student Effort. First, suggest that common student goals include good grades, but that your major goal is for students to learn economics. This normally requires diligence. If your goals and student goals were perfectly compatible, Figure 1-3 (drawn on your chalk board) depicts the relationship that would exist between the average (mean) grade given in your class and their effort and understanding. Point out that this graph shows a positive relationship between these variables, and indicate that you would cheerfully give everyone top grades (point a) if this positive relationship were accurate.

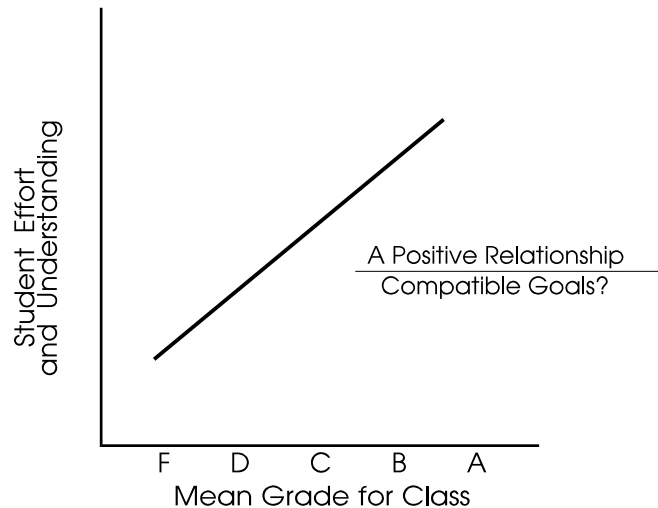


Figure 1-3

Now draw Figure 1-4, asserting that, sadly, your experience has been that when you have used an "easy" grading standard, students slough off studying economics, and devote more time to other courses or partying. Express personal empathy with student desires for grades, but indicate that successfully teaching economics is your #1 priority, and that you have found that a "hard" grading standard seems to accomplish this. Point out that this figure reflects what appears to be a negative relationship between student effort and the average (mean) grade granted in your classes. To stimulate study for your course, you will use a stiff grading scale, as at point d in the figure.

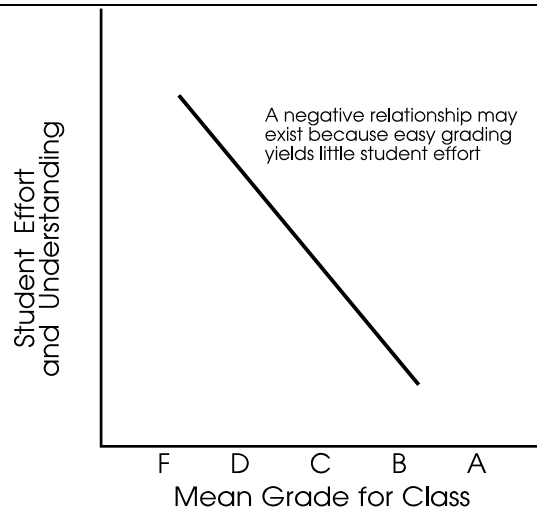


Figure 1-4

Altering Incentive Structures. Your class will want to discuss this, and some perceptive student may indicate that a harsh standard can be discouraging and result in very low student effort. Suggest that they are trying to soften you up, but draw something like Figure 1-5 and ask if what they are trying to say: Easy grading yields little study, but harsh standards do also; a medium grading standard is the way to get maximum effort.

Student Effort and Understanding

Either too much carrot or too little stick yields too little learning.

F D C B A
Mean Grade for Class

Figure 1-5

Regardless of student response, offer Figure 1-6 (or something you devise) as another alternative. You can accompany Figure 1-6 with the suggestion that very good students who normally get As will work hard even if standards are easy, but that you know that many D students will work just hard enough to pass the course no matter how hard or easy standards are. Indicate that you are considering altering the structure of your grade system (curve), but not the average (mean) grade awarded, to make it relatively easy to get a good grade (an A or B) so that students who would normally get B+s can get As with a little extra work, but that you intend for anyone who gets a D to consider it the most demanding D they've ever received.

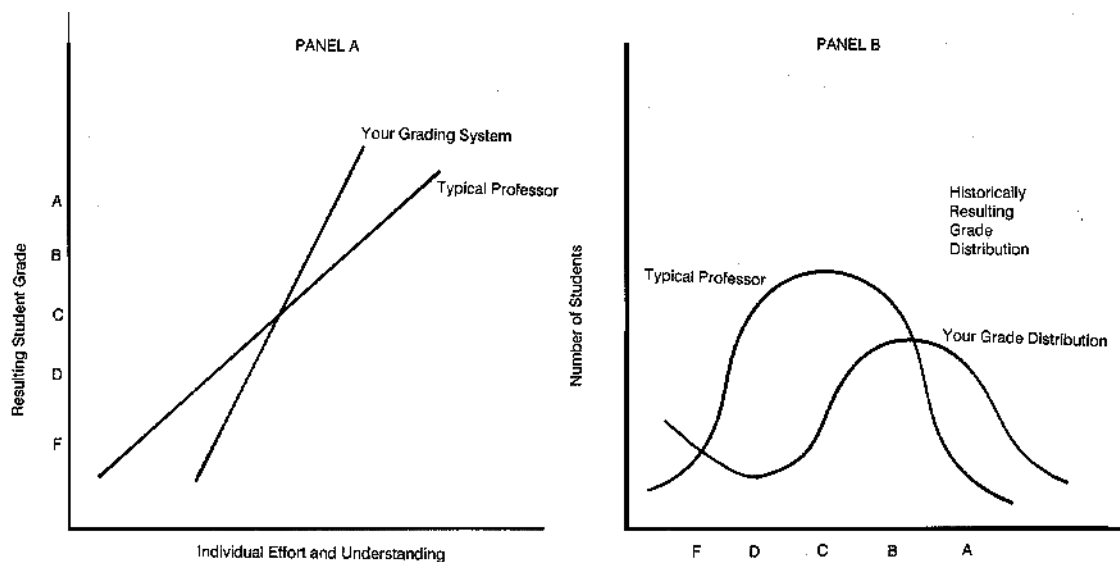


Figure 1-6

Any number of other possible relationships between grade means/structures and student effort/understanding can also be graphed, depending on how much you want to review graphs before launching into economics, per se. When you begin winding this part of your lecture down, indicate that economics is concerned with:

- a. how people respond to incentive structures (such as grades.)
- b. trade-offs between goals.
- c. coordination and resolution of conflicts, etc.

Now point out that economic reasoning is at the center of things you have discussed for the past few minutes. Thus, the preceding exercise reviews graphs for your students and can be used to emphasize just how inescapable the economic way of thinking is.

Positive vs. Normative Economics

Are You POSITIVE that's not NORMATIVE?

Brian Eggleston, Augustana College

Most principles texts define clear distinctions between POSITIVE and NORMATIVE economics. Positive economics purportedly concerns *what is* ("the facts") while normative economics pertains to *what should be* ("value judgments").

Institutionalists, in the tradition of Gunnar Myrdal (Nobel Laureate, 1974), have long viewed this as largely a false dichotomy. They argue that facts and value judgments are not so easily separated. For example, one's beliefs (ideology) impact the choice of problems undertaken and consequently which "facts" are discovered. Students generally fail to see the importance of this issue and for many years I found it difficult to illustrate the point.

The passage cited below captures the interdependence (circularity) between fact (reality) and value (belief) quite nicely. I read it to my classes, pausing at the end of each sentence to ask if there is any disagreement. (I have never encountered any.) When finished, I then reiterate the first and last sentence. I find that students very much get the point.

"Reality" is what we take to be true. What we take to be true is what we believe. What we believe is based upon our perceptions. What we perceive depends on what we look for. What we look for depends upon what we think. What we think depends upon what we perceive. What we perceive determines what we believe. What we believe determines what we take to be true. What we take to be true is our reality.

Gary Zukav, *The Dancing Wu Li Masters: An Overview of the New Physics* (New York: Bantam Books, 1980), p. 310

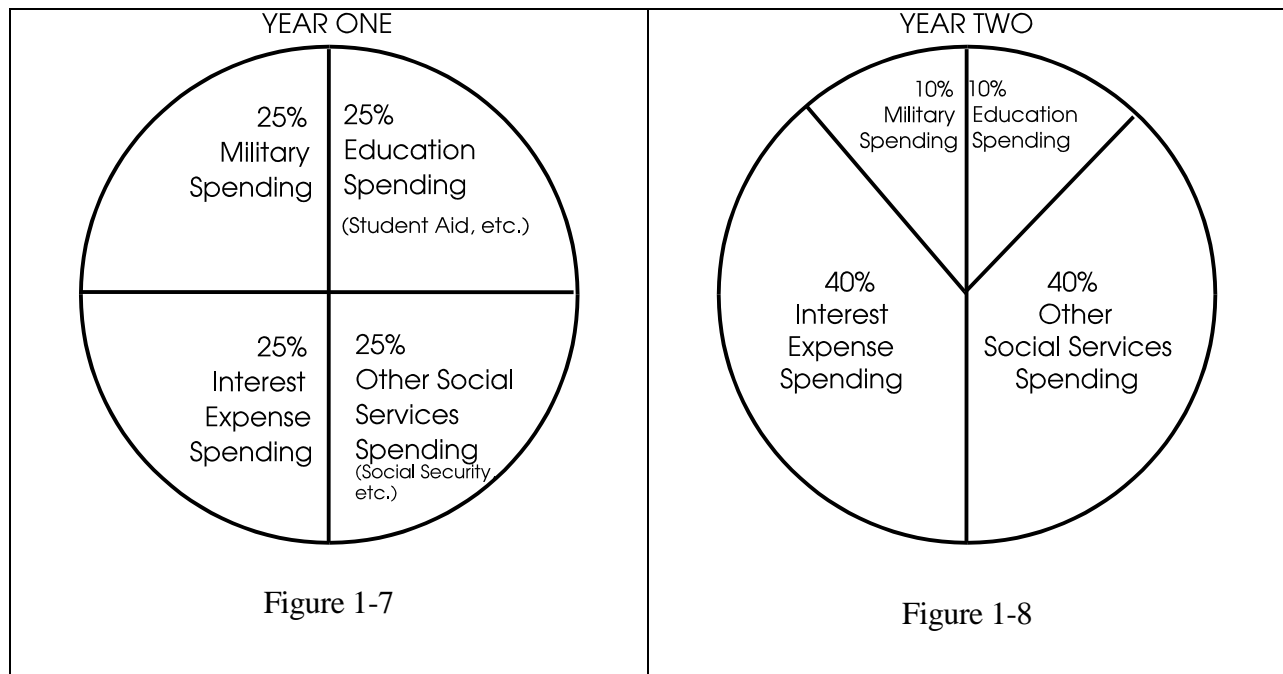
Distinguishing Positive from Normative

Stephen Teney, Briarcliffe College

From a purely definitional viewpoint, the distinction between a normative view of an issue and a positive analysis of that same issue, seems clear-cut. However, students generally seem to have difficulty in distinguishing between what exactly constitutes a normative view or a positive analysis.

The following example relates the concept of normative-positive representations to the government's provision of goods and services.

Suppose that in year one the government allocates its resources per Figure 1-7. (I always stress to the students that this decision of the federal government's budget allocation is a positive representation - as Casey Stengel would say, "you could look it up.")



Now suppose in year two the budget allocation is revised to look like Figure 1-8: At this point, I always ask the students - "How do we evolve from year one to year two?" Some student usually mentions something about voting and then I emphasize the point that, "yes, we voted as a society, through our elected representatives, to change the allocation of government services." The budget allocation in year two is also a positive representation of the government resource allocation. However, the process by which we evolve from year one to year two, is a normative one - we vote to increase spending in areas we feel should receive more financial support.

You can always adjust the percentages in the two samples pies to reflect personal taste, but education spending is always a component worth including. It is relevant for the student (and therefore the faculty), and it generally leads to some lively discussion.

Ideological Conditioning and Economic Analysis

Robert D. Simonson, Minnesota State University-Mankato

The ideological nature of much economics often confuses students and leads many to question it as a "science." One standard procedure is to familiarize students with the positive-normative dichotomy ("what is" vs. "what ought to be"). Many economists attempt to remove themselves from normative "value judgments" and practice value-free science. This dichotomization leaves most of the public with the unfortunate impression that economists, like auto mechanics, should agree when diagnosing problems and prescribing policy. But if economics is value-free, why does unrest in the profession and disagreement among economists seem to be the norm?

The answer is that ideology underpins economic paradigms and colors our policy prescriptions. Some excellent books have been written to explain the concept of ideology, how it shapes our thinking, and how it may pass for science to the casual observer. Ambitious students might read George C. Lodge, *The New American Ideology* (Alfred A. Knopf, Inc., 1976) or Gould and Truitt, *Political Ideologies* (Macmillan Publishing Co., Inc., 1973). A less time-consuming explanation is condensed in the introduction to Robert B. Carson's *Economic Issues Today* (St. Martin's Press, 1990). These sources tend to conclude that ideology is: (1) a synthetic (man-made); (2) a framework people use to define and apply values to the "real world"; (3) a collection of ideas which define the nature of the good community; and (4) controversial.

Students persist, however, in seeking a tangible example of how ideology influences our reasoning and resultant policy formulation. This request poses a unique problem. The example must be of a nature such that ideology itself is not relied upon to explain ideological conditioning. Although economics cannot be as mechanical as physics, after years of searching, I finally arrived at the following concrete example:

Directions: Connect these nine dots with four straight lines, but do not retrace any lines or pick up your pencil.

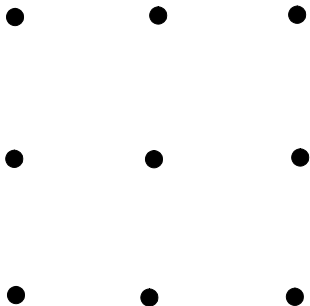


Figure 1-9

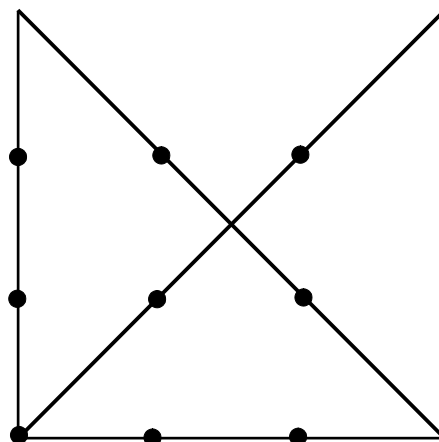


Figure 1-10

After a few futile attempts, most students view the puzzle as unsolvable. This is expected; psychologists inform us that most Americans could not solve this puzzle even if given unlimited time. Why? We think in certain ways and tend to follow established patterns of thought. We resist violating established boundaries. The eye senses a boundary established by the dots at the outer edges of the puzzle and the mind seeks a solution within these boundaries. Such attempts will be futile. Only people who are not restricted by perceived boundaries can easily solve the puzzle.

Students are amazed at how simple solving the puzzle is when it previously seemed impossible. Now ask students to compare the puzzle to real world problems. The connection is quickly made that ideologies, by their very nature, establish the boundaries of accepted thought and beliefs. They may be asked if the puzzle could have been solved had the directions instructed them to stay within the boundaries established by the eight dots on the outer edges. The obvious answer is "no." They may then be asked the extent to which economic problem-solving is constrained by ideological conditioning.

Students again quickly make the connection between their earlier objections and ideological conditioning. They often respond with examples of their own (news articles, advertising, political campaigns, etc.) which illustrate ideology masquerading as science. Ideologies are universal and pervasive. Some ideologies are not "better" or "worse" than others from a scientific perspective. Science and human values are intertwined at the base of economic analysis and all inquiry. Economists are not architects of ideology, but their analyses are performed in the real world laboratory. Resultant prescriptions are consequently influenced and ultimately judged by a public who are, in general, products of ideological conditioning.

The Normative Nature of Economic Goals

Ralph T. Byrns

Emphasize that all goals are intrinsically normative. There is a broad consensus about the desirability of the first micro goal listed in the text (efficiency), but students are often astonished if you point out that many government policies are inefficient:

- a. import quotas and tariffs.
- b. laws requiring government contractors to pay union wages (the Davis-Bacon Act), or that they "Buy American."
- c. state and local licensing of barbers, dog groomers, etc.

Other examples abound. You probably have favorites of your own.

After introducing equity and freedom as additional micro goals, stimulating discussions can be generated by examples of trade-offs among these goals. For example, your freedom to be alone may deny me freedom to associate with you; my desire for greater equality may deny you freedom to spend your money as you choose if I persuade others to vote for taxes to support the impoverished (or mug you to secure an involuntary transfer payment); efficiently importing goods produced at low costs by foreigners may (inequitably?) deprive some of the poorest among us of their jobs. Moreover, efficiency may be in conflict with other social goals; Constitutional denials of the right to sell oneself into slavery, or of bribing others to vote our way are examples cited by Arthur Okun in *Efficiency vs. Equity* (Washington, D.C.: Brookings, 1971).

In discussing positive versus normative economics, emphasize that policy making tends to be far more publicized than theory and involves huge doses of value judgments. This is a major reason for the erroneous perception that economists seldom agree.

Macroeconomics vs. Microeconomics

Using a Watch to Distinguish Micro/Macro

Jerry McElroy, Saint Mary's College-Notre Dame

In order to quickly demonstrate the difference between micro and macro theory in the first class lecture in Introductory Economics, I use a wrist watch. Micro analysis is analogous to examining the individual parts separately one at a time: the main spring, the various gears, hand armatures, and so on, are similar to the individual firm and individual consuming unit.

Macro, on the other hand, is analogous to examining how all the parts fit together to reflect the passage of time, and whether this output of the system (time measurement) is running too fast or too slow. In the same vein, macroeconomics considers the aggregate behavior of the individual units summed together, and focuses on whether the overall level of activity is on target, or inflationary or deflationary, and to what degree.

Distinguishing Macro from Micro

Ralph T. Byrns

Indicate that the differences between macro and micro are more of degree than kind. For example, unemployment can be addressed as an issue for macropolicy, but much of unemployment is best explained at the micro level (efficiency wages, seasonality, structural, frictional, minimum wage effects, etc.). Thus, unemployment is addressed in both macro and micro. Similarly, money and banking are commonly treated in macro principles, but many issues in banking are microeconomic in nature.

Scarcity and Resources

Rational Decision Making and Economics

Eric K. Steger, East Central University

Quite often near the beginning of each semester, I tell all students in my principles of economics classes that I'm glad that I'm able to fit into their life plans. I tell them that knowingly or unknowingly, they have decided that they would rather be taking economics now than doing anything else. Generally, several students protest and indicate that they'd rather be doing many other things than being in any economics class. I simply say if that is true, they should drop the class immediately because they're acting irrationally. However, I then explain that economics is crucial to each one of them. In fact, when their goals are carefully considered, taking economics is what they would rather be doing than anything else. This usually makes it clear how their behavior is consistent with their life plans rather than acting irrationally.

Scarcity and Immortality

R. Michael Brown, Metropolitan State College-Denver

I have drawn an interesting example that emphasizes the importance of scarcity from a classic of world literature, Homer's *Odyssey*. This example makes the point to students that a meaningful existence unavoidably involves choices in the face of scarcity.

There is a passage in which Ulysses meets Calypso, a sea princess and child of the gods. The divine and immortal Calypso is fascinated by Ulysses, never previously having encountered a mere mortal. Curiously, Calypso envies Ulysses his mortality. Most readers find Calypso's envy strange--most of us have occasionally fantasized that we would like to live forever. (Indeed, most religions promise everlasting lives to their true believers.) It would seem that Ulysses should envy Calypso her immortality, but not vice versa. Why would an immortal ever want to be mortal?

An appreciation of scarcity is the key to understanding their different perspectives. Calypso views Ulysses' limited life as much more meaningful than her immortal one because he may be significantly affected by even decisions that seem, at first glance, to be trivial. Every choice Ulysses makes involves a REAL decision. Calypso, on the other hand, will live regardless of her decisions; she will never truly choose in a life or death situation. Thus, she views her life as less meaningful than his.

A Date with Scarcity, Choice and Income Distribution

Don C. Jackson, Abilene Christian University

To illuminate the fundamental ideas of scarcity, choice and distribution of income, I use the following classroom exercise. A girl and boy are selected from the class. The boy is told he has just discovered the girl and is greatly attracted to her. To make a grand impression he has invited her to dinner at one of the better restaurants in town. I display on the board a menu which has appetizers from \$4 to \$12, entrees from \$8 to \$25, drinks from \$1 to \$5 and desserts from \$3 to \$10. I ask the girl to order. The boy is then told he has the following additional wants and needs this week:

Gasoline for the car	\$15
Fraternity Dues	\$20
TV set rental	\$10
An <i>Economics</i> text	\$40

He is told he has only \$50 to spend this week and no credit. I then ask him to order from the menu and decide on a tip for the waiter. After determining his choice and his financial dilemma, the class discusses scarcity (of the boy's money and as reflected in relative prices on the menu), choice (why the girl chose what she did, why the boy chose what he did, including foregoing the *Economics* text) and distribution of income (money to wealthy Texas cattle ranchers or poor Louisiana fishermen).

Scarcity and the Speed of Light

Seymour Patterson, Northeast Missouri State University-Kirksville

Students often have trouble with the idea that one human imperative is to make choices. I persuade them that only in Heaven, a place of eternal bliss, is scarcity not encountered, and thus, is decision making unnecessary. I have found it instructive to extend scarcity into a world where neither time nor income are constraints, yet scarcity remains a problem.

Have students imagine a world in which any distance can be traveled at the speed of light. Suppose a student in such a world had to study English and Mathematics for an examination. It would be possible for the student to go to the movies, have a drink at a local bar, and study English and Math at home before time advanced one second. Similarly, an instructor could simultaneously teach different courses in different classrooms without worrying about time conflicts. Intertemporal considerations would become irrelevant; i.e., the opportunity cost of time would become zero. With zero opportunity cost, people would become unaware of time, as though it had been suspended--it would in fact not even exist. Since time is not the only cost of any activity, however, opportunity costs would still exist for activities involving incomes and prices.

Now suppose that, in addition to the absence of time, income in our hypothetical world were unlimited. Such a state of affairs would, ipso facto, mean that its inhabitants could conceivably produce all the guns and butter they desired. The consequences would be awesome. There would be no reason for enemies to attack each other because any attack could be evaded by fleeing at the speed of light. Thus, no one would bother to invent or try to use weapons of mass destruction. The inhabitants of our imaginary world would have all their needs met. They could simultaneously be in excellent physical shape and gluttons, because they could simultaneously eat and exercise.

Nevertheless, scarcity would still exist. People could still die from cirrhosis of the liver caused by alcohol abuse, or lung cancer from inhaling excessive nicotine, or their bodies might shut down because of excessive cholesterol. After all, the people in our imaginary world would still be heir to all human vices, and they would still obtain physical and psychic utility from some things that would cause them great distress. Thus, even in an unlimited-income, light-speed world, scarcity is unavoidable. People would still be forced to choose, and nothing guarantees that their choices will be prudent, even when these choices maximize some subjective utility function.

Distinguishing Economic Capital from Financial Capital

Marvin L. Larson, Southwest Missouri State University

It can be a real task to convince students (especially accounting majors) that financial capital may be a surrogate for economic capital, but that economists are correct in insisting that it is not a factor of production. I have developed a thirty second demonstration that can be quite convincing.

One student volunteer is given a pencil and a sheet of paper, while another (hopefully, a business major) is provided with a dollar bill. (You can readily get volunteers by first offering to pay \$1 to whomever produces the most.) Each has a half minute to produce something. The first student (labor) can quickly produce a graph with the pen (capital) and paper (representing land). The second student is normally at a loss about what to do with the dollar or tries to buy land and capital from a classmate. (Be ready for the student who tries to make a paper airplane out of the dollar; if this occurs, specify that it violates the rules by converting money into physical capital. When the second student is forced to surrender the dollar to the first student (entrepreneur), conclude this example by commenting that money, often thought a factor of production by principles students, does not directly produce anything.

An Alternative Taxonomy of Resources

Ralph T. Byrns

The taxonomy of resources in the text is traditional: labor, land, capital, and entrepreneurship. Kenneth Boulding's alternative grouping can be illuminating: technology (or knowledge), materials, and energy. His categories lead to our description of production as requiring "the use of knowledge to apply energy to some material in a manner that makes it more valuable." Many students quickly forget the distinctions between economic (physical) capital and financial capital, so it may be worthwhile to spend a few moments emphasizing the differences between them.

Opportunity Costs

What is an 'A' Worth?

Dennis C. McCornac, Manhattan College

During the first few weeks of class when the syllabus and course requirements are being discussed, I set the price of an A. If the student is unable to achieve an A by fulfilling requirements, he or she is able to buy one. The going rate, however, is one million dollars. The payment must be made in unmarked bills and slipped under the professor's door late at night. Though the students initially are somewhat bewildered by the offer, I find this offer is an excellent example of: (1) the concept of opportunity cost, (2) a perfectly elastic supply curve, (3) the idea that everything (or almost everything) has a price, and (4) the concept of value. NOTE: To date every student who received an A has done so through hard work and scholarly achievement. I am also still teaching, and not retired.

Valuing Lives

By William L. Weber, Southeast Missouri State University

Many students in principles classes are reluctant to place values on a life. At the beginning of each semester I like to divide the class into groups of three or four in order to discuss how lives are valued and to introduce the notions of scarcity, opportunity cost, and positive vs. normative economics. Each group is asked to imagine that they are on the executive committee of a hospital with the job of allocating a scarce piece of medical equipment, say a kidney dialysis machine. A handout is given to each group describing the profile of each patient and the number of hours that they need to use the machine. The total number of hours demanded by all patients will need to exceed the number of hours available on the machine so that the students will be forced to make choices between patients. The patient profile can include the age of the patient, their occupation and income, whether or not they have insurance, their marital status, and the number of their dependents. The students are then asked to decide which patients get to use the machine and which do not.

After each group decides how to allocate the scarce kidney dialysis machine we have a class discussion where the concepts of scarcity and opportunity cost can easily be introduced and developed. A distinction between positive and normative economics can also be made at this time. To do this, we walk about the choice of objective that each group made in their allocation of the machine. For example, did the group choose to save the maximum number of lives, or, did they choose to save the maximum number of lives of those that had insurance, or, did they choose to maximize the life span of those who needed treatment. The patient profiles can be readily developed to examine the implicit choice of objectives. Each of the objectives has positive consequences, while the choice among the objectives is essentially normative.

Later on during the semester we often talk about the opportunity costs of raising the speed limit on interstate highways and how to value the loss of life that occurs because of higher speeds. There is always at least one student who argues that we cannot place a value on life. At this point one can quickly remind the student that when they were choosing how to allocate the scarce kidney dialysis machine, they were implicitly placing values on lives. The discussion can later be guided into how individuals place values on their own lives by purchasing life insurance policies or through their choice of occupation and housing, and how individuals are sometimes forced to place values on the lives of others when they serve on juries in wrongful death cases.

What Makes Something a Free Good?

Carole E. Scott, West Georgia College

Suppose that someone stopped you on your way to class and offered to sell you a week's worth of air to breathe for \$5. You would laugh. The story would be different if you were in a space ship hit by a meteor and all the air in the ship leaked out the hole. For the moment you save yourself by jumping in a space suit, but it doesn't have enough air to enable you to get back to Earth or survive until a rescue ship arrives. Fortunately, however, you are near a space station, and you radio it for help. They radio back that they will be happy to send you over a day's supply of air for \$5,000.

Why would you pay nothing for air in the first case and \$5,000 in the second case? Is it because the supply of air is greater on Earth than in the space station?

Student Expressions and Opportunity Costs

Ralph T. Byrns

Many students use expressions that conform to economic concepts of costs (e.g., "That's going to cost you") but then have difficulty in class in seeing that cost is not synonymous with a monetary price. When introducing the concept of opportunity cost, try to use as many nonmonetary examples as you can. (See, e.g., Hugh Macaulay's contribution in Chapter 6.) Then concede that monetary prices are a handy proxy for opportunity costs, but seldom reflect all costs. You might also want to talk about monetary prices as typically coming closer to reflecting costs in a market economy than under socialism or other systems, or mention that psychologists attempt "behavior modification" for their patients merely by altering opportunity costs.

Efficient Inefficiency

Gary Galles, Pepperdine University

Students often have trouble mastering the concept of economic efficiency (the relevant mastery entailing the ability to consistently and accurately apply the concept to real life). I believe that this, in large part, is due to the difference between what economists mean by efficiency (the value of what is produced exceeds the opportunity costs of all the inputs used to produce it) and the preconceived engineering or energy-efficiency notions they usually bring to class. To drive home the idea of economic efficiency in class, I use several examples of engineering or energy inefficiency that are (or may be) economically efficient. Included are the following:

- a. I ask whether it is more efficient to insulate a house in a temperate climate or a cabin in a cold mountain resort. Students usually favor the cabin by their replies, but I respond with an important maxim: the right approach to answering almost any policy question is *IT DEPENDS* on whether the value of output exceeds the value of the inputs. I then ask what the answer to the insulation question depends on. We discover that the value of the insulation (which must be compared to its cost) is an increasing function of the amount of energy saved, the price of energy and the amount of use. For an infrequently used cabin, the energy dollar savings may be outweighed by the infrequency of use, and hence it may be inefficient to insulate the cabin, despite its energy inefficiency. I also ask whether time share condos were more or less likely to be insulated than other cabins, to get them to see that increased frequency of use makes insulating more economically efficient.
- b. For a similar example, I ask whether a California law requiring at least a certain level of thermal efficiency for all air conditioners sold in the state is economically efficient. This again focuses on the trade-off between the costs of increasing thermal efficiency (that shows up in the purchase price) versus the benefits of cheaper cooling, which is a function of how much the air conditioner is used. It is easily conceivable that an infrequently used air conditioner would be most economically efficient by violating thermal efficiency standards, because the lower purchase price more than compensates for the higher stream of energy costs. This example can also serve as an introduction to present values (by asking how to discount the future energy cost savings to compare it to the higher purchase price of the "higher quality" air conditioner investment) and to the issue of requiring certain standards to be met versus providing the information for consumers to make their own choices (e.g., the legally mandated sticker affixed to new refrigerators revealing the expected energy costs of yearly operations).
- c. I ask when it would be economically efficient to continue to use an older technology manufacturing plant rather than invest in a new one to lower "costs." Here I get them to focus on the fact that the existing plant represents a "sunk" cost, so that the relevant choice is between the marginal cost of the old plant and the expected average cost of the new one (for which none of the costs are yet sunk). This clearly means that "state of the art" engineering or technically efficient plants may easily be economically inefficient for

- an existing producer. This can be elaborated to discuss when it becomes efficient to switch (when the marginal cost of the existing plant exceeds the average cost of the new, usually due to required repairs or renovation necessary to continue production at the old plant or to cost reducing new techniques for a new one) or to talk about what type of factory a new entrant should build (because for him there are no sunk costs).
- d. Related to the above, I ask whether it is more efficient for established firms to be leaders or laggards in adopting the latest technology. We find that this, in part, depends on the type of technological change involved. If it was a "scrap it" change requiring the abandonment of existing equipment, new entrants would tend to be the leaders, because they have no existing equipment whose value would fall with the introduction of the new process. If it was a "bolt-on" change which enhances the efficiency of existing equipment, the larger existing firms would tend to be the leaders, as they have more to gain by adopting it.
 - e. I ask about which car is more efficient. By now, the students will know to say "it depends," so we go through some of the things it depends on. The most efficient car to drive is a function of: a) miles per gallon (affects the dollar cost of driving); b) miles driven (MPG is more important the more miles are driven); c) the price of gasoline; d) safety preferences (since smaller, higher MPG gas cars tend to be less safe); e) noise preferences (since smaller cars tend to be noisier); f) comfort preferences; g) family situation (number of family members influences the desired capacity of the car); h) insurance demographics (age, sex, location, and accident record affects the insurance costs of different cars); i) height and weight of occupants (for height and width requirements, such as the Wilt Chamberlain ads for VW bugs); j) carpooling arrangements; k) expected depreciation in resale value; l) length of time you plan to keep the car; etc. I use this to make them see that efficiency problems in economics are almost always multidimensional and typically involve trade-offs among several goods or bads.

I continue with the same approach to more issues until students master the concept. I personalize it with questions like: what's the most efficient grade for you to get in this class (focusing on trade-offs and getting the lowest of a particular grade to minimize costs); is it efficient to come to class; what's the best way to study, etc. This approach lends itself to student involvement and problem-solving ability at a tremendous rate (students out of my class several years remember that IT DEPENDS is the right framework for answering efficiency questions).

Production Efficiency versus Allocative Efficiency

John W. Reifel, Grand Valley State University

Students readily grasp the concept of production (or technological) efficiency but frequently struggle to grasp allocative efficiency. The following simple example is useful in distinguishing the difference. Note that in any given year it would be possible to allocate all of the country's scarce resources into producing millions of large speedboats such that every household in America would have its own speedboat. Production efficiency would be achieved because all resources would be used and they would be combined in accordance with the latest boat construction technology at

factories of optimal scale to produce the largest boats possible constrained only by the requirement that there be one boat for each household. Observe that though this outcome would be an example of production efficiency it undoubtedly would not be an example of allocative efficiency.

Allocative efficiency would not be attained because society could obtain a much greater level of satisfaction from the use of its scarce resources if they were used in a different manner.

Though boating enthusiasts may be happy with this resource allocation many other households clearly would not. Households that live far from bodies of water where they could use their boats would be unable to derive satisfaction from them. The frail, those who fear water, and those who suffer from seasickness would be unable to derive satisfaction from them. These other groups of people would much prefer that the scarce resources alternatively be allocated to producing housing, clothing, hospitals, cars, etc. which do give them satisfaction.

This distinction can be used to refresh and deepen students' understanding of the production possibilities concept. Production efficiency is required to develop a PPC with speedboats on one axis and all other goods lumped together on the other axis. Allocative efficiency involves choosing the combination of boat and other good production that gives society the greatest possible satisfaction from the use of its scarce resources.

Engineering Efficiency vs. Economic Efficiency

Carole E. Scott, West Georgia College

While an engineer would measure the efficiency of an electric motor in terms of the ratio of energy input to energy output, the economist measures the economic efficiency of an electric motor in terms of the ratio of the dollar cost of operating the motor to the dollar value of the energy output. Thus, while the engineer might rate two electric motors as being equally efficient, the economist might not rate them as equally efficient. For example, the armature of one might be wound with silver wire, and the other with copper. The more costly motor, if each does the job equally well, would be economically inefficient relative to the other, less expensive motor.

Inefficiency

John P. Cochran, Metropolitan State College-Denver

It is often easier to describe what efficiency is by first explaining the meaning of inefficiency. Offer a number of examples of inefficient situations. For example:

- a. I have been washing my own dishes but break so many that it costs me \$800 per year. You can rent me a dishwasher for \$200 per year that cuts my time and energy costs in half and doesn't break dishes. Inefficiency exists until we make the appropriate transaction.
- b. Laws once "protected" women by forbidding their employment except in 8:00 to 5:00 office work, or as grocery clerks, nurses, or school teachers. Breaking down barriers that arbitrarily discriminate on the basis of race, age, or sex drives production costs down because comparative advantages can then be more fully realized.

- c. Laws limiting work by convicts because this would be "unfair" to competitors drives net prison costs up. (You can argue that, just as climate can determine comparative advantage, incarceration [or its absence] may shape comparative advantage as well.) Inmates could be required to pay room and board and compensate their victims with their earnings. Industrial training should increase the job opportunities of ex-convicts and reduce rates of recidivism. And competitors of prison industries could be compensated for retooling and retraining, much as trade adjustment assistance (TAA) has at times been paid to losers from freer international trade.

After students see that Pareto moves are possible from inefficient situations, the concept of efficiency becomes clearer to them.

Efficient Rationing in a Prisoner of War Camp

Mark Evans, California State University-Bakersfield

Students often have difficulty in isolating distribution from production, and in distinguishing between efficiency and equity. A classic article, "The Economic Organization of a Prisoner of War Camp," (R.A. Radford, *Economica*, 12, Nov. 1945, 189-201) provides clear examples of these distinctions: production and the distribution of income were largely exogenous, with all prisoners receiving the same Red Cross and German rations. Yet, money and an elaborate price system evolved to redistribute an equal (equitable?) distribution of commodities. After reading Radford's article and/or hearing a lecture on it, students grasp that rationing mechanisms must be evaluated from the perspectives of both efficiency and equity.

I use a definition of distributional preference drawn from revealed preference: a distribution is efficient if no two individuals can agree to any trade. At first, barter and middlemen activity were widespread in Radford's POW camp. Later, barter tended to "dry up" when a price system consisting of cigarette money and a central store/exchange mart with market clearing prices evolved. Whenever the authorities attempted to ration goods by some procedure other than market clearing prices, a resurgence of barter and middleman activity followed. I mention to my class that this is consistent with a theorem in welfare economics: price rationing exhausts all possibilities for mutual gain through trade. Simply put, we would expect barter to disappear if no additional "deals" can be struck, and its disappearance under price rationing lends empirical support to the claim that price rationing is distributionally efficient.

When I first define distributional efficiency and discuss it in the context of the thousands of products and millions of consumers in a modern economy, students often suggest that it is surely a utopian notion whose status is unobservable ("How would we ever know if all, or even most, trades have been consummated?") After considering what happened in a German POW camp during World War II, they appreciate this parable of welfare economics and the contribution price rationing makes to the quality of their lives.

Chapter Two

Scarcity in a World in Transition

Specialization and Exchange

Babe Ruth and Comparative Advantage

John A. Walgreen, Wheaton College

Assume that you are Miller Higgins, the manager of the New York Yankees in the early 1920s. You have just acquired a player named Babe Ruth from the Boston Red Sox. The Babe is a fine athlete who both pitched and played the outfield for Boston. If you use him as a pitcher, he will probably win about 20 games a year. (Ruth's won-lost record while pitching in Boston was as follows: 1915, 18-6; 1916, 23-12; and 1917, 23-13 --- an outstanding record.)

However, if he could play in every game (which pitchers cannot), Ruth can be expected to hit 50 home runs a year and to generate hundreds of runs and runs-batted-in. You recognize that it will be easier for the Yankees to find other players who can approach Ruth as a pitcher, but no one is likely to hit like Ruth. You correctly assess Ruth's comparative advantage as a batter and convert him to an outfielder, helping create a baseball legend who filled the record books with famous hitting feats.

An extension of this example: See if your students can explain why Ruth didn't pitch once every four games, and play the other games as a center fielder.

Comparative Advantage and Little League Baseball or Softball

Judy Kamm, St. Louis Community College

On a little league team there is always someone who is a star in all positions. There is also someone who is bad no matter where the coach plays them. Given a little league coach has to employ all the resources by playing all his players, the coach will play his star player at the position that player is best at and play the worst player at the position that player is least worst. And through specialization the worst player will practice and perfect his or her skills. As well the star will get better at his or her position. This specialization of each player will lead to the best combination for the most efficient team.

Individual Comparative Advantages

Ralph T. Byrns

Some examples of the concept of comparative advantage:

- a. Some colleges trumpet their records in graduating athletes who are on scholarship. Might some exceptional athletes be better off if they skipped college entirely, devoting more of their prime years to pro athletics?
- b. Would small but wiry athletes or behemoths be more productive as jockeys? Which should play pro linebacker?

Production Possibilities Frontiers

Production Possibilities Problem

Alice C. Gorlin, Oakland University

Consider the production possibilities for two totally dissimilar goods, such as apples and machine tools. Suppose that some resources are suitable for apple production and some for the production of machine tools, but that it is impossibility to shift resources from one product to another. In this case, what does the production frontier look like? Explain and show graphically. (See Figure 2-1.)

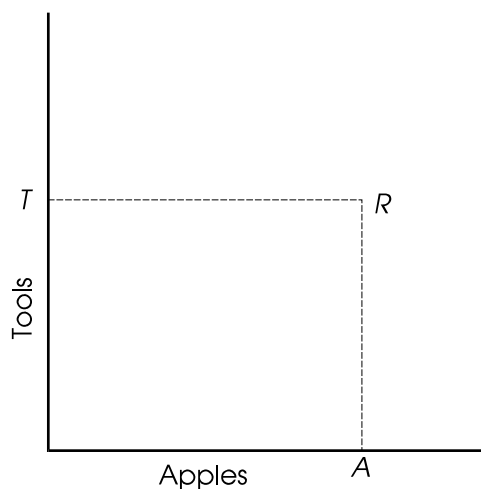


Figure 2-1

The Impact of Unemployment on the Production Possibilities Frontier

William P. O'Dea, SUNY at Oneonta

My students frequently do not understand why unemployment does not cause the production possibilities frontier to shift inward but rather causes a society to operate within its production possibilities frontier. To help them understand the distinction, I use a sports analogy. I ask the students to envision the performance that a professional athlete (I have been using Ricky Henderson) fully utilizing his or her skills is capable of (the number of stolen bases, the number of

RBI, the number of home runs, etc.). I then ask them to consider what would happen to Henderson's performance if he were upset with management for refusing to renegotiate his contract upwards. They readily appreciate that, since he would play with less than total dedication and enthusiasm, his performance would suffer. I then ask them what would happen to Henderson's performance if he were to seriously injure his knee sliding into second base and to explain the difference between the situations. The students have no difficulty grasping that in the first situation while Henderson's actual performance would suffer his potential would be unchanged and that as soon as management meets his contract demands his performance would improve. They can also see that in the second case Henderson's potential would be permanently reduced. To finish the exercise, I then tell the students that an economy suffering from unemployment is analogous to an athlete playing below his or her potential. Since the potential is there but is not being fully exploited, pursuit of the proper policies can enable the economy to improve its performance and return to its frontier.

Production Possibilities Curves for Three Outputs

Paul G. Coldagelli, Pennsylvania State University-Delaware

Two dimensions normally limit the trade-offs we can illustrate with a PPF, but with a little ingenuity a third output is accommodated. We do this by drawing a family of curves rather than a single curve. Consider the three goods apples (*A*), bananas (*B*), and coconuts (*C*). Each curve in Figure 2-2 shows trade-offs between apples and bananas, holding coconut production fixed. We portray changes in coconut output possibilities by shifting the curve to a new position. How is the law of increasing cost reflected for apples? coconuts? *NOTE:* The narrowing gap between successive curves as we move away from the origin illustrates the increasing costs of coconuts.

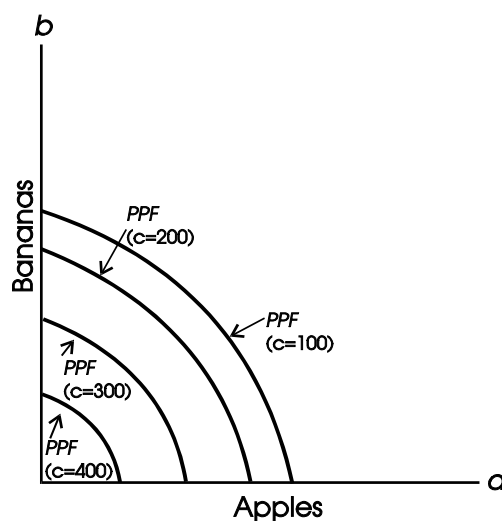


Figure 2-2

Efficiency and the Production Possibilities Curve

Robert Charles Graham, University of North Carolina-Charlotte

Students need to understand the goals a society tries to fulfill when it allocates its scarce resources, but they often have difficulty in differentiating between technological and allocative efficiency. The following illustration using the production possibilities curve has helped students to understand this distinction.

Draw Figure 2-3 on your chalk board. Remind students that every point on a production possibilities curve is technologically efficient, producing given outputs with the fewest possible resources. Then ask the students which of the five combinations represented by points *A*, *B*, *C*, *D*, and *E* should society produce. Students usually choose either point *B*, *C*, or *D*. At this point, the students should be informed that their answers are incorrect. Then, in an offhand manner, ask the students if you forgot to mention that this is a society of vegetarians, and again ask the students which output combination society should choose. The response for point *E* will be unanimous. Now stress the point that in order to determine which output combination society should produce, the student needs to know society's preferences. Only point *E* represents the best output combination, and therefore, it is allocatively efficient.

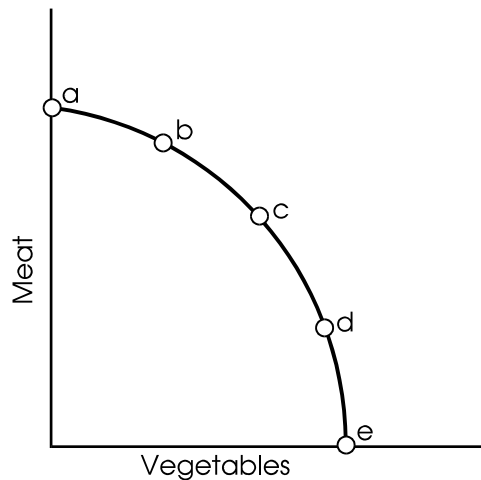


Figure 2-3

Ask Your Dog About Production Possibilities

Drew E. Mattson, Anoka-Ramsey Community College

An economy may not operate on its Production Possibilities frontier, just as a business may not always operate at capacity. How do I get students to understand this in a way they will remember past the next exam? I tell them about my neighbor's dog. My neighbor keeps his dog tied at the corner of his yard where his house meets a fence. The dog is on a 50-foot leash and therefore can run anywhere within the region defined by the leash, the fence and the house. I can illustrate many Production Possibilities ideas once the "dog" image is established:

1. Why would a business or economy operate **WITHIN** its frontier rather than **ON** the frontier? If my neighbor puts the dog's food dish only 40 feet from the corner, the dog will only go as far as the "incentive" just as a business will not operate at capacity if the demand is for less than capacity.
2. How does an economy get the maximum output? The dog can maximize the use of the "resources" available to it by stretching the leash to the limit and running back and forth along the quarter circle, the frontier.
3. Why does an economy make choices? If there is action at the fence in which the dog has an interest and there is also action along the house the dog must decide which action is the most interesting and by choosing one activity over the other forgoes the opportunity to participate in the alternative activity.
4. Can an economy get beyond the frontier? If I take a venison leg and place it one foot beyond the frontier, this dog will take a run for it and stretch the leash enough to grab the bone but will be "snapped" back to the frontier. Given the right incentive, an economy can perform beyond the frontier temporarily but will be "snapped" back to the frontier once inflation kicks in.
5. How does an economy expand the frontier? The leash is equivalent to the limited resource base and by lengthening the leash, the frontier has been expanded. Suppose I discover a little extra cord in the garage and tie it on. Perhaps I purchase a new length of cord.

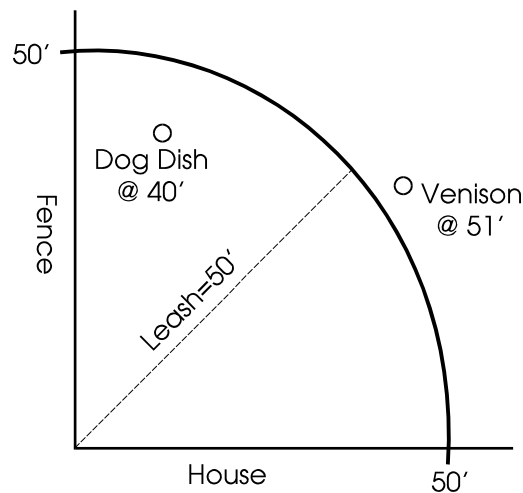


Figure 2-4

Principle of Increasing Cost

Gary Sellers, University of Akron

Most students have difficulty grasping the principle of increasing cost. Suppose you have picked a basket of apples which can be used to produce either cider or apple pies. Assume that if all the apples are used in cider production, C_{10} could be produced in Figure 2-5. Suppose now you wish to increase the production of pies from 0 to 1. Your goal is to acquire 1 pie at the minimum sacrifice of cider. Some apples must be withdrawn from cider production. Which apples do you use for the pie to achieve your goal? The apples vary in size in quality. While all of the apple could be smashed into cider, any bad spots would have to be cut out for pie production. Your goal would be achieved by withdrawing the very best apples for use in the pie. Assume in the diagram cider production must fall to C_9 to acquire the first pie. Continue this example from 1 to 2 pies, 2 to 3, 3 to 4. Consider the fourth pie. We must again remove from the basket enough apples to acquire 1 additional pie. We would take from the best remaining apples enough to produce one pie but their quality is not as good as that used in the first pie. Therefore we must take more apples out of the basket to acquire the 4th pie than was required for the 1st, and the cost of the 4th pie in terms of foregone cider production would be greater. That is, each additional apple pie costs more in terms of cider production, yielding a concave-from-the-origin production possibilities curve. How would the PPF curve look if every apple in the basket was exactly the same size and quality? Use this example to illustrate constant costs.

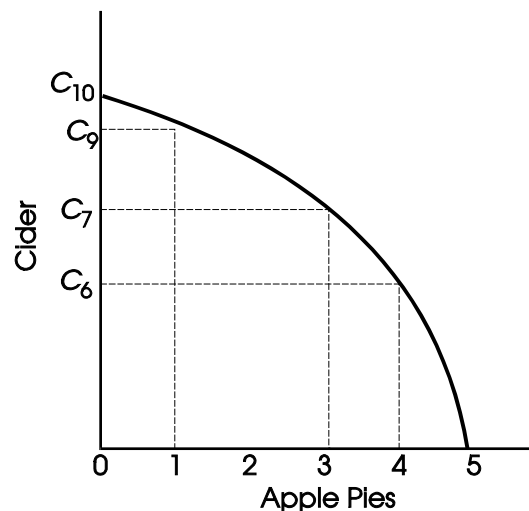


Figure 2-5

Editor's Note: The analogies between "PPFs" and individual budget constraints should be emphasized to microeconomics students so that they will perceive that the material is not completely new when they confront budget constraints drawn for individuals and firms.

Drink, Drugs, and the Law of Increasing Opportunity Costs

By Richard Schiming, Mankato State University

Introducing the law of increasing opportunity costs, I define it as "when more and more time and effort is devoted to one activity, the cost in terms of other activities sacrificed becomes greater and greater." I then mention that this is a principle of human behavior which everyone has seen in action. One example I use to illustrate this point is the tragedy of alcoholism (or drug addiction). Initially, as an individual begins to drink a little, the cost in terms of other activities sacrificed is relatively small. But as more time and effort is devoted to drinking, the opportunity costs become greater (lost job, divorce, etc.). Finally, a skid row alcoholic (or addict) who devotes all his time and effort to drink (or drugs) has effectively sacrificed everything else: home, health, job, family, friends, and future. This is the logical conclusion to the law of increasing opportunity costs.

Are the Costs Increasing or Decreasing?

Daniel Levy, University of California-Irvine

After introducing in class the *PPF* with a bowed out shape, I ask the students why the PPF has that shape. What if the *PPF* is a straight line? Or, what if it has a bowed in shape? By comparing the three shapes they are almost always able to answer. Alternatively, after suggesting that increasing costs yield standard concavity, ask students what the PPF looks like with constant or increasing costs. They should be able to come up with these shapes if they truly understand these graphical constructs.

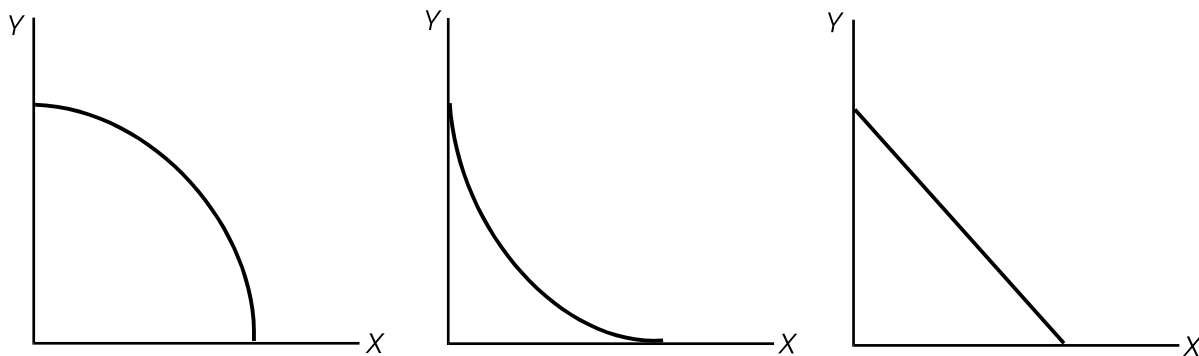


Figure 2-7

Consumption Possibility Frontier (CPF)

Daniel Levy, University of California-Irvine

I use the concept of CPF as an example to illustrate the use of the PPF. CPF is a description of the Consumption Possibilities of the Economy (like the PPF describes the Productions Possibilities of the Economy). Therefore, usually the PPF and the CPF will be identical. But if, for instance, the

economy receives a transfer payment in kind from abroad, the two Frontiers will not be identical. Here are some examples:

- a. CPF before and after receiving X from abroad; the PPF remains unchanged:

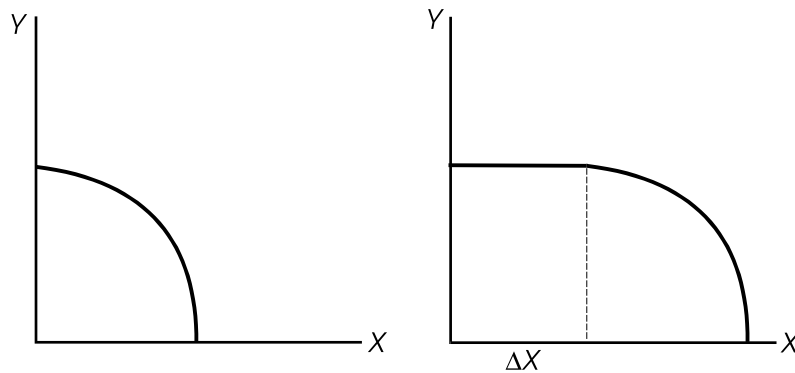


Figure 2-8

- b. CPF before and after receiving Y from abroad, the PPF remains unchanged:

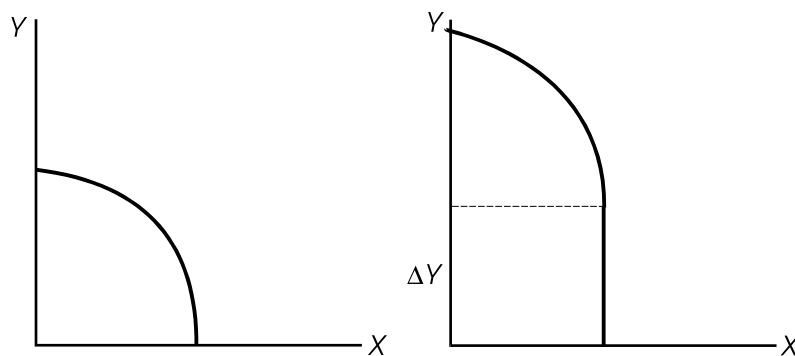


Figure 2-9

- c. CPF before and after receiving X and Y from abroad. The PPF remains unchanged:

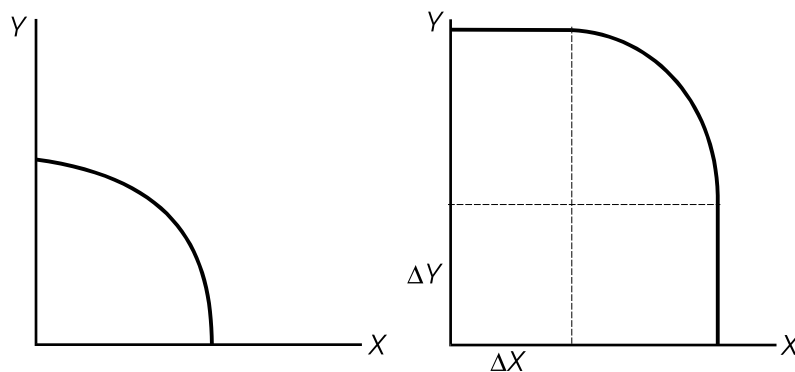


Figure 2-10

A PPF for Child-Rearing

Joseph I. Phillips, Jr., Creighton University

An analogy traditionally presented in regards to Production Possibility theory is the choice between Goods for the Present and Goods for the Future, the former meaning consumer items for present consumption and the latter, capital goods, research, education and preventive medicine.

In the short run, if more of a nation's resources are allocated to the latter, the long run situation will theoretically bring a greater menu of choices between present and future goods than if the goods for present consumption choice predominates, all other things being equal.

A useful analogy to explain this theory is to graph the P-P Frontier, labeling the vertical axis, Disciplining the Young Child and the horizontal axis Permissive Child Rearing for Current Stress Avoidance. Sometimes, like the choice of consumer goods, the instant gratification of peace and quiet wins out over taking the time and effort to discipline which, theoretically, other things equal, should yield more positive results in the future.

Cultivating the Production Possibilities Frontier

Norris A. Peterson, Pacific Lutheran University

When introducing the production possibilities frontier, I ask for five volunteers who would pretend to be profit-mongering capitalists. There is usually no shortage of volunteers. I then assign each of them an "endowment" of land and technology, as follows:

FARMER	PRODUCTION OPTIONS
A	10 corn or 20 wheat
B	10 corn or 10 wheat
C	8 corn or 4 wheat
D	6 corn or 2 wheat
E	16 corn or 4 wheat

They are instructed to try to make as much money as possible by producing either corn or wheat or any linear combination of the two, given their endowment. For example, Farmer A may choose 10 units of corn, or 20 units of wheat, but not both. Alternatively, Farmer A may choose 5 units of corn and 10 units of wheat.

Initially, the selling price of corn is \$1 and wheat \$.40. Each of them must decide what to produce. It does not take them long to figure out the rules of the game, and the rest of the class follows along.

I record their choices on a graph showing total quantities of each as I vary the price of wheat up to \$5 holding corn at \$1, thus deriving a convex production possibilities set.

From this exercise, several points can be brought up besides the usual ones of scarcity, choice and opportunity costs, and I refer to this exercise over the next several class sessions. Among the possible topics:

- specialization of resources and convexity of the PPF
- law of increasing cost

- c. only relative prices matter
- d. prices reflect opportunity costs
- e. the invisible hand leads to allocative and technical efficiency
- f. law of supply (record only the quantity of wheat while varying its price, holding technology, endowments and the price of corn constant)
- g. shifts in supply (vary the price of corn and observe supply of wheat; change technology or endowments; increase number of producers)
- h. incentives matter (e.g., tell each "farmer" that to qualify for government assistance (class points?) at least 2 units of corn must be produced.

PPFS for Beef and Form 1040s

Ralph T. Byrns

A production possibilities example that stresses that the PPF is concave from below because resources differ in suitability for different forms of production is to assume that the two goods considered are extremely disparate, say, beef and IRS Form 1040s, as shown in Figure 2-11. Appeals to factor heterogeneity as resources are shifted then drive home the concavity of typical PPFs. For example, start at point a in Figure 2-11, where 1040s but not cattle are produced. Ask students to describe the kinds of resources that will first be freed from accounting for cattle production. Help them draw stereotypes by suggesting that the first unit of labor moved into ranching might be an illiterate, snuff-dippin' 6'4" World Champion Goat Roper and Bronco Buster; the first land would be in some desolate stretch of West Texas; and the first capital, a saddle and a cuttin' horse. Naturally, few 1040s are lost when these resources are moved onto the beef industry, but much beef is gained, as the economy moves to point b. Now ask about the last resources moved into ranching as society forgoes its last 1040s (at point c) and moves to full specialization in beef (point d). The answer, of course, is that the last unit of labor moved into ranching is a 350-pound, myopic CPA who tries to herd scrawny calves down the sidewalks of Manhattan while astraddle a Shetland pony.

Other pairs of disparate goods can be juxtaposed to make this point about resource suitability and increasing costs: bowling versus treaty negotiation; religious sermons versus constructing high rise office buildings, etc. One excellent exercise that you might have students work through is "Apabana", in Chapter 2 in our *Student Guide for Learning Economics*, which will help students intuit how climate can shape forms of specialization.

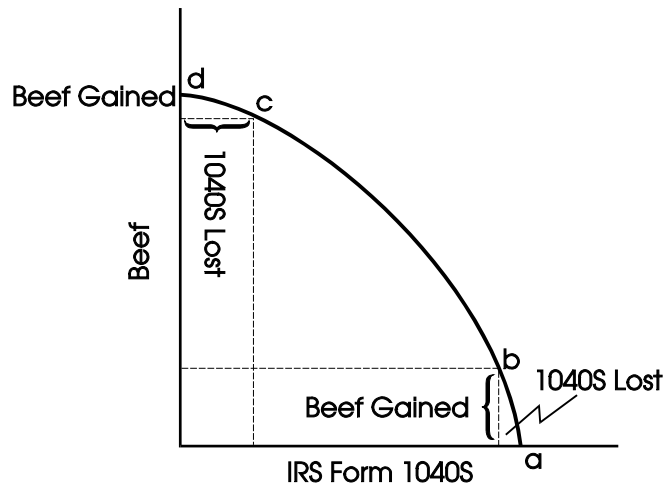


Figure 2-11

Allocation Mechanisms

Some Simple Economics of Dorm Food

Gary Galles, Pepperdine University

A hurdle that must be overcome in almost every principles class is to convince students that economics is useful in understanding their daily lives. To help overcome this obstacle, I have found that dormitory eating can provide some memorable illustrations (especially for freshmen new to dorm eating) of simple economic analysis. Here are some of them.

- Since the monetary price of a marginal helping falls to zero, the quantity of food consumed tends to rise compared to the case where you must pay for each helping (as at a restaurant), and students tend to gain weight. This is just an application of the law of demand.
- With a zero monetary price for each helping, other non-price rationing devices will be used to hold down the cost of providing food services. One such typical device is at the salad bar, where the most expensive ingredients (bacon bits, tomatoes, etc.) are the hardest, longest reach, and are in relatively small containers that frequently run out, and may be slow to be refilled.
- Another non-price rationing technique that has been tried is ration tickets to main dishes. The main effect of this is to create a black market of sorts whereby ration tickets move from girls (who wouldn't have used them) to boys (who wish to use more of them than their allotment), which tends to minimize any effect of such a plan to reduce quantities consumed (especially since meal plans can't discriminate in price between boys and girls).

- d. Some things about college life tend to shift the demand for dorm food to the right. In particular, since food is a complement to socializing, studying, and anxiety for many people, all of these tend to increase demand (particularly during exam periods) and the quantity of food consumed, making any weight problems worse.
- e. Another non-price rationing device is rationing by portion size. Since the cost of seconds consists largely of the time spent in line to get more, by providing smaller servings (particularly on large plates that take up much of the room on the tray), a dorm can reduce the total amount consumed by increasing the time costs in line. Similar practices include placing items in separate bowls or plates, which use up more food tray space, and in providing relatively small glasses, which both take up more space and require more trips to get refills.
- f. Since carbohydrates are typically the cheapest way to provide calories, dorms will tend to offer starchier main dishes and cheaper high calorie desserts (like pudding) than students would choose if they were forced to pay for the food per item.
- g. Some dorms offer full meal plans only, as a way of presenting an all or nothing choice to the student, as a way of extracting more revenue from food service.

I conclude by making some joke about the students not knowing that economics could predict weight gains upon going to college (and that colleges requiring more mental effort might have a worse problem, by raising the opportunity cost of exercising), and emphasizing that since there is an aspect of scarcity in everything, economics (the science of making good decisions when faced with scarcity) can be useful everywhere.

"No Tickets - No Cover Charge - No Cost?"

Eric Steger, East Central University

To illustrate the fallacy of no cost if there are no tickets or cover charges, I relate the following story.

Recently my 10 year old daughter informed me that a new group would be performing at a well known international "Rock & Roll" cafe and that she wanted to attend the concert. I found out that there would be no tickets or cover charge, but the cafe seats only 250 people. I explained to my daughter that the concert would not have a dollar price but the cost would be significant due to waiting in line for several hours plus temperatures would be above 100 degrees. As I expected, long lines existed and the temperature was above 100 degrees. Students quickly see the fallacy of "no cost" if there are no tickets or cover charge.

Choosing Miss America: Artificial Augmentations

Gary M. Galles, Pepperdine University

We spend so much time talking about money as the relevant rationing criterion in classes that we sometimes fail to adequately stress the fact that people who desire a good compete in whatever dimension they think will serve as the rationing or allocating criterion. A humorous way to emphasize this involves a recent Miss America contest.

Being Miss America is a scarce good (at least to those in the contest). Therefore, it must be allocated by some criteria. There are three official criteria: poise, talent and beauty. Given that contestants are attempting to acquire a scarce good with limited resources, their choices about how to compete (how much time, effort, etc. to devote to each category) will reflect the relative importance they believe each category has in determining the winner, as well as initial endowments (comparative advantages) in each area. What do they believe matters?

In a recent New York State Miss America Pageant, a girl was disqualified for padding her bust line. She responded by suing the Miss America Pageant people, arguing that due to bereavement after a relative's passing she had lost 15 pounds and with it some of her bust line, so that it was only fair to let her pad herself up to her "usual" bust measurements. (Which is more important then: bust size or physical shape? Losing 15 pounds may have improved her appearance in other ways. After all, don't many people diet for exactly the purpose of improving their appearance?) What did this girl reveal about the rationing criteria she thought mattered?

I conclude with some sort of joke about having forced myself to watch one of these, including the talent and poise competitions. No one who ever watched one of these competitions should be surprised at the conclusion reached by this beauty contestant.

Lord of the Flies/Blue Lagoon--Robinson Crusoe Updated

Laddie J. Sula, Loras College

One way to generate a great deal of discussion on the first day of class and provide insight into the nature of economics is by asking, "How many have read the book *Lord of the Flies* or seen the movie?" (Even for those who haven't, most know the story). I continue "Let's assume that we have been shipwrecked on an island. It is six o'clock in the morning. The sun is coming up. What do we do?" After an initial silence, someone usually suggests that we have to pick a leader (an opportunity to digress into voting theory, etc.); others suggest that we should look for food. This raises the intended points of WHAT should our primitive economy produce and, as the discussion unfolds, HOW should it be produced (who finds coconuts, who builds huts). Then, after some discussion on resource allocation, I note that the sun is setting in the west. We have produced a certain amount of output, but now the question arises regarding FOR WHOM does the production take place (distribution)? This immediately gets us into the efficiency and equity questions and sets the stage for continued discussion during subsequent classes of the positive/normative debate and views of conservatives, liberals, and radicals and their policy perspectives to name only two. I have found this an excellent way to show the students how exciting economics is and provide them with the major themes I want them to remember from the first class.

Tradition in Modern Mixed Economies

Mark E. Schaefer, Georgia State University

We often gloss over the importance of tradition when we discuss the ways that modern economies use a mixture of tradition, command and markets to solve the problems of What, How and For Whom. To correct this imbalance, I ask the students to help me list on the chalkboard all the elements of tradition that they can think of in the US economy. After a blank moment, a few minor items, like sending cards on Mother's Day, will be mentioned. Then someone else will volunteer that the tradition of giving gifts at Christmas has an important seasonal impact on the economy. I ask for other traditions of major impact. Someone will usually remark that our written Constitution has many economic elements which have been in effect for a long time, such as the free trade zone agreement by each state not to levy tariffs on goods imported from other states in the union, in exchange for the same treatment of its exports to those states. Someone else will then say that every country has a legal system which carries agreements across time. I ask how a legal system changes over time. They respond that earlier (or preceding) rulings in cases similar to present ones set the framework for current court decisions, e.g., the assignment of liability somewhere between buyer beware and seller beware in cases of faulty products. Thus, a system of precedent in the evolution of common law gives tradition an important role in providing stability to the framework within which people deal with one another peacefully and efficiently.

Traditions help to coordinate expectations among participants in a deal and may contribute to group efficiency by reducing negotiating costs at each repetition of deal making, e.g., the general presumption of basic honesty of reputable sellers reduces monitoring costs. We then rely on the courts to remedy the occasional cases of abuse. By contrast, if every one expects cheating as the first response, then suspicion feeds on itself and every one is worse off because some beneficial deals are never even attempted.

Note that following the ways that have been discovered slowly and painfully in the past through trial and error is more likely in subsistence economies (near the edge of starvation) and that willingness to take risk rises with the cushion above subsistence which has been earned slowly by the thrift engendered by being on the edge of survival is more likely as the cushion grows larger. Thus, past success (due to caution and thrift) may lead to current excess (may change the behavior away from risk avoiding and toward risk seeking) and set the stage for the future collapse back to subsistence, or below it to starvation and dying out.

Tradition is partly risk aversion and partly creation of public goods through passing on the habit of self restraint in the form of taboos (e.g., don't be greedy when killing game or harvesting wild crops, thus leaving some for your future and the tribe's future). Long standing rules of obligation on sharing the kill or the crop is insurance against starving if your individual luck turns bad while others in the tribe are prospering. Healthy customs and habits carry groups through hard times (e.g., Londoners better survived the bombing by Hitler in 1940 because of their traditions of courtesy toward one another and stiff upper lip, or perseverance, in the face of adversity).

Selecting a Bonus Allocator

Les Morford, Montcalm Community College

During one of the first sessions of the semester, I announce that I am giving ten bonus points on the first test (enough to make the exercise worthwhile without being too generous). The class is to decide within a half hour who is to become "custodian" of these ten points. This person is free to distribute them as he or she wishes but must announce the disposition of the points within one week. Having announced this, I sit down in the back of the room and say no more. Typically, there is five minutes of awkward silence, after which some attempt at organizing begins. In most cases, their discussion involves the basis of distribution (need, equally, effort, lottery ...) rather than who is to be the custodian.

Incidentally, the most frequently selected method is lottery, usually determined in the 29th minute. Most classes are unwilling to trust the judgment of the custodian to distribute the points. Most "custodians" follow the mandate they are given; a few have broken promises they made during discussion and/or ignored the mandate. The number of points the instructor can make based on this exercise is usually lengthy.

Allocating `A's

Curt L. Anderson, University of Minnesota-Duluth

The first day of class I point out that the essence of economics may be summarized with the following situation. I tell the class that the Dean (or some other school official) has declared that I only can "give out" X amount of A's in the course (usually X is 10% of the class size). I then ask how I could decide who gets the A's and who doesn't. Many schemes are offered including the following: alphabetically, bribes to the instructor (willingness to pay), random draw, weight, and even by merit and achievement. This example establishes that there are plenty of allocation mechanisms to use and that the choice depends on one's objective. I note that the merit system is used because it yields the best indication of a student's understanding of the material. I also note that in a market economy the willingness-to-pay mechanism is used for most goods because it appears to accomplish the goal of getting society the most from its scarce resources.

Mechanisms for Choice

Ralph T. Byrns

Point out that our assumption that self interest is the dominant human motivation suggests that, no matter which allocative mechanism is used to resolve a particular problem, people will try to gain by altering either themselves or the rules of the game. Allocative mechanisms only shape the form of competition; no mechanism can eliminate competitive behavior, and many mechanisms create inefficiency. Students will want to offer their own ideas about the inefficiency of brute force, tradition, queuing, and random selection. Examples of competition encouraged by particular allocative mechanisms include:

- a. *Adjusting To Brute Force:* War was long the dominant way for tribes and nations to compete. Today, whenever the ability to acquire and retain control over goods and services seems determined by brute force, people take karate lessons, buy 357 magnums, put steel grates on their doors and windows, or hire bodyguards. These are all

ways of competing through brute force. You may also want to discuss "vigilante-ism" as an adjustment when people perceive the police and courts as unable or unwilling to control brute force. (Goetze's shooting of four potential muggers in New York in 1985; Curtis Sliwa's "Guardian Angels" organization, etc.)

- b. *Beating The Queue:* When queuing is significant in allocating goods and services, there is competition in beating the queues. Reservation lists at restaurants are a way to minimize the queue. Getting an early reservation in beating the queues. Reservation lists at restaurants are a way to minimize the queue. Getting an early reservation is an important form of competition if you want to eat at a popular restaurant. When people want to travel, they frequently make several airline reservations to try to ensure that they get seats. Airlines respond to this form of competition by overbooking flights. (Ask your students if any of them have ever been "bumped" off a flight.) For other kinds of events, people are often hired to wait in line for others, and business firms may even emerge to perform this task. (Point out that this is one of the services provided by ticket scalpers.)

Another way to compete at queuing is for someone in a group to wait through a queue and hold places in line for other group members; most of your students will be familiar with this procedure at first-run theaters. Your students will find it interesting that in the Soviet Union, shortages are common and average Russians often spend 20 percent of their free time waiting in lines. The Soviet hierarchy, however, has well-stocked stores that only they can enter. This is their way to beat the queue.

- c. *Finessing Random Selection:* Some people try to cheat at state lotteries, poker, bingo, or other games where rewards are presumably random, or somewhat so. When random selection (the lottery system) is used for the military draft, some young men intentionally rupture their eardrums or exaggerate trivial injuries in hopes of avoiding military service; others try to qualify as conscientious objectors, or falsely profess homosexual tendencies, or cultivate criminal records or drug problems. Still others don't register for the selective service system, or go underground, or desert after being drafted, or immigrate to Sweden or Canada. NOTE: providing an extended litany of such behaviors helps drive the point home to students that people can be extremely ingenious in finding ways around mechanisms they don't like, or to exploit favorable circumstances.
- d. *Exploiting Tradition:* For many years, an "old boy" network consisting of upper class men drawn from the "Eastern establishment" (most of them graduates of Ivy League law schools) ran the U.S. State Department and the CIA. Family ties were important, almost as though people were employed as breeding stock instead of as diplomats or spies. In these or other situations where nepotism and in-breeding within a hierarchy is significant, competition frequently takes the form of people grossly overstating their family connections, using letters of introduction, joining fraternities or country clubs, wearing "rep" ties with pin-striped, three-piece suits, etc.

- e. *Using Government:* The public choice literature abounds with examples of how people compete for power in government and then use it for their own ends. Vote trading, lobbying, and log-rolling are only a few examples of the strategies individuals and special interests use to secure policies that are favorable to them. How special interests secure import quotas and tariffs that reduce social welfare but protect the jobs of highly paid workers and the interest and profits of the stock and bondholders in senile industries is an example that students are prepared to understand. Within your own community, you can probably find examples in zoning laws, government subsidies of convention centers or downtown malls, etc., where government power has been used in ways that were not, on balance, socially beneficial.

Use variants of Arrow's impossibility Theorem (from the text) as simple examples to show that government decision making may reflect consumers' choices only crudely, while allowing individuals to choose for themselves (whenever goods are rival and exclusive) yields a "fine tuned" reflection of their preferences.

Merit and Credentialism

Ralph T. Byrns

If you want to address the roles of merit and credentials as additional allocative mechanisms, draw on the following discussions, which parallel the text's treatments of alternative allocative mechanisms, but are not included in this edition because of space constraints.

- a. *Merit:* Beauty pageants, amateur athletics and academic grades are among the systems that rely on merit as an allocative device. Winners of Olympic medals and Rhodes scholarships are commonly able to transform their awards into life-long patterns of high status and material well being. Next to competition in the marketplace, competition for recognition of merit is probably most within the spirit of traditional capitalism.

A problem arises, however, if a society unduly rewards people in accord with their performance in competitive games instead of their actual productivity. Another difficulty is that determining how meritorious someone is requires that someone else makes judgments that are unavoidably subjective. Is the second runner-up in a Miss America pageant unarguably homelier or less talented or charming than the winner? While seemingly appropriate at times, a system based universally on "merit" would be judged capricious and unfair by most of us, and charges of favoritism would abound.

- b. *Credentials:* Ask your students why they attend college. Many will respond that a college education seems necessary for the careers they want to pursue. People compete by acquiring credentials (some of them phony or exaggerated) when college degrees or experience are criteria for employment, etc. This may be a good time to discuss whether college training inherently causes people to be more productive, or alternatively, if degrees serve primarily as signals about characteristics that firms want in their employees.

Chapter Three

Demand and Supply

Birth Weights and Marginalism

Steven T. Call, Metropolitan State College-Denver

Students must master relationships between averages and marginals. I use this example to focus on this issue: Suppose a woman currently has 3 children, whose names and birth weights are listed below:

CHILD	BIRTH WEIGHT (pounds)
No. 1 Tom	8
No. 2 Dick	9
No. 3 Harry	10

The average birth weight after three births is 9 pounds. Now suppose the woman bears another child (the "marginal" child) and the birth weight is 400 pounds. Since the "marginal" observation (400 pounds) exceeds the prevailing "average" (9 pounds), it is easy for all to see that the average must rise. If the marginal birth weight is 2 ounces, the average will fall. If the marginal birth weight is exactly 9 pounds, the average is unchanged . . .

If marginal > average, average is rising

If marginal < average, average is falling

If marginal = average, average is stable

Extending this example counters a typical student error: "If the marginal falls, the average will be falling." Let the woman bear a fifth baby, weighing 399 pounds. Now the marginal is falling, yet the average is quite obviously still rising. Hence, whether the average rises or falls is not related to whether the marginal rises or falls, but whether the marginal is greater or smaller than the average.

When Every Unit is the Marginal Unit

Ralph T. Byrns

One concept that many students find difficult is the idea that every unit is the marginal unit. Examples such as the following can lead students away from thinking that marginal units are uniquely identifiable:

- a. If you randomly remove a bucket of water from the ocean, it is the marginal gallon of water.
- b. Express outrage that you have too many students and threaten to give an automatic F to the one who drove class enrollment past 35 (or whatever.) If you are a bit of a ham, every student in your class will begin squirming, recognizing that he or she is the culprit.
- c. Show a full bag of candy to your class. Ask which piece was the marginal (last?) added, raising the total to 53 (or whatever) morsels in the bag. Distribute the candy, commenting that as each piece is withdrawn, the total has been reduced by one, and so it must have been the marginal piece. When only one piece remains, state that it is now "the last (marginal?) piece". Eat it yourself, asking your class if any of them get mad when someone else takes the last piece of some delicacy. Point out that, in a sense, each piece of candy that anyone ate was the marginal piece.

Rewarding Marginal Exam Improvement

Kyoo Hong Kim, Bowling Green State University

Students often have difficulty with the relationship between average product and marginal product. One way to help them understand this relationship is to reward them for marginal improvements in their quiz (or exam) scores over the semester. For instance, before professors give the second quizzes, they announce that an award of, say \$1 (or in my case, an oriental recipe), will be given to the student with the highest 'marginal' grade (improvement). This exposes students to the notion that eligibility for the prize requires their marginal grades to be higher than their average quiz grades. (Later, of course, students who think they are in the running report their performance confidentially to the professor). Repeated computations of marginal performance gradually lead the students to a solid understanding of the relationship between any general marginal and average function.

The Relevance of Marginal Analysis

Michael Behr, University of Wisconsin-Superior

Where are the terms, "margin" or "marginal", encountered apart from economics? The margin of a sheet of paper is the area between the writing and the rest of the universe; the marginal student is one who shows prospects of becoming a non-student; the marginal business is one that shows prospects of becoming a nonbusiness, etc. The commonality of all usages is "edge": The edge of the paper, the edge of academic survival; the edge of economic viability. In human affairs, as in the last of these two uses, it is at the edge where the action occurs. It is when we go over the edge that the changes occur that move us from one condition to another. It is these changes that are supremely relevant because our current conditions are consequences of past actions in that they are beyond our

control. Our future condition can be determined only by considering any changes that apply to our current condition. And these changes occur with the passage of time. Thus, life itself is lived at the margin of time where decisions are made and actions taken with respect to all of life's elements. Therefore, when you hear "marginal" you should hear "change" and you need only ask what variable is changing. Normally, marginal analysis in economics proceeds in terms of the ratios of changes in one variable relative to another, e.g., $\Delta C/\Delta Y$, $\Delta PQ/\Delta Q$, etc.

Marginal and Average Grades

William J. Swift, Pace University

In micro principles, how do you establish the relationship between the marginal cost, average variable cost, and average total cost curves? I tell my students to consider calculating their grade point averages. Their individual semester averages are the marginal component, their cumulative is the average component. Consider a typical frosh, I say. "He starts with a 2.5, slips to a 2.0 (what happens to his GPA?), then falls in love (they like this) and slips to a 0.4, then works hard because the dean sends him a stern letter and rises to a 0.6 (nervous laughter--too close to home for some), while all the time his "average" is falling even though the marginal was falling, leveled off, and is now rising." If his 'cumulative' hits 1.000 and his semester average is 1.0005, what happens? How can his GPA rise?.... they now see it. P.S.: I tell them that to end his (academic) troubles, we'll get our eager beaver married, boosting his GPA to 4.0. Of course, the married students recognize the trade off of one set of problems for another.

Focusing on the Appropriate Margin

Gary Galles, Pepperdine University

I have used the following example in class as a way to remind students that the first step in solving any real world economic problem is identifying the appropriate margin for decision-making.

Suppose you are walking through Central Park at two in the morning and you have \$200 in your wallet. Suppose further that a mugger pulls a knife on you and tells you to give him all your money. How do you respond? Do you say "I'll tell you what: I'll give you \$200 if you leave me alone; \$150 if you rough me up a little; \$100 if you cut me a little; \$50 if you put me in the hospital; but nothing if you kill me"? Of course not, because you would be focusing on the wrong margin for decision-making; you are faced with an all or none decision, not one in which marginal adjustments can be made (i.e., the relevant marginal decision is the all or none decision of how to respond to the mugger--fight or hand over the money. Once that decision is made, marginal ones may follow, like how hard to fight or how much money to try to withhold.)

While this example is obvious, it makes an important point: before you can apply your analysis to a particular problem, you must correctly identify the relevant margin. It can also serve as a springboard to a discussion of types of decisions where this is crucial. This would include: a) all or none type decisions (like marriage, divorce, having a first child, declaring war, etc.); b) improper

treatment of historical (sunk) costs (like refusing to sell below average cost, historical depreciation, treating average cost as if it were marginal cost, etc.); c) inframarginal external benefits (like justifying more (marginal) spending on health or education because of net external benefits in total rather than at the margin); d) indirect solutions when direct ones are better (such as a gas tax to reduce pollution); e) errors in analyzing the free rider problem (like the argument that if nobody is informed about the political arena, we will get bad government, therefore you individually should become well informed); etc.

The Margin and Common Sense

Roger W. Lizut, New Mexico Highlands University

The following is offered as an aid to getting students to think in terms of increments and marginal quantities.

Consider two featureless perfect spheres, one the size of the Earth and the other the size of a golf ball. Say that someone has wrapped a piece of string along the entire equator, with no space between the string and the surface, for each ball. Now comes along somebody with a lot of one inch high telephone poles and says that the entire string must be suspended one inch above the surface, and that it must be done for each ball. How much string must be added to the Earth-sized ball and how much must be added to the golf ball sized one?

The "intuitive" answer is that a lot more must be used for the Earth-sized ball. The key concept is to think in terms of increments, regardless of the "sunk" values already given. It can be easily shown mathematically that the increment required for both balls is the same: Say the Earth-sized ball radius is R inches and the smaller ball radius is r inches. The initial length of the large ball string is $2\pi R$ inches and the small ball $2\pi r$ inches. Both radii are to be increased by one inch to provide slack for the needed clearance. The new large ball length will be $2\pi (R+1)$ and the new small ball length will be $2\pi (r+1)$. The increment added to the large ball is then $2\pi (R+1) - 2\pi R$ which is $(2\pi R + 2\pi) - 2\pi R$ which is 2π inches. The increment added to the small ball is $2\pi (r+1) - 2\pi r$ which is $(2\pi r + 2\pi) - 2\pi r$ which is 2π inches. Therefore, the increment added to both balls is the same, despite "common sense."

Demand

Economics and Happy Hour

Gary Galles, Pepperdine University

Students often need help in distinguishing between changes in the quantity of a good demanded along its demand curve as the price changes and changes in the equilibrium price and quantity of a good demanded due to some other factor that shifted the entire curve.

I ask my students why happy hour exists. Some student will reply that it occurs during periods of low demand, when regular prices would leave a bar largely empty. I then ask which of the following would increase demand the most: a reduction in the price of a complementary good (snack food?) or a reduction in the price of drinks? The first to respond almost always falls for the "trick" and says that cutting drink prices would increase demand the most. I tell him that this is incorrect, and then solicit explanations from the class as to why. Those who understand will explain (or I will) that a drop in the price of a drink does not alter the relationship between the price and quantity of drinks demanded (i.e., it leaves the demand curve unchanged)--it just moves us to a different point on that relationship--but reducing the price of a complementary good does change the entire demand relationship, causing more drinks to be demanded at each price. Therefore, a reduction in the price of the complementary good raises demand more, because a price reduction will have no effect on the demand for drinks.

Which option is a better happy hour policy? A typical first response is that the complement good price cut will raise demand, while an own price reduction won't. I reply that while cutting complement prices boosts demand and a drink price cut doesn't, that doesn't necessarily make it the best decision. The standard answer is it depends, with further questions being: what does it depend on and how does it depend on these things? I show how it depends on demand elasticity, how complementary the two goods are, and the profit margin per drink, while I use graphical or numerical examples to illustrate these points. Then I ask why most bars give away munchies and charge for beer, rather than vice versa, to show how complementarity can be stronger in one direction than another (i.e., beer without pretzels is more enjoyable than pretzels without beer).

This example has proven useful in (a) cementing student understanding of the distinction between a shift of demand and a movement along a demand curve, (b) briefly introducing them to how economics would be used in a simple business decision (i.e., how it depends is the framework around which policy decisions are made), (c) improving student understanding of complementary relationships, and (d) generating class participation and interest.

The Law of Demand and a Seesaw

Ki Hoon Kim, Central Connecticut State University

Whenever a storefront shows a big SALE sign, what happens? The consumers buy more because of lower prices. If the same store charges higher prices, they would buy less or may seek substitutes.

Thus the inverse relationship between the price (P) and the quantity demanded (Q_d) of a good or service in a given time period is called the law of demand.

The best way to understand the inverse or negative relationship is just like placing the P and the Q_d on a seesaw. If one (say, P) goes down, the other (i.e., Q_d) goes up, and vice versa, as the following diagrams show.

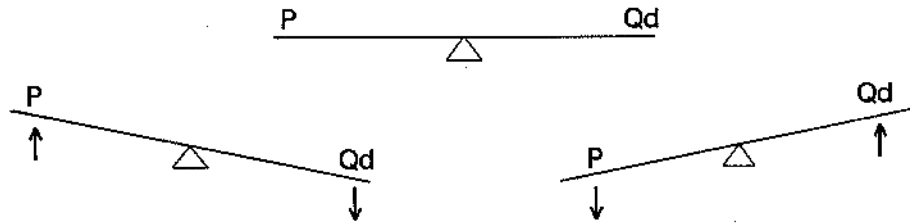


Figure 3-1

Changes in Demand vs. Quantities Demanded

Rudy McCallister, Truman State University

Distinguishing a change in demand from a change in quantity demanded is a troublesome, yet important skill that occasionally evades even the advanced student. To help reveal the difference, I draw a graph relating the time that a student spends preparing for an exam to his expected grade (you can also use this to make other points, e.g., diminishing returns). It shows that, generally speaking, as a student studies more, he makes a better grade, i.e., one moves along the curve. Now, I ask the students what would happen if they somehow came into possession of a copy of the exam. They respond, naturally, that they would probably be able to make a higher grade than before given the same amount of study time. In other words, the function shifts. Although this is a direct function, they can usually now see the endogenous/ exogenous nature of the variables and why a price change will not shift the demand curve.

Automobile and Quality Sales

Eric Steger, East Central University

Too often in economics classes we stress price and quantity relationships and deemphasize qualitative considerations due to the inherent difficulties in measuring quality accurately. However, when I relate that Honda Motor Co.'s Accord was the best selling car in the U.S. in 1989, students became interested. I explain that this was the first time a Japanese model has been number 1 in the U.S. Also, this manufacturer produces automobiles that, by most measures, are top quality. This usually communicates the price quantity and quality relationship quite well.

Demand vs. Quantity Demanded

Thomas J. Shea, Springfield College

The most difficult topic in supply and demand, even for my brightest students, is the distinction between demand and quantity demanded. I have tried many clever ways to explain the difference and to warn them about the trap of saying "If the price changes then 'demand' will change." I have finally solved the problem by never really saying quantity demanded. I use the term "amount people

wish to buy" in every instance where the text (any you can name) uses the term "quantity demanded." However, in writing on the board, and in the myriad of handouts, problems and quizzes, I always use the term "amount people wish to buy (quantity demanded)". The parenthetical "quantity demanded" is a sort of definitional concept that relates my lecture to the text. After seeing it written this way so many times, students coming upon the term "quantity demanded" in a text or a reading automatically know that this term means "the amount people want to buy" and not demand. They rarely if ever confuse demand with quantity demanded. Of course, I do the same with quantity supplied substituting the term "amount offered for sale" for quantity supplied.

With this method it is also easier to teach equilibrium. When you ask students what will happen to the price if the amount people wish to buy is greater than the amount offered for sale you get a much greater response than if you ask what happens when quantity demanded is greater than quantity supplied. For those teachers who still wish to use quantity demanded and quantity supplied, this method still works. Constant reminders that two terms are the same allows both you and the student to use them interchangeably. The key is that they do not use demand when they mean quantity demanded and vice versa.

Going Through the Gears

John S. Cameron, Southwest State College

This analogy is used to solidify the difference between changes in demand and changes in quantity demanded by relating these changes to the change in speed (quantity purchased) brought about by pushing the gas pedal (price) and a shift to a whole new set of possible speeds (quantities purchased) by shifting gears (demand). The axes of the graph are jointly labeled. Using the graph below the student can see the similarities. Starting in gear D_0 , greater MPHs (quantity per unit of time) will be obtained as the pedal (price) is depressed. If the automobile shifts to another gear, D_1 , greater speed (quantity purchased) can be obtained at each level of pedal depression (price). Downshifting to D_2 produces the opposite effects on speed and quantity purchased.

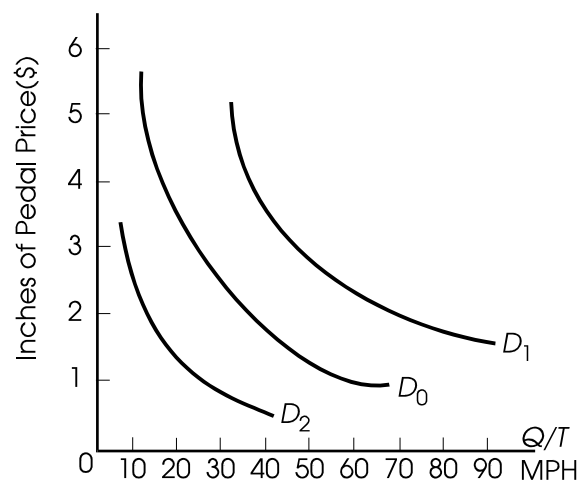


Figure 3-2

Mnemonics for Demand Determinants

Bruce Caldwell, the University of North Carolina-Greensboro and Phillip E. Graves, University of Colorado-Boulder

To help students remember the determinants of demand and the distinction between "changes in demand" and "changes in quantity demanded," we use the following memory (mnemonic) devices.

CALDWELL: To get their attention, state "Let's see if we can figure out what sorts of things might go into determining the demand for a product in a certain marketing region (the college). For relevance, let the product be--bottles of vodka." We then list (via their contributions)

P_x	=	Price of good
P_{og}	=	Prices of other goods (noting subs and complements)
P_x^e	=	Price expected for good
I	=	Income (noting normal and inferior goods)
N	=	Number of people in marketing region
T	=	Tastes and preferences

We then note that Px, Pog, Px*, I, N, T --spells PINT--as in pints of vodka (The 3 P's allow the slurring of the word pint, as in "Give me another p-p-pint.") Whether teetotaler or frequent partaker, they generally remember these 6 determinants of demand.

GRAVES: Alternatively, the following approach can be used. Put the following on the board:

$$D_X = D_X(P_X, P_0, I, N, T)$$

Figure 3-3

As I do this, I introduce the demand shifters as a word near and dear to the hearts of undergraduates: PINT. I then discuss how changes in the prices of other goods, income, number of buyers, and tastes can shift demand--the relation between the quantity demanded and the own price. To close this discussion, I ask, "How might this memory device handle price expectations?" The answer comes from Olde English: PYNTE (where E stands for expectations). I have found that this memory device resolves a lot of student confusion.

Markets for Grades

*Davis Folsom, University of South Carolina-Aiken and
Walter C. Rose, Sampson Tech. College*

FOLSOM: Early in any principles course we try to explain what a demand curve is, typically using some dull example like wheat or corn. To get students involved, I hand out a slip of paper and ask the question: "What is the most you would be willing and able to pay for an A in this course?" After the laughter subsides, I allow a few minutes for thought before collecting their unsigned figures. By the next class I tabulate and construct a demand curve and explain how if you said \$100 you would be willing to pay \$10 too. Later, when discussing demand shifters, I ask students how their income, grade expectations, and enjoyment of the course would affect their willingness to pay. After the first exam I ask if that price had changed. There are always some students who do not want to buy a grade. I use them in explaining what a market is.

ROSE: In discussing how to construct demand schedules and plot demand curves, the class is asked to write down what each one is willing to pay for an "A" in the course and turn the paper in to the instructor. From this action, we develop a demand schedule and then plot it on a graph. The instructor then gives the class a sheet listing the prices at which "A"s would be supplied. From this supply schedule, the class plots a supply curve and determines the equilibrium price and quantity of "A"s. It stimulates interest and helps students understand how a price system operates and how demand/supply schedules and curves are constructed.

Successful Job Interviews as Demand Shifters

Edward D. Lotterman, University of Minnesota-Twin Cities

Many students view the idea that expectations about future events are an important demand shifter as either boring or abstract and irrelevant. Texts often include some mundane example of a shopper who buys an extra sack of sugar because of rumors that the price is going up. The effects of broader economic expectations on individuals' consumption patterns are often ignored. I find the following example useful for many students.

College students are often a poor down-trodden lot who must pinch pennies to get by and often subsist for most of their college careers on oatmeal or macaroni and cheese. They have to walk around in old rags. (Playing up the poverty of students gets sympathetic attention!) They endure this extreme deprivation until the last semester of their senior year. Then they start to apply for jobs and go to interviews. You can easily tell who is doing well in the job search process, they are the students who go out for pizza and beer and who begin to sport flashy new clothes! You can also distinguish between majors, accounting and computer science majors with high expectations will go out for pizza frequently, philosophy majors perhaps once or twice! Why does this occur? It is because good interviews give students confidence that in a few months their era of poverty will draw to a close. It is not necessary to even receive their first paycheck for these students to begin to alter their consumption patterns. Most have some slight reserve of cash, and the mere expectation of fat checks in a few months is enough to loose the bands on their coffers. Those without any nest

egg may be inclined to borrow a bit, knowing that repayment will be easy. Budding accountants and systems analysts can, of course, be more prodigal since the size of the paycheck they anticipate is substantially fatter than that expected by the average philosophy major. Expectations of the future are a broad and powerful demand shifter not limited to expectations of future prices of a specific good.

Cable TV and the Law of Demand

Eric K. Steger, East Central University (Oklahoma)

Many times my students have difficulty remembering the determinants of price elasticity of demand. To help then I first ask, "How many have the basic cable TV?" (Our school is in a remote area such that most people have the basic cable service to enhance the quality of TV reception). Of those that raise their hands, I ask, "How many would not continue the service if the basic cable TV service rate rises 15%?" Very few, if any, would discontinue service. I ask them, "Why?" Most say that without the cable, the quality of TV reception is terrible. I indicate that there are few good substitutes. Antennas give poor quality reception and satellite dishes are still too expensive for many people. The demand tends to be relatively price inelastic in this price range -- based on the substitutes determinant.

Others indicate that the extra money spent on the basic subscriber services isn't much for quality reception. I indicate that the smaller the percentage of a budget allocated to an item, *ceteris paribus*, the lower the price elasticity of demand tends to be.

I indicate that the less "necessary" a good is, the more price elastic the demand tends to be. Cable TV services tend to be elastic on this count, but the other determinants overwhelm this one.

I do point out that as time passes, more good substitutes may be found for cable TV services and the price elasticity of demand will tend to rise.

Buying Coffee Even If You Don't Like It

Patricia L. Wiswell, Columbia-Greene Community College

One of my favorite anecdotes that illustrates how a change in demand may be caused by changing consumer expectations took place in the 1970s. My mother-in-law had a friend, Jack, who was in the coffee vending machine business in Metropolitan New York. He supplied the vending machines and ingredients for hotels, movie theaters, bus stations, etc. Naturally, it was important for him to follow the commodities market.

One night, Jack was a dinner guest at Mom's house. Coffee had been selling for 89 cents for a one pound can for a long period of time. Over dinner Jack told Mom that coffee prices would be skyrocketing in the very near future because Colombia (or Brazil) had experienced a major coffee

crop failure. The next day Mom hit every supermarket in Long Island and bought every can of coffee she could get her hands on. She had a basement full of coffee--but Mom doesn't drink coffee.

Variable Interval Reinforcement, Expectations, and Demand

Gary M. Galles, Pepperdine University

I have often found it difficult to come up with an example of how price expectations shift demand curves that sounds both realistic and important enough for the idea to sink in with my students. Therefore, I have come up with the following "psychology" example (based on a recent Wall Street Journal article) of the auto industry.

I begin by asking if any of my students has taken a psychology course. I ask one of them to explain (or I do it myself) what variable interval reinforcement is (it is rewarding behavior on a frequency that is a random variable--e.g., rewarding a rat an average of once in ten times it pushes a bar, but at an uncertain interval each time) as opposed to fixed interval reinforcement (e.g., rewarding a rat exactly once after each ten times it pushes a bar). The particular feature of variable interval reinforcement I wish to examine is the question of how fast the behavior in question is "extinguished" (i.e., stopped) when the reinforcement or reward system is stopped. So I ask two questions of my students about it. First, I ask whether it would take longer to extinguish a behavior under fixed or variable interval reinforcement schedules of the same average frequency. It takes longer under the variable schedule, because it takes longer to establish that the reward system has in fact been stopped. Second, I ask which of the two cases would be more likely to lead to a resumption of the behavior if a single reward is given at a particular time once the reward schedule has been stopped. Again, the variable schedule is the answer, because a single reward may convince the subject that he had just recently had a string of bad luck (no reinforcement), but that the reward system still existed. Once the behavior is started again, it takes a while to extinguish that behavior again. Hence, once a variable interval reinforcement schedule is begun, it takes a long time before subjects are convinced it's over, so the rewarded behavior tends to persist.

We then apply this result to automobile marketing in recent years. Car sales have been very low in this high real interest rate recession (you can introduce the real vs. nominal interest rate distinction here, if you have not done so already). I ask my students what an economist might suggest as a way to increase sales in such a situation. Since we will have just covered the law of demand, someone will suggest that the price be lowered. I then ask whether auto prices were effectively lowered (yes) and how. Someone will come up with rebates, discount financing, "free" extra features, etc., as ways it was done. (You can ask them about why the manufacturers didn't simply lower prices to dealers instead, as a thought question for a micro class). I also ask them whether these programs were permanent or only temporary (temporary), and whether cars sold better under them (yes).

I then ask what they would expect to happen to sales when these programs ended (fall, which is what did happen). I point out that manufacturers shortly responded to the resulting sales decline with new temporary promotions that had the same effect: increasing sales under the promotion campaign but very few sales when they stopped. This happened several times, at

different intervals (this is where the variable interval reinforcement comes in), with the same results each time. Car companies decided that the promotions were primarily shifting sales from periods with no promotions, not increasing sales in total (i.e., interested buyers would put off buying today because they knew if they waited long enough there would be a new promotion that would result in a better deal).

This is a case where the car companies "trained" potential buyers to put off buying (shifting the current demand curve to the left) in expectation of lower effective prices later under promotion programs (shifting that demand curve to the right) - a classic case of price expectations shifting demand curves over time. The story does not end here, with car companies just ending these promotions (they have continued), however, because of the variable interval reinforcement schedule involved in the promotions. Whenever the promotions have ended, people continued to wait for the next one, whether one was planned or not. This pushed down sales, distressing manufacturers and dealers, resulting in resumed promotions again.

Chevrolet attempted to break this pattern by substituting straightforward lower prices without special promotion programs on their new 1983 models, hoping to convince buyers that promotions would be ended in favor of general lower prices. Buyers apparently were not convinced, and sales were not very strong (ask whether the students would have been convinced by this) as buyers waited for the inevitable promotion program (made necessary by their expectation of one) even with lower initial prices. This also devastated sales of end-of-the-model-year 1982 cars (substitutes for new 1983 cars) by lowering the relative prices of 1983 cars and the expected relative price under promotions even more. These circumstances led to promotional programs for the 1983s and even bigger ones for 1982s in an effort to sell cars. Repeated temporary promotions initiated under weak sales conditions rewarded potential buyers who put off buying until the next promotion. Initial attempts to stop the promotions were not very successful because that buyer behavior was not quickly "extinguished" under the effective variable interval reinforcement schedule. Even stronger attempts to convince buyers that promotions were over, to be replaced with lower prices, failed to work much better at extinguishing this behavior.

It will take a period of lower sales than otherwise at any prices before potential customers stop holding off in hopes of a still better deal on a promotion. Not only that, but it could take even longer if some company decides to "reward" promotion waiters with a new program, and other companies follow instead of losing customers, because that will resurrect those same expectations the car companies are trying to bury. The end of these special promotional programs will probably require a general increase in the demand for cars.

Differentiating Shifts From Changes in Quantities

John P. Cochran, Metropolitan State College-Denver

After introducing the law of demand and the demand curve, emphasize the difference between demand and quantity demanded using graphs and verbal descriptions. The word demand always refers to the whole schedule or curve whereas the term quantity demanded refers to a single point or price-quantity combination. Demand reflects the quantities consumers would be willing to

purchase at alternative prices. Underline the "s" at the end of quantities and prices to reinforce the idea that demand refers to a whole array of price- quantity combinations. The definition for quantity demanded will be similar except price and quantity are in the singular. Quantity demanded is the quantity or amount consumers are willing to purchase at a given price. This distinction aids students in remembering to distinguish a change in demand (a shift of the whole curve) and a change in quantity demanded (a movement to a new point). A similar technique can be used to differentiate between supply and quantity supplied, and between changes in supply and quantity supplied.

Partial Equilibrium Analysis

Elephants, Blind Men, and Partial Equilibrium

Sharmi Mehta, East Tennessee State University

Students often have difficulty with the partial equilibrium approach to economic analysis. The initial symptoms of this difficulty appear with the discussion of the Law of Demand and the role of a good's price in relation to demand. Students commonly express doubts about the validity of the law by pointing out some factors (other than the price) which in their judgment play an important role in changing the demand for a particular commodity.

One way to cure their confusion about partial equilibrium analysis is to narrate the story of the seven blind men who, not having seen or heard about an elephant before, tried to describe the beast after touching only one part of its body. Thus, one who felt the tusk described the elephant as resembling a spear, while another who held the trunk argued that it was like a snake. Hearing the seven descriptions, it was quite clear that each man was right, but only partially so. Furthermore, no one was able to grasp the whole image of the elephant. Had they touched all its parts, they would have had a much better understanding of his whole complex figure.

The Law of Demand, by focusing only on the role of the price of a commodity, illuminates only one dimension of that commodity. The other parts of demand analysis--focusing on the roles of factors (other than own price) which cause a shift in the demand curve for a commodity--are then introduced.

The Ceteris Paribus Assumption and Time Travel

Joseph E. Pluta, St. Edward's University

Many students have difficulty grasping the usefulness of the ceteris paribus assumption and argue that it is unrealistic to hold "all else constant" when other things are, in fact, continually changing. Science fiction stories about time travel implicitly use the ceteris paribus assumption. By altering relatively minor circumstances (the independent variable) and assuming that all else happens as before, the time traveler changes a number of subsequent occurrences (dependent variables). A recent example illustrates the usefulness of the ceteris paribus concept in forecasting future events.

In the movie *Back to the Future*, 17-year old Marty McFly is transported to the year 1955 where he becomes involved in bringing together the two teenagers who are to be his parents. Marty helps to place his talented yet spineless father-to-be in a situation where he must stand up to the local bully who in adulthood is destined to be the father's domineering supervisor. In this playback of history, only one variable changes: a young man attains self-confidence. All other variables over the next thirty years are assumed to behave as before. When Marty is sent "back to 1985," he finds his parents more happily married, healthier in appearance, more financially successful, more creative, and employers of the town bully of thirty years ago. Despite the fictional fantasizing about cause and effect, the movie is a useful point of reference because so many students (and professors) have seen it.

Similar "time travel" experiments may be undertaken in class to replay economic history (assuming, of course, that care is taken to hold the proper "all other things constant"). If the U.S. energy industry had taken steps during the 1960s to make the American economy less dependent on foreign oil, for example, then (*ceteris paribus*) the impact of the energy crises of the early 1970s would have been less severe. If the tax cut during President Reagan's first term had been geared more toward investment goods than consumer goods, then (*ceteris paribus*) economic growth might have been more self-sustaining. If a student had not frivolously spent \$100 on entertainment last weekend, then (*ceteris paribus*) the money could be used this week for necessary school supplies. And so on.

If done properly, such exercises can be more than mere wishful thinking using the benefit of historical hindsight. At best, they may create greater interest in contemporary economic events (as well as the factors influencing their occurrence) and instill an appreciation for the necessity of the *ceteris paribus* assumption.

Ceteris Paribus

John P. Cochran, Metropolitan State College-Denver

The use and importance of *ceteris paribus* assumptions in economic analysis can be integrated into a lecture using the law of demand, the non-price determinants of demand, shifts or changes in demand, and changes in quantity demanded. When presenting the law of demand, underline the all else assumed equal or parallel phrases. All of the things held constant are then presented as the non-price determinants of demand. Shifts in demand are then easily presented as the result of changes in the factors that were assumed constant when the law of demand and the relationship between price quantity was introduced. Again the discussion can easily be adapted for supply. Some version of Table 3-1 can be placed on the board showing how changes in each category change demand. The table can also show such subcategories for groups as: substitutes and complements, normal and inferior goods, and expected price, availability, and income.

Symbol	Increased Variable	Effect on Demand
Po	Price of Substitute Good Price of Complement	Increase Decrease
I	Income: Normal Good Inferior Good	Increase Decrease
N	Number of Buyers	Increase
T	Tastes and Preferences	Increase
T	Taxes	Decrease
E	Expectations of: Price hikes Income hikes Shortages etc.	Increase for Durables Increase Increase
S	Subsidies	Increase

Table 3-1

Supply

Nudity, Opportunity Cost, and Market Supply

William Yacouissi, Mansfield University

Many professors use a class survey to illustrate demand, such as how many pizzas would you buy at prices, x, y, or z. This exercise never fails to produce the requisite negatively sloped demand schedule and related graph. However, supply is more problematic. Students don't instinctively understand why supply is positively sloped. Why should it take higher prices to call forth greater quantity? If the market price provides a profit, why isn't an unlimited supply of the good available at the market price?

To teach these concepts an exercise is needed that effectively conveys the concept of opportunity cost for resource inputs. This could be done if a product could be found that all students could produce and for which the opportunity cost of production is distinctly different for each student.

The concept I eventually settled on was that of nudity. Most people have an anxiety dream where they are nude in a room full of clothed people and anxiety or embarrassment is a good proxy for opportunity cost. Of course I would never suggest that students actually take off their clothes in class but it is a mind game to which virtually everyone can relate.

The exercise used is very similar to the common demand exercise. I ask the students to write down on an index card how much money they would have to receive to be induced to take

their clothes off in class. I also ask them how much they would have to receive to be induced to be unclothed on a nude-only beach. Sometimes a word is necessary to the students about keeping their payment demand reasonable. Realistically, most people would take their clothes off for a good deal less than a million dollars.

The results are usually as expected. Some students require low payment because their opportunity cost is low and others require high payment because their opportunity cost is high. This difference produces a positively sloped supply curve. Students also always put down a lower price for being nude in the presence of other nude people than in the presence of clothed people. The second set of prices is used to illustrate how a supply curve will shift when underlying market conditions change. In this case shifting from the classroom to a nude beach is analogous to introducing a technical innovation that lowers the opportunity cost of production for each producer.

The Artificial "Shortage" of Blood

Eric K. Steger, East Central University

Some students are skeptical about the efficiency of the price system. This example helps illustrate my point. I explain to students that many medical facilities complain of too few blood donors and potential shortages of blood, and that a sufficient supply of blood would exist if a higher price were offered to people to supply their blood. Some students protest and say that selling blood is "barbaric" and they would never sell their blood but would give it away. I then ask, "How many have given blood?" Very few have given blood. I explain that they may never give or sell their blood but many people are more willing to endure the discomfort of needles, etc., if the reward (money) is higher. This seems to make the point

Mnemonic Devices for the Determinants of Supply

Philip E. Graves, University of Colorado-Boulder

and Robert L. Sexton, Pepperdine University

To help students distinguish "changes in supply" from "changes in quantity supplied," we employ the following memory aid:

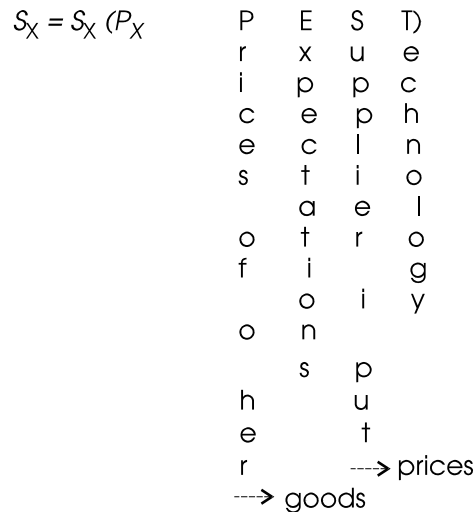


Figure 3-4

After putting the preceding on the board, we illustrate its use with graphical examples of the various shifters. In understanding movements along the supply curve, these other factors are seen to be PESTs, obfuscating the effect of a change in own-price. We have found that students exposed to this device quickly grasp the difference between change in supply and change in quantity supplied.

Illustrating the Law of Supply

Eric K. Steger, East Central University

I often ask my principles students if they could use some extra money. Most indicate that they could. I then offer to hire each one to help me do yard work at my home, but I'm only willing to pay \$1.00 per hour. Nobody is willing to work for that wage. I then offer to pay each student \$3.35 per hour for the same work. Usually I get a few that are willing to work. I then offer \$10 per hour to get other students to work. Immediately, I get many more students willing to do yard work. I then develop a table that contains wages and the quantity supplied at each wage. I then plot the numbers, and students easily see how the law of supply is realistic and relevant.

Technology and Supply

Ralph T. Byrns

Many people think of technological change as synonymous with progress and technological advances. Your discussion of technology as a supply shifter is an excellent place to make the point that technology is a broad term referring to anything that influences how resources are transformed into outputs (some have compared it to a magical "black box"), and that technology can move in both directions. Some examples to help make this point include:

- a. **Agriculture.** The "technology" that underpins agriculture includes climate, weather, insect cycles (e.g., plagues of locusts), diseases of plants and animals, and the state of knowledge. Such weather changes as drought or a frost that kills citrus trees represent negative technological changes.
- b. **War.** Vast amounts of modern capital may be wiped out during a war; this is also a negative technological change. A worldwide nuclear holocaust could yield instant and total depreciation of capital, with a nuclear winter being the ultimate example of technological regression. Mention to your students that, under a proposal offered by Assistant Secretary of State Morgenthau following World War II, Germany's devastated industrial base would not have been rebuilt, and Germany would have been denied little but agriculture as an economic base. Much technology was embodied in a highly educated and disciplined work force, however, permitting rapid recovery in the German "economic miracle" of the 1950s.

Equilibrium

Gravity and Equilibrium

Thomas J. Shea, Springfield College

To show how the idea of equilibrium is a set of forces which result in a "state of rest", "a position to which you are forced to go" or "a position from which there is no impetus to move" (to quote from the text examples), I ask my students to visualize a man jumping from the World Trade Center Building without a parachute. He will be in equilibrium only when he reaches the sidewalk below. For there he is indeed in "a state of rest", "a position to which he was forced to go", and most certainly "a position from which he has no impetus to move". This gruesome example seems to set the definitional concepts firmly in their minds.

The Difference between Real and Economic Shortages

Tim D. Kane, University of Texas-Tyler

Students in the introductory course sometimes have difficulty understanding that there are two kinds of "shortages" confronting the American consumer today: Those which are real and those which are economic. To illustrate the difference, I pose this question to the class:

"If four people are on a sinking boat in the Gulf of Mexico--too far out to swim to land--and there are only three life jackets on board, how will the life jackets be distributed?" Brute force, "first-come, first-served," and "women and children first" are the usual replies. However, it is obvious to the students that money, or price, is not relevant and that offering a jacket to the highest

bidder would not be in the self-interest of any of the passengers. Lesson: A "real" shortage is one which cannot be resolved by the price mechanism.

On the other hand, gasoline shortages under price controls, and apartment shortages under rent controls are two examples of "economic" shortages that were created when the price was arbitrarily set below its true market value. We know this is true because at higher prices the shortage disappears! Whenever the price of a good is set below its market level there will always be a "shortage" but it is an economic one rather than a real one. Lesson: An "economic" shortage is one that can be eliminated by rising prices.

Shortages, Surpluses, and Price Changes

Dale Sievert, University of Wisconsin-Madison

The standard approach to explaining how price changes follow demand or supply changes often assumes more student intuition than students possess. The dynamics involved in price changes need more explicit expression.

I begin by stressing that both buyers and sellers, because they face scarcity, are constantly trying to maximize their welfare. If market price is below the equilibrium price, a shortage exists. Many students seem unaware of shortages, so at this point we search for them. Sold out concerts, empty store shelves for popular items, and waiting lists for classes graphically show them how to recognize shortages. Next we examine why shortages lead to price increases. There are two reasons. First, even though the low price pleases some buyers, not all buyers are pleased because some cannot buy all they want. To increase the welfare of one who faces this situation, a higher price is offered to induce the seller to cancel contracts with other buyers. This occurs at auctions, stock or commodity rallies, and sales of popular items (such as Cabbage Patch dolls).

Second, sellers soon recognize a shortage situation and realize they can raise prices and still sell all they want. It is as though their nemesis, the law of demand, didn't exist. Thus, as prices increase, so can profits.

Finally, I stress that these two "forces" only tend to increase the price. Other more powerful forces could counteract them, thereby leaving prices unchanged. To dramatize this, I hold up a pencil and ask if gravity is a force acting to pull the pencil toward earth. If the students say "Yes," I ask why it isn't working. Of course, gravity is working. I'm simply overpowering it with the greater force in my finger muscles.

Then I show what such similar forces are that prevent price increases during shortages. Such forces include price ceilings, sellers seeking to maintain goodwill (thereby insuring future profits), and buyer resentment (i.e., irrational refusal to become involved in an auction). Similarly, surpluses are shown to cause price declines through the efforts of buyers and sellers to maximize welfare. And there too, these "forces" can be offset by price floors, collusion, and irrational seller behavior.

Analogies for Equilibrium

Ki Hoon Kim, Central Connecticut State University

A comfortably balanced mix of hot and cold water makes taking a shower one of life's pleasures. (Success stimulates off-key singing!) There are possibilities of changes in the volume or temperature of the water. Then a readjustment is necessary. Likewise, equilibrium is the state of balance between opposing forces. There is no tendency to change over time. When we roll a small ball in a big bowl, it oscillates for a while and then settles down at the lowest point in the bowl. It is in a state of rest which is an equilibrium position.

Stable vs. Unstable Equilibrium

Ken McCormick, University of Northern Iowa

The concept of a stable vs. an unstable equilibrium is often difficult for students. Consider an ordinary mixing bowl and a ping-pong ball. Drop the ball into the bowl, and watch it come to rest. This means that it has reached its equilibrium. Now slap the ball gently. It will roll around the bowl, but will eventually come to rest in the same spot as before, namely, the bottom of the bowl. Thus, the original equilibrium was stable. Now turn the bowl upside-down, and balance it on top of the bowl. The ball will be at rest, so it is at an equilibrium. Tap the bowl gently and cause the ball to roll down the side of the bowl. It will be obvious to all that it will not come to rest at the same spot as before. Hence, the position at the top of the upside-down bowl was an unstable equilibrium.

Using Prices to Allocate Faculty Gym Lockers

William Lee, Saint Mary's College of California

When I was a graduate student, I always enrolled in a physical activities class so I could be issued a gym locker. This entitled me to receive clean gym clothes and a towel weekly. I took full advantage of this service because I did not like to carry gym clothes in different stages of decay around in my car. Unfortunately, when I passed my qualifying exams I was no longer considered a graduate student. I was no longer allowed to enroll in gym classes and could not be issued a locker, so the aroma in my car . . . well, you knew when I was driving your way. The only alternative was to put my name on a waiting list for a "free" faculty locker. Naturally, I never got to the top of the list during the three year I worked on my dissertation and lectured. Six years after leaving the university, I returned to lecture for a term. Still enjoying tennis and jogging and not liking an offensive smelly car, I wanted a faculty gym locker. Predictably, I was still on the waiting list.

That year the school, for budgetary reasons, implemented a new revolutionary policy--charging \$15 per term for a faculty gym locker, including fresh gym clothes weekly. With the exception of the economists, the faculty screamed "foul." They said that it was not fair to make them pay for their lockers. After about a two week transition period of emptying and reissuing the lockers of people who were unwilling to pay the \$15 (some had not used them in years and some

had moved from the area) I, after nearly a decade, and anyone else who was willing to pay \$15 got a locker. All those who did not want to pay \$15 did not get a locker. As an added benefit, with the locker fees the university even bought soap dispensers for the showers. This shows how prices allocate resources and goods, in this case lockers, to their highest valued uses.

Marshallian Demands and Shortages

John P. Cochran, Metropolitan State College-Denver

To help students understand how markets cure shortages and surpluses, introduce the Marshallian concepts of demand price and supply price. Draw a demand curve on the board. Arbitrarily pick a quantity and ask what maximum price consumers would pay for this quantity. Repeat the process several times for different quantities until students understand the concept. (The exercise also helps students become more competent in the use of graphs). Next draw a set of market supply and demand curves and set price so that a shortage occurs. Ask students if any of the buyers who cannot acquire the good at current price would be willing to pay a higher price rather than do without. (YES) The stage is set to explain the tendency for prices to rise to cure a shortage. The concept of supply price can now be used to let students discover why prices tend to fall in markets with excess supplies.

Student Population and Rental Housing

Janet M. Thomas, Bentley College

Reasons for demand and supply disturbances can be construed by the student as just another laundry list to be memorized unless the presentation is lively and relevant. A shift in demand due to changes in population is one that generally does not lend itself to interesting examples, particularly if the focus is on changes in U.S. population. However, if the presentation of population shifts is placed on a more regional level, specifically the town or city in which the college is located, many instances of population-driven demand shifts can be discussed to which the students can more readily relate. A particularly relevant one in any college town is the annual effect of returning students on local population and its impact on the demand for rental housing. Students know first-hand the resulting effect on apartment rents and can readily accept the theory driving the result.

Do Markets Really Work? A Supply and Demand Experiment

Clifford Nowell, Weber State College

In order to demonstrate equilibrium and convince students that markets do actually work, I conduct the following experiment. I ask for 10 volunteers; 5 will be buyers, and 5 sellers. To create supply and demand curves I give each buyer a card similar to Card A and each seller a card similar to Card B.

Period	Test	1	2	3	4	5
Resale Value	3.00					
Purchase Price	2.50					
Profit	.50					

Card A

Period	Test	1	2	3	4	5
Selling Price	3.00					
Production Cost	1.00					
Profit	2.00					

Card B

Figure 3-5

The buyer's resale value varies from \$4.50 to \$2.50 in \$.50 increments. The seller's production cost varies from \$1.50 to \$3.50 in \$.50 increments.

The instructions I give the students at the beginning of the experiment are simple. I tell them that our market will have 4 periods, and that in each period we will auction off a fictitious product. During each period each buyer may purchase one unit of the product by bidding. Sellers may sell one unit of the product by giving offers. Each successive bid must increase in value and each successive offer must decrease. The bids and offers are written on the board and a transaction occurs when the offered price equals the bid price. The students who made the transaction record the sale price and calculate profit on their cards. I also tell them that they will be paid any profits they make during the course of the experiment. I tell the students each period will last 3 minutes, and then go through an example of how to fill out the cards.

Based on the values given by the cards, the following supply and demand curves will result. B1 represents buyer #1. The maximum willingness to pay for B1 is given by his resale value of \$4.50. Note that sellers 4 and 5 may not make any transactions because their costs of production are too large. Likewise, buyers 4 and 5 may not purchase any of the commodity.

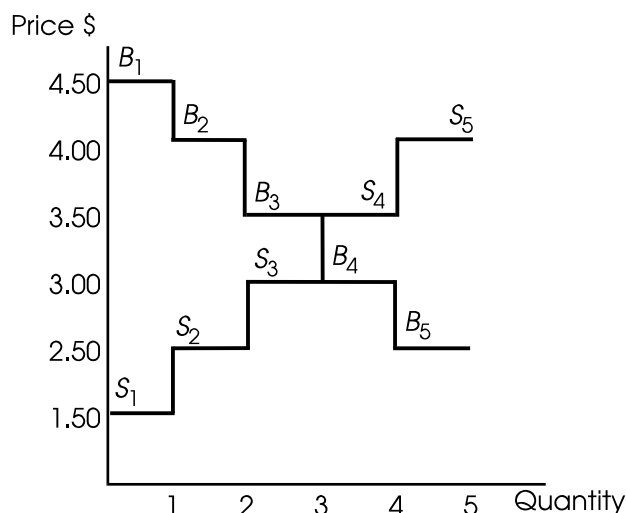


Figure 3-6

The equilibrium quantity sold will be three and the equilibrium price will be between \$3.00 and \$3.50. Consumer surplus can be demonstrated by the amount of earnings paid out.

This experiment gets students to believe in the concept of equilibrium and enables them to have confidence that the graphs I draw throughout the entire class have meaning. We conclude that markets do indeed work.

Experiments in Price Discovery

Steven C. Turner, University of Georgia

The purpose of the experiments is to make the students aware of the difference between price determination (which evolves from underlying economic forces) and price discovery (which is short run in nature and evolves out of the structure and rules of a market). Three experiments are conducted using the different trading mechanisms of an auction, centralized private negotiation with price reporting, and centralized private negotiation without price reporting.

The requirements for each experiment are as follows. Divide the class symmetrically into buyers and sellers and hand each student a card with their identifying buyer or seller number (an address label with buyer or seller and number identification information is helpful), his reservation price, and the number of units to be bought and sold. Individual reservation prices are assigned by picking off points on linear demand and supply curves in which the slope of the demand curve is the negative of the supply slope. For sellers, the reservation price represents the lowest acceptable price, while for buyers it represents the highest price to be paid.

For both private negotiation trading experiments, traders are given trading cards on which they record (1) time of transaction, (2) opposite trader number, and (3) quantity (number of units) and price of the transaction. The difference between these two experiments is that in the private negotiation with price reporting, traders are required to relay transaction price to a market reporter who records the prices sequentially in clear view of all traders.

In the auction trading experiments, the seller sells all of his units when the auctioneer selects his number. The auctioneer begins bidding at a certain price (he drops this price until bidding commences) and moves the price up until bidding is discontinued. All the seller's units (10 units/seller) are auctioned off and buyers can buy a maximum of 10 units.

After the experiments, data are collected for two purposes. One purpose is to rank or grade the students. This is done by recording each trader's actual profit (difference between transaction and reservation price) and his expected profit (difference between equilibrium and reservation price). The difference between actual and expected profit is computed and used to rank the class, the highest rank going to the trader with the greatest positive difference.

The other purpose of the experiments is to show the influence of supply and demand curves in a trading context, how average transaction prices can differ from equilibrium prices, and how different trading mechanisms can influence average transaction prices. Only a teacher's imagination

limits the way these experiments may be used to convey basic economic concepts. Relaxation of the basic assumptions of a perfectly competitive market can also be explored using variations on these experiments.

The Disappearing Supply and Demand Curves

Mark E. Schaefer, Georgia State University

Do (revealed market-wide) demand and supply curves always exist? No; individual buyers and sellers always have marginal benefit and cost curves, but they do not always reveal this information to others. Consequently, knowledge of market-wide curves is not always freely available.

As the number of market participants (sellers and buyers) goes from many to few, schedules of supply and demand go from being revealed in the market place to being concealed. Why? Because the person withholding information has an advantage over the person on the other side of the potential deal who gives away information in his eagerness to do business, thus losing bargaining power in the negotiations over the swap.

Successfully functioning competitive markets are oiled by the provision of a FREE good, the information revealed for free by the many participants who tip their hands, i.e., who tell what quantities they are willing to buy or sell at various prices. Why do they give away this valuable information freely? Because they would be ignored in the frenzy of exchange if they stood silently with arms folded in the commodity auction pit as others shouted out their bids and asking prices. Only as the number of participants decreases (and the significance and unique individuality of each participant becomes more apparent) does the influence of each on the outcome of the negotiation increase through hype, hints, cajoling, threats of withdrawing, whining and wheedling.

Why would you go to market, dilute your uniqueness in the herd of participants, and lose the power to withhold information? Because you expected the advantage of having many people on the other side of the exchange among whom you hoped to find a better swap, to more than offset the disadvantage of revealing information about your willingness to swap.

Independence Between Short-Run Supply and Demand

Ralph T. Byrns

When introducing time intervals (short run, etc.) stress that short run demands and supplies are normally independent. This helps students sort out S & D determinants. NOTE: Short run demands ultimately adjust to long run supplies, and short run supplies to long run market demands.

Examples: short run supplies of computers depend on long run demands because, were demand zero, they would never have developed. Similarly, a demand for oil would not have developed without a supply; we would now use other technologies.

Examples where demands exist without supplies include perfect solvents, perpetual motion machines, teleporter buttons, and other technologically unavailable goods. Supplies of tuna fish ice cream, economic poetry, incorrect mathematics formulas, or mud pies can be made available quickly, but there are no corresponding demands for them. Supplies typically exceed private demands for such things as doodles, songs by bathtub tenors or sopranos, and some professors' lectures. Demand is also far below supply in the following example.

Lothario fantasizes about Miss Universe, but the prices he's able to pay for her affection are below the prices she requires. (The prices need not be monetary; he could be willing to do her laundry or take out her trash.) His demand and her supply of affection to him are shown in Figure 3-7. This demand and supply are independent, but you may want to suggest that demands and supplies of affection are very interdependent for long term relationships.

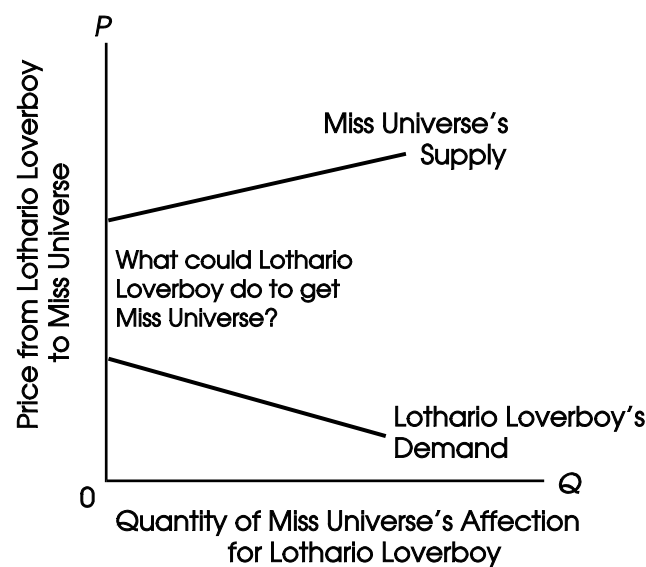


Figure 3-7

Chapter Four

Markets and Equilibrium

Equilibration

Illustrating Equilibrium

By: Jim Cox, University of Alabama at Birmingham

In his book, Man, Economy, and State, Murray Rothbard has an excellent illustration of equilibrium: "[Equilibrium] is like the mechanical rabbit being chased by the dog. It is never reached in practice, and it is always changing, but it explains the direction in which the dog is moving."

The Law of Demand and Fixed Charges or Discounts

Ben Collier, Northwest Missouri State University

Students are frequently less than excited about the Law of Demand. Since it should be perfectly obvious to anyone that the lower the price the more consumers would want making such a statement is rarely cause for excitement. To generate interest in this fundamental theorem I find it useful to introduce some of its less obvious implications. For example, a fixed shipping charge added to both a high quality and a low quality version of the same basic product will cause the high quality product to be consumed in relatively greater proportions. Thus the ratio of high quality to low quality Florida oranges consumed will be higher in New York than in Florida. In New York a high quality orange costs less in terms of a low quality orange than it does in Florida.

This same argument can be applied to the use of discounts such as coupons which give a fixed price reduction for two or more sizes of a product. In such cases the law of demand predicts that the smaller size will be consumed in relatively greater proportions. This may be food for thought the next time a student receives a coupon good for a dollar off either a medium or large pizza.

War and Oil Prices

Waylon D. Griffin, Hofstra University

Often my students think that a shooting war in the Persian Gulf is the cause of increases in the world price of crude oil. War, per se, does not affect oil prices. Shooting and bombing do cause speculators to get excited and buy more oil to increase inventories; as a result, prices rise on the spot and futures markets follow in the near term, several days. But in the longer term, several weeks world oil prices are determined by the marginal changes in the physical barrel of oil, not the speculative, or paper barrel.

So, to make the point I say, "The Persian Gulf can literally turn to blood but if the normal movement of oil tankers is not disrupted, the world price of oil will not change. Yet, if not one finger is pricked of blood, but a tanker sinks and slows the movement of other tankers, prices will

rise." War must in some way affect the marginal quantity of oil available for sale to affect oil prices; otherwise, war has no affect.

Price Floors and Black Markets for Low Quality Produce

Roy B. Levy, Pennsylvania State University-Delaware

A number of states, e.g., Delaware and New Jersey, employ an English auction for the sale of farm crops. As a former produce buyer, I often observed that an initial price announcement by the auctioneer (P_0 in Figure 4-1) for a low quality lot generated no bids among the buyers. At such an effective price floor, the equilibrium quantity at the auction was zero.

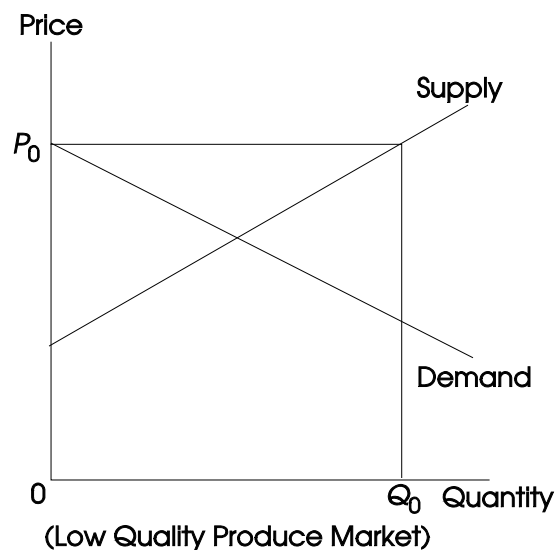


Figure 4-1

A nearby gasoline station or restaurant, sites known to both seasoned buyers and sellers, served as a location for the formation of black markets for low quality crops. Many of the low quality lots of produce that comprised the surplus quantity (Q_0 in Figure 4-1) typically sold on the black market at a price below P_0 .

Classroom use of this anecdote has served to introduce the adjustments that some economic agents make in response to price controls.

Movements Along vs. Shifts in the Demand Curves

Mark Zupan, University of Arizona

To help students distinguish between movements along and shifts of the demand curve, I let my students think of traffic school. In many states, including California, one can get a moving violation erased from one's traffic record each year by paying \$35 in tuition and attending an 8-hour traffic school.

The presence of traffic schools has two counteracting effects on the demand for speeding. First, it induces a movement along the demand curve by lowering the price of speeding since for many people the \$35 in tuition and 8 hours on a Saturday attending the school is less of a burden than a \$75 ticket and the increased insurance costs that accompany the violation on one's traffic record.

Second, traffic schools attempt to shift the demand for speeding leftward by having instructors lecture students on the need to obey the law and having students watch movies about what can happen to drivers who speed excessively. On the other hand, some people have claimed that traffic schools actually shift the demand for speeding rightward since instructors will often tell students about the various techniques available to them for getting out of future tickets. In the school I attended, for example, the instructor spent nearly 3 of the 8 hours of class telling us how best to deal with a California Highway Patrol officer, how to change the venue on a violation in the hopes that the officer will not show up thereby causing the charge against you to be dropped, how to fight a ticket in the courtroom, etc. A recent statistical study by the California Department of Motor Vehicles indeed reveals that, all other things equal such as prior driving record, attendance at traffic school does not make you a better driver and that the demand shifting effect of traffic schools may thus be nonexistent.

Given the two competing effects and the evidence that traffic schools may not be too successful at shifting the demand for speeding, the students come to the conclusion that traffic schools work to increase the equilibrium amount of speeding. Traffic schools may also worsen the efficiency of the insurance market by partially masking drivers' records, thus making it more difficult for insurance companies to distinguish bad drivers from good drivers.

Explaining Why Market Quantities Change

Mark Zupan, University of Arizona

In reviewing market operations, point out that while comparative statics is typically used to predict what will happen to equilibrium if a determinant of D or S changes, it can also be used in reverse to explain why a particular change in equilibrium has occurred. As an example, give them a graph such as that shown in Figure 4-2 of the market for lawyers, where the equilibrium has shifted northwest of the equilibrium in, say, 1930. Ask them why? This will get them to thinking that the dominant change has been a rightward shift in demand and get them wondering about which determinant of D has been changing (Y?, an increase in tastes for engaging in legal disputes and for defining personal property rights (e.g. in divorce, etc.)).

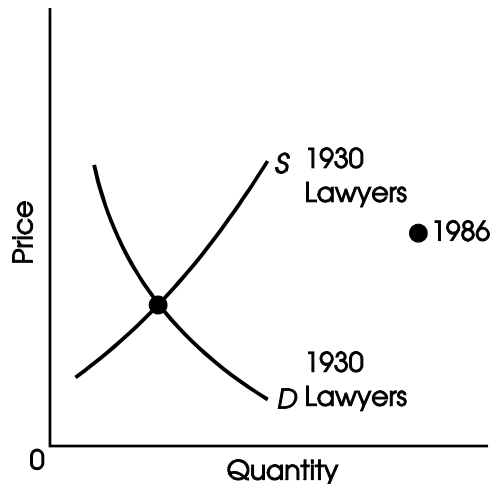


Figure 4-2 The Changing Market For Lawyers

Simultaneous Changes in Supply and Demand

Djehane Hosni, University of Central Florida

It is important to emphasize that the effects of simultaneous changes in supply and demand are simply the sum of the separate effects of supply and demand, respectively. We can isolate each effect and then treat them as though they were, in a sense, simultaneous equations. Four cases can be distinguished. The most effective classroom presentation occurs if you place tables of the following type on your blackboard, with arrows up or down to indicate determinate directions of change, or a big question mark when the result is ambiguous.

A. Supply And Demand Both Increase

	Supply	Demand	Net
	<u>Effect</u>	<u>Effect</u>	<u>Effect</u>
Quantity	Up	Up	Up
Price	Down	Up	?

B. Supply And Demand Both Decrease

	Supply	Demand	Net
	<u>Effect</u>	<u>Effect</u>	<u>Effect</u>
Quantity	Down	Down	Down
Price	Up	Down	?

C. Supply Grows But Demand Falls

	Supply	Demand	Net
	<u>Effect</u>	<u>Effect</u>	<u>Effect</u>
Quantity	Up	Down	?
Price	Down	Down	Down

D. Supply Falls But Demand Grows

	Supply <u>Effect</u>	Demand <u>Effect</u>	Net <u>Effect</u>
Quantity	Down	Up	?
Price	Up	Up	Up

Students should see that quantity unambiguously increased (decreased) when both demand and supply increase (decrease), but that the direction of the change in price is indeterminate because the double shift produces forces working in opposite directions. Similarly, they should see that price rises if demand rises while supply declines, and that price falls if demand falls while supply grows, but that the direction in which quantity changes is ambiguous in both of these cases. This exercise also provides a good place to discuss the differences between qualitative predictions and quantitative predictions.

A Martini to Help Us Understand How Markets Work

Charles C. Fischer, Pittsburg State University

As teachers we soon discover how useful a good physical analogy can be in helping students understand some abstract concept or idea. Ideally, the analogy should involve a physical concept or phenomenon that students are already familiar with, that closely approximates the economic counterpart in question, and that is of interest to students and, thus, acts as an attention-getter. The following analogy does a pretty good job of meeting this criteria.

I tell my students that to understand the concept of equilibrium price and the process by which this price is established in the market, we need one, and only one, good martini. This requires a martini glass, some gin, a little vermouth, and a perfectly round cocktail onion. Of course, substitutions are allowed, such as beer and a round hard-boiled egg, or Coke and a maraschino cherry for non-alcoholic drinkers. (Mentioning the beer and egg combination usually brings out some moans of disgust from students, but it does get their attention).

After making a crude drawing of our martini on the blackboard (see Figure 4-3.), we discuss the concept of equilibrium as a resting place, the onion being at rest on the bottom of the glass, and as a balance of opposing forces, in this case, the force of gravity acting upon the sides of the glass.

Next, with the aid of Figure 4-4, I demonstrate that an equilibrium price also is a resting place and a balance of opposing forces. Here, the economic counterpart of physical gravity consists of the forces of supply and demand. The notion of a market surplus (AB at P') putting downward pressure on the market price corresponds to the force of gravity operating on the onion. Furthermore, the changes in quantity demanded and quantity supplied that take place as the price is driven down by the surplus is analogous to how the shape of the martini glass influences the resting position of our cocktail onion. Of course, this analogy can easily be extended to include a discussion of stable and unstable equilibria, and the impacts of various changes in the givens.

A nice pedagogical attribute of this analogy is that not only does it have strong heuristic appeal, but, as you can see, its graphic representation provides visual confirmation of the linkage between physical gravity and economic gravity. The martini we make in class demonstrates that it is a small step to go from the familiar physical notion of gravity to the idea of economic gravity and the workings of the market.

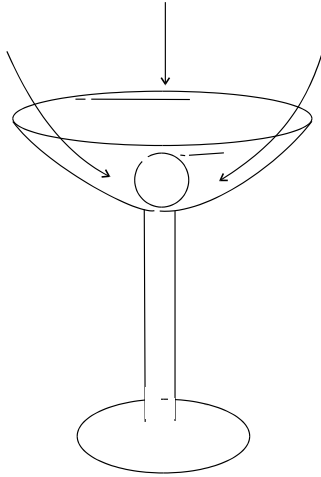


Figure 4-3

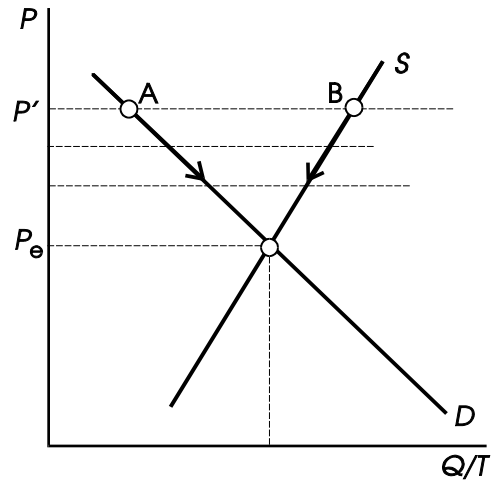


Figure 4-4

The Economics of Death and Dying in America

Henry N. McCarl, University of Alabama-Birmingham

All economists are familiar with the old saying, "There is nothing more certain than death and taxes." While the latter is especially familiar in April of each year, the former is a subject often avoided in the study of economics. A best-selling book titled *The American Way of Death*, and the movie *The Loved One*, both touched on the economic aspects of dying in America, but the real truth is seldom known until a close relative passes away and the family rushes to make the necessary final arrangements.

Some students find it an interesting even if a bit off-beat, project in economic analysis to examine the financial aspects of life insurance, funerals, perpetual care cemetery plots, internment in mausoleums, cremation, posthumous donation of body parts and related costs and potential economic benefits. Alternatives to internment may also be examined in terms of cost effectiveness.

Analysis of supply and demand concepts can be associated with an examination of alternative uses for urban land that has been used historically for cemeteries or burying grounds. A discussion of social customs and mores can be associated with economic analysis to show the restrictions placed on future land uses by attitudes toward alternative recreational uses of sacred ground such as golf courses. Examine the etiquette of playing through funerals or open graves as alternatives to sand traps, etc. Additional economic aspects can be examined with the limitations and problems created when building streets and highways, as well as dams and reservoirs, when they impact on the final resting place of the dear departed.

The Prisoner of War Economy

H. J. O'Neill, Suffolk County Community College

Officer prison camps in Germany during World War II contained separate sections for British, French, Flemish, Dutch, and other nationalities. Inputs:

- a. **GOODS:** Red Cross - Food and tobacco parcels; food from guards and camp kitchens.
- b. **SERVICES:** Skills of prisoners as seamstresses, watch repairs, barbers, cobblers, dental repair, etc.

At first barter was used, later cigarettes became a standard of value, and eventually script money appeared, but it was discontinued due to counterfeiting. Red Cross parcels arrived once per month. Some men set up as specialists--a still for liquor, dealing with guards, dealing with prisoners of different nationalities, finding desired goods for a fee, storekeeper or peddler, banker or loan shark, pawnbroker for jewelry, watches, etc. Each nationality had a market area with stalls, posted prices and translators to deal with other nationalities. In time, some individuals or groups became very wealthy in goods or cigarettes or script and were usually disliked. They had paid bodyguards, servants, and lived better than most prisoners. Future deliveries of Red Cross parcels or services or extra clothing were often pledged for loans or desired goods.

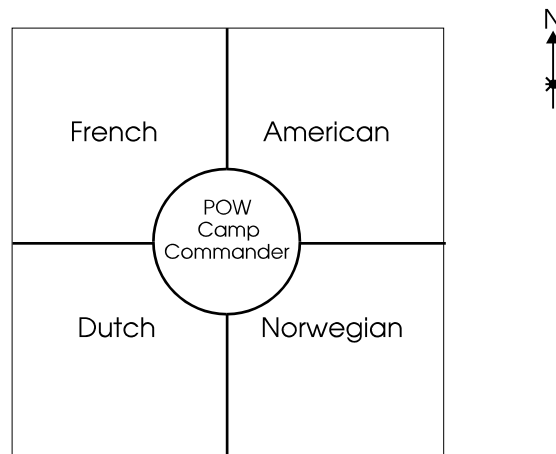


Figure 4-5 The Prisoner of War Camp

High demand items included tobacco, candy, canned fruit, liquor, underwear, mittens, sweaters, soap, and musical instruments. Speculators checked prices in other nationalities' areas and hired translators. Camp guards raided barracks for illegal hoards, but they could be bribed; a warning could be obtained to move stock or, for a larger fee, guards would divert the raid to a competitor.

WELFARE ASPECTS - prisoners never starved - always had shelter, prison rations and one parcel a month from the Red Cross.

RECOMMENDATION: assign the novel *King Rat*, by James Clavell.

- a. What happened to prices 10 days before a delivery was due?
- b. What happened to prices the day before a Red Cross delivery?
- c. Why was a skilled or cheating card player in a superior position?
- d. Why did non-smokers or candy-haters have an advantage?
- e. Why did specialists continually check prices in other markets?
- f. How did a confiscation raid by guards in a particular section affect prices in their own and other sections?
- g. What skills would facilitate success in this economy?
- h. What happened when a Red Cross delivery did not arrive?
- i. What happened when a double Red Cross delivery arrived?
- j. What happened when word arrived that the allied armies were only a few miles from the camp?

This example illustrates a real-life economy with all inputs controlled.

Examples of Volatile Prices

Ralph T. Byrns

Offer stock markets and commodities markets as examples where supply and demand are in such constant flux that prices and quantities move daily. [You might assign students to do a little library research to trace the prices of volatile stocks (e.g., stocks of companies that are rumored to be targets of takeover bids, or computer or electronics stocks from 1983-88) or farm commodities (e.g., wheat or hog bellies) for short periods to make this point, and to familiarize your students with the financial pages.] Then offer some examples of markets that seem to be highly stable over long periods (e.g., the demand and supply of nuts and bolts in your local hardware stores, or for ice cream cones -- real prices and quantities change very little over time.)

Analogies for Equilibration Paths

Ralph T. Byrns

Emphasize that transaction costs prevent instantaneous equilibration. After suggesting that equilibration time is positively related to the transaction costs incurred, you might use some of these analogies to describe the time paths of equilibrating prices and quantities:

DIRECT PATHS

Like Barracuda that attack their prey in a straight line.

Like an iron ball attracted by a powerful magnet.
Like an ace moving from a card shark's sleeve into his hand.

CIRCUITOUS PATHS

Like a shark that circles and nudges before closing in to feed.
Like a nine ball caroming six rails on a pool table before going into a pocket.
Like a marble spinning on a roulette wheel before it settles on a number.

Using Cobweb Models

Ralph T. Byrns

Although the text describes a roughly cyclical pattern of annual adjustments to supply in the wheat market, it does not explicitly deal with cobweb models. Your students may benefit from a more formal discussion of cobweb adjustments. For example, suppose that a bumper corn crop depresses corn prices in year 1, resulting in hog production of quantity Q_1 in Figure 4-6 (the supply of hogs is temporarily and unexpectedly high.) Hog prices will fall from P_0 to P_1 . This low price may so discourage hog farmers that the production of porkers drops to Q_2 in year 2, raising the price temporarily to P_2 . The unexpected high prices and profits could stimulate production to Q_3 in year 3, driving the price down to P_3 . And so on.

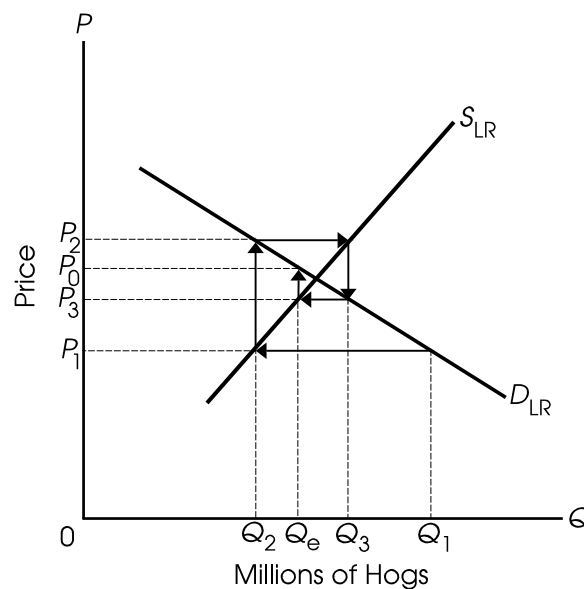


Figure 4-6 Illustrating Cobweb Models

The Reincarnation of Adam Smith

William Hildred and Frank S Wert, Central State University

An unexpected classroom visit by Adam Smith and the resulting dialogue proved a lively and effective team teaching method to illustrate Smith's ideas on mercantilism, specialization, and the proper role of government. Donning a full Smithian costume, one of us shows up, unannounced, shortly after the start of the other's class, claiming to be a reincarnation of Smith himself, and demanding the floor in order to right some misinterpretations about what Smith actually said, or didn't say, in *The Wealth of Nations*. The ensuing lecture, preferably given in a heavy Scottish brogue, is laced with many of Smith's most famous quotations and examples: i.e., division of labor in the pin factory; the invisible hand; the self-interest of the brewer, the butcher, and the baker; and the philosophy of natural liberty. The host professor frequently interrupts the lecture to ask Smith for further clarification or to challenge him on particular points. The format thus becomes an interactive dialogue. This provides an excellent forum to reinforce the use of the scientific method in the social sciences as Smith talks about the influence that Isaac Newton had on his work and that of his contemporaries.

The specific objectives of the lecture, and the principles to be covered, easily can be modified to fit almost any economics class. The technique is fun, and student interest is high.

What If Everything Were Free?

Frank Whitesell, University of Southern Mississippi

We teach that the competitive equilibrium price is the right price, in the sense that supply and demand are in balance. But there is still a tendency for students, as consumers, to feel that a lower price must always be a good thing. After all, doesn't everybody like a bargain? And aren't high prices inflationary?

To convince your students that lower prices are not always better for consumers, have them imagine what would happen if they woke up tomorrow morning and everything were free. Ask them where they would go first to start picking up their free goods. Then have them think about some of the problems they would be likely to encounter there. Subsequently, consider the longer run. What would store inventories look like on the second day of this consumer utopia? What about the quality or availability of services, like haircuts or automobile repairs.

Such a thought experiment gives students a real appreciation of the fact that market prices are necessary supply-side incentives as well as demand-side rationing devices. It is a simple step from here to discuss the problems that arise from ceiling prices, such as rent controls.

Price Controls

Understanding Price Floors and Ceilings

Dale Sievert, University of Wisconsin-Madison

Students often find it hard to remember whether price floors are set above or below the equilibrium price. I encourage them to learn the intent of such laws, instead of trying to memorize how they are established. Understanding is made easier by using comparison with a building. At times governments want to aid the buyer in a market. It does so by guaranteeing low prices. The student is then asked to imagine that price is represented by one's position in a tall building, having no stairs or elevators. A person then can be prevented from going higher in the building by being placed at or near ground level and by having ceilings placed overhead. There could be dozens of such ceilings, of course, each representing one story of the building. Wherever one is positioned in that building, it is the ceiling that prevents rising higher in the building. Similarly, price ceilings prevent rising prices. Conversely, suppose a government wanted to help a seller. Prices would be prevented from falling. Again, with the analogy, the person would be placed near the top of the building (a high price). Now, however, a downward movement is prevented by the floors in each story. Thus, price floors prevent falling prices.

Floors and non-price competition

Michael Kuehlwein, Pomona College

Price floors prevent firms from competing with each other through lower prices, encouraging them to engage in non-price competition. One fun example is the way banks competed under Regulation Q, which prevented them from paying interest on checking accounts and limited the interest they could pay on savings accounts. Some banks tried to attract customers by giving away free gifts for opening up an account: clocks, radios, and the like. When the government forbade this practice as a violation of Regulation Q, banks began offering the free gift to the friend of a person opening up a new account. In a case reported by the *Wall Street Journal*, a bank offered to send a friend of yours a free color TV if you would do business with them. One can also use this example to highlight the inefficiency of non-price competition. What if you (and perhaps your friend) didn't want a new color TV and would have much preferred higher interest rates on your deposits?

Price Ceiling vs. Price Floor

Tahany Naggar, Westchester University

Upon reviewing the difference between price ceiling and price floor, I realized that several students were confused and even questioned whether I had reversed the discussion. I tell them to imagine that they are standing in a building which has three floors and they are on the middle floor. Thus, the layer of the first floor on which they are standing is the ceiling of the first floor, while the layer

of the third floor right above their heads is the floor of the third floor. Ultimately, the price ceiling, equilibrium price and price floor are analogous to the first, second and third floors of an apartment building consecutively.

A Generic Example of Price Ceilings

Gary Galles, Pepperdine University

The analysis of price ceilings is a very fruitful area for showing students how useful economics can be in understanding the world. However, it seems to me that we can fail fully to communicate the analysis in two different ways: 1) we can stick to a dry textbook style treatment of the general analysis which, while covering the analysis, does nothing to generate student interest or an appreciation of the wide variety of ways these effects work themselves out in different types of markets; or 2) we can tell all sorts of "stories" about various price controls, which students find highly interesting, but which do not always leave them with a coherent understanding of the general analysis. In an attempt to avoid both these errors and to give my students an appreciation for both the general (or generic) effects of price controls and some specifics of how these effects work themselves out in different markets, I have used the following method with success.

The method is very simple. I introduce a particular example of price controls (which I call a generic example, to drive home the point that the purpose of this is to understand the general analysis): a maximum price of a nickel a loaf is imposed on bread. Then, by directed questioning of the class, I lead them to see what sorts of specific effects a price ceiling on bread could be expected to have. Next, for each specific effect (or set of specific effects), I ask the class to identify the general nature of the effect involved (e.g., a smaller loaf is one way to reduce quality). Finally, I tell them that such a general effect is to be expected from any effective price ceiling or price floor (whichever is then being discussed), and I reinforce this by telling them how those general effects have shown up in several different markets. An abbreviated version of this lecture on controls is as follows, using price ceilings as the example:

QUESTION 1: What would happen to the size of a loaf of bread?

ANSWER: If producers were allowed to, they would reduce the size of a loaf. If you can't raise the price per loaf, you can raise the price per ounce by reducing the size of a loaf (I tell them I'm sure they could get a Hostess Twinkie sized loaf of bread, sandwich sliced, for a nickel).

QUESTION 2: What would happen to the quality of the bread's ingredients?

ANSWER: If producers were allowed to, they would lower the quality of the ingredients. Not only would types of bread like Honey Wheat Berry disappear in favor of the cheaper plain white or wheat, but even those ingredients would be allowed to fall in quality (I suggest sawdust, since you don't really want to sell the bread for a nickel anyway).

GENERALIZATION: One effect of a price ceiling below the equilibrium price is that the quality of the good will be lowered in whatever dimensions are possible.

EXAMPLES: The disappearance of full serve and the appearance of cash only policies and reduced hours at service stations during gas price controls; the reduction in maintenance and service expenditures (e.g., painting, fixing problems) under rent control.

QUESTION 3: Would those who enacted the controls want to allow quality to fall, since that evades the intent of the controls?

ANSWER: No, so that a bread control board of some sort would be set up to regulate, investigate and enforce standards for sizes and ingredients, and to adjudicate any alleged violations.

GENERALIZATION: Price ceilings tend to lead to the establishment of regulatory bodies to prevent quality from deteriorating in whatever manner can be legislated (although there are always ways that can't be either detected or enforced), and these bodies consume scarce resources that wouldn't be necessary in the absence of price controls (repeat business and reputation give firms sufficient incentives, absent the controls).

EXAMPLES: Santa Monica or New York rent control boards; regulation of fees, etc. in states with usury laws setting maximum allowable interest rates.

QUESTION 4: If you could give bread a new name or form to escape the controls, would you?

ANSWER: Of course. You might expect the emergence of jumbo bagels or sandwich style muffins, as well as a resurgence of frozen bread dough, all as ways to sell bread and avoid price controls.

GENERALIZATION: If there is any way to rename a good or alter it so as to avoid price controls, it will be tried.

EXAMPLES: Under steel price controls during the Korean war the price of seconds (with "imperfections") rose dramatically, far above the controlled price of standard steel, and the percentage of seconds produced also rose dramatically; condo conversions, since ownership or mortgage payments were uncontrolled, while rents were controlled under rent control laws.

QUESTION 5: Might I try to capture some of the true value of the bread by tying its purchase at the controlled price to purchase of other goods not controlled?

ANSWER: Certainly. A supermarket may offer (real) bread at 5 cents, provided you buy \$20 or more in groceries or provided you buy a particular type and size of jelly (at an appropriate price), or a bakery may require the purchase of doughnuts as well.

GENERALIZATION: Attempts will be made to tie purchases of price controlled goods to purchases of some non-price controlled good so that the owner can capture the value of the price controlled good.

QUESTION 6: If you could change a price controlled market transaction to one that avoided direct money payment (and hence the controls) might you try it?

ANSWER: Yes. There would be an increase in barter, e.g., butchers and bakers may trade beef for bread. There would also be an incentive for intensive bread users (who have trouble buying under price controls) to either buy a bakery (avoiding markets for bread) or become self-sufficient in bread production (the same is true for households, even though this would otherwise be less efficient).

GENERALIZATION: People will try to avoid market transactions: barter, vertical integration, and self-sufficiency will expand.

EXAMPLE: Johnny Rogers bought a San Diego service station under gas price controls to assure gas for himself and his friends.

QUESTION 7: What would happen to the amount of bread available for purchase under a price ceiling?

ANSWER: Unable to capture the value of the bread to consumers, the quantity of bread available will fall, as some bakeries and bakers go out of business and others shift into alternative baked goods.

GENERALIZATION: A price ceiling reduces both the price received by the seller and the quantities of a good provided by suppliers.

EXAMPLES: Deterioration of the South Bronx and the explosion of condo and office conversions under rent controls; gas stations closing or cutting their hours of operation under gas price controls; the capping of "old" natural gas wells under natural gas regulation.

QUESTION 8: What would happen to the costs of finding bread under price controls?

ANSWER: Because there is less bread available at the lower price (i.e., there is a shortage) and because the "market" price no longer provides accurate information about cost and availability of bread, the costs of search and acquiring information about bread availability will rise.

GENERALIZATION: Since price controls mean that price no longer allocates the scarce goods in question, some other allocative device must be chosen. This eliminates the market's ability to transmit very low cost information about availability and prices, raising the costs of search and acquiring information.

EXAMPLES: The difficulties of finding a rent-controlled apartment; AAA announcements of the % of stations open each weekend, and added search for an open station under gas price controls.

QUESTION 9: Will there be more or less discrimination against Pygmy Eskimos (a seemingly safe discriminated against group) under price controls?

ANSWER: More. Without controls, if I refuse to sell to someone, it lowers my profits and so costs me something--discrimination is costly. Under controls, the cost of such discrimination is zero, as lots of more desirable (to the discriminator) groups are more than willing to buy as well at the controlled price.

GENERALIZATION: Since price controls prevent prices from rationing scarce resources, some other way of discriminating among demanders must take its place. By lowering the cost of discriminating, price controls increase discrimination.

EXAMPLES: Discrimination against families with kids or pets, lower income families (higher risk of payment), more people per unit (usually poorer, or disliked racial groups) under rent control; discrimination against smaller and riskier borrowers under usury laws; discrimination in favor of bigger customers and owned subsidiaries under steel price controls; The Apartment, starring Jack Lemmon; discrimination in favor of your own family members under rent control.

QUESTION 10: As a price control was left on over time, what would happen to the severity of the shortages?

ANSWER: Since over time, more and more bakeries will be due for replacement or renovation, but the profit incentive for production is weak, the quantity of bakeries and the availability of bread will both tend to decline progressively and the shortage will worsen.

GENERALIZATION: Price controls reduce the financial incentives to supply a good reducing maintenance of existing supply sources and reducing incentives for new sources to enter, which leads to a progressive reduction over time in the quantity of a good available.

EXAMPLES: Deterioration of the housing stock over time under rent controls; deterioration in the available supply of "old" natural gas under price controls; reduced farm output in Third World countries when price controls hold down crop prices.

QUESTION 11: Who gains from price ceilings?

ANSWER: Those who get to allocate those resources (in their own interests) when the market is prevented from doing so (usually some governmental body) and those who actually acquire the goods more cheaply than otherwise.

GENERALIZATION: Price controls transfer power from market forces (individual preferences) into political forces, benefiting the political establishment and those best able to manipulate it.

EXAMPLES: Schools in the Northeast which get preferential natural gas rates; rent control bodies; subsidized western consumption of electricity (from Hoover Dam) and water.

(NOTE: This same approach can be repeated for a generic price floor as well, but space precludes doing so here.)

Shortages and Public Utilities

John P. Cochran, Metropolitan State College-Denver

A perceptive student may offer public utilities as examples where prices are controlled but shortages do not occur. Here is a counterexample: In growing cities, booming housing construction frequently confronts price controls on natural gas, water, and other utilities. Local utilities commonly try to adjust to the resulting shortages by restricting the number of "taps" (connections) for these services. Builders have at times countered by putting multiple single-family dwellings on common water or gas taps. Then local public officials have countered by restricting building permits. And so on. These adjustments have, on balance, restricted the growth of housing and caused the prices of existing housing to soar.

Price Ceilings and Opportunity Costs

Carole E. Scott, West Georgia College

Suppose the demand for bread increases, that is, at every price people want more bread. This means that more can be charged for every possible level of output. To help the poor and prevent bakers from enjoying so-called windfall profits, the government prohibits sellers from increasing the price of bread. Without the incentive of a higher price, bakers will not increase their output of bread. Thus, at the existing price people will wish to buy more bread than is available. As a result, people will show up at stores before they open in order to try and be one of those who gets some bread. Thus, long lines will form. There will be an added cost to buying bread: waiting in line. For some people the opportunity cost of standing in line will be higher than the price increase which would have occurred if the government had not prevented price hikes. Some people will incur the cost of standing in line but not get any bread. Clearly, the government has not prevented a rise in the cost of obtaining bread, but it has prevented more bread from being available to buyers.

Adjustments to Price Controls

Ralph T. Byrns

Elaborate on the adjustments that some people make in response to price controls. Examples of the ingenuity of people who want to finesse controls help students see the variety of adjustments people develop in response to diverse incentive structures.

- a. The gasoline shortage of 1974-75 caused many people to get up earlier in the morning in attempts to be at the front of the queue that formed at many service stations. A standard signal that a station was not pumping gas was for attendants to lay their hoses over the pumps. Many consumers persistently "topped-off" their tanks whenever possible, when otherwise they would have let their gas tanks drop close to "Empty" before filling up. (This is an example of how consumers build private inventories of products anticipated to be unavailable.) Some station owners tried to beat price controls by such subterfuge as giving a "free" tank of gasoline to customers who purchased a lucky rabbit's foot key chain---for \$25-35.
- b. "Old" oil became "new" oil and "domestic" oil became imported oil when price controls varied for crude oil beginning in 1975. The price was severely restricted (to roughly \$4.00 per barrel) for domestic oil pumped from wells discovered before the Arab oil embargo, but was permitted to be much higher (roughly \$10 per barrel) for imported oil or domestic discovered during the energy crisis. Oil companies adjusted by drilling new wells next to old wells they shut down; miraculously, they discovered "new" oil. Along the Texas border, oil was exported to Mexico, and then "imported" at the higher price (a road was widened in Nuevo Laredo, Mexico, to allow oil tanker trucks to turn around and truck oil back into Laredo, Texas.) And on and on. The Justice Department was still filing charges as recently as 1982 against companies that tried to finesse these two-tiered controls.
- c. Point out that price supports in agriculture have not prevented farmers from experiencing severe financial problems, as indicated by widespread farm foreclosures during 1984-86. Suggest that price floors encourage some people to begin farming, borrowing funds or investing all their financial capital in the process. Many of these people err on the side of optimism, and so are "marginal" farmers who tend to be wiped out if things change slightly for the worse. The long term answer for farmers threatened by bankruptcy is not higher price supports, because higher price supports will merely encourage a new wave of marginal farmers to enter this market on a shoestring.

You can make this point strongly by asking students if they think that the U.S. federal government could create a domestic banana industry by guaranteeing a price floor of \$10 per pound of bananas. After suggesting that the industry would emerge in Florida or south Texas, appeal to their intuition to suggest that many of these banana growers would be "marginal", and threatened by bankruptcy from mildly bad weather or some other unforeseen problem.

Micro Responses To Policies

Punishment and Crime

Mark Zupan, University of Arizona

As a simple comparative statics example of how economists look at crime, tell students that Massachusetts has the highest auto theft rate in the country. Somerville, Cambridge, and Allston always rank in the top 10, as far as cities with high auto theft rates go. Ask students why this is so. Is it because people in Massachusetts are more evil? Why are the equilibrium points shown in Figure 4-8 for Massachusetts far to the right of other states?

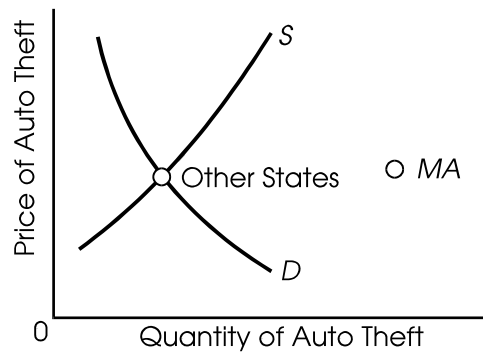


Figure 4-8

ANSWER: In Massachusetts auto theft is only a misdemeanor and not a felony. Rumor has it that it was changed from a felony to a misdemeanor when the son of a prominent state legislator was caught joyriding several decades ago.

Cracking Down or Messing Up

Gary Galles, Pepperdine University

When a social problem attracts public attention, whether it is littering, jaywalking or illegal drug dealing, the result is often a political program designed to solve the problem by cracking down on offenders. Unfortunately, however, hasty political solutions often fail to anticipate the results from the new incentive structures created, and may make the problem worse instead of better. Some simple examples to illustrate this might include the following:

1. Last year, jaywalking in downtown Los Angeles became a public issue and a crackdown using overtime police officers to monitor and fine jaywalkers was proposed. The safety considerations which prompted the crackdown would not be solved by this action, however. While jaywalking might be reduced somewhat, jaywalkers would now spend increased time looking for police and relatively less looking for cars, and any pursuit would involve police officers in risky jaywalking as well, thereby increasing the accident risk. Further, those officers could have provided other types of safety that the public might well have valued more highly.
2. Putting in crosswalk markings has long been considered a safety enhancement, yet some places are now sandblasting off those markings as a safety measure. It seems that pedestrians, by far the lowest cost accident avoiders, were being lulled by the markings into a false sense of security, not taking sufficient avoidance precautions, and accident rates were going up rather than down.
3. Last year it was proposed in San Diego that litter penalties and enforcement be increased and a new litter court be established to lower the costs of litter in the area. It wasn't considered that there are two types of responses possible to such a crackdown: littering less or littering smarter. If people chose to litter smarter, they would litter when and where the odds of being caught were lower. This would be in more isolated, scenic areas, where there are fewer police as well as fewer residents. Increased litter in such areas may actually be more costly than decreased litter elsewhere, both because the aesthetics spoiled would be greater and the cost of cleanup would also be greater in such isolated areas. In addition, the alternative use of the enforcement resources would be foregone.
4. Cradle to grave toxic waste tracking laws, to begin at some known future date, actually increase toxic waste dumping in the interim.
5. Drug crackdowns, which raise the price and profitability of drugs that do change hands, may induce increased entrants and attempts to distribute drugs. Those entrants may remain after the crackdown, and more drugs may be sold afterwards than if there had been no crackdown. You can extend this idea to consider differences between policies that shift supply, crackdown on sellers and those that shift demand, crackdown on users.

Selling Babies

By Ben Collier, Northwest Missouri State University

After covering the introductory topics of supply and demand and exchange I find it extremely useful to see if my students are able to apply these concepts to a nontraditional application. Namely, the possibility of selling babies. Not only is there certain shock effect value but it beautifully illustrates some basic points which we try to teach. Concepts such as 1) buying something doesn't mean that you can do anything you want to with it, 2) goods flow to those who value them the most, not the richest, 3) the gains from specialization. This can also lead into an interesting discussion regarding the "protection" offered to orphans through adoption agencies (making sure they receive "proper" parents) versus the lack of "protection" for children of natural parents. Although I generally win very few converts, the students and I find the discussion fun and long after they have forgotten definitions and facts they will remember this example.

Adoption

Ralph T. Byrns

If you cover the market solution for adoption described in the text, you may want to use some of the following questions as springboards for class discussion.

- a. Would the ideas expressed in this issue seem less controversial if couched in terms of buying and selling the rights to be parents, with all the responsibilities that implies, instead of baldly discussing the buying and selling of babies? (Student opinion.)
- b. Should adoptive families be more closely regulated than biological families? (Student opinion.) Appoint a student to be in charge of a state agency to detect and curb child abuse, and pose the following problem: "If you have a limited budget to perform your function and three lists of children--adopted, in foster care, and those residing with their natural parents--where would you send your investigators first? Second? Last?" (Mention the motivations that might exist for members of these three groups to have children. Foster parents may be good hearted people, or they may be most interested in the income from caring for children in a foster home. Most natural parents may want their children, but others may view their kids as unfortunate accidents. Adoptive parents definitely want children, or at least they did at one time--the motivations of some people in these three groups may change over time.)
- c. Suppose you were in charge of a state adoption service and wanted to ensure the job security of agency employees. How might you respond to declining numbers of children available for adoption and growing numbers of couples trying to adopt? (ANSWER: make the application process more rigorous; potential adoptive parents are willing to jump through hoops up to the value of their demand prices.) Is it possible that your policy changes would increase the size of your agency? (ANSWER - yes. A 1979 study found that states' employment of adoption workers was negatively related to the per

capita numbers of children available for adoption, and had grown across time as this figure had fallen.)

- d. At what age should children's opinions at least partially determine what happens to them? Would you specify a different age for children going through adoption than for children being separated from one parent or the other because of divorce? If so, why? If you accept the free market solution for adoption, at what age should the sale of a child be prohibited? Why? (All these questions call for student opinion.)

Chapter Five

Elasticity

A Rubber Band Analogy

Gary M. Galles, Pepperdine University

I have found that the simplest way to help students remember the concept of elasticity of supply is to use a rubber band analogy. I have them define P as the pressure with which you pull on the rubber band and Q as the length of the rubber band (length is, after all, a quantity), and elasticity of supply as the relative responsiveness of the length of the rubber band to changes in the pressure applied.

I demonstrate in class a few points. First, as Pressure (P) increases, length (Q) increases, as it should on a supply curve. Second, for equal percentage increases in pressure ($\%DP$) I get smaller percentage increases in length ($\%DQ$)--the rubber band's elasticity ($\%DQ / \%DP$) is falling. I tie this to the fact that for a typically shaped set of cost schedules, marginal cost increases at an increasing rate in the relevant range in the short run: since marginal cost is a competitive firm's short run supply curve, the standard case is one of increasing elasticity of supply by a competitive firm. Third, I note that there is a limit to the length that the rubber band can stretch, and tie that into the possibility of a short run physical capacity constraint at some large output, at which point supply would be perfectly inelastic.

Cocaine and the Elasticity of Demand

Michael Kuehlwein, Pomona College

To illustrate the concept of the elasticity of demand and its implications for prices and output, I like to discuss the world market for cocaine. In the late 1980s, the Drug Enforcement Administration (DEA) estimated world cocaine production was roughly 400 tons a year. Then in 1989, authorities seized 160 tons of cocaine, or 40% of the assumed world supply, and cocaine prices did not rise significantly. I ask my class what this seems to imply about the demand curve for cocaine. Students are usually able to determine it suggests the demand curve is close to horizontal.

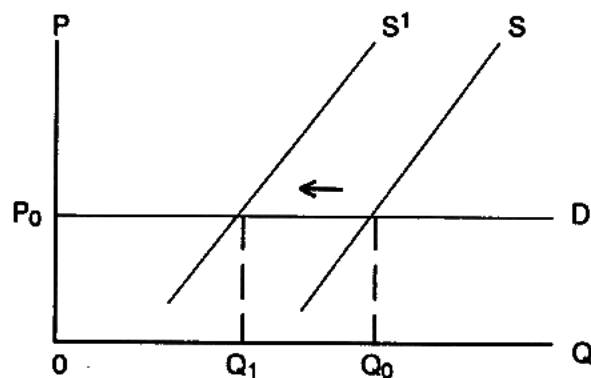


Figure 20-1

Then we discuss what that implies about the demand for cocaine: that it is extremely sensitive to the price of cocaine (very price elastic). That usually strikes students as implausible, since cocaine addicts are probably willing to spend almost any amount to satisfy their habit. This leads to a revision of the shape of our demand curve to a more vertical inelastic one. But then that seems inconsistent with the events of 1989:

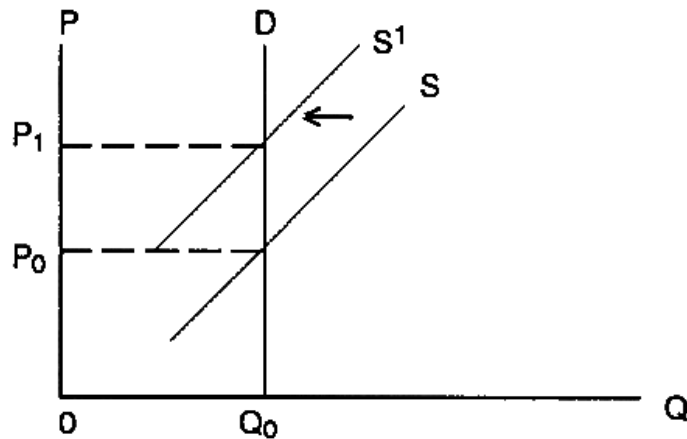


Figure 20-2

Finally, we usually conclude that these seizures probably did not have a significant effect on the supply of cocaine. Perhaps cocaine production was much higher than previously estimated, perhaps there were significant inventories, or perhaps the seizures merely offset increases in cocaine production which left supply fairly constant. I end the exercise by telling the class that after the events of 1989, the DEA significantly boosted its estimates of world cocaine production and consumption, consistent with our analysis.

The Elasticity of the Demand for Murder

Mark Zupan, University of Arizona

As an application of elasticity, tell your students that some applications are more lively and interesting than others. Take the case of the demand curve for murder. There are some philosophers who believe that it's completely an irrational act of passion and that murder would be committed no matter what the expected price faced by a prospective murderer. Ask your students to graph the demand curve for murder if such philosophers are right. (This demand curve is perfectly inelastic, with quantities of murders on the horizontal axis and the price (punishment?) on the vertical axis.) Ask, "What is the elasticity of demand for murder in this case? (Answer: zero.)

[As a side note also ask them what the equilibrium price of murder equals--i.e. (cost of punishment x probability of being arrested) x (probability of being convicted)]

There are other philosophers who believe that murderers are rational and respond to the price of committing such crimes. Ask your students to graph the demand curve for murder if this alternative school of thought is right. Have them suppose that 30,000 murders are committed nationally per year if the average sentence served is 30 years, but the murder rate rises to 50,000 annually if the average prison term is only 12 years. Assume that 60% of murderers are caught in either case. Ask your students to calculate and name the elasticity for these numbers. (Answer: this sentence elasticity of demand for murder is $-7/12$.) Now have them compute murder elasticities based on varying the probability of getting caught and being convicted, or varying the probability of execution.

Increasing the Elasticity of Demand for Having Babies

Gary Galles, Pepperdine University

The following true example has been an effective way to reinforce my students' understanding of demand elasticity. The hospital where my youngest child was born would reduce the price it charged insured couples for delivering babies: if you furnished proof of insurance 30 days in advance of the due date and committed yourself to delivering your baby there, the hospital would accept the typical insurance payment of 80 percent as payment in full for the services rendered (i.e., they would bill the insurance company, which paid 80 percent, then forgive the remaining 20 percent owed by the parents). I use this as an elasticity example in class. I show students how reducing their prices by 20 percent in the above manner would increase the number of births at the hospital far more than a 20 percent cut in the total charge for delivery--that is, that the demand curve facing the hospital for delivering babies was far more elastic under their policy than an across-the-board 20 percent price reduction. I demonstrate that the reason for this is that an across-the-board 20 percent cut in the hospital's price corresponds to a 20 percent price reduction to parents (who are still liable for 20 percent of 80 percent of the original price), while a 20 percent price reduction under their policy corresponds to a 100 percent price cut to the parents, using a numerical example like the following:

Customary Fee: \$2000, 80% Insurance: \$1600, Parents' Liability: \$400

20% Fee Reduction: \$1600, 80% of \$1600 Insurance: \$1280, Parents' Liability: \$320

20% Fee Reduction: \$1600, 80% of \$2000 Insurance: \$1600, Parents' Liability: \$0

This pricing policy is a way for the hospital to generate a demand schedule with approximately five times the elasticity of the parents' demand schedule (i.e., for a straight line demand curve, a 100 percent reduction in price to the patient would increase the quantity response to five times what it would be for a 20 percent reduction in price to the patient), making it more profitable to lower prices in their particular manner than across the board.

Elasticity of Demand and Movie Theaters

James A. Kurre, The Penn State University - Erie

To motivate and enliven a discussion of price elasticity of demand, I introduce the concept by posing the following problem:

"You have just inherited a movie theater from a long-lost uncle. When you visit the theater, your uncle's manager enthusiastically greets you and says that she has a good idea for increasing business. Specifically, she has noticed that there are typically a large number of unfilled seats at each showing, and she suggests that you cut the price of a ticket from the customary \$4.50 to \$2.00. She cites the Law of Demand as support, stating that you'll get more customers as a result. Does she have a good idea or not?"

This problem leads naturally to a discussion of how many more tickets can be sold at the lower price. Will the quantity demanded rise by a lot or a little? A good way to introduce the necessity of using relative (percentage) measures of the change in quantity and price is to tell them that 50 more tickets can be sold, and then ask them if that is "a lot" or "a little." Typically, someone will point out that the answer depends on the number of tickets that you normally sell, and you can specify two cases--one in which 25 is the normal amount, and one in which 300 is the normal amount. The idea of using percentage changes springs naturally from this. The next step is to discuss the effect on total revenue generated by the different price/quantity combinations, which leads naturally to a discussion of the relationship between elasticity and total revenue.

After we've discussed all the relevant issues, I show a list of actual elasticity estimates for various goods, and discuss the determinants of elasticity in the process. I then go back to the original problem and ask them to guesstimate the elasticity of demand for motion pictures. I then show them the actual estimates, which are $-.87$ for the short-run elasticity, and -3.7 for the long run. This leads to discussion of why elasticity varies with the time period considered. It is also interesting to point out that a strategy of "Let's try the lower price for a couple of weeks and see what happens" will yield a wrong answer!

In the course of this example, students will frequently point out that more popcorn, candy, and pop will be sold if you have more customers, and it is possible to discuss complementary goods as a result. You can also discuss the cost side, since some aspects of this business would have a near-zero marginal cost. For example, regardless of the number of people in the theater, the same amount of labor is required to project the film.

Elasticity and Membership Dues

Roger L. Adkins, Marshall University

Most students are or have been a member of an organization in which dues payments constitute a requirement of membership. These students recognize that a dues increase, other things equal, will result in a drop in membership. Many students recall that some club discussions have centered on

the extent of the decline in membership given an increase in dues of X dollars. Generally, one group of students in these sessions argues that a large number of members may drop out of the organization given the increase in dues; others indicate that only a few at best would do so. Even students who have never belonged to clubs seem to find intuitive appeal in this example of elastic and inelastic demand.

Price Elasticity of Demand and Higher Education Revenues

Eric Steger, East Central University

At times, some students question the relevance of price elasticity of demand. To drive home its relevance I use the following table.

<u>Tuition Price/ Hour</u>	<u>Number of Students</u>	<u>Semester Hours Student</u>	<u>Total Semester Hours</u>	<u>Total Revenue</u>
\$25	4000	15	60,000	$60,000 * 25 = \$1,500,000$
\$30	3900	15	58,500	$58,500 * 30 = \$1,755,000$

Elasticity = $(1500/59,250)/(5/27.5) = .139$

Once the students see that Total University Revenue rises when tuition price rises, the "relevance" of price elasticity is made clearer.

Price Elasticity of Demand

William V. Williams, Hamline University

Many students are best able to see the applicability of economic analysis when assigned problems are related to current events. The news media (unconsciously) cooperate with educational purposes by frequently describing agricultural or other disasters in certain product markets in sufficient detail that they provide fodder for student exercise sets. I clip these articles, underline the parts germane for student analysis, and devise problems for classroom distribution.

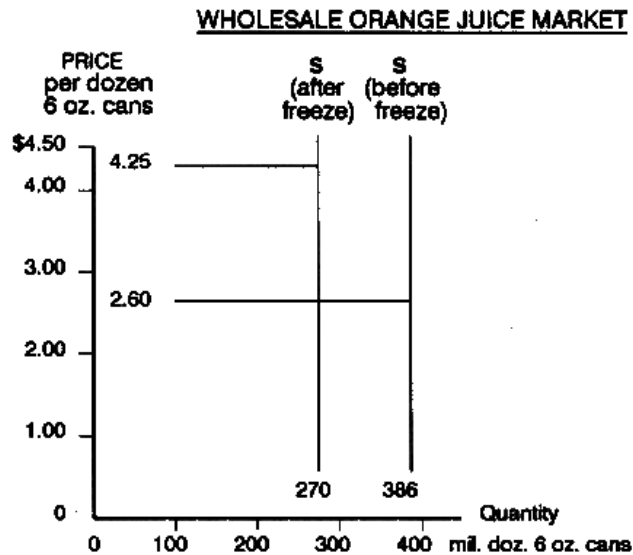


Figure 20-3

For example, an article from the Associated Press described a devastating freeze in which a 30 percent loss of the Florida orange crop was described as reducing the yield of frozen orange juice concentrate by 65 million gallons. The wholesale price of a dozen six-ounce cans of concentrate immediately rose from \$2.60 to \$3.55, and experts forecasted a further rise to \$4.25. I xeroxed the article with the assignment, which was:

From this AP article, we can locate two points on the implied demand curve.
 If 30 percent of the pre-freeze crop is 65 mil. gals., ($\text{crop} \times .30 = 65$)
 then the pre-freeze crop is approximately 217 mil. gals. ($65 / .30 = 217$)
 Since 1 doz. 6-ounce cans = 72 ounces, and 1 gal. = 128 ounces,
 then 1 doz. 6-ounce cans = .5625 gals. ($72 / 128 = .5625$)
 Therefore, assuming a vertical supply curve (in the very short run) --
 the pre-freeze supply is about 386 mil. dozen 6-oz. cans ($217 / .5625 = 386$)
 the post-freeze supply is 30 percent less, or 270 mil. doz. cans.
 Before the freeze, at a price of \$2.60 a supply of 386 was sold.
 Afterwards, when the price is expected to be \$4.25, supply will be 270.
 This gives two points where the two supply curves intersect the demand curve.

Assignment:

Compute the price elasticity of demand in the range between these two points.
 Will the wholesalers as a group be worse off after the freeze?

Hint: Compute total revenue before and after the freeze.)

Is this price rise socially desirable in efficiency and equity terms? Explain.
 Should government legislate a juice price ceiling to prevent "price gouging"?

Solution:

Price elasticity $e = [-65/((152+217)/2)] / [1.65/(4.25+2.60)/2] = -.73$

Total revenue after the freeze = 4.25×270 mil. = \$1147.5 million

Total revenue before the freeze = 2.60×386 mil. = \$1003.6 million

approximate net gain = \$ 144 million

From an efficiency standpoint, the price rise is socially desirable because

- a.) the reduced juice supply will be rationed out to those who want it badly enough (and are able) to pay the higher price.
- b.) the higher price will attract a supply of oranges from producers in other states and countries, which will keep the price from rising still further.

From an equity perspective, the price rise is not necessarily desirable.

- a.) The monetary gains and losses fall capriciously.
- b.) Those least able to afford the high price (the poor) will be excluded from juice consumption. Of course, the real problem that needs to be addressed is their poverty, not the "just price" of orange juice.

Government should not legislate a price ceiling.

To do so would cause inefficiency by distorting the allocation of resources.

The inefficiency will result in lower overall real income, making the poor even worse off.

Computing Point Elasticity

James M. Rock, University Of Utah

Point elasticity of demand or supply sometimes seems impossible for students to calculate given its typical formula: $DQ/Q / DP/P$. Rewritten as $DP/DQ/P/Q$, however, it is much easier to calculate point elasticity from a graph or table. The numerator of the ratio is the slope of a ray to the demand (supply) curve or price divided by quantity on the same row of a table. The denominator of the ratio is the slope of a tangent line to the demand (supply) curve or approximately the difference in price divided by the difference in quantity of the row above and the row below the row the point is at. If demand and supply curves are straight lines, the "approximately" disappears, as differences are constant throughout the table. This equation is also helpful in explaining that the slope of the tangent line is only the denominator of the ratio of slopes that makes up elasticity. The exercises for students that follow use this elasticity equation. (Note: students may know that the slope of the ray to a total curve is its average and the slope of a tangent line to it is its marginal. Consequently, given that economists typically put price on the vertical axis and quantity on the horizontal axis, the total curve is a demand-price (supply-price) curve, not a demand-quantity or supply-quantity curve.)

Point Elasticity Exercises: Assume that prices and quantities are measured in equivalent units. (Hint: Is the ray or the tangent line absolutely steeper?)

- a: Use geometry to determine which of the three demand curves in Panel A is elastic?--unitary elastic?--inelastic?

a _____
b _____
c _____

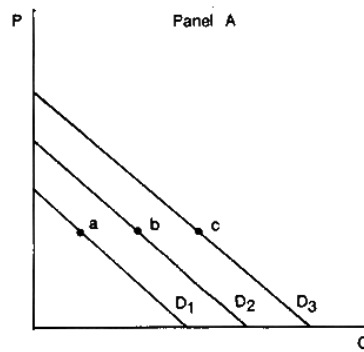


Figure 20-4 b: Use geometry to determine which of the three demand curves in Panel B is elastic?--unitary elastic?--inelastic?

D₁_____

D₂_____

D₃_____

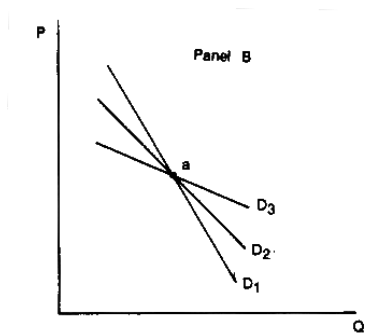


Figure 20-5 c: Use geometry to determine which of the three supply curves in Panel C is, at all points, elastic?--unitary elastic?--inelastic?

S₁ _____

S₂ _____

S₃ _____

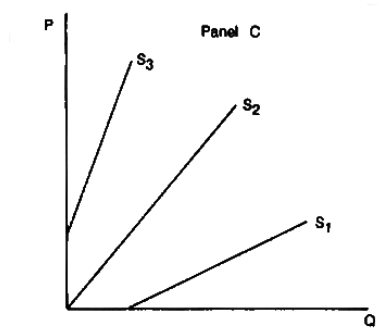


Figure 20-6 The Inelastic Demand for Cigarettes

Patricia L. Wiswell, Columbia-Greene Community College, Hudson, NY

I use the following example to explain the concept of inelastic demand. It also reinforces the notion that each of us considers different products to be necessities (based on our personal values).

First, I ask my students how many of them smoke cigarettes. A few students raise their hands. The price of cigarettes in vending machines is presently \$1.25 per pack. If the price were to double to \$2.50 per pack, how many of you would quit smoking? (Perhaps one student.) How many would cut your smoking in half? If the price were to fall to 60 cents per pack, how many of you would smoke twice as much? (No one.) For those of you who are non-smokers, if the price were to fall to 25 cents per pack, how many of you would start smoking (No one.)

Elasticity and the Fountain of Youth

Rock Vonburg, Eastern Wyoming College

The formula for price elasticity of demand can often be confusing to students, especially those with a weak background in math. An example I have found to illustrate the price elasticity of demand (and related concepts) is as follows:

Assume you are wandering around the hills and you stumble upon the Fountain of Youth. You are able to buy the land it's on for little or nothing and now you are faced with what price to charge customers. You want to maximize your revenue and have essentially no costs of production. You check innocently around the world with all the billionaires and multi-millionaires and find out what they would be willing to pay to be young again. From this information you develop the following relationship (reinforcing the Law of Demand in a way that students can easily grasp):

Price	Quantity	Revenue
-------	----------	---------

\$7	1	\$7
6	2	12
5	3	15
4	4	16
3	5	15
2	6	12
1	7	7

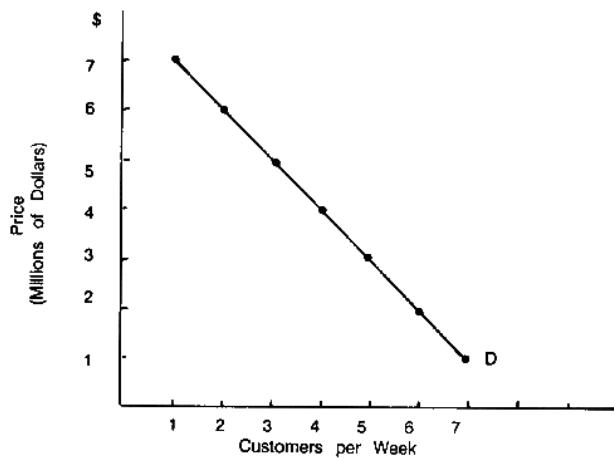


Figure 20-7 With these easy numbers you can point out how the relative changes of 1 unit in quantity and price change along each axis, so students get a general feel for how elasticity is measured. Clearly, revenue is maximized at a price of \$4 million per customer. You can show how revenue changes at different prices in the relatively elastic area and in the relatively inelastic area of the demand curve. The concept of marginal revenue can be introduced. The concept that even the purest monopoly market we can imagine is going to be subject to market demand can be introduced. We can introduce costs of production (advertising, hiring guards, putting up a fence, etc.) and show how this would affect our optimal "level of production." The example is easily recalled by students and can frequently be referred to throughout the semester as these related topics are introduced for more complete discussion and analysis.

Is the Demand for a Spouse Perfectly Inelastic?

Curtis D. Scribner, Pittsburg State University

Try to interpret the graph in Figure 20-8 before reading the explanation. Recall that for an item to exhibit perfect inelasticity of demand, the quantity demanded should not change when price changes. The correct interpretation: I wouldn't take a million dollars for my wife, but I wouldn't give a penny for another.

- In the absence of a law making polygamy illegal, would the demand curve be perfectly inelastic?
- Would you agree that quantity demanded is one because one is a necessity while two is a luxury?
- Does the absence of marginal buyers at \$.01 lead you to suspect that there is a hidden price?

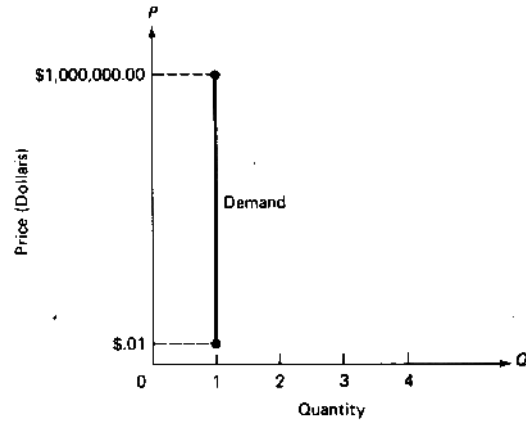


Figure 20-8

Elasticity, Pimples, and Obesity

Steven T. Call, Metropolitan State College-Denver

The elasticity of pimples with respect to eating chocolate candy is a measurement that most young college students can identify with. "Eat a candy bar and how many pimples do you get?" If you get a lot of pimples, the relationship is elastic. Otherwise it is inelastic. Extend the example. Some students may have a clear complexion but a sluggish metabolism. Although their elasticity of pimples with respect to chocolate may be low, their elasticity of weight gained with respect to chocolate consumption may be rather high. A two minute discussion along these lines helps students relax and assimilate the nontrivial elasticities.

Umbrellas and Rainfall

Pauline Fox, Southeast Missouri State University

I introduce elasticity as a measure of the strength or intensity of a causal relationship. Instead of starting with price elasticity of demand, I start with rainfall elasticity. The amount of rainfall per week is an important factor in the quantity of umbrellas purchased:

- a. The concept: Elasticity measures the strength or intensity of a causal relationship. A given change in rainfall causes a change in purchases of umbrellas. By what proportion?
- b. The point formula: % change in umbrella sales / % change in rainfall
- c. The arc formula:

$$\frac{Q_1 - Q_0}{Q_1 + Q_0} \qquad \frac{P_1 - P_0}{P_1 + P_0}$$

- d. What does the answer mean: I use the sentence "A 1% change in (rainfall) will result in an X % change in (umbrella sales)."

The next step is to examine price elasticity of demand, using the same steps. From there, it is easy to introduce income elasticity of demand, cross elasticity of demand, elasticity of supply. In addition, I try to introduce some elasticity concepts which do not have to do with quantities bought or sold. For example, I usually discuss an elasticity to measure the intensity of the relationship between study time and grade point average.

Linear Demand and Elasticity

Hugh G. Evans, Jr., Elizabethtown College

All economics professors are aware of the importance of making sure the student differentiates between elasticity and slope with regard to linear demand functions. Not only do we point out that elasticity can vary from one point to another on a given function, but we equally stress that for some commodities elasticity can change dramatically over a very narrow quantity range. In order to illustrate this point I use the following example.

I ask the class to try and guess the commodity I will describe in terms of the elasticity characteristics it might possess. These characteristics are as follows: (1) over a very small quantity range the item could be close to perfectly inelastic; (2) it then radically changes to become very elastic in nature, (3) and finally, it can end up exhibiting a negative price relationship which I point out is rather unusual. At this point the students are permitted to guess the item and discussion can proceed based on the suggested answers as time allows.

The answer is WATER. A possible explanation is as follows. Water can be a life sustaining commodity (necessity) which would carry a very high elasticity coefficient, but only over a rather small quantity range. Once a small amount has been consumed, water being abundant, it then might have a low elasticity measure. It might be noted to students that it is one of the few items which we sometimes expend large quantities of in order to consume a small amount. For example, in the summertime when we let the water run for a period of time until it becomes cold enough to drink. Finally, the negative price aspect comes in when you pay someone to relieve you of a commodity. For example, you pay to have the snow removed or your basement pumped, etc.

Elasticity Made Simple

Djehane Hosni, University of Central Florida

The concept of elasticity is always confusing to the students at first. It is important to emphasize the two separate elements embodied in elasticity:

1. Direction of change
2. Size of change in relative terms.

To simplify the presentation I rely on the use of arrow symbols.

	<u>Elastic</u> ($e > 1$)	<u>Inelastic</u> ($e < 1$)
Demand	$\% \uparrow P \rightarrow \% \uparrow Q_d$ $\% \downarrow P \rightarrow \% \downarrow Q_d$	$\% \uparrow P \rightarrow \% \downarrow Q_d$ $\% \downarrow P \rightarrow \% \uparrow Q_d$
Supply	$\% \uparrow P \rightarrow \% \uparrow Q_s$ $\% \downarrow P \rightarrow \% \downarrow Q_s$	$\% \uparrow P \rightarrow \% \uparrow Q_s$ $\% \downarrow P \rightarrow \% \downarrow Q_s$
	P - Price Q_d - Quantity demanded Q_s - Quantity supplied	

Figure 20-9

This use of symbols clarified:

1. Relative change by noting the size of the arrows.
2. Demand and supply elasticity as the same in terms of size of change, but different in terms of direction of change where demand is inverse and supply is direct.
3. The common error of confusing change of direction with change in elasticity.

Demonstrating the Concept of Elasticity

Timothy E. Sullivan, Towson State University

Many students find the concept of elasticity a difficult one to "visualize" and harder still to see how the notion of elasticity can be applied in practical situations. I first describe elasticity as simply a measure of responsiveness to a stimulus. Things that are elastic have a greater "response" to a given stimulus than do things that are inelastic. To demonstrate this I bring a racket ball and a squash ball to class and drop them from an identical height onto the front desk. The racket ball, which is more elastic than the squash ball, of course bounces much higher and longer than the relatively inelastic squash ball. Not only is the point of elasticity more intuitively obvious by visually demonstrating this, but you can then point out that the strategy of playing a game of racket ball versus playing squash is, in part, dictated by the properties of the ball. That is, relative elasticity alters the practical aspects of these two similar, yet different, games.

A further use of this example is to illustrate that while the squash ball is relatively inelastic, it is not perfectly inelastic. That is, it does respond somewhat to the given stimulus. Likewise, the relatively elastic racket ball is not perfectly elastic because it does respond "through the ceiling" in response to the given stimulus. The relevant comparison is often is how often one ball bounces relative to the other ball.

A Mnemonic Trick for Distinguishing Elastic and Inelastic Demand

Tran Huu Dung, Wright State University

After a lecture on the price elasticity of demand, most students can associate perfectly inelastic and perfectly elastic demand curves with the vertical and the horizontal lines. However, it is almost certain that very soon thereafter few students would remember which case corresponds to which shape. Even for experienced teachers, it could take a split second to recall. The following mnemonic trick guarantees that they will never forget this concept for the rest of their lives.

Simply notice that (1) the word inelastic begins with an "i," which resembles the vertical shape of the perfectly inelastic demand curve, and (2) the word "elastic" begins with an "e," whose horizontal middle bar should bring to mind the horizontal shape of the perfectly elastic demand curve (see Figure 20-10).

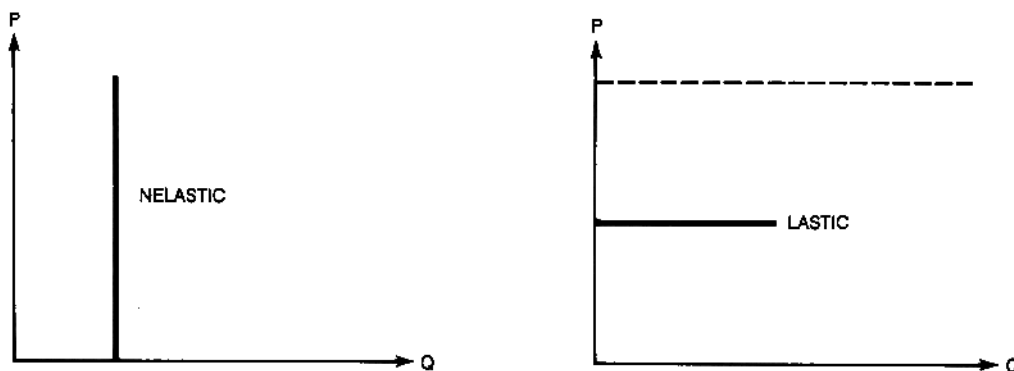


Figure 20-10

A Pythagorean Lesson on Elasticity

Josef M. Broder, University of Georgia

I have long been fascinated by Pythagoras' sand-box proof of his famous geometric theorem. As described in Jacob Bronowski's *Ascent of Man*, Pythagoras proved his theorem by placing and rearranging small squares and triangles in a sand box. The simplicity of his approach lead me to develop a similar lesson for explaining relationships between elasticity, marginal revenue, and total revenue.

My Pythagorean lesson consists of a metal board upon which three graphs are drawn in a vertical sequence. At the top is a demand schedule, in the center a total revenue schedule, and at the bottom a marginal revenue schedule. Magnetized color-coded squares and triangles are used to show the relationships between elasticity, total revenue, and marginal revenue.

First, three red rectangles are used to illustrate total revenue associated with P_1 on the uppermost demand graph. Next, these rectangles are transferred to the center total revenue graph to plot total revenue associated with P_1 and Q_1 . Returning to the top graph, four green rectangles are used to illustrate total revenue at P_2 . These rectangles are also transferred to the center graph where a total revenue at P_2 and Q_2 is plotted. This procedure is then repeated for P_3 , using three blue rectangles. As the rectangles are arranged on the board, I instruct students to observe changes in total revenue associated with price changes toward and away from unitary elasticity.

Marginal revenue relationships are shown by placing triangles in a step-wise fashion on the center total revenue graph. The height of each triangle designates the change in total revenue from a change in quantity. Next, these triangles are moved to the lower marginal revenue graph and a marginal revenue function which becomes negative at unitary elasticity is plotted. Given the large price and quantity changes, total revenue squares and marginal revenue triangles are plotted on the midpoints.

This elasticity lesson is simple, straight-forward and requires a minimum of mathematics. A magnetic board can be viewed upright and works well for large class presentation. Similar models can be constructed on a flat surface or, if one were a true Pythagorean, in a sand box.

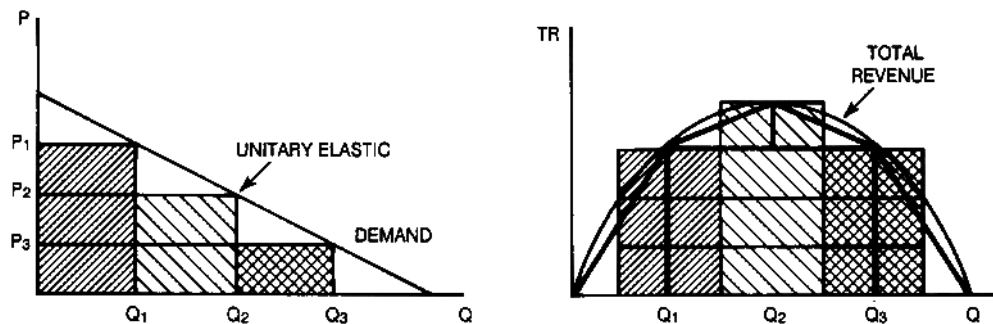


Figure 20-11

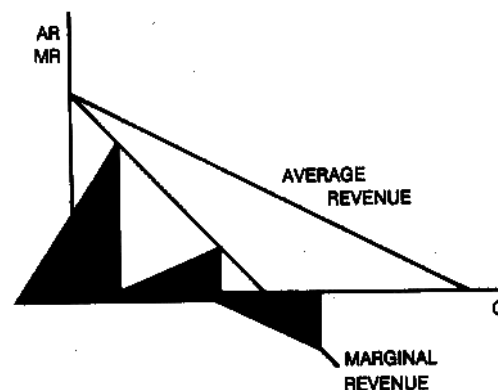


Figure 20-11a

Explaining Why Relative Demand\Supply Elasticities Determine the Proportion of a Per Unit Tax that Will be Borne by Demanders

Mark Zupan, USC School of Business

After explaining to my class why the proportion of any per unit tax borne by demanders equals $E_s/(E_s + E_d)$ and giving a few examples, e.g., $E_d = 0$ and $E_s = \text{infinity}$, I provide the following analogy:

Two fellows are walking along in the woods when they spot a grizzly bear coming over the horizon. Terrified, the two fellows break into a cold sweat and start to run as quickly as they can, with the bear in hot pursuit. The bear, being a faster runner, keeps gaining on them.

After running for awhile, one of the two fellows suddenly stops dead in his tracks and begins to change out of his loafers and into the running shoes he has been carrying with him in his backpack.

His companion can't believe how stupid a move such a shoe change is. The companion yells, "You must be crazy. Even with running shoes you can't possibly outrun a bear!"

The fellow who has stopped to change shoes replies, "I don't need to outrun the grizzly. I just need to outrun you."

The moral of the analogy is that if you see a bear in the woods, i.e., if the government is definitely going to place a tax on a good, it doesn't matter how fast you run relative to the bear. The only thing that really matters is how fast you run relative to the other fellow. The slowest, least price-responsive, most-pinned-down among the market participants, i.e., suppliers and demanders, is the party that will end up bearing proportionately more of the tax.

The Effect of Time on Own-Price Elasticity of Demand

Mark Zupan, USC School of Business

To convince my students that own-price elasticity of demand decreases the less time a consumer has to find substitutes, I ask my class whether they are more likely to be sensitive to the price charged by a store for a Christmas gift two months before Christmas or two hours before Christmas Eve.

Holding All Else Constant When Calculating Elasticities

Mark Zupan, USC School of Business

To convince my students that correct elasticity measures require that all determinants of supply and demand, save one, must be held constant, I give them the results of a survey of household energy

consumption in an eastern city of the US. The survey was conducted over 5 successive weeks. For each week, data collected included the price of heating oil, the price of natural gas, the average quantities of heating oil and natural gas bought by each household, and the average income per household.

Week	Oil Price	Gas Price	Income	Oil Q	Gas Q
1	1.10	1.12	200	100	90
2	1.09	1.10	190	90	80
3	1.10	1.12	210	102	108
4	1.09	1.11	190	100	70
5	1.08	1.10	190	100	70

I ask my students to calculate arc own-price, income, and cross-price elasticities of demand.

The students invariably become stuck at the start of the problem and ask over which arc the elasticities should be calculated. Most calculate arc elasticities based on the beginning and ending weeks' data and get screwy answers because they fail to realize that even though the oil price changes from week 1 to week 5, one cannot use the data from weeks 1 and 5 to calculate oil price elasticity of demand since the gas price and income also change over that arc.

To help the students along, I give them the following hint:

Suppose that you are driving home on the Santa Monica Freeway and that it is one of your unlucky days. You are driving in the middle lane and there are cars in the lanes on either side of you. The guy driving the beat-up pickup on your right takes out a shotgun and points it at you. Meanwhile, the guy in the low-rider on your left pulls out a 44 magnum. Both drivers shoot at you simultaneously and both hit you. You crash and burn. To what extent would it be correct to attribute your demise solely to the guy with the shotgun on your right?

As another hint, I ask my students to imagine that they were the CEO of American Airlines and that American was the sole provider of air service between Lubbock and Dallas, Texas. Suppose that, over a two-year stretch, you lower fares 50% and watch the quantity of passengers on this city-pair route increase by 50%. Over the same two-year stretch, however, income levels in the Dallas and Lubbock areas rise by around 100% on account of the rebound in oil prices. To what extent can you attribute the increase in passenger levels just to the fact that you lowered fares?

The two preceding hints encourage the students to realize that they shouldn't use contaminated elasticity measures, that they need to find data where only one determinant of demand and supply changes and all other determinants remain constant, e.g., the data from weeks 2 and 5 if they are trying to calculate the own-price elasticity of demand for heating oil.

Stretching Unrealistic Elasticity Concepts into Reality

Joseph Alexander, Babson College

For many economics students understanding how theoretical abstracts may be applied to the real world can be very frustrating. The graphic explanation of the elasticity of demand concept is a classic example, especially when the coefficient of elasticity is infinity or zero. The assumption that at a certain price, an infinite amount of a commodity would be bought, or that any amount would be paid for a needed service seems absurd. Nevertheless, it can easily be shown that perfectly elastic and inelastic demand curves are useful constructions for explaining extreme cases of demand/price relationships.

Consider Figure 20-12, which shows that an infinite amount of gold would be bought at a fixed price of \$35 per ounce. Indeed, for many years the U.S. Treasury was willing to accept all the gold it was offered at that price. The theoretical implication is that the demand for gold must be constant and that its supply is inexhaustible. The only way this can be expressed graphically is by a perfectly elastic demand curve. But the curve also shows that some lesser, and realistic, quantity, for example OQ, could be the actual amount taken by the Treasury!

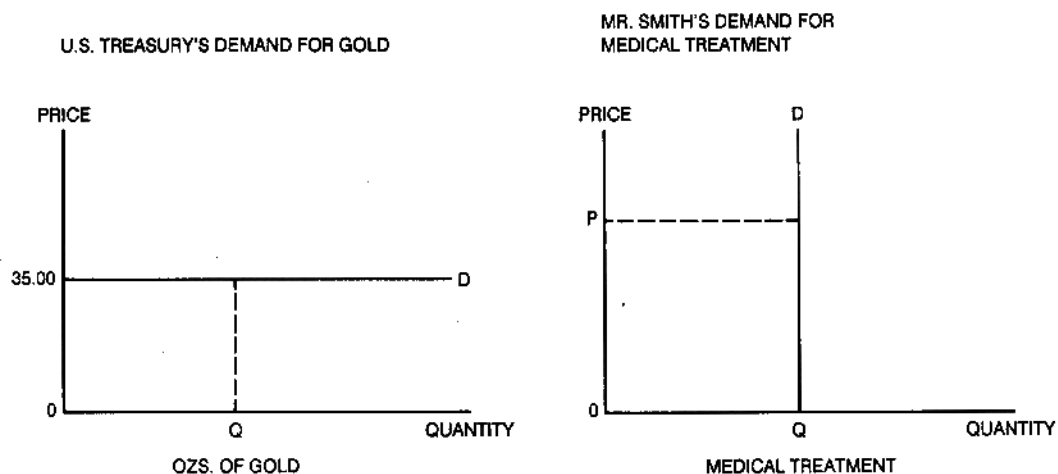


Figure 20-12

The practical usefulness of the perfectly inelastic demand curve can be demonstrated similarly. To illustrate, suppose critically ill Mr. Smith faces imminent death unless he receives both heart and bone marrow transplants. As shown by the perfectly inelastic demand curve for medical treatment, he would willingly pay any amount for life-saving surgery, even if the price were infinite! Although this scenario is totally unrealistic, a demand curve for something regardless of price must slope vertically. But the curve also indicates that the actual price he would have to pay, say OP, could lie anywhere between 0 and infinity!

These illustrative interpretations of the extreme cases of elasticity should help convince students that economic theory and economic reality are indeed compatible!

Unconventional Elasticity Measures

Ralph T. Byrns

When you introduce the concept of elasticity, emphasize its general applicability to any situation where quantifiable variables are systematically related. Untraditional examples include:

- a. The TV football game elasticity of divorce rates.
- b. The snow elasticity of ski lift ticket sales;
- c. The temperature elasticity of lemonade sales;
- d. The homerun elasticity of beer sales at a ballpark.

Then use such nonstandard examples to illustrate calculations of elasticity coefficients. Challenge your students to come up with their own examples. This makes these computations far less of a purely mechanical exercise for students, and aids them in retaining this concept. In the same vein, show how income elasticities can be used to predict the changes in demand if income grows or falls. Ask your students to indicate whether they think the following products are inferior ($e_y < 0$), normal ($0 < e_y < 1$), or superior ($e_y > 1$) goods.

- a. Winnebagoes
- b. canned vegetables
- c. Nissan 300ZX cars
- d. Seeds for home gardens
- e. College tuitions
- f. compact American cars
- g. rice and potatoes
- h. Tickets to horse races
- i. Vacations to Hawaii
- j. Lottery tickets

Now discuss how cross price elasticities can be used by a firm to predict changes in demand when the price of some other good is expected to change. Ask your students to predict whether cross elasticities will be positive (substitutes) or negative (complements) for the following sets of goods.

- a. golf carts and country club dues
- b. steak and potatoes
- c. Corvettes and Mazda RX-7s
- d. heavy shoes and galoshes
- e. shoelaces and tennis shoes
- f. lobster and crab
- g. MacDonald's and Burger King
- h. professors and textbooks
- i. typewriters and computerized word processors

j. video recorders and cable TV

If you ask students to first specify sign, and then whether the goods are complements or substitutes, they will remember these relationships longer. NOTE: Some relationships are not intuitively obvious (e.g., video recorders and cable TV). This allows you to make the point that the answer is ultimately empirical.

Chapter Six

Consumer Choice

Utility Analysis

Maximizing Constrained Marital Choices

Hugh H. Macaulay, Clemson University

Many students have difficulty with constrained maximization as an objective whenever people make choices. I present my students with a story that deals with untraditional prices and budget constraints. I try to look morose as I begin this tale, as if I had just come out on the losing end of a spat with my wife.

"When I was young, I thought _____ (famous actress from my period) was just the epitome of lovely womanhood. In my heart, I lusted for her. My wife-to-be thought _____ (movie star of period) was everything a man could be. Why did I settle on her? More strangely, why did she settle for me? Well, I had looked around and discovered that, given my physical and mental attributes and general prospects, the best I could do was marry _____ (spouse's name). I just couldn't do better. But why did she marry me, knowing the way I viewed _____ (actress's name)? She had looked around a bit too, and decided that in spite of my many flaws, I was the best she could reasonably expect to catch--_____ (movie star's name) had other choices available that he saw as preferable to my spouse. We both did the best we could."

Naturally, you can vary this language and embroider it with your own asides, etc., but it always captures students' attention, and helps them to see that economic choices and maximizing behavior extend far beyond the realm of standard choices about consumer goods, production decisions, and other examples we use in class. Further, the example shows that economists seek, and we usually get, the best that is attainable; perfection is not likely our lot.

Constrained Maximum in Principles of Economics

Seymour Patterson, Northeast Missouri State University

We live in a world of constraints. In fact constraints are so commonplace they go generally unnoticed. Gravity is a constraint that bounds us to the earth, though we pay no conscious attention to it. Money (or income) is also a constraint that bounds us to a "level" of living. We usually assert that given her income and given commodity prices, the consumer wishes to economize or maximize her utility by consuming the largest possible "bundle" of goods. Even after we plug in numbers for concreteness and draw a picture for further "clarity"--the abstraction of this concept of constraint does not go away. To add a measure of palpability, we offer the following analogy: suppose you live in a house with two rooms connected by a common wall with a door. One of the rooms (room A) has a fireplace in the center of the floor; the other room (room B) does not. On a fiercely cold winter day, room A will be hot and room B cold (see figure 21-1).

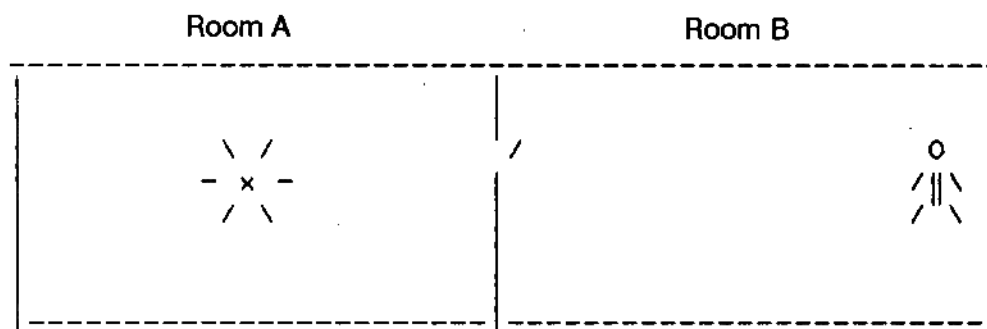


Figure 21-1

Someone standing at the east wall in room B would find that by moving toward the west wall of the room, she will feel increasingly warmer. If the door is locked and she has misplaced the key, then the constraint is "binding". The best she can do is stand next to the west wall of room B. However, if the door is open, the constraint is not binding and all the poor girl has to do is walk through the door and get comfortably close to the fireplace. Thus, there are two possible maxima.

Personal Computers: Economics and Rational Decisions

Eric K. Steger, East Central University

In my introductory economics classes, I typically use the decision regarding the purchase of a personal computer to help students use economic analysis in decision making. I first ask them to consider what needs they have. Do they need to compile a shopping list, an appointment calendar or a diary? If so, pen and paper for less than \$5 can do the job. If their needs include school papers, documents of 8 pages or less and personal letters, then an electronic typewriter for \$150-\$500 can do the job. Only when it is necessary to do college theses, lengthy documents, documents with graphics, serious creative writing and mail/merge for mailings do they need to spend \$600-\$1500 for IBM PC/XT compatibles.

Consumer Reports, March 1988, was valuable for this idea.

Maximizing Behavior

Charles Diamond, American University in Cairo

Students need to realize that the principle of maximizing behavior does not assume that consumers' behavior is purposive or that they are consciously aware of their utility functions; this principle lends insights into describing consumer behavior, but it is not the behavior itself. Astronomers similarly describe the orbital paths of planets around the sun; presumably the planets are unaware of their behavior. On the other hand, some students may say that while the principle of maximizing behavior is a theoretical concept (borrowed from math) that does not correspond to real-world

behavior. I counter with an example of their decision-making process in choosing their class schedules, and begin by writing a version of the following table on the chalkboard.

CLASSES			ECON 200	ECON 221	ECON 245
Preferences		Weight	rank/score	rank/score	rank/score
a.	no papers	10	10/100	7/70	0/0
b.	10:00-2:00	8	6/48	10/80	8/64
c.	lively instructor	10	2/20	10/100	5/50
d.	small classes	5	4/20	6/30	10/50
e.	discretion				
TOTAL WEIGHTED SCORE			188	280	164

Students are asked for a list of alternative classes they could have taken along with a list of their preferences or wants associated with classes and a weighting on a 1-10 scale (10 highest) as to its importance. The class with the highest score is signed up. This emphasizes that a choice or a decision made in the constrained maximizing framework involves trade-offs between preferences and the alternatives (constraints) at hand whether visibly as above or lightning quick in the mind.

Consumer Equilibrium in Burger King

Homayoun Hajiran, Wheeling Jesuit College

The following example has helped me to illustrate the concept of consumer equilibrium to my students. I asked them to reflect on their eating habits during their last visit to their favorite fast food restaurant. Having ordered a hamburger, a small order of fries, and a drink, a typical consumer will have a bite or two of the hamburger, then a few fries and perhaps a sip or two of the drink. Why don't they finish each item completely before starting the next?

A higher rate of consumption of an item (e.g., hamburger) results in lower marginal utility of that item. Hence, by switching from consumption of one item to another, they must have been continually trying to maintain their consumer equilibrium status

$$\left(\frac{MU_H}{P_H} = \frac{MU_F}{P_F} = \frac{MU_D}{P_D} \right)$$

Diminishing Marginal Utility, Fasting, and Sex

Hermilo Jasso, Jr., Lee College

I try to illustrate the principle of diminishing marginal utility in human terms by proposing the following thought experiment for students. Let's assume that you have been fasting for five days, perhaps you want to lose weight or because of spiritual reasons. You have gone five days without food and after the fifth day you to the nearest McDonald's and order a Big Mac. How will that first Big Mac taste?

(I give room for discussion)

Well, as you can see the first hamburger will taste like heaven. Let's say that you are still hungry, so you order a second hamburger. How will the second hamburger taste? Good, but not as good as the first one. Let's say we can measure the satisfaction on a scale of 1-10. We will call this utility. The first one will taste like a 10. The second one like an 9. So a picture will begin to develop. The third one like a 4, and so on. As you can see the principle of the diminishing margin utility begins to take effect. How will the fifth hamburger taste? Well, you will probably get a stomach ache or even diarrhea. (I give time for the class to laugh then I continue) This applies to the consumption of every product. Even to the more desirable product. On this planet it has to be sex and as you can see the same principle applies.

Diminishing Marginal Utility

Eric K. Steger, East Central University

I often use myself as an example to illustrate diminishing marginal returns. I ask my students if they have ever eaten at a restaurant that serves "all you can eat" meals? Most have. I ask them if they ever behave irrationally as I do when I am determined to consume a second or third plate of food? I explain that my marginal utility received for the second plate of food is less than the first but I continue eating up to the point where the marginal utility per plate of food consumed is zero. I do this because the costs of the meal are fixed and therefore the cost per plate consumed falls. I explain that an "all you can eat" offer is a "personal challenge" to me. Occasionally, some students point out that the long run potential costs of this behavior involve obesity, etc.

Humor and Diminishing Returns

Ralph T. Byrns

Some students erroneously get the idea that economists assume that marginal returns continuously diminish. To point out that returns may initially increase, but eventually diminish, ask why it sometimes takes a few jokes before a stand-up comic has an audience warmed up. (Returns may initially increase.) Point out that, after several jokes, only increasingly funny jokes will rock a crowd with belly laughs. (Diminishing returns) Finally, point out that people's embarrassed titters upon hearing a familiar joke shows that activities that initially yield positive returns may eventually yield only negative marginal returns. Few people find a joke amusing after hearing it the second or third time.

How the Marginal Utility for Candy Falls

By Sherry Wetchler, Economic Research Services

The concept of diminishing marginal utility can be initially difficult for students to grasp. First, begin by drawing a marginal utility curve on the blackboard like the one below. Explain that a consumer has diminishing marginal utility from a good if each extra unit of the good consumed adds less to total utility than the unit before. Next, ask the class if anyone likes candy bars. Choose a student to come up to the front of the classroom. Then, give the student a candy bar to eat. After the student finishes, ask the student to tell the class how much satisfaction he/she received and how much he/she would pay for the good. Continue this procedure until the student refuses to eat one more (I have found that this usually occurs after about three candy bars) and then, summarize.

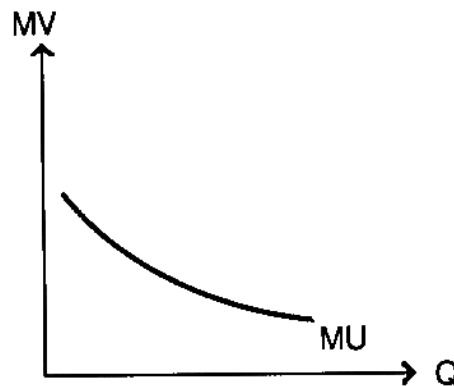


Figure 21-2

Time and Place Utilities

O. Henry Hoversten, Capital University

Time and place utilities can be demonstrated by exploring possible answers to such questions as:

- a. Why is today's metropolitan newspaper "worth" the price charged at the newsstand and tomorrow it may have zero or even a negative value?
- b. Why is a new wheelbarrow "worth" \$25 at the hardware store on Saturday AM, but only a small fraction of \$25 as soon as you bring it home and put it in your garage?
- c. Why may a football ticket to the big game be "worth" several times what you paid for it a week or two before the game and only a fraction of what you paid for it minutes before the game, and worthless a few minutes into the game?

Value in Use vs. Value in Exchange

Eric K. Steger, East Central University

To illustrate the different concepts of value I ask students what items would they try to get out of their homes if there was a fire, assuming that people are safe and they have 20 seconds to decide. I give them 20 seconds and then take up their papers. Typical answers include books, stereos, TVs, etc. Some students indicate that they will rescue pictures. I point out that the pictures have little value, if any, in exchange but substantial value in use. Televisions, stereos, etc. have some value in exchange and use but can be replaced rather easily whereas pictures are usually not replaceable.

The Rationality Assumptions

Steven E. Plaut, Oberlin College

Most students are disturbed by the rationality assumption. I make it appealing by using my large red cat, Tuli, as an example. Tuli is a rational consumer who:

- a. Is capable of choosing among different foods.
- b. Experiences diminishing marginal utility from food.
- c. Has a transitive preference ordering (Tuna is preferred to milk is preferred to dry food).

POINT: Rationality is so loosely defined that even a cat fits. NOTE: Animals obey many other "laws" of consumer behavior, including risk aversion and the ability to choose under conditions of uncertainty.

Making Students Introspective About Consumption

Ralph T. Byrns

Challenge students about whether their consumption patterns conform to the principle of equal marginal utility per dollar. Try to get students thinking about this concept, and some will probably later report to you that they find themselves thinking about whether they are making optimal purchases as they go down supermarket aisles.

Income and Substitution Effects at the Center

Joe Walker, University of Montevallo

Students need relevant and exaggerated examples to make some abstract economic concepts hit home. The following example does this for income and substitution effects:

You've been going to the center every day to eat lunch-- usually a grilled cheese sandwich (\$1.00) and a cola (\$.50). One day you go in, though, and the grilled cheese now costs \$1,000! Just as you begin to despair, your long lost rich uncle (or aunt) appears and, feeling sorry for you, gives you \$1,000 so you can buy your favorite sandwich. Do you buy the sandwich? Why not! You can afford it now, can't you? What has happened is that your real (apparent) income has been held constant and only relative prices have changed. In accordance with the Slutsky substitution effect, you now go for some other good (like hot dogs) and substitute away from the relatively higher priced grilled cheese.

Love as Complementary Neuroses

Gary Galles, Pepperdine University

As a brief, humorous illustration of complements, I have had some success with the following (taken from a psychologist friend):

I ask my students what type of person they are likely to "fall in love" with (be attracted to), and try to summarize their disparate answers by saying that they will tend to "fall in love" with someone who is complementary (in both senses of the term) to the way they are. What does this mean for someone who is neurotic, though?

For example, I ask my class what type of woman a "macho man" would tend to fall in love with. I let them respond until they see (which won't take long) that he would tend to fall for a woman with a complementary (matching) neurosis--one who tends to be overly dependent. I then ask about a woman who tends to be domineering--who will she go for? She will tend to match up with a man who we might call overmothered (i.e., one who can be dominated), since that is a complementary neurosis to a domineering woman. In other words, "opposites attract" may be a cliché about complementary neurosis. In some cases, however, having the same neurosis can be complementary. For example, neat freaks would tend to be attracted to others of a similar streak rather than slob (which is partly why Oscar Madison and Felix Unger could be called The Odd Couple, and why such mismatches are a constant scenario for situation comedies). Examples of what you would not tend to see would be a "macho" man with a domineering woman or two very shy and submissive types (how would they ever meet and raise the courage to start a relationship?).

This analysis also has implications for what happens when one partner acquires a new neurosis or overcomes an old one. If the respective neuroses become less complementary, disharmony in the relationship can arise and the change can be perceived as falling out of love. This may be why at the end of a relationship we tend to hear something like "I changed, but he (or she) didn't," with the implication that the changes made (or not made) were (or would have been) an improvement. Of course, we must note that the change could have been the beginning rather than the end of a neurosis. We could also ask about the chances for a neurotic couple whose neuroses don't exactly match, but she's sure she can change him to a more comfortable (for her) set of neuroses. She will always be trying to change him, and he will always resist -- discord will result and both will wonder why they aren't accepted for what they are (she, a meddler; he, comfortable with his own neuroses).

Is Public Transportation an Inferior Good?

Mark Zupan, University of Arizona

As an example of inferior goods, ask your students how many of them now use public transportation. After a show of hands, ask how many expect to use public transportation to get to their 25th class reunion (when they will presumably be substantially richer).

Normal and Inferior Goods

Gary Galles, Pepperdine University

I have found the following example very useful in: a) making students use and remember the concepts of normal and inferior goods; b) showing that the same good can be normal in some income ranges and inferior in others; and c) providing an example of a good that is at first inferior, and then normal, as income rises (all the other examples of this I have heard are for goods that are first normal and then inferior as income rises).

I have students consider a dog lover who especially likes large dogs, but who is very poor. In fact, he is so poor that all he can afford to eat himself is one can of dog food a day. Several sounds of disgust emanate from the class at this point, to which I reply that some people, even in the United States, are in this situation. I then go on to make a joke like "Besides, what's wrong with that? Dog food may be better for you than what you do choose to eat--at least it gives you a glossy coat and a healthy, wet nose, and if you're lucky, you might even get a "Hi-Pro" glow. Our dog lover obviously cannot afford to exercise his preference for dogs, because the opportunity cost of feeding one would be extremely high: food for the dog is food that he would have eaten himself; instead he goes hungry.

I ask the students what will happen to our dog lover's demand for dog food as his income rises from its present low level. While at the very first he may buy more dog food when he still can't afford much in the way of higher quality food (it would be a normal good in this income range), he will quickly substitute out of eating dog food and into other, preferred types of food when his income allows it [it would be an inferior good in this range -- the range where easing the income constraint allows the purchase of preferred, higher quality goods instead of the less-preferred, lower quality good, because the value of what is given up is less when more income allows more of your preferences to be satisfied (i.e., the marginal value of a dollar given up to buy the preferred quality item is lower, the higher is income)]. Once his income rises enough, however, he can begin to indulge his preferences for dogs. Over the range of incomes in which he would get more (or bigger) dogs as income rises, his demand for dog food would again rise, making it a normal good in that income range. If his income reaches a high enough level, he may even begin to replace the dog food with more expensive alternatives (such as Higgins, on Magnum, P.I., who feeds his "lads" steak), making dog food inferior in this income range as well.

I summarize this story by saying that a normal good is one you would like more of if you had additional income, but an inferior good is one you would like less of if you had additional income to buy the higher quality goods you really want.

Complementarity and Incompatible Goods

Ralph T. Byrns

Elaborate the idea that goods embody utility relevant attributes that determine price, cross, and income elasticities of demand, how rapidly utility diminishes, whether goods are substitutes or complements, etc. For example, candy has the positive attributes that it tastes good, provides quick energy, etc. It has the negative attributes that its sugar contributes to tooth decay, obesity, etc. The search for new cooking recipes is essentially the search for complementarities among different types of food. Combinations of attributes of certain goods makes the thought of fudge and sardine casseroles repulsive, while hot fudge, bananas, and ice cream sounds like a mouth-watering treat. Similarly, most people avoid wearing stripes with plaids, tennis shoes with tuxedos, etc.

An Example of a Giffen Good

Ali T. Akarca, University of Illinois at Chicago

The following example helps in explaining the idea of Giffen goods.

Suppose that you want to make a 10-quart pillow as a gift for a friend. You would really like it to be 100% down-filled, but can only spare \$40 for this pillow and down costs \$12 per quart. Polyester is an alternative filling costing only \$2 per quart. Consequently, you decide to make your pillow 20% down, and 80% polyester. What would happen if the price of polyester rose to \$4 per quart? You would have to make the pillow 100% polyester-filled. Its price, of course, need not rise

to \$4. Any increase in the price of polyester filling would cause you to buy more of it, making it a Giffen good for you.

After giving this example, I say to the students, suppose it is not a pillow but your stomach that you are filling, and invite them to come up with other examples of Giffen goods.

How to Illustrate the Case of a Giffen Good

Tran Huu Dung, Wright State University

Most students find it very frustrating to illustrate the case of a Giffen good using indifference curves and budget lines because rarely does a diagram come out right the first time.

Suppose that there are two goods, X and Y, and we want to show that X is a Giffen good, i.e., a decrease in its price would cause its consumption to fall. Here is the trick:

1. Do not begin by drawing the indifference curves. Instead, after drawing the two perpendicular axis the next step is to draw the two budget lines with a common Y intercept. Hint: Do not make these budget lines too steep.
2. Now draw the two indifference curves tangential to the two budget lines (I_1 and I_2 in Figure 21-3), making sure that (a) the tangency on the lower budget line (point E) lies very close to the horizontal axis, and (b) the tangency on the higher budget line (E') lies to the left of E.

Voila, the diagram illustrates the case of a Giffen good.

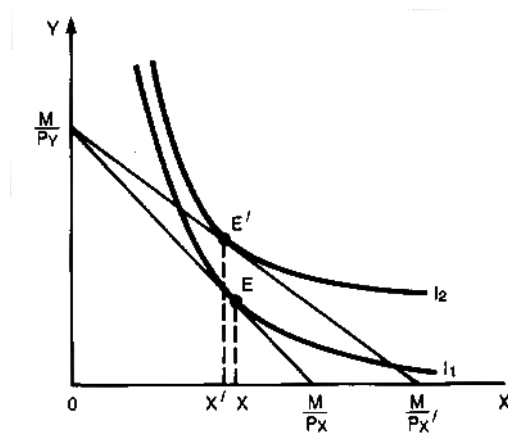


Figure 21-3

For advanced students, the reason why this would work can be given. Recall the Slutsky equation

$$\hat{Q}_x / \hat{P}_x = (\hat{Q}'_x / \hat{P}_x) - Q_x (\hat{Q}_x / \hat{M})$$










where the income effect (which is responsible for the perverse effect) is proportional to the budget share of the good. By locating E very close to the horizontal axis, we make this share large and, hence, increase the likelihood that the good would come out Giffen.

Distinguishing Normal, Inferior, And Giffen Goods

Alan Gin, University of San Diego

Understanding how the substitution and income effects differ among normal, inferior, and Giffen goods is a problem for intermediate micro students. Figure 21-4 aids in resolving this problem by using arrows of different lengths to indicate the direction and relative magnitude of each effect for each type of good.

It is most effective if you first distribute copies of the table and then proceed with standard graphical analyses of the substitution and income effects for each good, referring to the table where appropriate. Besides showing the direction and relative magnitude of each effect, the table can be used to emphasize certain important points, such as the fact that the substitution effect is always negative, that a Giffen good is also an inferior good, etc.

Effects of a Price Increase	Substitution Effect	Income Effect	Total Effect
Normal Good			
Inferior Good			
Giffen Good			










Effects of a Price Decrease	Substitution Effect	Income Effect	Total Effect
Normal Good			
Inferior Good			
Giffen Good			

Figure 21-4

The Paradox of Value

Daryl Gruver, Mount Vernon Nazarene College

To introduce the function of market prices, bring to class a cup of water, a jar of air, a candy bar, and something to represent an ounce of gold. Ask your class to rank the items according to their normal market prices, and then according to their value to human survival. Then question students about why the prices of these items are ranked in reverse order to their value to human survival.

Information and Transactions Costs

Duplicative Information and Decision Making

J. Thomas Davis, University of South Carolina

Students are sometimes prone to making quick decisions to economic problems based on what they think is the total needed information. I use the two illustrations shown on overhead transparencies. I show the transparency indicating a single head of an animal and then ask the class to tell me whether it is a bird facing in one direction or a rabbit facing the opposite direction. As they start to hesitate, I then show them the second transparency and tell them that even if they see many more figures without additional information, they still can't make an accurate determination. However, if they have sufficient information to see that the animal has bird-like legs, no amount of fast talking can convince them that the animal is a rabbit.

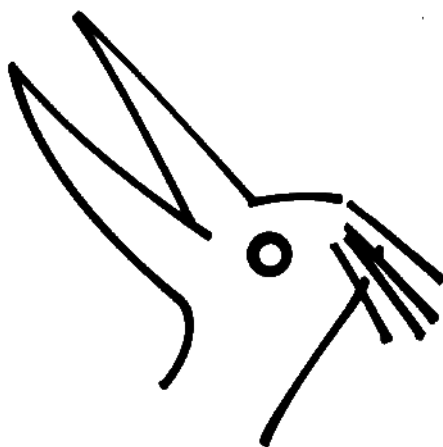


Figure 21-5

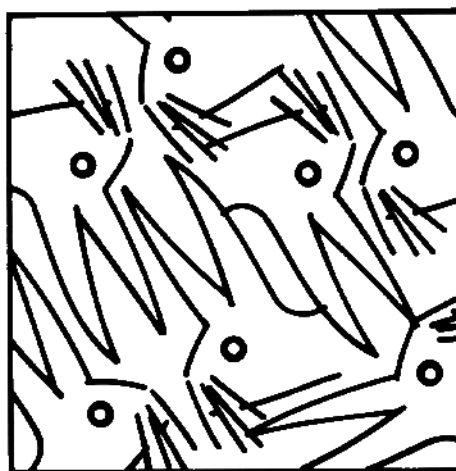


Figure 21-6

Looking for a Good (Enough) Man or Looking for the Best Man

Gary Galles, Pepperdine University

"Let's talk about an error common to the analysis of both romance and business. When a firm is looking to fill a job position or someone is thinking about whom to marry, it is common to hear that they are looking for the best candidate or Mr./Mrs. Right. Such a statement is incorrect. It would be correct in a world of costless perfect information (no uncertainty), but in such a world search would not be necessary. In the real world of uncertainty and often very costly information, however, this is not correct, because the costs of finding out about who is the best match will typically exceed the benefits. A more correct statement would be that you are not looking for the "best man for the job," but for one who is thought to be (when the relevant decision must be made) close enough to the best man that the costs of further search exceed the net benefits of finding someone better."

A statement in class like this one is certain to generate student interest and responses, typically protests that it is incorrect. That is one reason I have found such an approach ideal for introducing issues of costly information and search behavior. It gets students to listen, because it deals with things they care about, --jobs (second) and romance (first) and it can be used to make sense of things they are, or will become, familiar with.

Among the predictable results of uncertainty/imperfect information are:

1. divorce/firings: mistakes get made, and sometimes those involved find it less costly (not costless) to "get out" than to continue the "mistaken" relationship.
2. sometimes the "best one" gets away: you may turn down Mr. Right, because you thought that he wasn't "the one," but further search convinces you he was "good enough." Unfortunately, he may no longer be available.
3. easier divorces (layoffs) mean shorter courtships and more marriages (hires) as well as more divorces, (e.g., mandatory notification or layoff benefits for firms and the number of new hires).
4. prenuptial agreements (dismissal arrangements) lower the costs of marrying the wrong person, in part by controlling for strategic misrepresentation.
5. since perfect information is too costly, you look for lower cost imperfect proxies. Examples include dating behavior, "gossip" from mutual acquaintances, parents, "track record" so far, reputation, appearance...
6. people "fall in love" at school because the information is better (see people under more circumstances, for example) and the costs of acquiring it are lower (cheap dates are okay, built in social arrangements and common experiences, for example)
7. greater potential costs from mistakes, (e.g., AIDS or crucial decision makers) lead to more precautions
8. appropriable rents exist after specialized investments in the relationship have been made.

More implications can be drawn, limited mainly by your imagination. But the main point of uncertainty/imperfect information and the resulting implications of risk, unavoidable errors, search behavior and mitigating devices (like contracts) will be clearly made. This example can then be concluded by indicating the widespread extent to which the principles derived apply.

When Should You Get Married?

Barry P. Brownstein, University of Baltimore

The question of when to get married can be seen as an application of microeconomic search theory. Whether to get married or continue searching has certain expected benefits and costs. As long as the marginal benefits are greater than the marginal costs, continued search is wise. To go past the point where, at the margin, the costs exceed the benefits would be unwise. The student must at this point realize that economists are not taking the romance out of love-- everybody uses this type of reasoning whether they realize it or not.

But why are some people so indecisive about marriage? This is a good time to explain and illustrate the subjective nature of costs and benefits. Costs are not objectively measurable and are inexorably bound to choice. New information is available continuously and can change the decision maker's subjective estimates of the cost and benefits involved. Thus, one day the marginal benefit of continued search might exceed the marginal costs and marriage is not advisable. The following day, in the light of new information, the marginal costs of continued search might exceed the marginal benefits, making a trip to the altar a good choice.

Viewers Choice and Transactions Costs

Eric K. Steger, East Central University

I use the market for viewers choice and video tape rentals to help students understand how transactions costs influence consumption behavior. Viewers choice is a system that allows cable TV subscribers to receive a relatively new movie on special channels on cable TV and receive a special billing for the movie. Typically, the fee for the one time viewing exceeds the price one would pay to rent the same movie on videotape. I ask students, "Why is there a market for such entertainment?" I then explain that although the dollar price of viewers choice is higher than the video tape rental price, the overall or full price is lower when one considers transactions costs. The transactions costs include search time to locate the certain video tape, driving time and wear and tear on the car, waiting in line to check out and check in the tape, etc. When all of this is explained, the concept of transactions costs is usually clear.

Sensible Senioritis

Gary M. Galles, Pepperdine University

As we approach the end of another academic year, when senioritis reaches its peak among soon-to-graduate students and teachers start complaining in earnest about its epidemic proportions, it is time we gave some thought to the curious malady. It is time to defend those suffering from its effects, because it is a disease of the system rather than the seniors. Far from reflecting any sort of inherent character defect in the seniors, it is simply their rational response to change in the incentive structure they face.

Senioritis' primary symptom is a substantial reduction in academic effort which sets in toward the latter part of the senior year, and then rapidly escalates as "the end" comes into sight. It differs from many other diseases in that its sufferers are blamed for their own plight. However, they do not deserve the pejorative terms used against them ("you lazy bum" being one of the more sedate examples). They should rather be seen as responding in predictable, sensible ways to changes in both the benefits and the costs of academic effort brought about by dramatic changes in the educational, employment and social situations facing them during this time.

For those students going on to higher levels of education, the adverse incentives largely revolve around the fact that much of the convoluted application and acceptance process for more

advanced study is completed well before the end of the senior year. Batteries of standardized tests (SATs, GREs, LSATs, GMATs, MCATs and other members of the alphabet soup family) have already been studied for and taken. Not only had that test preparation taken time and energy away from other course work, but any further knowledge acquired afterward will not improve the results. Letters of recommendation, which require that teachers have good impressions of the student when written, are history as well, and you don't hear of teachers going to the extra effort to write "I take it back" letters if that student's ensuing performance falls off. Perhaps most importantly, acceptance commitments are made prior to the end of the school year. This and the knowledge that once the next level of schooling has been completed, no one will ever ask for your grade point average at the lower level, causes the significance of grade point averages to plummet once you are accepted. Therefore, class performance becomes much less important than before (provided you succeed in actually graduating), and it suffers correspondingly. Since each of these factors reduces the benefits that students receive from academic effort, they sensibly respond by working less than before (however much or little that was).

Similar incentives confront those seniors who have chosen to pursue employment rather than further education (though, for many, getting and keeping a job will be quite an education in itself). If a job has already been lined up, then not only did the efforts devoted to job search take away from studying, but any benefits of learning related to getting that job dwindle. Further, if work has already begun on a part-time basis, even less effort is left available for academics. If an acceptable job has yet to be found, then the process of filling out applications, running down (hopefully good) recommendations, going through interviews and days on the job, etc., raises the cost of studying in terms of the foregone alternatives, and students will predictably study less.

Graduation and the period leading up to it are also marked by dramatic social changes and the even greater effects of anticipating them. These adjustments, often highly traumatic, also siphon attention away from education. Many students will move shortly after graduation or may already be in the process, and preparations for and anxiety about moving, not to mention the difficulties of saying good-byes or of pledging eternal friendships, drain energy from academics (although the fact that they actually must write some coherent sentences in one another's senior yearbooks may be a compensating advantage). Boyfriends and girlfriends have to make some serious decisions about their futures, and both breaking off relationships and making wedding plans are known to be more than a little distracting. Social activities increase dramatically as well. There are special ceremonies to attend, proms to prepare for, banquets to go to (and off-the-cuff speeches to get ready if the hoped-for award comes through), and graduation parties to plan, enjoy, and recover from. Family celebrations, often including many of those relatives whose graduation gifts barely exceeded in value (if that) the psychic costs of seeing them, must also be attended. Both confrontations and accommodations with parents have to be worked out at well. And all of these raise the cost of doing school work.

Finally, by the end of their senior year, students are prisoners of their academic reputations. Those that have good ones find that it's a good time to try to "coast" on them a bit, since they don't need to worry about repercussions from teachers next year; those that don't find that the cost of overcoming them is too high for just one last term. All the seniors face this incentive structure, and they all know it. As a result, all students know that they can maintain their same relative standings

with less work, and performances suffer as they focus instead on learning to "play the game" at the next level.

All of these incentives work in the same direction--less attention to academics. But the result, senioritis, is not the fault of the seniors. It is the result of the system. So let's not be too judgmental of the ones we know. After all, most of us were seniors once (or twice) as well, and the most appropriate ending for, "When I was your age..." is "...I had it too."

We will never be able to eliminate senioritis, because these systematic end-of-the-year changes in students' incentive structures will persist. However, we can take steps to minimize its adverse effects. One way is to assign substantial last term projects as graduation requirements, forcing students to use what they have learned. Another way would be by teaching students more that they can see is intrinsically valuable (and training them to see that there are real values that are worth holding), and less of what they see as a senseless and irrelevant hurdle that must be overcome solely because it is required before they get on with their "real" lives. To the extent we can succeed in this, the importance of grades alone as a motivating factor will fall, and the senioritis effects due to the decline of the motivation to get good grades will be reduced. But this result will not come from either berating or trying to reform the behavior of seniors; it can only come from an educational system doing a better job of what we want it to do. If senioritis is a major educational problem, blame the system rather than the students.

The Time Cost of a Consumption Activity

Edward Scahill, University of Scanton

Several years ago, the Chicago White Sox and the Chicago Cubs were in the unusual positions of being in the thick of their respective pennant races at the same time. As the summer months rolled along, both teams reverted to their usual positions near the bottoms of their divisions. While they were still playing well, an article in the *Wall Street Journal* noted the increase in attendance at the home parks of both teams. The article also observed that many of the fans that attended the Cubs games (on the north side of Chicago) were either very young or of retirement age, while White Sox games (played on the South side of the city) attracted many blue-collar workers.

After relating this part of the story, I ask why there appeared to be such large differences in the ages of the fans of these teams. After fielding a few possible explanations, I provide a hint: Wrigley Field (home of the Cubs) still is the only major league field without lights, so that all the home games of the Chicago Cubs must be played during daylight. Naturally, the opportunity cost of time is much lower for either a student on summer vacation or a retiree than for a fully employed worker. The full cost of attending a Cubs game, then, is very high for someone who works during the day, while the cost of seeing a White Sox game at night is much lower, even though the money prices of the tickets are similar for both teams.

NOTE: The Cubs installed lights a couple of years ago, much to the dismay of many people in the neighborhood.

Time and Demand

Ralph T. Byrns

Elaborate on the time costs of consumption by discussing the time absorbed by vacations, movies or the theater, or exquisite dinners at four-star restaurants. Emphasize that time is often as binding a constraint on consumption as income is, and that this accounts for the growing popularity of cheap, fast food restaurants such as the MacDonald's, the Colonel's, Pizza Hut, etc., even among affluent suburbanites. Another example: Gourmet meals that can be microwaved are absorbing larger shares of most grocery store freezers. This also explains why high monetary prices for airline tickets may be more economical than "cheaper" bus tickets or travel by private vehicles.

The "Best" Choice May be the Wrong One

Gary Galles, Pepperdine University

Students very early learn in an economics course that an action is worth taking if the marginal benefits exceed the marginal costs. However, they often forget that at the time a decision is made, many of those benefits and costs are in the future and unknown, so that the proper decision rule is that, given the (incomplete) information at the time the decision is made, actions for which the marginal expected benefits exceed the marginal expected costs are worth doing, but you can be wrong if those expectations aren't met. As a reminder to students that what looked like a good decision at the time it was made may well not be when their expectations are not met, I give several illustrations, including: a) the decision to have your 27th beer of the night; b) studying very hard for an exam that turned out to be much easier than expected; c) trying new products that turn out to be duds; d) whether coming to class seemed worthwhile after the fact; e) blind dates; f) the relationship between the current international debt crisis and decisions made in the inflationary and rising oil price environment of the late 1970s; g) food poisoning (you wouldn't have eaten it if you had known); h) venereal disease and AIDS (again, if only you had known); i) selecting who to marry; j) selecting a career; etc.

After such a discussion, students seem to remember that since current decisions involve an uncertain future, decision making involves expectations rather than certainties. Thus, the seemingly best choice at the time may turn out to have been the wrong one.

Demand and Illegal Goods

Thomas J. Shea, Springfield College

One argument about liberalizing anything that is illegal is that the increased availability of the good will actually reduce the demand for it. This reasoning has been used extensively in arguments for legalizing marijuana and "pornography". "Proof" is given by the fact that, where these goods were legalized, revenue went down. Using the concept of inelasticity of demand usually takes care of this question but still leaves some doubt in the students' minds. To solve this, use prostitution as the

example. If prostitution were legalized across the country would the demand for it decrease? This will lead the students to realize that demand for prostitution is relatively inelastic. It will also give the students a better understanding of elasticity of supply. The very factors that are discussed as to why both buyers and sellers engage in such a market also leads to an understanding of the "other things held equal" parts of a demand and supply curve. Discussion will be lively.

Price Estimates

David C. Huseman, Butler County Community College

To determine whether students are "smart consumers", I provide a list of 30 items (described e.g., Heinz Catsup - 14 oz.) and ask for estimates of their prices. After students make their choices, I then give the correct prices so that they can see whether their own estimates are higher or lower than the actual price. The goal is to make students more price-conscious when they are in the marketplace.

Indifference Analysis

Would You Rather Have \$100 or \$125?

Jerome F. Heavey, Lafayette College

To help students understand preference theory and indifference curves and to help them resolve some apparent paradoxes, such as those which arise in the discussion of excess burden, I conduct simulated experiments of the following type. I will ask the class which they would rather have, \$100 in cash or \$100 worth of non-transferable credit at the campus snack bar. I will repeat the question a number of times, each time increasing the amount of credit at the snack bar. The only rule is that each student must answer as truthfully as possible. In a section of forty-seven students the experiment yielded the following information:

Amount of credit	Number who prefer cash	Number who prefer credit	Number who have no preference
\$100	47	0	0
\$105	47	0	0
\$110	47	0	0
\$120	44	2	1
\$125	40	6	1
\$130	37	10	0
\$140	35	12	0
\$150	22	23	2
\$200	5	41	1

It takes only a few minutes to run this experiment, providing an effective demonstration to the student of the logic of indifference curves. This is invariably followed by lively discussion in which students themselves point out such features as the following: (a) every student was able to state whether he/she had a preference or was indifferent between the two alternatives, (b) there were a number of cases where some students went from preferring cash to being indifferent, to preferring the credit, (c) some students went from preferring the credit without expressing indifference between the two, indicating that a point of indifference might lie somewhere between the observed increments, (d) all students were consistent, i.e., no one ever changed back to preferring cash once he had changed to preferring credit; (e) everyone agreed that a payment in cash is superior to a payment in kind when the two are of equal dollar amounts, (f) many students would rather have \$100 in cash rather than a much larger payment in kind. These last two points are ones which few students will accept if they come as conclusions drawn from an indifference curve diagram describing some anonymous individual. These points seemed to be readily understood, however, when they were the outcome of an experiment in which the students had participated.

The Meaning of the Conditions of Consumer Equilibrium

William Sher, Duquesne University

(1) $MRS = \text{price ratio}$ (2) decreasing MRS . Most students just try to memorize these conditions; they seldom understand their true meaning. Actually these conditions are not just mathematical results, but they are also meaningful in common sense interpretations. MRS between X and Y , say MU_x/MU_y represents the subjective view of the consumer toward the goods in question at the marginal for a given bundle of the two commodities. On the other hand, the price ratio represents the market opportunity that the consumer faces. If they are not equal, the consumer is not taking the full advantage of the market opportunities, thus the consumer can get higher satisfaction by adjusting the contents of the bundle for the same expenditure. When they are equal, this cannot be done. Hence, satisfaction is maximized. Remember that the MRS is a function of the quantity of each good in the bundle but the price ratio is a constant. Thus, when MRS is not equal to the price ratio, it is possible to make them equal by adjusting the quantity of the commodities. The situation may be illustrated by the following hypothetical situation. Suppose a super market sells only two goods, X and Y . At the entrance, each customer must declare how much he/she plans to spend (a fixed income), say \$100. Then the customer is given a cart which contains \$100 worth of

merchandise, namely X and Y. The customer can take the merchandise and leave or may make any changes provided that the total worth of the goods must be constant, \$100 in this case. Suppose the price ratio P_x/P_y is 2 which implies that the price of X is twice as high as Y. In other words, one can get 2 Y's if he gives up 1 X. This is the market opportunity. If the contents of the bundle of goods is such that the MRS is four, which means that the customer is willing to give up 4 Y's for 1 X due to too many Y's and too few X's in the cart, apparently he/she can be better off by giving up some Y and getting some X because one extra X can be obtained by giving up only 2 Y's while one is willing to give up 4 of them. By the assumption of non-satiation, the consumer is better off. Remember the assumption of decreasing MRS: when more X and less Y are in the cart, MRS decreases. Thus, there is a tendency that the price ratio and MRS will approach equality. On the other hand, if the bundle of the commodities is such that the MRS is 1 which is less than the price ratio 2, this means that the consumer is willing to give up one X for one Y, but he/she can get two Y's for each X in the market. Hence, the consumer can be made better off by giving up some X for Y. In either case, when MRS is not equal to the price ratio, the consumer can be made better off for the same expenditure, thus satisfaction of the consumer is not at maximum for a given income. However, when MRS is equal to the price ratio, namely $MU_x/MU_y = P_x/P_y$, the consumer can no longer make himself better off by changing the combination of the bundle. Thus, satisfaction is at maximum for the given income.

The Isoutil Function

Marvin L. Larson, Southwest Missouri State University

Economists have been fascinated with the utility that consumers receive since the days of Jeremy Bentham. We even attempt to derive a utility function for the entire society. In the principles courses, consumer behavior is addressed and dealt with using the ideas of marginal and total utility or marginal and total satisfaction. Many of us use the graphical analysis that is associated with indifference curves to assist us in explaining this abstract notion of consumer utility and his or her behavior in the marketplace.

Since the indifference curve represents a function of the same utility when two goods or services are considered all along the curve, I call that curve the Isoutil curve. It prepares principles students for the Isocost and Isoquant functions they will encounter in the intermediate microeconomics courses as well as those upper division courses that are oriented toward microeconomics. In addition, it may help students enrolled in the physical science courses who may have already been introduced to Isobars, Isotherms, etc., to apply this knowledge to one of the social sciences.

Let's Quit Drawing Indifference Curves

Henry Thompson, Auburn University

If an artificial construction adds no substance and creates confusion among students, it should be forgotten. This is exactly what indifference curves do for microeconomics. It will come as little

surprise to economists that all results of microeconomics can be derived without indifference curves, consumers simply optimizing utility along their budget. The principles of consumer behavior are, in fact, more intuitive and less cumbersome without indifference curves. Lagrangian optimization did away with the technical need for indifference curves, which only survive out of the mistaken idea that they teach us something. This note calls for their omission from current textbooks and blackboards. Income and substitution effects are easily illustrated by changing income to the level where the original bundle of goods could be bought. The Slutsky equation in no way depends on indifference curves. As economists with the job of teaching principles of the science to eager students, we should in practice forget indifference curves. They are a useless appendage, adding only confusion to a discipline which needs as little of that as possible.

A Pareto Efficient Line

Jonathan Sandy, University of San Diego

Intermediate microeconomics students need to see that "economics" is happening all around them. They just haven't learned to recognize it yet. Although they may grasp the intuition of demand and supply, the lighter side of the Pareto efficiency eludes the typical student. I have found that the following example demonstrates to the students that economics is at work in ways that are obvious only to the "initiated." First, I present the conditions necessary for Pareto efficient distribution formally with an Edgeworth Box diagram. We then discuss how difficult it would be to bring about Pareto efficiency for a social planner and whether they believe any mechanism could yield efficiency at all. At this point I introduce two separate diagrams with the appropriate endowments but add market prices to show how individuals, who are completely unaware of each other, arrive at a Pareto efficient allocation via utility maximization. This is an extremely important result, but the students usually see it as completely irrelevant because of the restrictive assumptions of the model. I assure them that even in the real world where there are many different goods and individuals, the Pareto conditions will still be met. I then present the following situation. Suppose you are up at the campus store trying to select the optimal quantities of Snickers bars and Haagen Dazs ice cream to buy given your budget constraint of \$10, which your parents just sent you. As you stand in the frozen food section a beautiful stranger, gorgeous beyond description, strolls up next to you. You hang your head in shame because you know there is no way you could have anything in common with someone so beautiful. While you're staring at your shoes, you happen to notice that this beautiful stranger is also buying Snickers Bars and Haagen Dazs ice cream. You are both price takers and face the same relative prices. And then it hits you. You look at her straight in the eyes and say, "We've never met, but right at this moment we are sharing something very personal and very subjective and yet something of great social significance. You see, if you are maximizing your utility as I know I am, then we are equating our marginal rates of substitution and bringing about a Pareto efficient distribution of goods." I then suggest they try this line for homework. Hopefully, the students learn that the simple decisions which drive demand theory also yield efficiency.

Chapter Seven

Theory of the Firm

The Need For a Written Agreement Between Partners

R. J. Pullen, Mt. Wachusett Community College

To teach the hazards of being in a partnership and the need for a written agreement, I ask the students to join in groups of four to form a partnership. Each partner is given a written description of him/herself. Part of the description is in italics, and that part is known only to the partner receiving it. The description not italicized is shared with the group. Each partnership is formed for the sole purpose of manufacturing and selling skis. The groups have one class period to reach a written agreement and hand it in. Below are the descriptions I provide, along with a list of items normally included in a partnership agreement:

Partner No. 1: You are a medical doctor with extensive assets including cash up to \$100,000. You do not want to be a general partner and do not need to be involved in the day-to-day affairs of the partnership. You desire no less than a 25 percent share of all profits.

Partner No. 2: You are a salesperson experienced in ski equipment sales. You have very little in the way of outside assets and can afford to invest only \$10,000. You must be able to draw \$600 a month. You have been involved in partnerships before and want everything in writing.

Partner No. 3: You graduated from Confederation College with a degree in accounting. You are an avid skier and have an outgoing personality that could easily be tapped to make you an outstanding salesperson. You have no money to invest, but want to be a general partner. You will accept junior status with a small share in the profits. Your primary goal is to become bookkeeper of this firm and embezzle enough money to hit the slopes in Switzerland. You do not want any audits in the articles of partnership.

Partner No. 4: You are an expert in laminating and metal working with Master Journeymen classifications. You have \$100,000 in assets, all of which are easily turned into cash. You have a desire to be a senior partner and will accept no less than a 20 percent share of the profits for any investment you make.

The Role of Profits

William Nelson, Indiana University Northwest

The following can be used to illustrate the role of profits in signaling where resources ought to be allocated and the ingenuity that profits bring forth. Citibank was interested in testing its automatic teller system. It offered a \$5000 reward to any Cal Tech student who could find the best method of beating its "foolproof" encoding device. They received many solutions. Would they have received more if they'd allowed the winner to use it for one day. Why? It is also noted that Berkeley students use similar devices to avoid paying BART (Bay Area Rapid Transit). The point is financial reward (profits) brings forth "the best" in human ingenuity.

Irrational Firm Behavior and Contingency Fee Audits

Eric K. Steger, East Central University

I ask my students, "Do employees of some firms always act rationally?" I explain that I know of a firm that provides no-risk contingency fee gas pipeline audits for oil and gas operators. I explain that this is simply a second opinion audit and works this way. If the auditors don't recover retroactive monies from gas previously sold to natural gas purchasers, there is no fee. However, if retroactive monies are recovered, the audit firm gets a payment only when the oil and gas operator receives the retroactive monies from the gas purchaser. I explain that the only expected marginal costs to the firm are transactions costs such as meeting with the auditors, answering questions, photocopying documents, etc. Since these are the only costs, why isn't the audit allowed?

This question stimulates some good discussion. Typically answers are: (1) the employees are afraid of looking bad to management; (2) management is afraid of looking bad to stockholders and/or interest owners in the wells; (3) the audit firm may have a poor reputation; (4) the offer has not been clearly communicated; (5) the oil and gas operators are so wealthy that a few hundred thousand dollars is too trivial to worry about; (6) the expected marginal revenue is less than the expected marginal transactions costs incurred.

This question helps students better understand profit maximizing behavior, transactions costs and why some employees may not always act in the firm's best interest.

Limited Liability and the IRS

Joseph. Phillips, Jr., Hudson Creighton University

In studying the principal legal forms of business enterprises (Sole Proprietorship, Partnership and Corporations) it is generally taught that corporations have the distinct advantage of providing limited liability to the owners. The stockholders risk only what they paid for stock purchased. Creditors can only sue the corporation as a distinct legal entity but not the owners on an individual basis.

A pointed exception to this involves the IRS being granted authority by Congress to collect trust fund monies used by corporations in the course of business (withheld income and social security taxes) from certain corporate officers who were responsible for remitting the funds to the government.

The existence of this statute in the IRS Code supersedes the normal shielding of liability of individuals in the corporate structure. The presentation of this fact alerts students to look beyond the generalities, be they in textbooks, newspapers or magazines. In the real world, there are exceptions to practically everything as opposed to the abundance of absolute truths.

The Appropriate Definition of an Industry

Michael Vaughan, Weber State College

Before students can understand the importance of market structure and the competitive process they must comprehend the basic microeconomic concept of an industry. To the economist, an industry is a group of firms producing similar or identical products. The critical point for students to understand is that the products are similar or identical from the perspective of the consumer. In other words, the consumer views the products as substitutes for each other. To emphasize this point, I ask students if all firms providing airline travel are members of the same industry. The inevitable response is "Yes". Students are then asked to name some firms in the airline industry. Eastern, Delta, TWA, American, and United are typically named. I then select a route, for example Salt Lake City to Denver, that is not serviced by one or more of these airlines. "If you wish to travel from Salt Lake to Denver, is Eastern Airlines an alternative?" "No!" "Is a ticket from Boston to New York a substitute for a ticket from L.A. to San Francisco?" "No!" The students quickly see that according to the economic definition of an industry, all the airline firms previously named are not members of the same industry. This exercise sensitizes students to the problem of industry definition, and it serves as an introduction to a discussion of geographic markets.

Socialism and Giant Corporations

Harry G. Shaffer, The University of Kansas

I first explain to my students that a socialist economy is one in which the means of production are owned by society at large and are operated under the guidance of some central planning authority, under the theory that the goals of socialism are not profits, but rather the broad interests of society, (as the planners conceive this interest to be). I then tell them that in order to get a picture of what a socialist economy would be like they could imagine a gigantic corporation that owns all the means of production (factories, mines, farm lands, banks, transportation facilities, retail outlets, etc.) and in which each citizen is theoretically an equal share-holder. And just like a corporation with hundreds of thousands of stock holders must have a board of directors to run it, so must a socialist economy.

This "board of directors" could be the government, a political party, a planning board, or even one single dictator. And this central authority could be democratically elected at periodic intervals, or it could perpetuate itself in office (as is the case in most large American corporations), thereby effectively depriving the "owners" of a decisive voice in the operation of their enterprise.

Differentiating Accounting and Economic Profits

Tom Hyclak, Lehigh University

Figure 22-1 is very useful in explaining the difference between accounting and economic profits. The difference is the reference point: zero for accounting and M for economics, where $M =$

minimum profit needed to cover the opportunity cost of the owners of the firm. The \$M-diems are added to labor and capital costs when drawing the total cost curves.

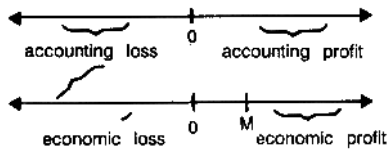


Figure 22-1

Economic Profits and Accounting Losses

Ralph T. Byrns

In distinguishing between accounting and economic profits, stress that economic profits are better guides to decision making. Examples are fairly easy where accounting profits are realized simultaneously with economic losses so that a firm will shut its doors in the long run. A nice twist is to discuss a case where economic profits are realized in spite of an absence of accounting profits (e.g., when a proprietor systematically cheats on the firm's income tax statements, when accelerated depreciation allowances eliminate a firm's tax liabilities, or when a profitable firm absorbs a firm that has experienced losses.)

Chapter Eight

Production and Costs

Explaining the Production Process

Salvatore Schiavo-Campo, Economic Research Services

Ask if anyone has a pencil to give you, and make a great show of asking whether the student can spare it. Then visibly break the pencil in half, return the half with the point still on it to the student, hold up the other half, and ask "What is this?" To the answer: "A broken pencil", the rejoinder is: "It is more useful to think of this object as materials, wood, lead, etc." Go on to point out that eventual production of a pencil is impossible without materials, and proceed to discuss natural resources as a factor of production.

Next, place the object on the desk and say: "Let us conduct a brief experiment. For the next 30 seconds everyone focus on this object, concentrate very hard, and 'think pencil.'" Those 30 seconds will go by slowly, with titters, bored looks and shifting of chairs, but will lastingly emphasize the simple fact that--as you will say to your students: "Production does not occur by thinking very hard, by prayer, government decree, or divine intervention. Production requires the conscious application of human effort to resources of various types."

You may then, with whatever embroidery is suitable to your temperament and your students, point out the necessity of human effort and use that as an opening to discuss labor as a factor of production. Then point out that--while teeth and nails might sharpen the object sufficiently to write with it--a pencil sharpener shortens that process and makes it enormously more efficient, and go on to discussing the economic meaning of capital. Finally, note that only by accident would an infant succeed in producing a pencil and a pencil sharpener from the materials at hand, no matter how much "labor" he put into it. And use this as the opening to introduce the subject of technology. (The simplest conclusion is to return to the unfortunate student, with an appropriate flourish and with thanks, the useless broken half of the pencil, provided that the student has a sense of humor.)

Diminishing Marginal Productivity in Basketball

Sharon K. Carson, Sue Bennett College

Basketball is very popular in this area of the country. A number of my students played basketball in high school and/or are playing it in college. I told the class to suppose that our college had a basketball game in which our coach was allowed to add an extra player while the other team was limited to the usual five players. Since our team would have six players to their five, we would probably score more baskets. Now suppose that our coach added another, and another, and another. Up to a point, each player would help us score more points (more than just five players could score.) As more and more players were added, however, we would benefit less and less. The basketball floor would become overcrowded. Players would fall over each other and eventually the total number of baskets scored would diminish.

The Law of Diminishing Returns

Daryl Gruver, Mount Vernon Nazarene College

To introduce the law of diminishing returns, the professor asks for three student volunteers to begin a game in which each person attempts to raise the most corn. Each student is assigned a 3'x3' section of chalkboard and seven pieces of chalk (about 1" long). They are told that the chalkboard represents their land area and that they raise corn by simply writing the word corn on the chalkboard. The word corn must be legible to the other members of the class. The students are given 15 seconds to raise as much corn as possible. At the end of the 15 second growing season, the corn is counted and recorded for each country. Then the population of each country is doubled by adding a second person. The process is repeated. The game continues with the doubling of the population to four and then to eight. The law of diminishing returns usually begins to be experienced at this time. The land area becomes crowded and the chalk supply is inadequate, illustrating what happens when additional units of a variable resource are added to fixed resources.

Productivity in the Bedroom

Ralph O. Gunderson, University of Wisconsin-Oskosh

This is a variation of the "Too many cooks spoil the broth" story that is frequently told to illustrate the law of diminishing marginal returns. With some not-too-difficult-to-do pantomime, I manage to perk up student attention and even evoke some laughter if I'm having a good day.

The object of the pantomime is to pretend to be "making up my bed" in the morning. I begin by telling my students to think of fixed factors. The number of people making up the bed is the variable factor of production. The desk or table that is in the front of the classroom is my simulated bed. I then pretend to make up the bed by myself (one unit of labor). I demonstrate with some silly motions all the different little tasks that I must complete, such as fluffing the pillows, pulling up the covers, running around the foot-end of the bed to straighten out a wrinkle on the other side, making sure the bedspread hangs evenly, etc., to make the bed.

Once finished, I announce that it took, for example, 4 minutes to complete the job. I then "hire" a phantom worker to help me do this job again. Through pantomime it is demonstrated that this second worker makes it possible to make the bed in 1 minute thus saving 3 minutes. A third worker reduces work time to 30 seconds thus saving 30 seconds. However, when a fourth worker is hired, pantomime pillow fights break out among the workers and required time increases.

This activity is designed to illustrate the advantages of specialization of labor and the accompanying ranges of increasing and then diminishing returns to a variable factor of production which is employed in different combinations with a set of fixed factors of production.

McDonald's and the Law of Diminishing Marginal Returns

Daniel P. Schwallie, Case Western Reserve University

When introducing diminishing marginal returns, I find it most fruitful to use an example familiar to nearly all students: a McDonald's hamburger outlet. The facility itself, with its tables, parking lot, cash registers, grills, and fryers is the short-run fixed plant and equipment. The long-run is the time it would take to expand the facility or move it to a new location. To these fixed factors, McDonald's must add workers before it can produce hamburgers. The number of labor hours used can be readily changed to produce different quantities of hamburgers, so it is quite clear to students that labor is the variable factor of production. (I usually note that the all-beef patties, pickles, sauce and sesame-seed buns are also inputs into producing hamburgers to make the example realistic. However, I assume the McDonald's franchise has unlimited access to these inputs at constant per-unit costs.)

Besides the fact that students are generally very familiar with the details of a McDonald's franchise, this example is particularly well suited to explaining diminishing returns because the labor used is quite homogeneous and the labor market is reasonably close to being purely competitive. Students quickly grasp that diminishing returns result, not because of varying labor quality, but because of the increasing mismatch between the quantities of fixed and variable factors as the quantity of labor employed is increased. I begin by supposing there is only one worker doing all the jobs: taking orders, cooking, packing and making change. I then point out there are initially increasing returns from hiring a second worker due to specialization of labor which is then possible. I continue to discuss the specialization of additional workers until it is clear that the marginal product of additional workers must be declining and diminishing returns have set in. Additionally, the instructor can discuss negative marginal productivity if the number of workers is continually increased until they are tripping over one another. The instructor can also introduce the idea of capacity by explaining that the McDonald's facility is designed to optimally employ a specific number of workers. I use a numerical example of the short-run production function in terms of hamburgers per hour to construct total product, marginal product and average product schedules. These are then used to derive U-shaped marginal cost and average variable cost schedules.

Athletes On Steroids and The Law of Diminishing Returns

By Gregg Davis, Marshall University

Why do some apparently successful athletes, such as sprinters, football players and body builders, resort to illegal steroid use?

In all areas of athletic endeavor, training during the early stages can significantly enhance athletic performance, whether through speed, strength, or a psychological edge. Weight lifting, for example, allows one to significantly increase muscle mass and weight lifting abilities just months after initial training begins. The rewards are obvious--bigger muscles and more weight lifted. But continued training eventually contributes less and less to overall performance. The muscles cannot grow forever, and limits to weight lifted begin to emerge. Athletes have now entered the economic

range of athletic training called diminishing returns. Additional training only marginally contributes to enhanced athletic performance.

In a futile attempt to defy the law of diminishing returns, some athletes turn to pharmaceutical supplements, such as steroids. Steroids initially, but only temporarily, afford athletes an opportunity to again reap the rewards of continued training (if they are able to pass drug tests and avoid the growing legal pitfalls of using these substances.) But eventually, diminishing returns set in once again, only now there are no escape routes left for the athletes to increase their performance. Continued steroid use eventually pushes athletes into a region of negative returns, where severe damage to the body manifests itself (e.g., Lyle Alzado).

Diminishing Marginal Productivity

Ralph T. Byrns

To illustrate how marginal products of labor diminish, suggest that if the last worker hired makes the beer run, the resulting popularity with coworkers may not be reflected in much extra production. Any number of activities show how problems of congestion emerge as more and more workers are hired: too many cooks in a kitchen, finishers at a car wash, or shovel wielders in a ditch. And imagine the problems if more and more lecturers tried to simultaneously spread their pearls of wisdom before a single audience.

The Law of Diminishing Returns: A Simple Demonstration

Terry D. McCraney, Vincennes University

I use a simple example to explain the law of diminishing returns to students--sweeping the classroom floor. I usually start by stating the law as simply as possible. Then I tell the class that we have the job of sweeping the floor. All students agree that they are interchangeable when it comes to sweeping. They can all sweep and all can sweep equally well. I ask them how to measure our efficiency, if all sweep equally well. The general response is that we can measure efficiency in terms of time. Then I explain that we have four brooms and I will choose people to serve as sweepers. I choose the first sweeper and tell him it will take 60 minutes to do the job. The use of 60 minutes is for easy division. If you must, you can remind the students that the job was never done before so we have no idea how long it will take to complete the job. A second student is chosen and I ask how long it will take with two sweepers. The response is thirty minutes. Questions may be asked to explain the thirty minute time. After a third sweeper is added the time falls to twenty minutes. A fourth sweeper brings the time to fifteen minutes. Then I add a fifth sweeper and ask for the time. Twelve minutes will be given as the logical answer. Now I explain that twelve minutes is incorrect, and that it will take twenty-four minutes. I ask the students to explain why it took longer with five sweepers than with four. Most of the class will quickly point out that we only have four brooms. Then I restate the law of diminishing returns stressing that sweepers are inputs, brooms are the fixed factors, and the amount of time reflects marginal returns.

The newly learned concept can now be reinforced by standard analysis, production examples, and graphing.

Production Principles and "Mock" Tests

Roger H. Goldberg, University of Memphis

To provide my students with hands-on experience with the principles of specialization and division-of-labor, I divide the class into groups A and B for one class period with the following instructions: to make-up a mock examination consisting equally of multiple-choice, matching, true-false and fill-in the blank type questions. Question content must draw from both microeconomics and macroeconomics. Students in Group A must work alone; each student individually develops a complete examination. Students in Group B are told that they may coordinate their production efforts by dividing into smaller groups to specialize on question formats and area. The "mock" tests are then collected after a fixed time and the output and quality of questions compared. In addition to highlighting the desired production principles, students have enjoyed the review opportunity!

The Importance of Money and Prices with a Brief History of the Calculation Debate

Jim M. Cox, University of Alabama at Birmingham

After giving the students sample data in which they calculate average product and marginal product from the quantity of inputs and total product, and then graph TP, AP, and MP, I ask the students which quantity of output should be produced. A number of responses are usually forthcoming--the greatest output level, the output with the highest marginal product, the output with the highest average product, etc.

This set of responses gives the instructor the opening to bring forth the fact that a rational answer cannot be made. A physical relationship between input units and output units is meaningless without knowing the relative values of the inputs and outputs. Therefore, in an economy with an absence of money and prices to guide decision makers, rational calculation is lost.

Then bring in the fact that the original socialist theories included abolishing money and prices and that this set off the calculation debate between Mises and Hayek and the socialist theoreticians in the 1920s and 1930s. This also allows the instructor to make the point that we are seeing socialist societies confirm this theory in their practice of encouraging more reliance on market prices and less on centralized planning.

Diminishing Returns and Fixed Inputs

Joseph E. Pluta, St. Edward's University

As a variable resource (say labor) is added to a fixed resource (say land), total product eventually increases by smaller amounts. This familiar definition of the law of diminishing marginal returns, when illustrated with appropriate examples, is easily grasped by most students. Questions often arise, however, about timing. Why, for example, do diminishing returns appear to set in at lower levels of output in some production processes than in others? Detailed discussion of relative input mix and stages of production may be useful in answering such questions, but I have found it instructive to focus on the size of the fixed input. Traditional examples include adding workers to an acre of land or the impossibility of growing the world's food supply in a flower pot. In both cases, diminishing returns occur relatively early because the fixed input is small. (The "why does it take three students from (your school's chief rival) to change a light bulb? One to hold the bulb and two to turn the ladder" story is also applicable).

Then I relate a conversation with a Navy Admiral who refused to accept the diminishing returns concept. His argument: "If you give me 20 ships, I can patrol the oceans with a certain degree of effectiveness. Give me 40 ships and I will double effectiveness. So much for diminishing returns." Two things may be learned from this argument. First, it may be difficult to convince some Admirals (or other persons with vested interests) that it is ever possible to have too many ships. Second, and more importantly, the size of the fixed factor strongly influences when diminishing returns occur. This may be when a second worker begins cultivating the flower pot or the 200th ship is launched but, so long as one factor is fixed, diminishing returns are inevitable. (Consider an astronaut discussing rocket ships as variable inputs and outer space as the fixed input!)

Similarly, diminishing returns occurs at much higher levels of output at a General Motors or Exxon plant than at Kate's Country Kitchen or Andy's Lumber Store. This is not because GM is more efficient than smaller firms, but because it utilizes more fixed input.

Diminishing Marginal Productivity in Class

Rose M. Rubin, University of North Texas

To convey the concept of diminishing marginal product, I set up a participatory experience in which the class develops the numerical example for discussion. The materials which I take to class for this are a stack of colored paper, two markers or heavy felt tip pens of different colors, and a stop watch. At the beginning of the class period, I set up the tabular framework on the blackboard for the data to be generated: Number of Workers, Total Product, Average Product and Marginal Product.

The announcement is made that the class is setting up a firm to produce greeting cards. A name for this firm may be developed. The distinction between fixed and variable inputs having been previously made, I explain that the firm's fixed inputs are the materials brought and a classroom desk; and the variable input is labor to be provided by students. Then, one student is designated as accountant for the firm to record production, and another is designated production

timekeeper. The production process is described: a) the workers are to produce greeting cards by folding a sheet of the colored paper twice to form each card; b) then, it is to be "decorated" with a red triangle on the front and a purple square on the back (or any similar two-step, specific decoration); c) next, the cards are to be piled in stacks of 5 for packaging.

The first student "worker" is selected to begin operations for a specified time period of 1 to 2 minutes, timed by the timekeeper, and his/her production is recorded on the board. Then a second worker is added, followed by a third, fourth, etc., with the entire process repeated with each additional worker. The students immediately recognize the advantage of setting up an assembly-line process and the class tends to cheer the "workers" on. By the time the sixth, seventh or eighth worker is added, the students clearly see the constraint of fixed inputs with a small workspace and, especially, only two marking pens. At about this point, marginal product of greeting cards will begin to decline, demonstrating the major point. The instructor can also institute a "quality control" measure, which generally causes marginal product to decline more rapidly. Thus, the class generates an example of the Law of Diminishing Returns.

You can extend this example with wage and price information so that marginal revenue product, marginal cost, average variable cost and other concepts can be related to your class's productivity.

A Frat's Production Function

Josef M. Broder, University of Georgia

One difficult concept to teach in production economics is the relationship between marginal product and average product. Lacking practical experience in production decision making, many students lack an intuitive understanding of marginal and average product.

To illustrate the relationship between marginal and average product, I use the process of pledge selection by Greek social fraternities and sororities. First, I ask the class to assume that the university offers an annual award to the social fraternity with the highest average grade point average (GPA). During rush week of each semester, fraternities and sororities select and initiate new pledge classes. The impact of the pledge class on the fraternity's GPA can be used to explain relationships between marginal and average product.

Assume that our fraternity has a GPA of 2.50 and that the GPA's of potential pledges ranges from 2.00 to 3.00. Assume also that our fraternity's chances of winning the award are good, that grade point average is a major factor in selecting this year's pledge class, and that pledges are selected incrementally by the brothers. How might the selection process be analyzed in a production function context?

Consider the GPA of the fraternity as the average production in a production process. To this production process we add pledges whose GPA's are defined as marginal products. As long as the pledges' GPA exceed the fraternity's GPA, then the pledge improves the fraternity's GPA or the average product increases. When the pledges' GPA is equal to the fraternity's, the average product is

equal to the marginal product. When pledges' GPA fall below the fraternity's average, the marginal product is below the average product and the average product or GPA will decline. At this point the fraternity must choose between pursuing the award and accepting pledges with "other" talents.

Single Variable Production Function

Bette Polkinghorn, California State University-Sacramento

In the small African country of Lesotho, I once visited a factory producing hand tied rugs woven on vertical looms. The women workers picked up short pieces of yarn from boxes below the looms and attached them to the vertical strings of the looms. I use this example to teach about single variable production functions, and begin by assuming that each woman must dye each color and cut the yarn to the appropriate length and then proceed to the loom to use the pieces of prepared yarn. As the number of workers grows, there is specialization of labor in assigning these individual tasks to different workers. Eventually diminishing returns sets in; negative returns occur when the women are falling all over each other!

Three Dimensional Look at The Production Function and Isoquants

Tantatape Brahmasrene, Purdue University North Central

To provide my students with a visual aid to more fully understand the production function and isoquants, I do the followings:

1. I cut a large funnel into three layers (please see enclosed photographs) and paint each layer with a different color.
2. Draw two axes on a white poster board and label them as "Quantity of Labor" and "Quantity of Capital."
3. Place the funnel on a white poster board from step (2) which serves as a floor plane and draw three isoquants parallel to each layer of the funnel with corresponding color. These curves show various combinations of inputs that can produce 50, 100 and 150 units of output.
4. Fold the second sheet of a white poster board in half. This provides two sides of the vertical plane. Then draw a production function on each side and label each side as "Total Output."

Now, I am ready to present to my students. The surface of a funnel represents the production surface. The height of a particular point on this surface denotes total output. Dropping a perpendicular down from that point to the floor plane allows us to determine how far the resulting point is from the labor and capital axes which in turn indicates amount of inputs required to produce that level of output. If we want to find the isoquant pertaining to a total output of 100 units (the red level), we just cut the production surface at that red level parallel to the base plane and drop perpendiculars to the floor plane. This results in an isoquant that includes all efficient combinations

of labor and capital that can produce 100 units of output. Other details can be added to this model by inserting the new floor plane.

Isoquants in production theory play a similar role as indifference curves in consumer theory. Therefore, this funnel model can be used to explain indifference curves and total utility by simply relabeling with post-it notes.

I have found that students enjoy the demonstration and are able to comprehend the otherwise abstract concept of three dimensional modeling.

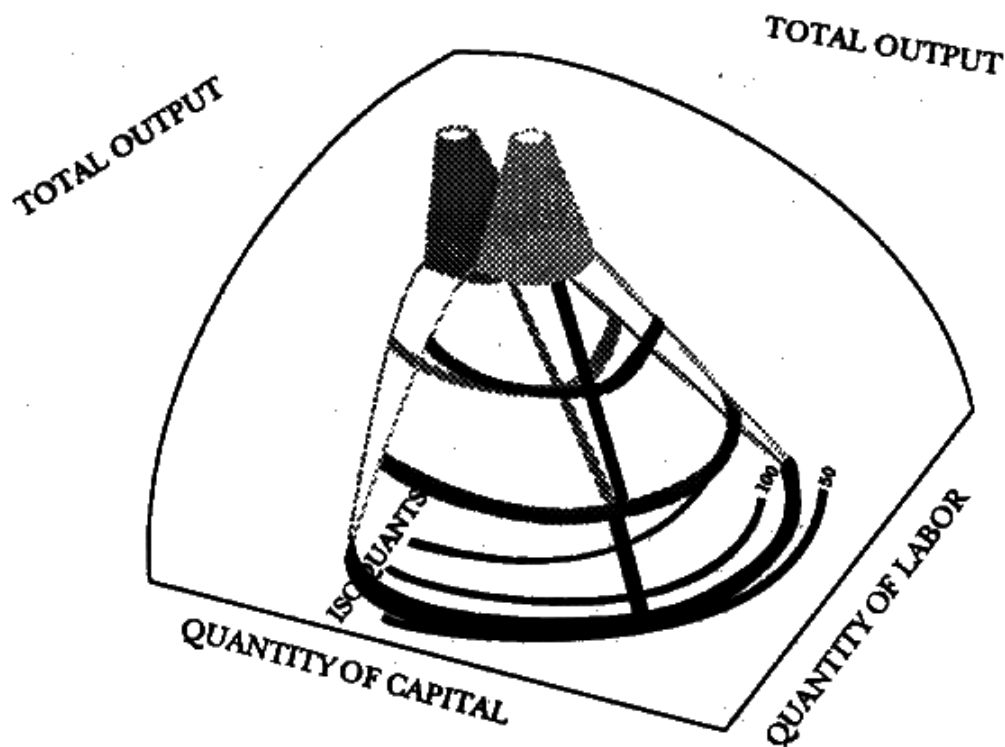


Figure 23-1

How Different Technologies Yield Similar Products

Ralph T. Byrns

Many students seem to believe that most production requires fixed coefficients between capital and labor. Examples to dispel this idea include using Mason jars for home canning versus the mass production in a Libby's plant, or collecting garbage with a few workers and automated equipment versus using many trash collectors all pushing wheelbarrows. An analogy from consumption that

seems to work is the suggestion that just as a well balanced diet can be derived from an incredible variety of foods with huge variations in the portions that are placed on one's plate, so too almost any form of output can be generated with a variety of inputs (e.g., chemists have produced imitation 'silk' purses from sow's ears, bananas can be grown under artificial lights in Alaska, electricity can be generated by water power, solar conversion, atomic energy, or combustion of wood, natural gas, fuel oil, etc.)

Emphasize that different technologies are available over different production periods, and that these periods are defined by the range of possible adjustments, not by time per se. Long run adjustments in one industry (e.g., entry and exit of children's lemonade stands) may absorb much less time than short run adjustments in another industry (e.g., for steel producers.)

Production Costs

Sunk Costs and Guilt Feelings

Gary M. Galles, Pepperdine University

To emphasize that sunk costs are irrelevant to current actions, I have found an example about guilt feelings to be both close enough to home and off beat enough to effectively get the point across.

I begin by asking if my students ever feel guilty (of course they do), and then ask what it means to feel guilty. Someone will eventually respond guilt involves current feelings about things that happened in the past, and which therefore cannot be changed. I point out that guilt is therefore remorse over a sunk (fixed) cost and ask whether that means guilt feelings have no use at all. This question usually puts students into shock temporarily, so I continue by saying that guilt feelings that only involve the past and have no positive effect on your present or future acts are worse than useless--they involve a cost with no corresponding benefit. I then ask whether that statement suggests a use for guilt feelings, getting the students to see that if guilt feelings lead to improved present or future behavior (perhaps including apologies to the offended, but necessarily including attempts to translate these guilt feelings into positive changes altering future behavior and/or avoid future guilt over the same thing), then it has a use. (Ask here why students' parents sometimes try to make them feel guilty--to get the students' behavior to conform more closely to what parents think it should). Once guilt had led to a change for the present or future, however, it involves a sunk cost and it has no more useful function. Guilt can be helpful as a motivator for the only thing we can change--our present and future actions--but if it involves fretting over the past with no effect on current behavior it is just an example of falling into the sunk cost fallacy. I conclude with some sort of joke about whether economists should be allowed to practice psychiatry.

Sunk Costs

Ben Collier, Northwest Missouri State University

David Friedman in his textbook Price Theory: An Intermediate Text has an excellent illustration of sunk cost: "When, as a very small child, I quarreled with my sister and then locked myself into my room, my father would come to the door and say, 'Making a mistake and not admitting it is only hurting yourself twice.' When I got a little older, he changed it to 'Sunk costs are sunk costs.'"

After telling this story and pointing out that David Friedman's father was Milton Friedman I go on to make the case that a knowledge of economic principles isn't just applicable to business decisions or those involving "money" but it is also extremely useful for everyday life situations, such as parenting. I may not convince students of this latter point, but this story makes a wonderful economic example.

Fixed Rental Payments and Decision Making

Norman Knaub, Pennsylvania State University-Altoona

The following analogy provides a simplified personal example of when firms should continue to produce even though they have losses and the role of fixed and variable costs in the production decision.

You sign a 12 month lease for an apartment. The rent is \$300 per month, and you must pay the utility bill, regardless of who is actually in the apartment. If the apartment is unoccupied the utility bill is zero, but the utility bill is \$80 per month when the apartment is occupied. You will not be using your apartment this summer. The best offer you have received to sublet your apartment is \$200 per month for the summer. Should you accept this offer? As an alternative, what would you do with your apartment if the best offer you received was \$50 per month? Since you have signed the lease, the \$300 per month rent is a fixed cost. If the apartment is empty, you will receive no income from the apartment and have a loss of \$300 per month. By renting the apartment, you will reduce your loss to \$180 per month with the \$200 per month sublet. With the \$50 per month sublet the lowest cost alternative is to leave the apartment empty during the summer since the rent during the sublet does not cover all of the additional utility costs and the loss from renting the apartment in this case is \$330 per month. If the rent was \$600 per month but the utility bill and best sublet offers are unchanged, would the decisions to sublet be different?

This example illustrates that once the lease is signed the rent becomes a fixed cost and should not influence the decision to sublet. The utility bill, however, is a variable cost and will influence the sublet decision. The decision rules for a firm to produce or not in the short-run follow naturally from this example.

University Fixed and Variable Costs

Eric Steger, East Central University

I've found that using our universe as an example is useful in communicating fixed and variable costs concepts. I explain that several years ago we faced a serious budget crisis. That is, we had to reduce expenditures. I asked the class "What costs could we cut at our university?" Salaries were mentioned but I explained that typically salaries were "untouchable" during an academic contract year. I explained that at our university 87% of the total cost of operation was due to salaries and wages. I then explained that we cut utilities expenses, travel, postage costs, telephone bill costs, books and periodicals, membership dues, equipment, data processing expenses, supplies and materials, and printing and binding. The categories were variable costs.

The MC and AC of Late Arrivals at Small Parties

Frederick S. Weaver, Hampshire College

How can the marginal cost curve start rising before the average cost curve does? Why does the marginal cost curve always intersect the average cost curve as its minimum point? These are simply arithmetic relationships, but they do confuse students and are sufficiently important to the theory of the firm that they warrant some special attention. An example that works for me is to ask students to imagine a small gathering of, say, ten people, and the average height of those at the party is 5'7". But some people are still arriving, and a latecomer who is 5'2" tall arrives at the party. What does this marginal guest do to the average height of those at the party (i.e., what direction does it change)? Another person, who is 5'3" arrives, and the average height of the roomful of revelers is pulled down a bit more. Yet another character drifts in, and her height is 5'6". The average height again declines (to 5'7"), as it has consistently even though the successive marginal changes have been getting larger. So as long as the increments are below the average, the average declines. Anyway, back to the party: when a person who is 5'7" joins the party, the average is unchanged, and when someone 5'8" tall finally manages to get there, the average height rises. So when a person of average height joins the festivities, the average does not change, but when someone above average height appears on the scene, the average height rises. Ergo, the marginal curve intersects the average curve at the average curve's minimum point.

Only directions of change rather than the particular numbers matter, but from experience, it pays to have a clear numerical example worked out before class. Initial confusion may facilitate understanding of some analytical issues, but this is not one of them!

Decisions about Variable Costs and Fixed Costs

John T. Ying, Rose-Hulman Institute of Technology

Due to current business circumstances, XYZ Corporation is operating at a very low rate of output. The president of the company argues that it is inefficient to employ the two existing plants--each

operating at half its customary output. Instead, he asserts that production should be concentrated in one plant, which can generate output at a normal level. On the other hand, the plant managers argue that the company should continue to use both existing plants to save production costs. Since both plants have U-shaped average cost curves and increasing marginal costs, it is more efficient to continue operations at the two plants. With whom do you agree? Explain your answer.

Optimum Input Mixes Depend on Relative Factor Prices

William C. Lee, Saint Mary's College of California

When I was going for my regular jog on a bike trail which parallels a creek, I passed an unusual sight--over 200 live goats. At first I thought I was experiencing some sort of runner's high because I had never seen goats there before. Later in the jog I approached the person who appeared to be in charge of the "operation" and asked what the goats were doing. He told me they were clearing the poison oak and brush from the creek bed. We joked that the goats probably did not get paid too much nor did they need health insurance, retirement benefits or a paid vacation. The economics lesson here is that although there are probably a lot of "high tech" machines or tools that could do this job, the economically efficient (least cost) input mix (200 goats, 1 dog and 1 goatherd) is probably the same one that would have been used thousands of years ago.

Computerizing Production and Costs on a Spreadsheet

Edward C. Koziara, Drexel University

In the past two years Drexel has been using the Macintosh personal computer in teaching economics. Students are assigned homework, receive disks with classroom examples, and view a screen which is used as an electronic blackboard. Templates have been developed for the basic courses and the following is one of the simplest and most useful. I use Microsoft Multiplan, but any spreadsheet could be used.

Production Methods is a decision analysis tool in which the costs of four different methods of making the same number of product units are compared to determine which method will cost less. The sheet looks like:

Production Methods	I	II	III	IV
Tools	135	100	300	400
Labor	345	178	500	100
Material	90	100	30	600
Machines	2,000	456	20	100
Cost Of	Tools	Labor	Material	Machines
(dollars)	\$700	\$100	\$500	\$500

Cost Of Methods (dollars)	I	II	III	IV
	\$1,174,000	365,800	\$285,000	640,000

Least Cost Method \$285,000 . . . Method III chosen.

All four methods require different amounts of the same four inputs: tools, men, material and machines. The Production Method section of the sheet illustrates the four methods, I, II, III and IV, and the requirements of each. Some processes are more capital intensive, such as Method I, and some are more labor intensive such as Method III. Under the Cost Of section of the sheet the costs in dollars contains the cost per unit of input. A tool costs \$700, a man costs \$100, a unit of material costs \$500 and a machine costs \$500. The costs of methods is shown in the Cost Of Methods section. Each of the prices of the components is multiplied by the amount needed to give the cost of employing the different methods. Method I, \$1,174,000 is the most expensive method and method III, 285,000 is the least expensive method. The final section of the sheet gives the total cost of the low cost method (\$285,000), the name of the method (III), and states that method has been chosen. To test for the least expensive method of production, this sheet uses the IF statement coupled with the MIN (minimum) function. The MIN function returns the minimum value in a series of values. Here the MIN function acts on the Cost Of Methods section and returns the minimum cost method. The IF function stipulates that IF the method is the least expensive print that method as the least cost method.

The sheet is mathematically simple. Major calculations involve only addition and multiplication. At the same time it is a powerful analytic tool because it allows the cost per unit or the production method to be changed and gives the low cost method after changes have been made. Although this example is for four methods it can be expanded to a greater number. For basic courses, four is probably sufficient.

Explaining the Shapes of Average Cost Curves

Keith Sherony, University of Wisconsin-La Crosse

I use the following method to illustrate the shapes of average cost curves to first year micro students. The illustration builds on the story line that if politicians can use "voodoo economics" it's ok for economists to use "voodoo mathematics". The method does not require the calculation and concomitant plotting of values. I assign those activities as out-of-class exercises. The method does require student understanding of relationships that increase at a decreasing rate ($\uparrow @ \downarrow$) and those that increase at an increasing rate ($\uparrow @ \uparrow$).

The presentation takes place immediately after completing the discussion of total fixed (TFC), total variable (TVC), and total cost (TC). While referring to a diagram that includes the three total curves I define and develop, one at a time, the corresponding average cost. Additionally, I tell the students that we are going to use what we learned about the respective total relationship to derive the shape of the average curve.

We try the easy one first. I give the definition of average fixed cost ($AFC = TFC/Q$). Then I ask the students to consider what happens in the numerator as I begin production, increasing output (Q) from 0 to 1 to 2 to 3 units etc., i.e., increasing the denominator at a constant rate ($\uparrow @ \rightarrow$). Since we had learned that TFC is constant we have:

$$AFC = \frac{TFC}{Q} = \frac{\rightarrow}{\uparrow @ \rightarrow} = \downarrow$$

indicating that AFC declines over the entire production range.

Next we take on the tougher challenge. Given the definition of average variable cost ($AVC = TVC/Q$), I ask the same question--- what happens in the numerator as I increase the denominator at a constant rate? Having learned that during the early stage of production TVC increases at a decreasing rate we have:

$$TVC = \frac{TVC}{Q} = \frac{\uparrow @ \downarrow}{\uparrow @ \rightarrow}.$$

Now voodoo mathematics comes into play. Since the up pointing arrow in the numerator cancels with the up pointing arrow in the denominator we're left with a declining numerator divided by a constant denominator. The conclusion is that AVC is decreasing. Of course eventually, as TVC begins to rise at an increasing rate, when you voodoo the up-pointing arrows you're left with a numerator that is becoming larger. The conclusion now is that AVC rising. If you draw the corresponding segment of an AVC curve as each voodoo operation is completed, the traditional U-shaped figure unfolds. Finally, the same treatment of average total cost ($ATC = TC/Q$) gives an U-shaped curve too.

Transitions From Production to Cost Theory

J. Michael Swint, The University of Texas Health Science Center

These two devices will enable students to see the monotonic transformations between short-run production and cost theories. (Naturally, you can use simpler language in your principles classes.)

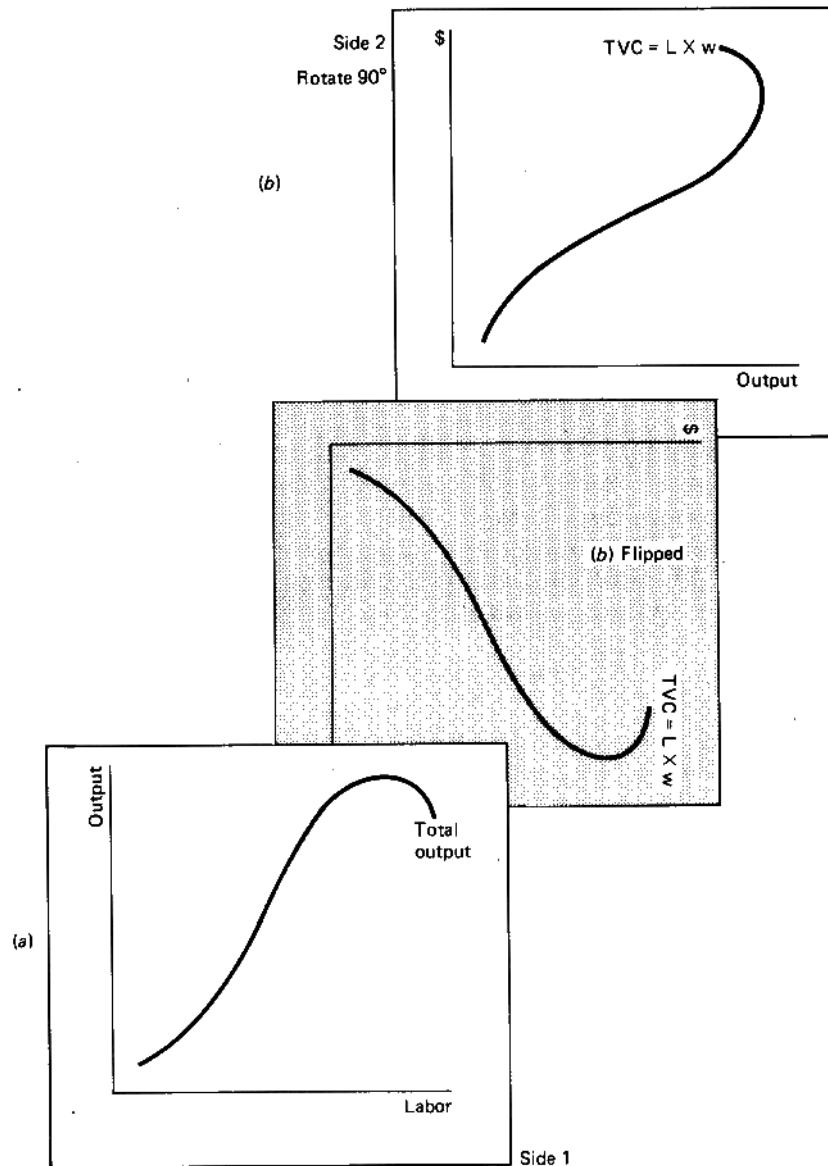


Figure 23-2

1. Given a total product curve $Q = f(L)$, with $K = K$ (Panel A of Figure 23-2), then $TVC = w(L)$. Since TVC is linearly related to output, multiplying the horizontal axis of the total product curve by the wage rate, w , yields total variable cost, or $w(L)$, with output, Q , inconveniently measured along the vertical axis. Now rotate Panel A 90 degrees clockwise and then turn over the paper upon which it is drawn. What you then see are the lines of Panel A through the sheet as Panel B. Because of the 90-degree rotation the axes are reversed as you would want; i.e., in production theory the dependent variable is Q and should be on the vertical axis; in cost theory costs are dependent and belong on the vertical axis.

2. Similar relationships exist between marginal product (MP), and average product (AP) (Panel A of Figure 23-3) and marginal cost (MC) and average variable cost (AVC) (Panel B). Since $AVC = w/AP$ and $MC = w/MP$, the symmetry of the relationship can be seen by turning Panel A over and upside down; MC and AVC appear through the sheet as Panel B. With both of these sets of graphs, you will need to emphasize the role played by the wage rate, but the fundamental symmetry of production and costs comes through loud and clear.

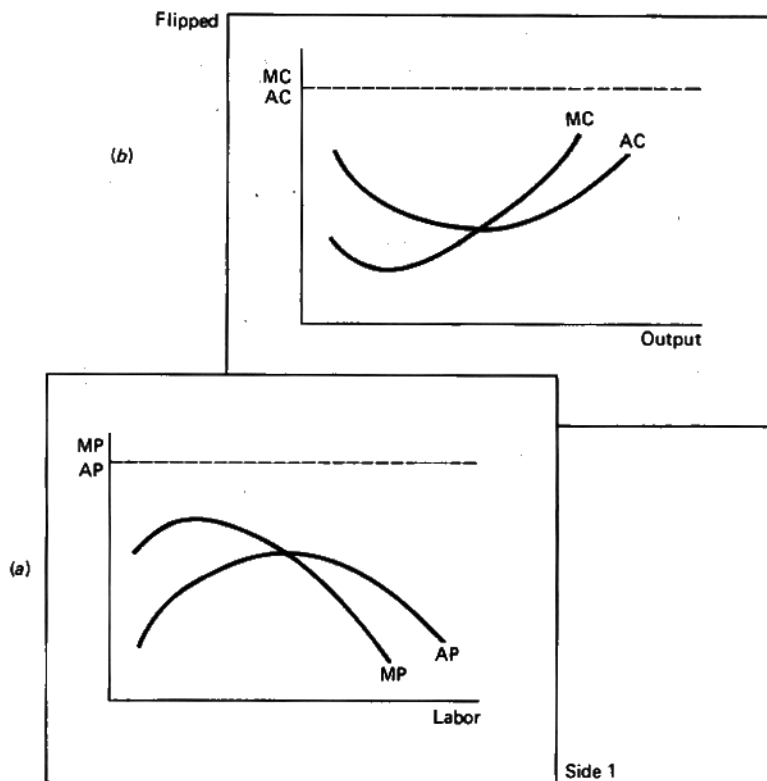


Figure 23-3

The Costs of Short-Run Production: A Textbook Illustration

Roy B. Levy, Pennsylvania State University

The exercise below provides for derivations of cost information from production information. I form the hypothetical Textbook Transport Company (TTC). TTC operates to minimize the cost of transporting textbooks from point A to point B. Opposite ends of the classroom serve as points of origin and destination. The company pays a user costs of \$.10 to employ a narrow band of classroom space, i.e., the capital input. TTC hires student employees at a wage of \$.04 per labor second. I act as the self-appointed president of the company, earning a salary of \$.50.

One can catalog output and labor information from several iterations of the productions process. At each iteration, TTC transports an additional textbook and employs an additional student. With the use of a watch, I record the total seconds used at each iteration. Given a judicious rounding of labor time, one can obtain an economically consistent set of output/labor combinations. Table 23-1 contains data from recent operations of TTC.

Output	0	1	2	3	4	5
Labor	0	3	5	9	16	25

Table 23-1

I instruct all students to compute the various costs that TTC incurs at each level of output. (Table 22-2)

Output	TFC	TVC	TC	AFC	AVC	AC	MC
0	\$.60	\$.00	\$.60	Undefined			---
1	.60	.12	.72	.60	.12	.72	.12
2	.60	.20	.80	.30	.10	.40	.08
3	.60	.36	.96	.20	.12	.32	.16
4	.60	.64	1.24	.15	.16	.31	.28
5	.60	1.00	1.60	.12	.20	.32	.36

Table 23-2

An instructor may use this exercise as an introduction to cost theory. One might then entertain discussions of the law of diminishing marginal returns and the properties of short-run cost functions.

The Choice of Production Methods

Yung-Ping Chen, University of Massachusetts-Boston

Profit-maximizing firms strive to operate efficiently. Economic efficiency is determined by the least cost of production. The cost of production under various methods can be determined by comparing the dollar value of the output with the dollar value of the input.

Suppose there are four alternative methods for producing 100 units of the product per month. These methods require different amounts of capital and labor, as follows:

Method	Capital Required	Labor Required
A	6 units	200 units
B	40 units	50 units
C	10 units	150 units
D	10 units	250 units

Which method should be used? All four methods can produce 100 units of the product, but they can result in different costs. Method D can be rejected because it used the same amount of capital as does Method C but more labor. Thus, Method D is obviously more costly than Method C and, therefore, less economically efficient. To choose the most efficient of methods A, B and C, however, we must have the relevant cost data. Let us assume that three different cost conditions could exist.

Cost Conditions	Per Unit Cost of	
	Capital	Labor
I	\$50	\$3
II	20	5
III	15	5

Then, the comparative costs of Methods A, B, and C are:

Cost Conditions	Method A	Method B	Method C
I	\$900	\$2150	\$950
II	1120	1050	950
III	1090	850	950

Therefore, the least cost or the most efficient method depends on cost conditions. Under Cost Condition I, Method A is the best; under Cost Condition II, Method C is the best; under Cost Condition III, Method B is the best. The most economically efficient method of production depends on the relative costs of labor versus capital.

We could draw some interesting and useful implications from this illustrative discussion. Suppose we currently employ Method A because it results in the least cost of production as compared with other methods. That is, we have Cost Condition I. If the cost condition changes to that of II, our present method is no longer the best (that is, the least cost). We will want to switch to some other method of production.

Changing conditions of resource availability can change the relative cost of labor and capital. These changes in relative costs of inputs may require changes in the methods of production, which mean changes in the usage of different resources. The development of new technology can lead to new production methods which may even use different resources to produce the same product.

For example, the Industrial Revolution may be viewed as a process of coping with the resource constraints which began to constrict economic growth. In England wood was once used for a number of purposes such as building material, fuel, and chemical inputs. During the reign of Queen Elizabeth I, wood fuel prices rose about three times as rapidly as general prices. In the early 17th century, timber supplies were being depleted, and laws were passed to limit forging and furnace operations in areas where timber became increasingly scarce. In time, however, the Industrial Revolution substituted coal for wood as a source of fuel and power and used abundant iron in place of timber. The changeover was long in coming because, until technological problems were solved, using coal instead of wood in glass making, baking, and iron production resulted in inferior products.

Due to abundant timber resources, the United States developed extensive technology in wood-making machinery, which by the 1850's was the most advanced in the world. The large fireplaces in early American homes illustrate the lavish use of an abundant resource, since they were designed to burn large logs that were no longer available in Europe. Similarly, while the American builder used wood, the European builder used stone or iron. Americans also used wood to construct bridges, aqueducts, and even roads.

In the mid-19th century, relative timber prices began to rise. As a result, a shift toward coal occurred, in some cases rather rapidly. For example, at the beginning of the Civil War, cord wood supplied the energy needs of the railroads, but twenty years later, railroads were using twenty times as much coal as wood.

These examples show that as the relative price of the resource currently in use increases, other resources become more economically attractive alternatives. Technology develops to exploit these abundant and relatively inexpensive alternative resources. Entrepreneurs apply the new technology to find new production methods with lower costs than the method that had once seemed the best choice.

Weights and Relationships Between AVC, ATC, and MC

John W. Reifel, Grand Valley State Colleges

Students frequently have difficulty grasping why a firm's marginal cost curve must pass through the minimum points of the average variable cost and the average total cost curves and why average variable cost achieves its minimum point at a lower level of output than where average total cost reaches its minimum point. A weighing analogy can aid in an understanding of the relationship.

To explain why the MC curve must pass through the minimum point of AVC, relate the following analogy. If the parents of a sizable family whose children range from pre-school age to teen age stand on a large scale at the same time, the average human weight (ABW₂) can be calculated by dividing the weight reading (W₂) on the scale by the number of people (2) standing on the scale. Now, successively add the children, one at a time in order of increasing weight, to the group already standing on the scale. Take weight totals as each heavier child steps onto the scale and compute the resulting average human weights. Students readily grasp that as long as the

children who successively step onto the scale weigh less than the average human weight of the group already on the scale, the resulting new average human weight will fall. But, as the heavier children step on the scale, at some point they will start weighing more than the average human weight of the group already on the scale and so the resulting average human weight will begin to rise.

The analogy of the weighing example to the firm's cost curves can be drawn by letting people on the scale be units of output, the weight reading be variable cost, average human weight be average variable cost, and the weight of the last child to step on the scale be marginal cost (the change in variable cost). Thus, as output increases one unit (another child steps on the scale), the new average variable cost (the new average human weight) will be smaller, the same, or larger depending on if the marginal cost (the weight of the last child to step on the scale) is less than, the same as, or greater than the preceding average variable cost (the preceding average human weight).

To explain why the marginal cost curve must pass through the minimum point of average total cost, relate the following extension of the preceding analogy. Assume the head of the family is blind and has a seeing eye dog which accompanies him everywhere and is therefore considered his appendage. If the seeing eye dog and the parents stand on the scale at the same time, the average total weight (ATW_2) can be calculated by dividing the weight reading ($W_2' = W_2 + \text{weight of seeing eye dog}$) on the scale by the number of people (2) standing on the scale. Successively add the children, one at a time in order of increasing weight, to the group already standing on the scale. Take weight totals as each heavier child steps onto the scale and compute the resulting average total weights. Students readily grasp that as long as the children who successively step onto the scale weigh less than the average total weight of the group already on the scale, the resulting new average total weight will fall. But as the heavier children step on the scale, at some point they will start weighing more than the average total weight of the group already on the scale and so the resulting average total weight will begin to rise.

The analogy of this second weighing example to the firm's cost curves can be drawn by letting people on the scale be units of output, the weight of the seeing eye dog be fixed cost, the weight of the people on the scale be variable cost, the weight reading on the scale be total cost, average total weight be average total cost, and the weight of the last child to step on the scale be marginal cost (the change in total cost). Thus, as output increases one unit (another child steps on the scale), the new average total cost (the new average total weight) will be smaller, the same, or larger depending on if the marginal cost (the weight of the last child to step on the scale) is less than, the same as, or greater than the preceding average total cost (the preceding average total weight).

Note also that average total weight will reach its minimum point at a larger number of family members than where average human weight reaches its minimum point because where average human weight is at a minimum, it equals the weight of the last child added but is less than average total weight (including the dog's weight) and so average total weight must still be declining. By analogy, average variable cost must reach its minimum point at a smaller level of output than where average total cost reaches its minimum point.

Relationships between Marginal and Average

David J. Jobson, University of Alberta

In explaining why marginal cost intersects average total and average variable costs at the latter's minimum points, the following analogy has proved useful.

First, the three cost curves are sketched on the blackboard and students are led to observe that when the marginal is below the average, the average is falling; when the marginal is above the average, the average is rising; when the marginal equals the average (intersection point), the average is unchanged.

At this point, when asked, students are commonly unable to explain why these relationships exist. Students are then asked to guess the average weight of all students currently in the class. After various guesses, we agree that the average is about a certain amount say 130 pounds.

Then I propose that a new (additional or marginal) student weighing 95 pounds enters the class. What must happen to the average weight of students in the class? Why? Then I propose that a new student weighing 300 pounds (sumo wrestler?) enters the class. What must happen to the average weight of students in the class? Why? Finally, it is proposed that the new student weigh an amount equal to the current class average. Will the average change? Why not?

Marginal and Average Relationships

Thomas J. Shea, Springfield College

Marginal/average relationships are among the most difficult concepts for mathophobic students to master. One way to get this idea across is to ask students to suppose that they were given 10 quizzes during the term and that they had to keep a "graph log" of the results of each quiz as well as their average. Ask what would happen if they got 100 in the first quiz and 80 in the second. Their marginal result (80) was below their average. What happened to the average? Then tell them that their next quiz result was a 0. What happened to the average? In the next quiz they received a 90. Now what happens to the average? And so on. Students are very adept at figuring their average and can easily grasp the idea that "when the margin is less than the average, the average decreases and when the margin is greater than the average the average increases." Homework requiring graphs paralleling these results also reinforces this concept.

Relationships between Marginal and Average Costs

Gary M. Greene, Sr., Spartanburg Methodist College

Many students find it very difficult to understand the relationship between the marginal and average cost curves and how one moves in relation to the other. The examples that I have used can be explained very simply and readily understood by any economics student. Consider the average

weight of ten skinny men to be 100 pounds. Along comes a fat lady who weights 200 pounds. The fat lady is the extra or marginal person to be considered. Now, what is the average? Does the average increase? When the marginal cost curve (the fat lady) is greater than the average cost curve (the ten skinny men), the average cost curve (the total of the ten skinny men and the fat lady) must rise. The case of the skinny man and ten fat women will explain why the average cost curve will fall. It does not matter what example one uses: whether it is a large dog or small cat, large football player or small football player. The relationship will always hold true.

Decomposing the Linkages from TC to MC

Jim Vincent, University of St. Thomas

Most students who lack a good background in calculus find it difficult to interpret and use the concept of the slope of a nonlinear function. In micro principles classes, this poses a major problem in teaching about the relationship between a total cost curve (or total variable cost curve) and the marginal cost curve. The result is that many students complete beginning micro with big gaps in their comprehension of the linkages between cost functions and production functions.

Instructors often try to motivate the idea that the MC curve reflects the slope of the TC by referencing a "textbook-style" total cost curve such as that illustrated in Figure 23-4. This involves explaining that the MC curve is downward sloping over the range of output for which the TC curve is decreasing and upward sloping over the range of output for which the TC curve has increasing slope. In my experience, there are many students for whom this type of explanation, however clear, is inadequate. I have been using an extension of this approach that has proven to be quite successful.

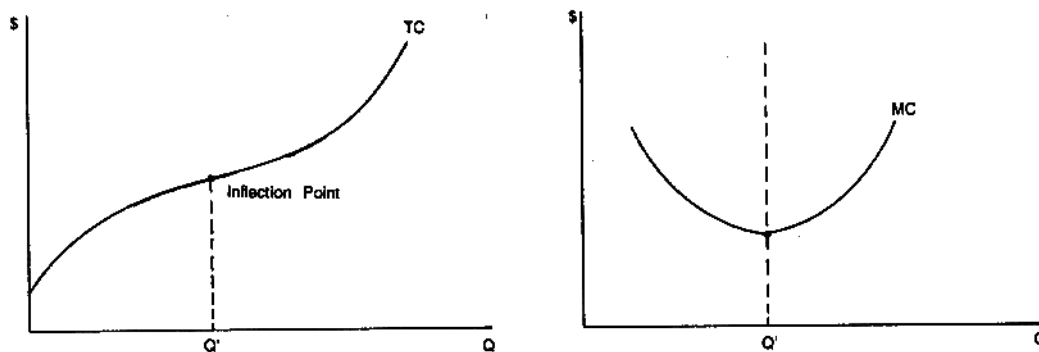


Figure 23-4

After going through the preceding explanation, I find that many students memorize the relationship in Figure 23-4, but cannot generalize the fundamental concepts. To extend this standard explanation, I decompose the approach into the two panels shown in Figure 23-5. I first draw the top part of Panel A, but do not even hint that this is simply the portion of the TC curve in Figure 23-4 that is to the left of the inflection point. Upon being asked what the MC curve

associated with this TC curve might look like, very few students are able to respond. I then present them with the TC in the top part of Panel B, again without mentioning that it is the portion of the TC curve in Figure 23-4 to the right of the inflection point. Most students still draw a blank.

After their minimal responses, I draw the MC curves (at the bottoms of Panels A and B of Figure 23-5) associated with both of these partial TC curves while describing the related effects on output (e.g., . . . and in Panel A, the MC falls because increasing amounts of output are produced as each extra worker is added to the production process, but each worker adds only a constant amount [the wage rate] to total cost . . .). Then the fact that these TC curves are just parts of the original is revealed, and there is much groaning and a recognition by most students of how simple the concept really is. I have received numerous comments from students that this exercise provided a major breakthrough in their understanding of the relationship between a total and a marginal function. A similar step-by-step approach is useful in clarifying many economic concepts that involve lengthy and intricate linkages.

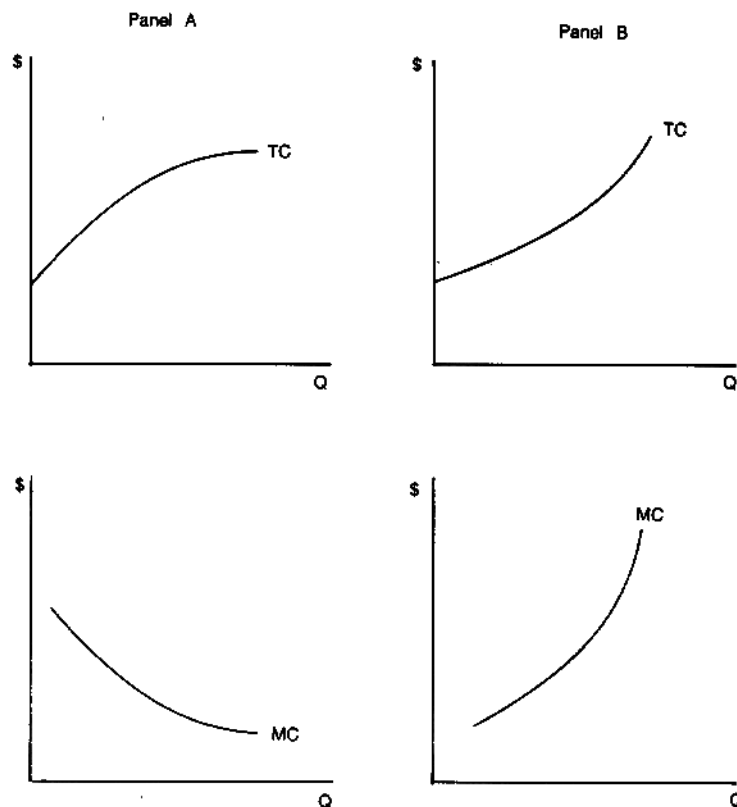


Figure 23-5

Chapter Nine

The Competitive Ideal

Market Structures

Taxonomies of Market Structures

Joseph I. Phillips, Jr., Creighton University

A motivational device for teaching the four basic market models of Microeconomics is to place the following essay question on the blackboard before beginning the material. Compare and contrast the following: Perfect Competition, Monopoly, Monopolistic Competition and Oligopoly with respect to (1) the nature of the products produced, (2) shape and location of the demand curves faced by a firm, (3) relationship between firms within the industry, and (4) qualifying assumptions associated with each model.

The students are informed that such a question will appear on the next test and will comprise 20% of the test grade. Class concentration tends to rise to a higher level fostering greater understanding of the material and better assignment and test performance.

Competition vs. Competing

Richard B. McKenzie, University of California at Irvine

Students often have difficulty comprehending the dilemma individual competitors face in the market because they are usually exposed only to the conditions for competitive equilibria. One way to offer students a brief experience as competitors is to give them a chance to bid for a given amount of money, say, \$2, requiring every student to pay the auctioneer the amounts bid, with the understanding that only the highest bidder will receive the "kitty." Bids are collected on signed slips of paper indicating that the student understands the rules of the game. After the first round of bidding is completed with the professor in the room, the professor leaves the room giving the students a chance to collude in their bids. (Before leaving, chide the students on the expected inability to trust one another.)

This game highlights several important points: (1) the dilemma each student faces in attempting to outdo competitors, (2) the pressure on competitors to collude and the hurdles confronted when many competitors try to form an effective cartel, (3) the benefits of monopoly power, and (4) the consequences of "rent seeking." (In classes of over 30 students, the total bids usually exceed the amount up for bid by several times. The professor should expect a profit and plan to give it away (without telling the students beforehand.) This game was originated by Geoffrey Brennan at VPI.

Domino Diagrams and Market Structures

John Pisciotta, Baylor University

Micro principles emphasizes the graphics of revenue and cost curves for various market structures. "Domino" diagrams can provide students with a useful first exposure to market structures. These diagrams reflect the numbers of buyers and sellers in various market structures. Figure 24-1 shows structures typical of pure competition, monopolistic competition, oligopoly, and monopoly. Note that on the buyers' side of these markets, many dots reflect the many potential buyers. The differences are on the sellers' side; there are many sellers in competition, but only one in a monopoly market.

Domino diagrams can also be helpful in discussing the concept of countervailing power as it relates to oligopoly. Part A of Figure 24-2 shows oligopoly without countervailing power. In Part B we find that oligopoly on the sellers' side is faced with oligopsony with only a few buyers in the market.

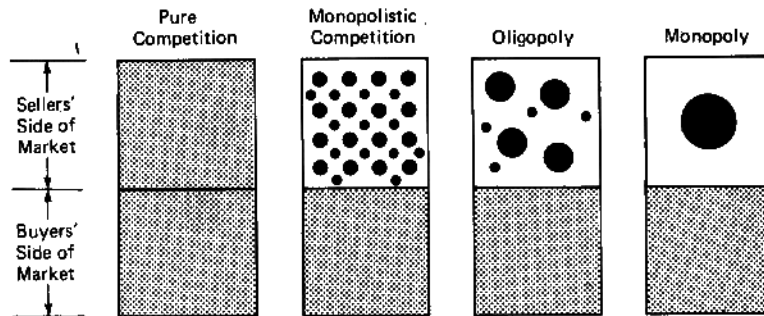


Figure 24-1

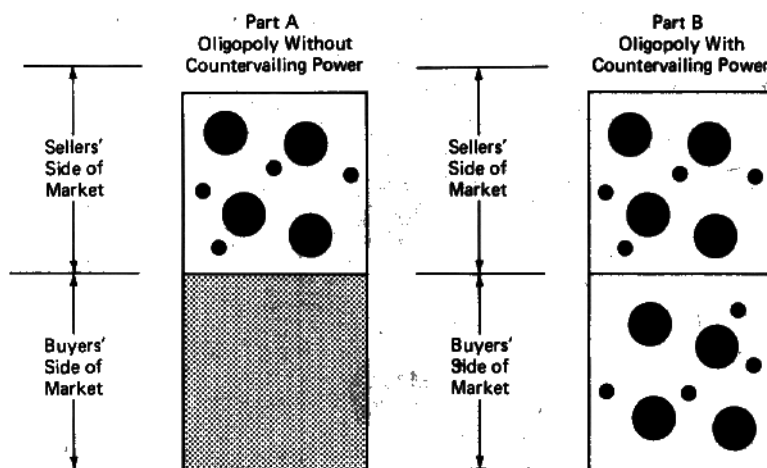


Figure 24-2

Finally, the domino diagram can be used in a discussion of labor as well as product markets. Figure 24-3 shows a highly competitive labor market, with many sellers and many buyers. The buyers are fewer in number than the sellers since the number of firms would always be less than the number of workers. Figure 24-4 shows a labor market dominated by a few employers. Notice that while there are many sellers representing individual workers in the market, there are only a few on the buyers' side of the market. The power on the buyers' side of the market can be a factor in unionization where labor unions establish countervailing power. Part A of Figure 24-5 shows a monopoly union which deals with a few employers in a market. Part B shows a monopoly union which faces only one employer.

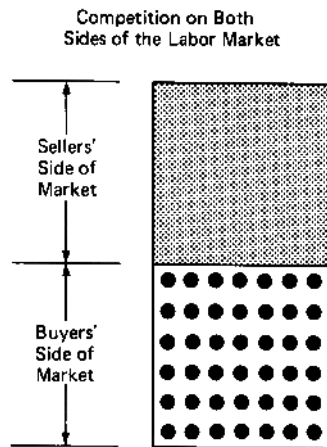


Figure 24-3

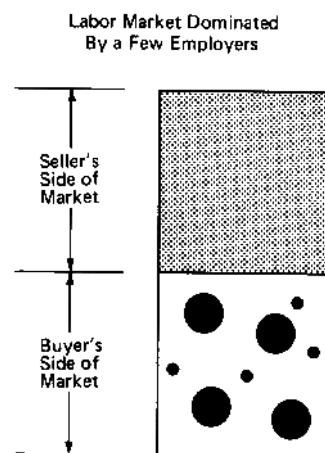


Figure 24-4

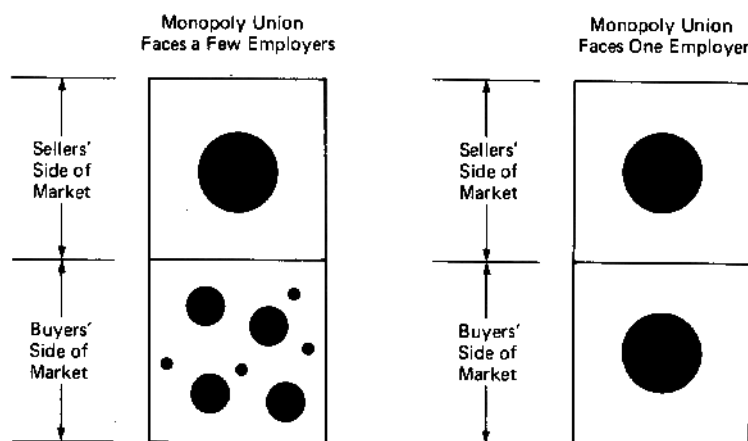


Figure 24-5

Competition and Incentives

Dan LeClair, The University of Tampa

To Minimize Costs: To introduce principles students to the differing views concerning cost minimization and market structure I use the analogy of a race. In the competitive case, there are many runners each with similar abilities and training. In competition, each runner has an incentive to run as fast as he/she can to win the medal, but alas, in perfect competition the best each can do is tie. In fact, each runner must run as fast as possible just to tie, if all the runners are running their fastest (efficiency). In the monopoly case, there is only one runner in the race. Some would argue that without competition there is no incentive for the runner to run as fast as he/she can (inefficiency). Others would counter that even without competitors, the race may be timed, with a greater trophy (profit) for a faster time. This would be enough to cause the lone runner to run as fast as possible (to be efficient).

To Innovate: In the competitive race, what any one runner can do to train for the race the others can do as well and the race ends in a tie anyway (no incentive to innovate). Others argue that anything that can be done (for instance, weight training) will be done in order to try to get ahead or keep up. But suppose one runner came up with a unique way of increasing his/her speed and endurance (reducing costs), but others were somehow prevented from using that method (e.g. patent - some monopoly power). Of course, this is likely to increase the incentive to innovate. (Possible example: Ben Johnson and his use of a technology no competitor could lawfully use.)

Possible extensions: 1) You could assume that the sole runner is regulated so that he/she can only win a trophy whose size does not vary with the time, so that there is no incentive to run faster. 2) Or, if the trophy size does vary with time, the faster the runner runs the greater the incentive for other runners to enter the next race. Of course, this may provide an incentive for the sole runner to settle only for the small trophy by not running fast.

New Technologies and Market Revenues: Hollywood and the VCR

James K. Shaw, European University of America

One of the more intriguing challenges facing established industries is competition generated from new technologies. Hollywood and the VCR represent a case in point: motion picture studios, "reeling" from the perceived threat of videocassettes and recorders, as well as cable and broadcast television, had forecasted declining revenues through much of the 1980s. The presumption was that such innovative technologies would divert consumers from motion picture attendance and, therefore, diminish studio revenues. The reality is that ticket sales are constant, and many new theaters are currently under, or planned for, construction.

As the data below firmly illustrate, revenue to Hollywood studios climbs at a predictable annual rate of 8-12%, despite these emerging technologies; it is, rather, the total revenue mix for theatrical films that has changed, not bottom-line profits. New technologies have meant, in short, a bigger pie for this industry. Ask students about other competitive "threats" likely to penetrate established industries in the 1990s, e.g., electric cars or cellular phones. Will industries previously

committed to the production and/or maintenance of seminal consumer goods experience increased or diminished revenues as the result of these innovations?

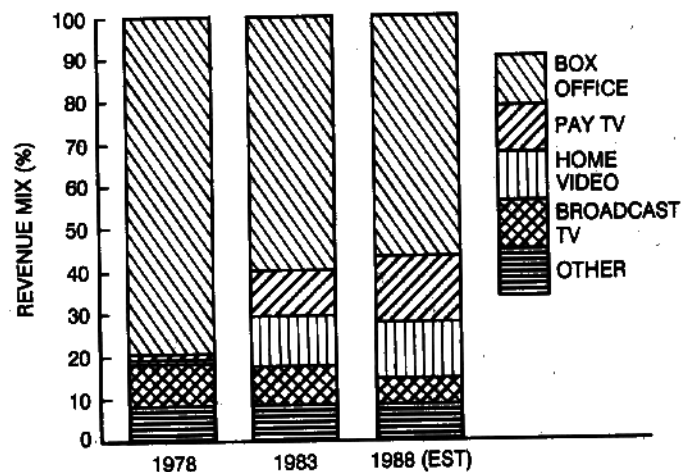


Figure 24-6

Pure Competition

The Ideal State of Perfect Competition

Steven M. Rock, University of Northern Illinois

Students often fail to understand why so much time is spent describing the model of perfect competition. The model is restrictive and there are few real world applications. To grab their attention, I offer the following analogy. The model of perfect competition is like virginity. Both are held as lofty ideals by which alternative behavior is judged, even if both are rare.

What is a Homogeneous Commodity?

Jim Cobbe, Florida State University

Most students will agree that USDA inspected homogenized whole milk is a homogeneous commodity. Ask several students to recall the price they last paid for milk. Standardized to a price per ounce, the range will be very large. Milk in a small container from a vending machine may well be two to three times the price per ounce of the cheapest milk in a gallon jug from a supermarket. Ask if there are entry barriers of any significance to retail sale of milk, and remind students of the "law of one price." Discussion should establish that (1) commodities have important characteristics (size of package, storage requirements, location) other than the purely physical; (2) transactions involve significant costs (time, convenience, travel, storage implications) other than monetary price; (3) monopolistic competition based on non-physical characteristics is possible and common. The

homogeneity requirement for perfect competition turns out to be much stricter than that the physical commodity itself be physically homogeneous and perfectly divisible.

The Perfectly Elastic Demand Schedule

Eric K. Steger, East Central University

Quite often, my students have difficulty understanding why there is a perfectly elastic demand schedule facing individual firms in perfect competition. I've found that it helps if I use oil production as an example. I stress that the world demand and supply of oil determine its market price. I then explain that oil producers face one price for their oil production and can sell all they produce at one price. If a student complains that they can't sell all they produce, I challenge the person to show one example of oil production not being purchased. Typically, by using graphs and this illustration, they understand perfectly elastic demand curves.

Reallocating Resource Use

Dale Sievert, University of Wisconsin-Madison

Long run dynamic adjustments towards equilibrium in an industry are among the most striking of economic phenomena. The price line's position relative to the average cost curve's position dictates whether firms leave or enter an industry. Most students do not recognize similar real life situations, though they grasp the graphic presentation. In short, they find it hard to apply the concept, and most cannot fathom why such resource reallocations are necessary.

Two illuminating examples help my students understand this process. The first occurred in the barbering industry. Prior to the Beatles (pre-1963), fashionable male hair length was shorter. Men required certain amounts of resources (barbering labor, cutting tools, shops, etc.) to maintain desired hair length. By the mid 1960s, fewer such resources were necessary due to a change in taste for hair styles. Society had more barbering resources than necessary.

The competitive model suggests that in such a case, prices would fall, then profits, then the number of firms (resources). Finally, price would return to its original level. However (in my state at least), prices did not fall; the number of firms did fall sharply-- one third of barber shops closed during a two year period. How did this happen? My friend's shop, for example, burned. He then took a job in advertising and never returned to barbering. Why the shop burned at such an auspicious time we never learned--but many have suspicions.

Another example is agriculture. Tours of most farming areas reveal numerous old abandoned farmsteads, reflecting diminished labor resource requirements as agriculture became capital intensive.

Like Ants to a Picnic

Ki Hoon Kim, Central Connecticut State University

When we drop some cookie crumbs on the floor, what do they attract? Ants, of course. In competitive markets, the "ants" are the firms and the crumbs are the excess profits. Ants will come to the place until all the crumbs are gone. Firms will enter the industry until all excess profits are zero. This is possible because competition prevails. When there are no more crumbs, no more ants will come--when there are no excess profits, the entry of firms will stop.

Profit Maximization

Bernard Newton, Long Island University-The Brooklyn Center

The following illustration worked very well when I gave it in response to a student who exclaimed that she was too excited about getting married to be interested in how maximum profits are obtained by equating marginal revenue and marginal cost. Assume that you wish to maximize the profit on your wedding. Also assume that each person you invite to the wedding will cost you \$25 per head no matter how many persons you invite.

First, invite that relative (Uncle Keynes) that will bring you the greatest cash gift, say \$1000. Thus, the marginal revenue is \$1000 and the marginal cost is \$25. The profit is \$975, that is $\$1000 - \25 . Then invite the person that will give the next highest amount (Cousin Galbraith), say \$750. Thus, the marginal revenue is \$750 and the marginal cost is \$25. The profit on Cousin Galbraith is \$725-- that is $\$750 - \25 , and the profit on both relatives is $\$975 + \$725 = \$1700$. Then the student should invite the person who will give the next highest valued gift, and the next. Where should she stop? When she reaches the person (co-worker Malthus) who she estimates will give her a \$25 gift. Thus, the marginal revenue will be \$25 and the marginal cost remains at \$25 for a break-even result. If the person who is expected to give the next highest valued gift were to be invited, there would be a loss on that one person, for the marginal revenue would be less than \$25, while the marginal cost remains at \$25. Thus, that person would not be invited.

Thinking on the Margin

Steven T. Call, Metropolitan State College-Denver

Training students to think on the margin is a primary goal in economics principles courses. The following problem provides practice. 95 percent of a class will usually get the wrong answer at first. The example refers to President Nixon's 18 minute tape erasure during Watergate.

Assume your firm sells recording tape erasers and has an average total cost schedule as given below:

Quantity	Average Total Cost
200	\$200
201	201
202	202

Assume that the firm maximizes profit by selling 201 units. Now suppose that the firm is approached by the White House with an urgent request for a recording tape eraser and offers \$300 for it. Assuming that the additional sale will not affect the present market sales, should the firm accept the order if profit maximization is the only criterion?

ANSWER: No. Marginal Revenue (\$300) < Marginal Cost (\$403). Most Common Answer: Yes, since $300 > 202$. This error arises from focusing on averages and failing to properly consider marginal cost.

The Short-Run Decision to Operate or Shut Down

William P. O'Dea, SUNY at Oneonta

To illustrate that a firm deciding whether to continue operating in the short-run will base its decision on the relation between total revenue and variable cost ignoring fixed cost, I use as a case study the Warner Brothers film "Hearts of Fire." I tell the students that the film was produced in 1986 and had a production cost in the \$15m-\$18m range. I then tell them that the film was not released to theaters in the United States and ask for an explanation. Some students suggest that Warner Bros. did not release the film to theaters because it felt it could earn more by releasing the film directly to video or pay cable. I point out that the value of a film in these secondary markets is directly related to its performance in theatrical release and ask for another explanation. Some student will generally ask what it costs to release a film to theaters. I tell them that in 1986 the cost of prints and advertising was approximately \$8m for a film given a wide release (800-1000 theaters). It then becomes clear that Warners did not release the film because it anticipated that revenues from theater owners would not cover these distribution costs. The final part of the exercise is to translate the elements of the problem into economic terminology. The decision whether to release the film is analogous to the firm's decision to operate in the short-run. The production cost of the film is a fixed cost. In deciding whether to release the film, the marketing department's concern is not to compound a mistake made by the production department. In making this decision the marketing department will focus on those costs which it can control-the variable costs of distributing the film. Be deciding not to release the film, they lose the production cost which is not pleasant. However it would be less pleasant still if Warners had added to this loss by releasing the film and incurring variable costs that were not covered by revenues.

Recognizing Potential Profits or Losses

Ralph T. Byrns

Show your students how the potential for profits or losses can be quickly recognized regardless of the market structures by drawing sets of cost and demand curves so that:

Demand intersects ATC	--->	Profits
Demand lies below ATC	--->	Losses
Demand tangent to ATC	--->	Breakeven.

Dutch Auctions

Gary M. Galles, Pepperdine University

Discussing a Dutch auction helps cement the concept of opportunity costs in students' minds. I begin by asking if any student has been to an auction, and have him describe the bidding process. I then ask what determined the price paid, and stress that the price is just barely above the value placed on the item by the last bidder to drop out--which is determined by what he was willing to pay), and may be far below the value placed on it by the actual buyer (e.g., one person could value a good at \$1 million, but everyone else drops out at \$100,000). In other words, price is determined by opportunity cost--the value to the next highest bidder. I then ask if you need to know how much others value an item for this result to hold; this gets them to see that standard auctions reveal what others are willing to pay. One merely bids slightly more than the last bidder, whose last bid reveals the maximum he was willing to pay, so that one need never pay much above that amount for the item.

I then describe a Dutch auction: an exorbitant opening price is announced for the item to be sold, and is gradually lowered until someone signifies willingness to buy at which point the auction is over and the transaction is consummated. After noting that it is less showy than a standard auction, I ask why an auction would be conducted in such a manner. I lead them to see that a typical auction reveals the values others place on an item, which you barely beat, while a Dutch auction does not reveal such information until it is too late to just beat the last bid, because the first bid is also the last bid. I point out that a Dutch auction is intended to extract a price in excess of opportunity cost (what the second highest bidder would pay) by concealing what those opportunity costs are until it's too late, thereby inducing the buyer placing the highest value on the item to bid an amount closer to the maximum he would be willing to pay than he would under a typical auction arrangement.

I then ask what sorts of items would sellers think appropriate for Dutch. Students should see that only where there may be significant divergences between the values placed on an item by the highest valuation and second highest valuation buyers would a Dutch auction yield significantly higher prices. This tends to restrict such auctions to cases of unusual, rare or one-of-a-kind items, especially if they are of high value (because then small percentage differences in price may generate big absolute differences).

Next, I note that the same sort of tactics could be employed whenever the item involved does not have a well established narrow range of prices. A good example occurs in bazaar trading where both parties start at ridiculously divergent prices and each betters his terms until the other party finally accepts. Both parties are trying to extract as much benefit of the trade as they can: the buyer trying to get a price near the minimum the seller would accept; the seller trying to get a price near the maximum the buyer would pay.

I conclude by reemphasizing how Dutch auctions represent attempts to get above opportunity cost prices and the importance of prices in conveying opportunity costs.

Explaining the Marginal Benefit = Marginal Cost Rule

Charles C. Fischer, Pittsburg State University

The idea that any activity should be undertaken if its marginal benefits (MB) exceed its marginal costs (MC) and that it should be undertaken until $MB = MC$ is among the most general of economic concepts and the most troubling for students. The game of Economic Simon Says demonstrates the logic of the $MB=MC$ rule and helps drive home sound economic decision making. In this game, students are told to obey Simon only if it is profitable to obey. Then Simon imposes both costs and benefits on participants. Simon says "Take one step forward--I pay you \$5 and you pay me \$4." Ask students if they would step forward. Yes, for a net gain of \$1: $MB > MC$. Would you move immediately after hearing "I pay you \$5"? No, we can't make a good decision based only on benefits or costs. Simon might have said "You pay me \$6." Then, we would have made a bad decision and wound up with \$1 less in our pockets. Would you move if Simon said "I pay you \$4.10 and you pay me \$4"? Sure, we could pocket a dime. Simon pays \$4.01 and you pay \$4? We would still gain a penny. As students exchange money with Simon and watch their wealth grow they become true believers in the $MB = MC$ rule for decision making. Of course, the game doesn't have to be physically played. By explaining Economic Simon Says and then asking students for their responses, its lessons are quickly grasped.

The Marginal Consumer

Josef M. Broder, University of Georgia

Elasticity is one of the more difficult concepts to teach or learn. Many graphical/mathematical presentations lack an intuitive explanation for consumer reaction to price changes. The marginal consumer approach provides intuition to presentations on price elasticity of demand by asking students to identify and analyze two distinct groups of buyers of a product. There are both marginal consumers who quickly respond to any price change and loyal consumers who tend to buy regardless of price. The marginal consumer approach contrasts the total revenues received from these groups, and can be simplified by assuming that:

- a. Each consumer will purchase only one unit of commodity.
- b. Movements along the demand curve represent consumers entering or leaving the market.

The relative contributions to total revenue made by marginal and loyal consumers can be expressed graphically. For example, a price decline from \$6 to \$5 results in a \$1 loss in total revenue from the loyal consumers and a \$4 gain in total revenue from marginal consumers for a net increase in total revenue of \$3. Likewise, a price decline from \$2 to \$1 results in a \$4 loss in total

revenue from loyal consumers and a \$1 gain in total revenue from marginal consumers, for a net loss in total revenue of \$3.

The total revenue impacts of a price change depend upon the relative sizes and contributions of these consumer groups. Segmenting and labeling the total revenue areas under the demand schedule in this fashion incorporates some real world people into the concept of elasticity and can be used to supplement conventional graphical or mathematical presentations on the subject. Figure 24-7 The Marginal Customer and Price Elasticity of Demand

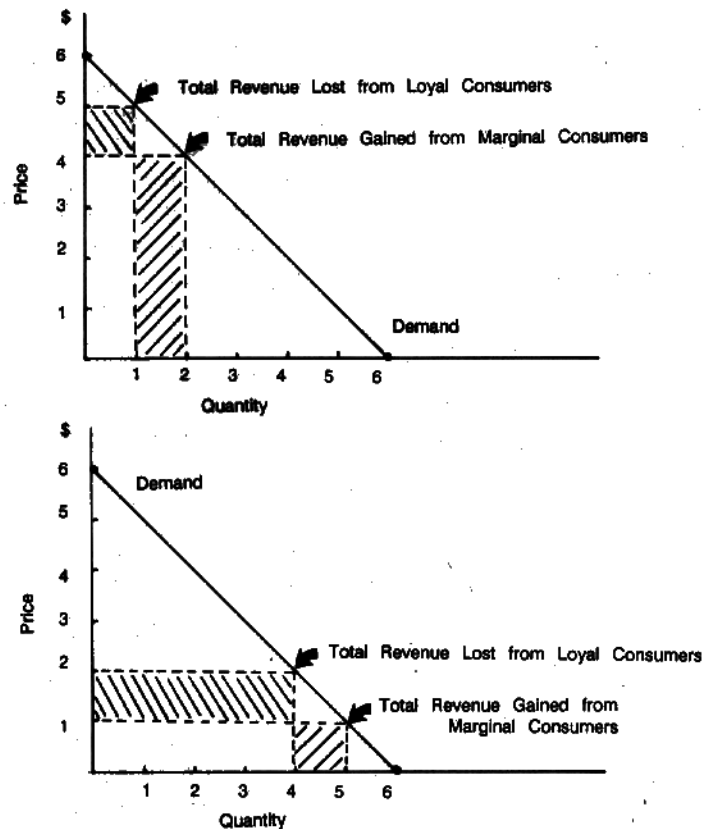


Figure 24-7

The Fallacy of Composition and the Economic Way of Thinking

Thomas L. Wyrick, Grove City College

The fallacy of composition plays a more important role in economics than a few introductory comments can convey. Many important ideas in economics are the result of avoiding the fallacy, and to the extent the average citizen or politician fails to recognize and avoid the pitfall, we economists have a clearer understanding of the world than they.

Take, for example, the strong preference among politicians for expansionary macroeconomic policies. They realize from personal experience and from communicating with constituents that profits and employment depend critically on the strength of the demand for goods: sellers try to stimulate demand by advertising, manufacturers change product designs to stimulate demand; companies expand and new ones are created to satisfy unfulfilled demands.

Policy makers often draw from these experiences the lesson that government can promote prosperity by stimulating the demand for goods. In each of the cases cited however, it is individual businesses (and their employees) that benefit from the increase in demand. Because the nation faces a resource constraint that individual firms don't, a simultaneous increase in demand for all goods cannot boost the entire economy in the same way relative demand shifts can benefit individual producers.

The fallacy of composition can also be used to help explain how the demand for an individual firm's product can be infinitely elastic while the market demand for the same item has a different shape entirely (and may even be inelastic in the relevant range). Before presenting the usual explanation of the curves' shapes, it is helpful to preface one's remarks with a review of the fallacy of composition. Just because the industry demand curve slopes downward does not mean the demand for each firm's output should have the same shape.

Drawing special attention to the fallacy of composition before discussing the shapes of the two demand curves should be a signal to students that a "common sense" view of matters may lead them to incorrect conclusions. To the untrained, common sense may suggest that a firm with 1% of market sales will face a demand curve that is 1% of the market demand curve. Or common sense may suggest that a company selling 1% of total market volume "controls" that part of the market and can vary price within its "domain" in the same way that an entire industry can influence price. Economic logic permits one to see through these confusions and does so by avoiding the fallacy of composition.

A third way the fallacy of composition can be used is to explain the invisible hand of the marketplace. Although individual sellers mean only to promote their own gain, Adam Smith noted that they "promote an end which was no part of (their) intention," namely, the well-being of consumers. The competitive market process yields more than a summing of the parts would suggest.

Scheduling on Amtrak

Barry P. Brownstein, University of Baltimore

The distinction between marginal and fixed costs is best taught by using examples. An excellent one was related by a student who told of attending a meeting to discuss Amtrak's schedule. The staff economist wanted to add an extra train, arguing that the marginal revenue from that train (passengers' fares on that train minus lost revenue on other trains) would exceed the marginal cost. Since idle capacity existed the marginal cost would amount to the cost of the crew. The accountants, however, argued that each train "has to pay its own way". Presenting figures on the average cost of each train, they argued that the extra train would not be profitable. A good class discussion develops by asking what is included in average cost (which should not be considered as far as the discussion of the extra train goes). Then ask the class to demonstrate that profits are higher or losses less by following the economist's advice.

Fixed Costs, Variable Costs, and Rational Behavior

David Weber, U.S. Coast Guard Academy

To demonstrate why profit-maximizing/loss-minimizing firms will shut down in the short run if variable costs cannot be covered (a result easily demonstrated either numerically, graphically or algebraically), I confront students with situations such as the following: (1) Upon graduation, you find yourself working in a city in which is located a university that offers a graduate program in a field that interests you; you decide to register for one evening course and, at the first class, a syllabus is handed out that is quite different from what you were led to expect--should you continue to take the course simply because the registration fee is not refundable? (2) You heard that a new movie just opened at your local theater and decide to take your chances, although you don't know what it's about; it turns out that after five minutes of viewing, "Terminal" is not about terrorism at a major train depot, but about emotional disorders caused by spending too much time with computers--should you sit through the movie simply because the price of admission is not refundable?

The similarity in these situations is, of course, that the fixed or "sunk" costs associated with one's actions should not affect one's behavior--what matters in either case is whether the potential benefit of continuing with the course (or remaining in the theater) exceeds the sacrifice one would incur from same, which is variable, i.e., over which one has control. Thus, if you believe you could spend your time in some other way which would provide greater benefit than you could expect from the course (or movie), economic rationality (which emphasizes such cost/benefit comparisons) would lead you to leave the classroom (or theater) despite not receiving any refund, just as a firm will shut down in the short run if the additional sacrifice it would incur by remaining open cannot be covered by revenues so earned.

Average Cost vs. Marginal Cost Pricing

Eric K. Steger, East Central University

To illustrate the difference between average cost and marginal cost pricing, I ask my students several questions. I first ask, "Does it make sense to you that airfare between Oklahoma City and Dallas and Oklahoma City and New York City should be the same price on the same day for the same quality (no uncertainty of a seat) ticket?" Students say "no" because the distances are clearly so different. I ask them next, "Does it make sense to you that the price of mailing a first class letter from Oklahoma City to Dallas and Oklahoma City to New York City should be the same?" Naturally, the students think and say, "Maybe not." I do point out that the airlines come closer to using marginal cost pricing and the postal service comes closer to using average cost pricing. I do indicate that the letter may take longer to go from Oklahoma City to New York City than from Oklahoma City to Dallas and this is a non-monetary cost. Interestingly, some students indicate that the flight from Oklahoma City to New York City is longer than the flight from Oklahoma City to Dallas and the difference in the examples is minimal.

Demand Change and Profit Change

David Weber, U.S. Coast Guard Academy

The power of market supply and demand analysis may be illustrated in many ways. One important area in which it can support our intuition with economic logic is the analysis of the effect of changes in market demand and supply on producers' profit. For example, one's intuition would be that changes in market demand alter producers' profit in the same direction. Further thought on the matter may give rise to some skepticism about such a result since, if demand increases, not only will the equilibrium price and quantity exchanged increase, causing total revenue to rise, the total costs of producers will rise as well and it is not obvious that total revenue will increase more than total cost. However, that this is exactly what happens in the conventional case of down-sloping demand and up-sloping supply schedules is revealed by a straightforward graphical analysis of the problem.

In Figure 24-8, D_1 and S_1 are the initial market demand and supply schedules, respectively, and point E_1 corresponds to the initial market equilibrium. If demand increases by D_2 , the new equilibrium corresponds to E_2 . The increase in total revenue enjoyed by producers is the area of ABE_2CFE_1 ; recognizing that S_1 is an aggregation of individual firm supply curves, each of which is a segment of their respective marginal cost curves, the area of E_1E_2CF is the increase in total cost incurred by producers, since that increase is simply the sum of the marginal costs of each additional unit that will be produced. The result is that producers' profit rises (or producers' loss diminishes) by the area of ABE_2E_1 . If D_2 had been the initial market demand schedule and demand fell to D_1 , Figure 24-8 suggests a decline in producers' profit (or a rise in producers' loss) by the area ABE_2E_1 .

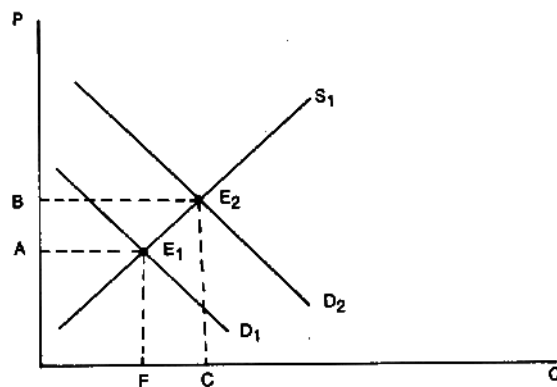


Figure 24-8

Entrepreneurs Do Too Use Marginal Cost and Revenue

Jonathan B. Wight, University of Richmond

Students sometimes grouse that business people they know never use marginal cost or marginal revenue in making decisions. This complaint is easy to defuse in an attention-getting exercise: Hold up a \$10 bill and ask a volunteer, say Bob, if he is willing to trade \$5 of his own money in exchange for this \$10. Bob will eagerly accept, probably grinning greedily to his friends, and wondering if there's a trick. After carrying out this trade ask if he would now exchange \$7 for another crisp \$10 bill, which again he will do. Continue offering him trades with the "cost" to him rising up to \$9.99 for a \$10 bill, each time getting a positive response from Bob. Then ask if he will pay \$11 or \$12 for a \$10 bill, which he will refuse.

On the blackboard record in columns Bob's costs, revenues and profits from these actions, then graph and analyze the results (the familiar competitive firm scenario). From here on, students will always equate $MC=MR$ with the entrepreneurial mind--not an ivory tower construct.

Note: In a pinch you can get by with "play" money if your Dean is too cheap to provide meaningful and appropriate teaching aids. However, the surprise and impact of this lesson is greatest if actual currency is utilized.

Chapter Ten

Monopoly

Producer Revenue and Demand Elasticity

David Weber, U.S. Coast Guard Academy

Without using calculus, it is difficult to prove to students that percentages rather than absolute changes in prices and quantities demanded determine whether, and if so, how, the total revenue (expenditure) of producers (consumers) will change when the price of a product changes. I find it helpful to confront students with the data sets for price/quantity demanded in Table 24-1; both sets may be viewed as coming from the same demand schedule, or each set may be viewed as coming from different schedules.

I		II	
P	X_D	P	X_D
9	6	2	15
8	8	1	17

Table 25-1

I then pose the questions: What is the same about each set and what is different? What I want students to recognize is that the slope between individual points is the same for both sets ($-1/2$) but, whereas in the first set, a drop in price of \$1 and an increase in quantity demanded of two units raises total revenue, in the second set a drop in price of \$1 and an increase in quantity demanded of two units reduces total revenue. If absolute changes are the primary determinant of how total revenue will change when price does, the same absolute changes should result (at the least) in the same type of change in total revenue, which clearly is not the case. Although this numerical illustration is not a general proof, it is a sufficient basis for demonstrating that absolute changes are not, in fact, what is important. How percentage changes compare is what matters, and one may go on to notice that in set I, the percentage change in quantity demanded (approximately 14%) exceeds the percentage change in price (approximately 12%), while in set II, the percentage change in quantity demanded (approximately 7%) is less than the percentage change in price (approximately 40%).

An Economist's Pick-Up Line: "I Bet Your Demand Is More Elastic Than Mine"

Robert W. Wassmer, California State University-Sacramento

An example of price discrimination that evokes groans of disgust, and even a few chuckles, is describing the profit-maximizing reason that bars and entertainment places put on a ladies' or men's night. In my lecture I go through the standard diagram that shows why it is in the best interest of places to do this. I finish the lecture by stating, tongue in cheek, that I have now provided students with a great opening line they can use the next time they attend a "night" provided for the opposite

sex. If you can get past the initial slap, the opening line should provide for at least a half hour's conversation in which they can demonstrate their superior intellectual ability. A napkin and pencil, or even swizzle sticks, makes for great tools to illustrate the concept.

Why Royalty Recipients Prefer Lower Prices

Joseph Zoric, Franciscan University of Steubenville

Many students find it hard to differentiate between maximum total revenue and maximum profit. To clarify this difference, I point to the rock group "Tom Petty and the Heartbreakers." Mr. Petty once accused his record company of charging too much for his album. He felt that many fans could not afford his album at the high price, and therefore, he urged the company, in fairness to his fans, to lower the price. I ask students why Tom seems so interested in his fans' welfare. He doesn't look much like Mother Teresa.

The answer is that he may be less interested in their welfare than in his own. Petty is probably paid a percentage of the revenues from the sale of his records, so his income would be highest if total revenues from his records were maximized. The record company, on the other hand, is interested in maximizing its own profits. A graph like Figure 25-1 can be used to suggest that the firm wants to produce where $MR=MC$, but that Petty wants sales where $MR=0$. This would require price to be lowered from where $MR=MC$ to where $MR=0$. Were Petty paid a fixed royalty per record, he would want to maximize the quantity sold and would naturally advocate a price of zero. This might make him appear heroic in the eyes of many fans, but only self-interested to people who know a little economics.

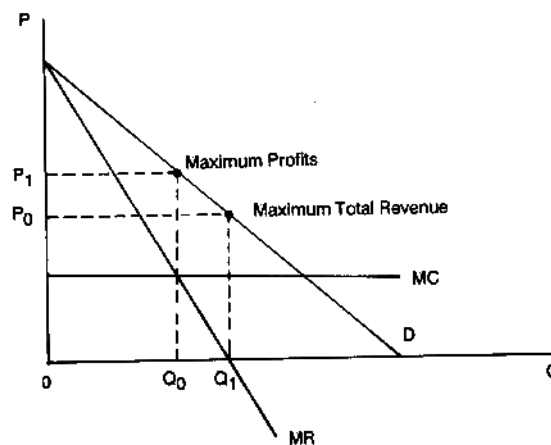


Figure 25-1

EDITORS' NOTE: You can extend this example to texts. Almost all authors sympathize with complaints about high textbook prices, but cynics may note that lower prices would yield more royalties.

Are Monopolies Always Profitable?

Ralph T. Byrns

Ask students for examples of potentially monopolized products that could not be profitable because demand would be everywhere below any reasonable estimates of the average costs of production. In addition to the "disposable razor blade sharpener" and the "panty hose reweaver" we've suggested in the text, you might have proposals for dehydrated water, exotic patent medicines, automatic baiters for people too squeamish to impale worms on fish hooks, electronic pancake turners, indoor plant waterers, winders for string collectors, and a host of other imaginary gadgets.

DEATH VALLEY GAS

Mark H. Maier, Glendale College

In the town of Panamint near Death Valley, California, there is a single gas state, "Al's Gas." It is 40 miles from its nearest competitor. How much should Al charge for a gallon of gas? (In 1991, when gasoline was 90 cents per gallon in California's urban areas, it cost \$1.80 at Al's in Death Valley.)

This example motivates discussion of monopoly pricing, in particularly the concept that monopolists will not charge the maximum possible price that any consumer will pay. In addition, the example raises the issue of substitutes when it seems there are none: Will consumers drive the extra 40 miles to buy gas? If consumers must buy Al's gas because their tanks are too low to drive 40 miles, how will they adjust their future buying habits in order to avoid Al's high prices?

Al claims that European visitors, accustomed to high gas prices, leave him tips, whereas U.S. visitors often complain in unprintable language when they read the price at the pump.

Local Monopolies

Ralph T. Byrns

Discuss whether the lone gas station in a small town is a monopolist. After considering the issue of contestability, extend this to the single daily newspaper in a large metropolitan area. Discuss whether the trend in many major markets towards one newspaper represents increasing monopolization. (Are radio, TV, and national papers (WSJ, NY Times) and news magazines sufficient competition?) Go one more step, and talk about how an absence of foreign competition (in e.g., steel, cameras, autos, bicycles, and electronics) because of trade barriers may yield inefficiency and the exercise of monopoly power. Challenge students for examples of monopolies that exist without government sanction.

Profit Maximization and the Concept of a "Marginal Profit"

Yung-Ping Chen, University of Massachusetts-Boston

Profit maximization involves a comparison of total cost to total revenue at various possible levels of output. A firm can decide what quantity to produce by making this comparison of costs and revenues at successive increments of production. The firm must observe how its costs and revenues vary with its output. The rule for profit maximization follows from the comparison of marginal cost and marginal revenue. Marginal cost is the cost for producing one more unit of output. Marginal revenue is the revenue that one more unit of output yields. If the cost of producing one extra unit is less than the revenue from selling it, it will be profitable for the firm to add that unit to production. If, on the other hand, the cost of the additional unit that the firm contemplates producing is greater than the revenue it can generate, it will be unprofitable to produce that additional unit. Therefore, as long as marginal revenue exceeds marginal cost, the firm will want to produce more in order to increase its profit. If marginal revenue falls short of marginal cost, however, the firm will decide not to produce more. And when marginal cost equals marginal revenue, the firm will stop producing more.

This method of marginal analysis may be restated using the concept of "marginal profit." If marginal revenue exceeds marginal cost, the difference may be defined as marginal profit. That is, marginal profit is the profit that comes from one more unit added to production. The figures in Table 25-2 illustrate this concept of marginal profit.

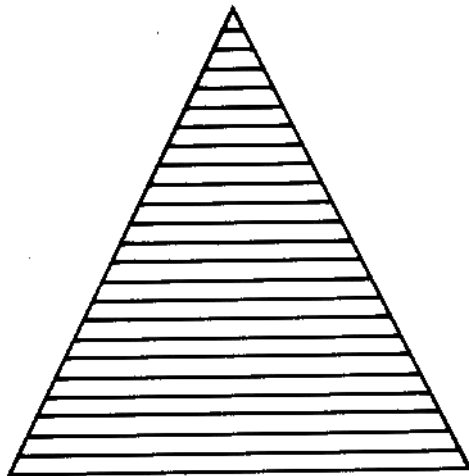
The column labeled "marginal profit" shows that marginal profit is \$-29 when the first unit is produced. When the second unit is produced, however, there is a marginal profit of \$5. From then on, marginal profit increases from \$33 to \$57 to \$71 to \$81, then to \$85 when the seventh unit is produced. Beyond the seventh unit, marginal profit declines from \$83 to \$75 to \$61 to \$41 and finally to \$15. After that, when the thirteenth unit is produced, once again there is a negative marginal profit.

The largest marginal profit occurs when the seventh unit is produced, which yields \$85 of marginal profit. There may be a temptation to conclude that this is the best situation for the firm because the marginal profit is the largest at that level of output. However, even though the marginal profit declines beginning with the eighth unit, that unit still enlarges the total profit by adding \$83 to the total profit. The ninth unit adds \$75 to the total profit, and the tenth unit adds \$61 to the total profit. In the case of the eleventh unit, it adds \$41 and even the twelfth unit still adds \$15 to the total profit. Although each successive unit earns less and less marginal profit, the total profit nonetheless increases until it reaches the highest level of \$578 with output level at twelve units. It is only after the twelfth unit, when marginal profit shows negative figures, that the firm's total profit declines. At the level of thirteen units, for example, total profit declines to \$561. Thus a profit-maximizing firm continues to increase its output as long as the marginal profit is greater than zero. Before that is reached, every unit the firm produced will add to the profit already accumulated. It may be said that the firm is building a "pyramid of marginal profits." Marginal profit, as explained earlier, is the difference between marginal revenue and marginal cost. When marginal

revenue equals marginal cost at a certain level of output, the firm reaches the apex of the pyramid, as Figure 25-2 shows.

Output Level	Marginal Cost	Marginal Revenue	Marginal Profit	Total Profit
0	0	0	0	0
1	\$131	\$102	\$-29	\$-29
2	97	102	5	-24
3	69	102	33	9
4	47	102	57	66
5	31	102	71	137
6	21	102	81	218
7	17	102	85	303
8	19	102	83	386
9	27	102	75	461
10	41	102	61	522
11	61	102	41	563
12	87	102	15	578
13	119	102	-17	561
14	157	102	-55	506
15	201	102	-99	407

Table 25-2 Illustration of Marginal Profit



Price and Marginal Revenue in Imperfect Competition

Figure 25-2

Price and Marginal Revenue in Imperfect Competition

Thomas J. Shea, Springfield College

Using the relationship between the margin and the average (see Marginal and Average Relationships by Thomas J. Shea) one can more easily explain why the demand and marginal revenue curves are graphed the way they are in imperfect competition, i.e. the marginal revenue curve always lies below the demand curve, and therefore why marginal revenue is always less than price. This concept is necessary if the student is to grasp the criticism that imperfect competitors produce less and charge a higher price than perfect competitors as well as the more sophisticated argument that they do not charge a price equal to marginal cost.

Since all averages are simply some total divided by some quantity, the average revenue is simply total revenue divided by quantity. But if we were to take the total revenue equation $TR = P \times Q$ and divide both sides by Q , we'd find that $TR/Q = P$ or TR/Q is actually our demand curve. Thus, AR is another name for demand.

We know that demand curves are downward sloping. From our discussion of average and marginal relationships we know that when the average is decreasing, the margin must be below the average. Thus, we must draw the marginal revenue curve below the demand curve and know that in every instance marginal revenue is less than price.

Profit Maximization in Action: Markup Pricing

Daniel Y. Lee, Shippensburg University

Some of my students, most of whom are majoring in business, complain that what they learn in economics courses are only theories and not practical tools that can be used in the real world. They say that, for example, no managers of real companies know what their marginal revenue and marginal cost curves look like and, therefore, cannot use them in practice. I combine the concepts of price discrimination and markup pricing to help these naysayers see how the critical thinking skills they learn in economics can be also useful in the business world.

First, explain the conclusion of third-degree price discrimination: a profit-maximizing seller (who supply his output where $MR = MC$) would charge a higher price to the buyers whose demand is relatively inelastic and a lower price to the customers with elastic demand. Next, explain the concept of markup pricing, the practice used by managers of *real* firms and present some statistics showing how the sellers' markup percentage is higher for the items with relatively low price elasticity of demand than those with elastic demand. The practice of markup pricing is consistent with the profit maximization rule taught in the classroom!

Managers may not realize it, but they are applying the $MR = MC$ rule in setting their prices.

Maximum Profit vs. Maximum Sales vs. Minimum Costs

Joseph E. Pluta, St. Edward's University

Students occasionally have difficulty distinguishing between the goals of profit maximization, cost minimization, and sales maximization. Since each of these strategies at one point or another appears to be "good" for the firm, the fact that they may be in conflict is often puzzling to students. To demonstrate that each strategy is likely to produce a different output level, I construct Figure 25-3 to reflect demand conditions facing an imperfectly competitive firm. Profit maximization occurs at an output level of Q_1 , cost minimization at an output level of Q_2 , and the dollar value of sales (or total revenue) is maximized at Q_3 (Q_4 and Q_5 are break even points where economic profit equals zero).

An output level which accomplishes more than one of these goals simultaneously is possible but unlikely. TR and profit can both be maximized only if $MR = MC = 0$. Profit can be maximized and ATC minimized in long run equilibrium under pure competition. I have found this diagram useful for discussing the general case where each strategy produces different levels of output as well as the exceptions noted above.

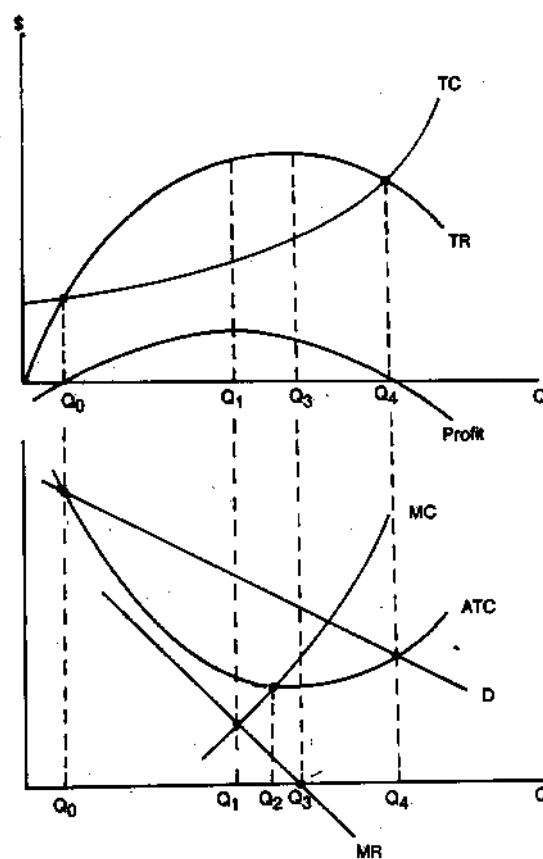


Figure 25-3 Profit Maximization vs. Cost Minimization vs. Sales Maximization

No Monopoly Supply Curve

Shu-chin Shen, University of Wisconsin-Janesville

Students studying the theory of monopoly for the first time find the concept that monopolies have no supply curve perplexing. Some texts explain the idea with a terse statement that students can hardly understand. Others use complex graphs to show that under monopoly, as demand shifts, one equilibrium quantity can associate with two or more prices (or vice versa), which disproves the existence of a supply curve, because a supply curve implies that each supply price has only one corresponding quantity. This approach has two short-comings. First, most students seem unreceptive to such reasoning. Second, the graphs are too complex for instructors to demonstrate with accuracy on the blackboard so that the student can see clearly what is proved or disproved. One such graph showing one equilibrium quantity associated with two prices is illustrated in Figure 25-4.

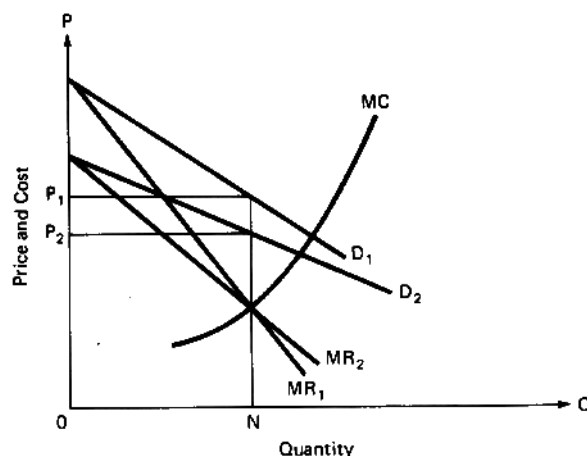


Figure 25-4 Why There is No Monopoly Supply Curve

I have found that the "no monopoly supply curve" solution can be explained by simply mentioning that in pure competition, supply prices are independent variables, with the corresponding quantities supplied being the dependent variables. In a monopoly, on the other hand, the equilibrium price and quantity supplied are determined simultaneously where marginal revenue equals marginal cost. Since marginal revenue under monopoly is not price but is, rather, derived from the demand curve on which the equilibrium price corresponding to the quantity supplied is found, the equilibrium price is neither an independent variable in relation to the quantity supplied, nor is it a supply price. As demand shifts and the intersection of marginal revenue and marginal cost moves, the equilibrium price and/or quantity changes, but the analysis above is unaffected. Without supply prices as independent variables there can be no supply curve.

Students can easily see this reasoning from standard graphs for the monopoly firm. Immediately following this explanation, however, the student should be cautioned that no supply curve does not mean no "supply" for the monopoly firm. The "supply" cannot be represented by a

curve, but by points on the firm's demand curve, as determined by the intersection of marginal revenue and marginal cost curves.

Price Discrimination in the Sale of Education

Eric K. Steger, East Central University

The following example helps illustrate price discrimination. I ask my students, "Why is the tuition higher priced for junior and senior level courses relative to the freshman and sophomore level courses at our University?" Some students say, "It costs more to teach them because the class sizes are usually smaller than for freshman and sophomore courses." I agree, but ask if cost differences fully explain tuition differentials? My position to the students is "no" because I explain to them that once a student begins at a university, it is costly to transfer to another university. Potential problems in transferring course credits, personal adjustment costs, etc. make the student's demand for education relatively inelastic in the face of a tuition price increase. I explain that our state legislature uses the concept of price elasticity of demand in the sale of education.

Illustrating Price Discrimination and Elasticity

Tom Riddell, Suny Oneonta University

A student recently related the following incident: She went into a record store in mid-November and found the price of recent releases to be \$5.99. Later on, in early December, she returned to the same record store and found that the prices had been raised to \$7.99. In the discussion that followed, students very easily grasped the ideas that the demand for records and tapes was different at different times of the year and that the store had determined that the demand during the holiday season was less elastic. There were also several comments about the holiday spirit of the record store and expressions of the hypothetical effect on their demands at that store.

Examples of Price Discrimination

Mark Zupan, USC School of Business

Among the examples of price discrimination that I provide my students are the following:

1. College tuition--I lead into this example by asking my students whether they are all paying an identical price for getting the same sheepskin. I also ask them how schools acquire information on the prices different people are willing to pay for going to college. Answer: the detailed financial aid forms people have to fill out when applying for tuition remission.
2. Airline tickets whose prices depend on such factors as the age of the passenger, (e.g., senior citizen or student fares), how many days prior to the flight the ticket is purchased, and whether the passenger stays over on a Saturday. I tell my students how, even with

the typical restrictions that are imposed, airlines are not always able to prevent resale. Major corporations, for example, that consistently fly 10 people back-and-forth on an daily basis between New York and Chicago, can obtain the deeper discount, stay-through-Saturday fares even though their employees never stay over the weekend. The way this can be done is by consistently buying 10 round-trip, stay-through-Saturday tickets, unstapling the outgoing and return portions of each ticket with a return portion from a ticket whose outgoing reservation was for a flight prior to the most recent Saturday night.

3. Season passes to Disneyland and Magic Mountain;
4. Magazine subscription renewal offers that offer a lower price the longer you refrain from renewing I bring in an example of how a magazine kept on sending me renewal notices and kept on lowering the price they offered the longer I did not respond.
5. The book publisher policy of printing a more expensive hardbound version of a book first and then, several months later, issuing a less-expensive paperback version-I tell my class about how I fought a losing battle over holding out and waiting for the paper-back version of Tom Clancy's *Patriot Games* to come out. For two months after reading Clancy's *Red Storm Rising* and *The Hunt for Red October* I stuck to my guns and would walk by the campus bookstore and just glance at the display of *Patriot Games* in the main window. And then my time-varying preferences got the best of me.
6. Economic periodical prices that depend on whether one is a library, a full professor, an associate professor, an assistant professor or a graduate student-I bring in examples from *AER* and *JPE*.
7. Frequent flyer programs for airlines and frequent stayer programs offered by hotel chains-A recent Wall Street Journal article pointed out that there are now also frequent parker programs offered by certain parking lots located near major metropolitan airports.
8. Car selling techniques--Car dealers manage to sell the same model at very different prices. I am always amazed at the statistics concerning the number of people who buy a car at the full, list price. All too few people seem to haggle the price down. During the haggling period, moreover, many dealerships employ a method for finding out how much a customer is willing to pay by having the salesperson act as a supposed intermediary between the customer and the dealership owner. After getting the customer to reveal his/her bid, the salesperson typically goes off to the dealership owner to plead the customer's case. Quite frequently, I suspect, such a technique serves to make the customer sweat, allows the salesperson and owner to share information about the customer and to plot selling strategy, and ultimately decreases the extent to which a customer is willing to haggle.

The all-time classic example of price discrimination that I relate to my students, however, involves a story about how my carpets recently got cleaned and how I probably got fleeced in the process. Intent on selling my condominium and buying a house, I decided to hire the Ajax Company (the names have been changed to protect the sleazy and guilty slimeballs) to have my carpets steam-cleaned. The carpets probably had not been cleaned in over five years and showed it. I selected Ajax on the recommendation of a faculty colleague and because Ajax offered a rock-bottom price of \$47 to clean the carpet in my living room as well as in both of my bedrooms. Little did I know what a scam I was getting myself into.

The whole affair started off quite innocuously. Two guys from Ajax showed up at the appointed time on Friday morning and began to move in their equipment. They seemed pleasant enough at first blush, diligent about their work and good-natured towards each other and towards their prey, i.e., me. They proceeded to measure out the square footage in my condo down to the last accurate half-inch and then to confirm the \$47 rate that had been quoted to me over the telephone. And then, by apparently well-rehearsed steps, the fleecing began.

Step #1 involved their asking about when the last time my carpets had been cleaned. They began clucking disapprovingly when they found out that it was at least over five years ago. They tried to make me feel guilty by telling me that a carpet needs to be cleaned at least once every six months.

Step #2 involved their looking at some of the spots in the carpet very closely. The guys from Ajax again began to cluck disapprovingly. They informed me that the former owner of the condo must have kept a dog in the house because they could smell dog urine in some places. They told me that if a special microbial treatment wasn't employed during the carpet cleaning process, the spots left by the former owner's dog would keep on expanding and would eventually eat through the carpet. They also told me that since my carpet hadn't been cleaned for five years that they would have to employ their special double-cleaning process and would simultaneously scotch-guard my carpet against future stains and dirt. The total bill would, of course, be higher, they said, to the tune of \$525 for all three rooms.

When I resisted and stuck to the basic treatment, the men from Ajax went to Step #3 picking out the most traveled spot on the carpet and showing what a difference the double-cleaning process provided over the regular steam cleaning process. In a two-foot square area of the living room they applied the double-cleaning process while very gingerly single-cleaning a strip of carpet right next to the double-cleaned square. If there had been a major difference, one would, of course, then have had to opt for the double-cleaning treatment. Anybody with half an aesthetic sense would never leave an ultra-clean square standing in the middle of a less-thoroughly cleaned carpet. Fortunately for me, there was not much difference between the two processes.

Encountering my intransigence on the \$525 offer, the men from Ajax then went to Step #4, price discounting. They first offered me 10 percent off an "already very low" rate...then 15 percent...then 20 percent...then 25 percent.

When I continued to insist on just the basic treatment, they moved to Step #5: playing up the personal ethics of professional carpet cleaners. They insisted that they would feel horrible if they had to leave my place knowing they had not done a good job; that it would just hurt them inside knowing they had given my carpet only a half-hearted treatment. As I walked away from them and headed to work on a paper on the personal computer in one of my bedrooms, the men from Ajax began to grumble. The mumbled curses all were intended to reflect how bad they felt about doing slipshod work.

After starting to prime their equipment and letting me think about things for awhile (Step #6) as I tried to work on my paper, one of the guys from Ajax came over to me and made their "very last" and "best" offer: \$120 to do just the living room as a trial case. Feeling guilty about having so mistreated my carpet and about offending the professional ethics of carpet cleaners, I caved in on the offer. Since my bedroom carpets were in pretty good shape, I agreed to let them do "the works" on my living room carpet for \$110.

As soon as the guys from Ajax got me to sign on the \$110 deal, they then began to work on building up my ego, Step #7. They told me how they still had to call the home office to approve the low rate. After talking in hushed tones with a person at the home office, they told me how everybody at the home office thought that I was a good friend of theirs since only good friends received such low rates.

After spending half an hour applying every special treatment known to humanity, which couldn't have cost more than an additional \$10, to my living room carpet, the guys from Ajax came over to chat with me some more. They simultaneously started to clean the carpet in the entrance to one of my bedrooms, "for free," they claimed (Step #8).

When I shoo-ed them out of my bedroom, they proceeded to inform me about the small rip in my living room carpet and how they would fix it, "for free," they said again, with one of their extra-special glues if only I would allow them to do the carpet in the two bedrooms, Step #9, not "for free," of course.

I managed to keep the guys from Ajax away from my remaining carpets, but not after being lectured about the deplorable state of those carpets. I finally managed to get rid of the men from Ajax, but not before they had told me how they were heading off to do a singer's house in Beverly Hills and about how the last singer for whom they had worked in that area had liked the \$2500 job they had done so much that she had given them a \$150 tip Step #10. They promised to check back with me in six months to see how my carpets were doing. I smiled as they left and vowed to either change my name or get an unlisted number by then.

POSTSCRIPT: The day after the cleaning, my fiancée discovered that the watch she had left over at my place was missing. After tearing apart both her place and mine, we became convinced that the men from Ajax were somehow intimately connected with the watch's disappearance. We phoned in our suspicion to the president of Ajax who assured us that he would have his two men take a lie detector test. The head of the work crew, however, who, we found out later, just happened to sell watches on the side, passed the test.

Car Dealers and Perfect Price Discrimination

Jack Adams, University of Arkansas-Little Rock

Point out to student that in most instances, at the official sticker price, the typical automobile firm will sell zero units (cars). In fact, the "actual" price is undefined with only a bottom limit unknown in an exact manner to the consumer. As the bartering proceeds, it becomes quite clear that the dealer is attempting to move the consumer up the demand curve within an ever narrowing price band in an attempt to implicitly extract all consumer surpluses, as illustrated in Figure 25-5. The friendly car dealer should theoretically accept all price offers above or equal to short-run marginal cost. While it becomes quite clear that this is not perfect price discrimination (first degree), it is a rather interesting attempt at A. C. Pigou's offspring.

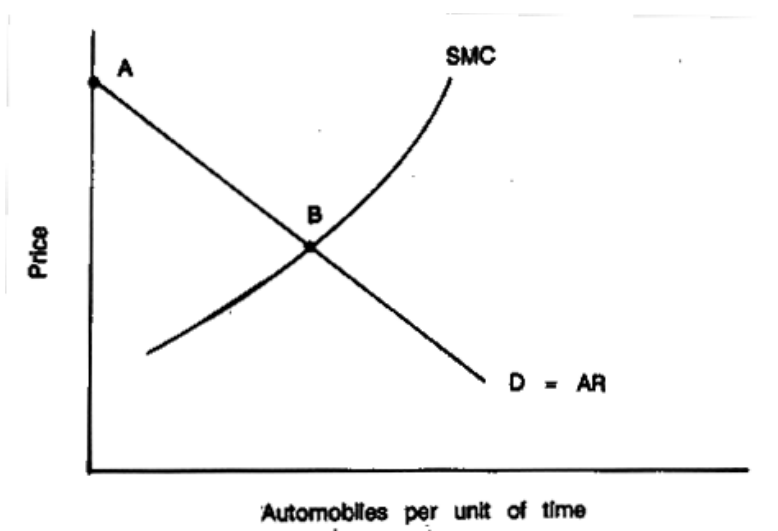


Figure 25-5

Verification: Have student volunteers approach some local car dealer and observe the resultant pricing policy outcome.

The Maitre D' as a Price Discriminator

Gary Galles, Pepperdine University

Considering the role of a maitre d' can be a useful way of illustrating several points about price discrimination. A maitre d' who takes tips in exchange for preferential seating, e.g., for a Las Vegas show or a seat with a better view, is engaging in a form of price discrimination by charging different prices for different seats. This is often complained about as an extortionate racket, but such complaints are not well founded. The use of this price discrimination mechanism is actually employed as an indirect means for owners to capture some of the gains from price discrimination when it would be too costly or less efficient to do directly by "pricing tables," and it is not the harmful device alleged.

Several points can be developed from this example.

1. The maitre d' does the discriminating directly rather than the management, because the transactions and information costs of effective discrimination would be too high in the absence of the self-revealed value of tips offered for prime seats. This can illustrate 2 points: if price discrimination is too costly to employ (the costs of implementation exceed the gains), it does not take place (and a discussion of what factors affect the gains and costs can be started), and as costs of price discrimination fall (via self-revealed information in this case), more of it will take place.
2. Just because the maitre d' does the discriminating does not mean he captures all the gains. Competition from others for this valuable position will reduce the wage the owner must pay to acquire those services, so that much of the gain is actually captured by the owners even though they don't do the price discriminating. The maitre d' selected will be one with a comparative advantage in price discriminating, and he will receive a higher income (in the form of economic rent) to the extent of his differential skill at that task.
3. Because the maitre d' is the lowest cost monitor of such things as who comes, what they tend to tip, how often they return, etc. and because the potential present value of future tip income is an important incentive to provide appropriate service to customers, such tipping may be the most efficient way to both reveal values and induce appropriate responses.
4. Since shows are a public good to the audience (with different values to the patrons, however), tip discrimination may be the financing mechanism closest to "tax shares equal to marginal benefit shares" typically used as one benchmark for public goods pricing.
5. Since this tipping behavior increases revenue to owners and leads them to cater relatively more to "big spenders" by better revealing their preferences, better shows (as seen by patrons) can be financed and seats more efficiently allocated via this mechanism, which can potentially benefit all patrons (vs. the preference revealing problems typical of public goods).
6. The extent of the potential gains increase with the "quality" (cost) of the show, the number of seats, the differences between seat locations and the average income of the patrons, explaining why this practice isn't universal.
7. This analysis can also be extended, if desired, to valet parking.

Price Discrimination and Social Values

Herbert M. Bernstein, Drexel University

To emphasize that monopoly is not always a clear cut good or bad situation, I graph the standard price discrimination model that shows how a monopolist maximizes profits by charging those with less elastic demands higher prices than those with more elastic demands. I first use the example of a monopolist physician who charges the rich more than the poor. The class invariably perceives this situation is "fair". I then change the example to that of an urban supermarket chain that charges higher prices to the poor than to the rich (emphasizing that there is no difference in per unit costs in both neighborhoods). The difference between the two examples is that the rich have the less elastic demand for medical services while the poor, due to relative immobility, have the less elastic demand for food. When the class maintains that the supermarket chain is "unfair", I point out that one diagram covers both situations. Isn't discrimination always bad? This usually elicits a fervent discussion.

Total Revenue Impact of Price Discrimination

David J. Jobson, University of Alberta

Students can better appreciate the revenue enhancing potential of price discrimination by actually computing and comparing pre and post discrimination revenues. This example uses discount coupons--a price discrimination technique with which all students are familiar. and Gordon Tullock (Homewood, IL: Richard D. Irwin, Inc., 1975).

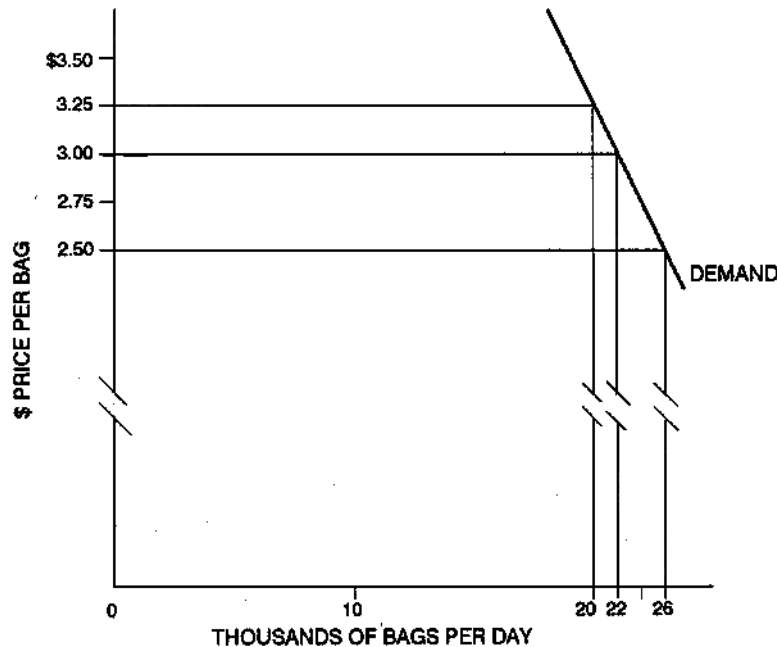


Figure 25-6

Above is the demand curve for Happy Hound dog food. Use the three prices shown (\$2.50, \$3.00, \$3.25) to determine which price would give the greatest total receipts.*

"A price of \$____ will give maximum total receipts of \$____ per day. Now assume Happy Hound decides to price discriminate by charging \$3.25 to all those willing and able to pay this price. A \$.75 cents-off coupon is printed and issued to attract other (price sensitive) customers. The maximum possible total receipts possible under this arrangement is \$____ per day."*

*Show all calculations.

Answer key

A price of \$3.00 will give maximum total receipts of \$66,000 per day. Now assume Happy Hound decides to price discriminate by charging \$3.25 to all those willing and able to pay this price. A \$.75 cents-off coupon is printed and issued to attract other-price sensitive-customers. The maximum possible total receipts possible under this arrangement is \$80,000 per day.*

*Show all calculations.

$\$3.25 \times 20,000 =$	\$65,000
$\$3.00 \times 22,000 =$	66,000
$\$2.50 \times 26,000 =$	65,000
$\$3.25 \times 20,000 =$	\$65,000 from those paying full price
Plus: $\$2.50 \times 6,000 =$	<u>15,000</u> from coupon users
	<u>\$80,000</u> Total Revenue

Surgical and Consumer Surplus Extraction

Charles Diamond, American University of Cairo

Marshallian consumer surplus is a difficult concept for most students to grasp. The problem invariably arises when discussing the average market price and the prices above the average that some consumers would willingly pay if they had to. One example I give is to tell the students to imagine having been told by a doctor that you have appendicitis and that the going rate for the operation is \$2,000. Next I tell the students to imagine being on the operating table, split wide open when the surgeon directs the anesthesiologist to remove the laughing gas mask so that he can talk with you about a subject that is no laughing matter. The surgeon says, "I have removed your appendix and all is OK but now I want to know how much you are willing to pay for me to close you up." At this point, rather than bid the average price you were quoted up front, you would probably bid much higher to close the operation. This way the surgeon has removed your appendix and any surplus valuation of the operation above the average price you may have had.

A less bizarre example addresses discriminatory pricing policies once allegedly prevalent in the computer industry. IBM knew that if it set its average forecasted price for a computer, that it would lose much of the potential revenue that could be extracted from the many buyers who would have paid a great deal more than the average price. I ask my students to think of all the technology "nuts" they know who must have the latest PC equipment, stereos and so on as soon as available regardless of price. To capture this surplus value (the difference between average market price and the consumer's reservation price), IBM and other electronics companies initially set high prices for their new products and then, gradually, allowed the selling price to trickle down over time.

Monopolistic Affection Suppliers and Social Welfare

Ralph T. Byrns

Use the example of a couple's exchange of affection as an example of the potential behavior of a monopoly supplier. Emphasize that the "price" can be strictly subjective, and need not be monetary. The demander of affection may "pay" by hauling out the trash, maintaining the family car, taking primary responsibility for child care, doing the laundry, cooking, etc. A lecture that keeps student attention can use the standard sorts of graphs that we use to illustrate the profit maximizing behavior of a monopolist. Tell the following story during your lecture, beginning with Figure 25-7.

If your partner is "desperate" for affection (i.e., has a less than perfectly elastic demand for affection) from you, then it is possible to exploit this desperation (i.e., extract a subjective price for affection from you in excess of the subjective marginal cost to you of providing it) just as firms with monopoly power can charge a high market price for their goods to 'desperate' buyers.

You can elaborate this story in a variety of ways. For example, you can discuss the withholding of affection as a tactic to drive up the price your student(s) receive (a common strategy during many courtships.) This parallels the way monopolies hold production down to keep price up. Then illustrate graphically why such a strategy (reducing affection) is inefficient. Extend the example to show that subjective "price" discrimination can lead toward greater efficiency in the

exchange of affection. In a bilateral exchange of affection, such "price" discrimination is fairly common, with the partners frequently trading the roles of exploiter and exploitee.

Conclude by suggesting that the best of all possible (romantic) worlds occurs when the very inelastic demander of affection receives huge amounts of affection at a subjectively low price from an enthusiastic supplier, who in turn views the price received as very high, and so supplies an enormous quantity of affection. (This combination generates large amounts of both consumers surplus and producers surplus.) This example also works well when presenting bilateral monopoly models. This lecture is an enjoyable and instructive way for students to learn the monopoly model. A similar example is contained in the first edition of *The New World of Economics*, by Richard Mackenzie

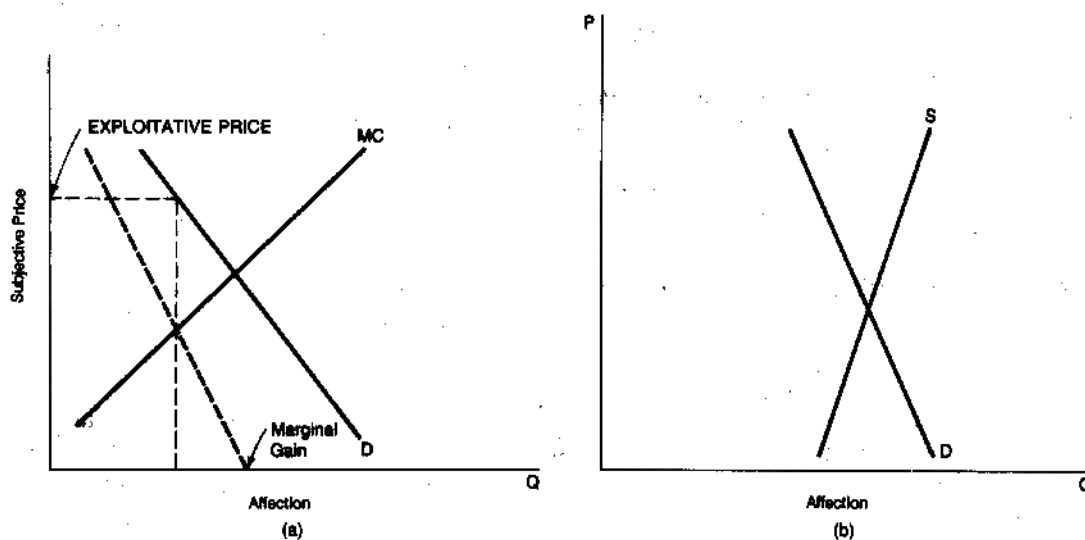


Figure 25-7

Monopolies and Second Best Solutions

David Hemenway, Harvard School of Public Health

To illustrate the theory of the second best, I assume that all markets are perfectly competitive except one, and there are two problems in that market: large negative externalities are generated by the production process, and the industry is monopolized. Then eliminating the monopoly may worsen rather than improve the situation.

I also explain that the "second best" notion--that if there are a number of problems, fixing one may make the situation worse--is possible in all areas. For example, if the gas stove leaks AND the pilot light isn't working, fixing the pilot light may not improve matters. Similarly if the pressure regulator for the furnace is defective, it is not always desirable to fix the oil burner. In medical care,

if a patient has both a high CO_2 and a low O_2 in her lungs (as may be caused by a drug overdose), giving her oxygen (O_2) can stop her breathing entirely.

Chapter Eleven

Imperfect Competition and Game Theory

Product Differentiation

The Effect of Advertising on Consumer Choice

Robert M. Kenney, Miami-Dade Community College

To help my students understand how consumer choice is influenced by television advertising, I ask them to name the worst commercial they remember. As each student answers, he almost invariably names the product being advertised. If he doesn't, I ask what it is. Without exception he is able to do so. When the last student has answered I point out that even though I asked for the worst commercial, each student responding was able to recall the product which, after all, was the purpose of the advertisement.

Visual Aids for Industrial Organization

Josef M. Broder, University of Georgia

Economics instructors often get more excited by industrial organization than many of their students. Graphical and mathematical descriptions of monopolies, oligopolies, etc., are challenging but tend to overwhelm beginning students. To supplement textbook presentations of industrial organization, I bring to class visual aids or actual commodities produced by firms in a given industry.

For competitive firms I use samples of undifferentiated corn from several corn producers. For the monopolistically competitive local fast food market I use the Burger King Whopper and McDonald's McDLT. Oligopolies can be illustrated by samples of Coke and Pepsi; packages of Lipton, Luzianne, and Tetley teas; or boxes of 35mm film from Kodak and Fuji. Products from monopoly or near monopoly markets include those with patent or copyright protection, i.e., Polaroid self developing film, computer software, or, my favorite, the patented Grippio guard on common household metal clothes hangers.

These consumer products can readily be used to explore questions of structure, behavior, and performance in various industries. Specific pricing strategies of monopolists can be illustrated by identical bottles of Heinz ketchup, one originating from the local grocer, the other used in a local restaurant. A comparison of prices for identical products sold by full-service grocers to those sold in convenience stores is also a valuable teaching aid. A visual inspection of the colorful, cleverly designed, and extensively researched packages of differentiated products give the students a better understanding of oligopolistic behavior. With time, the instructor may be able to structure his/her entire lectures around particular consumer products.

Product Differentiation and Consumer Illusions

James Angresano, Hampden-Sydney College

When introducing monopolistic competition to my principles students, I seek to impress upon them that the main characteristic of this industry structure is that consumers perceive that products are

different. That is, many products may be differentiated in the minds of consumers where no substantive differences exist.

I begin by asking who can discern differences between Coca Cola and Pepsi Cola. At least 10 students quickly raise their hands. I then ask five of them to come to the front of the room. I place 10 glasses on a table, each of which contains some cola. I place an empty Coke and an empty Pepsi bottle on the table and tell the students that five of the glasses (say row A) contain Pepsi and five of the glasses (Row B) contain Coke. Each student is asked to drink from a glass in row A, eat a cracker, and then drink from a glass in Row B. No one in the class, including the tasters, is permitted to talk during this test. After they have tasted the soda I ask them which row contained Pepsi and which row contained Coke. In nearly every case some students will believe that Row A was Coke, while others will insist that Coke was in Row B. I then inform the class that all glasses contained RC Cola (or some cola other than Coke or Pepsi). This demonstrates to them (in addition to the lesson that they should be wary of authority figures) that goods have images and that differences between them may be more imaginary than real.

Brand Name Quiz

G. Michael Sher, University of Minnesota and

S. Gupta, Jackson Energy Cooperative

1. Aspirin. Bristol Myers makes:
 - a. Excedrin
 - b. Bufferin
2. Toothpaste. Proctor and Gamble makes:
 - a. Crest
 - b. Gleem
3. Drain cleaner. Bristol Myers makes:
 - a. Drano
 - b. Vanish
4. Laundry detergent. Proctor and Gamble makes:
 - a. Tide
 - b. Cheer
 - c. Gain
 - d. Oxydol
 - e. Bold
5. Furniture polish. Johnson Wax makes:
 - a. Klean and Shine
 - b. Favor

6. Soap. Proctor and Gamble makes:
 - a. Zest
 - b. Lava
 - c. Ivory
 - d. Camay
 - e. Safeguard
7. Aspirin. Sterling Drug makes:
 - a. Bayer
 - b. Cope
 - c. Midol
 - d. Vanquish
8. Dishwashing liquid. Proctor and Gamble makes:
 - a. Joy
 - b. Ivory
 - c. Thrill
9. Household cleaner. Texize makes:
 - a. Fantastic
 - b. Janitor in a Drum
 - c. Grease Relief
10. Cleaner. Proctor and Gamble makes:
 - a. Spic and Span
 - b. Top Job
11. Sugar. Amstar makes:
 - a. Domino
 - b. Spreckels

NOTE: All answers to all the preceding questions are correct.

The Seemingly Irrational Consumer

Josef M. Broder, University of Georgia

Many students pride themselves as being wise consumers, often going to great lengths to find bargains. Similarly, economics professors reinforce these beliefs in their lectures on consumer demand. In theory, consumers are assumed to be rational, i.e., that consumers be able to choose among bundles of goods, that consumer choices be transitive or consistent, that consumers prefer more to less, etc. Central to the consumer choice process is consumer product information which often leaves much to be desired. The absence or distortion of such information may lead to the seemingly irrational consumer.

To demonstrate the practical pitfalls of consumer choice, I have the class participate in consumer taste panels. First, I select three competing, yet similar, food or beverage products. Next, I ask students to rank these competing brands on the basis of (expected) quality and price. Then,

students participate in blind taste tests where products are disguised as brands A, B, or C. Next, the blind taste test is repeated with the same brands labeled X, Y, and Z. Finally, I collect taste panel questionnaires used in the exercise and compile the results. Questions addressed by exercise include, but are not limited to, the following:

1. Do students associate quality with price?
2. Are students' prior expectations consistent with taste panel results?
3. Are student preferences similar in repeat taste panels?
4. Are student purchase choices rational?

Previous applications of this exercise have found that students often confuse quality and price, that lower priced brands are often preferred over more expensive brands, that many students cannot distinguish between competing brands, that many students overinvest in high-priced brands which they later judge as being inferior to cheaper brands, and that the use of taste panels in advertising, as well as advertising itself, can be misleading.

Students find the taste panel exercise to be both informative and challenging. I use the exercise to introduce and critique consumer economics. The questionnaire used in the taste panel exercise is shown below:

TASTE PANEL

Please rank the following on the basis of what you know or expect from these brands (where 1 = most preferred or most expensive and 3 = least preferred or cheapest):

Product Brand	Preference Ranking	Price Ranking
Lipton	_____	_____
Luzianne	_____	_____
Tetley	_____	_____

Blind Taste Tests

Test One (A, B, & C)	Test Two (X, Y, & Z)
1st Preference_____	1st Preference_____
2nd Preference_____	2nd Preference_____
3rd Preference_____	3rd Preference_____

Is Beer Artificially Differentiated?

Craig Nauman, Madison Area Technical College

My idea is designed to illustrate non-price competition in oligopoly. Students are asked to find the average price of a six-pack of their regular beer. Beers are then grouped according to type (regular, premium, super premium, light). To illustrate the non-price competition, a sample of each type of beer is brought to class for a blind taste-testing. Students are asked to name the type, and, if

possible, the brand. Invariably they cannot tell either, and find that the price of beer has little to do with their taste favorite.

Monopolistic Competition

VHS Tapes

Joseph Phillips, Jr., Creighton University

To crystallize the concept of a monopolistically competitive industry model, I utilize one of the hottest consumer products today, VHS format videotapes. The casings found on the tapes are identical in every respect except for brand names which makes them compatible with all brands of VHS tape decks, the "competitive" nature of the model.

However, differences in quality, though subtle (color definition, picture detail and dropout tendencies, for example) give each brand a uniqueness of its own, the "monopolistic" element of the model.

It is pointed out that absent a special sales price, videotapes are generally sold within a very tight price range and that because the consumer has numerous alternatives, one brand could lose its entire market if it unilaterally increases price dramatically. The current video craze is a major source of examples which effectively maintains the student's interest.

The Benefits of Product Differentiation

Ralph T. Byrns

Poll your class about the percentage price cuts, percentage increases in safety, and percentage increases in miles per gallon that would be necessary before they would all be willing to drive identical cars. You may be surprised at how much even impoverished students are willing to pay for product differentiation in automobiles when you discuss this feature of monopolistically competitive markets.

Discuss the benefits of product differentiation, and suggest to your class that savings might be as high as 20 percent if we would all buy standardized cars, clothing, homes, or whatever. Ask how many would acquiesce to majority rule to consume these standardized items at such savings. You may be shocked to discover that most are willing to pay very high amounts for product differentiation. Remind them that the negatively sloped demand curves associated with differentiation lead firms to follow inefficient policies. Use this to emphasize the analytics of the (in)efficiency of monopolistic competition. Then challenge your students to rationalize differentiation as an efficient production device. (This may be impossible {unless price discrimination is perfect}, but it will stimulate a lot of thought among your better students.)

Imperfect Competition

The Oligopolist's Dilemma

Josef M. Broder, University of Georgia

The concept of the "oligopolist's dilemma" is a graphical extension of the kinked demand curve and can be used to complement intuitive explanations of oligopolistic pricing behavior. Consider the case of the duopoly. The uncertainty of competitor reaction to price changes leads to price rigidity and non-price competition. The possibility that competitors may or may not follow suit in a price change leads to two separate demand curves facing the oligopolist: the matched and unmatched curves. The matched demand curve results when competitors match all price changes while the unmatched demand curve results when competitors fail to match these price changes.

The oligopolist's dilemma can be shown graphically by assuming that the oligopolist is currently selling at the intersection of the matched and unmatched demand curve and by examining the total revenue consequences which might result from a price change. This dilemma is best summarized in Figure 26-2, where any price change by the risk averse oligopolist could lead to a loss in market shares and a loss in total revenue as shown by movements along the truncated or solid lined total revenue curve.

For example, the oligopolist selling four units of quantity at a price of \$2 explores the potential for increasing total revenue by changing price. Company analysts estimate that total revenue may be increased by either increasing or decreasing price toward the point of unitary elasticity. Since our firm cannot predict how competitors will react, a price change involves risk. The possible reactions to price changes are as follows:

- (a) Our firm increases prices to \$2.50, competitors match price increases and total revenue increases from \$8 to \$8.75.
- (b) Our firm increases price to \$2.50, competitors do not match price increase and total revenue declines from \$8 to \$5.
- (c) Our firm decreases prices to \$1.50, competitors do not match price decrease and total revenue increases from \$8 to \$9.
- (d) Our firm decreases prices to \$1.50, competitors match price decrease and total revenue declines from \$8 to \$6.75.

With these options, firms avoid price competition and attempt to engage in tacit collusion on price increases (price leadership). Translating the kinked demand curve into total revenue and using real numbers in these graphs gives students a better understanding of the oligopolist's behavior.

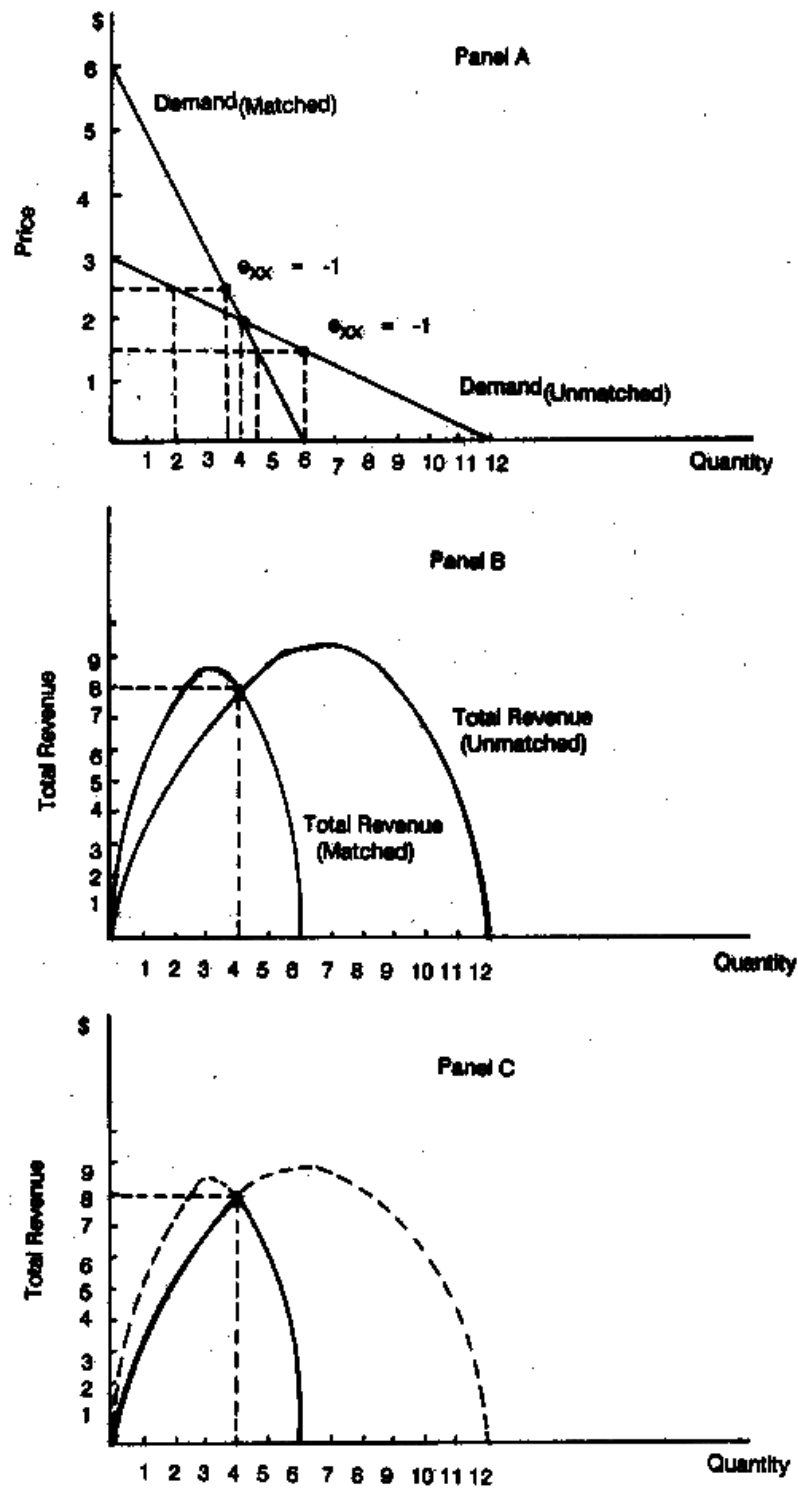


Figure 26-2 The Oligopolist's Dilemma

Variations in Demand Elasticity and Firm Behavior

Eric K. Steger, East Central University

To help my students better understand profit maximizing behavior, I assume that I approach the ticket window at a local movie theater immediately after the movie begins. I know that there are vacant seats because I counted the number of people buying tickets. Therefore, I offer the cashier half of the regular ticket price to let me see the remainder of the movie. I assert that I will not purchase the ticket at the regular price. I explain to the students that I really don't expect the seller to give me a 50 percent discount but it would be in the theater's interest to do so because the marginal revenue generated would exceed the marginal cost of this decision. The firm has excess capacity and can provide to me a slightly differentiated service (I don't see all the movie) without increasing its marginal costs.

Typically, students ask, "If my reasoning is accurate why don't we see theaters offering different quality tickets at different prices?" My response is that they do recognize different demand elasticities among their customers by offering price discounts for matinees and other off-peak showings. However, theater management does not recognize that another market may exist that is responsive to movie quality differentiation (not being able to see the entire film) in return for price discounts. As an example of this type of pricing, I explain that the airlines have offered 'standby' discounts for customers who are willing to bear uncertainty.

Collision, Cooperation, and Collusion

Anthony J. Greco, University of Louisiana at Lafayette

I speak in terms of "Collision v. Collusion." The collision course is followed when firms act independently relative to price and/or other facets of competition. They can be said to be traveling in different cars rushing toward the same customers. The collusive course, on the other hand, avoids run-ins among firms. The firms are essentially traveling in the same car moving toward customers.

Pedagogic Reasons for Kinked Demand Models

Ralph T. Byrns

In an address after being awarded the Nobel Prize, George Stigler disparaged the continued appearance of kinked demand curves in economics textbooks because empirical testing does not seem to confirm the price stickiness predicted by this model. Nevertheless, the kinked demand curve model excels in conveying the idea that oligopolistic decision making is interdependent. Thus, going over this model in class is usually time well spent.

Oligopoly and Collusion

Edward Fagerlund, Minnesota Department of Commerce

Two groups of three students each are selected and directed to stand at opposite corners in front of the class. (Try to make sure at least one bright student is in group I.) All the students are told that each of them has a widget to sell, that they each should submit a slip of paper showing their name and the lowest amount they will accept for the widget (maximum \$1), and that I will buy one widget from each group. The following conditions are imposed:

Group I - three persons - can talk between themselves.

Group II - three persons - can't talk (I stand with them during the few minutes the students have to fill out this paper).

Group III - the rest of the class - can talk.

Usually I pay \$1.00 to someone in Group I (which they split), about 50 cents to someone in Group II and 2 cents to someone in Group III, showing that collusion pays off (I vs. II), but that collusion in a large group is difficult (I vs. III).

Economics and Extortion

Gary Galles, Pepperdine University

I have used an extortion example in class which helps students to understand sunk costs, post-contractual cheating (or appropriable quasi-rents), and how one can be induced to overpay for something.

Extortion or kidnapping cases involve some sort of payment for silence about some "secret" or for return of the kidnapped. The problem with paying extortion or blackmail is that once a payment is made, that cost is sunk and the payer is still in the position of being held up (again) for a marginal ransom payment just less than the value of what is being ransomed. Furthermore, by revealing that he is willing to pay at least what was previously demanded, the payer may induce the extortionist to ask for more each time his demands are met (without this, we wouldn't see any crime dramas about extortion on TV). In this way, paying extortion not only doesn't improve your position, but it can make it worse and actually lead to payments in excess of the total value of the item taken (incidentally, this is a true case of throwing (away) good money after bad (already thrown away), but sometimes throwing good money (profitably) after bad (unprofitably spent) is rational. An example would be a factory that cost \$10 million more than the present value of its net revenue stream, but which needs \$1 million worth of repairs to stay open: as long as the present value of the remaining net revenue stream exceeds \$1 million, it is economic to throw good money after bad).

The only time payment of extortion should be made is when the ransomed item can reasonably be expected to be recaptured (e.g., never for photographs or other reproducible items, for which no assurance that "this is the only set of negatives" can be had) or the extortionist caught in a trap (this is why the extortionist holds out the hope of providing an exchange, while not intending to let it happen, and why payments so often involve a trap).

Another thing to note is that successful trades involving kidnapped people or things are almost always simultaneous (also often true for drug transactions) rather than sequential. The reason is post-contractual cheating. Once we agree to trade, if the extortionist gets the money first, he will be tempted to renege on his end of the bargain; similarly, if the payer gets back the hostage first, he will renege. This is not a major problem in most of the business world, because the negative impact of a bad reputation on future sales gives them a profit incentive not to engage in such behavior, but it may be where repeat sales are unlikely and information may be slow to get out (e.g., buying something from Midnight Auto Sales, out of somebody's trunk).

Grade Collusion in the Classroom

Richard C. Schiming, Mankato State University

Students sometimes find it difficult to imagine the problems of a small group of firms acting in collusion. While the profit maximizing possibilities are obvious, the forces tending to disrupt collusive activities are not. To demonstrate these disruptive forces, I discuss an example common to all students. When students receive a take-home examination, students together usually decide on a limit to the time to be devoted to the test. The hope is that such a limit will prevent the problems of uncertainty and excess competition. But, this form of collusion quickly disintegrates as each student believes others will violate the agreement and thus, each student decides to violate this agreement to protect his or her grade. Only if the class size is small and enforcement costs are low can such an agreement ever hold together. The students then see how cartels, in spite of the potential for gain, can be short-lived.

Collusion and the Creation of an Exam

Carl E. Enomoto, New Mexico State University

The prisoners' dilemma has always been one of the more fascinating topics in microeconomics. It is usually demonstrated with a profits-payoff table for two firms or for two criminal suspects. One way to show how this theory works is to conduct the following experiment. For your first class exam, have each student submit one question covering any of the course material you have already gone over. Tell the class that you will select a small sample of these questions for the test. You will probably find that many of these questions are extremely difficult and you would not have asked such questions if you had made up the exam. For the second exam, let the student discuss among themselves the questions they will submit for the exam (leave the classroom when they do this). When you select questions from the list this time, you will find that the questions are usually easier to answer and concentrate less on the fine details of the course. By keeping both lists of questions submitted by the students and then returning them to the students later on, the class will see how

beneficial collusion can be. One variation to this occurs if you have a particularly large class. In this case, the students cannot easily collude and usually a few students will come up with difficult questions that only they can answer. This will still allow you, however, to talk about game theory and strategy in microeconomics.

Illustrating Collusion

Steven W. Jones, Phillips County Community College

After explaining the concept of collusion and citing examples such as the OPEC cartel, ask for volunteers to help you illustrate some elements of successful collusion through a simple experiment.

Select five students for the experiment. Group four of them into two pairs and send them out of the room. Have the fifth student go to the board and turn his back to the class. Show the class a picture composed of several simple geometric designs. (An example is shown in Figure 26-5.) Then ask the student to draw this diagram. The response is obvious--he can't recreate the design because he has never seen it and doesn't have the specific information needed to reproduce the drawing. Without collusion, he lacks vital information of which his classmates are aware.

Invite Pair A inside and instruct them to go to the board. One member faces the board, the other faces the class. They have their backs to each other and neither may turn around. Show the student facing the class the same drawing. Instruct the student that his task is to get his companion to reproduce the drawing. The student seeing the picture can talk to his partner but cannot monitor his partner's progress. Time the process. Record the time to complete the task. This represents imperfect information about industry operations - but is better than no information at all. Finally, have Pair B enter and go to the board. One member is assigned the responsibility of reproducing the drawing; the other is actually shown the drawing. However, this pair may work together in any manner necessary to achieve their objective but only the student who did not see the picture can actually draw the designs. Time the process. Two way communication will develop, and the time to complete the process will be considerably less due to a more effective exchange of information.

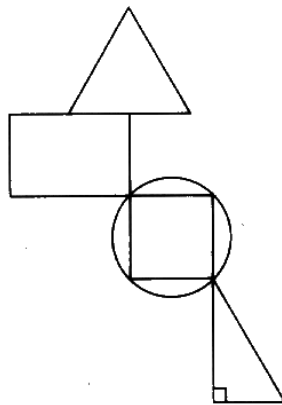


Figure 26-3

Student Collusion

Henry G. Demmert, Santa Clara University

My idea is an effective method of illustrating the inherent instability of a cartel (or of collusion in general).

I present the class with a reading assignment which, I emphasize, they will be responsible for on the next exam. I then ask them to imagine what would happen if they all got together and agreed not to read the assigned material. I point out that, because I grade on a curve, their grades would not be affected and they would all have more time to party, study for other exams, etc. In other words, there are potential collective benefits to be gained by all members of this hypothetical "student cartel." I then ask them what their best personal strategy would be, given that all of their classmates have agreed not to do the assigned reading. It is immediately obvious to them that they would clearly gain by cheating on their fellow cartel members: Their classmates' failure to read the assigned material would result in a lower grading curve, and they can take advantage of the lower overall curve to increase their own grade by doing the assigned reading. In fact, I note, their payoff from doing the reading is even greater in the cartel environment than under normal circumstances. Finally, I ask them if they would have enough faith in one another's "integrity" to abide by their agreement. Most concede that they would find it almost impossible not to take a peek at the assigned reading as the exam draws near.

I then draw a parallel between the incentives at work in this case and those at work in an economic cartel whose members agree to fix prices and restrict output.

Cartels and the Incentive to Cheat

Daniel R. Marburger, Arkansas State University

To illustrate how cartels may break down because of incentives for members to cheat, I use the following analogy. Suppose that on the first day of class, the instructor announces that his course will consist of four multiple choice exams. Further, he intends to curve the scores on each of the exams (i.e., the average score on each exam is a 'C').

Several days later, an enterprising young student (whom we will call Joe) devises a way to beat the system. If all of the students agree not to take the exams, then everyone's score will be zero, which means that everyone will earn a 'C' according to the instructor's grading system. Of course, if no one takes the exam, there is no reason to study, purchase the text, or attend class. All one need do is enroll. Assuming that the promise of something for nothing is inherently appealing, the class agrees to form those non-exam taking cartel.

For the first two exams, the cartel, works like a charm. No one shows up for the exams, and all students receive a 'C'. Prior to the third exam, however, Joe, no longer satisfied with a free 'C', invents a means of beating his own system. Joe decides to show up at the exam and randomly guess the answers. Since the instructor gives multiple choice exams, the law of averages suggests that Joe will earn a score of roughly 20%. Since the rest of the cartel members do not take the exams, a score of 20% should be at the top of the class. In other words, whereas the remainder of the class earns 'Cs' for nothing, Joe will earn an 'A' with an equal lack of effort. And since none of

the other cartel members will be in the classroom during the exam, there is no way for him to get caught.

Soon, the exam date arrives. With a rather cocky air about him, Joe strolls into the classroom--only to find 10 other students already taking the exam. As he scans the room, two questions cross his mind: 1) Have these people been here for the previous exams? After all, Joe didn't show up for the first two exams. 2) Did they study? If these people know the answers while Joe randomly guesses, he's going to fail the exam!

It doesn't take a genius to figure out what happens for the fourth exam. All of the students show up for the exam, and all of them study. When the final curve is announced, Joe, who organized the cartel in an attempt to get something for nothing, earns a 'D' for the course; a 'D' that he worked to earn.

Dollar Bills and Cartel Stability

Mark Mitchell, Clemson University

An experiment that illustrates the difficulty of maintaining a stable cartel is to cut a dollar bill into quarters and distribute them to four willing students. The experiment is more interesting if you use a larger bill. The rules are 1) each part is worthless alone, 2) the bank only requires three parts in return for a crisp clean undamaged bill (you are the bank), and 3) communication among the students is encouraged at all times. Two options are readily available. All four may go to the bank together and receive twenty-five cents each or three students could form a cartel and split the money three ways instead of four. If the students choose the first option, remind them that forming a cartel of any three will increase their wealth. Once a cartel forms, (whether spontaneously or by your prodding) and begins to exchange with you, remind the excluded student that the value of her part falls to zero once the exchange is made. Unless she begins trying to break the cartel on her own initiative, suggest going to two cartel members with an offer to make them better off than their current arrangement. For example, she could agree to accept only twenty cents, leaving forty cents each to her two co-conspirators. All three parties will be better off, so a new cartel is formed. Naturally, while the new cartel is on the way to the bank, the entire scenario is repeated. The ejected member, finding the value of his part threatened, will bargain with two current cartel members and a new cartel will form. Students eventually realize that bargaining could continue forever, so the likely final solution is that all four students go to the bank. Competition prevails, and the stability of the cartel has been proved unsustainable.

Why Cartel Members "Cheat"

Curt L. Anderson, University of Minnesota-Duluth

Sometimes it is difficult for students to understand why individual firms of a cartel would "cheat" on a cartel agreement that supposedly makes them all better off. To illustrate why this occurs, I inform the class that the grades on the next test will be given out on the following basis: if one scores within 10 points of the top score in the class, an A will be received; if within 11-20 points, a B; and so on. I then point out that the class perhaps should consider forming a cartel with each

individual student as a member. By making the agreement that each individual will not study at all for the test, the top score would be held way down and all students would receive a decent grade without any effort. Thus, the agreement is generally perceived as beneficial. Quickly, however, the students begin to realize that if everyone else in the class abides by the cartel arrangement of no studying, they could ensure themselves an A (a greater benefit than just a "decent" grade) with just a little studying. So, because the benefit from cheating on the cartel arrangement is greater than the benefit from following it (assuming everyone else does), cheating occurs. Everyone of course, faces the same situation and so soon everyone begins to study and the cartel falls apart.

Supermarket Coupons and Noncollusive Oligopolists

Joseph Phillips, Jr., Creighton University

To illustrate clearly the concept of the "kinked" demand curve faced by a noncollusive oligopolist the following example based on actual real life occurrences can be utilized:

In the city of Anytown, there are three major super-markets: A, B and C. Until November of 1981 overall price policy appeared to be competitive. In November, Supermarket C, the newest member of this oligopoly, began offering to triple the value of manufacturer's coupons to its customers. Within a few days, Supermarket A began offering triple coupons, followed shortly thereafter by Supermarket B. The price war escalated in the next three weeks as Supermarket C began to offer 60 day rain checks for unavailable products, a policy quickly matched by its rivals. This was advertised widely and soon people from surrounding areas who had never previously patronized these stores created such overflows that baskets were lined up from the cashiers' aisles to the back of the store. After this occurred, the 'triple coupon' offer was abandoned, and 'double couponing' was the offer made available by all three markets.

In September of the next year, Supermarket B announced that it was eliminating double coupons. No other market announced that it planned to do likewise. This proposed policy change never was implemented by Supermarket B. This is illustrative of the demand curve above the kink where competing firms are not as likely to match a price increase and thus the firm tends to face a relatively elastic demand curve above that point.

Discouraging Shirking in Group Projects

John J. Gregor, Plymouth State College

The problem of what to do about an individual member(s) of a group who does not fully participate in the work load (shirking) is handled in a very efficient fashion by providing each group with a budget of \$10,000 which they allocate among the members of the team by vote. These dollars are then used to purchase additional points on the project grade or on an exam. The price of points is determined by the instructor before the beginning of the course. It could, however, be determined by class auction.

The Oligopoly Game

Peter D. Adelsheim, Saint Martin's College

1. This game is designed to simulate the dynamics of oligopolistic competition. The goal of individual profit seeking takes the student from competition to collusion and eventually back to competition (after the cheating on the cartel begins).
2. The game is played in six rounds. In each round, each individual student will decide whether he/she wishes to "compete," i.e. lower prices, or "collude," i.e. raise prices.
3. After deciding, each student indicates his/her decision by raising an open hand for competition or a fist for solidarity. Your "profits" in each round are determined by what the majority does in conjunction with what you do, as indicated in the table below.

		What you do	
		Compete	Collude
What the Majority Does	Compete	10	0
	Collude	40	20

Table 26-1

4. We will play one game of six rounds for practice and then discuss the simulation. I suggest that we then play the game another time which will then count for 10% of the student's final course grade.
5. Grades are determined as follows:

over 120	=	A
120	=	A-
100-120	=	B
80-90	=	C
60-70	=	D
below 60	=	F

Oligopolistic Interdependence

Jerry McElroy, University of Notre Dame

In order to clearly demonstrate the meaning of interdependence in oligopolistic price and quantity decision-making, I use two applications of game theory. The first is a basketball analogy whereby I demonstrate that one team's offensive posture will depend on the defensive position taken by the opponent. Following along with this example, I diagram on the board different offensive strategies against two common zone-type defenses, showing, e.g., the 1-3-1 offense (Figure 26-4A) against a 2-1-2 zone defense; similarly the shift to a 2-3 offense (Figure 26-4B) against a 3-2 zone defense.

In the same fashion, to use a more experiential example, I explain some of the varieties of strategies used by poker players depending on who the competition is, i.e., who is playing against whom. These include conservative play against, say, an unknown player, bluffing against the more inexperienced, and so on.

Both types of examples tend to solidify students' intuitive grasp of the essential characteristics of oligopolistic decision-making, i.e., taking rivals' reactions and strategies into account.

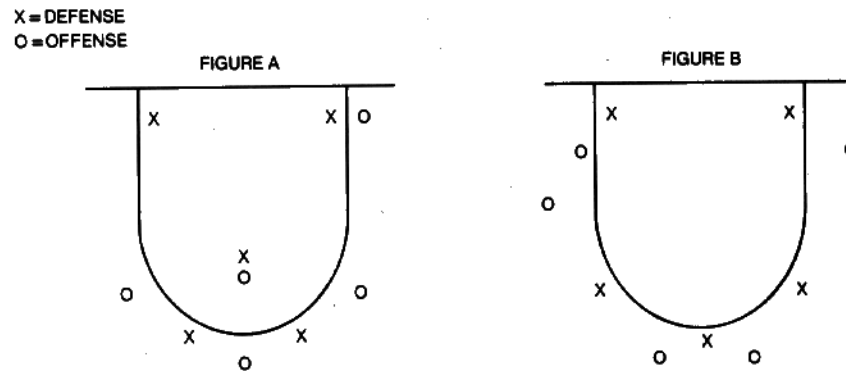


Figure 26-4

Prisoner's Dilemma

David Hemenway, Harvard School of Public Health

Oligopolistic behavior is usefully explained in game theoretic terms. Most of my time devoted to game theory is spent ensuring that students understand the prisoner's dilemma game. Understanding the prisoner's dilemma also improves discussions of externalities and the moral hazard problems of insurance. The best way to understand game theory is to play games. Using a number of real world examples, I carefully describe payoff matrices and how to read them. We also go over the classic bank robber scenario of the prisoner's dilemma game. Then I tell the class that we are going to play a serious game for something that counts to them--10% of the grade.

We play the game reflected in Figure 26-5 five times. A few students are selected as "Column." All students must make a simple simultaneous choice--put up a hand (for competition) or a fist (for solidarity). The rest of the class is "Row." Thus if student A puts up a fist, but the majority of the class puts up a hand, student A receives 0 points. The grading scale is also given. I spend some time making sure everyone understands the rules. No talking is allowed.

The class becomes very involved. They have never won. While all could easily get A-'s (or better), they usually all get C's and lower. Even when the majority begins by putting up fists, they become so enraged at the ones "competing" and receiving 30 points that the implicit coalition breaks down. And once the coalition breaks, it seems impossible to reform if without communication.

After the five rounds they determine their own grades. I then ask if they would like to play the game again, for another 10% of their grade--under the condition that I first leave the room for five

minutes and they can talk. At the end of the class we discuss the type of variables which affect the likelihood of successful coordination or collusion (e.g., number of players; the existence of a strong trade association, etc.). I don't count the grades, but it is important for them to believe that I might.

		Row		(The Numbers Could Also Be Considered Profit Margins)
		Hand	Fist	
Column	Hand (Compete)	10	30	
	Fist (collude)	0	20	

> 100	A
90-100	A-
80-89	B+
70-79	B
60-69	B-
50-59	C
40-49	C-
30-39	D
<30	F

Figure 26-5

Attending Class as a Prisoner' Dilemma

Josef M. Broder, University of Georgia

Maintaining class attendance is a perennial challenge for all levels of instruction. After midterm examinations, class attendance often drops to discouraging levels. Popular techniques for maintaining attendance are often time consuming (roll-calling) and/or are demeaning to many students (seat assignments). In place of, or in addition to, these conventional attendance techniques, the instructor can use game theory to encourage attendance.

This attendance experiment assumes that a certain amount of class attendance is important to the learning process and that students should have some options, and thus bear some responsibility, for attending class. The experiment is initiated after the midterm exam. The rewards of the experiment are simple: the class as a whole receives points for class attendance. Specifically, each student in the class receives one point on his final grade for each day that class attendance exceeds a predetermined level, i.e., 90 percent. University guidelines for attendance make a good starting point. When this attendance level is reached, all students receive the bonus points, including those who were absent on that particular day. A simple head count is sufficient to monitor daily attendance. The class is not penalized for poor attendance; they lose the opportunity to improve their final grades.

The experiment is useful in teaching game theory and the prisoners dilemma, or in this case, the student's dilemma. Students have the option to attend class (cooperate) or cut class (defect). Each option has two possible outcomes such that attending class may or may not ailed bonus points, while cutting class may or may not result in a loss of points.

The dynamics of the experiment are enjoyable to the students and tend to vary with class size. In small classes, students are quick to see the advantages of cooperation and will encourage

attendance among the would-be defectors. Student generated lists of rationed cuts have also emerged in small classes. In large classes the results are less predictable. Attendance standards may have to be reduced in large classes to maintain student interest and participation. Also, attendance standards can be lowered during the experiment if necessary.

Despite the generous appearance of the attendance experiment, the total bonus points awarded tend to be less than the arbitrary "curve" which is often given at the end of the term. When used in place of the curve, these attendance points may represent a more objective factor in assigning final grades.

Simple Game Theory and Oligopoly Models

Paul Temple, University of California-Santa Barbara

First year micro-students are often told that, unlike perfect competition and monopoly, oligopolistic market situations are quite common in modern industry. Yet the analysis of oligopoly receives scant attention at most levels of undergraduate study. Game theory provides the most general set of tools in the analysis of oligopoly, but is generally considered to be outside the scope of introductory classes. Nevertheless, I have used a very simple pay-off matrix that, besides providing an introduction to game theory, also illustrates some of the important aspects of oligopolistic markets.

Consider the very simplest kind of game; there are two players (firms) and each firm can choose between two prices, "high" or "low". The outcome, in terms of profitability, can be illustrated in a simple matrix, as in Table 26-2.

		Profit (\$) per period (firm 1's first)	
		FIRM 1	
F I R M 2		High Price	Low Price
	High Price	1,000; 1,000	1,500; 200
	Low Price	200; 1,500	800; 800

Table 26-2

Most people intuitively understand the nature of such a simple game, but it illustrates some important principles:

- (a) Interdependence: each firm's profit depends not only upon its own actions, but also those of its rival.
- (b) Collusive solution (joint profit maximization): If each firm charges a high price, then joint profits are at a maximum. Such a solution may be reached by either overt collusion

or a more tacit procedure such as price leadership. It represents the "cooperative" solution, and involves a superior outcome for both firms.

- (c) Competitive solution at "low-low": Such a solution is likely to be found in games where, for one reason or another, each firm plays a very cautious, safety-first policy. We can see this because charging a low price provides the best outcome when one assumes that one's opponent adopts a strategy likely to do you the most damage (i.e. by setting a low price). Setting a low price can also be seen to be the strategy when "maximizes one's minimum gain" (maximin).
- (d) "Chiseling": it is often contended that there is an incentive for individual firms to cheat on a collusive agreement, because for each firm marginal revenue is greater than marginal cost. Such a possibility can be seen by a movement from "high-high" to "low-low". But such a movement cannot, it seems, persist. For, at a "low-high" outcome, the firm with the high price can do better, regardless of his opponent's reaction, by setting a low price. Thus the ultimate effect of chiseling would almost certainly be to make all parties worse off. The "chiseller" is thinking in "marginal" terms, but not "strategically".
- (e) Changing values: by altering the figures somewhat, it is possible to illustrate other propositions. We can introduce the notion of "bargaining power" or "threat strength" by making one firm's profits considerably lower than the others at the competitive solution ("low-low"). In that case one firm stands to lose much more by failing to co-operate, giving the other firm much greater "threat strength" and consequently bargaining power.
- (f) Kinked demand: A kink in the demand curve is much more likely to occur at the "high-high" solution, where an increase in price by both parties is likely to make both worse off. At the "low-low" solution, on the other hand, is it rational for a firm not to follow a price rise?

Competitive Strategies

Jim Ford, Washington & Jefferson College

Two men hate each other, and with good reason. John has had a very long-standing and passionate affair with Fred's wife, Rita. Now Fred loves Rita very much. Worse than this, however, John wants the affair to continue although Fred demands that it be ended. Fred would like to kill John, being, among other things, a righteous and indignant husband. John feels the same way about Fred; John would have Rita if Fred were not alive.

For no reason other than for illustration, and perhaps because of a bit of sadism within us, we are going to place these two bitter enemies, Fred and John, in a room that is totally dark. We hand each man a similarly deadly knife; machetes of the same length and design would be appropriate. Letting our imaginations run rampant, we then tie their left hands together, being certain beforehand that they were both right-handed. Finally, we would leave the room, locking the door as we departed.

Now, what options do Fred and John have? First, either one may attempt to kill the other by slashing blindly into the air. This might be called the direct means to murder. On the other hand, this could be attempted craftily, the more indirect approach. Fred might make overtures of peace to John hoping to lull the victim into believing he is safe until it is too late. After all, if John feels safe, he will stand still. He will be easier to hit with one deadly blow with a machete.

Secondly, another option is fairly obvious. If one is not hell-bent on absolute retribution--killing would be psychically optimum--perhaps a compromise would be advisable. Even losing one's leg is not palatable, although it is better than losing one's head. Furthermore, there is the ultimate question of who is killing whom. John may be the victim instead of the victor. The goal may be sweet, but the odds may be frightening. A truce may be the better option because the situation may be simply too dangerous for either John or Fred. Survival at all may be preferred to being entirely free of one's enemy. Sometimes two can make a comfortable peace.

If these were the only options open to you if you were Fred or John, which would you choose? Would you go for the big one, or would you allow your enemy--and maybe yourself--to exist? Now, put yourself into another situation. We are going to allow you to become either president or chairman of the board of a very large company, and your name is Fred. Furthermore, someone named John is in the same position with your only competitor. There are no other firms in the industry in which you operate, although one or two more would make little difference. Such an industry is defined as an oligopoly - one with few firms making it up.

Compare Fred and John, husband and lover respectively, with Fred and John, corporate movers. Both are desperate because the stakes are high. Both are in the dark. The husband and lover are literally so; the corporate chiefs are in the dark about what each other is doing. Furthermore, corporate power is great. The problem is that both have equal power in this respect. Remember that Fred and John in that dark room had machetes, but they were deadly and equal too. They were tied together with a rope; the business competitors are tied together by trying to sell the same product. Everything appears to be equal, similar, and locked into position.

Now what about the options between the two corporate giants, Fred and John? They too may attempt to kill each other. Each may cut its prices below its costs and await the opponent's demise. The trouble is that Fred may try to destroy the company John directs only to find that John's firm had more than anticipated resources with which to do battle. Fred's attempt killed Fred's

company. That was not the way the plan was supposed to work. Besides, there is the other problem. Cutting prices to force closure of a competing firm is unlawful. The Antitrust Division is not fun to fight. Even if a company wins, the costs can be ruinous.

Peacemaking may be preferred to direct murder. After all, blessed are the peacemakers. Besides, if one cooperates with a competitor long enough, he will be easier to kill. Just like with machetes, when the enemy stands still, he is easy to hit. Waiting is better anyway. Presently, the plan is to survive, and to allow the opponent to do the same. Fred - husband - can cut John's ropes, and John can cut Fred's, probably at the same time. Then both may relax. The situation is even rosier with the two companies. Provided Fred and John do not raise suspicion in the Antitrust Division, they may share information. Being in the dark as to one's competitor is not welcome. Furthermore, this development would be like throwing down their counterpart's machetes. Now our two competitors are no longer locked together in a deadly duel. They are where they desire to be. Fred's company may pass its cost data and prices along to John's company. John's firm will reciprocate. No other corporation makes the same product. By joining forces, the two can operate like a monopoly. (One and one does not necessarily make two here.) The two can raise prices and profit margins. Fred's and John's companies can get rich by acting together. What is so bad about that? In both situations, peace is probably preferable to war.

Cost Analysis of the Multiproduct Firm

Mark Jelavich, Northwest Missouri State University

In analyzing the costs of a multiproduct firm, two concepts arise that do not show up in most microeconomic texts. The first concept is the idea of "scope economies". Say we have a multiproduct firm producing two goods: minivans and light trucks. Scope economies are said to exist if the cost of producing some particular number of minivans and some particular number of light trucks together is less than the cost of producing each product separately (using the same technology). If some economies exist, then it is rational to have a multiproduct firm. For example, say the cost of producing one million minivans and two million light trucks together is \$15 billion. However, the cost of producing one million minivans alone is \$8 billion, while the cost of producing two million trucks alone is \$9 billion. In this case, scope economies exist. Some reflection would show that such economies can arise from shared fixed costs as well as "cost complementarities" (e.g., sharing specialized labor or distribution costs).

A second concept is the idea of average incremental costs. The concept of average cost is often indefinable in a multiproduct firm context: If you add one million minivans and two million light trucks together, what do you have? The concept of average incremental cost (AIC) is used in place of average cost. The AIC of a minivan in the above case would be the total cost of producing one million vans and two million trucks together, minus the cost of producing the two million trucks alone; the difference is divided by one million minivans. Thus if the cost of producing both products together is \$15 billion, and the cost of producing trucks alone is \$9 billion, the AIC for vans is \$6000.

The concept of marginal cost for each product still holds in a multiproduct firm. By comparing the marginal cost of producing a (say) minivan to its AIC, you can determine if there are scale economies in minivan production. If the marginal cost is less than the AIC you have

increasing returns to scale in minivan production. The same analysis can be performed on light truck costs.

A good "primer" on this topic is E.E. Bailey, A.F. Friedlaender, "Market Structure and Multiproduct Industries", *Journal of Economic Literature*, September 1982.

Chapter Twelve

Antitrust Policy and Government Regulation

Antitrust Matching

David Hemenway, Harvard School of Public Health

Questions:

1. "...restriction of each merchant to one pattern manufacturer."
2. "Only five companies ever bought in sufficient quantity to obtain the \$1.35 per case."
3. "A toehold acquisition of a small company."
4. "Conscious parallelism that has not yet read conspiracy out of the antitrust laws."
5. "Select one . . . as its 'dancing partner' and would assume responsibility for purchasing its distress supply."
6. "The law does not make mere size an offense."
7. "Leaves entirely out of account all other kinds of containers: plastic, paper, foil."
(dissent)
8. "Fictitious shipment became known as 'phantom freight'."
9. "Reasonable probability that either one of the companies would have entered the market ..."

Answers:

- a. U. S. v. U. S. Steel Corp., 251 US 417 (1920)
- b. FTC v. Cement Institute, 333 US 683 (1948)
- c. FTC v. The Bendix Corp., Docket No. 8739 (1970)
- d. Theatre Enterprises, Inc. v. Paramount Film Distributing Corp., 346 US 537 (1954)
- e. Standard Fashion v. Magrane-Houston Co., 258 US 346 (1922)
- f. U. S. v. Socony-Vacuum Oil Co., 310 US 150 (1940)
- g. U. S. v. Continental Can Co., 378 US 441 (1922)
- h. FTC v. Morton Salt, 334 US 37 (1948)
- i. U.S. v. Penn-Olin Chemical Co., 378 US 158 (1964)

Answers: 1. e; 2. h; 3. c; 4. d; 5. f; 6. a; 7. g; 8. b; 9. i

MERGERS and THE HERFINDAHL INDEX

Paul Azrack, Queensborough Community College

The "Writing Across the Curriculum" movement has often emphasized the importance of short written assignments as a way to foster learning and critical thinking. The following assignment is one which allows students of microeconomics to think critically and apply economic theory to real world events.

Since recent years have seen a wave of merger activity, students are asked to evaluate the impact of a prospective merger on the level of concentration and competition in a given industry. I choose the industry and give the students several pieces of factual information about the current

level of competition. These facts include the number of firms, the market shares of the leading firms, the current Herfindahl index for the industry and the 1982 merger guidelines established by the Justice Department. Students are then presented with a hypothetical merger proposal and asked to advise the Justice Department on whether or not to challenge the merger.

Their report is to be brief, approximately 200 words (the length of this manuscript), and must present all evidence to support their position. An industry that faces foreign competition, such as laptop computers, beer or athletic footwear, adds another dimension to their analysis. The choice of industry can make this assignment fun as well as educational.

Is Oligopoly Bad?

Herbert M. Bernstein, Drexel University

In a discussion of different modes of competition, it is argued that ideally the market should provide the greatest output at the lowest per unit price. However, pure competition may not accomplish this ideal if we incorporate into the model a costly high technology that only a few competitors can afford. Therefore, as the following graph indicates, it is conceivable that situation (b) representing a few oligopolistic firms can produce a higher output and lower per unit price than purely competitive situations (a) since the oligopolistic firms would have markedly lower marginal costs of production.

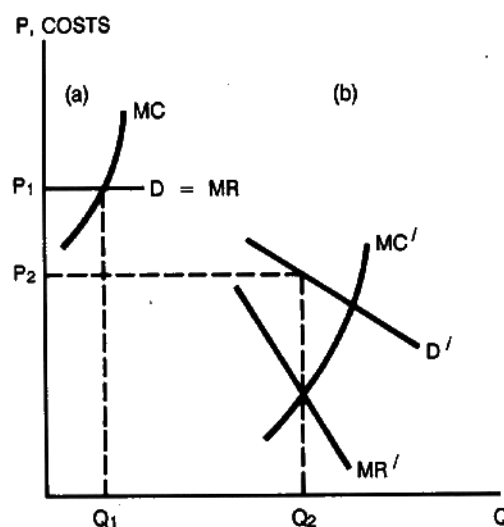


Figure 27-1

Does Free Trade Reduce the Need for Antitrust?

Ralph T. Byrns

George Stigler and Lester Thurow, among others, have independently concluded that free international trade is a powerful threat to monopoly power, and that the most effective antitrust

policy may be elimination of nearly all trade barriers. Competition from foreigners, according to this view, has eroded most of the monopoly power once possessed in such previously oligopolistic industries as document copying (Xerox), automobiles (once dominated by GM), sewing machines (once dominated by Singer), typewriters, ad infinitum.

A Story about the Marketplace

Irvin B. Tucker, University Of North Carolina-Charlotte

The objective of this case is to provide a zesty story to provoke thought on two important issues. First, the economic reasons for or against government involvement in the marketplace. The parable supports the principle that in the absence of real and significant externalities, imperfect competition, or imperfect information, markets work quite well for private goods. Second, government intervention in domestic markets may produce indirect effects on the availability and price for products because of the impact of international trade. Finally, there is a similar story by Henry G. Manne, "The Parable of the Parking Lots", in *The Public Interest*.

In a land not far away, there was an advanced society dominated by service industries. It seems that most folks were spending much of their time writing something down on paper. One popular method for accomplishing this task was a thin piece of wood about 6 inches or so long with lead through the middle and a piece of rubber attached at one end. The opposite end from the rubber would be sharpened to an extremely sharp point for creating visible impressions on the page. These objects were called "pencils." As we begin our story, pencils were abundantly available for 1 mertil (a mertil equals a dime).

One day, all across the land, newspapers carried a column in the front page relating the tragedy which befell poor John Nerd. It seemed that Mr. Nerd had stuck himself with the sharp point of the pencil and had choked on a rubber eraser all in the same day. His condition was stable and improving. Moreover, the article pointed out that only one month before this accident, a Superb University (equivalent to our Harvard) study had been published identifying that pencil- chewers and those who stir their coffee with a pencil as "at risk" groups.

Television and radio interviewers rushed immediately to the hospital for coverage of the story. In the days which followed several national network talk shows featured guests who were pencil industry spokespersons, doctors, lawyers, consumer advocates, economists, journalists, congressmen, and many others to discuss the "pencil problem." Political pressures began to mount to do something before another Nerd was injured. The congress appointed a study group recruited from all special interest groups in the country to look into the matter. After many long hours of debate, this committee recommended that the public be educated to replace pencil usage with the personal computer. The Association of Professional Pencil-Makers charged that this would be unfair competition and restraint of trade. Emotions of pencil executives ran high and a slush fund was collected for some mysterious purpose. After many months of deliberation, the congress passed a bill by a senator from a state without any pencil manufacturing impact. In order to protect the public, this bill required that each pencil have the statement "This Pencil Could Be Hazardous to Your Health" printed on its side. There was also concern that the income of pencil-makers was too

low, so a price support program for pencils was passed. Some senators expressed reservations about the support program for pencils. They said the result of an earlier support program for cheese was government warehouses full of cheese. These senators feared the country might again be forced to distribute pencils to needy, as happened for cheese.

Reaction from pencil-markers was swift. First, pencil industry management got the largest pay raise in history. Second, each manufacturer launched an advertising campaign across the nation attempting to persuade the public that its brand of pencil was the safest. Eventually, many pencil manufacturers began making their product without paint, without erasers, and with only soft lead that would not hold a sharp point. Soon the quality of domestic pencils was considered by many consumers to be inferior to foreign pencils, and domestic pencils cost four times more than imported pencils. Imports began to increase and workers lost their jobs. Pencil industry officials and unions reacted by demanding protection from the congress, while consumers were urged to reject the foreign-made pencils. Across the land, demonstrations were held against foreign pencils and senators from states where pencil companies were located declared that pencils were as patriotic as Rollerball (as American as baseball). Some senators proposed a bailout (named after a major car manufacturer) while a very few congressmen suggested nationalizing the pencil industry. Eventually, such ideas were rejected because they increased the deficit, and because it was trendy to pass protectionist measures. Instead, a bill was passed and signed by the president to impose quotas on pencil imports. The president then called a press conference to inform the public that this was only a temporary step needed to give the industry time to improve and become competitive in world markets.

The impact of this legislation was swift. The decline in pencil industry employment stabilized and fewer customers found foreign pencils on the shelves. Alas, the only problem then was that pencils had a 10 mertil instead of the old 1 mertil, price tag, and they didn't work as well as they used to. Some said they would have preferred to spend the extra 9 mertils on something besides pencils.

Sharing Monopoly Profits

Ralph T. Byrns

Determination of allowable costs is one of the problems regulators must face when regulating monopoly power. Use this concept as a basis for discussing the current problem in the airline industry. Did regulation prior to 1980 allow some factor payments to exceed opportunity costs? (Senior airline pilots' salaries commonly exceeded \$100,000 annually.) Should there be limits on the level of wages and/or executive salaries that are considered justifiable costs?

Monopolies and Consumer Surplus

Thomas J. Shea, Springfield College

The use of quantity discounts is the most obvious one always used to show how a firm squeezes out consumer surplus. However, to show the students how a regulated monopoly can squeeze out consumer surplus nothing works better than to ask the students to ask their parents to mail them the receipt from their latest electric bill. Not only does this get them to write home and let their parents know they are doing some work at college but one look at the various rates per kilowatt hour leaves no doubt in their mind about differential pricing.

Regulation vs. Antitrust

Ralph T. Byrns

The thrust of antitrust policy is to breakup firms that are monopolies. Show why economies of scale may indicate that one large firm may be able to supply a given good at a lower price and in larger quantities than could be provided by a competitive industry. In this case antitrust would not be in the consumer's interest.

Consider a two firm industry versus a one firm industry. The required output is Q . Assume that in the two firm industry, each firm produces $Q/2$, so that the production function for each firm would be $Q/2 = f(K/2, L/2)$. Total output for the industry would be Q . Total resource use would be K, L . Assume the one firm industry operates with economies of scale. If the one firm uses the same resources its production would be $f(K, L)$, and would produce an output greater than Q . The students should see that the same output could be produced with fewer resources or that the same resources could produce more output. Breaking up the one firm into several smaller scale units would not necessarily benefit the consumer. Regulation may be socially preferred on the grounds of efficiency.

Regulation vs. "Cut-Throat" Competition?

Ralph T. Byrns

Our competitive models predict that in the long run profits will be zero and all capital owners will receive only normal rates of return. One aim of regulation is to adjust revenues so that capital owners make an average or normal rate of return. Discuss why in a dynamic, uncertain economy some capital owners may prefer ownership of a firm in a regulated industry to ownership of a firm in a competitive industry.

Does Safety Equipment Enhance Safety?

Ralph T. Byrns

Sam Peltzman's studies of auto safety equipment suggest that greater safety for the drivers and passengers in an automobile reduce the personal costs of reckless driving and cause increased automotive carnage to such third parties as passengers in other vehicles or pedestrians. Although the empirical work is far from conclusive, compulsory safety equipment appears not to have reduced injuries and fatalities to the occupants of vehicles and may have increased pedestrian fatalities. Gordon Tullock has (facetiously?) suggested that these negative externalities from compulsory personal automobile safety equipment might be internalized if spears were mounted in steering wheels to impale drivers involved in front end collisions. We have found that this general line of argument invariably elicits a lively debate in our classes.

Silly Regulations

Ralph T. Byrns

Discuss several instances in which regulation seems silly or unnecessarily costly. For example, OSHA repealed a rule in 1980 that required all firms employing more than four males to have 'split' (horse-shoe style) toilet seats. An EPA order required a utility to shut down one of its polluting electric generators. The alternative plant designed under the guidance of the EPA was more costly per KWH generated, and produced more pollution. The utility's request to convert back to the first plant was denied. Ask students for other examples of this genre.

Costs of Block Pricing

Eric K. Steger, East Central University

I explain that block pricing is a technique that can efficiently generate revenues to cover all costs for a natural monopolist. This technique essentially uses price discrimination to yield efficiency.

After a presentation on the benefits of block pricing I ask, "Are there any costs of block pricing?" Typically, I get few answers. I then explain that if energy conservation is a goal, block pricing is analogous to your automobile insurance rates declining when you receive more traffic tickets. That is, there is a perverse incentive to economize on energy use when block pricing exists.

Chapter Thirteen

Competitive Labor Markets

Explaining a Firm's Demand for Labor

William L. Weber, Southeast Missouri State University

When discussing labor markets, I often illustrate how the efficient quantity of labor is determined by examining an apple orchard. The apple orchard owner combines land, capital (a barn) and labor (apple pickers) when harvesting apples. Students can easily see the law of diminishing returns: apples on trees close to the barn on low branches are picked first. Complement inputs such as a ladder and substitute inputs such as a machine which shakes the apple tree causing apples to fall into an inverted umbrella can also be easily introduced. In addition, the effects of externalities on wages and employment can also be introduced. For example, bees of a bee keeper located next to the apple orchard will cause greater flower pollination and increased productivity of workers, while the effect of acid rain may be to reduce yields of apple trees and the productivity of apple pickers.

Psychic Income in the Labor Market

Herbert M. Bernstein, Drexel University

In the discussion over the labor market it is argued that people do not work exclusively for money; that jobs do contain degrees of psychic income. Therefore, the presence of psychic income implies that wage differentials, all other things being equal, will be greater given psychic income. In the following graphs we assume initially that jobs (a) and (b), which require commensurate skills, pay the same. If we now acknowledge the presence of psychic income in job (a) and its absence in job (b), the supply of labor in (a) will increase; the supply of labor in (b) will decrease resulting in a differential pay for (b) over (a). The overall implication is that the less important money becomes in the workplace, the greater likelihood of increased wage differentials.

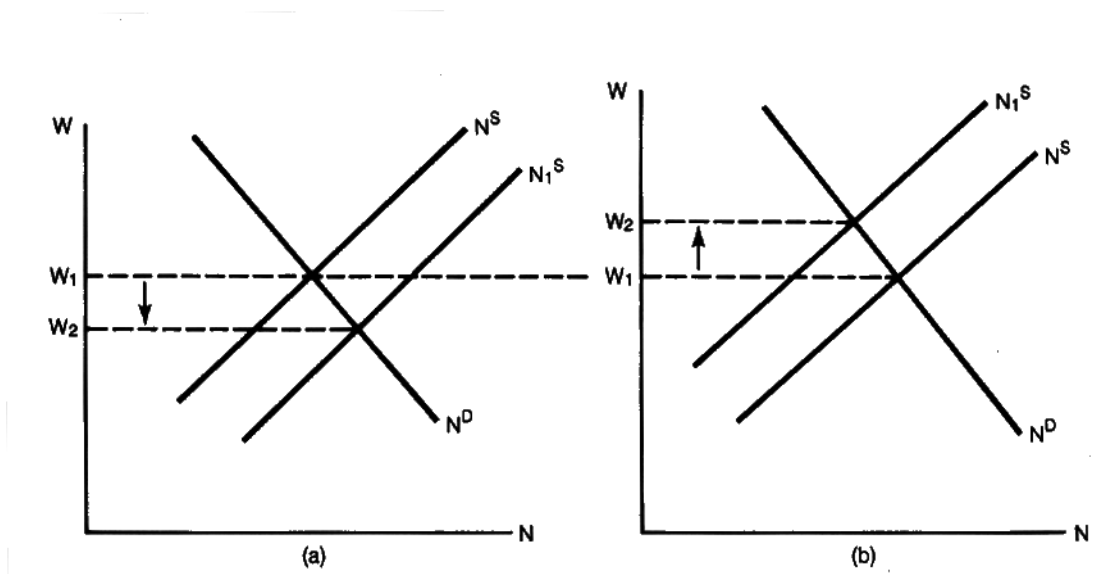


Figure 28-1

Benefits and Costs of Class Attendance

Eric Steger, East Central University

I explain to my students on the first day of class that I have an attendance policy. I explain that the benefit to them of never missing a class is a better education plus three points added to their final average grade. I explain that if a student misses my class six times an extra cost occurs. The student must compensate by doing an extra research paper entitled "The Causes, Costs and Curves of Employee Absenteeism." Typically, several students must write the paper but they learn that there are significant economic costs incurred in an economy when absenteeism exists.

Product and Resource Markets: Symmetry

David Weber, U.S. Coast Guard Academy

I find it useful to illustrate certain differences between price-taking and price-making buyers in resource markets by citing parallels with price-taking and price-making sellers in product markets. In a perfectly competitive product market, a firm confronts a horizontal demand schedule, indicative of the fact that regardless of how much of the product it offers to sell, the price that consumers will be willing to pay is not affected. As a result, the additional revenue it earns from the sale of a (any) marginal unit is equal to the full price of the product so that its marginal revenues and demand schedules coincide, as described in Figure 28-2.

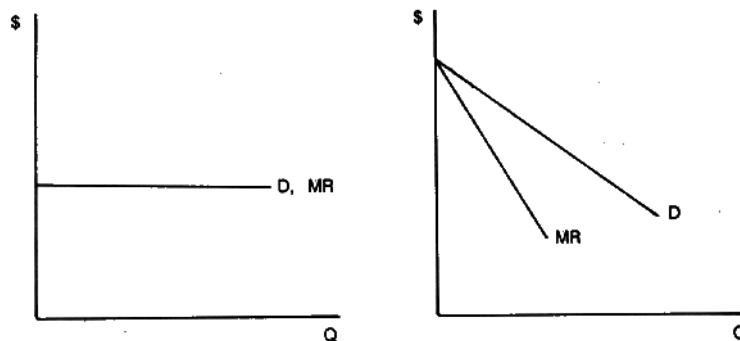


Figure 28-2

Because a price-maker in an imperfectly competitive product market confronts a down-sloping demand schedule, variations in the amount it offers to sell will change the price consumers are willing to pay, and as a result, the additional revenue earned from the sale of a marginal unit (except for the first unit sold) will be less than the price received for it, so that firm's marginal revenue schedule will be below its demand schedule, as in Figure 28-2.

In a perfectly competitive resource market, the assumption of price-taking behavior on the buying side is captured graphically by confronting the firm with a horizontal resource supply

schedule, which implies that the resource price is unaffected by how much of the resource the firm chooses to acquire. As a result, the additional cost the firm incurs when a marginal resource unit is acquired (i.e., the marginal resource cost) exactly equals the price of the resource, so that the supply schedule of the resource to the firm coincides with the firm's marginal resource cost schedule as in Figure 28-3.

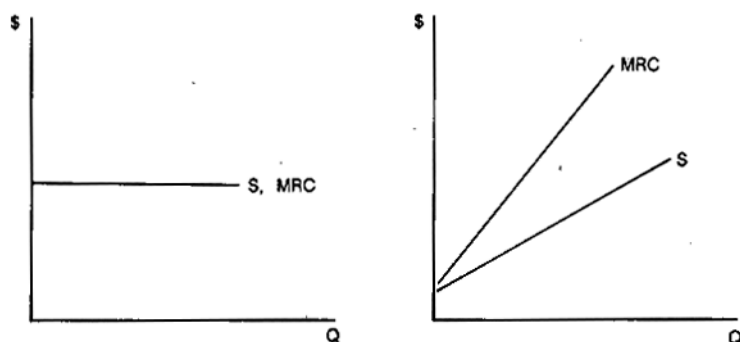


Figure 28-3

Because a price-making buyer in some imperfectly competitive resource market confronts a positively-sloped resource supply schedule, variations in the amount of the resource it chooses to acquire will change the price resource suppliers are willing to accept. As a result, the additional cost incurred when a marginal unit of some resource is acquired exceeds the price for which that unit is willing to make itself available (except for the first unit acquired), so that the firm's marginal resource cost schedule will be above its resource supply schedule as described in Figure 28-3.

A simple numerical illustration reinforces the conclusions cited above. In Table 28-1, two points on a price-maker's down-sloping demand schedule are described. The additional revenue earned from the sale of the marginal (seventh) unit is \$2, which may be viewed as the difference between the price received for it (\$8) and the \$1 less it receives on each of the six non-marginal units (compared to the per unit price of \$9 it would have received for each of them if the price would not have dropped so as to permit the sale of the marginal unit.) (If the price associated with the quantity of seven units had remained the same; \$9, as it does on a horizontal demand schedule, the marginal revenue earned from the sale of the seventh unit would be \$9, the price received for selling it).

P	X_D
9	6
8	7

Table 28-1

Similarly, Table 28-2 describes two points on a price-maker's up-sloping resource supply schedule. The additional cost incurred from the acquisition of the marginal (seventh) unit of the resource is \$15, which may be viewed as the sum of the price paid for it (\$9) plus the \$1 more the firm must

pay for each of the six non-marginal units (compared to the \$8 per unit price it would have had to pay for each of them if the price would not have risen so as to permit the acquisition of the marginal unit.) (If the price associated with the quantity of seven units had remained the same, \$8, as it does on a horizontal supply schedule, the marginal resource cost of acquiring the seventh unit would be \$8, the price paid to acquire it.)

P	X _s
8	6
9	7

Table 28-2

Marginal Productivity Theory of Wages in Aurelia

Walton Padelford, Union University

Imagine the feudal kingdom of Aurelia with king, nobles, farmers, serfs. The agreement between King Gunnar and the people is that all the people in the kingdom will be defended and will have a weekly distribution of food in exchange for certain work days. Small children are seen in the kingdom of Aurelia working in the fields at very minor tasks; such as, picking up sticks, or pulling a few weeds by hand. Certainly, their addition to total production must be very low. However, the agreement is that everyone in the kingdom will eat, so any contribution to production increases the average consumption of everybody.

King Gunnar died, and his brother Bruno became king. He began paying wages for services rendered and attempted to make a profit on kingly enterprises. Children no longer showed up for work in the fields because the value of their produce, being 25 cents per day, was nowhere close to the daily wage rate of \$5 which they would have to receive for daily service.

Resource Substitution Possibilities

Ali T. Akarca, University of Illinois at Chicago Circle

Even though students "learn" the isoquant-isocost analysis of the behavior of the firm, they seldom apply it in their routine thinking. To bring this to the forefront and to emphasize the significance of substitution possibilities, I give my students the following exercise:

A firm produces 100 units of output using 50 hours of skilled labor and 100 hours of unskilled labor time together with its fixed inputs. If the price of unskilled labor increases by \$1 per hour (say, due to an increase in the legal minimum wage rate), the firm's total cost of producing 100 units of output will increase by \$100. Do you agree or disagree? Explain.

Most students agree with the statement given and dismiss it as too trivial. Only after seeing on a graph how through substitution the firm can cushion itself from the full potential impact of the input price increase, they learn to appreciate the relevance of the isoquant-isocost analysis. After

giving the correct answer to this exercise (the cost will increase but by less than \$100), I ask the students why do they think that the unions, whose members are usually skilled laborers earning much higher wages than the legal minimum wage rate, bother to support raising the minimum wage rate. Because by then they have a graph in front of them showing the effect of the rise of the minimum wage to be an increase in the employment of skilled labor, most of the students give the correct answer. They also show signs of pleasure in gaining a new insight into an issue they had already given some thought. Indeed, I think that this analysis of minimum wage issue is more understandable to the students than the usual treatment involving separate demand-supply analyses of skilled and unskilled labor markets.

Explaining Scale and Substitution Effects

Stephan F. Gohmann, University of Louisville

Students often find it difficult to understand the scale and substitution effects of a wage change. Instead of discussing labor and capital, I use an example of a bar which serves amongst other drinks, gin and tonic. I tell the students that they own the bar and currently sell their gin and tonics for a price of \$2.00. At this price they sell 100 per day. The recipe is:

For 1 Drink

1 shot of gin

2 shots of tonic

1 scoop of crushed ice.

For 100 Drinks

100 shots of gin

200 shots of tonic

100 scoops of ice.

I ask them what they would do if the price of a bottle of gin rises from \$5 per fifth to \$10 per fifth.

They'll say raise the price and water down the drinks. From these responses I can then explain the scale and substitution effects.

I ask what happens when they raise the price? We find that quantity demanded falls, say to 90. As a consequence we have scaled back production and the use of all inputs.

For 90 Drinks

90 shots of gin

180 shots of tonic

90 scoops of ice.

I then ask how they will water down the drinks. Generally they agree to change the recipe. To make the results interesting I choose:

For 1 Drink

1/2 shot of gin

2 1/8 shots of tonic

1 3/8 scoops of crushed ice.

This allows me to explain the substitution effect.

A final result is that for the 90 drinks we sell, we have the following quantities:

For 90 Drinks

45 shots of gin

191.25 shots of tonic

123.75 scoops of ice.

This result allows me to explain the concept of gross complements and gross substitutes.

Why Capital does not Cause Unemployment

Ray M. Johns, Hagerstown Jr. College

Many students are beguiled by the simple but erroneous logic that an increase in labor-saving capital will cause unemployment. In macroeconomics, this misguided idea must be dealt with as a possible cause of structural unemployment. The subject can be introduced with an historical reference either to the Luddites who smashed textile machinery in England 1811-1816 or to Marx' "industrial reserve army". The flaw in the simple logic of the Luddites was the assumption that labor-saving capital won't change relative prices or incomes. In fact, as new technology increases physical productivity it can be expected to: (1) lower the price of the product creating new uses for it and increasing sales volume, (2) increase the incomes of the more productive workers creating a rise in demand for other products, (3) increase the real income of the product purchaser as the price falls creating increased demand for this product and other products, and (4) create jobs and incomes in industries producing the labor-saving capital goods. As an example, AT&T in 1910 had 121,000 employees handling seven million calls (average 57 calls per employee). In 1981, they had 874,000

employees handling 219 billion calls (average 250,000 per employee). labor-saving capital increased the demand for AT&T employees. Of course, the microeconomics explanation is that labor-saving machinery shifts the VMP to the right and causes a higher level of employment.

Your Pet's Supply of "Labor"

By Ben Collier, Northwest Missouri State University

I have a young German shepherd who is very smart and has been able to learn commands given both verbally and with hand signals. But I find that when I show her that I have a doggie treat in my hand she is much more responsive to my commands (the benefits of obeying have increased), and when we go outside (she is an inside dog) she is much less responsive to my "come" command. This I attribute to the greater cost of obeying (the foregone opportunity to explore the outdoors). Not only does this serve as a good example of costs and benefits but it illustrates the methodological point that humans (or animals) need not be aware of economic theory or be "intelligent and calculating" for economics to predict behavior.

Inframarginal Units of Labor

Josef M. Broder, University of Georgia

Job-hunting is a most stressful experience for many graduating seniors. As faculty, we share some obligation to offer guidance and counseling to this group of future alumni. Since many of us lack job placement resources, our roles as advisors are perhaps best served by helping graduating seniors understand labor market behavior.

Invariably, we are asked to console students who are having trouble finding jobs or getting interviews. After receiving a series of rejections, students often question their self-worth, as well as the value of their economics degrees. To console these students, I remind them that the value of labor depends upon how it's combined with other production resources. These relationships are readily shown with production functions.

Under competitive labor market conditions, workers are hired, among other reasons, if their marginal value product exceeds their wage rate. In a production function context, the marginal value product of labor declines to a level where additional hiring is unprofitable. The value of an individual's labor to an employer depends largely upon when he joins the company. At issue is not whether the skills and talents of graduating seniors are inferior to those in the labor market, but that inframarginal units of labor are paid more than marginal units. Hence, many rejection letters from would-be employers are to be expected.

While theoretical advice may not substitute for gainful employment, such advice may lead to more productive job-searching strategies. Students are advised to search for jobs for which they can effectively compete in industries which are actively hiring and with companies where they stand a reasonable chance of becoming an inframarginal employee.

“Wages Per Hour and College Basketball Players”

Eric Steger, East Central University

Recently, I noticed a basketball player in one of my classes seemed despondent and generally unlike himself. I asked him to see me after class. I inquired why he seemed so depressed and he told me that he was not getting to play in the games and was ashamed that he was "sitting on the bench". I told him that he was lucky compared to people playing because they all received the same nominal wage (tuition, fees, room and board paid through a scholarship) but he didn't have to exert himself and risk injury. In fact, I encouraged him to "loaf" as much as possible and just keep his scholarship because effort per dollar he received would be minimized. At first he protested and said my analysis was faulty but then he indicated I was making sense. I reminded him to perform, when asked, well enough to maintain his scholarship.

The Rate of Return to College Education

Robert J. Thornton, Lehigh University

Most courses in labor economics devote time to discussing the notion of human capital and the costs and returns of investing in human capital. Usually labor economics textbooks also summarize the empirical results of various studies which have attempted to measure the rate of return to a college education. The great majority of such studies, however, deal with the costs and returns of college graduates in the 1960s and 1970s. To give students a more current perspective on how their own investment in education may pay off, I employ the following exercise.

I first distribute to the class tables of recent income levels of college graduates and high school graduates for various age categories. The data are published annually by the U.S. Department of Commerce in its P-60 series. (Additional data on college graduate earnings are also available from the College Placement Council of Bethlehem, PA. or even from the campus placement office.) From this data the students can calculate a rough estimate of the average yearly differential (D) between earnings of college graduates vs. earnings of high school graduates. I then ask the students to put together an estimate of how much their four years of college is costing them (C)--tuition costs, various fees, and the income foregone by not working.

Using the data gathered in this fashion, the class can now calculate a rough estimate of the average rate of return (r) to a college education through the formula $r = D/C$. The formula is fairly well-known and is derived from the sum of a geometric progression. (The derivation of the formula may be a useful mathematical exercise in itself.) Of course, the appropriate cautions and limitations of the analysis should be made clear to the students. Strictly speaking, the formula is valid only for cases when the differential (D) between the earnings of college and high school graduates is constant over the worklife. (This assumption is more valid for the case of female college graduates than it is for male college graduates.) Nevertheless, the class exercise is useful both for producing rough estimates of the rate of return to college using current data and for generating discussion concerning the strengths and weaknesses of human capital analysis.

"You Just Can't Get Good Help Anymore"

Eric Steger, East Central University

To illustrate Law of Supply, I relate part of a conversation that I had with a local business person. This man complained that he had to work many "overtime" hours and he had to work his employees "way too many overtime hours." He said that "you just can't hire good help anymore." I asked him what salary range he was offering new college graduates? The salary figures he gave were appallingly low even in Oklahoma. I explained to the class that although a high beginning salary is not the only determinant of labor market choice, an "adequate" salary must exist or labor market "shortages" will persist.

Are English Professors Overpaid?

Barry P. Brownstein, University of Baltimore

A hard notion to stamp out of principles students is the belief that there is an inherently fair price for a good or resource. Shock therapy can be the best method to stamp out these prejudices. Inform your class that the English faculty are grossly overpaid at your school. This is not your judgment but the judgment of the market. Since the supply of English professors greatly exceeds the demand, the market clearing price must be considerably below the going wage. An interesting discussion invariably arises when you point out that you are not judging the inherent worth of the English faculty, but are simply using market valuation. Are police and firemen underpaid? Then why is there a surplus of applicants? Is it fair that the author of a great scholarly work will probably get paid a lot less than the author of a romance novel? Eventually with enough examples the student will come to see that the only value-free estimate of a "fair price" is the market price.

The Minimum Wage and Student Employment

Thomas J. Shea, Springfield College

One of the arguments given by economists against the minimum wage is that it will hurt those it is really designed to help. Many of the arguments given about interfering with the workings of supply and demand are couched in this manner. Students seem to react to this argument negatively and are sincerely concerned with the plight of those working under a poverty level wage.

The best example I can give is for those universities that subsidize student aides. There is usually a budgeted amount of funds to be allocated according to need and the dictates of the financial aid system. However, it is explained that students can be made to realize, given a budgeted amount and a fixed wage that there are a certain number of hours of student labor that are funded. Now, ask them what would happen if a new, higher, wage as mandated by the federal government. It would mean less student labor hours available and, thus, some needy students left without a job and a means of financing their educations. This leads to many lively discussions of "need," other means of subsidizing students, and, eventually, what alternatives there are to a market solution to a difficult problem.

Example of a Price Floor: Comparable Worth

James A. Kurre, The Penn State University - Erie

The concept of comparable worth has been much in the news lately, and has frequently received a sympathetic hearing because of the nature of its goal: halting or preventing wage discrimination based on gender. The argument stems from the basic idea that two people who do the same job should be paid the same wage, other things such as experience and skill level being equal. If a man and a woman are doing the same job yet the woman is being paid less, there is a *prima facie* case of sex discrimination.

Comparable worth extends that basic idea. What if the two people are not doing the same job, but jobs that are comparable in the sense that they require similar skills and responsibility? If one person were paid less, is that also necessarily a case of sex discrimination? The goal of comparable worth is to ensure that these people are paid the same regardless of gender. There is a basic economic flaw in this idea, however. The comparable worth concept can be considered to be an attractively packaged price floor.

Consider the following case. Panel A of Figure 28-4 shows the market for occupation A. Since demand is relatively low compared to the supply of people in this occupation, the wage level is W_1 . Panel B of the figure depicts the market for occupation B, in which the demand is relatively great compared to the supply, resulting in wage W_2 . These two occupations have "comparable" levels of skills and responsibility required. Under the doctrine of comparable worth, they should be paid the same amount. However, if the wage in A is raised to W_2 , there will be a surplus of workers in that occupation, the typical effect resulting from any price floor placed above the equilibrium price. If instead the wage in B is lowered somehow, a shortage will result in that occupation. If market A represents an occupation which is primarily populated by women, such as secretary, while occupation B is something like truck driving which is primarily done by men, we have the typical "comparable worth" case. Ironically, an effective comparable worth law would result in a decrease in the number of jobs in occupation A (a decrease in quantity demanded) at the same time that more people--both men and women--are attracted into that market by the now higher wage (an increase in quantity supplied). This stimulates competition for a smaller number of higher-paying jobs--hardly the intended goal.

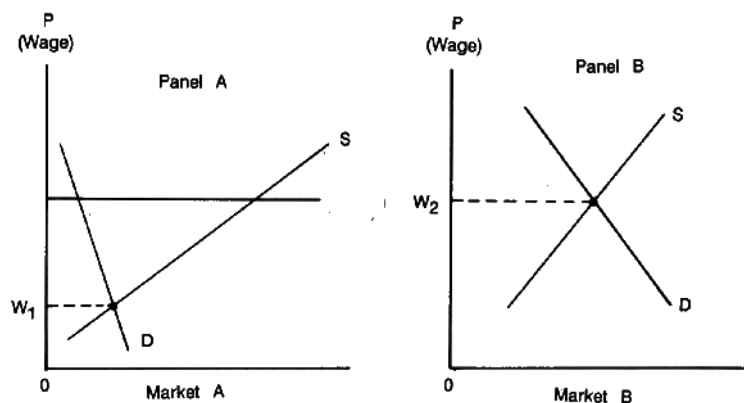


Figure 28-4

A good way to evaluate the idea of comparable worth is to divorce it from the emotion-packed discrimination issue. What if occupation A were buggy-whip braiding and occupation B were microcomputer assembly? Even if these two jobs require comparable levels of skill, a market system would yield low/falling wages in market A, with high/rising wages in market B, reflecting changing demands in the economy. A primary role of price in a free market economy is to provide information to producers participants about changing economic priorities. Locking price up with any effective floor or ceiling will prevent it from passing on such information, and will also give incorrect incentives for current and potential producers of these goods, resulting in a misallocation of resources.

The Supply of Playboy Models

Sol Kaufler, University of Haifa

In a singular effort to reverse historian Thomas Carlyle's dismal assessment of economics, I posed the problem to my students of constructing a model of the supply curve for models who might apply for the monthly centerfold position in Playboy magazine, and identifying the assumptions upon which their models were built. (No pun intended!) The collective insight of the class yielded essentially three contradictory views.

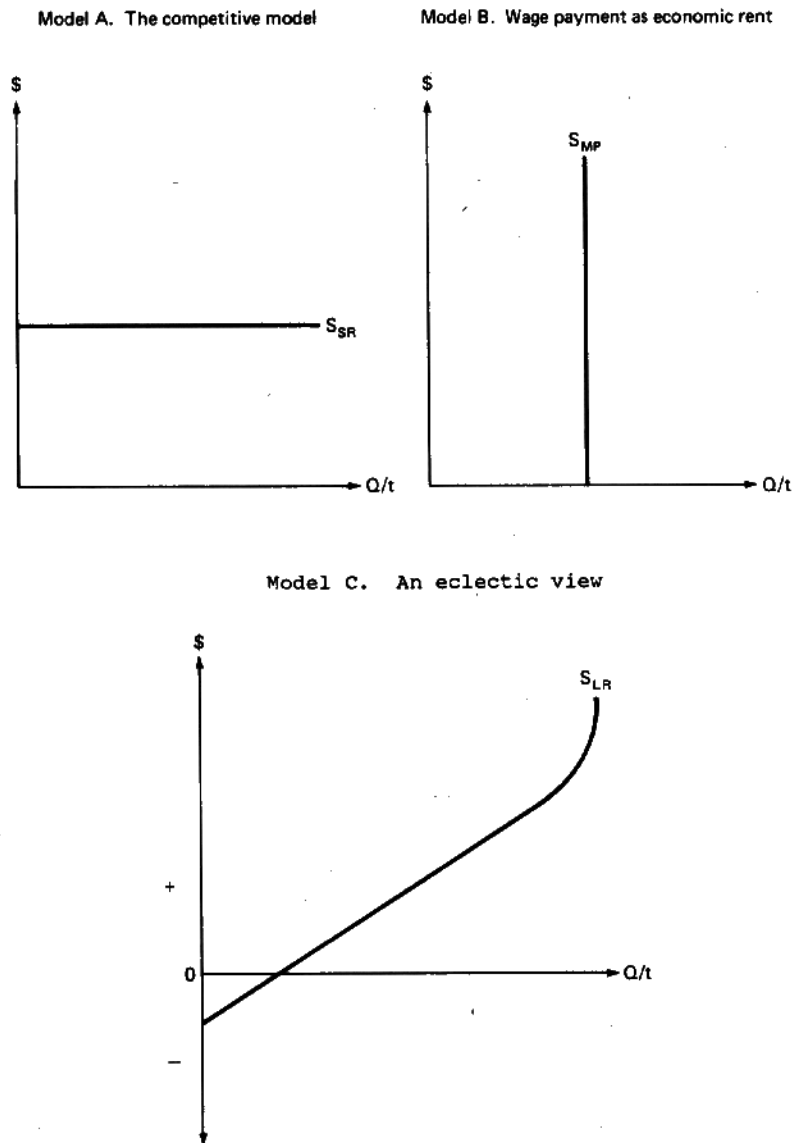


Figure 28-5

Model A: The Competitive Model (Panel A of Figure 28-5.)

Assumptions:

- Attractive models are basically a homogeneous labor resource (highly substitutable).
- There is, therefore, a perfectly elastic supply curve over a large range of labor in the short-run.
- The price of the resource will equal competitive wages for comparable work.
- The employer is known to seek special status for his product, so wage payments far above the competitive norm are a custom only, unneeded in the market for such labor.

Model B: Wages As Economic Rent (Panel B of Figure 28-5)

Assumptions:

- a. A particularly qualified model is a highly limited labor resource.
- b. Supply is, therefore, perfectly inelastic in a given period.
- c. The market price of the Playboy is purely demand determined.
- d. The model selected might be regarded as the landlord of a strategic site; all payments received represent surpluses in excess of the actual supply price or opportunity cost.

Model C. Eclectic Views (Panel C of Figure 28-5)

Assumptions:

- a. Net advantages to the model selected as "Playmate of the Month" suggest a large supply of available models with varying financial expectations, present and future.
- b. Some models, eager to capitalize on future job prospects, might be willing to pay for the unique opportunity; hence, a negative price might be established if quantity demanded were minuscule.
- c. A number of models might be unwilling to pay for the opportunity but would forgo positive remuneration; hence, a zero price.
- d. Many more models would be attracted to the particular job as the wage scale reached a competitive level equal to their opportunity costs.
- e. Only in the long-run would a higher than market rate be necessary to induce a particular model who might not otherwise be available for employment.

The class reached no conclusion, but the excitement of theorizing about markets was never in better evidence.

Cobwebs and the Labor Market

Herbert M. Bernstein, Drexel University

The Cobweb Theorem that supply chases demand due to a gestation period of production, is usually presented in connection with agricultural activity. I have discovered that by utilizing the labor market in conjunction with a gestation period (time spent in college) students' attention is enhanced. In particular, if you use professions such as engineering and architecture, you can demonstrate that students, by relating to relative wages when they are freshmen, can precipitate excesses and deficiencies in supply as they respond disproportionately to the wages that exist when they initiate study, rather than to the expected demand upon commencement.

Wage Rate Differentials and Allocation

C. Richard Waits, Texas Christian University

Students are handed an empty matrix in which the eleven rows are identified with different occupations and the nine columns are headed by different industry classifications. Students are asked to go through the help-wanted ads of the Sunday newspaper to find salaries being offered in as many of the matrix elements as they can find. Then we discuss possible reasons for the differentials, illustrate the variations in demands for outputs and for various skills, and discuss the allocation by wage incentives in the various boxes in terms of taking workers (hours) away from one occupation/industry and setting those workers in another place in the matrix. The impact of these allocation on the locations of supply curves in each box can also be understood in terms of changing wage rates.

Comparing Competitive Product and Resource Markets

Ralph T. Byrns

Compare the assumptions of a competitive product market to the assumptions needed to generate a competitive labor market.

Product Market	Labor Market
1. Large number of buyers and sellers.	1. Large number of buyers and sellers.
2. Each agent is small relative to the market.	2. Each agent is small relative to the market.
3. Homogeneous product. The product of one firm is a perfect substitute for the product of any other firm.	3. Homogeneous workers. Each worker is a perfect substitute for any other worker.
4. The firm is a price taker.	4. The firm is a wage taker.
5. Free entry and exit.	5. Perfect labor mobility.
6. Perfect information.	6. Perfect information.

Students also gain by seeing the parallels between the output decisions of profit-maximizing competitors and their decisions in labor markets. Just as the marginal output decision can be viewed as a balancing of marginal benefits to the competitive firm (the price received) and its marginal cost, you can treat the employment decision as a comparison between the benefits (MRP) and costs (w) of hiring an additional worker. Suggest that profit maximization in pure competition is consistent with hiring any workers who bring in more money than it costs to hire them. This approach lets students see quickly why $VMP > MFC$ leads to the marginal worker being hired.

Tax Reform and Labor Markets

Ralph T. Byrns

Supporters of the 1986 tax reform and the 1981-84 supply side tax cuts argued that cuts in marginal tax rates would increase the quantity of labor supplied. Discuss whether this assertion can be supported unambiguously by theory. (Answer: this is certain only if the substitution effect of an increase in the after-tax wage exceeds the income effect.) Suggest to your students that a major effect of these cuts in marginal tax rates may be to encourage many wives of financially successful men to enter the work force. If a woman was the primary care provider while her children were young and her husband became very successful during the period when marginal tax rates rose to in excess of 50 percent (don't forget about Social Security Taxes), the wife who could secure only an entry level job often confronted potential total expenses from working (50+ percent marginal tax rate + extra transportation, clothing, eating out, etc.) that may have exceeded her potential income. Recent reductions in marginal tax rates may have offset this situation somewhat, stimulating a greater flow of housewives into the work force, and a swelling of the number of two-earner families.

A related point that you may want to raise with your students is the recent political issue of "trickle-down" economics. Use the tools presented in the parallel chapter of our text to explain trickle down economics. Assume a competitive labor market and a competitive product market. Show how $P \times MPP_L = W$ also implies that the real wage will equal the MPP_L where the real wage is W/P . Use an aggregate labor market model to show how increased investment that increases labor productivity will increase the demand for labor, increase employment and increase real wages. This sets the stage for all kinds of interesting discussions.

The Slope of a Graph can have a Natural Economic Meaning

Mark E. Schaefer, Georgia State University

Ask students to give estimates of weekly take-home pay as hours worked per week increases from ten to twenty on up to fifty. You plot hours on the horizontal axis on the board and take-home pay on the vertical axis. Then ask them what the slope means. Give a hint by drawing a second steeper line and asking what happened to cause take-home pay to be larger for the same hours worked. They will notice that the slope of the line connecting the dots can be thought of as the wage rate, which convinces them that the slope of a graph can have a natural economic meaning.

You can press the story further by drawing a second graph directly under the first with the same hours worked marked on the horizontal axis but now with the wage rate on the vertical axis. Help them discover that a slope in the upper graph corresponds to a height in the lower graph and that the total area under the lower curve at, say, forty hours worked is the height of the upper curve at the same number of hours worked. Varying the height of the lower (wage) curve varies the steepness of the upper (pay) curve.

Indifference Curves and the Work-Leisure Trade-Off

Bienvenido S. Cortes, Pittsburg State University

A popular application of the indifference curve-budget line analysis of consumer behavior is the allocation of time between work and leisure. The usual evaluation of the work vs. leisure choice would be to draw one consumer budget line connecting one extreme case where the person works all day and gets maximum payment of say, \$A, and the opposite extreme where she doesn't work at all and therefore gets no pay. Consumer equilibrium is then reached at the point of tangency of the budget line and an indifference curve.

Instead of drawing only one budget line, we can make the analysis more realistic by delineating three budget lines for three types of workers: (1) a steeper AD represents workaholics or over-achievers who prefer to work more and thus get paid more; (2) a flatter FD represents bums or independently wealthy individuals who work much fewer hours than workaholics and thus get paid less, and; (3) a vertical BG represents me with a fixed income or salary, \$I. The relevant budget line would then become ABCD. My utility is indicated by indifference curves U and U' (the workaholic's set of indifference curves would reflect greater preference for work and income and, thus, would be located more to the left of my, or a bum's utility map). I maximize my utility at point B with 8 hours of work per day at \$I an hour and 16 hours of leisure (sleeping, eating, playing tennis, etc.). However, my preference or where I want to be is not necessarily the same as my optimal position. I want to have more leisure hours with the sacrifice of some \$ (point E). Emphasize the notion that you can't have your cake and eat it too since at point E, I can't be paid a workaholic's income and still enjoy extra time for just "bumming around." Another way of showing this analysis is by treating it as a linear programming application where the area under ABCD is the feasible region and B the optimal solution.

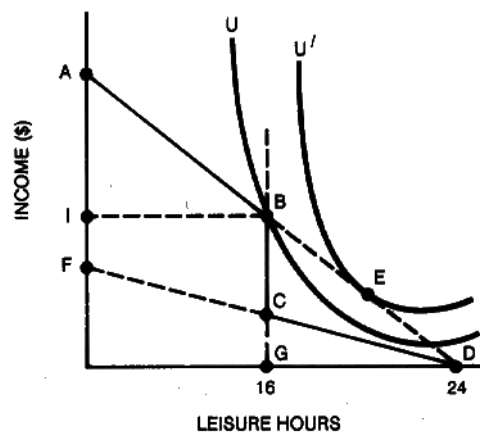


Figure 28-6

Chapter Fourteen

Imperfect Competition in Labor Markets

The Supply Side of Resource Markets

Djehane Hosni, University of Central Florida

Students typically find it difficult to comprehend resource markets. However, as the resource market is presented after the discussion on the structure of product markets, I take advantage of this fact and explain the resource market in reference to the product market. There is an analogy between the supply side of the resource market and the demand side of the market and as a buyer of a factor in the resource market. Figures 29-1 and 29-2 illustrate some parallels.

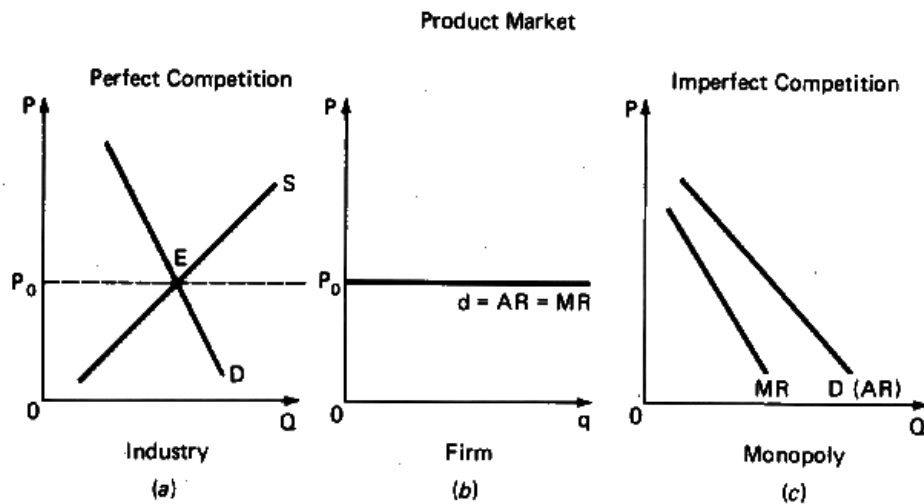


Figure 29-1

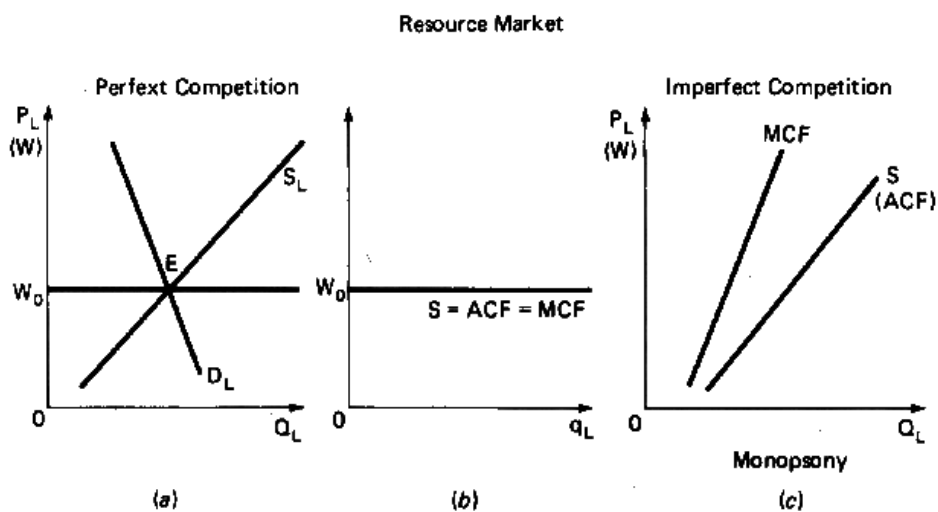


Figure 29-2

Market Structure	Product Market	Resource Market
Perfect competition	Market D & S dictate price	Market D & S dictate wage, rent, interest
	Firms and their customers are price takers.	Workers (or other resource owners) and those who hire them are price takers.
	D facing firm is perfectly elastic. $P = d = AR = MR$	S facing firm is perfectly elastic $W = S = ACF = MFC$
Imperfect competition	Monopoly=1 seller Industry = 1 firm	Monopsony = 1 buyer Market buyer = 1 firm
	The firm controls price of the good	The firm controls the wage, rent or interest
	Demand slopes down	Supply slopes up
	Marginal revenue is downsloping and below demand ($D > MR$)	Marginal factor cost (MFC) slopes up, above supply ($S > MFC$)

Exclusive Unionism and The Ph.D. "Union Card"

Eric Steger, East Central University

When I discuss the two ways in which unions attempt to raise wages, I typically include the Ph.D. in economics labor market example. I explain that some economics graduate schools may restrict the number of Ph.D. in economics graduates much like the exclusive unionism practiced by traditional craft unions that require an extended apprenticeship before a journeyman union card is obtained. Students then realize that all exclusive labor markets operate in a similar fashion.

Sally Field's Academy Award

Robert C. Graham, University of North Carolina-Charlotte

The impact of a labor union on a monopsonistic market yields one of the most surprising results in a principles of economics course. On the diagram of a monopsony, it can be shown that a union can establish a higher wage than was previously paid and, at the same time, cause an increase in the number of workers employed by the firm.

I have found that students understand and enjoy this analysis when an analogy is drawn with Sally Field's Academy Award for the movie *Norma Rae*. In that movie Sally Field portrayed a textile mill employee who assists a union representative in organizing the workers at the mill where she works. After much hardship and conflict with her fellow employees, Sally Field and the union are successful in organizing the workers. The subsequent admiration and respect (not to mention the Academy Award) that Sally Field wins is not surprising given the result predicted by the model, where workers have both higher wages and more jobs.

Labor Unions as "Fleets In Being"

Edward D. Lotterman, University of Minnesota-Twin Cities

Students are often sharply polarized in their estimates of the effects of unions. Some see unions as monsters spreading their slithering tentacles to strangle liberty and free choice while extorting vast sums of money from employers and the public. Other students view unions as fraternal clubs, pure as the driven snow, spreading wholesomeness, sweetness, and light throughout the universe. It is striking, however, that both groups of students tend to focus only on the effects of unions on unionized firms. The effects on other firms are largely ignored. The following analogy is useful in communicating a broader view of the effects of unions, especially in classes that include numbers of history or political science majors.

The 19th century American naval strategist, Alfred Thayer Mahan, postulated the concept of "the fleet in being." Mahan argued that one country's navy could have a powerful effect on the actions of a rival country without ever fighting a battle. The mere existence of a fleet would force the other country to devote resources to defensive efforts. If handled correctly, a modest "fleet in being" could force the opposing country to expend proportionately much greater resources on defensive measures. Kaiser Wilhelm II was a devotee of Mahan, and the German surface fleet in both World Wars essentially served as a "fleet in being." Resources devoted to the German surface fleet were relatively small and no decisive battles were ever fought. But in both wars, Great Britain was forced to devote tremendous resources to her navy and to coastal defense.

Labor unions can be compared to "fleets in being." It is not necessary that a union go on strike for it to have effects. It is not even necessary that the union organize a specific firm for it to affect that firm. Since many firms view union organization of their workforce as something to be avoided, these firms will often adjust their wage scales and personnel policies so that their employees will have little incentive to seek unionization. The effects of such defensive actions may

be much more widespread than the direct effects of union collective bargaining with organized firms. Note that this powerful influence is not necessarily positive for the union itself. A union "fleet in being" in effect has many free-riders on board for the cruise who do not stoke the boilers or man the guns!

Labor Cartels

Curt L. Anderson, University of Minnesota at Duluth

When discussing inclusive unions and their attempts to secure higher than equilibrium wages, I often refer to the union (the collective bargaining unit) as a labor cartel. This is useful in that "cheating" on the cartel (working for less than union established wages), like for any cartel, must be controlled by the cartel for it to survive. Hence, the turbulent history of the labor movement may be partially explained by the need for strong-arm tactics by the unions to keep members (and non-members) in line with the cartel arrangement.

A Marginal Analysis of the Football Player's Strike

Thomas Wyrick, Grove City College

When players in the National Football League went on strike at the start of the 1987-88 season, teams recruited non-union players and continued their regular schedules. A sharp fall in attendance and particularly vocal, sometimes physical, opposition to team policies by striking players caused many observers to conclude that the strike would probably be settled in the players' favor.

Economic theory suggested otherwise. The story is told by table 29-1, which give the weekly revenues and costs of a typical NFL team.

**Weekly Revenues and Costs for the
Average NFL Team, 1987-1988 Season**

Average N.E. Team, 1987-1988 Season					
Pre-Strike (normal season)			During Strike		
Revenues	Television	\$973,000	Television	\$973,000	Change in Revenue Equals -\$503,000
	Stadium gate	526,000	Stadium gate	126,000	
	Luxury box seats	255,000	Luxury box seats	200,000	
	Concessions	60,000	Concessions	12,000	
	Radio	40,000	Radio	40,000	
	Total	<u>\$1,854,000</u>	Total	<u>\$1,351,000</u>	
Costs	Player salaries and associated costs	\$854,000	Player salaries and associated costs	\$230,000	Change in Costs Equals -\$624,000 ↓
	Non-player costs	200,000	Non-player costs	200,000	
	Total	<u>\$1,054,000</u>	Total	<u>\$630,000</u>	
	Profit Equals \$800,000		Profit Equals \$921,000 ----->		

Table 29-1

The most important thing to note in the table is that the strike had very little effect on weekly team revenues. Because of long-term contracts between the NFL and broadcasting networks, teams received weekly payments of about \$1 million regardless of the quality of play or the number of fans watching or listening to game broadcasts. The strike had a far larger impact on team expenses. The average team hired non-union players for \$230,000 per week, while regular (union) players had earned \$854,000. Although a few regular players crossed union picket lines, the number was fairly small until the outcome was apparent.

In the margins of the table, note that the strike cost team owners \$503,000 per week in revenues lost due to lower attendance, but saved \$624,000 per week in costs due to lower salaries. As a result, the strike actually increased team profits by \$121,000 per week. This suggests that team owners were under little immediate pressure to settle the strike. Because striking players were not paid during the labor dispute, it was only a matter of time until they would agree to return to the playing field.

Yet one cannot conclude that owners would have been content to let the strike continue indefinitely or that players made a mistake by striking. The key to the owners' ability to resist player demand ultimately rested on having a steady (fixed) source of revenue from broadcasting contracts. Over the longer run, extending beyond the current contract period, a lengthy strike in '87-'88 may cause broadcasters to insist on contracts protecting them from losses resulting from future strikes.

One possibility is a contract for smaller weekly payments to reflect the additional risk broadcasters perceive of recurring strikes. Because of this possibility, team owners were risking future income by permitting the strike to continue and were under more pressure to settle the strike than the short run analysis in the table indicates. Another alternative would be for broadcasters to insist on new contracts tying weekly payments to game attendance. A contract of that type would make owners much more vulnerable to future strikes than they were in '87-'88, surely a prime objective of players looking to the future.

Wage Discrimination and Efficiency

Ralph T. Byrns

Point out that just as the inefficiency of monopoly can be reduced through price discrimination, the inefficiency of monopsony can be reduced through wage discrimination, and that monopsony power is commonly associated with power to structure wages. Discuss why pervasive wage discrimination makes it unlikely that unionization or higher minimum wages will increase employment, a possibility when a union is used as a "countervailing power" to offset the monopsony power. Suggest further that if labor monopsonists in e.g., the textile industry, compete vigorously with others in the product market (foreign producers?) who have comparable cost advantages (perhaps from monopsony power of their own), unionization or higher minimum wages will almost certainly result in disemployment or even permanent shutdown. For example, if one "sweat shop" owner is forced to pay high union wages but competes only with other sweat shop owners, the unionized firm will fail.

Child Warfare and Labor History

Robert L. Hermann, Dakota State College

Students are often confused as to the rationale behind federal labor legislation in a market economy stressing competition and free enterprise. The following "story" helps to clear the air.

Imagine the "World of Work" as a big playground, with Government being the playground supervisor, the little kids on the playground being the workers, and the playground "bully" (on any playground there is always a bully), who in this case represents management. For most of recorded history, the bully had things his own way on the playground, and the supervisor left things alone, believing that "Kids will be kids." When the bully wants to swing, he doesn't wait his turn, he just pushes the little kids out of the swing. When they play ball the Bully always gets to bat first, and he

is usually the pitcher. If the rules of the game being played don't agree with the Bully, the rules are changed, etc. The playground supervisor finally comes to the conclusion that the Bully has had things his own way far too long. The supervisor calls the little kids together in a conference and says, "I'll tell you what I am going to do. I'm going to give you little guys sharp sticks. When the Bully pushes you out of the swing, knocks you off the teeter totter, or changes the rules of the games to suit himself, I want you all to gang up on him and jab him with these sharp sticks."

And "Kids being kids", that is exactly what happens. The Bully no longer has things his own way. In fact, without any provocation at all, many of the little kids give the Bully jabs with their sharp sticks whenever they walk by him. The supervisor, watching this, realizes that maybe he has gone too far. So he calls the little kids to another conference and tells them, "I'm going to let you keep your sticks, but I am going to break off the sharp points, since you have been using them to excess." The playground then settles down to peaceful play for the first time. The little kids still have their sticks to control the Bully when needed, and the Bully realizes that he can no longer have everything his own way.

Putting this story into the proper time frame: Before 1935 the Bully had his own way on the playground. Between 1935, (Wagner Act) and 1947, (Taft-Hartley Act) was a period of sharp sticks in the hands of the little kids. The Taft-Hartley act had the effect of breaking off the points on the sticks. Since 1947, the supervisor has been able to sit back and watch the kids play. "Kids will be kids" and there are still playground squabbles, but neither the Bully nor the little kids alone can dictate the action and the rules of play.

A Union for Managers?

Ralph T. Byrns

Poll your students about their opinions of whether unions raise wages by less than 5 percent. Over 5 percent? Over 10 percent? Over 20 percent? Over 30? Approximate the average of student opinions about the union/nonunion wage differential. Then state that you are going to start a union for mid-level managers (the position to which many students aspire), and ask how many would be interested in joining (many college students are very antiunion). Most will indicate NO. Tell them that dues will equal only 3 percent of their wages, and remind students of the ideas they just covered about profit (or in this case, income) maximization. If unionization generates say, 20 percent extra income but only costs 3 percent of income, it seems almost sinful for them not to join. Discuss this for a while. Some student will eventually suggest that higher wages for union members cause wages to fall for nonunion workers.

Symmetry between Corporate Structures and Unions

Ralph T. Byrns

Many students are vehemently anti-union, and appeal to laissez faire notions to support their positions. You can lead them to reexamine whether unions are inconsistent with a free market

approach by pointing out that corporate managers act as agents for huge numbers of stockholders when they deal with consumers by setting prices, or when they act as stockholders' agents in dealing with workers by trying to specify working conditions and wages. Symmetrically, union officers act as the collective agent of a large number of workers. Suggest that if unions are perceived as exercising monopoly power in the sale of labor, that managers of giant firms may similarly exercise considerable economic power in their decisions. And that competitive forces (e.g., imported goods) may equally limit the power of both corporate managers and labor unions.

Collective Bargaining

Robert D. Witherill, University of Southern Maine

One economic model presented to students learning about wages is that of bilateral monopoly. The instructor explains that the wage usually lies between the upper limit of the marginal labor cost curve's intersection with the marginal revenue product curve and the lower limit of the monopsonistic labor buyer's supply curve, with the exact wage will be determined by collective bargaining.

A role playing model helps students understand the bargaining process, and why it often takes so long is so difficult. The class is divided into groups of four or five so that there are two groups for each company--a management negotiating team and a union team. Each group is given specific information pertaining to their position. The management team is given information about labor's marginal revenue product, costs and profits. Labor's team is given information about the concerns of the union's membership for higher pay, better working conditions, and the state of the union's strike fund.

After the distribution of information sheets, each side is given time to formulate their bargaining positions. They then meet, and union and management present their demands or positions. At this point, a recess may be in order to discuss the response to the other side's position. The sides then reconvene to bargain a contract. A time limit should be set on bargaining. If there are two or more companies, the best management or union team may be determined from the agreed settlement. A further discussion can then be held on what elements are involved in collective bargaining, why bargaining takes so long, and what factors can improve the bargaining process.

Union Team You are a member of the Union Negotiating Team for the Ajax Corporation--manufacturer of steel office furniture. There are 1500 employees in the firm and they are represented by your Amalgamated Steel Fabricators Union. You are currently involved in the negotiation of a new wage contract. The following information may help you in your negotiations. This information is confidential. It is not known to the management representatives.

Your members is pushing for a wage increase. You also want an additional 1/2 hour of clean up time--currently cleaning up and changing from work clothes is on the employees' own time. You want more vacation time, another paid holiday, and another half hour for lunch making lunch time one hour. In addition, the plant is very hot in the summer time. You would like the company to air-condition the plant. Your union's strike war chest is low--but the company does not know this. Your membership would find a strike difficult right now, but they are likely to vote you out of a job if you do not get a good settlement of the union contract.

Currently the average wage is \$5.94 per hour. Employees have six paid holidays per year. Employees are given one week paid vacation after one year of employment and one more day for each additional year worked.

Management You are a member of the Management Negotiation Team for the Ajax Corporation--manufacturer of steel office furniture. There are 1500 employees in the firm and they are represented by the Amalgamated Steel Fabricators Union. You are currently involved in the negotiation of a new wage contract.

The following facts may help you in your negotiations. These facts are confidential--they are not known to your union representatives.

Number of workers	Marginal Revenue Product (per hour)
1000 - 1100	\$8.00
1100 - 1200	6.60
1200 - 1300	7.40
1300 - 1400	6.80
1400 - 1500	6.40

The wage under the present contract is \$5.94.

Any increase in other benefits would be proportionable; i.e., one-half hour extra lunch time would reduce the average MRP by 40 cents; an extra holiday by 6 cents. Workers currently get one week of vacation after a year of employment and one extra day for each year with the company. They also get six paid holidays. Management would prefer to have workers on an incentive wage system, but so far, the union has refused to accept this.

Profits for your company last year were \$1,600,000 which was 12% of sales or a return of 20% on invested capital. This profit represents earnings of \$2.40 a share of the outstanding stock. The current market price of the stock is \$50 a share. Your job is to negotiate the lowest-cost contract possible. You really cannot afford a strike at this time but neither can you afford to negotiate a contract that will cause your company to suffer financially.

Multiple Bargaining Parties

Ralph T. Byrns

When you discuss the collective bargaining process, point out that negotiation is typically conducted by specialized corporate management teams (not the stockholders who own the firms) who bargain with union leaders (not the workers themselves.) In major contract negotiations, government also plays a role because, presumably, the public interest is at stake. Thus, voters, politicians, and arbitrators also may play roles. Ask your students about what they perceive to be the objectives of each of these seven groups. Here are some possibilities:

- a. corporate managers seek contracts that will justify high management salaries and minimize hassles and the filing of grievances after the contract is set; they must satisfy stockholders that they have negotiated a contract that permits acceptable profits or their own job security is threatened.
- b. stockholders want maximum profits, which many view as incompatible with a contract settlement involving wages and fringe benefits higher than those paid by other firms or to comparable employments.
- c. union leaders want the highest salaries and 'perks' possible for themselves, and must satisfy their members that they negotiated the most advantageous package of wages and fringe benefits that the firm (or industry) could afford; otherwise, their tenure as union officials will be threatened. (Their objectives parallel those of corporate managers, with whom they have much in common.)
- d. union members want the highest valued combination of pay and fringe benefits possible that is consistent with reasonable job security. Within unions, there will be older workers who are willing to forego high wages per se for seniority rules, fat pension plans, etc, and younger workers who want higher pay for apprentices, women who want maternity leave benefits and child care allowances, and so on.
- e. voters typically want minimal labor conflicts and disruptions, and in their roles as consumers, they would like prices that do not reflect inflated wage payments.
- f. politicians generally want to be reelected, and want to project images that their priorities reflect those of voters and consumers. At the same time, they recognize the potential benefits from campaign contributions from union or management PACs or political support.
- g. arbitrators want job security, and seek settlements that are acceptable to all of the preceding parties.

Ask your students to indicate the areas in which these parties (e.g., managers and stockholders) have common and divergent interests. Then ask them to do the same for union

leaders and workers, voters and politicians, etc. A thorough discussion of these problems can give students insights into how complex the problem of collective bargaining can be.

If you have time, a brief simulation of the collective bargaining process can be useful. A number of possibilities are outlined in texts on Labor Economics or Collective Bargaining, and in the preceding idea offered by Robert Witherill.

Chapter Fifteen

Rent, Interest, Profits and Capitalization

How the "Boss" Collects Economic Rent

Robert W. Wassmer, California State University-Sacramento

The concept of economic rent is important, but not very interesting if explained using the standard example of land. An example that I use is of interest to most students and illustrates the fact that economic rent is the biggest component of most "superstar" earnings. Bruce Springsteen, or the "boss" as some fans call him, is a rock star that most students of the current, and recent past generations, know quite a bit about. He got his start playing small bars in the 1960s along the New Jersey Shore. Springsteen quickly developed a reputation of consistently putting on three hour concerts (probably close to the maximum humanely possible). Till this day he continues to perform these marathon concerts and this yields the necessary requirement of a perfectly inelastic labor supply.

A hypothetical market for Springsteen's labor is given in Figure 30-1. This market shows that any pay above \$100 per concert hour is pure economic rent because it does not cause Bruce to play anymore than the three hours physically possible. Springsteen's fans may question whether it is "right" for the "boss" to receive such a high wage. In fact, some fans probably think that his high wage is what causes concert tickets to be so expensive. It is easy to show that they have the causation backwards. Fans have only their own behavior to blame for his high wage. Both the willingness of fans to pay high concert ticket prices, and their willingness to see him play in large auditoriums which drives up his marginal physical product (MPP), has increased the demand (MRP) for his services by concert promoters and consequently the wage they are willing to pay him. A sure way for fans to lower his, and other superstar wages, is to boycott their performances. As Johnny Carson once said, "I'm especially grateful, as I have no other marketable skills."

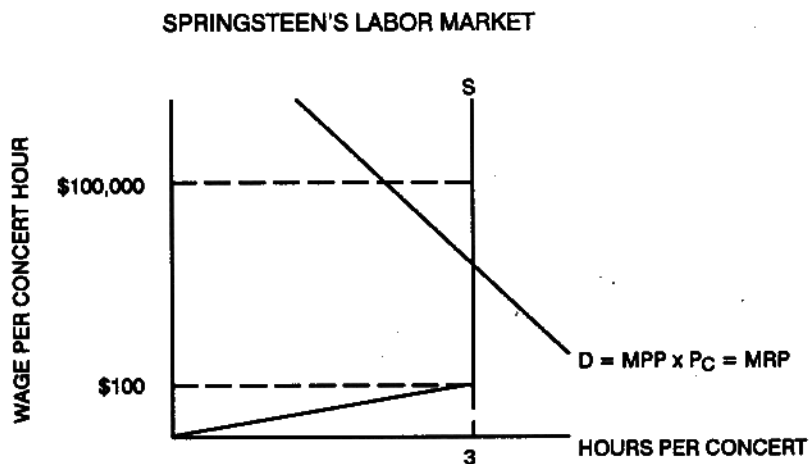


Figure 30-1

The Model Matters - Rent Control

David Hemenway, Harvard School of Public Health

When presenting 'real world' illustrations of economic principles, I try to emphasize the importance of the assumptions being made. For example, almost all economists (including myself) believe that a ceiling on rents will reduce the quantity of housing units available. This is certainly the result of the competitive model. However, if the competitive assumptions do not hold, the conclusion may not follow. In a monopoly model, for example, rent control conceivably might increase the supply of housing. (See the figure below.) This is similar to rate regulation of natural monopolies (e.g., utilities) increasing output. The same principle is inherent in the possibility that minimum wage laws or union-set wages might increase not only the price of labor, but the amount employed in a monopsony market.

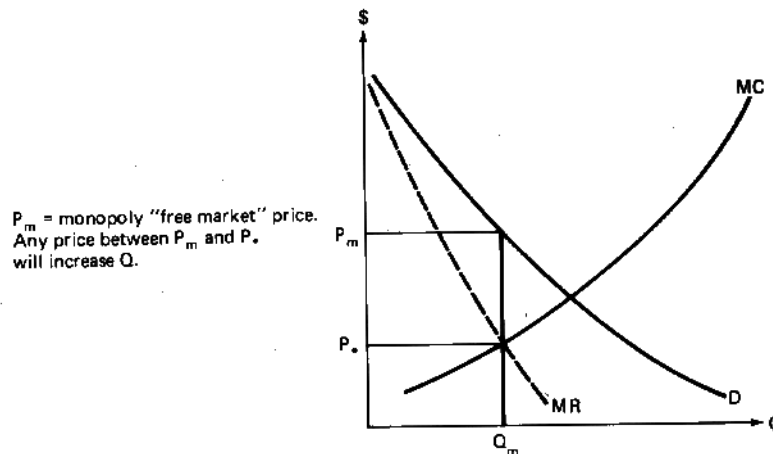


Figure 30-2

Are Professional Athletes Worth What They are Paid?

Eric K. Steger, East Central University

Quite often my students say that the huge salaries earned by professional athletes are excessive. They say that nobody is worth that kind of salary. I quickly disagree and point out that the market, although not perfectly competitive, says that these people are "worth" whatever they are paid. The moment when the athlete's marginal contribution to the team is less than the cost of the team, the team will terminate this athlete's services. I point out that the professional athlete is simply a labor resource input into a profit motivated production function. Due to this fact, an employer will not pay an excessive salary.

Smog, Urban Crime, and Economic Rents

Ralph T. Byrns

Suppose a humanitarian, primarily concerned with the plights of the impoverished, were given a "Magic Button" that would, at zero resource cost, completely eliminate pollution. Would it be consistent with the humanitarian's desires to activate the button? Curiously, the answer is NO.

The reason is that when highly polluted urban cores become more attractive for residents, numerous affluent suburbanites move downtown to avoid the transportation and time costs of commuting. This bids up rents in urban centers, driving poor people into suburban slums, where they would live no better than previously, but would be forced to commute. This line of reasoning suggests that the poor actually benefit from pollution. Parallel reasoning suggests that elimination of street crime or other forms of urban malaise would also harm the urban poor by bidding up central city rents.

After discussing these issues at some length with your class (and we promise lively debates) you might point out that this reasoning focuses on substitution effects (the changes in the relative prices of residential locations), while the positive income effects emerging from the elimination of such social bads may provide benefits to the poor that more than offset the perverse effects on income distribution of the substitution effects. If so, it may be that the poor do not gain because of urban problems. (This exercise aids students in comprehending capitalization and economic rents. We first heard the general idea from Armen Alchian.)

Profit and the Entrepreneur

Thomas J. Shea, Springfield College

In discussing the Schumpeterian view of profit as a return to a "special factor of production-- the entrepreneur," students need to have an example of an entrepreneur rather than an inventor. The one that gets their attention is Hugh Hefner. I tell them that he did not invent sex (it was invented by the Phoenicians) nor "sex magazines" (they were invented by the Babylonians). But he was the first to successfully package a magazine that skillfully combined a pseudo-intellectual philosophy, some fine writing by Faulkner, Hemingway and others, as well as airbrushed photographs of incredibly beautiful women. He reaped huge profits as a result of what Schumpeter would have called entrepreneurial talent.

Dynamic Economic Processes: The Bubble and Crash

Mark E. Schaefer, Georgia State University

The investment accelerator and the cobweb model are two frequently discussed examples of dynamical processes in economics. We need to expand our standard repertoire to include the case of destabilizing speculation or the so-called "asset bubble." You can count on having enthusiastic

student response and an energetic class session when you raise the topic of wide swings in the stock market. An unsustainable rise in the price of one stock or the whole market is often compared to an expanding soap bubble which must finally burst.

You may want to focus the discussion by asking three questions. How does a bubble, or rise, in the price of a stock get started? What inherent internal process will eventually burst any purely speculative bubble in the price of stock? What early warning signal should alert you that the turning point is near, so you can switch sides from "long" to "short"?

The following sketch of a possible bubble may give the students something to sharpen their teeth on. To say that a stock is overvalued we need to know the true value, which can be conceptualized as the present discounted value of the future stream of dividends actually paid out to shareholders. Some will suggest that expected future appreciation of the share price influences present demand for shares, which is probably true, but which is also the conceptual error of double counting which sets the stage for the bubble to even exist.

The first act in the bubble drama is the noticeable rise in the price of the asset. This run-up may be due to the announcement or rumor of new favorable information. It may be due to a string of random but positive price changes which will occasionally happen by the laws of chance. Or it may be the result of manipulation by a small close-knit group of market participants who intend to bilk the large uniformed but greedy mass.

The second act starts when speculators notice and pile on, leveraging themselves by using borrowed money ("call" loans or overnight loans which can be immediately recalled, perhaps forcing the borrower to sell in a declining market) whose interest rate is variable but below the expected appreciation rate of the asset. This frenzy of buying to beat the expected price rise causes the market price to overshoot the true value of the asset, creating a bubble which will eventually burst. The hysteria may become so intense that lenders also switch to borrowing and speculating in an attempt to capture the rates of return that they see their customers reaping. So the interest rate rises, perhaps drastically.

The third act of the drama begins when the interest rate on loans eventually exceeds the appreciation rate of the stock. Then the leveraged speculators are suddenly losing money. They are being squeezed and must sell. The stock stops rising, hesitates briefly at its peak and begins to fall. This turning point is followed by the fourth act in which panic sets in as highly levered buyers are forced to sell to meet margin requirements on the stock they have purchased on borrowed money. As they trample on each other trying to get out of the stock, its market price plummets.

This crash in value of the asset leads to the fifth and final act in which the price falls below the true value. If the price ever begins a recovery, the trend of rising price toward true value is noticed by speculators and act one of the drama begins again. We know the turning point is near when the interest rate on loans begins to rise and approach the appreciation rate of the stock. Appropriate defensive action should then be taken.

Why All Stock Purchases Are "Mistakes"

Eric Steger, East Central University

I state that all stock purchases are mistakes. Obviously, students protest and say I'm wrong. I explain the following:

- (1) If you sell the stock for less than you paid for it, it is a mistake. They agree
- (2) If the stock remains at the same price and pays no dividends, the opportunity costs of interest forgone hurts investors.
- (3) If the stock is purchased at the all time low and sold at the all time high, this is also a mistake. They ask "how?" I explain that an investor with 20-20 hindsight should have mortgaged his/her home and "scraped together" every penny to invest in the stock. This mistake here is that you didn't buy enough of this stock.

I explain that you can always set yourself up to be a loser in stock purchases if you have this perspective.

Explaining The Role of the Stock Market

James E. Harmon, Imperial Valley Campus of San Diego State University

In the "conventional wisdom" the stock market is believed to be an accurate measuring instrument of the health of the economy. Many column inches of commentary to this effect pervade the media. But the price of stock is governed by its expected price/earnings ratio, which is only the investor's belief about future profits. Further, as James Balog of Drexel, Burnham, Lambert notes "over the past 50 years only 3% of all corporate capital has come from common stock. The rest comes either from retained earnings or debt" (*Christian Science Monitor*, Nov. 26, 1985, p. 31 in John Yemma's "Business" column). If only 3 cents of every corporate capital dollar comes from the stock market, then what is the actual or major function of the stock market in the economy?

Let the student ponder this in groups or entire class. Usually a bright one will light up finally and blurt it out. If they cannot break through, gently suggest that they look at it as a socially approved lottery in which certain kinds of people play as they bet against each other's money and beliefs. The stock market, then, may be a better indication of the nation's euphoria or neuroses than anything else.

This exercise also sets the stage for further discussion of risk capital and small business financing, corporate debt (bonds), retained earnings, and administered pricing. I have used this for 15 years to generate interest in the subject among my students. The kernel of this idea is drawn from the 1950s writings of A.A. Berle about the role of the corporation.

Explaining the Value of Money

Aaron A. Hutcheson, Austin Peay State University

The "Time Value of Money" is discussed in economics classes in many different ways: inflation, deflation, present value, real purchasing power, appreciation, depreciation, and etc. A "prop" that I have found most useful to get the attention of students and to make the economic point is to use a "shrunk" dollar. The shrinking process is described visually below.



Figure 30-3

Why Do Positive Rates of Interest Exist?

Charlotte Twight, Boise State University

I introduce students to the concept of positive interest rates by asking the class if someone has a ten dollar bill (or twenty!) that I can use to illustrate a few points in the day's lecture. When some unsuspecting soul volunteers the hard cash, I take it and very slowly and conspicuously walk back to the front of the room, get out my wallet, put the money in my wallet, and put the wallet away. I then turn to the class, as if to commence the lecture. There is typically much laughter and commotion at this point. The person who volunteered the cash usually begins to protest, in response to which I feign surprise and say I just wanted to use the money for a year. Wouldn't that be all right if I just returned the \$10 to the person a year from now? Of course at an intuitive level, especially when their own money is at stake, they know that's not okay, and it's amazing how quickly the students will tell me all the reasons: risk, opportunity cost, and the like, why they would require compensation if they were to allow me to have the use of their money for a year. There is often at least one venturesome person who states that it would be all right for me to keep the money for a year and return it without interest if he or she could be assured of an A in the course! This offer, of course, further illustrates the point that some compensation would be required.

Revealing Time Preference: A Bidding Game

Edward D. Lotterman, University of Minnesota-Twin Cities

A good understanding of the human preferences which underlie basics such as interest and discounting is important in many economics and business courses. A simple technique for illustrating time preferences for money is to conduct a short bidding game with one or more students. It is necessary to bring a dollar bill as well as loose change amounting to another dollar to class. The money should be placed on a table or desk in view of the class, the dollar bill on one hand, and the pile of loose change also equaling a dollar on the other. A student is selected and given the choice of one dollar in loose change now or the dollar bill at a later date (the day of the final exam is a good choice). Most students naturally prefer to have the dollar today. The next step is to remove a penny from the pile of change and ask the student what his preferences are given this new choice, \$1 at a future date, or \$.99 right away. The process is repeated with the sum of money offered at the present successively reduced by 1 or 2 cent increments until the student decides to wait for the dollar in the future. At that point go back to the last sum the student preferred to have at the present and give him that amount. (Most students will be absolutely flabbergasted when you give them the money).

Then on the blackboard or overhead, go through the process of calculating that student's time preference for money or implicit interest rate. Most students are willing to pay very high rates of interest in games such as this, usually 15-25% in my experience in the U.S. and 20-30% when I taught Farm Business Management at the Universidad Nacional Agraria in Peru (using dollars, not soles!). You can discuss why they are willing to pay such high rates in both facetious (heavy date coming up tonight and no gas money) or serious terms (great deal of risk involved in trusting word of econ prof, high transaction costs involved with collecting small sums during finals week).

If you are willing to spend the cash, it is often useful to select a sample of four people, send them out of the room so that they cannot observe each other, and then go through the process with them one by one. This highlights interesting differences between individuals in time preferences. You can try to see if there are differences between men and women, graduate students and undergrads, business students and econ students and the like. You will probably run out of money before you come up with any results that are statistically significant, but the process can be fun. Costs can be reduced by using a smaller sum of money than a dollar, but in my experience \$.25 or less is not enough, it is too much of a "game" and you get very spurious, inconsistent results. I doubt that this game is original with me, but do not know who to credit with the idea. None of my profs used it when I was a student!

The Magazine Subscription Problem

Stephen H. Archer, Willamette University

To help students' understanding of the time value of money and the greater worth of present dollars compared to future dollars, I use the practical magazine subscription decision. Most publishers offer a major discount if one is willing to subscribe to their magazines on a multiple year basis. Students are usually familiar with these come-ons. But how can they make an intelligent choice from among the alternatives presented?

For example, suppose the magazine's offer is to subscribe for one year at \$18 and two years at \$34. I have to assume that (1) the subscriber wants the magazine for at least two years and (2) next year's one year rate will be the same as this year's rate, \$18. In this example, the expenditure of \$16 more today saves an expenditure of \$18 one year from now. If the subscriber must take the \$16 out of a savings account earning 6%, then the opportunity cost of money is 6% and the present value of \$18 is $\$18/1.06 = \16.98 . Sixteen dollars is less cost than the present value of \$18, so choose to subscribe for two years.

In terms of rate of return, spending the \$16 now saves us \$18 in one year, so the rate of return on the \$16 is $\$18/\$16 - 1.0 = .125$ or 12.5%. One can earn 12.5% by buying the second year subscription now; this exceeds the 6% return in the savings account. One earns \$2 by subscribing for the second year now versus $\$16(.06) = \0.96 in the savings account.

You could extend this type of illustration to the discount that insurance companies offer for paying premiums annually instead of semiannually.

Backwards Bending Supplies of Loanable Funds?

Ralph T. Byrns

Proponents of supply side economics argued that cuts in tax rates should increase saving, reduce interest rates, and increase investment. Use the loanable funds model to outline the theoretical foundations for this view. (Some of the discussion about saving and interest rates in Chapter 19

may be helpful.) Use income and substitution effects to show how higher after-tax rates of returns may reduce instead of increase saving, using logic that parallels the development of 'backward-bending' labor supply curves.

Mortgage Rates, Tax Deductions, and Housing Prices

Ralph T. Byrns

Use the present value formula to show why rising mortgage rates should reduce the demand for housing, and vice versa. Treat the PV as the demand price for a future stream of housing services. Let the Y_i represent the value of the future housing services in period i . Now use competitive assumptions to show how the equilibrium price of housing should equal the capitalized value of future rental incomes. (This idea can be extended into a discussion of how the value of owner-occupied housing is imputed for the GDP accounts.) Discuss how income tax deductions of interest payments on home mortgages artificially raises the prices of homes and otherwise distorts the housing market.

Chapter Sixteen

Income Distribution and Poverty

Income Distributions and Scarcity

Robert S. Rycroft, Mary Washington College

I begin my discussion by asking students how much income "typical" (defined as 4-person if someone asks) American families need to be comfortable. After averaging their estimates, I reveal what the average U. S. household income actually is. The student estimate is always significantly greater than this. After noting that by student standards the typical American family is far from "comfortable," I am able to make the point that scarcity is a problem even in the richest country in the world. The instructor can also initiate a class discussion of why this is the case since our average income exceeds any reasonable estimate of subsistence.

Further, most students do not have a clear idea of where they stand in the distribution of income. Ask your students to estimate what percentage of all families had incomes lower than theirs for the previous year. After showing them the actual data, ask how many underestimated the number of families they were richer than. Most will have underestimated.

Efficiency, Not Equity

Todd Steen, Hope College

In order to emphasize the point that an efficient situation is not always equitable, use the following example. After discussing the concept of efficiency, poll the students as to whether they think more concern should be given to efficiency or equity in the process of distributing goods. This usually leads to a good discussion focusing on the merits of both positions. After that distribute a piece of penny candy (different kinds) to each member of the class. and then allow them to make trades. This highlights the fact that once all the trades are made, the situation is considered efficient, but that the final distribution depends on initial "endowments." Then distribute additional pieces of candy to a selected group in the class (dark-haired students, for example). Again allow all possible trades to be completed. This highlights even more clearly how a situation that is efficient (as well as Pareto optimal) is not necessarily equitable. This exercise can bring to the forefront issues of equal opportunity and discrimination if the professor desires. Bring enough candy for everyone!

An Income Distribution Game

Donald M. Peppard, Jr., Connecticut College

The income distribution game works in classes of 40 students or more. The instructor chooses four students (or 10 percent of the class) who own the rights to produce quiz results. These four student owners may hire as many students as they like to take quizzes for them. Students work in groups of four or five, and owners may hire enough students to operate more than one "plant." Owners do not work; they supervise the groups of workers that take the quizzes. There are usually four quizzes during the semester; the more quizzes the better the game works. The students who are hired negotiate their wages in advance of taking the quizzes; owners receive the points that the quiz earns

and pay their workers out of the quiz earnings, retaining any residual profits. Owners may hire and fire employees at will, and students may organize unions, too.

After each quiz is taken, graded, and returned to owners, the class discusses the distribution of "income." Students who were unemployed receive some level of unemployment benefits (usually 50 percent of the average wage), and students who are unemployed for 2 quizzes receive a lower level of welfare benefits (determined by the class). Transfer payments are funded by taxes levied on the owners and the employed population (the form of taxes is discussed and determined by the class).

An owner who loses money, i.e., whose quizzes are not good enough to pay his workers and yield profits, can be bought out by another owner who borrows from future earnings; the new owner operates as the owner of 2 or more "plants." Students use their final totals of points to buy 20 percent of their course grades; grades A through F can be bought by the top through bottom quintiles of the income distribution, respectively. (This use of the points requires early and clear understanding of the grade jeopardy students may be in, but it provides an important incentive to take the game seriously.)

The game can be used to illustrate several aspects of income distribution: wage setting, tax and transfer structures, ownership advantages, incentives, and the effect of unions.

Miscellaneous Criteria for Distributing Income

Forrest McCluer, Boston University

Perhaps one of the more difficult concepts to convey in economics is the importance of income distribution in allocation decisions. Individuals rarely experience a drastic change in their families' relative income. The introduction to income distribution described here is an effort to have students experience a simulated change in income distribution.

First, begin by conveniently coming to class with a shortage of handouts which describe the income distribution in the United States. How these scarce resources are going to be allocated among competing wants is the obvious economic question. The situation can be made more dramatic by supposing that the information contained in the handouts represents all of the knowledge necessary to graduate from college and that a college degree is the signal that would assure them of success and high wages or salaries in the labor market. Students should by now be well versed in the notion that resources are allocated on the basis of price in a market system. Furthermore, those that prefer 'success' to other goods would be willing to compete on the basis of price for the rights to the vital information contained in the scarce documents. However, students may not be very interested in bidding against each other, particularly in light of the fact that many of their parents have already spent a few thousand dollars to get them there in the first place. Additionally, it could be noted that if this information were allocated on the basis of price, those with the greatest incomes would, *ceteris paribus*, get the handouts. If these handouts did, in fact, guarantee job market success then we would expect to find that income distribution would become

more skewed over time as those with high incomes who acquire the college degree enjoy increases in their level of income.

So the search is on to find another criteria upon which to base this allocation decision. A number of criteria could be used. I.Q. or grade point average could be used. However, these involve problems of credibility in measurement and may result in an increasingly skewed income distribution. I have used shoe size (measured strictly according to the male scale), as the basis of the allocation decision. This has worked out well, although height or weight could serve the same function. I start out at size twelve and work down until there are as many students with a specific shoe size or larger as I have handouts. If only 5 percent of the class get a handout then the shoe size that clears the market would be comparable to the income that would put a family into the top 5 percent of all families with income. In 1980 this amounted to \$54,060.

There are a number of comments or situations that are bound to arise with such an allocation mechanism. For example, a petite female may say that she has a size 10 1/2 shoe. Obviously, she must be experienced in income tax evasion, welfare fraud and other comparably dubious deeds. Invariably, someone says that this system of allocation is 'unfair'. This opens up a number of topics for discussion. First, one would inquire of those with big feet whether they thought the system was fair. Usually, they would say yes. This response would be consistent with wealthy families who would advocate the maintenance of the status quo.

Women would be particularly upset about this allocation system because they typically have smaller feet than men and would get few, if any, handouts. Some women may suggest that there ought to be some adjustment factor so that the distribution of women's shoe size would be comparable to the distribution of men's shoe size. While small-footed men and women would still be excluded from receiving scarce commodities, such a proposal may receive tacit approval from the class for being a little more 'fair'. Some interesting insights can be gained by tracing this shoe size analogy back to income distribution at this point. Should groups of people who, on average, have smaller feet (income) than other groups of people get a special discount so that their smaller feet (income) would not be a systematic disadvantage? Such a proposal could be translated into a program where blacks and women, who have on average less income than whites and males, respectively, would pay lower prices (or receive income subsidies) for goods than whites and males. Such a proposal unfailingly provokes some lively discussion.

The next objection to the shoe size distribution mechanism usually concerns the ability to change one's income but the inability to change one's shoe size. You can counter that people not only inherit their shoe size from their parents but also, on average, their parents' socio-economic class. However, to suggest that there is, on average, little intergenerational mobility between socio-economic classes is an invitation to angry class reactions. To an audience indoctrinated with the 'American Dream', individuality, free will and Horatio Alger stories, such a suggestion would be tantamount to blasphemy. By stepping quickly to the side one could call upon the fallacy of composition concept to demonstrate the same point (although empirical evidence is available on intergenerational socio-economic mobility). While one person could start out in life poor and become a millionaire, it does not follow that everyone who starts out poor in life can become a millionaire.

Before concluding this exercise in income distribution, you can suggest that there are other mechanisms for making distribution and allocation decisions other than on the bases of price and income, or shoe size for the matter. Resources could be shared, for example. However, sharing represents communism, and we can't have that.

Giving Real Meaning to the Poverty Level

Thomas E. Duston, Keene State College

When students are introduced to the concept of the poverty level, it is generally viewed as a boring set of tables showing that poor people aren't really so bad off. Incomes of \$10,000 or \$12,000 per year seem quite a lot to students who view themselves as getting by on a few thousand a year, as many of them do.

To help get the students understand the meaning of poverty level income we go through a class exercise whereby we actually develop an annual budget for a typical student in class. Usually this is a single person but this illustration would also work with married learners. One must estimate each budget item, such as room, board, recreation, travel, clothing, etc., being careful not to include items which would be part of the investment in education such as tuition and books. Even with conservative expenditure estimates, which some students view as unacceptably low, it is quite easy to get an annual figure in the \$8,000 to \$9,000 range. All of a sudden the students understand the meaning of a \$7,000 poverty level for a single individual!

This exercise meets several objectives, even in a large lecture class. First, it gets the students involved in their own learning, as a great deal of enthusiasm is generated during the estimating of the budget items. Second, it is a device which makes the numbers in a table come to life. And third, for most students it explodes one of their untrue precepts; that is, that living at the poverty level is no big deal. They are impressed.

Rarely have I found a device which so dramatically improves my ability to help students really understand and appreciate a particular measure of social welfare.

Equality and Comparable Worth

Ralph T. Byrns

Court cases are being brought to augment the doctrine of 'equal pay for equal work' with a principle of 'equal pay for comparable work'. The advocates of this position point to female secretaries who receive lower wages than male mechanics, where the mechanics work the same hours and have no more (and in some cases, less) education and training than the secretaries. Another example is nurses with college educations who are paid less than hospital janitors. Try the following argument on your students:

"Suppose that secretaries must be paid as much as mechanics. A profit maximizing employer will react to such a rule in the same way that a firm reacts to a higher minimum wage. Office procedures will be automated (through, e.g., word processing equipment), and the net result of the rule will be that many women who would like secretarial employment will be without jobs. Now suppose that nurses must be paid as much as other people with college degrees who work in hospitals (e.g., accountants or administrators). Nurses will be disemployed, and many of their functions will be performed by less well trained aides or technicians.

"Should those who practice music for years and attain graduate degrees in music receive the same incomes as medical doctors? Should training and education be dominant in determining incomes? If so, the signaling function of wages will be lost and people will follow the careers that they enjoy without regard to the rest of society's demands.

"The solution for women who want higher pay is for them to become engineers, or lawyers, or architects, or doctors (but not college professors). The doctrine of 'equal pay for equal work' is justified; the idea that people should be paid equally for 'comparable' work is not, and will only create: (a.) more of a government bureaucracy because one will be needed to review the cases brought by people who believe themselves underpaid; (b.) unemployment among women in typical 'female' occupations; (c.) inefficiency and losses of production. "

This current issue may heat up in the very near future. We promise that if you advance the preceding argument (again, regardless of whether you believe it or not), your classroom discussion will be very lively.

Income Redistribution: Disincentive Effects

Russell Shannon, Clemson University

It is often suggested that income redistribution schemes reduce the size of the economic pie, since both the people taxed to provide financing for welfare programs and those who receive the benefits may be discouraged from working. Suggest to your students the following experiment: After your next exam has been graded, each student above the median grade will have 30% of their 'surplus' points removed from their exam grades; these points will then be redistributed to students with grades below the median, so that they receive roughly 30% of their grade 'impoverishment', relative

to the average grade. Ask the students (who by now may be wearing expressions of utter dismay on their faces) what they think will happen to the total amount of studying and the total amount of points made as a result of this scheme.

Reflecting on Income and Effort

Ralph T. Byrns

Suggest to your class that some people work only if they are paid handsomely for doing so; others will not work more than a minimal amount even if rewarded for their efforts, or punished for the lack thereof. Still other people seem to be "workaholics", who labor diligently at any task regardless of the monetary incentive structure; their work motivation tends to be internal. Ask your class which of these groups they perceive as falling into which income classes in the United States (e.g., high-, middle-, and low income groups). Then make the following argument to arouse student thought (regardless of whether you believe this line of reasoning or not):

"Many of those who make high incomes (e.g., doctors) may argue strenuously that they are too heavily taxed. But if these people are primarily self motivated, much of their income is economic rent and this heavy taxation may have little effect on their work effort. Thus, a large part of their income can be distributed to the poor without affecting total production in the economy."

An extension of this argument is to suggest that many of the people who have huge incomes are operating in negatively sloped (backward-bending) ranges of their labor supply curves. If these people are taxed more heavily to finance income redistribution, it is conceivable that to maintain their country club memberships, two Mercedes, etc., that they would work even harder than they do.

On the other hand, there is considerable debate about whether most welfare recipients could work if work were available. Data published regularly by the Department of Health and Human Services suggests that most of those on welfare are minor children, the very old, or the disabled. This may be especially so given recent attempts to reduce welfare roles. Ask students whether people should suffer from very low incomes when they are incapable of changing their own circumstances in a major way. Follow up with a question about what this supply side policies that are designed to replace welfare with "workfare".

Continuing in this vein, you might discuss the position advanced by many supply-siders that income redistributions reduce the incentives to work of both those from whom income is taken and those who receive welfare. Point out that this argument is valid whenever the substitution effect of changes in wage rates is negative for those who are taxed (you will need to explain what this means in this context), and the income effect on the demand for leisure is positive for welfare recipients.

NOTE: Art Laffer has attempted to rebut some of the preceding lines of argument made in the preceding paragraph with the point that if high income people work harder when more heavily taxed because many are operating in a negatively sloped portion of their labor supply curve, the income effect of transfer payments on welfare recipients will still result in less labor being supplied in the aggregate.

Vouchers and Cocktails

Roy B. Levy, Pennsylvania State University

To introduce applications of consumer theory, I develop an anecdote that serves to analyze the effects of a voucher scheme. At a social event I recently attended, each attendee received three marbles. Although one could not trade marbles for cash, each marble entitled the holder to one cocktail. A cash bar applied to anyone who chose to consume more than three cocktails.

To develop the effects of the voucher scheme for classroom use, one can depict consumptive optima for Consumers X and Y (Figure 31-1). Consumer X views cocktails as economic bads. Consumer Y views cocktails as economic goods. In Figure 31-1, A represents all other goods and C represents cocktails. Under the voucher scheme, Consumer X maximizes utility along budget constraint DEF at D. Consumer Y maximizes utility along budget constraint LMN at O.

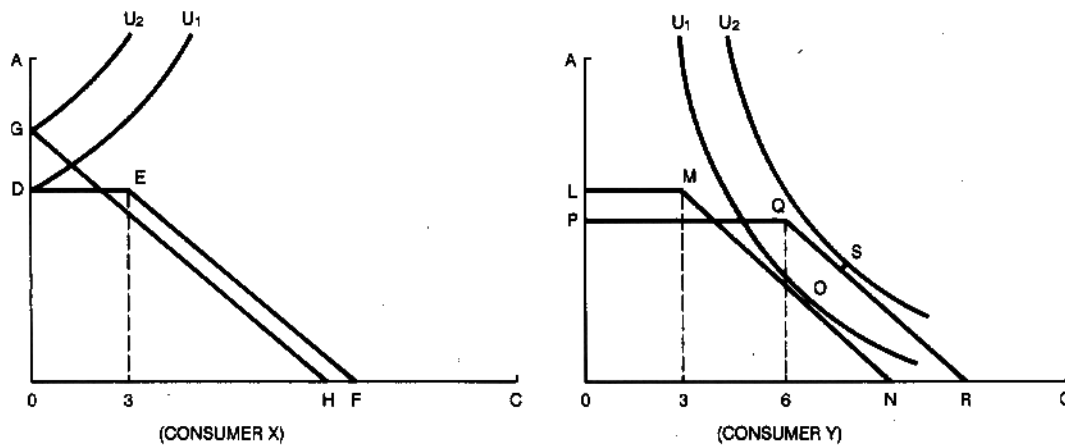


Figure 31-1

One can then discuss the effects of modifications of the voucher scheme. One possibility involves the sale of three marbles by Consumer X to Consumer Y. As a result of the sale, Consumer X realizes a new utility maximum along budget constraint GH at G . As a result of the purchase, Consumer Y achieves a new utility maximum along budget constraint PQR at S . The increase in utility of both consumers from U_1 to U_2 assumes the following: (1) Consumers X and Y agree on a price below the market price of cocktails; and (2) all goods, except cocktails for Consumer X, are either normal or superior goods. One can alter Figure 31-1 to analyze other modifications of the voucher scheme, e.g., cash reimbursement of marbles.

The above anecdote has served as a successful springboard for analyses of the potential net benefits of alternatives to voucher programs. Examples include: 1) private education tuition tax credits vs. universal public education vouchers; 2) targeted tax relief vs. the food stamp program; and 3) child care tax allowance vs. a governmental child care voucher system.

Perceptions of the Distribution of Income in the U.S.

Michael Vaughan, Weber State College

Students normally enter the principles course with many misconceptions concerning income distribution. To help students come to grips with the actual distribution of personal income, I ask students to guess how much a family would have to earn to be in the upper 50 percent of income earners in the United States. I emphasize the nature of this question by stressing that the hypothetical family would be richer than one half of all households in the United States. Students normally guess amounts ranging from \$60,000 to \$100,000. I then tell students that in 1984 a family income of \$26,430 would exceed the income of 50 percent of all households in the United States. I continue the exercise by asking students to estimate the level of household income necessary to be in the top 1 percent of the income distribution. Once again, student estimates are normally much greater than the actual figure. This exercise startles most students, and it piques their interest for a more complete discussion of income inequality.

Chapter Seventeen

Market Failure and Public Finance

Free Riders Who Don't Have a Heart

Gary Galles, Pepperdine University

Students typically understand the concept of free riding rather easily, but are often unable to appreciate the many forms it takes. To expand their abilities to apply the analysis, I have found a simple example from the card game "Hearts" to be helpful.

In the game the object is to get as few points as possible, where each of the 13 hearts taken in a "trick" is worth one point, and the Queen of Spades is worth 13 points. The one exception, sometimes called "shooting the moon," occurs when a player gets all 26 points possible in a hand, in which case every other player gets 26 points, or else the player with 26 points subtracts them from his total.

When a player decides to try to "shoot the moon," stopping him has public good aspects in that all the other players gain, but it also has a cost (because you get the points), leading to the desire to free ride and let someone else bear the costs. This concept can be used to introduce the standard public goods/free rider problem in a memorable fashion and to illustrate other conclusions that also generalize. These conclusions include the fact that people are more willing to bear the costs when it is less expensive to do so, for example, when one heart will be taken rather than possibly the Queen of Spades, or when later in the hand, as more information is revealed, it is more certain that if they don't stop it, it won't get stopped. Additionally, the results are often inefficient because what could have been stopped was not; future retribution is a consideration since opponents can dump "taxes" on you later, etc.

If further explanation seems necessary, you can then do the same sort of thing with group class projects, which can also be used to begin introducing some theory of the firm.

Shedding Light on Public Goods

Russell Shannon, Clemson University

For "private" goods such as hamburgers and TV sets, the exclusion principle works. If I eat a hamburger, you can't have it but must buy your own. This good is both rival and exclusive. While I might invite you to enjoy The Cosby Show with me, I can instead lock my door, pull down the blinds, and watch it alone. Although the good is somewhat nonrival, exclusion is still possible.

But some goods are not like that and must inevitably be consumed in common. For example, suppose the White family buys a piece of land in an undeveloped area and builds a home. Then the Brown family buys the lot next door and builds a home of their own. One evening after supper Walter White and Bruce Brown get together and decide to put up a light at the street on their property line. The light provides illumination and protection for both families, and so is nonrival and nonexclusive.

Then along comes the Green family. They buy some land across the street and put up their dream home. One afternoon Walter and Bruce saunter across the street, taking some freshly-baked cookies to welcome Greg Green and his family to the neighborhood. "And by the way," Walter mentions, "I'm sure you've noticed the convenient and attractive light we've erected for our illumination and safety." Bruce quickly adds with a cheery smile on his face, "Since you cannot be excluded from enjoying the light's benefits, we think it would be grand if you'd chip in and help us pay the electricity bill. You might even replace the light bulb from time to time."

This scenario has two possible outcomes. (a) Greg Green may have a sense of community spirit and agree to the proposal. Then all three families will dwell together happily ever after. (b) However, Greg may not be the gregarious sort and refuse. He will choose to be a "free rider." Lacking the power of government to tax, Walter and Bruce will be unable to compel a contribution. They might even take back their cookies.

Such a light, like national defense and police protection, is a "public" good. Once provided for one, it is unavoidably available for all. Financing such a good through taxes may be the only way to achieve an optimal amount. Needless to say, however, there are still many difficult details to determine, such as the proper number of missiles and Marines. The market system is clearly not apt to provide an "efficient" solution, but it is not necessarily the case that the political system will either.

An Example of an Intermediate Benefit from a Public Good

Wade L. Thomas, Ithaca College

The classifications of the benefits and costs from public goods are many: real or pecuniary, inside vs. outside, direct or indirect, tangible vs. intangible, and final vs. intermediate. Examples of an intermediate benefit are hardest to come by. A popular public finance text uses weather forecasts as an intermediate benefit to aviation and family picnics. These benefits are good, but there still exists a haze around how certain publicly provided or produced goods or services manifest themselves, perhaps quite accidentally, as intermediate inputs in the production of some final output.

The U.S. Postal Service's development of the ZIP (Zone Improvement Plan) code to identify postal delivery areas is an example of something that was designed to improve mail delivery, which has a public good aspect to it. The emergence of privately operated parcel and mail delivery firms such as the United Parcel Service, Purolator, Federal Express, etc., creates rivals for the independent public enterprise of the U.S. Postal Service. Those rivals realize benefits from the Postal Service's time, effort, and cost associated with developing ZIP codes. Private carriers can procure a ZIP code directory at low cost and use it as a model for identifying delivery areas, thereby avoiding the cost of developing their own system. Clearly, ZIP codes present an intermediate benefit to private mail and parcel carriers, mainly by lowering the information cost associated with delivering the final service.

Beyond this example is that of telemarketing surveyors who often use ZIP codes to identify the geographic locations of survey respondents. The list can go on and on, but the point is made: a

public enterprise developed the ZIP code as part of the system for providing mail delivery as a final output, but private enterprise can make use of codes i.e., enjoy an intermediate benefit, in producing and delivering other goods and services.

Apples and Public Goods

John Neal, Lake-Sumter Community College

When I introduce the two characteristics of public goods that distinguish them from private goods--nonexcludibility and joint consumption--I use a helpful prop, one red delicious apple. The trivial case of a person selling apples offers the opportunity to show how easily a seller can exclude others unwilling to pay the costs of production from consuming his apples. I then start eating the apple and show how my eating of the apple obviously makes it no longer available for consumption by another individual. All the relevant costs and benefits have been taken into account by both parties to the exchange. No benefits nor costs have been imposed on third parties to the transaction. Then the transition to a discussion of national defense and its inherent differences is easily accomplished.

Grades as Public Goods

Jose Alberro, University of Illinois at Chicago Circle

After the midterm I come into class and in a very conspiratorial manner I offer to sell grades. My acting is semi-believable and the students love to play the game. But the grade I will sell is the same for the whole class; everybody will get the same grade. Furthermore I don't care who pays me as long as I get my "price." I then announce my supply schedule and wait. My experience is that all the problems inherent in public goods will soon appear: The social optimum cannot be obtained by market forces, there needs to be an "enforcer" of community decisions (the state); incorrect specification of property rights; free riders; inability to exclude anyone once the grade has been bought; "A" students are at the mercy of the rest of the class (they cannot supply their own private good and barter property rights).

Joint Costs and Cost Allocation

Mark S. Jelavich, Northwest Missouri State University

I use the following example to illustrate the problem of allocating costs where two or more outputs are produced from one production process. I developed this example from a British Rail cost allocation study. (See Stewart Joy, "Pricing and Investment in Railway Freight Services", *Journal of Transport Economics and Policy*, Sept. 1971.)

Say you have a single track railway line, with neither signals nor sidings, running between two cities. If the only commodity hauled between the two cities is coal, and there is at most only

one train on the line at any one time (eliminating the need for sidings), then all costs of that rail line can be attributed to coal haulage, including all of the fixed costs. No joint costs exist.

Now say that in addition to coal, the rail company begins to haul wheat between the two cities. If coal traffic does not grow, then any additional fixed cost items, such as signals and sidings, can be attributed to wheat traffic as the rail company expands the line's freight capacity. However, the original single track - no signal - no siding system represents a joint cost, since both wheat and coal use that system. Furthermore, if coal and wheat are hauled together, then the wages of the engineer, brakeman, and freight conductor are also joint costs, since two "outputs" (wheat and coal traffic) are being produced. Any "bridge traffic" (traffic traversing the line but neither originating nor terminating on the line) adds to the joint cost allocation dilemma.

Externalities and Public Institution Tuitions

Ralph T. Byrns

If you teach at a public institution, the difference between in state and out of state tuition is at least arguable as good example of a governmental estimate of the money value of an external benefit.

Market Failures and Efficient Allocations

Ralph T. Byrns

Economic efficiency is only a problem if resources are scarce. In this case the society has more goals than resources can accomplish. Resources are allocated efficiently if all ends achieved are more valuable to society than any end that is not achieved. To be efficient, a society must develop an institution or institutions that:

- (a) Determine and then reveal the preferences of the individuals whose preferences are to count.
- (b) Transfer information about preferences to owners of resources.
- (c) Create incentives for resource owners to use their resources to accomplish the most urgently needed goals.

Discuss the circumstances under which the market accomplishes these tasks efficiently. Show how in cases of market failure, market signals fail to do at least one of the three tasks listed above. Discuss how lack of information about the relevant preferences hinders the government's ability to correct market failure.

Elasticities and Burdens

Mark Zupan, University of Arizona

As an application of tax incidence and elasticity, I tell students that as far as who ends up bearing a tax goes, it doesn't matter whether a tax is placed on producers or consumers--even though intuition may say that it does. As an example, I use an analogy based on the Exxon price-overcharge case of the early 1980s.

During the 1970s' oil price controls, Exxon was told it could charge whatever it chose to for a certain category of oil but that, since the Department of Energy wasn't sure whether that oil should be price-controlled, Exxon's revenue above the price-controlled level had to be escrowed in a bank in Kansas. By the early 1980s, the account had grown to almost \$2 billion, and the Department of Energy ruled that Exxon had illegally overcharged for the crude oil, so the money in the kitty had to be split among downstream users of the oil: refiners (who buy the oil and turn it into refined products such as gasoline, aviation fuel, heating oil, etc.) and consumers (who were represented in court by state governments).

The DOE now had to decide who would get the \$2 billion; with the split between refiners and consumers ideally being determined by which group had borne the Exxon "overcharge tax" in the mid 1970s. Suppose that the gasoline market could be depicted as in Figure 32-1 and that Exxon's overcharge effectively raised the MC of gasoline by 5 cents per gallon. That would raise the supply of gasoline in height by 5 cents per gallon at each output level--to S' .

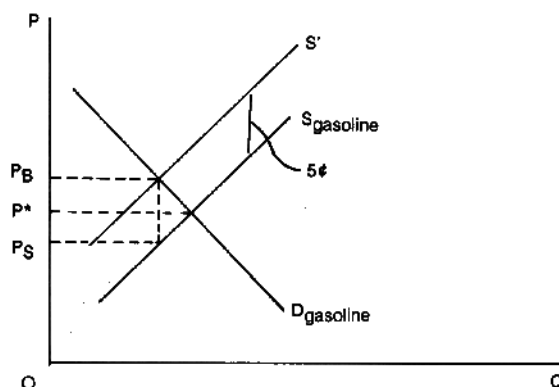


Figure 32-1

Now ask your students by how much the price faced by buyers rises? (to P_0), and how much of the price sellers get after Exxon takes its 5 cents? ($P_s = P_0 - 5$ cents) Ask them if buyers get stuck with the entire tax . . . Sellers? (No, in both cases). And they will start getting the picture that, even though the tax was placed on suppliers (refiners); suppliers bore only $P^* - P$ cents of the tax while demanders bore $(P_0 - P^*)$ cents.) As a general rule tell them that who bears a tax depends on who has the least elastic/response curve. Specifically, the proportion of any per unit tax borne by demanders equals: $E_s / (E_s + E_d)$.

In the Exxon case, the refiners' lawyers argued in court that the demand for gasoline was perfectly elastic and that demanders bore none of the tax; refiners got stuck with all the Exxon tax (i.e. $P^* - P_0 = 5$ cents and $P_0 - P^* = 0$). What these lawyers were arguing was that the elasticity of demand (E_d) equaled infinity. If E_s is finite, then [roughly], $E_s' / (E_s + E_d') = E_s' / (E_s + \text{infinity}) = 0$, and the proportion of the tax borne by demanders was negligible. This is illustrated by Figure 31-2.

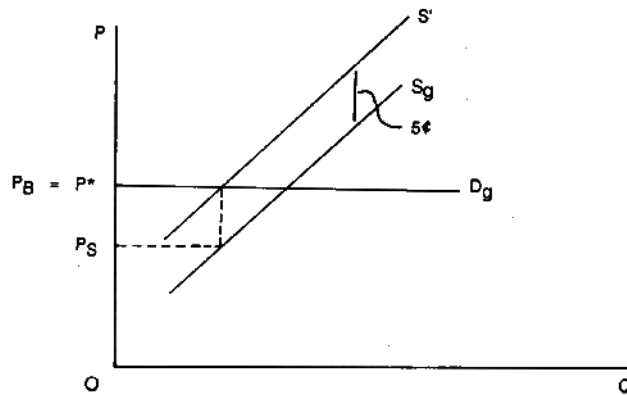


Figure 32-2

Lawyers representing consumers, however, argued that gasoline was perfectly inelastic in demand and that buyers bore all the tax and were entitled to the entire \$2 billion (i.e., $P^* - P_0 = 0$ cents, and $P_0 - P^* = 5$ cents). What these lawyers were arguing was that $E_d = 0$ --- that $E_s / (E_s + E_d') = E_s / (E_s + 0) = 1$, so that the proportion of the tax borne by buyers as effectively 100 percent. This argument is illustrated in Figure 32-3.

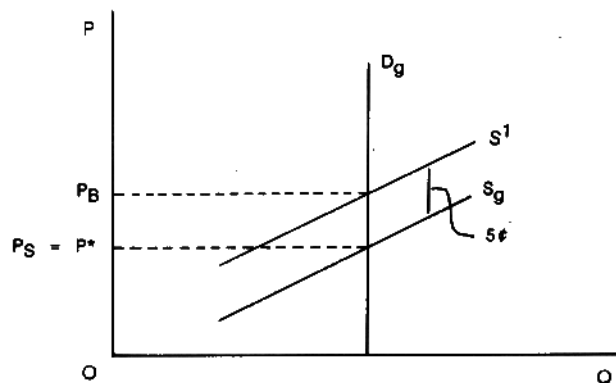


Figure 32-3

Incidentally, the best estimates on E_s and E_d indicate that refiners (or, more precisely, their stockholders or owners), bore 40% of the tax while consumers of refined petroleum products bore 60%.

Principles of Taxation and Class Absences

Roger H. Goldberg, University of Memphis

To highlight basic principles of taxation in a personal manner, a tax system is developed for the class which uses student absences as the tax base. Each student is allowed one absence as a "personal exemption". A second absence is permitted "tax-free" as a "zero-bracket deduction". Succeeding absences are then taxed as a percentage of grading points which students may earn in the course. "Flat-rate" taxation may be easily contrasted to a "progressive rate" which provides for increasing point losses with each subsequent student absence. The illogic of regressive taxation from the instructor's viewpoint; i.e., reducing the rate of tax (point loss) due to incremental absences, completes the discussion. Ideally, a student raises a question concerning itemized deductions. I respond that a valid note from the health clinic may be taken as a "medical deduction" for absence without penalty, but that "tax reform" has eliminated the charitable deduction!

Per Unit Excise Subsidies vs. Ad Valorem Subsidies (or Taxes)

David E. R. Gay, University of Arkansas

A local grocery store marks down the price of its steaks toward the end of the expiration date on the package. Usually, a sticker is attached which says either \$1 off or, occasionally, \$.50 off. Using a specific example of a package which had been priced at \$3.45 vs. one marked \$4.25, which would consumers select? Initially, about 1/3 or more of the class will pick the higher priced steak, although each steak only has a reduction of \$1 which yields a 29% price cut for the lower priced steak vs. 24% for the larger steak. The grocery store provides a per unit subsidy which yields a different percentage reduction in price. Then I can revise the example to illustrate what happens if the case involved taxes instead of subsidies.

Are Payroll and Sales Taxes Proportional or Regressive Taxes?

Eric Steger, East Central University

I explain that there is a difference of opinion regarding whether payroll and sales taxes are proportional or regressive taxes. On one hand, these taxes are proportional because the tax rate remains the same regardless of the size of income. I explain, though, that the sales tax is not based upon income but upon the amount of the purchase. Therefore, the sales tax is proportional. Payroll taxes are proportional also because the tax rate is the same regardless of the size of income.

I explain that the dispute arises because of the regressive impact (hurts low and middle income people more than upper income people) of these taxes. I indicate that for some purposes, there needs to be a differentiation between a regressive tax system and taxes with a regressive impact.

Chapter Eighteen

Public Choice

Using Benefit/Cost Analysis in Micro Principles

Cheryl L. Cohn, Millikin University

The following is a short (3 page) paper assignment I give my Principles of Microeconomics students to help them understand that economic role of government and the way economists use rational choice in evaluating public policy. The role of government is typically discussed in the market failure context of externalities, public goods, market power, etc. The idea of rational choice of economic decision-making is one of the key concepts in microeconomics. Once the idea of rational choice has been presented to students, they are capable of applying the concept to policies at the federal, state, local or even university levels.

I require each student to find an article on a policy or administrative decision, the lower the administrative level the better. Some examples students have found were whether to install a new stop sign, to build a new park or jail, or to have longer visiting hours in the dorms. The student must then identify a problem that the policy is designed to correct, specifically relating it to the market failure concepts discussed in class.

The student lists the benefits and costs of the policy, explaining which groups in society will receive the benefits or incur the costs and why, and then decides if the policy is rational based specifically on the benefits and costs. Finally, I require that they provide an alternative policy to show them that there is seldom only one way to solve a problem.

If the instructor does not wish to have students write papers on their articles, the students can bring the articles to class. The instructor can choose some of the topics to analyze in class and achieve the same goals, although in a more passive learning style.

Transactions Cost in Scheduling Exams Democratically

Josef M. Broder, University of Georgia

In recent years the concept of transaction costs has emerged in many introductory economics textbooks. Once assumed to be negligible, transactions costs are now used to explain many cases of market and/or collective failure. To illustrate the impact of transaction costs on collective decision-making, I solicit class input on scheduling the midterm exam. The class is asked to decide when the midterm will be offered within a specified two-week time period.

First, I impose a unanimity rule whereby all class members must agree. Initially, students feel this rule is fair. Later, students learn that such a rule is impractical due to the high transactions cost of achieving unanimous consent. After a two-week impasse, I impose a two-thirds majority which lowers the transactions cost for the class, increases the probability of reaching a decision, but imposes political externalities on the dissenting minority.

If another impasse is reached, a simple majority rule is imposed, lowering transactions costs further, thereby increasing the probability of a solution, as well as imposing additional political externalities on the dissenting minority. In some instances, the class was unable to reach a decision by midterm and abdicated the decision to the instructor. Thus, the exercise proved useful in

illustrating relationships among transactions costs, collective behavior, and the limits of democratic processes.

The Government Economics Problem

Calvin A. Kent, Baylor University

The purpose of this exercise is to demonstrate to students the difference between how economic decisions are made in the marketplace and how they are made through the political process. A list should be distributed to each student at the beginning of the period which contains 10 desirable expenditures that could be made by a city government. A brief explanation of each should be included indicating the need for the program. The students should be told what the total budget of the city is. The amount should be insufficient to allow all 10 projects to be undertaken. Each student should budget the money available by listing in priority the projects which he favors. No one can spend more than the budget, but students could spend less if they wish to hold city money in reserve. Next, students should meet with other students who share their highest priority at various locations throughout the room. These "interest groups" prepare a brief advocacy presentation to be made to the others in the class indicating why their project should be included in the budget.

The students should then be assigned to various communities. Care should be taken that members of the special interest groups are widely dispersed among the various communities. Each community should then prepare its own budget indicating how the limited funds should be spent. At the end of the exercise the teacher should record what the preferences were of the various communities indicating which programs were adopted and which were rejected by each. The teacher should then point out to the students the following:

1. All economic decisions, public and private, involve opportunity costs.
2. Individual preferences are not necessarily going to be the same as the community preferences when group decision-making takes place.
3. Special interest groups have a tremendous influence upon what is and what is not included in a government budget.
4. People cannot adjust their payments and consumption to reflect their personal preferences when political decisions are made as well as they can in the market. In the political arena payment is obligatory and reflects group rather than individual priorities.
5. Various methods are used to reach political decisions, such as voting, dictatorship, compromise, etc.
6. Different communities will have different preferences for government projects based on the desires of those who are part of the community.

PROSTITUTION AND ECONOMIC CONCEPTS

John Rapp, University of Dayton

Ask the class to pretend that they are a small economy with all the characteristics of the U.S. economy--a largely capitalistic economic system, unequal distribution of income, and democratic. Everything is the same, except for one thing. In our classroom economy prostitution is legal.

Then solicit volunteers or appoint individual students to play various roles--the head of the government (president or mayor), a chief of police, a public health officer, two female owners of brothels, one rich male customer, one poor male customer, and the head of a volunteer morals squad. Direct the morals squad chair to pressure the governmental head to enact legislation making prostitution illegal. (You have to insist, for instructional purposes, that prostitution now becomes illegal.)

Then question the various players about what happens. The chief of police will recognize that more law enforcement resources are necessary--which can only come from fewer police doing other duties, less of other governmentally provided services, or higher taxes and fewer private goods. The governmental head also becomes involved in this discussion. This drives home the point of opportunity cost. Ask the brothel owners what they will do; go underground and charge higher prices, because of increased risk. Ask the public health officer for his or her concerns about the social costs of increased social disease that would likely result. Inquire as to the differing effects on the two customers. Talk about the victimless crime issue and the issue of free choice.

This can be a long or short exercise. Either way, make lists of the costs and benefits of making prostitution illegal noting that simple economic analysis is an excellent way to examine social issues. Similar exercises can also be undertaken for other illegal items, the drinking age or speed limits.

The Problem of Government Monopoly

Ray M. Johns, Hagerstown Jr. College

A monopoly is a monopoly is a monopoly, regardless of who owns it. A good example of the undesirable characteristics of monopoly, even if government owned, is State owned liquor stores. Privately owned liquor stores licensed by the State Government and restricted in number are invariably quite profitable and offer an open display of many varieties and brands of various types of alcoholic beverages. State owned liquor stores are usually more limited in number, charge higher prices, keep all the liquor hidden on shelves in the back, and have many more employees than are needed. They also rarely make a profit for the State since they are operated for the benefit of the employees, not the customers. These jobs are often patronage rewards for assisting in political campaigns.

Do We Really Want Lower Taxes and Less Government?

Ralph T. Byrns

A quick poll of the students in virtually any college classroom will reveal a widespread call for "lower taxes and less government." After ascertaining that this is true through a show of hands in your class, either list a large number (20 or so) of present or proposed government activities (e.g., socialized medicine, national defense) on a chalk board or pass out detailed lists of such activities (perhaps to have students take them home to record their responses). One activity at a time, have students indicate by shows of hands whether they favor: (a) eliminating the specific activity by government; (b) substantially decreasing the funding for the activity; (c) keeping the activity at present levels; or (d) increasing the government's participation in this area. They will be surprised (and you may be as well) when virtually all classes vote for substantial net expansions of many, or even most, government programs. When asked to account for this seeming paradox, some students may argue that most people want greater efficiency--more and better quality government services at lower tax costs. You can question whether greater efficiency in government is likely, regardless of who holds office, and then contrast the efficiency of marketplace resource allocations with those resulting from public sector decision making. We have found that this exercise invariably generates enthusiastic class participation.

Mutually Beneficial (?) Student-Teacher Exchange

Gary Galles, Pepperdine University

I once assigned a 20-page typewritten paper to my students. One of the students, who had finished writing her paper (as close to the minimum length as possible), but who couldn't type came up with a (facetious) innovative proposal for a mutually beneficial exchange. Since the "going rate" for typing was \$2.50 per page, it would cost her \$50 plus some hassles to get it typed, but as an alternative she would turn in her legibly written paper plus \$25 to compensate me for how much slower and how much more effort it would be to read than a typed paper.

Is this a good deal? It is for her, since it costs her less this way than the alternative. In a narrow sense, it may be for me as well. The answer depends on how much extra time it would take and the opportunity cost of my time. If, for example, it would take me six minutes extra to read it and the opportunity cost of my time is \$50, then any price over \$5 would make this a good deal for me as well. As long as the maximum she was willing to pay (based on the cost of getting it typed) exceeded the minimum I was willing to accept to read it handwritten, we could both be better off.

Is there a problem with this? Yes--the same problem as with PAC or industry donations to a particular political candidate: the possibility of external costs to be imposed on others involved. If this could be construed as a bribe that would lead to this student's or PAC's interests being considered over others, these others (students or taxpayers) would be made worse off (or at least feel worse off, even if it really wasn't a bribe), by taking away from them to give to the favored one(s). Oh well--another money-making idea down the drain!

Efficient Resource Allocation and Information

John P. Cochran, Metropolitan State College-Denver

Resources are allocated efficiently if the combination of ends achieved is more valuable to society than any other feasible combination. Efficient economic decision-making requires a society to develop institutions that:

- a. cause decision-makers to reveal their preferences.
- b. transfer information about preferences to owners of resources and information about relative scarcities of available means to potential users.
- c. create incentives for resource owners to use their resources to accomplish the most urgently needed ends.

Discuss the circumstances under which the market is such an institution. Then show how in cases of market failure market signals fail to do at least one of the three tasks listed above. Discuss how lack of information about the relevant preferences, strategic voting, legislative strategies, bureaucracy, etc., hinder the government's ability to correct market failure.

Public Choice And Trade Policy

Scott Brunger, Maryville College

This role-playing model requires selecting a few students to fill specific roles.

THE ISSUE: A Proposed Status Quo Trade Act - To protect American jobs by raising trade barriers in all industries where American employment is declining.

PLAYERS' GOALS:

- a. The purpose of being a Senator is to be re-elected by your constituents. Otherwise, you go back to being an obscure lawyer after your heady years in Washington. To be re-elected, you should either cater to your constituents' self-interests or mobilize sufficient campaign funds to offset your unpopular votes. One million dollars in advertising expenditures offsets one million lost votes. Remember, your constituents will remember this vote on foreign trade, but with the election two years off it has to give them results based on sound economic principles.

- b. The purpose of being a lobbyist is to get your legislation passed. If you fail, you will be fired and have to find a job as a motel night manager or, heaven forbid, a college professor. Your money can be useful to build a coalition.

Each senator will have a two minute presentation. Then, we will adjourn for a break during which you can lobby each other. Afterwards, you meet for 20 minutes to vote amendments. A cloture rule will require a final vote. A half-hour debriefing will follow the game.

CHARACTERS:

Vice-President Shrubby--presides over the Senate, and casts tie-breaker votes. Is concerned with reelection of himself and President Spacestar in the face of severe economic stagflation.

Senator Camaro of Michigan - Detroit concerned about foreign car imports. (10 million votes). Farm areas concerned about corn exports. (5 million votes).

Senator Blount of Tennessee - Prospective investors want freedom to trade with overseas subsidiaries. (3 million votes).

Senator Empire of New York - Banking community wants foreign industrializing countries to earn dollars to pay off their loans. (5 million votes).

Senator Windy of Illinois - Chicago does not want steel imports. (10 million votes)/
Downstate farmers want soybean exports. (5 million votes).

Senator Salmon of Oregon - Forest product companies want to maintain Asian markets. (5 million votes).

Senator Crank of California - High tech industries want freedom to trade with overseas subsidiaries. (5 million votes).

Senator Corny of Kansas - Farmers want agricultural exports. (5 million votes).

Senator Smiles of Georgia - Peanut and cotton farmers do not want foreign competition. (5 million votes).

Senator Milch of Minnesota - Dairy industry favors foreign sales. (5 million votes). Iron miners want more demand. (10 million votes).

Senator Stetson of Texas - Computer and farming interests favor continued high prices. (5 million votes).

Oily Smooth - lobbyist for the National Association of Multi- national Corporations.

Ima Shopper - lobbyist for the Federation of Consumer Coops.

Mr. Muscle - lobbyist for the Syndicate of Manufacturing Workers.

Poli Glot - lobbyist for the Association of Import-Exporters.

Agri Big - lobbyist for the Farm Bureau

Pin Stripe - lobbyist for the Consortium of Global Banks

Chapter Nineteen

Environmental Economics

Are The Fish Biting?

Gary Galles, Pepperdine University

To contrast private- and common property rights (leading to the common pool problem), I use the following illustration.

I ask my students when fishermen go fishing. They reply that fishermen arise at some "ungodly" hour, so they can be fishing at or before dawn. I then ask my students why this is so: Is it because fishermen like wading hip deep in cold water in the dark? Is it because all fishermen are insomniacs? Some students will come up with "That's when the fish are biting." I focus in on that answer, and ask whether fish only eat in the morning, or if there might be some other reason. As a hint, I ask them who owns the fish. They quickly see that usually in the U.S., nobody owns a fish until he catches it, so that fishermen compete to be the first to the stream in order to catch those scarce fish. If most of the fish are caught early in the morning, it will appear that they just aren't biting at other times, when they may not in fact be there at all. I then ask my students when people would go fishing and whether the fish would be biting if someone owned the rights to fish on a river, which is in fact the case for some Scottish streams. Fishermen would fish when it was more enjoyable (e.g., as a warm afternoon picnic outing) and the fish would be biting, since the owner would have a profit incentive to keep it stocked as long as fishermen would be willing to pay for the service.

I then ask whether assigning private fishing rights might be socially beneficial. It can benefit the resource owner by generating a return stream. It can also benefit fishermen, by allowing them to pay more dollars in exchange for more enjoyable fishing at a lower cost in terms of sleep lost. I show how common rights to the fish may deplete the size of the run and even threaten the species with extinction, whereas if someone owned the fishing rights he would adopt a "harvesting" strategy that would maximize the present value of those rights and perhaps save the fish.

I go on to talk about such common pool resource examples as whales, clams on public beaches, the buffalo, Indian property rights in beavers, pollution, etc., to emphasize the central aspect property rights play in the allocation of resources and the troubles that can arise from a lack of established property rights. I emphasize that since markets work well (with all their beneficial information and incentive functions) only when rights are clear, this forms a basis for a necessary role of a government in a market economy: the definition and enforcement of property rights.

The Economics of Sin

Thomas M. Love, North Central College

When we were children, the adults in our lives went to considerable lengths to impress upon us the value of saintly behavior. Everyone received a very clear message: the ideal amount of sin was zero! We were all expected to strive to live up to this standard.

I like to tell my students that this approach to sin is seriously flawed. Our ministers and parents did make it clear that sinning has costs. The expected costs of sin are in the form of guilt, punishment, penance and possible eternal damnation. But it is equally apparent to anyone who has contemplated the act that benefits also accompany sinning. We can expect that sin will occur when

the expected benefits of sinning are larger than the expected costs. From this perspective it follows that the ideal amount of sin is not zero.

This account will have to be corrected to allow for the external costs of sin, but that is beside the point. The point is that students are now hooked! They will be listening intently as you lead them into cost-benefit analysis, external costs and benefits, marginalism, e.g., the marginal benefits of the next sin, or present value, e.g., the present value of eternal damnation. Instructors can add their own touch to the story with reference to personal experiences.

Pollution and Production Possibilities

John P. Cochran, Metropolitan State College-Denver

Many students believe that pollution should be reduced to zero. The opportunity cost concept and the production possibility frontier can be used to dispel this fallacy. Draw a PPF with GDP on the horizontal axis and reduction of pollution on the vertical axis. The students should quickly see that reduced output is an opportunity cost of pollution and with current technology zero pollution would probably entail zero output.

Returns to Scale and Externalities

Masoud Moghaddam, St. Cloud State University

Students are often confused between returns to scale and externalities. The former follows from the shape of the average costs curve, while the latter is a determinant of the slope of the long-run supply curve of a perfectly competitive industry. I shed more light on these two issues by presenting a simple example in which there are two producers, A and B, whose firms are very close to one another. A produces honey, while B grows flowers. As such, firm B has positive externalities upon the production of firm A, simply because bees travel back and forth at no charge. Firm A produces more honey just because it is built close to firm B, and honey is plentiful at a lower per-unit price. It is very helpful if two simple demand and supply diagrams are drawn for each firm, and actually show how the supply of honey shifts to the right due to the flowers being close by. There are several points to be made here.

1. Externalities are not marketable, i.e., firm B cannot charge firm A for each bee's consumption of flowers.
2. Externalities, as the name implies, are external to firm A, whereas returns to scale are purely an internal phenomenon, i.e., it's solely determined by firm A's efficiency, access to inputs, and the like.
3. As long as externalities are not internalized, then there is no direct relation between externalities and returns to scale.

4. Internalization is possible if either of the two producers decides to buy up the neighboring firms. As soon as externalities are internalized, then it is possible to relate them to returns to scale.
5. Positive externalities create social benefits, in that there is more honey available on the market.

Negative externalities, along with their social costs, can easily be explained in the context of the same example. Furthermore, the case of negative externalities is even more interesting, because it requires some form of government intervention. Most notably, the government can internalize negative externalities by taxation, or can force one firm to take the other one over, and thus maximize the joint profits of both firms. Margin benefit/marginal cost analysis from the society's point of view can also be applied to the two previously drawn diagrams.

Law and Economics

Harold Hotelling, Lawrence Technological University

A diagram familiar in the study of external costs and property rights can easily be adapted to the study of a particular type of pollution, viz. crime. Just as the costs of pollution (C_a) and of cleaning up (C_b) can be traded off, with the optimum being the minimum point on the total-cost curve, the costs of crime and of fighting crime can be compared to suggest an optimum crime-deterrence budget. The horizontal axis, in both cases, represents control, where 0% is complete deterrence and 100% the level in the absence of any deterrence.

A more extended adaptation changes the variables somewhat and addresses the Type I and Type II errors possible in a criminal trial. C_a represents the cost of releasing guilty individuals, including their further crimes. C_b represents the cost of punishing innocent defendants. The horizontal axis is now a measure of the protections afforded those accused of crime. Once again, the optimum point is that at which the total of the two costs is minimized, and where MC_a and MC_b are equal and opposite (NOT, except by coincidence, the point of intersection). Thus the cost-benefit equality at the margin works even in such areas as criminal law where many students (and lawyers) think in terms of absolute rules, i.e., vertical demand curves. The student will see why the standard of proof in criminal cases is proof beyond a "reasonable" doubt, not proof beyond any doubt. Such choices as the right to counsel and the exclusionary rule represent movements (here leftward) along the axis in the hope of lowering the total cost.

For homework, the student can be asked how the diagram changes under dictatorship (Ca is perceived as much lower and the minimum TC is further to the right) or civil lawsuits (the standard of proof is only be a preponderance of the evidence, again moving the minimum TC to the right).

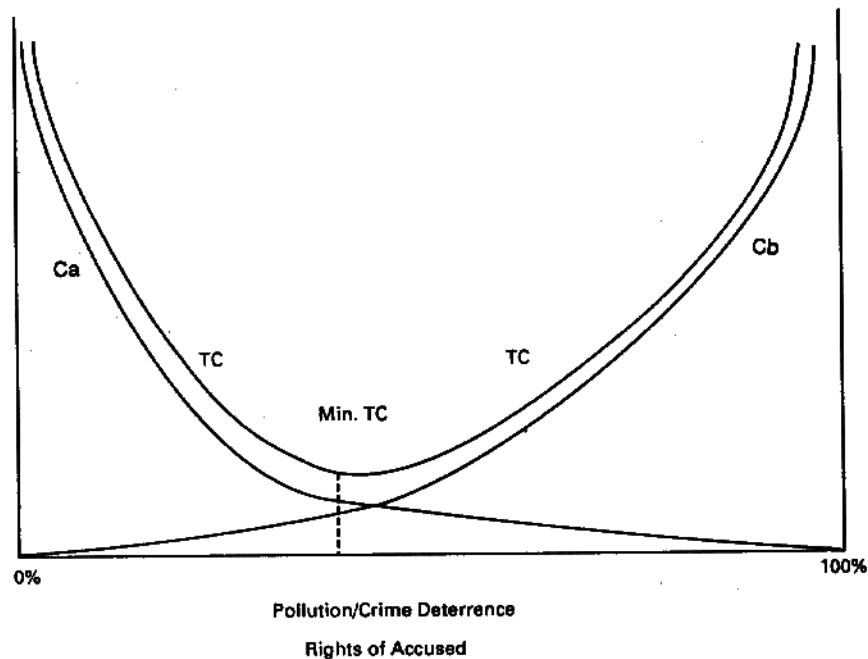


Figure 34-1

Noise Ordinances and the Coase Theorem

Stuart E. Thiel, Washington State University

This method makes the Coase Theorem accessible to principles courses by placing it in the context of $MB = MC$.

Situation: Greeks (i.e., fraternities, sororities) like loud, late parties; their neighbors do not. Assume one Greek house and one neighbor, who can negotiate costlessly, and assume that a local noise ordinance governs who has the right to the externality.

Draw on a blank transparency slide axes labeled decibels (dB) and \$. Run the horizontal scale from 0 to 100 dB (F-14 takeoff), or 140 dB (pain threshold). Suppose the noise ordinance prohibits any noise over 50 dB (loud office) after 10PM. Then draw typical decreasing MB of noise for the Greeks and increasing MC of noise for the neighbor so they intersect to the right of 50 dB, the Greeks may well decide to pay him something to dissuade him from calling the cops. The punch line, of course, is that the optimal dB level is where MC crosses MB; an optional extra is a discussion of how much the Greeks must pay.

Now, suppose the noise ordinance is repealed, so the Greeks can make all the noise they like and the neighbor must pay the Greeks for additional silence. Turn the transparency over. The Greeks' MB for noise is now their MC for silence; ditto (MB of silence is now MC of noise.) for the

neighbor. And we see Coase's result: the noise ordinance is irrelevant to the level of noise; the optimum remains where $MC = MB$. What changes is who pays whom, and how much.

Explaining the Optimal Quantity of a "Bad"

Mark A. Nadler, SUNY at Fredonia

This lecture is as much fun for the instructor as it is for the students. After discussing in class what is meant by the optimal quantity of a "good" through marginal private benefit and cost schedules, I then present to them the following situation:

"Assume that I'm running for Mayor. In the course of the election, I'm invited to your club or church to present my political views. I state in my speech that if elected Mayor, I'll allow crime and pollution to increase, and let our town's schools deteriorate."

By now, even the dullest student is awake and listening. I then ask my class whether it is logically consistent for a politician to advocate the existence of more "bads". Usually, the response is a resounding "no". I then proceed to draw the necessary social marginal benefit and cost curves to demonstrate the possibility of a political leader advocating the existence of more "bads".

This lecture raises some interesting ideas. First, the idea of an optimal quantity of a "bad". Second, that it is quite possible for a society's welfare to increase with the increase in the quantity of a "bad". And third, after redefining a "good" as something that society wants more of, and a "bad" as something society wants less of, it is quite possible to think of crime as a "good", and food as a "bad".

The Rear-End-Collision Prevention Light

Jack Adams, University of Arkansas-Little Rock

As the consumer purchases that new automobile, an additional cost associated with governmental regulation becomes readily apparent. Yes, the now familiar Dole light to prevent rear end collisions. According to former Secretary of Transportation Elizabeth Dole (whose administration mandated the light, and for whom the light has been informally named), it has been estimated that approximately 900,000 rear end collisions could be prevented with the advent of this accident prevention installation feature.

Kits are now available for older model vehicles. Nevertheless, while the driver of the new car benefits, just as the other potentially involved driver, from any accident that is prevented by the light, it should be emphasized that in addition to this obvious social benefit anyone who avoids colliding with the owner of an automobile with a Dole light additional spillover benefits accrue to others through reduced automobile insurance premiums. Thus, lower policy premiums induced by "Dole light" accident prevention certainly represent external benefits which the rational consumer does not perceive in the quest for direct private benefits (i.e., prevention of being rear ended) by a Dole light purchase.

The requirement of Dole lights raised the price of autos just as requiring catalytic converters had raised car prices earlier. Even so, what about all the older model vehicles whose owners may

choose not to install the light? In Figure 34-2, the equilibrium price amounts to P . Next, assume a tax credit for consumers who install the Dole light. The ideal outcome would be additional light installations to the point where marginal social costs equal marginal social benefits. Alternatively, they could be made a mandatory requirement during a phase-in period in order to secure a safety inspection sticker.

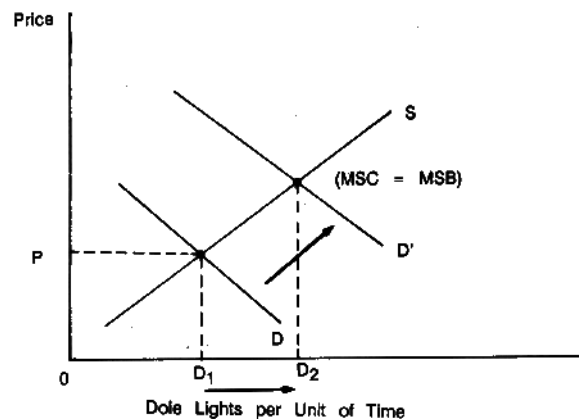


Figure 34-2

Which would you prefer? While the answer becomes obvious, one must also consider which would be the most effective policy within a reasonable time constraint.

Is Competition Always Beneficial?

Gary M. Galles, Pepperdine University

After covering the section of a principles course in which we show the "nice" properties of a perfectly competitive equilibrium and compare its virtues to the properties of the monopoly model, students can sometimes come away with the notion that "free" competition in any of its forms is always socially beneficial. To avoid this possibility, I use the example of toxic waste dumping to get across the point that there are limits to the types of competition that are socially beneficial, by emphasizing what can result in the cases of external costs as well as competition "outside the rules of the game."

I first ask how toxic waste dumping is a form of competition. The answer is that in search of higher profits, illegal dumping of toxic wastes is one way to lower production costs, which either yields higher profit margins on sales at a given price, or lower prices, attracting customers away from rivals; either raises profits. I ask them to think of the case of the chemical company involved at Love Canal as a specific example (or whatever the latest toxic dump scandal is). I then ask why this form of competition had undesirable effects. I focus their answers on the primary reason--that privately borne costs diverge from true social costs--and so introduce a concrete example of externalities. I also get them to see that we often have laws to prevent the imposition of external costs on others, but that competition outside the law can still be socially harmful. I do this to remind them that the "free" competition we mean when we talk about social benefits is usually assumed to

be within the bounds of legality, although not all forms of competition fall within those bounds (other examples include arson against a rival's factory, blackmail, physical threats, etc.). "Free" competition is not totally free.

I conclude this example by using illegal dumping to illustrate how difficult it is to "crack down" on such activities. I ask whether announcing that a new cradle-to-grave tracking program for toxic chemicals would be initiated and take effect in a year would make things better or worse. This gets them to see the difference between near term results (increased dumping to beat the deadline) and longer term results (presumably, reducing dumping) as well as getting them to think about how expensive such contracts would be.

The Catalytic Converter

Anthony K. Lima, California State University-Hayward

I have found that this example is very useful in illustrating the difference between quantitative restrictions on pollution and taxes to provide incentives to control pollution. The example also gives the instructor another opportunity to emphasize the irrelevance of fixed costs to economic behavior.

The example revolves around the catalytic converter, which is installed on most automobiles today as a pollution control device. The converter acts as an afterburner. By using a platinum-based catalyst, certain noxious gases such as carbon monoxide are further oxidized to much less objectionable forms. For example, carbon monoxide is catalyzed to carbon dioxide, which plants convert into oxygen. It has been estimated that the catalytic converter adds about \$500 to the cost of producing an American-made automobile.

Unfortunately, the catalytic converter requires that the owner of the automobile use only unleaded gasoline. The tetraethyl lead in leaded gasoline fouls the catalyst, rendering it useless. Unleaded gasoline is more expensive than leaded gasoline of the same quality. Therefore, there is an incentive for the owner of the car to use leaded gasoline to save money. The Environmental Protection Agency has attempted to forestall this possibility by making the fill necks on the gas tank of cars required to use unleaded gasoline much narrower than the necks on other cars. The gasoline pump nozzle is correspondingly narrower for unleaded gasoline pumps. Therefore, the leaded gasoline pump nozzle will simply not fit into the tank of cars required to burn unleaded gas.

It is amusingly simple to widen the fill neck to the extent required to accept the leaded gas pump nozzle. Many car owners have in fact done this. The point is that there is absolutely no incentive whatsoever for the owner of the automobile to not do this. Further, there are substantial incentives to widen the neck and mess up the converter. This has led the EPA to a new regulation: States must implement mandatory annual exhaust pipe testing for pollutants. These tests are of questionable value, as there is no evidence that they are at all consistent from car to car, or even from day to day.

A far simpler solution would have been to impose a differential tax on leaded gasoline, so that its price would be greater than unleaded gasoline. Students invariably respond to this proposal with the cry that it is unfair to the owners of older cars. The response is obvious: in any economic situation, there are always those who gain and those who lose.

Economics and Behavior Modification

Gary M. Galles, Pepperdine University

To emphasize the point that economic analysis is mainly an analysis of people responding rationally and predictably to their incentives, I find the parallels between government tax and subsidy policies and behavior modification useful. I begin by describing the rudiments of behavior modification: you reinforce (reward) the behavior you desire and try to discourage (penalize) the behavior you don't desire, using whichever motivators a group of expert psychologists believes will work best (e.g., attention, peer pressure, overt disapproval, etc.).

I then point out just how similar behavior modification in psychology is to tax and subsidy policies. The classic prescription for an industry with "too much" output, such as the case of external costs, is to tack on a per unit tax equal to the level of marginal external costs to social optimum (i.e., penalize the external cost behavior at the margin). An industry producing "too little" output, such as the case of external benefits, similarly calls for a per unit subsidy (i.e., reward the external benefit behavior at the margin).

This example reinforces the point that economics is about how people respond to incentives, although those incentives and the behavior analyzed are usually restricted to certain areas. It also shows that just as psychological intervention may potentially result in better social consequences, so can government economic intervention in some areas. Finally, it shows how general and widely applicable the economic way of thinking is.

The Common Pool Resource Problem

John R. McArthur, Pittsburg State University

Students often fail to grasp the importance of private property rights in determining the efficient allocation of resources. When asked by the instructor why grizzly bears are scarce and an endangered species while horses are seemingly as abundant as ever, students often respond with blank stares. Only seldom, if ever, will a student answer "because horses are privately owned, grizzly bears are not." To illustrate the impact property rights can have on allocative efficiency, I play a game with the students.

Use about 20 round beads (buttons, marbles or other small objects can be used). I inform the students that the beads represent a common pool resource. For example, tell them each bead represents one whale, the classroom floor represents the ocean, and their desks are whaling ships. Tell the students that you will pay \$.10 per whale in time period one, which should last no longer than one minute, and you will pay \$.25 in the second time period, immediately following the first period. Indicate that these time periods represent the equivalent of several years. Throw the beads, scattering them on the floor (throughout the ocean). Inform the students that once a bead is picked up off the floor (the whale is harpooned) it must be turned over to the instructor (the buyer) in that time period. Storage is not allowed or is too expensive.

From past experience, I have found that the beads are always collected in the first time period. The students who gathered the beads (harvested the whales) should be asked why they did not wait one minute to earn an extra \$.15. The response, of course, will be a recognition that waiting might mean surrendering a sure \$.10 to their neighbor (another whaling ship). The expected value in time 1 exceeds the expected value in time 2.

After the beads are collected from the first experiment, hand out beads to individuals, informing them that they are the sole owner of that whale and that property rights will be strictly enforced. The beads will be offered by students in the second time period, earning \$.25. Compare the outcomes, explaining why they are different and pointing out the importance of property rights. This game was originated by Terry L. Anderson at Montana State University.

Externalities and Consumer Prices

Ralph T. Byrns

When external costs are internalized, consumers pay higher prices for the product. Many students feel this is unfair because they believe the firms benefited from their pollution and should thus bear the cost of reducing it. Use supply and demand diagrams to show that in the absence of government programs to abate pollution, it is these exact same consumers that benefit.

Litigating Negative Externalities

George E. McCallum, St. Norbert College

For non-smokers, an excellent opportunity to introduce the idea of negative externalities presents itself when a student ignites a cigarette. Feigning strangulation ("Aaaaarrgh!"), assert that this miasma has gravely harmed your lungs and that you are going to sue him/her for "pulmonary trespass." Ask the class if the court won't surely award you damages. (They'll say "No.") What if you sue the tobacco company? ("No.") How about a class action on behalf of all aggrieved non-smokers? (Doubtful without enormous legal expenses.) Although you have clearly been wronged and may easily have to bear extra costs (eyewash, throat lozenges, antihistamines) where such pollution is severe, there is no practical way to make the producer, and ultimately the consumer, bear (internalize) them. An interesting variant would be an outdoor party, where the smokers' acrid exhalations simultaneously drive away the mosquitoes (positive externality).

Bidding to Internalize Externalities

Les Morford, Montcalm Community College

Although smoking is not permitted in our classroom by edict of the Board of Trustees, I convince my students that we have been given permission to decide this for ourselves--provided we decide the issue as a market rather than a political decision. When I ask how this might be done, there are such answers as "we'll vote on it," "the instructor will decide" or "each student will decide whether or not he or she will smoke during class." After generally unsuccessful struggles with the question, I

tell them we will put the exercise aside for a while, following which we discuss private ownership of property, without reference to the smoking issue.

When we return to the smoking question, it is usually not long before the students suggest that the smokers will try to "buy" the rights to use the classroom air while the non-smokers will bid to keep the air free of smoke. Only after one or the other of the groups has out-bid the other do I confess that the Board did not give us permission to be an exception to the no-smoking rule.

Why Do Even Nice People Litter?

Ralph T. Byrns

Ask whether your students have ever dropped a piece of paper or a cigarette butt on the ground on the rationalization to themselves that one piece of litter in an otherwise clean area does not matter. Now ask if any have littered in an already messy area while thinking to themselves that, because of the litter that already exists, their litter adds virtually nothing to the clean-up costs that are already necessary because other slobes have preceded them. If you keep extending this argument, they will soon understand the cumulative nature of even trivial negative externalities. Point out that this same reasoning applies to the effect of one person walking across new grass, and then several more, and then the hundreds who, once there is a well worn path, think nothing of walking on the grass. You might also ask why people who think nothing of throwing aluminum cans out their windows as they drive down the highway are less likely to do so in their neighborhoods, and would never consider such littering once they've arrived in their own driveways.

Pollution: Market Failure or Government Failure?

Ralph T. Byrns

The book presents several market solutions to pollution problems including licensing (assigning the right to pollute at a cost) and litigation. Assuming that defining and enforcing property rights is an economic role of government, discuss whether pollution is a market failure or a government failure (government has either failed to properly define or enforce existing rights.) Then raise the question of whether government is truly protecting your rights to have your body or property unpolluted if you must bare the costs of going to court to have such rights enforced. Your students may also gain from a discussion about how reduction of pollution is much like a public good; non-rival and non-exclusive.

Chapter Twenty

The Economics of Health Care

Does Everything Have a Price?

Ralph T. Byrns

Some instructors may view the perspective of all human action as self interested as imperialism by economists. This exercise may not be to their liking, but we find that arguing that all behavior of *homo economicus* is perfectly explicable as optimization given relative prices (opportunity costs) and budget constraints causes students to focus in on economic reasoning early in the course.

After arguing that everyone always pursues the opportunities that they perceive to the best (lowest cost for a given desirable outcome), we turn the argument around and ask if anyone in the class can conceive of any action that they would not do regardless of price. Most students respond that there are things they would not do for any price. (They are still thinking of monetary prices.) Then ask, e.g., "How many of you would NOT kill your mothers for any price?" Most students will raise their hands. Select a young, innocent looking student and conspiratorially swear the rest of the class to secrecy about what your student is about to reveal. Then introduce yourself as Vlad the Impaler (a Transylvanian monarch who inspired the Dracula of fiction), and suggest that the alternative to their killing their mothers painlessly by injection is that you will, but by torture and only after slaughtering the student's entire family (including the student). Faced with such blood-curdling alternatives, most students will confess that for the right price (in this case, a worse alternative), they would kill their mothers.

Admit that this may seem a contrived example, but that many who dearly love their mothers would commit euthanasia if extended torment by an inevitably fatal disease were the alternative. Similar choices are frequently made when enormous medical costs must be incurred to keep a loved one alive for, at best, some short period.

The point of this exercise is that any action, regardless of how unpleasant, may be chosen if the alternative is even less pleasant. In *Tragic Choices* (Norton Publishing, 1978), Calabresi and Bobbitt detail numerous tradeoffs between painful alternatives and suggest that such choices are often made using disguised decision mechanisms.

Misguided Humanitarian Argument

J. Michael Swint, The University of Texas Health Science Center

Misguided humanitarian argument: To explain why worrying about economic costs of programs that save lives is not inhumane (to physicians, students, etc.). The concepts of cost-benefit and effectiveness analyses are often criticized in the health sector by individuals I would call "misguided humanitarians. " That is, many individuals believe that the value of a human life is infinite and that the costs involved in saving it are therefore irrelevant. This argument ignores the fact that the amount of resources available for disease control (or any other) programs is limited. If we may use an extraordinary amount of resources to save a single life, we may have cost many more lives by denying these resources to alternative uses. Thus, ignoring the economic costs (i.e., the foregone benefits--lives that could have been saved in this case) may result in "unnecessary" loss of life.

The "Best Medical Care for the Most People" Myth

J. Michael Swint, The University of Texas Health Science Center

The AMA's "best medical care for the most people" slogan is stated as an objective obtainable within current levels of medical funding. With fixed medical resources, we can provide "the best" medical care to relatively few (Point A in Figure 35-1) or lesser medical care to more (Point B), but it is logically impossible to do both. Point C would fit the myth, but would require a huge expansion in resources.

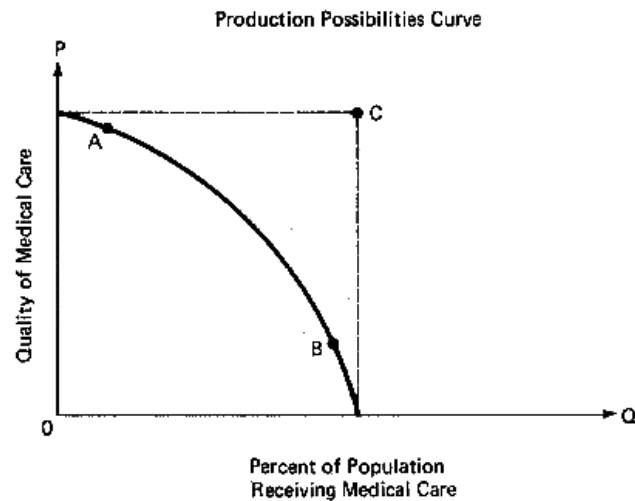


Figure 35-1

Poll your class to find out how many students would willingly pay higher taxes or insurance premiums to provide everyone with first class medical care. Point out that medical care now absorbs roughly 11 percent of GNP, with 1 percent of GNP being spent on intensive care units (ICUs) alone; nearly 65 percent of all medical care is rendered to people who live less than 2 more years. This lecture can be expanded to consider whether people really mean it when they utter the cliché that "human life is priceless."

NOTE: The concavity from below of this PPF can be rationalized as reflecting heterogeneity in the resources devoted to medical care, some of which are especially suited to intensive care of the critically ill, with other resources being devoted to public health, mass production medical services (e.g., emergency rooms), etc.

The Effects of Third Party Payers

J. Michael Swint, University of Texas Health Science Center

An analogy to illustrate the perverse behavior introduced by third party health insurance: Imagine instead if we decided to have "National Sears Insurance," wherein insurance covered our purchases

at Sears, but with a 20 percent deductible per purchase. Thus, if you purchased lawn furniture priced at \$200, you would pay \$40 and the insurance would pay \$160. As a subscriber (and most of us are for health insurance) you view \$160 as free even if you'll eventually pay higher rates if others behave similarly. Thus the \$40 becomes the "real" price. In fact, since your behavior alone won't noticeably influence insurance rates (they're likely to increase regardless), you would be irrational to consider anything but the \$40 price. Sears would take over the entire retail business and distort relative prices in the economy and an undesirable large amount of resources would be attracted away from other sectors and into the "Sears sector."

NOTE: Health-related expenditures are approaching \$600 billion and absorb almost 12 percent of GNP--and the percentage is increasing.

Certain Death vs. Insurance

H. J. O'Neill, Suffolk County Community College

To illustrate the role of risk and uncertainty in a market system (and life, more generally), announce to your class that: "I have an infallible device that lets me know exactly when a person will die--year, day, and hour. It does not tell how or where. You or your heirs receive \$1,000,000 if you die before or after the time I specify. I will never lose this 'guarantee'." Then ask the following questions:

- a. How can I make money with this?
- b. How could you, even without the device, make money from such a service?
- c. What industries will be affected? In what ways?

CLUE: Perfect foresight would eliminate both risk and uncertainty and, consequently, the insurance industry and any potential profits from speculation. Thus, many business activities (especially in financial markets) would be profoundly affected.

Moral Hazard and Car Insurance

Dave Hansen, Linfield College

I never fully appreciated the concept of moral hazard in insurance until the time that our car insurance had expired and I had not renewed it since I was considering offers from alternative companies. After about a week my wife said one day, "Would you please renew the insurance with someone; I am so tired of having to drive carefully." Now there is a scary thought.

Chapter Twenty-One

Foundations of Macroeconomics

Macroeconomics as a Complicated Jigsaw Puzzle

Gary Galles, Pepperdine University

Most principles students have a harder time with macroeconomics than with microeconomics for several reasons. First, it seems that the measurement problems that must be overcome (e.g., ambiguities or biases in measures of unemployment, the money supply, national income accounts and the various price indices) before one is a competent user of concepts are much greater in macroeconomics, and since few students are inherently interested in these problems, this can lead to glazed eyes unless students can be shown their importance. Second, macro only indirectly addresses the world a college freshman "lives in," while micro seems more obviously relevant; it is harder to draw on student experience in explaining the issues involved--in making economics "come to life." Third, the model building required before a payoff is much more time-consuming in macroeconomics. Finally, students perceive macro as less coherent than micro, perhaps because there is less consensus among macroeconomists.

Because of these difficulties, I have drawn an analogy between macro and a jigsaw puzzle that must be put together in a particular way. First, several large pieces must be constructed from smaller pieces. I.e., with each building block of a general model, say monetary analysis, there are problems of definition (How should we define money?), measurement, (How should we measure money?), memorization, (What tools are available to the Fed?), institutions, (How does the Fed operate?) and analytics (What effects, and how large, will a given policy have?). However, these larger pieces do not fit together. Connecting pieces must then be constructed to join the building blocks together. I.e., the building blocks of macroeconomics need to be integrated into a more coherent general picture, but they can't be integrated until the building blocks are each understood (e.g., monetary and fiscal policy must be integrated, and further integration must occur to get to aggregate real supply and demand analysis of the accelerationist model). Only then does a relatively coherent picture emerge from the puzzle, and even then we don't have the border pieces. I.e., the principles class does not teach all of macroeconomics, and macroeconomics is continuing to evolve, so that while we can construct most of the center part of the puzzle, we cannot put it all together. The real difficulty with the whole process is that while the teacher knows what the completed puzzle looks like, he can only describe it to the students--they can't "see" the completed (as far as principles is concerned) picture until they have built it.

I use this analogy to give students an overview of the course structure: we build up the pieces first, with descriptions of why we are doing this to get where we are going, then we put the separate pieces together into a more coherent "whole": not all of macro, but enough to understand most of the issues that will affect students' lives. This analogy also highlights some difficulties in teaching macroeconomics. While you need to give students a sense of where they are going; you can't integrate the analysis until each piece is well understood. You have to continually let students know why they are learning what they are made to learn, because it often isn't obvious. You have to beware of going over students' heads by introducing complications before the basics are well grasped or putting the pieces together too fast. Entertaining and useful illustrations also seem harder to come by than in microeconomics.

Comparing Phases of a Business Cycle to a Newlyweds' Life Cycle

By Judy Kamm, St. Louis Community College

A couple announces their engagement. The engagement process begins the expansion of their life cycle. The goods and services the couple demands during the planning of their wedding and new home lead to further expansion. Until their wedding which is the peak of the first phase of their life cycle. After their wedding, the couple's consumption falls off, recession begins, because they have to pay the bills from the wedding and the new home purchases. Also, the couple may not consume as many new goods and services now that they are newly married. The next expansion of their life cycle begins when the couple has a baby. The goods and services the couple demands while planning for the baby leads to expansion. The birth of a baby is another peak in the life cycle. In summary, all individuals' various life cycles combined together constitute the business cycle. As an instructor one could further the phases of the life cycle.

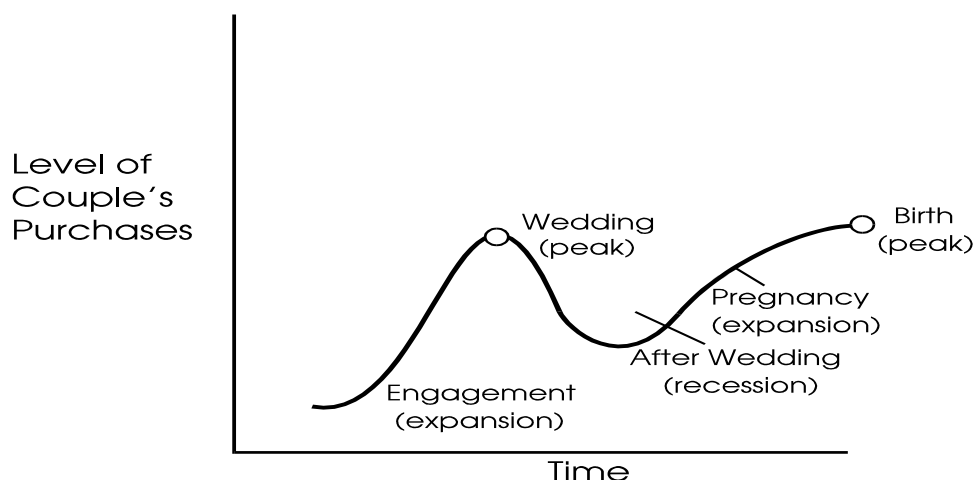


Figure 5-1

Introducing Macro

Ralph T. Byrns

The macro goals presented in Chapter 1 of our texts lead naturally into questions about the meaning of unemployment, inflation, or economic growth. Ask your students to estimate quantitative targets for rates of unemployment and economic growth. This is also a good place to distinguish changes in relative prices from inflation. Many people erroneously believe that inflation exists whenever any price rises, but other prices (e.g., computers, TVs and stereos, gas and oil during 1983-86) may be experiencing offsetting declines. Mention that the price level is a macro concern, while changes in relative prices are largely within the province of microeconomics.

Briefly suggest the possibility of tradeoffs between macro goals: (a) unemployment vs. inflation; (b) growth vs. high consumption now; (c) balancing the budget vs. boosting growth

through tax cuts. The intent here is not to rigorously investigate, e.g., the existence or transience of a Phillips curve, but rather to suggest that tradeoffs between goals are pervasive.

Economic Predictions and Lottery Tickets

James A. Kurre, Pennsylvania State University

Students just beginning Economics are sometimes frustrated that in the social sciences our laws don't hold every single time. They may be used to the physical sciences where the law of gravity or Boyle's law tells you exactly what will happen every time. I point out that a law that doesn't work every single time can still be quite useful. A system of picking lottery tickets that was only right once a week would still be very handy to have! Our laws might not hold for every person in every situation, but they're right significantly more often than once a week.

Economic Fortune Telling

Bienvenido Cortes, Pittsburg State University

Why has economic forecasting been likened to crystal ball gazing and evaluated as inferior to weather forecasting? In my business cycles and forecasting class, I address this question by assigning a special project. I provide each student a data set of 50 time-series economic variables (alternatively, the instructor can assign the students to gather the data themselves to familiarize them with basic government sources such as the U.S. Statistical Abstract and Survey of Current Business, and ask the student to select a particular variable he/she is interested in (only one student must be working on a specific variable). Using a statistical computer package such as MicroTSP, which I require in class, I instruct the students to do the following:

1. Based on the data of your variable under study, compute forecasts for 1, 2, and up to n periods ahead using the following forecasting methods:
 - a. naive models - average absolute change and average percentage growth rate
 - b. autoregressive model(s)
 - c. single moving average - absolute change and percentage change
 - d. exponential smoothing
 - e. trend model
 - f. causal regressive model - bivariate or multiple.

Explain each of the procedures as well as the results obtained. For the causal model, explain your choice of independent variable(s) and the causal relationship(s) presumed.

2. Provide time-series graphs of the actual and forecast values of your variable for the entire period and for each of the different forecast methods used.
3. Calculate the root mean squared error (RMSE) for the forecast series for the 1-, 2-, and up to n-period forecasts based on each of the different methods.

4. Which forecasting method do you think is best? Explain your answer.

This project underscores the difficulty of forecasting activity. It emphasizes the need for formulating adequate and sound economic hypotheses. In particular, causal modeling helps the students think logically about linkages or relationships. Finally, this project demonstrates that sometimes the simplest models or methods may be the best ones and that the accuracy of one's forecasts depends on one's assumptions and the stability of the hypothesized relationship.

Where Are You at 11:05 AM?

Les Carson, Augustana College

Monetized Circular Flow Chart, Open U.S. Economy

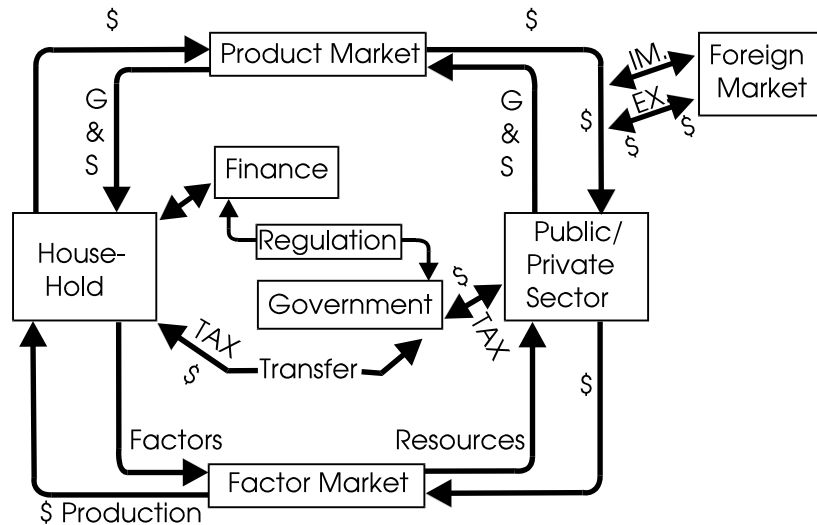


Figure 5-2

Using the commonly incorporated monetized flow diagram above, an attention device to aid student conceptualization can be one of asking the students where they are while sitting in a college classroom relative to the macro-system. This device works best if it is used prior to students leaving at the end of the class to eat lunch, go to work, band practice, football practice, etc. (Such a "tracing" of activity makes understanding the macroeconomic impacts easier.

For example, from public sector (university) and human capital investment in himself, the student leaves campus going to a part-time job as a retail clerk in a local mall, thus being in a product market. Later, or in an associated sequence, one can suggest that the student might try to use a "float" by writing a check at 6:00 p.m. Friday for the weekend and covering it from his paycheck as the bank opens on Monday. From this same illustration government regulations (broken line) can be discussed, as well as some monetary activities by banks themselves and Federal Reserve System later. Using the same notion the instructor can discuss the shifting of demand/supply functions in both product and factor markets to which students can relate, with noticed sympathy in the case of part-time job seeking.

In summary, the exercise above connects in students' minds micro participant (economic man) to macro system and allows transference by a short response question with a changed situation on an exam.

Numbers in the Macroeconomic Circular Flow

J. Dennis Chasse, State University of New York-Brockport

Numbers in a circular flow diagram increase its explanatory power. I discovered this when I started using diagrams like this one to explain why planned saving must equal planned investment at equilibrium. I kept the numbers simple so the students could make comparisons in their heads. I used different situations: spending plans equal to national product; spending plans less than national product; and spending plans greater than national product. I left numbers out and had the students fill them in. I gave circular flow quizzes. I related it to their experience. As a result, they grasped, almost effortlessly, relations that they had previously found quite difficult. Since then, I have used the same technique in the larger circular flow with government and foreign trade. The insertion of simple numbers seems to multiply the pedagogical possibilities for the circular flow diagram.

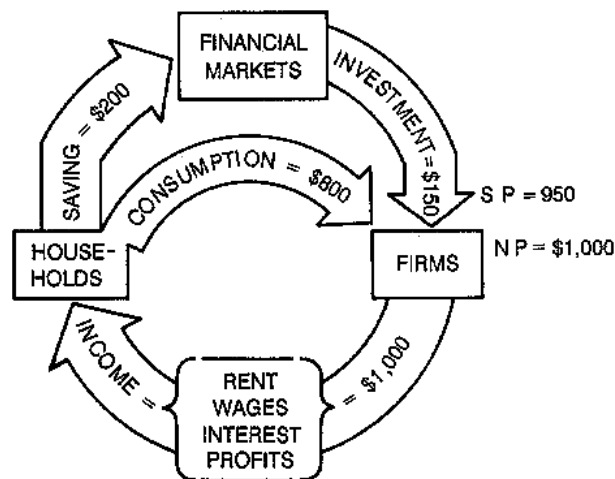


Figure 5-3

Investment and the Interest Rate

Ki Hoon Kim, Central Connecticut State University

Investment-demand curve is downsloping because rates of interest (along with the vertical axis) and the amount of investment (along the horizontal axis) are inversely related, just like the law of demand.

Whenever we encounter two variables which are inversely related, think of a seesaw. Place the I (investment) and i (the rate of interest) on a seesaw. If i goes up, I comes down, and vice versa.

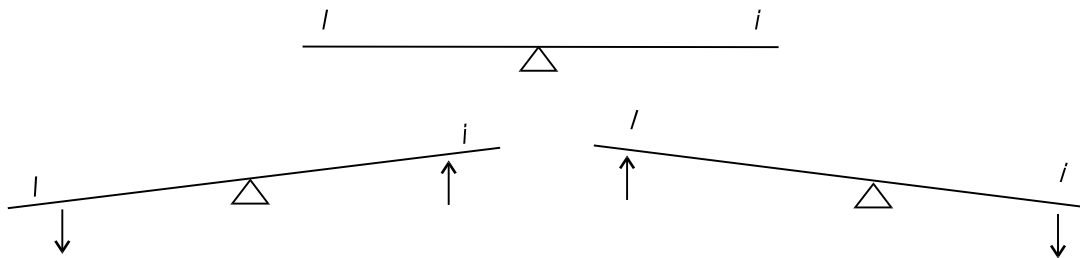


Figure 5-4

W * R * i * P

Philip E. Graves, University of Colorado-Boulder

The following memory device has been useful to me in presenting the various factor payment categories.

W R i P (with a silent "W" as in "Wrangler"):

W = wages

R = rents

i = interest

P = profit

I find this aids students considerably when studying elementary circular flow diagrams.

Business Cycles

Lessons from Edsels for Macroeconomics

Anthony K. Lima, California State University-Hayward

While most business students understand why they need to study micro, many have serious doubts about the relevance of macro for them. This example may not convince them of the value of the entire course, but generally quiets their more vigorous objections:

The Edsel was introduced by the Ford Motor Company in 1956, and was named after Henry Ford's younger brother, Edsel Ford. This was less than the ideal time to launch a new car model, because its maiden voyage sailed right into the teeth of the 1957-58 recession. It was one of the more remarkable financial failures ever for new product introduction. The central point is that business planning is likely to fail unless the general macroeconomic environment is taken into account. Some knowledge of macroeconomics is necessary for the business person to successfully plan production or forecast demand.

This brief example can be extended in several directions. First, it can be used to point out the procyclical nature of the demands for consumer durables; that such demands generally fluctuate much more than the business cycle itself. This can lead to a discussion of the role of durability in determining the income elasticity of demand. A second direction which the discussion can take is the reason for the 1957-58 recession. This will typically revolve around the issue of fiscal policy and the role of government in the economy. It may be possible, depending on the types of students you have, to introduce the simple multiplier concept at this point. It's a good example.

Depressions and Income Elasticities of Demand

Ralph T. Byrns

Discussions of the social consequences of recessions or depressions can lead into informal analysis of the income elasticities of demand (avoid this terminology unless most of your students have already taken principles of microeconomics) for such things as marriages, divorces, children, schooling, etc. Ask students for their impressions of why suicides, crime, physical and mental illness, and other maladies rise when economic activity falls, and why marriages, divorces, and birth rates tend to fall when the economy is in the doldrums. This discussion aids students who have little appreciation of the effects of the Great Depression.

Chapter Twenty-Two

Employment and Unemployment

Unemployment

Calculating The Class Unemployment Rate

Todd Steen, Hope College

One of the most important macroeconomic indicators is the unemployment rate. In order to emphasize what the unemployment rate tells us, as well as what it does not tell us, I have students classify themselves into three groups (employed, unemployed, and not in the labor force; according to the definition) and then calculate the class unemployment rate. The classification process and the calculation of the unemployment rate usually leads into questions about part-time vs. full-time workers, how workers search for jobs, and the issue of "discouraged workers." In order to bring up the definition of labor force participation rates, ask the students first to give labor force data about their female family members, and then about their male family members. Then have the students calculate the labor force participation rates according to the formula given. This can lead into a discussion of the convergence of female and male labor force participation rates over the last 30 years and the reasons behind this convergence.

Humanizing Economic Numbers

Davis Folsom, University of South Carolina-Aiken

When progressing from introductory material in a principles class, the discussion usually begins with macroeconomic measures. Before lecturing about these numbers I give students an assignment. I have them read and summarize vignettes from Studs Terkel's *Hard Times: An Oral History of the Depression* and chapter six from Russell Baker's autobiography *Growing Up*. Both of these sources vividly portray the human fears and social conditions of the Depression. When I then put time series graphs of unemployment and GDP on the overhead projector, students in some small way can relate to what otherwise would be just peaks and troughs of a line. Student comments have been quite positive.

Baseball and Structural Unemployment

Cho Kin Leung, William Paterson College

When discussing the problem of unemployment, I always find that elementary students have some difficulty in conceiving that technical coefficients in production may affect the size of structural unemployment. To enhance understanding, it is helpful to use real life examples in which the students are interested. One of my favorite sources is sports. To field a baseball team, for example, you must have one pitcher, one catcher, one first baseman, one short-stop etc. The technical coefficient is very rigid in this case. Suppose that there are two people who can play only short-stop position; one will not be used and therefore is "structurally unemployed." To solve this particular problem of unemployment, either we have to change the rules of the game by allowing two

short-stops in the field--making the technical co-efficient flexible--or one of the short-stops must be sufficiently versatile to play in some other vacant position.

Characterizing Types of Unemployment

John P. Cochran, Metropolitan State College-Denver

Examine each type of unemployment (Frictional, Structural, Seasonal, and Cyclical) with regard to:

- a. nature of the unemployment and source of the problem;
- b. voluntary or involuntary;
- c. type of government program to reduce this kind of unemployment;
- d. market mechanisms to reduce this type of unemployment.

EXAMPLE: Frictional Unemployment

- a. Jobs are available. Potential workers have the skills to fill the available jobs. The problem is generating the needed information so that the workers find the jobs and employers find workers, and then transporting workers to jobs or vice versa.
- b. Usually viewed as voluntary unemployment.
- c. Job Service Centers. Government expenditures must be explicitly directed towards matching workers and jobs.
- d. Want-ads and employment agencies.

Discourage Workers to Lower the Unemployment Rate

Gary Galles, Pepperdine University

Students often have trouble keeping the differences between employment rate and unemployment rate data straight. To help them keep the differences straight, I introduce the subject of proposing a solution to lower unemployment rates. My solution is to hire Sam Kinnison, Louis De Palma, Don Rickles, and others whose specialties are putting people down, to go to unemployment offices and unmercifully berate the people there about being losers. This will depress the unemployed so much that they will stop looking, which lowers the unemployment rate and obviously benefits society. At this point, I ask if there is anything wrong with my conclusion about what would happen to unemployment rates, then if there is anything wrong with my conclusion about society. Those students who have read more carefully can then explain to me (and the rest of the class) the differences between unemployment and employment rate measures and their implications. This can then be extended to make students more aware of such things as data involving discouraged workers, under employed workers, and cases where both rates move together (when welfare rules require unemployment registration or when strong employment demand generates even greater entry into the labor force). Students tend to remember this example better than they do simply memorizing the appropriate definitions.

Discouraged Workers and Unemployment Rate "Bias"

Robert J. Thornton, Lehigh University

In teaching the economics of unemployment, the notion of disguised or hidden unemployment is an important one. The terms refer to individuals who have withdrawn from actively seeking work because they have become "discouraged," believing that there is no work to be had. The concept is a straightforward one, but not so easily understood is how the discouraged worker phenomenon can make the unemployment rate as reported by the Department of Labor a biased estimate of the true employment rate. Toward this end the following simple numerical example works nicely.

Assume that the labor force consists of 100 workers, of whom 95 are employed and 5 are unemployed. The unemployment rate, of course, would be equal to the number of unemployed workers divided by the number of persons in the labor force or $5/100 = 5\%$. Imagine now that an economic downturn occurs in which 5 more workers lose their jobs. This would result in the unemployment rate rising to $10/100 = 10\%$. But suppose that after a period of time, 3 of these unemployed workers become "discouraged" and stop looking for work. Since they have ceased their job-search activity, they literally drop out of the Department of Labor's labor force count and, as a result, are also no longer considered to be among the ranks of the unemployed. This makes the unemployment rate as reported by the Department of Labor fall to $7/97$ or 7.1% . In comparison with what many would consider the true jobless rate (10%), the discouraged- worker-affected reported rate (7.1%) is clearly a downward-biased estimate. In other words, the unemployment problem is much more serious than the reported figures suggest.

How To Experience The Great Depression

Lawrence A. Daellenbach, University of Wisconsin-La Crosse

Principles of Economics texts record the Great Depression with employment statistics and a few examples of the harsh living conditions. The most severe economic slump of the century is ancient history for principles of economics students, most of whom don't remember the early 1980s recession.

With an inspiration provided by Studs Terkel's Hard Times, I initiated an interview assignment to make the history personal and alive for the students. They were required to find a person born before 1923 and conduct an interview that focused on the experiences of the Depression. They were directed to find out where and how the person lived, what the person observed during the period, how the person felt during the Depression, and what lasting personal effects there were, if any. The interview report was limited to four pages and was supposed to be written in a human-interest story style, suitable for inclusion in the family life section of a local newspaper. Students were also permitted to work in small groups, maximum of three, since some did not have easy access to a Depression era witness.

The stated objectives were clear: make the Depression real for the students and give them another writing opportunity. These were achieved with ease. The unstated objectives were twofold: first, I wanted students to learn about their elders and about themselves; second, I thought

the unusual assignment would add variety and lighten the macroeconomic theory discussed in class. I wasn't prepared for the outpouring of emotion and human feelings expressed in many papers.

Eighty percent of the students interviewed one of their grandparents. One student wrote that he began the interview with his grandma in the living room of his parents' home. During the interview other members of the family drifted in and became involved in the discussion. What began as a simple assignment became a highly emotional family experience. The student concluded that he now understands why his grandparents appeared "cheap" and why his father had certain attitudes about money.

Other students reported similar stories. The lessons for my students went well beyond the stated objectives. Several common threads ran through their papers. They learned first hand about the physical and psychological costs of the Depression. They learned that the psychological scars formed then haven't disappeared, even after more than fifty years of better times. They learned that although their parents were not a part of the Depression, many of their attitudes and behavior are influenced by it.

Bias in the Unemployment Rate over the Business Cycle

Mark E. Schaefer, Georgia State University

The concept of the discouraged worker can be brought to life by asking the students if there is any pattern to the occurrence of discouragement over the duration of the business cycle. They will eventually guess that it gets worse as the downturn drags on. You ask innocently if that has any effect on the unemployment rate. They reply that it reduces two things, 1) the number of unemployed still searching, and 2) the total labor force. Thus, both the top and the bottom of the unemployment rate fall. Can we say which way the ratio moves? Yes, the top falls more proportionately than the bottom, so the ratio falls. Thus, the reported unemployment rate may mislead us either by understating the full extent of the problem or by appearing to improve late in the downturn.

Then let them show mastery of the idea by asking if a symmetrical case can be made for encouraged workers during the upturn.

Summary: In the late (early) stages of the downturn (upturn) the fraction of the labor force officially reported as unemployed is too low (high). Why? Because some job seekers become discouraged (encouraged) and drop out of (join into) the official labor force of those actively looking for work. Thus, a drop (rise) in the unemployment rate is not necessarily a good (bad) thing.

Chapter Twenty-Three

Inflation

Inflation and the Price Level

Prices in the Good Old Days

Michael Kuehlwein, Pomona College

Prices have risen steadily in the US economy since WWII. In the early 1990's prices were roughly 8 times what they were back in 1940. To illustrate what this means, I cite some 1940 prices from an old Statistical Abstract of the United States: potatoes: 2 cents/lb, flour: 4 cents/lb, milk (delivered fresh!): 25 cents/half gallon, sugar: 5 cents/lb, chuck roast: 22 cents/lb, leg of lamb (if you really wanted to splurge): 30 cents/lb, bread: 8 cents/loaf, stampers were 3 cents a letter and postcards were a penny (the penny postcard), the median cost of a house: \$2,900, the median monthly rent: \$24, the average price of a new car: \$650. This usually gives them some appreciation of the effects of inflation.

The Completeness of the Consumer Price Index

Robert J. Thompson, Lehigh University

In pointing out to students the tremendous variety of goods and services covered by the CPI, I distribute lists (or display them via an overhead projector) of the 400-plus items in the "typical" consumer's budget along with corresponding expenditure weights. The complete list runs about 6 pages and is available from the U. S. Department of Labor. As I browse down the list, noting examples of salami and socks, jewelry and pet supplies, toilet tissue and parking fees, etc., the fine detail and thorough nature of the CPI is emphasized. More than one student has suggested that it reflects "everything but the kitchen sink." (To this remark the instructor can reply, "You're only partially correct. Until the 1978 revisions, even the cost of replacing the kitchen sink was included!"). In addition to emphasizing the completeness of the CPI, the list of items and their expenditure weights also impresses on students the possible differences in the changes in the general cost-of-living as measured by the CPI and in students' own cost-of-living. Interesting discussion can be generated by discovering items that are dominant in students' own consumption patterns but which are either excluded or not weighted very heavily in the CPI. College tuition is one of the best examples of the former in this regard.

Inflation

D. Robert Johnston, Indiana University-Bloomington

To start students thinking about inflation, blow up a balloon, explaining that it represents the price level. As you inflate it, inflation is occurring. Now let the balloon go, and ask what happened--deflation. Now blow it up again until it finally explodes, and ask what happened. The inflation was so pervasive (hyperinflation) that the balloon (price level) burst, leading to an economic breakdown.

(NOTE: One could now use the balloon to explain nominal and real GDP as suggested by Jose Alberro in the second edition of *Great Ideas*, p. 48.)

Textbooks, Yardsticks, and Inflation

James Neal, Lake-Sumter Community College

In discussing the negative effects of unanticipated inflation, I have incorporated the use of a yardstick for a simple demonstration. The demonstration is prefaced by the statement that inflation is, of course, only a change in the length of the financial measuring rod so why be concerned about any real effects. I then ask the students to consider the effects of an unanticipated change in the calibration of a slide rule (for the benefit of older students) or the basic statistical functions in an electronic calculator. Would these changes alter the ability of an engineer to construct a building, a bridge, a highway? Next, I ask about the consequences on a textile manufacturer if its basic measure, the yard, was arbitrarily altered in an unexpected fashion. How would this affect its orders, machinery settings, and potential revenues? This question is accompanied by the dramatic breaking of the yardstick into as many pieces as strength permits. Now discussion of the specific financial difficulties in planning caused by unanticipated inflation can easily begin.

Common Sense and the Measurement of Inflation

Lawrence A. Daellenbach, University of Wisconsin-La Crosse

Most students have a vague idea about the relationship between price indices and the value of the dollar. Their common sense tells them that as prices rise, a dollar buys less and therefore is worth less. After a brief reminder of what they already know about indices, a student is asked, "If a dollar is worth one dollar when the price index is 100, what is its value when the price index increases to 178?" The following dialogue typically ensues between the (S)tudent and the (T)eacher.

S: "I guess the dollar will be worth less, since prices have gone up."

T: "That's right. But what's the numeric value?"

S: "I'm not sure. Maybe about 22 cents."

T: "That's not the right answer. But I'm sure you know how to work the problem. Want me to prove it?" ("Yes.") "OK, suppose the price index goes from 100 to 200. Prices double. What's the value of the dollar?"

S: "Fifty cents?"

T: "Good! Just common sense, isn't it? Now suppose the index goes from 100 to 300. What's the value of the dollar?"

- S: "Thirty-three cents?"
- T: "Excellent! Just common sense, isn't it? How about 100 to 400?"
- S: "Twenty-five cents."
- T: "You're three for four. You've demonstrated you know how to work the problem. Now, suppose the index increases from 100 to 178. What's the value of the dollar?"
- S: "I'm still not quite sure."
- T: "Your intuition or common sense helped you solve the easy problems, but still fails in the more complex situation. You apparently have a method for working the problem, but you haven't formalized it. The value of the dollar equals 100 divided by the price index. $V=100/P$. The answer is $100/178$ or approximately 56 cents. What can we learn from this? The economic theory in this class merely formalizes and extends your common sense so that you can go beyond simple problems and analyze more complex situations."

CPI and Compounding

Daniel Levy, University of California-Irvine

To check how well students understand the uses of the CPI, ask them these questions:

- a. Compute the inflation rate for the two-year period if you know that the annual inflation rate in the first year was 3% and in the second 5%. (It is greater than 8%.)
- b. If the nominal income rises by 30% and at the same period the inflation rate is also 30%, does this imply that the real income is unchanged? (No!)
- c. "The government announced today that last month, the annual inflation rate was 6%." What was the actual monthly inflation rate last month? (This is important because every month when these figures are published, the media often uses this type of terminology in explaining their meaning.)

Political Economy and the Index Number Problem

Frederick S. Weaver, Hampshire College

You are the Minister of Economics in Stagnacia, a small country in which bread and ale are the only two goods produced and consumed. During your five year term in office, ale production and prices have slightly but steadily increased while the output of bread has slowly and consistently fallen, although the price of bread has not changed. Now that you are running for reelection, you want to show the maximum increase (or minimum decrease) in aggregate production and to minimize the apparent inflation that has occurred while the economy has been under your guidance.

While this goal (and outright falsification not feasible), which year's prices would you choose to calculate the published "real GDP" and which year's output to calculate the published price index?

A Price Index - An Intuitive Interpretation

David Weber, U.S. Coast Guard Academy

I find it helpful to relate the logic behind price indices as measures of changes in economic activity to the question of determining which college football teams should be rated #1, #2, and so on. The different schedules played by the teams and the different conditions under which they played makes such judgments difficult. Similarly, it is difficult to determine the extent to which economic activity, measured by the level of final goods and services produced, changes over time. Because of the difficulty of making such comparisons when production is measured in terms of physical output, there is an obvious advantage to measuring all final outputs in a common denominator such as dollars. But the disadvantage of doing so is that an element of "distortion" is introduced because per unit prices of different goods and services, the bases for conversion to dollar values, are unlikely to remain unchanged over time.

Now, a reasonable way to determine the best college football team (at least conceptually) would be to standardize the opposition (as well as the playing conditions) confronted by each team being compared so that performance differences among them may be related to quality differences among them. Similarly, standardizing prices is the objective and achievement of incorporating a price index into the measurement of economic activity. Because changes in the dollar value of final outputs will reflect, at least in part, changing price levels and not changing production only, a "distortion" is introduced which can be overcome with the help of an appropriate price index. In effect, the use of price index puts the production levels of different years on the same footing, valuing them by the same set of prices so that the "distortion" created by changing prices over time is eliminated. Without pursuing the technicalities of the "index number problem" and related matters, it may be argued that the use of a price index achieves a kind of standardization in terms of which changing levels of economic activity may be compared more accurately.

The Differences Between CPI and the GDP Price Deflator

Paul G. Coldagelli, Penn State University-Delaware Campus

This exercise teaches students the differences between the CPI and the implicit GDP price deflator, revealing how the CPI over-states inflation by failing to account for consumer's substitution of goods, and shows the important distinction between real and nominal GDP.

Consider a small island economy which produces (and consumes only 3 goods: Apples (A), Bananas (B), and Coconuts (C). You have the following price and production information for the last 3 years.

	1991		1992		1993	
	P	Q	P	Q	P	Q
A	\$.30	200	\$.40	250	\$.50	200
B	.25	400	.30	500	.35	500
C	.50	100	.50	160	.50	200

Let 1991 be the "base year" for the CPI and the implicit GDP price deflator (IPD). For calculating the CPI, use the following market basket for an average family: A: 20 B: 40 C: 10

- calculate nominal GDP for each year.
- indicate the percent increase in nominal GDP from
 - 1991 to 1992
 - 1992 to 1993
- calculate real GDP (in 1991 dollars) for each year.
- calculate the IPD for 1992 and 1993. Hint: the nominal GDP, when deflated by the IPD, yields real GDP.
- redo problem (b) using real GDP and compare your answers.
- calculate the CPI for 1992 and 1993. Explain differences in your calculations from those in problem (d).

Hyperinflation Money Samples

Ralph T. Byrns

The problems associated with inflation and hyperinflation can be graphically illustrated to students by obtaining and passing around the classroom actual pieces of currency from the German (1921-1923), Hungarian (1945-1946), Chinese (1946-1949), Russian (1922-1924), or various South American hyperinflations (1910s- present). Postage stamps from such periods have a similar effect.

Actually seeing the large denomination notes contrasted to earlier and smaller notes makes quite an impact on students. You might, for example, show a German one mark note from 1919, indicate that a loaf of bread cost roughly one mark at the end of World War I, and then show a 5 million mark note from 1923, a 2" stack of which was needed to buy a loaf of bread by that time. Currency and stamps can be obtained from coin and stamp dealers. Many large denomination notes have become somewhat expensive, but the effects of such demonstrations on students and their appreciation of the problems surrounding hyperinflation make them worthwhile. (NOTE: *The Hyperinflation Collection* provided to instructors who adopt our texts contains 29 such artifacts from six major hyperinflations.)



Figure 7-1

Why Inflation?

Ralph T. Byrns

Assert that government has the power to eliminate inflation. If students challenge this, offer the possibility that the Federal Reserve System could cut the money supply in half (prove that the FED is the relevant agency by having them peruse bills from their purses or wallets). Most students recognize intuitively that halving the money supply would precipitate an enormous drop in spending. Their familiarity with demand and supply analysis will lead them to conclude that downward pressures on prices would be irresistible. Ask why we have inflation if the government could eliminate it. Some students may come up with the acceptable answer that inflation may be more acceptable than the alternatives. Now assert that we have inflation because we demand it (politically). Why? Cite the traditional reasons: that debtors and government gain from inflation, etc. Point to the late 19th century (1868-95) and the Great Depression (1929-39) as eras when political pressure for inflationary policies were rampant (the Greenback Party, the Free Silverites, the New Deal, etc. You might also cite the pressures for inflationary policies from, e.g., realtors and such White House insiders as Secretary of the Treasury Donald Regan prior to the 1984 presidential election.) Suggest that, at a minimum, this establishes that some people gain from inflation.

Now treat inflation as a zero-sum game and examine the possible winners and losers from income redistribution caused by inflation. Use the following table as a starting point.

Losers

Creditors

Taxpayers

Those whose prices paid rise faster than their incomes

Sellers of futures contracts

People who fail to anticipate inflation

Gainers

Debtors

Government (Bracket Creep and Seignorage)

Those whose incomes rise faster than prices paid

Buyers of futures contracts

Correct forecasters of inflation

The Demand for Inflation*Ralph T. Byrns*

Here is a suggestion for instructors who enjoy counterintuitive lectures to stimulate student thought and discussion. It depends on a view that some people might perceive as outrageous to rationalize the concept that people demand inflationary policies. Specifically, it is the possibility that some (many?) people equate success with achieving numerical goals, and that nominal goals move upwards (or if the desire is for smaller numbers, down) gradually as monetary targets are achieved. That is, we have inflation (or deflation, where appropriate) in many scoring systems because people like big (small) numbers, and policy makers are prone to accommodate these desires. The following evidence can be cited:

- a. Grade Inflation. Students want higher grades. Professors (rule makers) have complied with this want by gradually (all A's would be too flagrant, and people would realize that the game had changed) lowering standards and raising grade averages. In 1965, the median GPAs of graduating seniors were approximately 2.2 on a 4.0 scale; by 1982, median GPAs had reached 2.9+ on a 4.0 scale.
- b. Basketball. The fans' desires for higher scores have led pro basketball to outlaw the zone defense, adopt a 24 second clock, and award 3 points (instead of 2) for baskets scored from over 22' away. Result: even losing teams typically score over 100 points per game. In the college game, a shot clock and a 3-point shot from 20' were introduced during 1986-87 to favor offensive scoring and speed up the game.
- c. Football. Similar desires by fans resulted in numerous rules changes favoring the offense over the defense. Offensive linemen can 'hold' on passing downs; defensive backs are allowed only limited contact with potential pass receivers, etc. Result: offensive statistical records (yardage, passing, etc.) are shattered regularly, and average points scored in professional football games have soared over the decades.

- d. Track and Field Events. Indoor tracks are now 'tuned' with steel springs so that sprinters run faster and faster. (If the boards are too stiff, runners 'cushion' their strides and speeds fall; if the boards are too limber, the 'mushy' feel slows runners down.) Pole vaulting: the poles permissibly used have evolved from bamboo and aluminum to extremely flexible fiber glass, with the permissible amount of flexibility being increased over time. Result: record heights have risen by 5' or so over the past 40 years.
- e. Pinball and Electronic Games. In the early 1950s, winning a bonus pinball game required a score of roughly 100 points on a typical machine. Pinball addicts kept track of record scores. The manufacturers recognized that players wanted higher scores, so the values of bumpers and bonus rollovers were raised, increasing the number of points required to win games, but with little or no change in the difficulty encountered in doing so. Result: winning scores went from 100 to 400 to 1,000 to 10,000 to 100,000 to 1,000,000 to 10 million to 100 million points, in roughly three year increments. The same phenomenon occurred, but even faster, with computerized arcade games; each generation of games has easier scoring possibilities.
- f. Dress Sizes. This is a slightly perverse example. Many women want to wear lower dress sizes, and dressmakers have accommodated them. What was a size 16 in the mid-1950s is now a size 10. More expensive clothes lead the trend towards lower numbers, being 'roomier' for a given nominal size than cheaper clothes. This might seem to be a counterexample, but conforms to the general idea explicated here that numbers do matter, and people's desires for 'better' numbers are accommodated by those who govern what the numbers are.
- g. Income. People commonly measure their success by their incomes. Many want 'to do better' than their parents, or feel cheated and unappreciated if they don't get raises each year. The regulators of this 'income game' (the FED, politicians, etc.) accommodate these desires through inflationary policies. (This motive may help explain why wages appear to be relatively sticky downward and flexible upward.)

Chapter Twenty-Four

Measuring Economic Growth and Performance

Hairy Toes and Housing Starts

Edward D. Lotterman, University of Minnesota-Twin Cities

One of the key tasks for principles students is to learn how important economic parameters such as GDP, inflation, and unemployment are defined and measured and why such measures are important to policy makers and laypeople as well as academics. I have found it helpful to use an analogy that compares these economic variables to the physiological ones a physician might record while examining a patient. GDP is to a nation as height and weight are to a person. The rate of change in the price level bears some similarity to body temperature; interest rates may be compared to blood pressure, and so on. The comparisons may seem a bit farfetched, but they do provide an intuitive understanding of why these economic indicators are measured and recorded. These indicators give government, business, and the general public some idea about what economic actions might be advisable just as key physiological indicators give physicians some basis for actions with regard to their patient's health.

I extend this analogy when I deal with less important indicators such as housing starts. I note that these are not necessarily important in themselves, but are valuable because they serve as proxies for more important factors or because they give advance warning of possible changes in more general economic conditions. Then I tell them about a physical exam I had some time ago. The doctor felt my feet and toes. He said, "Hum that's funny, I just can't find a pulse anywhere in your toes." He felt again and then said, "Well, in any case you have good hair growth on them, so it should be OK." Mystified, I asked my doctor why such minor things as pulse or hair growth on toes were of any interest. It turns out that poor blood circulation is one of the leading indicators of the onset of diabetes, and that deteriorating circulation in the toes is a sign that any good clinician looks for. Not finding a pulse is a sign of possible poor circulation which might warrant further tests, but good hair growth indicates that circulation is not a problem. This simple analogy can be understood by most students and it reinforces the understanding that many variables, while not of overwhelming importance in themselves, can nevertheless be important indicators about the state of other aspects of the economy.

On National Income Accounting

Denny Myers, Oklahoma City Community College

Have your students investigate which country in the world has the highest per capita DPI. You will get many answers, but one should be the island republic of Nauru in the South Pacific. On further investigation the students will learn that it is a one-resource economy based on super-phosphate. DPI is over \$100,000 for a family of four and they generally do not work. One implication of this chapter is that DPI is a fallible, but not unreasonable, measure of welfare. Have the students determine if life today on Nauru is better than, say, 50 years ago. It is certainly arguable.

COMPUTING A PRICE INDEX AND REAL OUTPUT

Knowles R. Parker, Wake Technical College

To better understand a price index or a table comparing current GDP and real GDP, students should have a crack at computing these numbers. The trouble is that when even a hypothetical price level is put up on the board as a starting point, there is only the assurance that at least one student will do the original computations. Nominal students will make a last minute effort to avail themselves of the work accomplished by the one real student. How to individualize? Eureka! Tie such an assignment to the students' social security numbers.

Here's how it works. The price level for a nine year period is unique to every student, because the units digit in each of the three digit numbers representing the price level is the student's social security number. The first two digits are 50_ through 58_ (or really any other sequence). It's arbitrary, but the fifth year can be designated as the base year and given the index value of 100. From this beginning each student must follow the procedure for computing the price index as explained in the most text books.

The table can be extended, using the same data, to figure the inflation rate. By designating an actual or units output of 100 through 108 (or any other sequence), the exercise can include calculations for current output and real output in dollars, using the price index as the deflator.

In the discussion that follows students can refer to their own tables to clearly see that the increase in current output in dollars reflects both the increase in the quantity of goods and services and the price tags put on them.

Such an assignment is quickly graded, and the instructor can harbor a lot less suspicion that he or she is going through a stack of facsimiles!

CREATING AND USING A PRICE DEFLATOR

YEAR	PRICE LEVEL	PRICE INDEX	INFLATION RATE (%)	ACTUAL OUTPUT	CURRENT OUTPUT(\$)	REAL OUTPUT
1	502.....	92.79	2.19	100.....	50200.00	54100.66
2	513.....	94.82	2.73	101.....	51813.00	54643.54
3	527.....	97.41	1.52	102.....	53754.00	55183.25
4	535.....	98.89	1.12	103.....	55105.00	55723.53
5	541	100.00	2.96	104.....	56264.00	56264.00
6	557.....	102.96	1.44	105.....	58485.00	56803.61
7	565.....	104.44	1.06	106.....	59890.00	57343.93
8	571.....	105.55	2.10	107.....	61097.00	57884.41
9	583.....	107.76	108.....	62964.00	58429.84

Table 8-1

Profits in National Income Accounting

Thomas J. Shea, Springfield College

In any national income accounting problem, students invariably confuse the separate terms "undistributed corporate profit," "corporate profits taxes," and "dividends" with the total term "corporate profits before taxes." They will sum two, three or all four terms. Draw the parallel that the breakdown of the three separate terms is similar to the difference between gross earnings and take-home pay. Just as we know that a paycheck before taxes is not indicative of what workers get to keep and that we must use different terms to distinguish them, it is the same with corporate profit before taxes. By asking what happens to paychecks, you get responses about how state taxes, federal taxes, FICA, etc. are taken out and distributed to various agencies, you tell them to imagine that "corporate profits before taxes" is a corporation's paycheck. What happens to it? Some is "distributed" to the government in the form of taxes; i.e. "corporate profits taxes." Some is distributed to the stockholders; i.e. "dividends." Finally there is the part that is left in the corporation; i.e. "undistributed corporate profit." The sum of the parts equals the whole.

Gross Investment minus Depreciation

Lee J. VanScyoc, University of Wisconsin-Oskosh

Students often find it difficult to comprehend why the capital consumption allowance should be subtracted from GDP. I find the following example aids in a simplistic manner to explain why.

Let's assume that on January 1, 1995 the economy has five houses. (Remember that residual housing is a part of investment.) This is shown in column one of Figure 8-1. During the year, house #5 became worn out, or perhaps it burned down. Also, during the year three additional homes were built, (this is shown in column 2). Column 2 shows our gross investment that is the amount of residual houses that were constructed during the year.

Has national welfare increased by three houses compared to the number of homes as of January 1? Column 3 shows that the economy is only 2 houses better-off and not 3 houses. Why only 2 houses and not 3? One of the new houses simply replaced house #5 (the one destroyed by fire), so gross investment (3 houses) minus capital consumption allowance (1 house that burnt) equal net investment (2 houses). Thus, net investment is a better measure of national welfare.

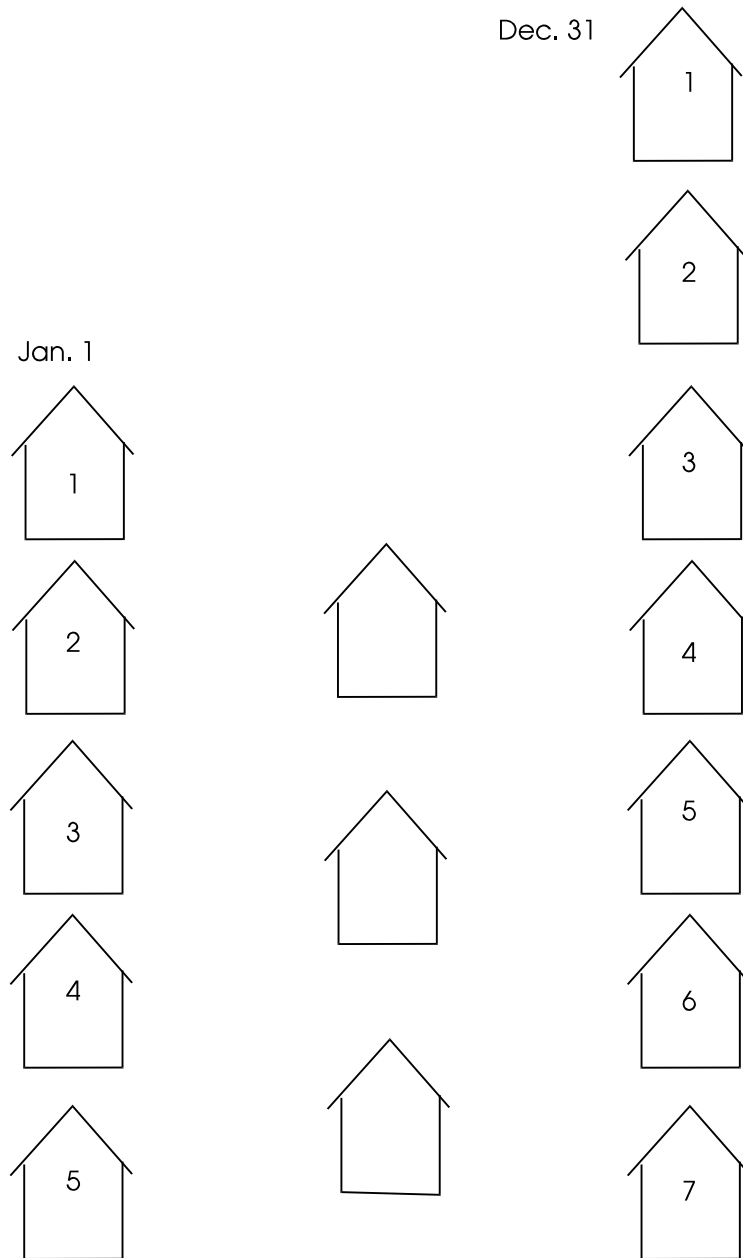


Figure 8-1 Gross Housing Investment after Rapid Depreciation

Why Do We Impute Rent?

David Jones, Pacific University

Suppose that this class represents all U.S. homeowners. (There were over 51 million owner-occupied housing units in the U. S. in 1980.) Last New Year's Eve we had a big party and everyone decided to move next door. That is, I moved into my neighbor's house, she moves into her neighbor's house, who in turn moves into his next-door neighbor's house. And we all begin paying rent. I pay her \$225 per month. She pays him \$450, etc. Clearly there are far more rental payments

in this year than in previous years. (If the average owner-now-renter paid \$350 per month, our income tax forms would show a total of $(12 \times \$350 \times 51 \text{ million}) = \214 billion more in rent than before! After a year we decide that this is a lousy idea and all move back "home". Reported rental income drops precipitously.

Here's the question: Did the rental component of GDP derived via the income approach ($W + R + i + P$, etc.) rise in the one year of craziness? If it did, how was that accounted for in the expenditure measure of GDP ($C + I + G + X - M$)? It must have been caught by C , as consumption of housing services. When we all "move back home" reported rent falls, but does the consumption of housing services? Don't we continue to get the same C out of our houses, just without paying rent to anyone else? It would seem that GDP from the expenditures side has not changed. Its just a question of whether I am consuming the services of my house or my neighbor is. This implies that there would be no difference in the income measure of GDP either. (If you don't change $C + I + G + X - M$, you can't change wage + rent + interest + profit, etc!) The folks at the Department of Commerce account for this apparent paradox by imputing rent to home owner/occupants (i.e., estimating the rental value of all the owner occupied housing and including that in the rental and consumption of components of GDP.

How Do Imported and Used Cars Affect GDP and NNP?

David Jones, Pacific University

Consider an imported car. Where was it produced? Say, Tokyo. It obviously has no impact on U.S. GDP until it is imported, at which time its F.O.B. or value at the U.S. dock (depending on who shipped it) is subtracted from U.S. GDP as an import. That same number, plus any domestic transportation, insurance, etc. is added to GDP as inventory (investment). On the income side, wages, rent, interest, profit, ($W + R + i + P$) etc. rise by domestic value added (the difference between the import price and the inventory value). From this point on, there is no difference between foreign and domestic cars as far as additional value added.

Now let's look at a Detroit machine. When was it produced? If it was built and sold in 1980, it had its major impact back then. But if it's resold this year as a used car, the value added by the used car dealer is in $W + R + i + P$ and as C , consumption of car salesmen's services. But if it's sold by a private individual, this value added element is missed in GDP calculations. Let's look at a car built this year.

After the car is built, as it sits in Detroit or on the dealers lot in Cleveland, it is a part of inventory (investment). Who buys it? No matter who, the mark-up shows up as value added in income ($W + R + i + P$), inventories drop by the dealer's cost of the car and some other component of expenditures (C, I, G or X) goes up by dealer's cost plus mark-up; both income and expenditures go up on net by the dealers mark-up. If someone buys the car for personal use, C goes up by the amount paid for the car. If it's bought by the federal, state or local government, G goes up by that much. Likewise for X if it's exported (no matter who ends up buying it in the other country). If a business buys the car investment (in plant and equipment) rises by the car's cost to the buyer and

investment (in the car dealer's inventory) falls by the dealer's cost. The net change in the investment is the value added by the dealer.

We've already dealt with resale of a used car. But there is one other way that this car can affect future national income and product accounts: Depreciation. If the car was exported, it's gone. If it was bought by a consumer, its not used in the production of future goods and services (in the eyes of Department of Commerce), so it's not depreciated. Even if the government bought it and used it to taxi VIP's around, it's not considered to be additionally productive (maybe Commerce is right!) and it's not depreciated. Only if a business owns the car (say, a taxi company) does it affect future national and product accounts, by lowering NNP relative to GDP due to its depreciation.

Limitations of Measured GDP

Ralph T. Byrns

Students seem to enjoy discussing the limitations of GDP estimates. Be sure to point out that errors in GDP accounts can lead to improper policy making (just as business decision makers faced with bad information about costs, sales, profits, etc., will make poor decisions.) Then ask your students why the rental value of owner occupied housing is included in GDP, and how accurate they think these figures are. List several types of data, and ask them to rank it for accuracy. E.g.:

- a. Value-added sales data from General Motors.
- b. Tips reported by waiters and waitresses.
- c. Wages earned by government employees.
- d. Values of food grown and consumed on the farm.
- e. Gross sales from home repair firms.
- f. Sales people's incomes after adjusting for business expenses.

Many students will conclude that the data are so erroneous that GDP measures are a waste of time. Remind them (from Chapter 5) that the bulk of reported production and sales in this country are channeled through giant corporations that are closely scrutinized by the IRS. Suggest that this implies that either: (a) the dominance of giant corporations in the U.S. economy is substantially overstated, or (b) that the bulk of data used in GDP calculations are reasonably accurate. Ask your students which of these positions they believe to be correct. (Frankly, we do not have a good answer ourselves.)

In a similar vein, students are very interested in the Underground Economy. Ask students if they know people who fail to report all of their income to the IRS, or who overstate their personal deductions and business expenses. This almost always generates a lively class discussion.

A different ploy is to ask students how many have had a course in statistics. After a show of hands, discuss the standard statistical assumption that measurement errors are off-setting (normally distributed). Then ask the class whether they believe that reported incomes are as frequently overstated as they are understated. Students quickly see the point, and its implications for national income accounting.

Emphasizing the Concept of GDP

Ralph T. Byrns

Students should be able to distinguish between conceptual GDP (the total value of annual production) and published estimates of GDP, which are severely limited by data availability. If you shine your own shoes, for example, this adds to conceptual GDP, but not to measured GDP. You might relate the old tale about the man who marries his maid and, thus, reduces measured (but not conceptual) GDP.

Many students do not understand why imports are subtracted from exports. (ANSWER: Because imported goods are included in consumption, investment, and government purchases.) Challenge students to think of any other groupings of buyers. Ask them to explain why transfer payments are not included in government purchases. (ANSWER: Nothing must be produced by welfare recipients for them to receive these payments. This is not the case for consumer or investor transactions, nor for government purchases. For these transactions, there is always *quid pro quo*.) We find that emphasizing the concepts by raising such questions is more effective in developing student understanding than is spending a lot of class time on accounting examples.

Chapter Twenty-Five

Classical Macroeconomics and Keynesian Aggregate Expenditures

Classical Macroeconomics

Bozoian Economics - Explaining Say's Law

Philip J. McLewin, Ramapo College of New Jersey

Explain Say's Law and point out its implications that a capitalist market society is inherently stable at full employment -- when shocked it will automatically recover. At this stage draw a Bozo figure on the blackboard, the type with a weighted bottom used as a punching bag by young children.

Students already know what happens when Bozo is hit; after a period of adjustment rocking back and forth it fully recovers in the original upright position. It doesn't take much to realize that when the economy is "shocked" with a blow, it also recovers by itself. What gravity is to Bozo's recovery, flexible prices are to the market economy.

As you develop the Classical AD/AS framework, draw a Bozo around the AS curve. The upright Bozo is perfect to help explain why the AS function is vertical.

One Christmas my son gave me a Bozo. Economics seems less stuffy when you walk around campus with a big yellow Bozo in tow, and call yourself a specialist in Bozoian Economics.

A Simple Classical Model

Frank Whitesell, University of Southern Mississippi

Typically, a student's first introduction to macro-theory is through the classical model, beginning with Say's Law. I have found that students have a very difficult time learning to think in macro terms. The following example helps in getting started.

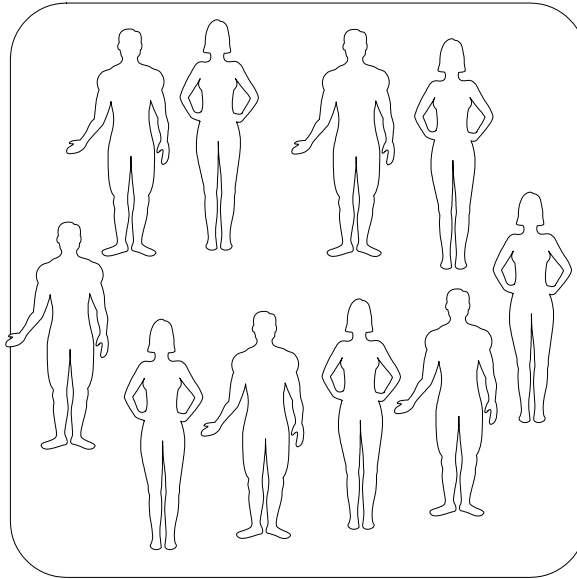


Figure 9-1

Imagine a closed economy consisting of ten people. Each is producing \$10,000 worth of consumer goods or services. (You may want to give a few specific examples of occupations here.) Total production is \$100,000 worth of goods. But how can we be sure that these people can sell all of the goods they are producing? There must be \$100,000 in total spending. This, of course, results from each person's receiving \$10,000 in income and spending all of it. This is basically what Say's Law assumes will happen. If everything works neatly, total demand will equal total production, and everyone will be fully employed.

Now ask your students what problem could arise in this economy. Most of them will quickly see that there will be a problem if people save part of their incomes. For example, if everyone saves 10%, only \$90,000 will be spent and someone will be out of a job.

Now you need to explain the difference between saving and investment. This distinction is always confusing at first, because these words are often used interchangeably in everyday conversation. Then, with investment considered as another type of spending, you can show how full-employment equilibrium is assured in the classical model by a flexible interest rate that equates saving and investment.

In the picture, now designate one of the people as a producer of capital goods. Now you have the supply side:

Production of consumer goods		
(9 people x \$10,000)	=	\$ 90,000
Production of capital goods		
(1 person x \$10,000)	=	<u>\$ 10,000</u>
Total output, or supply	=	\$100,000

On the demand side:

Spending for consumer goods (10 people x \$9,000)	=	\$ 90,000
Saved, and channeled into investment spending (10 people x \$1,000)	=	<u>\$ 10,000</u>
Total spending, or demand	=	\$100,000

Everyone is selling exactly what he or she produces, and the economy is still in equilibrium at full employment.

You may even take the opportunity here to look ahead and suggest how modern Keynesian theory denies the simple saving = investment linkage and therefore comes to quite different conclusions about the operation of our modern economy.

Wages and Prices During 1929-33

Ralph T. Byrns

This is a good place to point out that the price level fell by roughly one third during 1929-33, while average wages only fell by roughly one fourth. Suggest to students that this is a classical explanation for the decline in employment during this period, and ask if this implies that most of the unemployed could have secured jobs by taking wage cuts that were equal to the average of price cuts during this period. If so, does this mean that those who were without jobs were voluntarily unemployed?

Suggest that the classical wage-bargaining mechanism may not be very smooth, with violence often being meted out to firms that insist on wage cuts (arson, sabotage, the Pullman Strike) and to individual workers who are willing to accept wage cuts so that others will be laid off--mayhem, broken legs, etc.) Student opinion will typically range widely about how much violence or the potential for terrible employee morale might make wages sticky downwards.

Robinson Crusoe, Keynes, and the Classics

Jim M. Cox, University of Alabama at Birmingham

When contrasting the Classical and Keynesian views on the macro-economy I always have occasion to make the point that whereas Classics held that savings was equal to investment, Keynes believed the two were not necessarily equal. I ask the questions: Which might be greater, savings or investment? In the majority of cases the answer immediately comes back "investment!" This answer is based on the idea of borrowing money to finance investments. In order to deter this

mistaken answer, I have instead begun to urge the students to first analyze the question in the setting of Crusoe alone on an island.

The Crusoe setting isolates the essentials--there's no money, no other people, and no credit cards to complicate the essential issue. With the Crusoe approach my students have routinely concluded that it is savings which can be greater than investment. The example I typically give after getting the correct answer from the students is that of Crusoe producing 5 apples today and saving 2, obviously the 2 do not have to be invested in the form of seeds for a future tree and future apples, therefore savings can be greater than investments.

The Crusoe approach has been helpful in analyzing other situations as well, such as deriving the law of diminishing marginal utility, illustrating opportunity costs, explaining roundabout production and (with Friday brought onto the island) the nature of exchange and the law of comparative advantage.

Keynes and the Classics: Using History

By Thomas J. Shea, Springfield College

It is very difficult to keep student interest in the classical school of thought for two reasons. First they feel that something so long ago is outdated and irrelevant and second, the assumptions of the classical model that Keynes tears down seem too unrealistic when compared to "modern" thought.

I attempt to handle this cynicism by reiterating the distinction between long run and short run. It is very important to note that the classical economists were attempting to explain the long run effects of a "free enterprise" market economy model. They were aware of short run problems but feared that amelioration those problems would lead to even greater difficulties in the long run. As a matter of fact, the classical school is still the benchmark we must return to when we teach contemporary criticism of Keynesian thought. Many of the concepts of "modern" monetarism, supply side economics, rational expectations and the like can find their intellectual ancestors in classical thought.

At the same time, it is important to use the classical school as Keynes' "whipping boy" during the time he was writing. The great depression cried out for a solution and Keynes' maxim of "in the long run we're all dead" was the rallying cry for the beginnings of massive government intervention into the marketplace. Students are woefully ignorant of these times and the incredibly important shift in emphasis in economic thinking that came out of this period. It can be made exciting viewed in this historical framework, just as more recent struggles with inflation, the Vietnam war and budget deficits are in our discussion of post-Keynesian economic theory.

Finally, many of the economic arguments that students read about in newspapers and news magazines lead them to accept the old saw that "if you lined up all the economists in the world from end to end they would not reach a conclusion." Consideration of Keynes and the Classics will lead them to the idea that it is not economists disagreeing but that the opponents are arguing short run vs. long run "solutions" to an economic problem.

Classical See-Saws and Keynesian Elevators

Erick Lee Erickson, Metropolitan State College-Denver

Classical faith in the concept of full employment equilibrium can be likened to a seesaw between saving and investment. Keynesian theory can be compared to an elevator, driven by investment alone.

Classical economists explained business cycles as largely reflecting temporary imbalances between the actions of thrifty savers and enterprising investors. Full employment depended on equality between saving and investment, for if saving was not invested, it would be frozen out of the spending flow. But interest flexibility would automatically balance saving with investment. The classical model can be likened to a seesaw hinged on a full employment equilibrium. Saving in excess of investment might pull the economy down, but recovery is automatic because excess saving pushes interest rates down, stimulating investment spending so that this market clears. The economy might temporarily inflate if saving were inadequate to satisfy investors' demands, but shortages of investable funds would bring about higher interest rates and dampen investment. Any inflation or recession must therefore be temporary.

Note the "seesaw cross" between saving and investment in Panel A of Figure 9-2, which illustrates a classical view of the loanable funds market. This seesaw yields the tendency for the economy to equilibrate in a stabilizing fashion towards full employment GDP, as shown in Panel B of Figure 9-2.

Keynesian economists view the loanable funds market in a drastically different way, holding that saving is far more influenced by income than by interest rates. (Keynes was personally skeptical that interest rates had any influence on saving.) During a recession, saving dries up because income plummets, and there is feeble pressure, at most, to invest. The question of boom or bust depends on the health of the enterprise, not thrift. This model of the economy, reflected in Figure 9-3, can be likened to an elevator, capable of stopping on any floor and remaining dormant until the right buttons are pushed. (Suggest that the vertical saving function in Panel A is like an elevator shaft.) Full employment may require a level of investment (or other autonomous spending) that may not be generated in the loanable funds market, leaving the economy to stagnate as shown in Panel B of Figure 9-3. Unemployment that occurs because of this depressed GDP will not automatically go away.

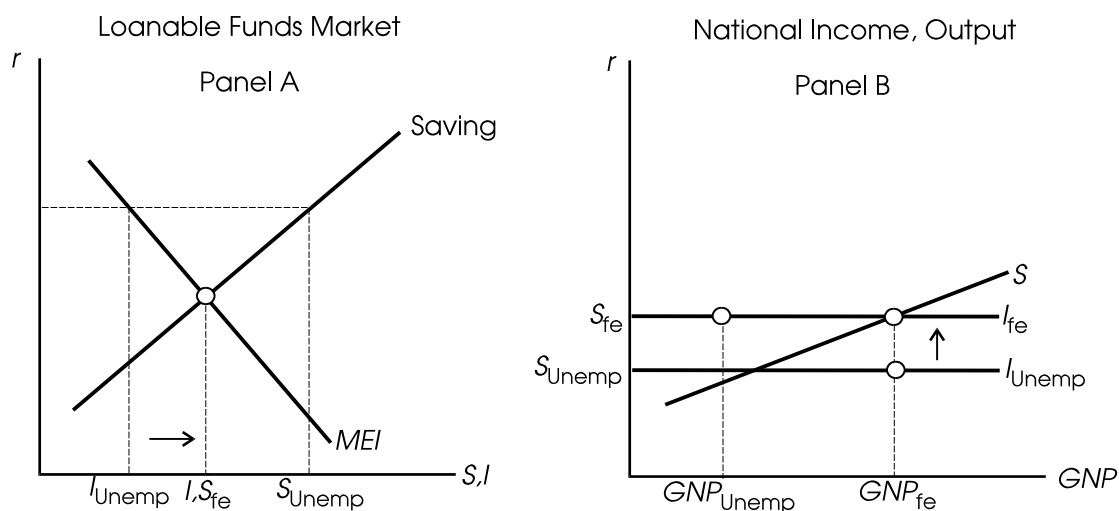


Figure 9-2 Classical Saving/Investment Seesaws

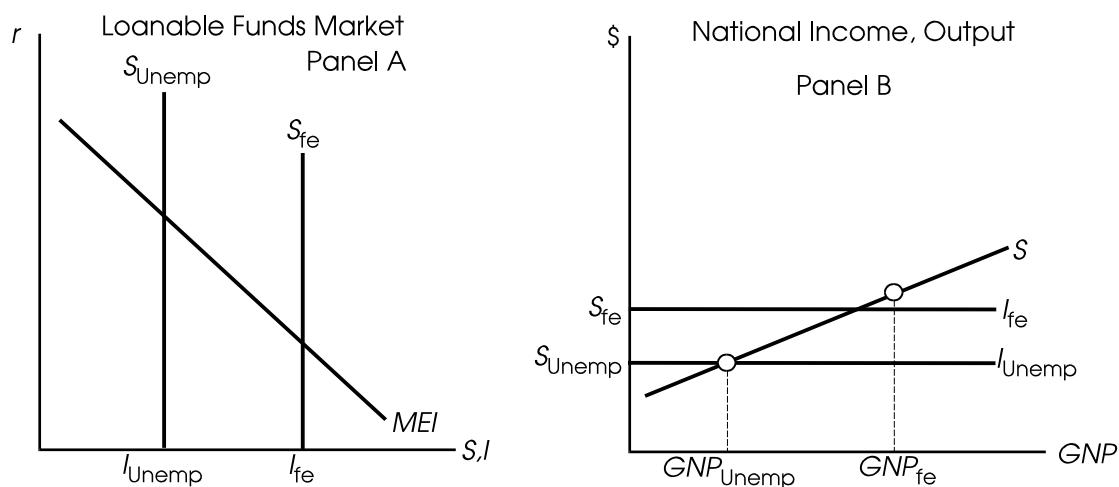


Figure 9-3 The Keynesian Elevator

Classical Saving-Investment-Production Linkages

Joseph Williams, Itawamba Junior College

This example emphasizes the importance of saving/investment to production, using a simplified farming operation.

Farmer Brown has one bushel of corn left over from last year, and so has one bushel to use as seed to plant for this year. Had he ground up that last bushel, baked it, and eaten it, he would

have had no seed to plant for this year's crop. He then would have no more corn to eat, to feed his animals, or to sell. He would have nothing for the future. Farmer Brown had to save that bushel for planting.

Now, he can plant that bushel of corn and harvest many more bushels this year. Farmer Brown knew that saving a little now can provide him with a lot more later on. Investment goes along with saving. Investment is the using of saved goods in order to make more goods for the future. Farmer Brown invested when he planted that saved bushel of corn so that he could harvest more corn later. Saving makes it possible for investment to occur.

Through saving and investment, Farmer Brown can have even more corn. Let's assume that he harvests 20 bushels this year. If he gives 2 bushels to his farm animals, eats 5 bushels, and sells 12 bushels, he then has 1 bushel left. He could save that bushel and plant it next year, harvesting 20 bushels again. His production provides him with something to save. Saving is possible only when not all income is consumed.

He realizes that 1 bushel saved this year will provide for 20 bushels next year; but if he saves 2 bushels this year, he might harvest 40 bushels next year. Then he could have more corn to eat, to feed his animals, and to sell. By increasing his investment, Farmer Brown can produce more goods and increase his economic well-being.

A nation's production of goods and services must increase if its people are to enjoy a higher standard of living. This increase in production requires more investment. However, this additional investment will require more savings. Just as Farmer Brown tried to save the second bushel of corn, so must an economy try to save more of its present output in order to provide for more future investment and economic growth.

The Importance of Classical Macro

Ralph T. Byrns

We emphasize classical (pre-Keynesian) theory for a couple of reasons. One is that it sets the stage for Keynesian analysis and explains the laissez faire approach to macroeconomic policy prior to the 1930s. Another is that classical theory has been modified and restated in the theories of efficient markets and rational expectations, and in the works of modern supply-siders. These recent innovations in macroeconomic theory are treated later in the text, but a thorough exposition of classical analysis is an important foundation for student understanding of them. NOTE: we use the term classical to refer to most of economic theory prior to Keynes, including early approaches to the quantity theory of money (Chapter 14). The term 'neoclassical' may seem more appropriate, but it raises a number of issues (e.g., If this is neoclassical, then what was classical?) that waste class time. Thus, we use the 'classical' label that Keynes used to refer to earlier thought.

Classical Economics and Homeostasis

Ralph T. Byrns

The suggestion in the text that classical economics relies on automatic adjustments that are analogous to biological processes called homeostasis (e.g., fevers or chattering teeth to regulate temperature) is one that students enjoy discussing, especially since many will have recently taken a biology course. Ask your students for examples of homeostasis other than those offered in the text. NOTE: A colleague has suggested that this example has an Austrian flavor because Austrians view the economy as an adaptive organism rather than as a repetitive machine based on principles drawn from physics, which is the basis for much of traditional classical modeling (marginalism). Nevertheless, this analogy works well for students, and is worth elaborating.

Involuntary Student Unemployment?

Ralph T. Byrns

One useful classroom technique is to ask students if any of them have ever been involuntarily unemployed. If some respond in the affirmative, ask if they would have been willing to work for the minimum legal wage. If they say "no", see if they will admit that they could easily have found a job at \$3.35 per hour, or whatever, in which case they were voluntarily unemployed. If they were willing to take a minimum wage job, ask if they would have worked for, say \$1.00 per hour had it been legal to do so. If the answer is yes, then suggest that a law kept them from working, not the market system. The more persuasively you use a classical line of reasoning with your students, the better they will understand the power of classical argument.

Money and the Price Level as "Veils"

Ralph T. Byrns

Introduce students to the classical notion that all 'real' behavior is homogeneous of degree zero in money prices (but don't use this terminology). You can do this by asking if their work or spending patterns, etc., would change if we used e.g., euros, yen, pesos, or rubles instead of dollars. Most will intuitively say that this would not affect their behavior. Now ask if the time, wear and tear on the car, gasoline, etc. used to drive from your town to, say, Los Angeles, would be affected if current measurements (gallons and miles) were converted to a metric system (liters and kilometers.) Again, the common response will be negative. Then ask if their behavior would be altered if all prices, including wages, were raised (or lowered) by 10 percent. 20 percent? 100 percent? In all cases, the answer will probably be no, especially from students who fancy themselves ultrarational. Point out that their behavior is consistent with the interpretation of a classical Aggregate Supply curve, as shown in our parallel text chapter.

An interesting diversion is to ask why, if units of measure do not matter, most people change the hours they awaken, eat, and go to school or work when governmental edict moves us from standard time to daylight-saving time or vice versa. If people are ultrarational about

numeraires, they should reset their clocks but then move their activities up or back one nominal hour to correct for this 'new' system of time measurement.

Keynesian Aggregate Expenditures

$$C + I + G + (X - M)$$

Consumption, Saving and the Invasion of the Killer Bees

Holley Ulbrich, Clemson University

Students have trouble with the constant term in the consumption function--especially the vertical intercept, which seems to indicate that consumption goes on even when income and output are zero.

I point out that it is easy for an individual to consume by dissaving -- drawing on past savings, or borrowing against future saving. But how do we do it collectively? I remind them of some of the horror movies they have seen such as *Invasion of the Killer Bees*. Fleeing from disaster, there is no time to produce; income and output temporarily fall to zero. Instead, we see people looting the stores for food, a graphic example of dissaving by drawing down on accumulated inventories. In longer term disasters, they pillage buildings for materials and wear out their capital rapidly without replacing. Bread and circuses in the late Roman empire were made possible by letting the society's rich stock of physical capital, buildings, roads and aqueducts, be used and allowing capital to wear out without replacement. They were eating their capital, or dissaving.

Student Dissaving

Ralph T. Byrns

Students enjoy discussions of dissaving because so many of them are financing their college educations by borrowing or by drawing down past savings. You can introduce this point by asking if any student has a zero income. Several will normally answer that this is their situation. Ask one of them if he or she is spending any money this year. After the affirmative answer, illustrate this person's situation on the board, showing positive autonomous spending at zero income. Use realistic numbers while you are doing this. Query the student about the source of spent funds. This yields a discussion of sources for dissaving. Then ask if the student would continue to dissave as much if he or she was awarded an additional \$1,000 as a scholarship. A little discussion should enable arrival at an estimate of this person's MPC. If you assume that this MPC is constant, you can draw a linear Keynesian consumption function. You might suggest the possibility that the MPC diminishes slightly as people achieve ever higher incomes. Discuss this with the class as you graphically illustrate a nonlinear Keynesian consumption function. Then indicate that to simplify the analysis (per Occam's razor), you will use the linear function as you build a full Keynesian cross model.

Distinguishing the MPC from the APC

Michael Kuehlwein, Pomona College

After introducing the concept of the marginal propensity to consume and relating it to the slope of the consumption function, I like to test the class on how well they understand the concept. So I tell them there is a hypothetical economy in the world where C is \$400 million and DI is \$500 million. I then ask them what the MPC is in this economy.

Someone usually suggests .8. To explain why this is wrong, I show them that all you have is one point on our consumption function and you can draw many different lines with different slopes through that point:

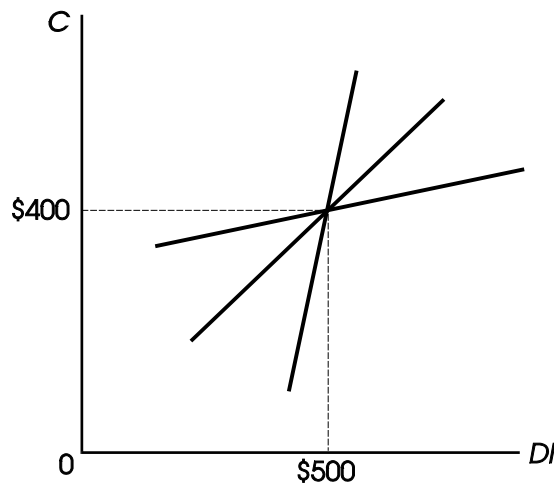


Figure 9-4

So we need at least two points to pin down the slope and MPC. We can, however, determine that the average propensity to consume in this economy is .8. For that all we need is one point reflecting total consumption and income.

The Circular Flow As A Teaching Device

Robert Scott Gassler, Vesalius College of the VUB

My only experience as a teaching assistant was with a professor who had me grade 125 assignments on the circular flow diagram. Perhaps that gave me a psychological need to justify my work, but in any event I started thinking about the meaning of such diagrams. A seminar paper on network theory written earlier for Kenneth Boulding gave me an appreciation for the logic and richness of circular flow and similar diagrams. My experience has been that expanded circular flow diagrams helps students connect a large amount of macroeconomic information that otherwise seems fragmentary and disjointed.

The Problem: Every principles textbook has at least one circular-flow diagram (usually in an introductory chapter or early chapter on macroeconomics), at least a few pages on the national income accounts (with a table indicating how to go from GDP to personal income in several easy steps), and a section devoted to the development of the Keynesian cross. Some texts also try to distinguish behavioral relations from equilibrium conditions. These topics often appear to students as unrelated to each other or to much else.

The Solution: The first year I taught macro principles on my own I bit the bullet and designed my own circular-flow diagram, as shown in Figure 9-5. Note that the four sectors of the economy and the Rest-of-World "sector" are in boxes and the lines connecting them are flows of income; flows of goods are suppressed for simplicity. The whole diagram can be drawn upside down, but make sure that the Firms and Households boxes are on the outside (not counting Rest-of-World). Using the term "Treasuries" instead of "Government" stresses that other parts of the government show up elsewhere, e.g., the Postal Service is in the Firms box and the FED is in the Banks box.

As an exercise, ask the class to fill in the labels for the lines. (Someone will always get the X and M mixed up; that gives you an excuse to explain that these are flows of income, not goods and services.) For "investment," use fixed investment, which includes both net and replacement investment. Make sure you separate out the change in inventories.

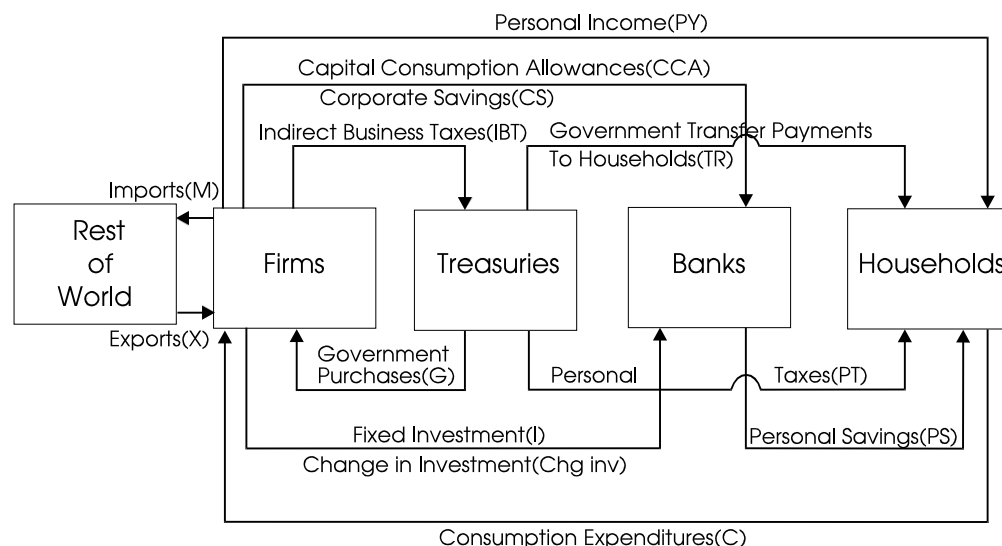


Figure 9-5

Then explain that classical macroeconomics talked only about the outer ring (again not counting Rest-of-World); here Say's Law looks trivial. Now explain that one of Keynes' contributions was to emphasize the roles of the two inner boxes and point out that the pipelines to and from the banks box could get clogged. The only way for the government to unclog the system (assuming that the Bank of England would not do what Keynes thought it should) is to run a deficit, thus adding to the flow what the banking sector took away. Thus, a circular flow diagram can be used to highlight a central point for policy of the Keynesian Revolution. Now explain that the circular flow can be measured at any point and, if we remember to make the right adjustments, the number we get will be consistent with whatever we get by measuring it anywhere else in this diagram. Point to the lower left corner, the upper right corner, and the lower right corner. They are, respectively, the Gross Domestic Product, National Income by source, and National Income by disposition. It is now easy to see why we need to subtract some things from GDP to get national income.

Next point out that (according to network theory) the basic principle for each box is that what goes in equals what goes out, and that according to accounting principles there will always be a term for each box that will take up the slack, e.g., "Deficit" should be a term placed right beside "Taxes" on the arrow going into the Treasuries box. Point out the Change in Inventories term as the most important of these.

Take the Firms box and add the terms going in and equate them to the ones going out:

$$C + I + G + X + (\text{chg inv}) = PY + CCA + CS + IBT + M$$

By convention we subtract M from each side to get:

$$C + I + G + (X-M) + (\text{chg inv}) = PY + CCA + CS + IBT$$

The first four terms are aggregate expenditure and the whole thing is GDP as measured in the national income accounts. Now do the same for the Households box:

$$PY + TR = C + PS + PT$$

$$\text{or, } PY = C + PS + PT - TR$$

(By this time even the students with acute math anxiety will be reasonably sure that you will not be going over their heads.)

Now substitute for PY in the second equation for firms above:

$$C + I + G + (X-M) + (\text{chg inv}) = C + PS + PT - TR + CCA + CS + IBT$$

Rearranging:

$$C + I + G + (X-M) + (\text{chg inv}) = C + (PS+CCA+CS) + (PT+IBT-TR)$$

$$\text{or: } C + I + G + (X-M) + (\text{chg inv}) = C + S + T$$

which is the usual formulation of the national-income identity.

Now you can graph it (see Figure 9-6). We separate out the part of GDP that is the result of people's deliberate decisions and get:

$$AE = C + I + G + (X-M)$$

We also acknowledge that income can be disposed of in only three ways, by consuming it, saving it, or getting taxed on it:

$$Y = C + S + T,$$

which is the equation for the 45-degree line. This is the best explanation I have for what a 45-degree line is doing in the middle of an economic model. The distance between them, of course, is the change in inventories.

In one stroke you now have an explanation for the old question of how GDP is always an identity as well as a behavioral description, and you have plausibly set up a Keynesian model. Now the explanation of equilibrium and the behavior of the system out of equilibrium is a piece of cake (pie?).

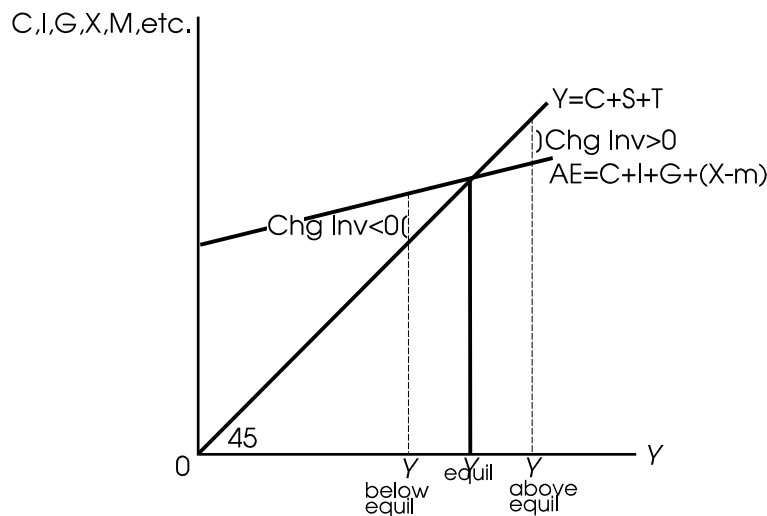


Figure 9-6

All of the major NIPA components are in the diagram and, with some simplifying but harmless assumptions, you can explain where others fit. For example, G includes salaries of government workers if we assume that each worker is her or her own firm selling services to the government. Exports and imports go out from the Firms box because we usually buy goods from

firms that import them. And so forth. The chances are slim that questions like these will come up and slimmer that students will find the explanations as contrived or implausible.

Conclusion: An expanded circular-flow diagram can help in explaining relationships between: (1) national-income accounts and the Keynesian cross, (2) GDP and personal income, and (3) classical and Keynesian analysis. It also provides insights into: (4) the significance of the Keynesian Revolution, and (5) the difference between "behavioral relations" and "equilibrium conditions."

When I first tried this approach, it was well received. The next semester I was behind schedule and initially omitted it. Two days into the macro section of the course, students began complaining that they were not sure what all this was about and would I please explain why we were doing this. I gave my expanded circular-flow session at that point, and the students said they were satisfied.

Permanent Income and Windfalls

Michael Kuehlwein, Pomona College

An implication of the permanent income hypothesis is that temporary changes in income should have little effect on current consumption. The illustration I like to use comes from an 1989 article in the *Wall Street Journal* about how the residents of Winston-Salem, North Carolina, enjoyed an unexpected windfall that year. Many of them worked for RJR Nabisco and owned stock in the company. When Kohlberg, Kravis, and Roberts bought the company for about \$25 billion, they paid shareholders a substantial premium for their shares (roughly double the old price). For many stockholders, it was almost like winning the lottery. But consumer spending did not significantly increase. "I hear a lot about this money that's out there, but we haven't seen people coming in to buy things that they might not ordinarily buy," said one store manager. This sentiment was echoed by many other local merchants. So we are able to get into a discussion of why spending did not rise commensurately with income this year.

Interestingly enough, the one business reported to be flourishing was the local Cadillac dealer, who nearly doubled his monthly sales: "We're tickled to death." I've been eating steak and lobster each night." That then leads to a discussion of how purchases of consumer durables such as cars go on to the distinction between consumption expenditures and actual consumption.

The Permanent Income Hypothesis

Philip Lesser, University of Redlands

To illustrate that current consumption is a function of future as well as past and present income, I ask my class to imagine a university where the students are very car conscious. (That usually is not very hard for them to do!) I then contend that medical students will, on the average, have more and better cars than philosophy students at this university with equal endowments of assets, present incomes and desires for cars. It stands to reason, I continue, since medical students would be more

willing to deplete their savings and/or borrow today because they anticipate greater future income than their counterparts in the philosophy department.

Life Cycles and Permanent Income

Ralph T. Byrns

We hint at the permanent income hypothesis in principles courses, detailing it in more advanced courses. A possible enrichment for your class is to discuss this theory using a graph like Figure 9-7. Discuss some reasons for the dissaving common among very young or very old families (respectively, accumulation of housing, consumer durables, educations, etc., and spending out of funds previously saved for retirement); then discuss the saving common during the middle years of families' income streams (funds for retirement, children's college tuitions, etc.) This usually persuades students that the income/consumption/saving pattern shown is reasonable.

You can now ask if a person who inherits \$50,000 dollars this year is as likely to spend most of it as someone who receives a \$50,000 hike in annual pay. Spend a few moments to explain why not, and how this fits into the permanent income hypothesis. Later, when discussing Chapter 27, you may want to address the implications of this hypothesis for the effectiveness of fiscal policy in stimulating consumption spending via Keynesian multiplier processes.

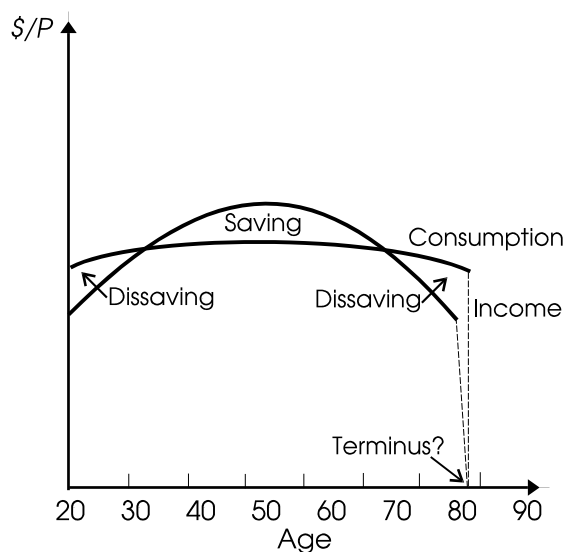


Figure 9-7

Expectations of Unemployment

Ralph T. Byrns

One extension of the text's discussion of the effects of expectations on consumption and saving is to raise the issue of expectations of disemployment. Describe how and why expectations of

unemployment may cause a family to save more and spend less. This prepares students for the discussion in the next chapter of the paradox of thrift and other Keynesian concepts.

Rationalizing Investment Schedules

Ralph T. Byrns

Many students (especially those who are derelict about assigned readings) will argue that investment is positively related to the interest rate. This view emerges from failure to distinguish between financial investments (which can be viewed as mechanisms for saving) and economic investment. Review the differences between financial and economic investment (described in Chapter 1) to clarify these concepts for students.

Even some conscientious students have difficulty understanding why the rate of return falls when the level of investment rises. You can offer the intuitive argument that everyone knows about a few highly profitable investments and if these are undertaken, then only somewhat less profitable investments remain. After these have been made, still less profitable investments remain. And so on. A slightly more rigorous discussion appeals to the general law of diminishing returns mentioned in Chapter 2 of our text. You need to emphasize that net investment increases the capital stock.

Savings as a Function of the Interest Rate

James A. Kurre, The Penn State University - Erie

Students sometimes are puzzled at the idea in the loanable funds theory of interest rates that savings should depend on the rate of interest. To illustrate the feasibility of the idea, I ask them to consider the hypothetical case in which we meet in the college cafeteria. I'm hungry but broke, and ask for an overnight loan. The student is also hungry, but has only \$2 in his pocket. Normally, he would consume the whole \$2 at lunch. However, I can bribe him into not consuming some of his funds by offering to pay him interest with the return of principal tomorrow. I then go through increasing amounts to be paid tomorrow (\$1.10, \$1.25, \$1.50, \$2.00, \$3.00...) and point out that at some level of interest, he'd be willing to give up one of his two dollars today and go hungry. I then point out that this student has an upward-sloping saving (supply of loanable funds) curve, just as the loanable funds theory suggests.

The Endogeneity of Foreign Trade Balances and Government Outlays

Ralph T. Byrns

While discussing the foreign sector, you might differentiate between balances of trade and payments. Discuss the marginal propensities to export (negligible) and import ($MPM = \text{roughly } MPC \times M/C$). Point out that the positive MPM causes rising income to drive a country towards

deficits in both trade and payment balances, but that this will be ignored for now to help simplify the analysis.

Similarly, you may discuss the tendency of government purchases to grow when income grows if public goods are income elastic. (Discuss Wagner's Law if you think this will help.) If you also mention that transfer payments tend to fall as income rises, and why, this will help prepare students for the discussion of built-in stabilizers presented in Chapter 27. Finally, you should again emphasize that all forms of spending other than consumption are treated as strictly autonomous only for reasons of simplification.

Chapter Twenty-Six

Macroeconomic Equilibrium

Illustrating the Saving-Investment Linkage

Roger M. Clites, Clarke College

Many students are baffled by the idea that when investment exceeds saving, national income will rise; when investment is less than saving, national income will fall, and that only when investment equals saving will national income be in equilibrium. To give them an alternative view of the concept I have tied the equations $Y = C + S$ and $Y = C + I$ together for consecutive time periods.

First I write on the board $Y(1) = S + C$ and point out that when people receive the national income from businesses they save some of it and spend most of it. Then I point out that the C portion spent out of the first of two consecutive time periods becomes part of the monies received by businesses to be paid out as national income during the next time period. I write on the board $C + I = Y(2)$. Then, after pointing out that the C figure is the same in both of the equations I connect them as shown.

$$Y(1) = S + \begin{array}{|c|} \hline C \\ \hline C \\ \hline \end{array} + I = Y(2)$$

I then draw a box around the C s and point out that the relative size of I vs. S determines the relative size of $Y(2)$ to $Y(1)$.

Dynamic Multiplier: A "Pebble In Pond" Analogy

V. C. Kharadia, Northwest Missouri State University

Economics instructors must try to get several important points across in lectures on the dynamic multiplier process: (a) how an economy in equilibrium is disturbed by an exogenous force, (b) the timing of the multiplier process with its infinite number of multiplier rounds and linkages, where most of the multiplier effects are realized in the earlier rounds, and (c) how the multiplier process gradually peters out. Most freshmen find these concepts difficult, and tend to be unimpressed by mathematical equations!

To make it easier for my students to mentally visualize and more fully comprehend with a lasting impression the dynamic working of the multiplier process, I use an analogy of throwing a pebble (an exogenous force like autonomous investment) into a tranquil pond (an economy in equilibrium). Then, the students can imagine how the ripples (the multiplier rounds and the linkage effects) form, multiply into an infinite number, but gradually peter out. Like the ripples in a pond, the multiplier process creates a pervasive, but gradually diminishing economic impact. When the force of the pebble striking the water equals the shock absorbed by the pond in the form of ripples generated, the pond's tranquility is restored. Likewise, when investment injections equal the shock-absorbing saving leakages from the economic ripples of spending and income creation, the economy absorbs the exogenous shock and achieves a new equilibrium.

Explaining the Investment Multiplier

Kishore Kulkarni, Metropolitan State College - Denver

In explaining the investment multiplier idea of Keynesian economics, I always initially define real investment as an expenditure on buying machinery, tool and equipment, or construction activities, or increase in the stock of inventories. By taking an example of construction activity in a city, I emphasize the income generated for a group of individuals responsible for the construction, and call it X. Group X therefore consists of plumbers, electricians, landscapers, etc. When these people receive income, National Income (or GDP) also increases by the value of the building, say \$100 million. Depending upon the value of marginal propensity to consume, the recipients of this income would consume a part of it on their favorite activity. Let us say group X has a favorite activity of drinking beer. Then their consumption becomes income of the bar owners, and the National Income (or GDP) in the second round goes up further. If we assume marginal propensity to consume to be .5, then group X would consume \$50 million and save the rest.

The process of further income generation continues as the bar owners consume a part of \$50 million. We are concentrating on equilibrium GDP changes, at the end of the process, GDP has to increase by several amounts like $100 + 50 + 25 + 12.5 + \dots$ etc. The ultimate change in equilibrium GDP is thus a multiple of the original change in investment.

Explaining the Multiplier

David Priddy, Piedmont Virginia Community College

The concept of the earnings multiplier is especially well suited to analogy, particularly since students are immediately suspicious of any claim that the market can turn "one dollar into ten."

Begin by producing a large one dollar bill; usually a sheet of paper with large numerals and the picture of a local personality on it (or xerox Figure 10-1, or use a blow-up of a real bill). In order to keep track of the various transactions put column headings on the board: "Change in Income," "Change in Savings," and "Change in Spending" and establish a marginal propensity to save.



Figure 10-1 Money to Illustrate the Multiplier Process

Now, give the dollar to a student as new income. This student will "save" according to the MPS by tearing off a portion of the dollar and then spend the remainder by passing it on to the next student. This continues, with each series of transactions being recorded on the board, until it becomes apparent that the process will continue ad infinitum. The instructor can then total each column as if it had continued, and then lead the students to all the appropriate conclusions.

A similar example can be used to demonstrate the banking multiplier since the underlying process is essentially the same. Because they have already learned one concept, the similarity of example makes it much easier to understand the other.

The House That Jack Built

Barbara A. Vatter, Memphis State University

This is the house that Jack built

This is the carpenter paid by Jack when the house was built

This is the grocer paid by the carpenter
who was paid by Jack when the house was built

This is the wholesaler paid by the grocer who was
paid by the carpenter who was paid by Jack
when the house was built

This is the warehouse person paid by the wholesaler
who was paid by the grocer who was paid by the carpenter
who was paid by Jack when the house was built

Now the carpenter, the grocer, the wholesaler
and the warehouse person consumed and saved,
saved and consumed, consumed and saved and
saved and consumed

With such intensity

They produced a propensity,
while the economist produced what was marginal, but

Together the sum became quite large in all

Although $MPC + MPS = \text{only } 1$,

$1/MPS = \text{the multiplier, } \times \text{ the house that Jack built!}$

Prolific Pennies

Charles W. Brown, Stephen F. Austin State University

The multiplier is a difficult concept for students to comprehend. One of the best ways to teach this principle is to let the students actually experience it in action. This can be done by using pennies rather than dollars or billions of dollars.

The equipment needed for this demonstration of the multiplier are three jars and 100 pennies. Ten students are needed to participate in the exercise and one student with a calculator is utilized to provide quick calculations. The instructor or another student can serve as recorder to keep track of the transactions on the board.

The demonstration then proceeds as follows:

1. Certain assumptions are explained to the class such as
 $MPC = 3/4$ $MPS = 1/4$ therefore $K = 4$
2. Three jars are set on a table or desk
 - a. One jar to serve as the GDP jar (now empty)
 - b. One jar to serve as the spending jar (contains 100 pennies)
 - c. One jar to serve as the savings jar (now empty)
3. Each of the ten students participating is asked to drop \$1.00 in the GDP jar. This represents all of the spending for that year, thus the GDP is \$10.
4. The instructor, representing a Japanese investor or some other new spender, then injects the spending jar into the economy. This jar contains 100 pennies and is passed to the first student to represent a new purchase.
5. The first student, upon receiving the 100 pennies, will remove 25 pennies and place them into the saving jar. The remaining 75 pennies are then spent by passing them to the second student.
6. The second student will remove 25 percent of the pennies and place them into the saving jar and will spend the rest by passing them on to the next student. The person with the calculator is determining 25 percent and 75 percent each time for precision and in order to save time. The recorder is placing the information on the board in three columns (change in income, change in spending, and change in saving) as each transaction occurs.
7. This same procedure is followed until the money has passed to each student and then it starts over again. Eventually the spending jar will be almost empty (we usually stop at 2 pennies left) and the saving jar will contain most of the pennies. The records on the board will show that almost \$4.00 of new income has been created because of the fact that 100 pennies came into the economy as new spending. These are prolific pennies indeed!

Multiplier Leakages: A "Poking a Pipeline" Analogy

V.C. Kharadia, Northwest Missouri State University

It is difficult to effectively explain the declining numerical value of the multipliers in the three-sector, four-sector and money economies as additional leakages of marginal tax rate, net import rate and interest rate effect are introduced. Mathematical models are the methods that are generally used to explain the falling value of the multipliers. But freshmen in particular find it difficult to mathematically comprehend the universe of the multiplier leakages.

To explain the impact of additional leakages on the multiplier process, I use an analogy of a water pipeline (spending stream). For a two-sector economy in equilibrium, a given MPS (a leakage from the spending stream) implies some multiplier and total income or spending level, given the autonomous expenditures (water tank, the exogenous force in the water system). Spending, income creation and the multiplier effect depend on the number and magnitude of the leakages from the spending stream. Water pressure in the pipeline and water received by the customers can depend on the number and size of holes (leakages) in the pipeline. Each multiplier leakage can be compared with a hole in the pipeline. With the increased number and size of leakages from the spending stream, the numerical value of the multipliers and income creation decline. Similarly, the increased number and size of holes in the pipeline (spending stream) would reduce water pressure (spending pressure) and water received by the customers (spending and income creation). Just as the water pressure (and water flow) would be a reciprocal of the sum of the holes in the pipeline, the multipliers (and income flow) are likewise a reciprocal of the sum of the leakages from the spending stream. While mathematical presentations on the multiplier tend to silence a class, the "poking a pipeline" analogy seems to create a spark, probably with a more lasting and clearer impression of the multiplier universe.

Spending Multipliers: A Physical Demonstration

M. Dudley Stewart, Jr., Stephen F. Austin State University

After I have shown my students how to calculate the investment spending multiplier and how to apply it, I ask them to assume that I have received \$1.00 in new income, and I write \$1.00 on the blackboard. I then ask them to further assume that I and each of them have a marginal propensity to consume (MPC) of 0.50. Finally, I ask them what I will do with the \$1.00. They naturally reply that I will spend half and save half, so I write \$0.50 under the \$1.00 on the board and tell them that I spend the \$0.50 with the female student sitting in row one column one and ask them what she will do with it. They again respond that she will spend half and save half, so I write \$0.25 on the board and tell them to assume that she spends it with the male student to her right and ask them what he will do with it. Again, they respond that he will spend half and save half, so I write \$0.125 on the board and remark that \$1.875 is new income has thus far been generated. I write three descending dots and \$2.00 on the board under the other numbers. I then tell them to note that the numbers become smaller and smaller and that we would never reach an end using such a method, but that by using the formula for the investment spending multiplier we can calculate \$2.00 as a limit, because it is based upon a convergent infinite geometric series.

I then give them a physical demonstration of the multiplier and a convergent infinite geometric series. I back up to the right wall of the classroom, as close to it as I possibly can, and tell the students that I am going to calculate the left wall as a limit of two (2), continuing to assume an MPC of 0.50. I then take half of the distance to the left wall and half of the remaining distance and half again until my nose is almost touching the wall. I have to really suck in my stomach for this part. I then tell them that I will never ever reach the wall, because I am taking half of the distance to it each time, but by using the formula for the multiplier, the wall as a limit of two (2) can be calculated. During the physical demonstration, the students smile, chuckle, and otherwise seem to enjoy it.

I have used this method for many years and have achieved great success with it. When I ask the students if they now understand better the concepts of the investment spending multiplier and a convergent infinite geometric series, they respond enthusiastically and positively. A few students have come to me at the end of class and told me they never understood the latter concept in their math classes. (See The Concept of the Simple Deposit Multiplier.)

Explaining the Spending Multiplier

Tantatape Brahmasrene, Purdue University North Central

Another fun way to explain the spending multiplier process is to use fake money from a “Monopoly” game. I capture students' attention by bringing a stack of Monopoly money to class. Let's assume that $MPC = 0.5$. Then I purchase a fictitious commodity from a student for \$ 800. Quarters and pennies may be provided depending upon how far you want to play in the spending process. The process continues as the initial student purchases another commodity from another student. This exchange progresses for five rounds. This is usually sufficient to make the point clear. Students do have fun counting money while understanding how the multiplier works. The instructor or an assigned student can record the transaction on the board, as shown below.

<u>Round</u>	<u>Increase in Income</u>	<u>Increase in Consumption</u>
1	\$800	\$400
2	400	200
3	200	100
4	100	50
5	50	25
All other rounds	50	25
Total	1,600	800

A \$ 800 of initial spending led to a \$1,600 increase in income.

Xeno's Paradox: Why the Multiplier Ends

Seymour Patterson, Northeastern Missouri State University

When students are first introduced to the idea of a multiplier, they are generally told that people can do two things with income: save it or consume it. In general they will consume only a fraction of their income and save the remaining fraction. Thus, individuals have a marginal propensity to consume (MPC) and a marginal propensity to save (MPS), respectively. If MPC is 0.9, a person receiving a \$1 will save \$0.10. Someone else will obtain \$0.90 and will save \$0.09, and so forth. Adding $\$1 + \$0.90 + \$0.81 + \dots = \10 . Since the multiplier is $10 (= 1/\text{MPS})$, income will increase to \$10. One student noted that the process for multiplying by 0.9 could continue indefinitely, so how do you reconcile the two methods. I noted that the question is nontrivial, but that a trivial analogy may help to clarify it. The numbers get so small that at some point you can ignore them. I added that if someone pointed a gun at you and fired, theoretically, and by his reasoning, the bullet should never hit him since he could infinitely divide the distance between the gunman and himself (or the distance traveled by the bullet). But he would still be dead. He got the message.

Using Transactions with Students to Illustrate Multipliers

Ralph T. Byrns

Provide intuition for the autonomous spending multiplier by assuming a constant MPC of, say 0.80. Suggest that, in spite of an absence of change in your own income, you have decided to have a home custom-built for \$100,000. Award the contract to a student sitting in the front row, who represents all workers on this house. The \$100,000 increase in this student's income causes purchases of \$80,000 worth of merchandise from the person behind him or her. Keep a running tally of these transactions on your blackboard. Emphasize "receipts of income" and subsequent "spending" with each transaction round. The \$80,000 in income stimulates \$64,000 in purchases from a person in the third row. And so on. Ask when the process will stop. If no one knows the answer, kid your students by alleging that you have solved a concept from calculus called a Taylor expansion ($b^0(A) + b^1(A) = b^2(A) + \dots$) to arrive at a figure of \$500,000. Then point out that you actually used a multiplier and calculated: $(\$100,000) \times (1/(1 - .8)) = \$500,000$.

The derivation of this multiplier is in the Optional Material following Chapter 10. Many mathophobic students may think that this algebra is incomprehensible. Show your students the following summary equations after stressing that $\text{MPS} = 1 - \text{MPC}$:

$$\text{a. } \Delta Y = \Delta A (1/\text{mps}), \text{ and } \text{b. } \Delta Y = \Delta A (1/1 - \text{mpc}).$$

Take a few minutes in class in which you offer various fractions for the values of the MPC ($9/10, 4/5, 3/4, 2/3, 1/2$) and have them provide the resulting multipliers. When they see that all that is required is inverting a reciprocal, they will be much more comfortable with these numbers. Do the same for fractions representing the MPS ($1/10, 1/5, 1/4, 1/3, 2/5$, and $1/2$). Now use the blackboard to provide a series of values for A (any form of autonomous spending), ΔA , MPC, and MPS, and have students calculate equilibrium (Y) or the change therein (ΔY). Then provide the Y

or ΔY and the MPC or MPS, and ask them to calculate the autonomous spending required to achieve equilibrium. This prepares students for calculations of recessionary, inflationary, and GDP gaps in the next chapter. Spending about half of a lecture on these exercises may bore mathematically adept students, but it is very worthwhile for the rest.

Explaining Keynesian Equilibrium with an Innertube

William Foeller, SUNY College at Fredonia

One of the basic conditions in elementary Keynesian economics is that a system is in equilibrium when leakages from the system equal injections into the system.

After a discussion of the concepts of circular flow, consumption (C), saving (S), investment (I), taxes (T), governmental spending (G), exports (X), and imports (M), a simple innertube analogy can be used to show the equilibrium

$$I + G + X = S + T + M$$

Beginning with the concept of a simple closed tube with no leakages or injections, the volume of air can be assumed to indicate the volume (value) of dollar flow in the system from households to firms to households, etc.

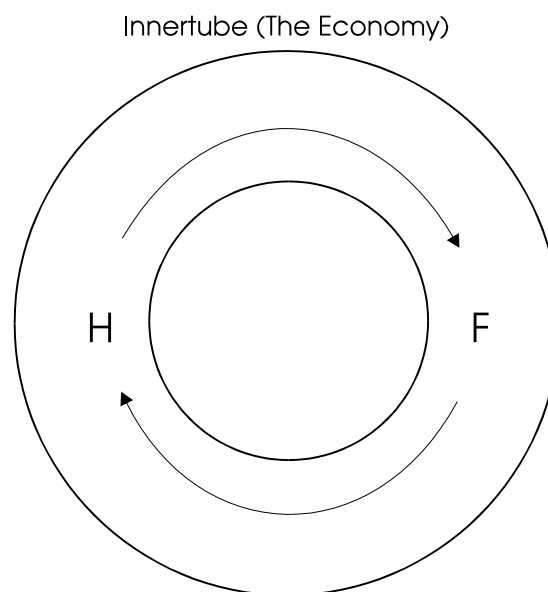


Figure 10-2

But if households don't spend all their income, i.e., they save (leakage), and if there are other leakages and other spenders (injections), the tube will have a series of "valves" (leakage outlets) and "pumps" (injection inlets).

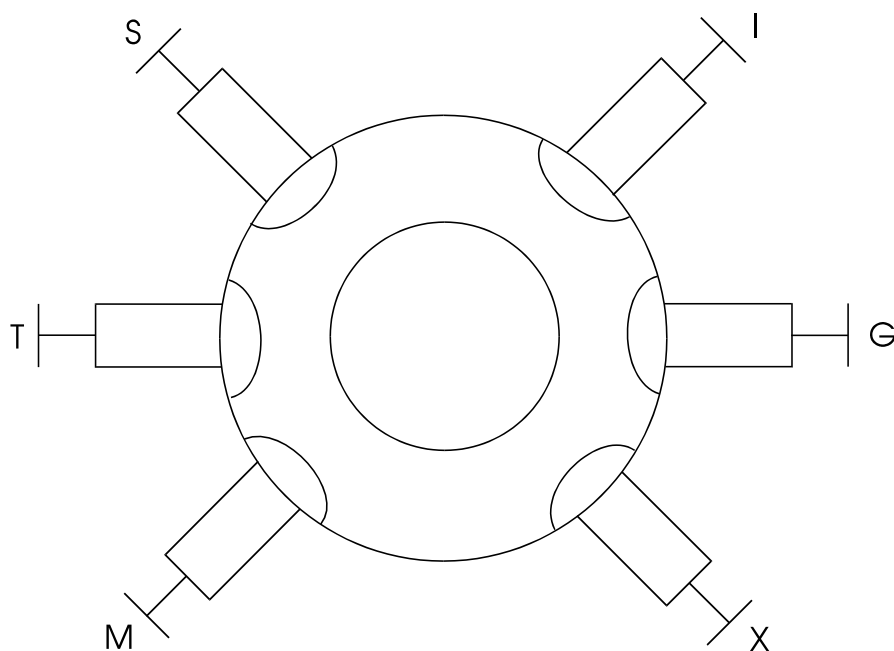


Figure 10-3

One can imagine taking a measurement of the economy in equilibrium by using a caliper to measure the tube's diameter (flow volume is a function of tube size).

In a given time period, if any or all of the valves are depressed, but the pumps are not working, the tube will deflate (economic contraction). Only if the valves and pumps are working, allowing total leakages to be matched by total injections, does the tube remain stable: $I + G + X = S + T + M$.

The analogy can be pushed a bit farther (but not too far) by asking for the effects of various combinations of operating pumps and valves. For example, "If G, X, T, and M are not active, what maintains constant volume?" Answer: The I pump injecting air equivalent to the air released by the S valve. ($I = S$).

Another example might be: "If X is not pumping, and T is not active, but the I and G pumps are pumping faster than the S and M valves are releasing air, what is happening to the tube (economy)?" Answer: $I + G > S + M \implies$ tube is "expanding".

The students can envision a group of people standing around the tube, measuring the diameter, pumping and depressing chosen valves in a given time period, then measuring the change in the diameter of the tube.

A larger tube indicates that the combinations of injections were greater than the combination of leakages, implying "expansion" in the economy. A smaller tube indicates that leakages were greater than injections, causing a "contraction". Using the analogy, the nature of Keynesian equilibrium, expansion, and contraction can thus be introduced in an elementary way.

The Magic Circle

By Mark Pernecky, St. Olaf College

The circular flow of income often seems like a maze of plumbing to many students. I depict the relationships between GDP, factor costs, national income, and aggregate demand (expenditures) in what I call the "magic circle". (I abstract from depreciation, indirect business taxes, and undistributed corporate profits, though these items could be included.)

Starting from the top of the circle, as GDP is produced an equal amount of factor costs must be paid to produce that GDP. (I show this equality by example elsewhere.) Factor costs to one group (firms) are national income to the factors of production (households). Some income is spent by these factors (represented by AD, aggregate demand) for consumption (C). Investment (I), government spending (G) and net exports (X) may be assumed to be autonomous. The circle is completed.

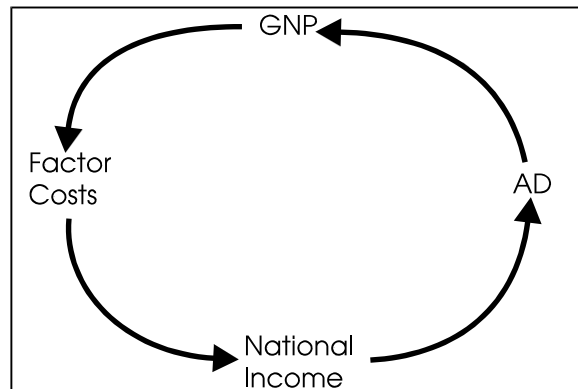


Figure 10-4

I depict and describe the idea behind the "magic circle" quite often during the semester - almost like a mantra: "As-GDP-is-produced-it-becomes-an-equal-amount-of-factor-costs-which-becomes-an-equal-amount-of- income-which-is-spent-on-the-GDP." Several concepts which can be depicted by the magic circle include the relation between injections and leakages, Say's Law, the Keynesian spending gap, the savings-investment link for growth, and the multiplier.

The relation between leakages (savings (S), taxes (T), imports (M)) and injections (I, G, X) can be depicted as follows.

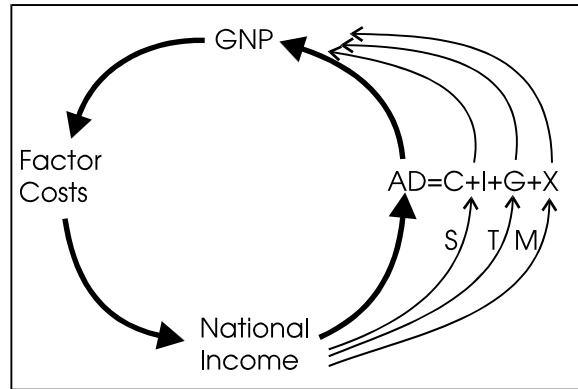


Figure 10-5

Say's Law can easily be contrasted with the Keynesian view of leakages and injections. The circular flow holds for the latter; GDP is bought back. The supply of GDP has generated its own demand. For Keynes, the demand gap created by a leakage from savings can be seen. If investment is not forthcoming, government spending is required.

The savings/investment link for economic growth can also be seen on the circle.

Finally, the multiplier can be demonstrated on the magic circle. The initial spending boost from an autonomous expenditure increase can be shown to generate income in the first round, via GDP. Some of the income leaks out before the consumption expenditures in the second round. The higher the marginal propensity to save, the lower the multiplier, and the greater the leakage in each round.

Illustrating the Accelerator Principle

Ray M. Johns, Hagerstown Jr. College

Accelerator theory is a difficult concept for students because it lacks empirical results and practical application. But a simple illustration will drive home the importance of this concept to students. Pick out a capital equipment manufacturer in the surrounding region. Ask the students if they know anything of the employment history of that factory. Usually some students will have friends or family working there. And, typically, the factory will be working overtime and all three shifts at one time and then abruptly lay everyone off at another time, only to hire them back again later. This illustration of the accelerated impact of the business cycle on the capital goods industry is a valuable lesson in understanding both acceleration theory and the instability of employment in certain industries or even in regions dominated by capital goods producers.

Investment, Profits, and Your Waistline

By Gregg Davis, Marshall University

When thinking about the role of business spending, or investment, and its role with profit and the state of the economy, it may help to personalize these concepts to your "Battle of the Bulge," or the

fight of the expanding waistline. The waistline contracts, expands or remains the same depending upon your caloric intake each day with respect to the body's needs to replace the calories used up during our day to day activities (ignoring for now the role of exercise). When we speak of investment, part of that investment goes towards replacing what has become worn out or obsolete. This type of investment is comparable to the intake of calories to replace those calories burned off in the human body. If investment, or caloric intake, just offsets the loss of capital, or calories, then what we call net investment is zero. Under this scenario, our waistline remains the same, as does the state of the national economy. Neither growth nor contraction occurs.

Now, in the case where we consume more calories than the body needs to replace, or where business spends above what is needed to replace the capital worn out, the "waistline" expands. Net investment is now positive, and the economy is growing. Investment raises the net worth of firms, and hence profits increase. A declining economy, or one that is dangerously contracting, represents the reduction of the waistline. Here net investment is negative, the economy's caloric intake is less than what is needed to replace the calories burned off, and hence the waistline contracts. Business is not even spending enough to replace what is being worn out, and as a result, profits fall, which causes investment to fall still more. Just as too much weight loss is dangerous for the body, too little net investment is dangerous for the economy.

To summarize, our rule for the economy follows that of our waistline. When forced to loosen the belt, net investment is positive, and the economy is expanding, profits are on the rise. Bring the belt in a few notches and the economy is contracting, profits are falling, and net investment is negative.

Business Investment and the Great Depression

Dick Kennedy, Odessa College

Explain to the class that any business contraction is likely to be quite severe if businessmen decide to shelve or postpone their long range investment plans in plant and equipment, and any subsequent business recovery is likely to be quite weak unless those investment plans are revived.

CASE STUDY: The 1929-33 business contraction was quite long and severe, and business did shelve long range investment plans due to the magnitude of the contraction. The business recovery that began in March, 1933, and ended in May, 1937, was quite weak, and GDP did not return to the level of the 1920s expansion. The economy fell back into the depression in May, 1937, and the 1937-38 contraction reached a lower point than the 1929-33 contraction. The weakness of the 1933-37 expansion and the severity of the 1937-38 contraction can be attributed, in no small part, to the lack of long term business investment.

Although the 1937-38 contraction was more severe than the 1929- 33 contraction, the 1937-38 decline was relatively short because business began to revive their long range investment plans by June, 1938. By that date the United States economy was supplying lend-lease war materials to Great Britain, and long term business investment in the U. S. economy took hold. The 1938-45 expansion proved to be a very long and vigorous one due to the revival of long term investment plans by business.

Long term business investment in plant and equipment plays a key role in the business cycle because the multiplier principle primarily operates on business investment. Small changes in business investment cause national income or GDP to increase by some multiple of the investment. The multiplier principle can and should be explained in relation to the business cycle.

This case study should be illustrated by duplicating Figure 10-6 on the blackboard.

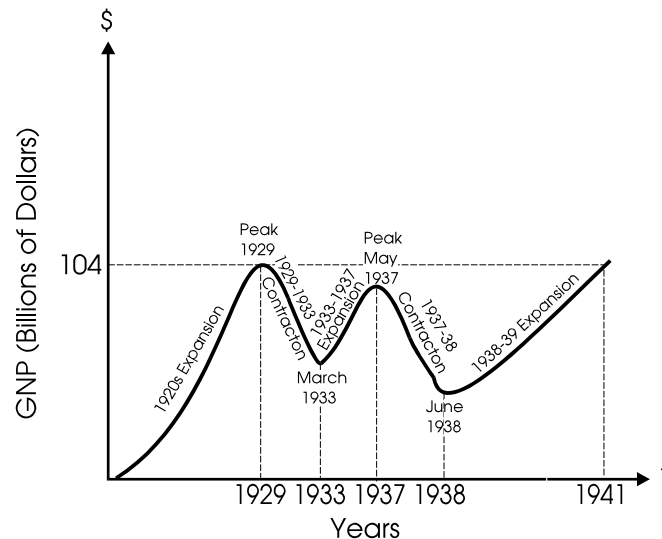


Figure 10-6

Note that GDP did not return to the \$104 billion level until 1941. Insufficient long term investment caused the 1933-37 expansion to be quite weak and the 1937-38 contraction to be quite severe.

Quantity Versus Price Adjustments

Ralph T. Byrns

Few students immediately recognize the importance of why Keynes emphasized quantity adjustments, and was skeptical of the efficacy of Classical wage and price flexibility. Here is one approach to facilitate student understanding of this skepticism. When you introduce the Keynesian system, review simple demand and supply curves. Illustrate a market in which the current price is below equilibrium, and allow your students to identify this as a shortage. Indicate that Classical and Keynesian analyses concur that when there is excess demand (XD), the price rises rapidly to clear the market, and that this idea holds for resource markets (e.g., labor) as well as markets for goods.

The next step is to graph a goods market for which the current price exceeds the market clearing price, and allow your students to identify this as a situation of surplus. Then draw a market for the labor that produces this good, and suggest that the surplus in the goods market is paralleled by a surplus of labor. Assert that both markets began at points "a" in the Figure 10-7, and that the market disequilibria are caused by a decline in the demand for goods. Ask students if the price of

the good will fall to equilibrium very quickly if wages are "sticky" downwards; firms do face pressures to cut their production costs. After a little discussion, your students should perceive that it may be easier for firms to do this by laying off workers than by trying to get workers to take wage cuts.

Ask why labor is reluctant to accept wage reductions, i.e., why does the process by which the prices of surplus goods are "bid down" appear to work only slowly and erratically in labor markets? If classical price mechanisms operate smoothly in a labor market, anyone threatened by a layoff could retain his or her job by agreeing to a wage cut. Suggest the following possible reasons for wage stickiness:

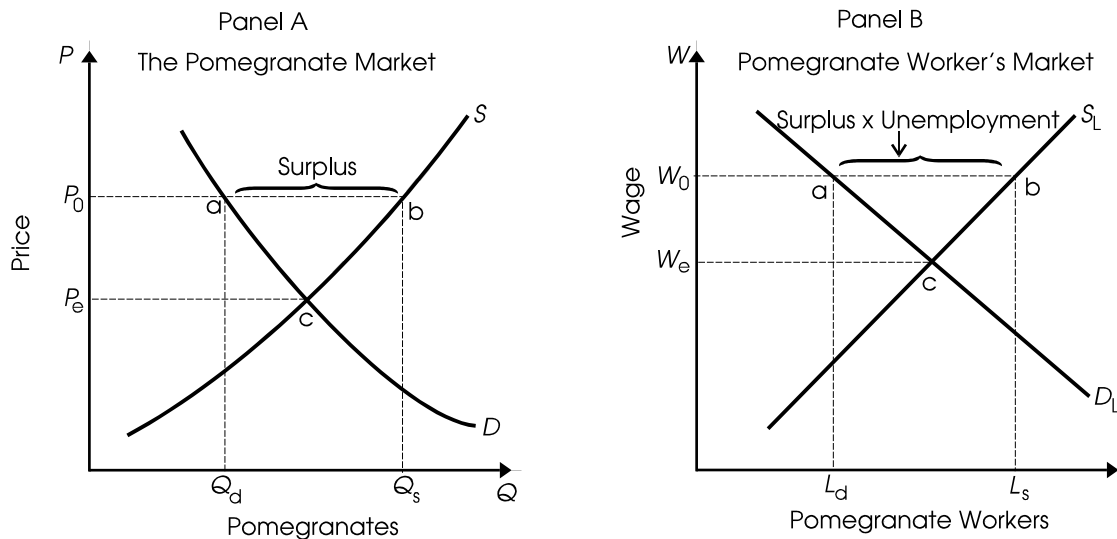


Figure 10-7

- a. Few labor contracts are for the sale of only a single resource unit (e.g., one hour of work). Rather, they cover sales of many labor hours over long periods because recontracting is costly. Thus, wage agreements are not lightly renegotiated. (In contrast, sales of, e.g., a can of soup or a lawnmower involve only single transactions.)
- b. Workers sometimes react violently toward anyone threatened by layoff who accepts a wage cut because this threatens the jobs of those not laid off. (Cite violence against "scabs" during labor disputes as examples. Most students find these examples persuasive and interesting.)
- c. Union contracts and minimum wage laws infectiously tend to make all wages sticky downwards.
- d. Point to the Hoover administration's exhortations to business firms to maintain wages at the onset of the Great Depression if you enjoy historical examples. (Herbert Stein cites this policy in several of his publications.)

- e. Suggest that workers may quit or accept layoffs in preference to wage cuts if they perceive that their alternative employments have remained stable (or if unemployment compensation is sufficiently generous). Thus, if workers fail to perceive an economy-wide collapse of demand, they may be less willing to accept wage cuts.

All of these are reasons why wages (and consequently, prices) may be sticky or even rigid, and help to explain the Keynesian focus on quantity rather than price adjustments to deficient demand.

Keynesian Inventory Adjustments

Ralph T. Byrns

To illustrate that in a Keynesian model of a closed, private economy ($C + I = C + S$), unexpected inventory changes reconcile conflicts between planned saving and investment, graph a simple Keynesian cross and select an income level where Aggregate Spending is below national output (the 45-degree reference line is mathematically $C + S$.) Ask whether inventories will unexpectedly shrink or grow. (ANSWER: Grow). Point out why undesired growth of inventories causes reductions of employment in the Keynesian model (prices and wages do not decline). Then select an income level where AE exceeds National Output. Inventories will shrink, stimulating expanded output and employment. Numerical examples are very helpful in clarifying this discussion.

Parallel this analysis with discussions of the Keynesian diagram for planned saving and investment. If $S > I$, inventories unexpectedly grow, causing declined in employment. If $I > S$, inventories unexpectedly fall, stimulating employment.

Chapter Twenty-Seven

Fiscal Policy

A Story of Economic Thought

Lawrence H. Hadley, The University of Dayton

In the beginning God created Adam Smith,
And Adam created an invisible hand,
And every man pursued his own self-interest,
And labor was divided,
And nations became wealthy,
While the invisible hand worked together for the good of all,
And thus did Adam create economics,
And God saw that it was good, but naive.

So on the second day, God created Ricardo,
And Ricardo tasted the forbidden fruit of income distribution,
And the population increased rapidly,
And the wages of workers stagnated,
And people demanded more food from the marginal land,
And the rents of landlords increased greatly,
And the returns to nations diminished,
And God saw that it was dismal.

So on the third day, God created Marx,
And labor created all that was of value,
But labor was denied this value by greedy capitalists,
And capitalists increased their surplus by exploitation,
And thus was created the reserve army of the unemployed,
And labor was united,
But the potential for social revolt became great,
And God saw that it was upsetting.

So on the fourth day, God created Keynes,
And there was a Great Depression on the land,
And the reserve army of unemployed suffered from sticky wages,
And Keynes saw that there was insufficient aggregate demand,
And the invisible hand did not work,
so Keynes sent the government to replace the invisible hand,
And the government tried to represent God's goodness on earth,
But God saw that it was depressing.

So on the fifth day, God created Friedman,
And Friedman tried to rediscover the invisible hand,
And he called it the constant growth of the money supply,
And he decreed that the demand for money would be stable,
And this decree made the velocity of money stand still,

And Money determined everything,
And thus Friedman determined the power of money,
But God saw that money was the root of all evil.

So on the sixth day, God created Laffer,
And Laffer also tried to rediscover the invisible hand,
And he called it lower marginal tax rates,
And workers were going to work harder,
And households were going to increase savings,
And businesses were going to increase investment,
And supply was to come forth,
But God saw that it was marginal.

Then on the seventh day, God would have created Zachary Smith,
And God would have imparted to him the truth,
And Zachary would have used this truth to build a model,
And this model would have unified economists,
And all would have been one.
But it was the seventh day,
So God rested in equilibrium,
Leaving economics in disequilibrium.

More Accurate Graphical Multipliers

Mark Zupan, University of Arizona

Many students memorize and believe that the autonomous spending multiplier is always $1/[1-b]$ and the tax multiplier is always $-b/[1-b]$. I avoid this problem by emphasizing that the spending multiplier in the simple Keynesian model is always $1/[1 - \text{slope, AE curve}]$ while the tax multiplier is $-b/[1 - \text{slope, AE curve}]$. This helps them to see that when components of the AE curve other than consumption depend on Y , all the multipliers change.

I draw the AE curve shown in Figure 11-1 to show the basis of the general formula. I also, as a test, ask students when the multipliers would be smallest: when $\text{slope} = 0$ and multipliers = 1 or $-b$ (tax multiplier). This occurs when no form of spending depends on Y and when any change in exogenous spending (intercept) will change by the identical amount since it produces no reverberations.

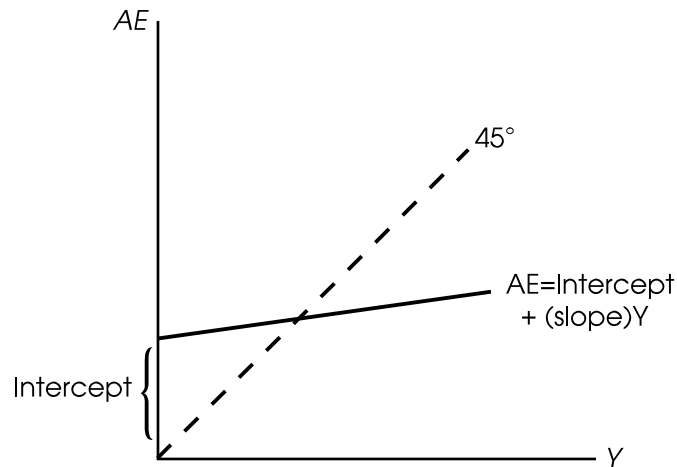


Figure 11-1

The Irreversibility of Fiscal Drag

David Jones, Pacific University

Students often mistakenly get the notion that automatic stabilizers reverse the sign of the multiplier, rather than merely lowering its size. Thus, they conclude that if an external shock causes income to fall, automatic stabilizers will slow the income decline and then reverse it, causing income to return to (or at least move back towards) to its original level. A simple analogy overcomes this misconception. Automatic stabilizers are like dragging your feet. They slow your slide, but they don't reverse it!

Fiscal Hydraulics

Louis H. Henry, Old Dominion University

Depression: Depression may be explained in terms of inadequate spending in the nation's economy. Let's say that level B in the tub (Figure 11-2) is the correct amount of national spending that would insure jobs for all those who want them. Depression hits when the tub level falls to C. We have three ways to raise the level in the tub: faucet 1, household spending; faucet 2, business spending (investment); and faucet 3, government spending. The spending flows have to overcompensate for two leakages: savings 4 and taxes 5.

The malady of economic depression usually begins by increasing the leakage of savings 4. But, instead of flowing directly into the investment faucet 2, the sinister valve of hoarding 6, is opened, and the leakage fills hoarding tank 7. (Through lack of confidence or other reasons, people and businesses would rather hold cash than spend. This attitude could be illustrated by imagining the pump on the table slowing down.)

Fiscal Policy: To raise the level in the tub, the government could cut taxes (close the valve at 5) or increase government spending (open the valve at 3). The tax presumably causes increased flows from 1 and 2 because individuals and businesses now have more after-tax. Government spending at 3 is itself a direct spending injection. Either technique results in a deficit for the government budget; that is, leakage at 5 is less than addition at 3. Where does the government get this extra money to spend? By simply running to the bond market (pump 8) and borrowing the hoarded money from tank 7. Up goes the level. All is wonderful.

Ever hear of the multiplier effect? Let's say that the difference in spending between level C and level B is \$100 billion in new spending through any of the three faucets. Every time a dollar is spent, it becomes someone's income and they spend part of it, which becomes another's income and so on until a full dollar leaks out in saving or taxes. In the meantime, that initial dollar made for increases in several people's incomes. So if we add, say \$40 billion of new spending to the tub, the multiplier effect (outboard motor 9) churns the level up by \$100 billion. It also works in reverse--an initial small drop in spending results in a large drop in the tub's total spending level.

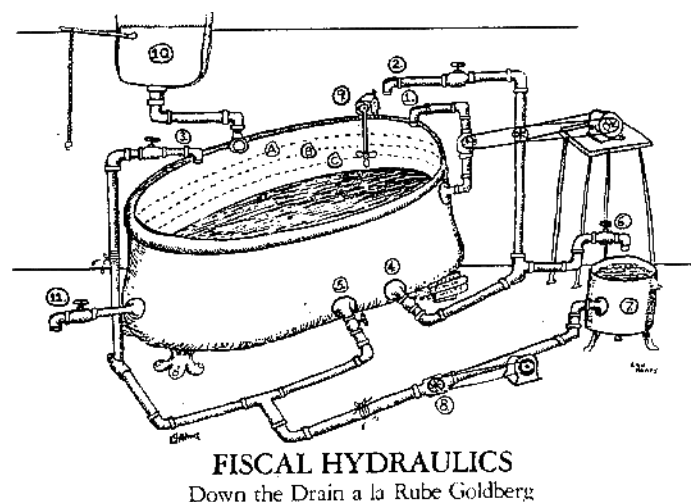


Figure 11-2

Inflation: Demand-Pull inflation is caused by too much spending -moving the tub's level to bathtub ring A. To offset the spending spree of the private sector, government reacts by increasing taxes (open the valve at 5) thereby reducing the flow from household faucet 1 and business faucet 2. Or the government could turn down the valve for 3 reducing its own spending. More out, less in, and the level drops back to level B. Once again, all is simply wonderful.

Stagflation: The statistics and the description of stagflation (simultaneous recession and inflation) suggest that we are strangely enough, at both levels A and C. What seems to have happened is that with inflation problems, policy makers react by opening the drains thus dropping the economy to a recession level below B but the bathtub ring of inflation remains. Why? It's a different kind of inflation called cost-push and it is not the old demand-pull variety of too much spending. Obviously we cannot have levels A and C at the same time (too much and not enough spending). Manning the pumps and valves will not cure stagflation--unless of course, we almost drain the tub into depression. That's a cost we cannot endure in order to reduce the rate of inflation.

Other, more direct policies are less costly in human terms to attack cost-push inflation. (The plumber's hat must be removed in the fight against stagflation.)

Monetary Policy: In addition to the fiscal hydraulics of the government, we also have monetary policy as practiced by the Federal Reserve System. This time, the tub levels are adjusted up or down by flushing more money into the economy from tank 10 or by reducing the money supply by opening valve 11. These techniques are also ineffective in combating stagflation but may be useful in the battle against recession or demand-pull inflation.

The Umbrella Theory Approach

Ronald A. Siltzer, Spartanburg Technical College

The Umbrella Theory Approach can be an excellent tool as students begin to build an economic model. It can expand their thinking skills by encouraging them to evaluate the secondary effects of a theory as well as the primary effect.

Suppose the theory is to reduce the federal deficit by raising personal income taxes. As all the effects of this decision are examined, note the secondary ones in particular. (See Figure 11-3).

The primary support of the umbrella compares to the primary effect in the model; the prongs or secondary supports correspond to the secondary effects of the theory. If the secondary effects support or uphold the theory, the umbrella will continue to be open and usable. On the other hand, if the secondary effects prove negative or do not support the model, the theory (or umbrella) will collapse. This approach can be used in other disciplines in addition to economic theories.

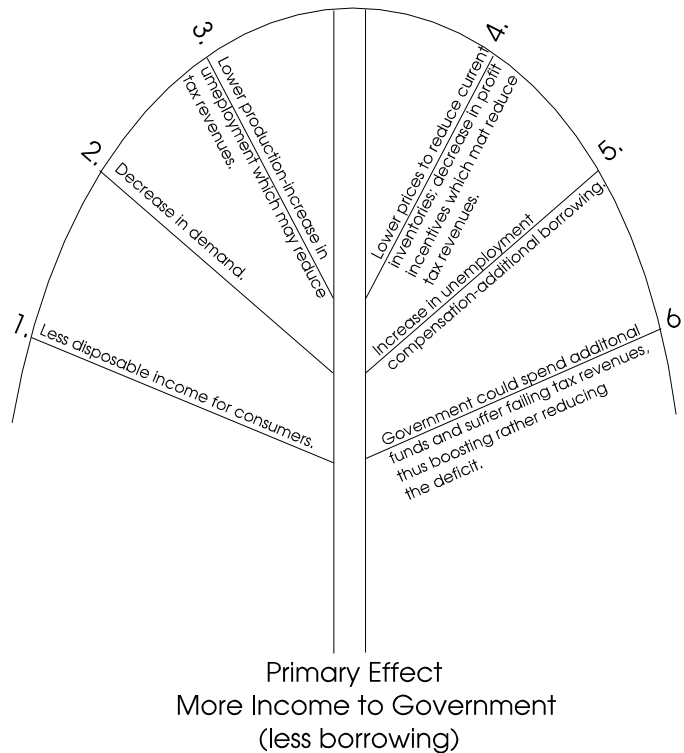


Figure 11-3

"To Reduce The Federal Deficit By Raising Personal and Income Taxes"

A Flat-Tax Consumption Function

Paul G. Coldagelli, Penn State University-Delaware

This exercise is especially helpful given the renewed interest in "flat rate" tax for the U.S. The exercise also helps students learn the distinction between marginal tax rates and average tax rates. When taught with the consumption function, this distinction is easily learned, as students learn the difference between average and marginal propensities to consume.

In each of the following cases, draw taxes as a function of income. Then draw an "after tax" consumption function, with consumption a function of gross income. Compare this with a "before tax" consumption function drawn on the same diagram.

- a. No taxes: $C = \$500 + .9Y_d$ (Y_d = disposable income)
- b. Taxes = \$300, independent of income (a lump sum tax)
- c. Taxes = $.2Y$ (Y = gross income, tax = 20 %)

- d. Taxes = .1Y for income < \$5,000; (10% marginal tax)
 Taxes = .3Y for income > \$5,000; (30% marginal tax)
 What is the average tax rate if Y = \$12,000?
- e. Income below \$5,000 is not taxed; Taxes = .25Y for income exceeding \$5,000. Does the marginal tax rate rise? Does the average tax rate? Write a formula for the average tax rate.
- f. Taxes = .0715Y for income < \$50,000.
 Calculate total taxes at income of \$26,000. At \$37,000. What are the marginal tax rates at these incomes? (This reflects the Social Security tax.)

The Taxes Students Pay

By Davis Folsom, University of South Carolina at Aiken

While most non-traditional college students have good first hand experience with the impact of taxes on economic decision-making, most traditional students have only vague images of taxes as a "four letter" word muttered by parents every spring.

Students tend to know little about taxes but they are quite interested in the subject. As a means to involve students I give them an assignment to interview two taxpayers. I suggest that they interview these people separately and ask the following questions:

"What types of taxes do you pay?" (not amounts)

"Which tax do you consider the fairest? Why?"

"Which tax do you consider the most unfair? Why?"

"If you got a \$100,000 raise, how much of it would you really receive?"

Sometimes I add an additional question about a current issue or proposed tax such as reducing capital gains taxes.

The first questions shows students how many taxes exist and which levels of government use different types of taxes. Most people only name four or five taxes, frequently missing excise taxes. Someone will ask whether or not FICA is a tax.

Responses to the fairness questions differ but lead easily into discussion of ability-to-pay versus benefits received principles of taxation and then into discussion of progressive versus regressive taxation.

Responses to the \$100,000 raise question will always vary but I show students that full-time workers probably receive between \$500 and \$800 depending on their income level and state and local income taxation. The whole concept of marginal analysis becomes meaningful to students when applied to taxation and income. Next I show students how being offered \$5000 more per year to work in a major city doesn't mean you will have \$5000 more to spend. Finally I explain why economists at my university, recognizing marginal taxation, are the least likely business faculty to teach summer courses!

Classical Stability vs. Keynesian or Marxian Instability?

Ralph T. Byrns

You might introduce this chapter by reminding students that Classical economists perceived the market system as intrinsically stable, and recommended laissez faire policies. Contrast this with the Marxist view that capitalism is dynamically unstable, using blackboard graphs such as Figure 11-4. Then indicate graphically that Keynes perceived capitalism as unstable without government intervention, but that full employment with price level stability could be secured through proper fiscal policies.

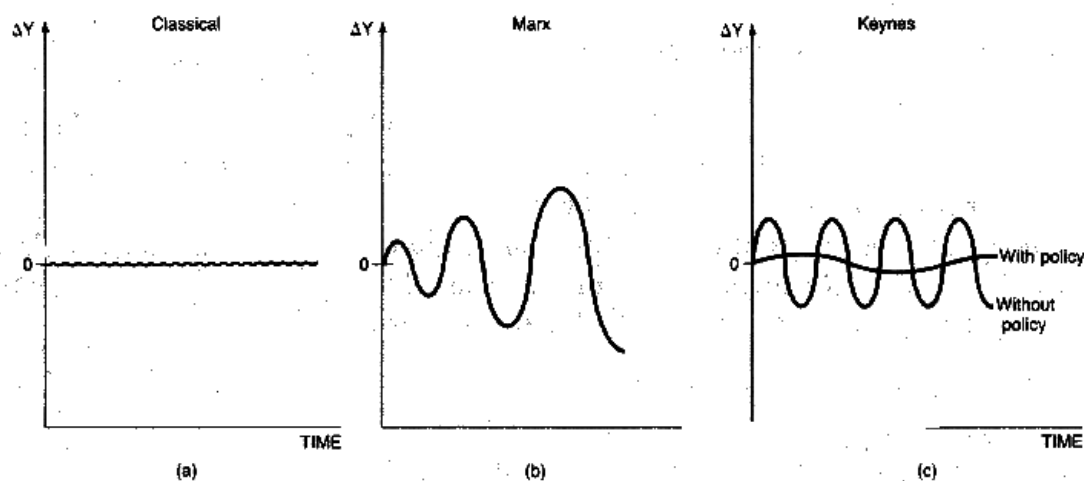


Figure 11-4

IRAs and the Savings Rate

Gary Galles, Pepperdine University

A discussion of the effect of IRAs on saving is a useful way to focus student attention on marginal incentives during a supply side economics lecture. I begin by explaining that IRAs allowed individuals to place up to \$2,000 a year tax-free (this year, as the IRA deposit is subtracted from taxable income) into an account that would compound with interest (also tax-free, and it is this tax-free compounding that makes the biggest difference, which I use a numerical example to show) until retirement ("substantial tax and interest penalty for early withdrawal"), at which point it is paid out as taxable income (at, hopefully, lower tax rates, due to lower post-retirement income).

I point out that the effect of an IRA is to substantially lower the effective tax rate on that form of savings. Then I ask whether IRAs are likely to increase savings much, due to their higher after-tax return. Most students indicate that it would. I then point out that there was almost no effect on the savings rate when IRAs were introduced and that the reason could be seen by focusing on marginal incentives. First of all, I explain that there was no change in the marginal incentive to save for those already saving in excess of \$2,000 a year, since the last dollar saved would not be in

an IRA, getting preferable after-tax rates. These people, who tended to be high income and high tax bracket individuals, did build most of the IRA accounts (having the most to gain from deferred taxation and having more liquidity in their assets), but the funds put in IRAs had been previously saved in some other form, leaving no net effect on their savings rate. Lower income and tax bracket individuals, who weren't saving \$2,000, were also unlikely to have significantly better marginal incentives to save. First, they had less to gain by the tax deferral than higher tax bracket savers. Second, they had fewer liquid assets and, with lower incomes, less certainty that they wouldn't have to withdraw the funds prior to retirement and hence be subject to the interest and tax penalties for early withdrawal. Third, since retirement income is highly correlated with pre-retirement income, lower income individuals are likely to want to set aside less money for retirement than higher income individuals (especially with Social Security as a separate system.) However, note that the post-retirement income cap after which Social Security becomes taxable would act as an added tax on higher income retirees with IRAs. Finally, even if people in this group started IRAs, the relevant question is whether the marginal dollar saved went into an IRA or whether inframarginal dollars saved were just shifted from other forms of saving. Given the desire for liquidity, it is doubtful that many in this group put their marginal savings dollars into an IRA, and thus questionable whether their savings rate would be raised. Finally, remember that some people borrowed the money to start IRAs, which does not represent net savings at all.

In summary, I conclude that the effect of introducing IRAs was primarily a tax subsidy to relatively high income groups with very little of the claimed intention of increasing savings.

Elasticity and the Laffer Curve

Robert Schenk, Saint Joseph's College

The idea behind the Laffer Curve--that a decrease in tax rates may increase tax revenue--is an interesting application of the concept of elasticity. The Laffer Curve points out that the government faces a "pricing" problem much like the one a business faces. If a business raises the price of a product, buyer behavior will be affected and revenue will rise or fall depending on the responsiveness of people to the change. When the government raises the cost of an activity by taxing it more, it will also affect people's behavior. As in the case of the business, if people are highly responsive to the change in cost, revenues will decline. In fact the major difference between the "pricing" problems of business and government is that business should avoid inelastic portions of the demand curve while the government should avoid elastic portions (unless the purpose of the tax is to discourage undesirable behavior rather than raise revenue).

The Laffer Howitzer

Edward D. Lotterman, University of Minnesota-Twin Cities

One analogy for explaining the Laffer Curve is to compare taxing to shooting. This may be most useful on campuses where there are a significant number of ROTC cadets, reservists or just plain

militarists among the student body. In my experience it is a very good analogy to use for people with some shooting experience, but may completely mystify others, so caution is urged.

In shooting rifles, tank guns, and 16 inch cannon on the battleship New Jersey, if you want to hit a target farther away, you have to raise the barrel of the weapon. The more it is angled up from the horizontal, the farther away the projectile will strike--up to a certain point! At about 45 degrees elevation, maximum range of the weapon is reached. When firing mortars, the barrels of which point up at angles greater than 45 degrees, the opposite is true. To shoot farther, the angle of the barrel with the ground is decreased. If the angle is increased, the point of impact will get closer and closer to the gun until, when fired pointing straight up, the shell goes up then drops right back on the mortar crew and wipes them out!

A howitzer can be fired at all angles from below the horizontal to nearly straight up. Firing below 45 degrees is called "lower register" firing, that above 45 degrees is called "upper register" firing. A howitzer crew has to know that when firing in the "lower register" an increase in barrel elevation will increase range, but that as the 45 degree angle is passed, further increases in elevation will begin to decrease range. When the crew gets a call from a forward observer to shoot at a target farther away, they have to know whether they are in the lower or upper "register" in order to make the correct adjustment to the angle of the tube. If they make a mistake they will at best miss enemy and at worst wipe out their own troops!

The Laffer Curve argues, in effect, that Federal tax policy is analogous to shooting a howitzer. Raising tax rates (the gun barrel) from zero will raise tax revenues (range of the weapon) up to a certain point, but that continuing to raise rates after that point will decrease revenues (range)! Pointing the weapon straight up will prove disastrous to the crew, just as progressive property taxes approaching 100% on English manors after WWII were disastrous for U.K. property tax revenues. Fiscal policy makers must know what "register" they are in just as howitzer crew members must. Supply-side economists who argued that lower tax rates would not hurt government revenues implicitly believed that the U.S. was in the "upper register" of the Laffer Curve.

The Laffer Curve and Physical Exercise

Geriant Johnes, Lehigh University

The following game may be used to explain the shape of the Laffer curve. Offer five students 25 cents for each press-up (or sit-up or some other painful physical exercise) they can do in a minute. Explain to the students that the income earned by one of them will be taxed at a rate of 100 percent; the other four students will be taxed at rates of 75, 50, 25 and zero percent respectively. Five more students may be employed to count the number of press-ups completed by each of the athletes. At the end of the minute the point can be made that the student being taxed at 100 percent did not complete many press-ups because he lacks the incentive to do so. Hence a Laffer curve can be drawn. Occasionally students will behave irrationally and will work hard when heavily taxed; the game still makes it easy to explain why this would indeed be an irrational response.

Gradualism and the Laffer Curve

Ralph T. Byrns

Discuss Arthur Laffer's contention that the phasing-in of the tax cuts of 1981-83 actually reduced current investment and income because investors and workers postponed productive activities until the full cuts were in effect. For example, a person might have considered working and saving to finance a college education. The postponed tax cuts may have induced some to borrow to attend school during 1981-83, so that their earnings would be taxed at the lower rates of 1984 and beyond.

Chapter Twenty-Eight

Money and Banking

The Meaning of Money

Salvatore Schiavo-Campo, Economic Research Services

While talking in generalities at the beginning of your first lecture on the origins and meaning of money, absent-mindedly shred a blank piece of white paper. Then, still talking, again as if just fiddling around, fish a dollar bill out of your pocket and tear it up very slowly. I guarantee strange looks and horrified gasps. Briefly pause, and ask: "What's the matter? Why should it seem normal to tear up a plain piece of paper but strange, almost sinful, to destroy a piece of green paper? Is it because it's green? (No, you would not have been shocked if it had been green notepaper). Is it because there is writing on it? (No, you would have been blasé if it had been a piece of old newspaper). Is it because the government printed it? (It would not have bothered them if you had torn up, e.g., a blank IRS Form 1040.) The essential difference is that you can exchange the green piece of paper with George Washington's picture on it for something that you may want, while nobody would accept the blank piece of white paper in exchange for anything useful. The normal lecture about the various functions of money as a medium of exchange and store of value can then take place, with frequent reminders that this special printed green paper is money because and only because people accept it as money. (An instructor who objects to destroying a dollar can, with a little practice, achieve the same effect by tearing it carefully in half and then taping it back together after class.)

Who Has Too Much Money?

Ralph T. Byrns

Many students erroneously perceive money as synonymous with wealth, income, or cash. One way to convey the idea that money has a fairly precise economic meaning is to ask for a show of hands from those who have too little money. Most will respond affirmatively. Then ask how many students have too much money. Feign astonishment when virtually no hands go up, and assert that this defies the laws of probability. Ask for those who have too little money to raise their hands once more. Select a student at random and ask if he or she currently possesses any cash. (If the answer is NO, choose another student.)

Now ask this student about his or her intentions for this cash. After the response that some of it will be spent on lunch, or gasoline, or whatever, later in the day, suggest that this answer indicates that the student has too much money and too little lunch, or gasoline, etc. People commonly trade things of which they have too much for things of which they have too little (e.g., the exchange of leisure for the income generated by work when people have surplus free time and "too little" money). Now ask for a show of hands from those whose income is too small. Respond that you believe the unanimous show of hands. Ask how many have too little wealth. Again respond that you believe this second unanimous show of hands. As an aside, ask how many are poor. If a number of hands go up, argue that they are broke (illiquid), not poor. Most students embody tremendous investments in human capital, but it, sadly, is notoriously illiquid!

Now repeat the question of how many have too little money. Select a student from those who persist in raising their hands, and ask what he or she would do if given a dollar. (A touch that renders classes dumbstruck is to simply give the lucky student a dollar.) When the student says something about how the dollar will be spent, repeat your point that an extra dollar would be "too much money" relative to whatever is purchased.

This brief discussion takes no more than 3-4 minutes, and sets the tone for a discussion of the functions of money. It is especially effective when preceded by the exercise offered immediately above by Salvatore Schiavo-Campo.

Money Is Socially Defined

By Richard Schiming, Mankato State University

One way to explore the definition of money is to stress that money is socially defined; that whatever assets a society chooses to use as money are the money assets. This principle can then be used to discuss the extremely wide variety of assets that have been used as money by different societies at different times and places. There is also an important corollary to this principle: no government can force a society to use any particular asset as money. To illustrate this point, ask the students to name two money assets that the US government has tried but failed to circulate in the last fifteen years. When the students realize that they haven't seen either \$2 bills or Susan B. Anthony dollars recently, this effectively drives home the point that money is socially defined.

Money and its Features

Daniel Levy, University of California-Irvine

Here's how I introduce the subject of money in the class:

I write on the board, WHAT IS MONEY? Then I tell the following story.

When I was young, I thought that money was the most important thing in a man's life, and, as I got older, I realized that it was true. Some people say, "Time is money." If this is so, I am very rich: I have lots of time. Some people say "Money is everything." But, money cannot be everything because if it were, what would we buy with it?

So, what is money? I take from my wallet one dollar bill and read the inscriptions on it. I say, "I am not going to pass this! Is this money?" Some students say, "Yes," while others say "No." Then I take a blank check from my checkbook and ask, "Is this money?" Some students say, "Yes," while others say "No." Then I take some credit cards from my wallet. I point at the American Express card and say, "This is a symbol of my social status in this country! Are these cards money?" Some students say, "Yes," while others say "No."

Then I show them a plastic bag of shredded dollars which are available from the Bureau of Engraving and Printing and many regional Federal Reserve Banks. I read what is written on the bag. "THIS PACKAGE CONTAINS SHREDDINGS OF \$150.00 IN GENUINE UNITED STATES CURRENCY." I digress by telling the students that I bought 10 such packages sent them to my family and told them over the phone that \$1,500.00 is in the mail. They were very happy! Is this money? Some students say, "Yes," while others say "No."

So, what is money? Let's try to characterize money. Let's try to write down features of money. I will start.

- a. Money is dead. Money is not a live creature. It is a dead object.
- b. Money is green. American dollars (the paper money) is green.
- c. Money is rectangular. American dollar bills are rectangular objects.

A student asks, "But, why is it important? Not all the money in the world is green. Does paper money have to be rectangular?"

I obviously agree. So, these are some features of money, but they are not the features that make it unique. What are the features that make money unique? Here they might have some suggestions. If not, I help them by telling some stories. Imagine that tomatoes were used as money. Can you imagine how a modern economy would function, how transactions would take place in that case? How would you pay in cash in order to buy a TV set? To buy a car in cash, you will need several pickup trucks. So,

- d. Money is portable.

In the world where tomatoes serve as money, banks would be giant refrigerators. In modern economy we can always take the cash, put it under the mattress or in a wallet and spend it after a month. Therefore,

- e. Money is storable.
- f. Money is durable.

Imagine a situation where cows serve as money and you go shopping. You take with you 4 cows which you somehow manage to put on a pickup truck. Suppose that you buy something for which you have to pay three cows. You start pushing the cows from the truck: first the white, then the black and finally the blue cow. And the seller says, "Ooo, not the blue cow. I want the red one!" The moral of this story is that unlike cows or tomatoes

- g. money is homogeneous.

Again imagine the above economy and the cashier in a supermarket saying that you should pay 78/100 of a cow. How do you pay that? With modern money we do not have such a problem since

- h. Money is divisible.

I continue in this manner to explain why something that serves as money should also be

- i. scarce,
- j. accepted and
- k. difficult to counterfeit.

To make the class discussion entertaining, I ask students questions such as:

1. Why does money make people happy?
2. Can you buy a \$15,000 new car from a car dealer using only pennies?

Before There Was Money

Steven T. Petty, Northwestern Oklahoma State University

I like to start my money and banking unit off with a discussion of how goods and services were exchanged before money was developed. I emphasize the fact that in the early days before money, there existed far fewer goods and services. The level of technology was low and output was produced by hand. Surpluses were small in size and rare in occurrence. Barter was a convenient way of exchanging goods and services and transferring surpluses from one household to another. "Coincidence of wants" and "the large number of relative prices" were not much of a problem in this simple setting.

As the level of technology advanced, economic systems grew. More varieties of goods and services were being mass-produced and exchanged. Coincidence of wants became a problem. This problem of "matching up with someone who wanted what you had and had what you wanted" became pronounced. Also, the time period, location, amounts, and quality all had to coincide in order for barter to take place.

The large number of relative prices to deal with also became a big problem. At this point I like to show students how a simple four-good economy leads to six relative prices. I start by assuming values for four goods (e.g., $1A = 2B = 3C = 4D$) and then set up a four by four matrix and find the exchange value for each good in terms of other goods. Next, I introduce the formula for finding the number of relative prices. The formula is: $\text{THE NUMBER OF RELATIVE PRICES} = n(n-1)/2$, where n equals the number of goods to be exchanged in the economic system. I then relate the formula back to the matrix. The $(n-1)$ part of the formula relates to the fact that the middle diagonal in the matrix contains 1 to 1 comparisons of goods to themselves. This row is so basic that the formula "throws it out". Next, I show students that the middle diagonal divides the matrix in half and that each half is the inverse of the other. Since $1/2$ essentially means the same thing as $2/1$ when examining rates of exchange between goods, the $/2$ part of the formula "throws out" one complete half of the matrix. I then do a few examples using the formula to show how quickly the number of relative prices increases in economic systems where many goods and services are exchanged.

I wrap up my "before money" discussion by explaining the ways in which money solves many of the problems found in barter systems. As economic systems became technologically advanced, hundreds of thousands of different goods and services began to be produced. A convenient and efficient way of transferring surpluses from one household to another was needed. A convenient and efficient method of exchange was realized when money began to be used to execute transactions. Coincidence of wants was no longer a problem as money became acceptable by all. The large number of relative prices were replaced with a smaller number of money prices. Now my students are ready to fully understand what is meant by "medium of exchange", "story of value", and "measure of value".

Up-to-Date Economic Statistics

By Steven T. Petty, Northwestern Oklahoma State University

Typically, the principles student's first exposure to macroeconomics occurs when covering the topics of GDP, unemployment, and inflation. All three of these topics give rise to statistics and measures that students are unfamiliar with. If the student is unable to achieve a firm understanding of macro measures, then that student will experience difficulties later in Keynesian employment theory and monetary theory.

Besides reviewing the underlying mechanics of macro measures (e.g., explaining that some macro measures are rates of change and that others are comparing one value to another value and that some measures yield percentages and some do not) I feel that it is very important for students to be able to understand how currently reported measures are calculated.

In order to keep my students and myself up to date on current macro measures I have found two excellent monthly publications from the Federal Reserve Bank of St. Louis. The publications are: National Economic Trends and Monetary Trends. The two publications provide graphs and tables of current measures including: real and nominal GDP, the CPI, PPI, and GDP deflator, the unemployment rate, M1, M2, various interest rates, labor force participation, and inventories. I require my students to know approximately the major macro measures.

Although the graphs and tables are very suitable for overheads, I have elected to post the measures in my classroom. This has proven to be very convenient. While many textbooks provide good historical data for examples in class, my posted information allows the class to calculate current measures. For example: in the past I have referred to my posted data for the current GDP deflator and the current nominal GDP figures. I used these numbers to calculate current real GDP. I then compared our calculation to the Fed's measure and came up with the same number. Students liked this and began to trust their abilities in calculating macro measures. The current measures seem to have more meaning to students than the historical data found in most texts.

What Do You Know About The Money In Your Pocket?

Frank Whitesell, University of Southern Mississippi

One subject that interests every student is money. I have found that even the students who normally display little interest in economics can be drawn into a discussion about the money in their pockets.

A good place to start is with some basic facts about our current coinage. You will be surprised at how few people can answer these questions.

- Q: Why are the dimes, quarters, half-dollars and dollars made since 1964 of the sandwich type, with nickel-copper outer layers and a pure copper core?
- A: The copper core is necessary for electrical conductivity, required by many vending machines. This requirement was fulfilled by the old silver coins. A solid nickel-copper coin (such as a five-cent piece) is not conductive.
- Q: All U.S. coins of ten cents or larger denomination have serrated, or reeded, edges. Why?
- A: There is no practical reason for this reeding today. Originally, coins made of silver or gold were reeded to prevent the undetected scraping of metal from the rims.
- Q: Why did the Treasury issue Susan B. Anthony dollars in 1979, and what happened to them?
- A: They were issued to save the government money, predicted to be \$30 million a year. Even though they cost slightly more to make than paper dollars, a coin circulates for several decades, versus an average lifetime of 18 months for a dollar bill. Because of poor planning, the Anthony dollars are easily confused with quarters. (This is one answer that everyone in the class will know.) But there is another point: Americans have never accepted large-denomination coins. Even hundred-year old silver dollars are very common in uncirculated condition today because they have spent most of their lives in Treasury vaults and have never entered general circulation. Over 850 million Anthony dollars were minted, but they never effectively circulated. The series was discontinued after 1981.
- Q: What happened to the silver coins that the Treasury issued until 1964, then replaced with today's clad coins?
- A: This is a good example to use in discussing Gresham's Law. The bullion value of these 90% silver dimes, quarters, and half-dollars is equal to the coin's face value when silver sells for \$1.38 an ounce. By the time this happened, the new nickel-copper clad coins had effectively replaced silver coins in circulation. Someone invariably asks what a silver dime or quarter is worth now. The answer is found by multiplying the current price per ounce of silver by the face value of the coin times 0.72. For example, if silver is \$6 an ounce, a pre-1965 silver quarter has a bullion value of \$1.08.

What is Money?

Kay Johnson, CFP Penn State-Erie

A pile of money attracts student attention! To introduce the topic of money and financial markets, I bring an envelope of money to class and dump it on my desk. When I ask for a volunteer to come to the front of the class and select what money he/she would like to have, I always get an immediate

response. The volunteer often gets a surprise, though, in that only a small portion of the currency and coins is from the U.S. The majority of the money is foreign currency. Normally this causes immediate dialog between the volunteer and the other class members. It is then very easy to lead the class discussion into "What is Money?". This is also an excellent opportunity to explain the various markings and symbols on a dollar bill as well as the significance of a silver/gold certificate versus a Federal Reserve Note. From that point, you can turn the discussion to the topic of inflation and the current purchasing power of the various currencies displayed. Afterwards, you can again ask the volunteer student what his/her selection of money is, as often their preferences will change based upon knowledge obtained through the class discussion. It is also easy to keep students attentive during the remainder of the class session by just referring back to the various currencies and sharing additional knowledge of their history or exchange value.

Why Money?

Jeffrey S. Bader, Lafayette College

Students easily grasp how money is used and why they want it, but most find it difficult to understanding why money exists and precisely what it is. To illustrate the concept of money, I play a trading game with roughly four students in front of the class. Their task is to attempt to trade four different goods, which I represent by giving each of them a piece of differently colored chalk. The game is first conducted without money to illustrate a barter system, and the students quickly see the difficulty of trying to coordinate a coincidence of wants to ensure that all trades take place. The second time each person begins with a piece of colored chalk and \$1. The students readily discover that while it is difficult to trade chalk for chalk, exchanging money for chalk poses few problems. The role of money as a medium of exchange is visually presented to the class.

This brief, but effective exercise enables the class to discuss several aspects of money:

- a. Students quickly see the pressure for a monetary system to evolve from a barter system because the introduction of money efficiently reduces the transaction cost of trading goods. These benefits are more evident when students begin thinking about trying to trade wheat, coats, and refrigerators in a community setting rather than pieces of colored chalk in a classroom.
- b. Students also discover that what distinguishes money from any other good is that it is the medium of exchange. This leads into why some things are classified as money and why some are not, i.e., the monetary aggregates and the difference between M-1 and M-2.
- c. The third lesson that students learn is that money need not have intrinsic value. Its role as the medium of exchange exists simply because it is generally accepted by the public. This leads us into a discussion of the evolution of money from gold and silver coin to Federal Reserve notes.

Money as a Standard of Value

Loren Guffey, University of Central Arkansas-Conway

The functions of money described in macro principles courses too often become a meaningless list that students memorize but don't really understand. After explaining that the primary requirement for money is that it be acceptable as a medium of exchange, I move on to other functions of money. Here is an example that I use to emphasize that money serves as a measure of the relative values of heterogeneous items. (I teach vocabulary as well as Economics!)

Many of my students have a commitment to Christian beliefs and revere the Bible, while others like their spirits in a different form. To illustrate money as a measure of value, I pick the extreme example of a bottle of whiskey and a Bible. First I ask if anyone considers them of equal value. No one in the class ever believes that these two items are of equal value. Then I specify that each is on sale for eight dollars.

Once students realize that even emotionally charged examples succumb to economic laws, they have made a giant step towards understanding economics. The collective values of all members of society determine that these items, priced equally, are of equal value. When students understand that society can value even radically different goods equally without any individual valuing them equally, they not only perceive the role of money as a standard of value, they also get a glimpse of the magic of a market system.

The Historical Parlance of Money

Anthony J. Greco, University of Louisiana at Lafayette

I begin by mentioning that money is anything generally accepted in payment. I remind students that the acceptable means of payment have taken many forms in different times and places. When I point out that such things as bread, clams, and dough have been used and that this is why we still use such slang terms to represent money, they chuckle and tend to easily remember this function of money.

Money vs. Near Money

Dennis C. McCornac, Manhattan College

Students usually consider their passbook savings account to be the same as cash. They are somewhat confused as to why the passbook savings account is not a medium of exchange. To illustrate the difference, I offer the student a dollar bill or my passbook savings account book to use to go to the student union to purchase a cup of coffee. None has ever chosen the savings account book.

What Is Money?

Paul G. Coldagelli, Penn State University-Delaware

Economists at times announce a need for greater saving. The following proposal apparently encourages saving and helps solve the federal deficit financing problem without "crowding out" private borrowing: Suppose firms were required to pay workers 20% of their take home pay in the form of U.S. Savings bonds. The other 80% could be paid in conventional money (cash or check).

How would households respond if this imposed saving was more than they cared for? Given the supply of savings bonds, and their general acceptance, we would likely see consumers offering savings bonds as a medium of exchange, and firms (grocery stores and other retailers especially) gladly accepting these bonds, for they would permit consumer purchases. Those who wanted to save could hold bonds; those who wanted to spend could do so by "spending" their bonds in exchange for goods and services. Society has transformed bonds into "money"!

This example can also be used to differentiate consumers' decisions to spend/save from their decisions to hold their wealth in relatively liquid/illiquid forms. Reducing liquidity (shrinking the conventional money supply) may not increase saving!

Gresham's Law

Jim Cobbe, Florida State University

There are two anecdotes that illustrate different aspects of Gresham's law. First, which money is bad may depend on the individual. In 1945, after the atom bombs ended World War II, Indonesia (the Netherlands East Indies) was occupied by a British Military Administration (BMA) that took the surrender of the Japanese occupying forces. For a while there were four different paper moneys in circulation: pre-War NEI Guilders, the only currency which the returning and released Dutch would accept; Occupation Japanese money, which was available in abundance and had been the official money for three and a half years; British Military scrip in which the British troops were paid and with which the BMA paid for its purchases; and new rupiahs, issued by the rebels fighting for independence from the Dutch, acceptance of which was encouraged by the rebels' guns. Vendors typically quoted prices in the money they were most willing to accept, or that they thought the purchaser was most likely to proffer; prices were always negotiable, and the exchange rates between moneys varied between individuals and from day to day. Allegedly, some members of the occupying British forces were able to acquire substantial quantities of goods starting with very small amounts of BMA scrip and then completing long series of cross-transactions between different moneys with different individuals; others found themselves holding large nominal sums in, e.g., Japanese occupation money or rebel rupiahs, which became almost worthless as the Dutch authorities reestablished themselves. But which money was bad depended on individuals; Japanese troops continued to regard their money as good, and rebels and their sympathizers regarded theirs as good, even after most of the population was refusing to accept them. Hence, the opportunities exist to gain by roundabout transactions.

The second anecdote concerns the failure of the first attempt to introduce paper currency in Tanganyika (now Tanzania). It failed, not because the currency did not maintain its purchasing power but for the much simpler reason that the paper itself was not sufficiently durable in the environmental conditions. It was liable to rot, attack by insects, and general physical deterioration; it did not represent a reliable store of value because it was too likely to literally fall apart and become unacceptable. Hence, paper money was the bad money, driven out of circulation by coins, which were physically more durable, even though in purchasing power terms the two moneys remained at par with each other.

Gresham's Law In Bolivia

Walton M. Padelford, Union University

While working in Bolivia several years ago, I noticed an example of Gresham's Law operating in paper currency. Bolivian paper notes were printed by the Thomas LaRue Co. of London, but unlike the U.S. dollar, there was no simple mechanism for destroying old notes and issuing new ones. This resulted in some paper currency becoming very worn and tattered, often raggedly repaired with tape. Bills that became too worn would eventually circulate only at a discount. That is, if one day you will present a worn 10 peso bill to a merchant, he might have offered you only 8 pesos credit for it. This resulted in a game of paper money-musical chairs. The object of the game was to pass bad currency as soon as possible. Bad money then circulated much faster than good money; or as Gresham would have it, bad money drives good money out of circulation.

Examples of Gresham's Law

James A. Kurre, The Penn State University - Erie

A good example of Gresham's Law, which states that bad money drives out good money, can be found in a typical poker game. Although they constitute only a small proportion of the coins on the table, the Canadian coins continually show up in the pot. While a Canadian nickel has a face value of five cents, its value in terms of American money is less (and it just might jam in a vending machine, too) so Canadian nickels are the first ones thrown into the pot. The last winner of the evening is the one who takes home most of the Canadian money.

Another way to show Gresham's Law at work is to ask the students to pull out all their coins and look at the dates. They will regularly find pennies and nickels with pre-1965 dates but no higher denomination coins with those dates. This is due, of course, to the fact that the higher denomination coins had some silver content before 1965, and increases in the price of silver made the intrinsic/metallic value of those coins greater than their face value. As a result, silver coins disappeared into hoards or were melted, leaving the bad or cheap money to be used for day-to-day transactions.

Barter

Harry G. Shaffer, The University of Kansas

One of the difficulties of barter is that things have different values; some are very valuable and some are not. Suppose we are living in a barter economy, and Mrs. Henry Ford Jr.'s cook tells her that they have run out of salt. Mrs. Ford decides to get it herself. She goes to the grocery store and says to the grocer:

"I need some salt."

"What do you have to offer in exchange?" he asks.

"Don't you know who I am?"

"No, I don't think I have had the pleasure."

"I am Mrs. Henry Ford Jr. and you know the business we are in."

"Oh yes, indeed," the grocer says. "If you give me a green Ford Maverick loaded with options, I'll give you 46,000 pounds of salt."

Of course, she doesn't want 46,000 pounds of salt. She wants two pounds. How can they trade? You might say that this is very funny, but after all, it would not be impossible. The grocer could simply keep book until the value of her purchases equals the value of the car he wants. Unfortunately, not even that is possible. Suppose that over a period of time Mrs. Henry Ford, Jr. buys (and I write on the blackboard):

467 extra large sirloin steaks	212 quarts of milk
59 loaves of bread	315 dozens of eggs . . .

How does one sum steaks and milk and bread and eggs? It can't be done without a common denominator to add up their values. If we know that steaks are \$5.50 each, quarts of milk \$.98 each, etc., then we can add them together until they equal the value of the automobile.

If Barter Is So Bad, Why Does It Still Exist?

Eric K. Steger, East Central University

Typically, after I discuss the usual costs associated with barter some student will say, "If barter is so bad, why does it still exist?" This is a worthwhile question to get students discussing. Answers generally given are (1) tax avoidance and /or evasion; (2) people need products and services and don't have enough money so they incur the costs of barter to receive the benefits from consuming these products and services received from barter.

Medium of Exchange vs. the Standard of Value Functions of Money

James A. Kurre, The Penn State University - Erie

In a discussion of the functions of money, students sometimes have a difficult time distinguishing between the medium of exchange and the standard of value functions of money. The following example usually serves to make the point.

Consider two American students in the study-abroad program. One is just completing a year of study in France and the other has just arrived to begin her year. The departing student wishes to sell his Peugeot, and the arriving student wishes to buy a car. It is possible that they will haggle over the price of the car in American dollars, but the ultimate exchange of currency would be in francs. In this case, the dollar serves as a standard of value while the franc is used as the medium of exchange.

Money and Spending

John P. Cochran, Metropolitan State College-Denver

Discuss the various measures of the money supply (M1, M2, M3, L), and point out that M2 and beyond are estimated because people may think of these less liquid accounts as money and plan their spending accordingly. Indicate that the relationship between money and spending is a major reason why money is a critical consideration in macroeconomics. If you want to anticipate coming materials a bit, you might mention that while Keynesians think spending is determined primarily by income, monetarists emphasize money holdings as the major determinant of spending.

Explaining the Money Multiplier

Donald T. Butler, Central College

A new deposit of poker chips is the change in base for the first monetary expansion problem I give my students. Pile 100 chips, \$1 each, on the desk at the students' left, then put a few half sheets of blank paper on the right side and keep the T-account record on the board. Then ask, "With a reserve requirement of 15% and a cash drain of 5% of demand deposits, how much can the banking system lend?"

Lend \$80, drop \$5 worth of chips on the floor (cash drain), post a half sheet of paper as a Demand Deposit in the bank on the right half of the table and keep \$15 in chips as reserve behind the demand deposits as required. You may want to keep loans of \$80 on paper also. Repeat a sufficient number of times, and you will have \$400 of demand deposits with \$80 reserve (as required) and \$20 currency in circulation. And the change in M1 Money Supply? Demand Deposits (\$400) plus currency in circulation (\$20) equals \$420. This visualization of the reserves being used up in two places, quickly and efficiently teaches the basic concept.

The Banking Cycle

Djehane Hosni, University of Central Florida

Students are, typically, not at ease with the Money and Banking Section which is, in all standard textbooks, presented through a lengthy numerical example. To grasp the essence of the banking transactions and in order to follow the changes in the money supply, I summarize the banking transactions in a banking cycle format with a series of steps.

I. Availability of Excess Reserves (ER)

1. Calculate Required Reserves (RR as = Required Reserve Ratio % X Demand Deposits)
2. Check for Excess Reserves
 $ER = \text{Legal Reserves} - RR$
If $ER > 0$, The bank can extend a loan.

II. Banking Transaction	Assets		Liabilities
*Loan Transaction:	Extension Loan	↑	Demand Deposits ↑
	Repayment Loan	↓	Demand Deposits ↓
Check Withdrawal	Reserves	↑	Demand Deposits ↓
Check Deposit	Reserves	↓	Demand Deposits ↑

III. Have Excess Reserves been created?

- If $ER > 0$, The bank can extend a loan and the cycle repeats itself.
If $ER = 0$, The bank is fully loaned up (no loan can be extended).

* A common error by students is to skip the loan transaction step and omit its effect on the balance sheet. You will mess up your computation if you jump to the check withdrawal step.

Dr. Schlack's Money Tree

Robert F. Schlack, Carthage College

Does money grow on trees? Can banks create money? Regrettably, I sometimes think that students find it easier to believe in the former rather than the latter. Yet, as teachers of principles, we likely would agree that fractional reserve banking and the money multiplier are two basic ideas that students should have mastered by the time they leave the macro course. How might we explicate these highly nonintuitive concepts to a generation which, we are told, prefers pictorial over algebraic manipulation?

While most principles texts contain ample evidence in support of the utility of graphical approaches, I find no attempt to use graphical modes of analysis to explain deposit creating and the money multiplier. This seems unfortunate for all we need do is apply, with minor changes, a concept and technique already familiar to students--the notion and representation of trade-offs.

Consider the following ("Dr. Schlack's Money Tree"). Suppose \$1,000 in new reserves enters the banking system (the proverbial "found hoard" is deposited in an account). Initially, the first round bank is at \$1,000 on axis labeled "Reserves" (as shown). Assuming fractional reserve practices, however, the bank will want to trade-off the safety of holding reserves for the income from extending loans (via deposit creation). This means, in graphical terms, that the bank moves along a 45 degree line that is akin to the familiar production-possibilities curve until its preferred combination of safety (reserves) and income (loans) is reached. For the moment we can assume that the bank feels comfortable being fully "loaned up" (the ratio of required reserves to deposits is taken to be 0.20).

In a second round, the situation is similar for other banks (but note that the maximum--\$800--on each axis is less). The loans extended by the first round bank enters the second round banks as new reserves (see dotted arrow). Again there is a trade-off and these new banks move down another 45 degree line (solid arrow) until an optimum combination of safety and income is reached (again assume it is the legal ratio).

The process repeats a third, fourth, and a success of other times, with each additional round adding less and less to the money supply (the triangles get smaller and smaller). The cumulative change in the money supply (as a result of deposit expansion--"banks creating money") is shown by the horizontal movement of the succession of triangles.

The model also lends itself nicely to showing, very graphically, how the maximum potential expansion (as given by the legal reserve ratio) would not be realized should either 1) banks wish to hold some excess reserves, or 2) the public desires to hold more currency. In the first case, the movement down the line is halted before the points indicated above (and all subsequent triangles are smaller). In the second case, the currency withdrawal causes the relevant 45 degree line to shift inward (and again the triangles for this and subsequent rounds will be smaller).

While students, along with the rest of us, may still wish to believe that "money grows on trees." the model offered above may help to convince doubting neophytes that the trees are planted and nurtured by banks (making the Fed, with its powers to increase or decrease reserves, equivalent to the sun). Now I only wish that I could convince these "powers that be" to plant just a little one of these trees in my own backyard!

"Dr.Schlack's Money Tree"

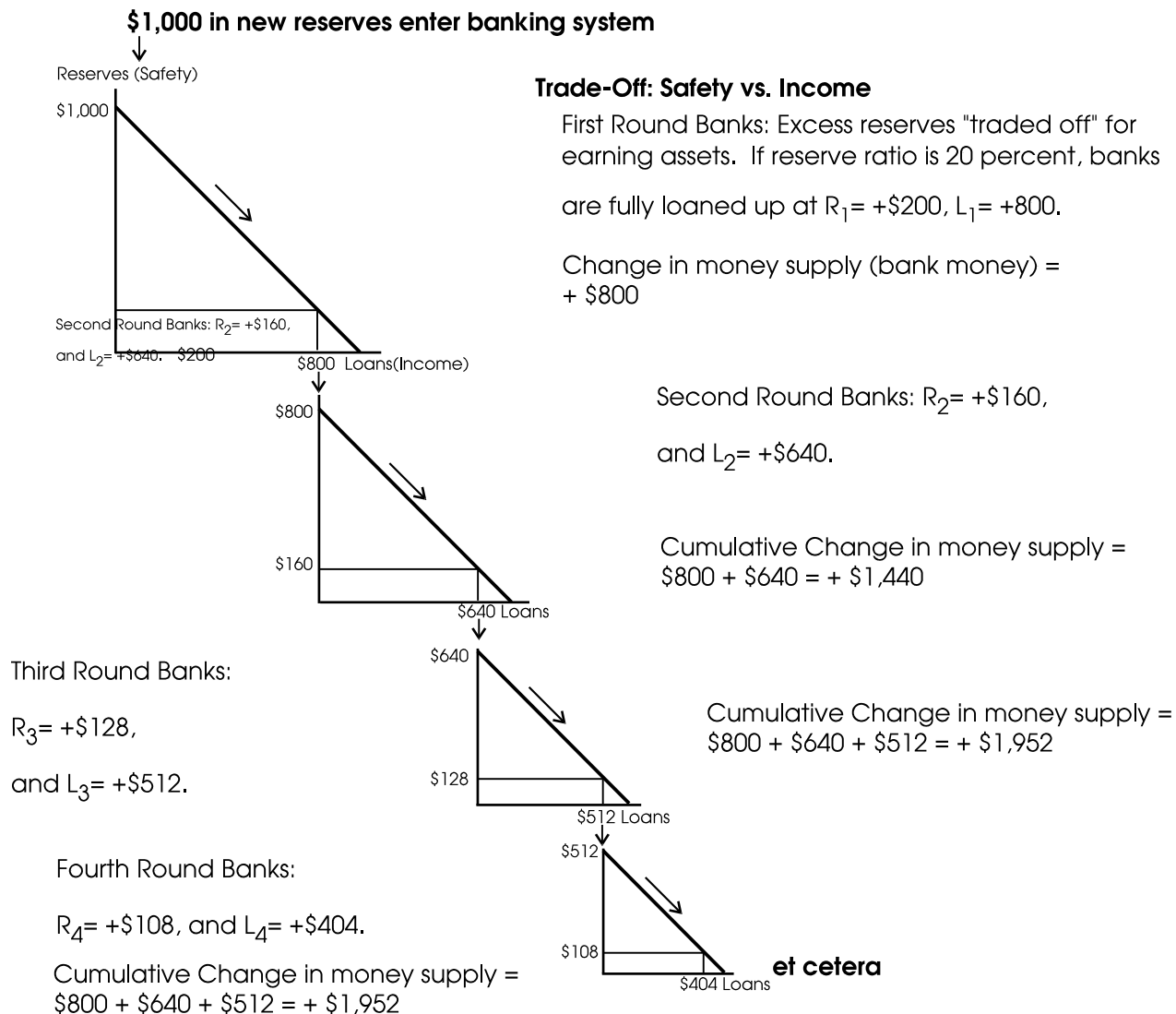


Figure 12-1

Money Creation

Ralph T. Byrns

Appoint a student as the class banker, and use the standard T-account process to show the money expansion process. Place other student names on accounts and IOUs in this money creation process, being sure to emphasize that your 'banker' seems to be creating money out of thin air when making loans.

After arriving at the standard result that the monetary base times $1/r$ equals the potential money supply, point out that this money multiplier ($1/r$) parallels the autonomous spending multiplier ($1/MPS$) discussed in the Keynesian material, that the monetary base is analogous to autonomous spending, and that the money supply is calculated in the same manner that equilibrium was computed in the simple Keynesian model; i.e.:

$$1/r \times MB = MS \quad \text{and} \quad 1/MPS \times A = Y.$$

This reassures mathophobic students, and shows them that learning a little math can pay double dividends; they have more of an incentive to learn this because they will be able to apply the same mechanics to both monetary and Keynesian concepts.

Now suggest to a number of students who have "bank accounts" that there is less in reserve than they cumulatively have deposited. Set up a run on the bank. Ask your banker if there is any solution short of absconding to Brazil with all reserves. Some student will suggest selling some IOUs to another bank. (You might ask if anyone has ever borrowed from one institution and wound up paying another to point out that "factoring" debt instruments is common. Some student almost invariably has had this experience on a car loan.) Then ask, "What will happen if runs on banks become widespread? (Financial collapse.) This sets the stage for the upcoming discussion of the FED and its role as "a lender of last resort."

Fractional Reserve Banking in the Salad Oil Trade

Stanley Kaish, Western Illinois University

When I teach the fractional reserve banking system I remind the students that banking is the only profession in which you can sell the same thing twice and not get arrested. When you lend excess reserves, you have sold the right to demand the same deposits to both the original depositor and the borrower.

Back in the 1960's Anthony DeAngelis, known as the Salad Oil King, practiced fractional reserve banking with his salad oil inventories. He learned, as did the early goldsmiths, that 1) the commodity deposited is fungible, and 2) not everyone wanted to withdraw it at the same time. Mr. DeAngelis ran Allied Crude Vegetable Oil Company which was a tank farm, i.e., a warehouse for salad oil. When some 1 billion pounds of oil were deposited with him to store he issued warehouse receipts which guaranteed the presence of the oil and, not unlike bank pass books, could be used as collateral for loans by the owner depositors of the oil. Mr. DeAngelis then sold 90%* of the oil left in his trust to other buyers, in effect treating it as excess reserves. The other 10% he kept as required reserves to show any owner who came to check up on his oil, assuring the person examining it that the oil being shown did indeed belong to him. As long as all the owners didn't want their oil at once, the fractional reserve system worked as well in oil as it did in banking. Alas, one day all the owners did want the oil, and while the bankers enjoy their country clubs, fractional reserve banking ended up putting the Salad King in jail.

Explaining Bank Liquidity Plus Money Creation

Charles E. Hegji Auburn University at Montgomery

Students sometimes have a difficult time understanding how banks can create demand deposits "out of thin air," so to speak. If the students have already been exposed to the bank expansion multiplier from a principles class, they also may be under the misconception that bank reserve problems are solely related to Federal Reserve reserve requirements against deposits. This example cures both problems.

I begin showing a bank a T-account on the board after a customer deposits \$1000 in cash in the bank by opening a checking account. The bank usually has my name.

Assets	Liabilities
\$1000 cash assets	\$1000 demand deposits

I purposely use the term "cash assets," since it gets away from the students thinking in terms of the Federal Reserve, and actual bank financial statements use this term or something like it. I then show how cash assets would be transferred to other banks when the above customer spends his or her demand deposits.

I then ask a student if he or she would like to borrow some money, and how much, encouraging a large amount. Suppose the amount is \$50,000. I take a piece of paper and write up a loan agreement, get him or her to sign it, and put it in my pocket. I also give the student a make believe checkbook in return. Then I write up the new T-account after the transaction.

Assets	Liabilities
\$1000 cash assets	\$1000 demand deposits
\$50,000 loans	\$50,000 demand deposits

We have just exchanged something of value. I have the student's IOU and the student has his or her demand deposit. And, the bank has created money "out of thin air." Why don't banks do this ad-infinitum, however? The problem, as I point out, is that the borrower would want to spend his or her money which would drain cash from the bank. Hence, we have a liquidity problem, independent of the Federal Reserve.

I think it is an important concept, and it seems to work.

Chapter Twenty-Nine

The Federal Reserve System

Currency Circulation

Kelvin C. Kelley, Providence College

When introducing money and banking, I have students take out their bills and we see if all 12 Federal Reserve banks are represented. By pointing out that each bill was issued from a particular bank, as the seal on the bill shows, and by noting that through circulation from person to person to store, etc., a particular bill has ended up (for now) in a student's hand in Providence, RI, the circular flow, velocity, the exchange system, etc., all are highlighted. At the same time, you can draw attention to the fact that all bills are now Federal Reserve Notes rather than Silver Certificates, introduce the "gold standard" vs. "no gold standard" points of view, and discuss the notion of the real value of currency.

Simple Deposit Multipliers: A Physical Demonstration

M. Dudley Stewart, Jr., Stephen F. Austin State University

After I have taught my students T-account analysis with respect to the expansion and contraction of deposit liabilities, I teach them the concept of the simple deposit multiplier and its application. I begin by pointing out that were we to continue to use T-account analysis we would never reach the end of the expansion process because the numbers become smaller and smaller and smaller. I tell them that this is an example of a convergent infinite geometric series and that by using the formula for the simple deposit multiplier ($X = 1/rr$), we can calculate precisely the money supply expansion limit for the depository institution system. I then demonstrate how to compute it and how it is applied.

To assist my students in gaining a better understanding of the process, I give them a physical exhibition. I proceed to the right wall of the classroom, and with my back touching it, I tell them that I am going to show them that it is simply impossible to reach the left wall if, with a reserve ratio of, say, 0.50, we continue to take half of the distance thereto. I then walk half the distance from the right wall to the left wall and half of the remaining distance again and again and again until I wind up nearly touching the left wall. At this point, I walk in place to demonstrate that by taking half of the distance each time, I will approach the wall as a limit but never reach it. During this part, the students are very attentive and rather amused.

On the blackboard, I show them that we can calculate the left wall as a limit of two (2) by performing the simple operation called for in the formula, $X = 1/0.50 = 2$. I have used this method successfully for many years. At the end of each class in which I have done this, invariably, one or two students, sometimes three, will come to me and tell me that they never understood the concept of a convergent infinite geometric series before, not even in their math classes, until now. Moreover, they say that my physical demonstration has given them new insight into the multiplier and the money supply creation process. (See The Concept of the Investment Spending Multiplier.)

Inside and Outside Money

Carolyn Shaw Bell, Wellesley College

In distinguishing "inside money" from "outside money" or between vault cash and currency in circulation, a former student suggested the example of a bank robber. A successful robbery would automatically increase the amount of money supply, because it would move vault cash into circulation without canceling any demand deposits. Students find this notion sufficiently offbeat for them to think about it and they come to a solid understanding of the difference between currency, demand deposits, and "money."

Federal Reserve System

Ann Mari May, University of Nebraska, Lincoln

In discussing the Federal Reserve System, students should be aware that the 12 district banks are geographically dispersed throughout the country. To demonstrate this point, I ask that they take out a bill from their wallets and notice the number in the 4 corners that corresponds to the Federal Reserve bank.

Then I tell them that if they ever need quick money, one easy bet is that you can guess which Federal Reserve a bill was issued from by merely looking at the upper right quarter of the bill. (The student has of course memorized the 12 district banks and can verify the bank by looking at the round stamp on the left side of the face of the bill.)

When the exercise is over, I ask the students to please pass the bills to the end of the aisle and the teaching assistant will collect them! We need financial support from somewhere!

The Politics of Financial Institutions

Ralph T. Byrns

Point out that long terms for FED board members makes them quite independent. Instead of discussing institutional data, students will be more challenged if you pose questions about the economic factors that have shaped these institutions. Here are some examples.

- a. Why are most banks state-chartered instead of being chartered by the Comptroller of the Currency? ANSWER: Until recently, states could set lower reserve requirement ratios. Use the Socratic method to guide students to the conclusion that this provided greater profit opportunities for state banks than for federal banks, because state banks could grant more loans from given deposits.

- b. Why are the Kansas City and St. Louis District Banks so close to each other in Missouri in the comparatively unpopulated U.S. Midwest? ANSWER: The Chair of the House Banking Committee when the districts were established was from Missouri.
- c. What will be the impact if the Congress passes legislation allowing full-fledged interstate branch banking? Will this facilitate or squelch competition in financial markets?
- d. The idea that elimination of Regulation Q lowered interest rates to borrowers while raising interest payments to savers is counterintuitive, and well worth the time spent in class discussing why. ANSWER: Because the greater amounts of funds kept in banks if savers are rewarded for doing so can only be loaned out if bankers are forced by competition to charge lower interest rates.
- e. Compare bankers' desires for retention of these interest ceilings on deposits with the desire of NCAA coaches to hold the line on payoffs for college athletes; the motivation is quite similar.
- f. Discuss why usury laws "protect" low income consumers only the availability of credit. We indicate why in the text.
- g. In discussing the FED's control of margin (down payment) requirements on stock purchases, appeal to the Modigliani-Miller theorem. Granting the FED control over margin requirements was a misplacement of power if the hope was to check stock speculation because if irrational speculators begin wildly buying stock with low margin payments, more prudent investors will presumably sell; higher stock prices reduce rates of return and make other investments (e.g., real estate) more remunerative. For example, if stocks and real estate each initially yield 10% rates of return, a stock that sold for \$100 per share would yield \$10 per share annually. If the stock rose to \$200 per share, its anticipated yield falls to 5% because the corporate profits determine stock prices, and not vice versa.

Independence of the Fed

Michael Kuehlwein, Pomona College

The Chairman of the Federal Reserve's 4-year term currently does not coincide with the President's 4-year term. This means a newly elected President usually has to work with the Chairman appointed by his predecessor. This is a very unusual arrangement, and to drive this home I use the following political analogy. What if each newly elected President were forced to retain the former Secretary of State and to allow that person to conduct his or her own foreign policy? Such an arrangement usually strikes the class as ludicrous and sure to create serious conflicts in government policy-making. Yet it's similar to the system we currently rely on for the formulation of economic policy.

Finger Pointing and an Independent Fed

Gary Galles, Pepperdine University

Every so often, there is a move in Congress to eliminate the independence of the Federal Reserve System, making it answerable to Congress. This issue of whether we want a dependent or an independent FED can be used to illustrate several points.

1. Given the large number of important variables that FED policy affects or can be used to partially control, no matter what the FED does, there will be gainers who approve as well as losers who complain and, as a result, want reform.
2. Monetary policy has both good and bad effects, whether stimulative or contractionary. Monetary stimulus creates increasing real output and reduced unemployment for a time, which Congress claims credit for, thereby pointing their fingers at themselves), but it also leads to inflationary consequences, which Congress points the finger of blame at the FED for. If contractionary monetary policy is pursued, we get a business slowdown or recession with the FED being blamed, with later effects mitigating inflation, and with everyone else in government trying to claim the credit. An independent FED lets politicians claim credit and deflect blame, no matter what is done, which is why it has maintained its independence.
3. The opposite of (2) occurs with the politicians currently not in power. While the ins try to take credit for the good effects of FED policy and blame the FED for the bad, the outs blame the ins for the bad effects and credit the FED with the bad. Between (2) and (3) political contention over macroeconomic policy is assured. If desired, this can also lead into a discussion of monetary growth rules or other targets, which restrict FED independence but don't increase dependence on Congress and political pressures.
4. Choices between congressional dependence or independence of the FED also lead into a discussion of coordination of monetary and fiscal policy, including the possibility that a coordinated stupid policy may be worse than an uncoordinated approach as well as public choice issues such as the short run political bias.
5. Even if a congressman knew making the FED dependent wouldn't lead to better results, that would not stop some politicians from introducing bills to do it, and telling all their constituents of the noble fight they are waging. The constituent newsletters hint that voters could thereby get the benefits of monetary policy without the costs, but a conspiracy by the bureaucracy in Washington is stopping them. These bills, which are known to be doomed to failure when introduced, are designed to produce political points back home, not effective policy in Washington.

Grade and Risk Aversion

William R. Massey, Santa Rosa Junior College

Economics instructors are often frustrated in attempting to convey the reality of risk aversion, and the human aspects of competition in a capitalistic model. After much trial and error, I finally settled on the following exercise.

I walk in class and announce that the school's administration has changed grading policy effective with this school term. At the end of this term, I must give an "F" for every "A" I give and a "D" for every "B" I give. This grading policy is to take effect after all the drops and will apply to those who are actually still enrolled at the end of the term. I then let a discussion begin which usually starts with a student saying, "That is not fair." I let the discussion continue until some student, and inevitably it happens, suggests that I give all "C's" thereby avoiding flunking someone.

At that point I tell them that this has been only an exercise and ask how many felt that all they had to do was beat the rest of the class to get an "A" and how many feared they would be the "F". I then point out that this policy can account for several things, not the least of which is that some competitors might be willing to cheat, and also that it might explain why socialism may be easier to sell in third world countries. In something less than ten minutes it is possible to convey the human meaning of competition more quickly than in a three hour lecture.

Reporting Grades and the Stock Market

David E. R. Gay, University of Arkansas

When I return exams, my students receive the standard measures of performance such as the average, range, median, and mode. In addition, I compare their results to a stock market with the number of exams becoming the number of issues traded on the exam, or trading day. Based upon a previous exam I compare the number of issues which are up to those exams with higher letter grades, those issues which decline to those exams with lower letter grades and those issues which are unchanged to those exams grades that have remained the same. The students may conclude if the market is a bull market, a bear market, or mixed.

Stock Market Experiment

Jerome L. McElroy, Saint Mary's College-Notre Dame

One technique to pick up a principles class after the mid-term doldrums is to perform a stock market experiment. The subject is inherently interesting, and the structure of the experiment tends to facilitate heightened student participation. The purpose of the class is two-fold: (1) to briefly present the role of the stock market (a) in macro classes as a source of capital formation, or (b) in micro classes as an example of perfect competition; and (2) to test the random walk hypothesis concerning the behavior of stock prices.

For the introduction, the pros and cons of standard topics in corporate finance are covered: bank loans, retained earnings, bond and stock issues. This segment can be climaxed by circulating some Wall Street Journal advertisements of both bond and stock new issues. Then several "after issue" topics can be covered: supply/demand dynamics, short and long-term price movements, price-earnings ratio, the institutional mechanisms (i.e. broker's fees, etc.), role as an economic indicator, and finally how a WSJ stock quotation is used.

In the experimental segment, the class, say, of 40 is divided into four groups of ten. A complete *WSJ* stock quotation is distributed to each group from roughly six months earlier. From these data each group must list seven stock picks and their respective closing prices. The only criterion for selection is that students must have some economic rationale for their individual picks. This task takes 10-15 minutes.

During this time, the instructor lists seven "best buys" on the board with their respective six-month quotations and those taken from the day previous to class. In addition, the two totals are summed and a rate of return is calculated. The instructor can explain these picks are taken from expert analysts, either from *Business Week*, *Barron's*, *WSJ*, or some other source.

Next, the instructor distributes the previous day's price quotations, and each group must (1) list the respective closing prices of their picks, (2) sum the total of the two-date columns, (3) and calculate a rate of return on investment. Finally, a spokesperson for each group must report these findings and compare them with how well the experts did. Invariably, some groups beat the experts and some fall short, but the average performance is about the same. This evidence leads easily into an explanation of the random walk thesis of stock price fluctuations.

The remainder of the class can be spent in several interesting ways: (1) examining the implications of the random walk thesis since it is usually quite contrary to student perceptions and beliefs, (2) pointing out the "full knowledge" assumptions of perfectly competitive markets upon which the thesis rests, (3) discussing the why and wherefore of individual stocks that performed considerably above (below) the average.

The technique works best in 75 minute classes, but it can be accommodated to 50-60 minute classes by reducing the number of groups and/or abbreviating the introductory material.

Chapter Thirty

Monetary Theory and Policy

The Velocity of Money

Paul G. Coldagelli, Penn State University-Delaware

A good way to illustrate the velocity of money is to hypothesize that each student owes some other student a dollar and is owed a dollar by someone else. Each could pay off his debts by taking a dollar out of his pocket and giving it to his creditor. In this way, all debts are settled with \$n dollars. (n = the number of students.) Or, each could wait until he received the dollar owed him, and use it to pay his creditor. In this way, the same number of transactions (\$n) is supported with only \$1. Velocity has increased n-fold.

The exercise also points up the need for precautionary balances as students come to realize that their debt obligations can be resolved only if they themselves receive the payment they expect. This illustrates the debt pyramid and the rationale behind reserve requirements.

Students can calculate their personal checking account (or saving account) velocity. They find this an interesting exercise. Have them look at their most recent bank statement and figure out their (weighted) average daily balance (M). Then have them look at the total value of checks written that month (PQ). They can then calculate their monthly velocity: PQ/M. Suggest that students with very low velocity should be keeping some of their wealth in interest bearing form, rather than "idle" in their checking accounts.

Money as a Hot Potato

Gary Galles, Pepperdine University

The game of hot potato provides a helpful analogy for students who are struggling with the concepts of velocity and money demand.

- a. The velocity with which you pass the potato to the next person is a function of its holding cost, i.e., the hotter the potato, the faster you pass it on and the more round trips it per period. Similarly, the velocity with which you pass money (exchanging money for the next person's goods) is related to the opportunity cost of holding money (the forgone interest rate); i.e., higher interest rates yield higher velocity so that more transactions and nominal national income can be generated with a given amount of money.
- b. The game is over when the temperature of the potato falls enough that someone is willing to hold it. Similarly, equilibrium is reached in the money market when people are willing to hold the amount of money in existence, because they consider the marginal benefits of holding it to be equal to the opportunity costs.
- c. If people were allowed to wear thin gloves to shield them from some of the heat, the velocity with which the potato was passed around would fall. Similarly, introducing interest earning forms of money shields its holders against some opportunity costs of holding money and tends to reduce velocity, other things equal.

Illustrating the Velocity of Money

Roger M. Clites, Clarke College

I simply hold up one finger and say, "Irving Fisher could have said, 'One dollar spent and re-spent a total of five times has just as much impact on the economy as (hold up all digits on one hand) a five dollar bill spent one time.'" He pointed out that it was not only the size of the money supply that impacted on the economy. How rapidly it passed from hand to hand also affects, prices, wages, the employment level output, etc.

The Concept of the Income Velocity of Circulation of Money

M. Dudley Stewart, Jr., Stephen F. Austin State University

Students often suffer from reversed logic when trying to relate changes in velocity (V) to the demand for money (M_d) when studying the equation of exchange: $MV = PQ$. After having given them ways of viewing V and having shown them on the blackboard how it is calculated using actual data, I give them a physical example. I have the value for V already on the board, say (6). I then tell my students to assume that we have been observing V for a period of a calendar year and that it has risen to 100 from 6. I ask them how individuals have changed their economic behavior and they tell me that they are spending money much more rapidly. So, I begin to put my hand in and out of my pocket very, very rapidly as if I were making payments and tell them to visualize a film that has been sped up substantially in which the actors are moving about very jerkily and overly rapidly.

I then tell my students to assume that V has decreased to (1) from (6) and ask them how individuals are behaving now with respect to spending money. They reply that they are not spending it as rapidly, that they are holding on to it longer. I again begin to put my hand in and out of my pocket very, very slowly as if I were making purchases and tell them to visualize a film in which the actors are moving about in slow motion.

In the first instance, I ask the students what might be the cause of such a rapid and large increase in V and they say a high rate of inflation must exist. I tell them that, other things being equal, that is correct and then ask them what that means with respect to the demand for money. Their response is varied; some say it has increased and some say it has decreased. I then go through the physical exhibition again, and again ask the question. They all then say that it has increased because the individuals are trying to protect themselves against the declining purchase power of the monetary unit. In the second instance, I ask the students what might cause a large decline in V , and they tell me that the economy is in the midst of a deep recession or a depression. I ask them what that means with respect to the demand for money, and they say that it has increased because people are being very cautious and are trying to hold on to their money balances longer by not spending as much as previously.

This method adds levity to the classroom, and I have had excellent success with it for many years.

Velocity and Income

Judy Butler, Baylor University

I illustrate the concept of income velocity by passing around a given stock of money at different rates to simulate different income levels. I use monopoly money with all the bills being of one easy-to-multiply denomination. Three or four students to participate by passing bills with me in a circle with each student counting his or her income while I speak to the class about the various payments being made. I have another student keep time and stop us after one minute. I show the effect of velocity on income by passing the bills slowly the first time, and more rapidly the second time. The effect of a changed money supply on income can also be shown. To conclude the illustration I usually ask one or two students to hoard money, thus showing how increased money demand affects income.

What is the Reciprocal of the Velocity of Money?

Mark E. Schaefer, Georgia State University

In discussing the equation of exchange and the quantity theory, we often are forced into an embarrassed remark that the reciprocal of velocity, or the Cambridge K, is a mysterious parameter related to the demand for money. But $1/V$ is not really obscure, only misrepresented. It has a natural interpretation as the average holding period of money by the seller, or borrower or portfolio manager. You can help students gain insight into this phenomenon by making this analogous to the management of inventory in retail sales. The financial press routinely reports the ratio of inventory to sales which gives the coverage or the number of days until current inventory will run out. For example, auto dealers have a 90-day backlog on their lots. Ask the students what this means. Someone will eventually say that it would take 90 days to sell the cars they currently have on hand if the current rate of sales continued; similarly, cash-holdings. This length of time is the reciprocal of the velocity which implies a length of time after which they would run out if they did not rebuild their holdings. This length of time is the reciprocal of the velocity and is the holding period of the last dollar of cash acquired under a last-in-first-out rule. Since the buyer's cash losses are the seller's cash gains, cash holdings are being rebuilt for the system as a whole. Thus, the last dollar acquired is also the typical dollar, and the time it is held is the average holding period.

The actually observed holding period may be contrasted with the desired holding period, which is inversely related to 1) the interest rate foregone on alternative assets, and 2) the expected stability of revenue and spending streams, but directly related to 3) the risk of alternative assets and 4) the brokerage costs of switching between cash and other assets. One may then give an intuitively appealing scenario of a pulse increase of the money supply. First the actual holding period increases, exceeding the desired holding period, and sales increase. If capacity to produce is not being fully utilized, then output can expand. If the economy is already at full employment, then the extra cash chases a fixed flow of goods causing prices to be bid upward.

The Velocity of Turnover

Gautam Mukerjee, University of Pittsburgh

To explain the velocity concept I resort to a little experiment. I ask my students how long each of them keeps a dollar before spending it. The answers are usually in days or hours. The holding times are then converted into the same unit, that is, in days or hours, and the average is found. A standard length of time such as a week or month is then divided by the average for the class. The result is the velocity of turnover during the specified period of time. I then show how during periods of uncertainty the average holding time of a dollar is likely to be higher, since one is unlikely to go shopping immediately after being laid off, thus leading to a lower velocity. Similarly, times of prosperity and growth are likely to witness a higher velocity of turnover.

The Concept of Velocity

William B. Nelson, Indiana University Northwest-Gary

Suppose two students decide to sell cans from a case of beer at a rock concert for 50 cents each. However, they have to walk several blocks to the stadium. Student A has 50 cents and student B is broke. Since it is a hot day, student A gets thirsty and desires to drink a beer, student B agrees but demands student A's 50 cents. A few blocks later student B gets thirsty, drinks a beer and gives student A back the 50 cents. Shortly, student A gets thirsty and drinks another beer giving student B the 50 cents. Of course the process accelerates as the beer takes its effect, and before they reach the stadium the beer is gone. Notice what has happened. Twelve dollars worth of economic activity has been supported by a mere 50 cents. You might have the students calculate the velocity. Also ask what the velocity would have been had they not touched the beer but sold it at the stadium. This analogy has been modified from D. H. Robertson's, *Money*.

Quantity Theory and Money Multipliers

V. C. Kharadia, Northwest Missouri State University

Monetarists contend that changes in nominal income (Y) track movements in the money supply (M) and argue, therefore, that macroeconomic stability requires the FED to follow a steady course of monetary growth. This argument raises two issues:

- a. To what extent can the FED control M?
- b. How does a given change in M affect Y?

The first issue involves the money supply determination process, which can be discussed in terms of the money multiplier: $M = KB$, where K = money multiplier and B = monetary base. The factors that affect K would affect the transition from a policy induced change in B to the resulting change in M . The second issue involves the monetary transmission process from a given change in M to the resulting change in Y . This can be discussed in terms of the equation of exchange: $MV =$

Y, where V = income velocity of money. The quantity theory of money per se sheds no light on how the money supply is determined. And the money multiplier says nothing about how a given change in the money supply would affect the economy. The effects of a given change in M on Y depend upon the behavior of V . These two issues, however, are interrelated in the discussion of the economic effects of monetary policy:

$$\begin{array}{ccccccc} \text{monetary} & & \Delta & & \Delta & & \Delta \\ \text{policy} & \text{-----}>> & K & \text{-----}>> & V & \text{-----}>> & Y \end{array}$$

To present an integrated picture of the money supply determination-cum-transmission process, I substitute the money multiplier equation into the equation of exchange and get $(KB)V = Y$. In its differential form, this can be written as $b + k + v = y$, where b , k , v and y are the time rates of change in B , K , V , and Y , respectively. This equation allows us to focus on how offsetting or reinforcing movements in K and/or V can mitigate or augment the impact of a policy-induced change in B on Y . This enables my students to see more clearly two of the major problems the Fed confronts: first, its control of the money supply and, second, the unintended effects of given changes in the money supply.

Money and Prices

By William Gissy, Morehouse College

Hand each student ten \$5.00 monopoly bills. The students are told that three items will be available for "purchase" (i.e., Air Jordan, a popular compact disk, and concert tickets). The number of units of each item equals one-third of the class size. Each item is then put up for bid starting at \$5.00 and increasing at \$5.00 intervals until the number of buyers equals the number of available units. The price of each item is recorded. The experiment is repeated, with each student given twenty \$5.00 bills. The auction price of each item is recorded for the second round and compared to the price of the first round. With more money, students will bid higher prices for each item. Students must be able to pay the auction price for each good. So for each item the buying students must pay, reducing their bidding ability for further items.

Pure Inflation

Peter V. Mini, Bryant College

The hero strides into the saloon and asks for 20 minutes of companionship. Upon being told that it'll cost him 20 oz. of gold dust, he is incensed, "Last month it took only 1/4 oz., a mere pinch!" He understands, however, when he is told that during his absence they struck huge gold deposits. The unusual character is this example should illustrate the rarity of pure price inflation.

Great Expectations For Money

Dr. Walter P. Scott, Southwest Texas State University

We all demand money, but the reasons are varied. In economics, the concept of the demand for money can be taught by explaining the differences in two opposing theories.

In the first view, the monetarists suggest that money is used mainly to acquire goods and services. As the market rate of interest falls, for example, spending tends to increase for transaction purposes.

The Keynesian perspective suggests that an alternative motive for the demand for money is related to speculative spending. This type of spending is driven by expectations of profits. Remind students that the amount of money individuals and firms demand for speculative reasons vary with their expectations of future price movements. If speculators feel prices of securities are about to fall, they will demand a great deal of money for future investments. As interest rates start to rise, prices of securities will fall, and speculators will reason that by holding money, they can obtain stocks and bonds at lower prices than at present prices. This adds credibility to the old adage to "buy low and sell high".

To illustrate this process, divide a number of students into two groups. One group demands money for transactions. Another group demands money for speculative spending. The participants who demand money for transactions are asked to explain how interest rates generate greater spending. They should respond, "lower rates make purchases less costly". Those who demand money for speculative reasons are asked to explain what they "gave up," and it becomes clear that the group understands that what is given up is current consumption for future "profits" gained.

The two opposing views of the demand for money can be illustrated by a moving see-saw shown below. As interest rates fall, monetary theory suggests consumption spending will increase. However, individuals who are motivated by speculative spending realize as a result of cyclical swings in interest rates, prices of securities will fall as interest rates rise.

The important lesson that students learn is that money not only serves as a store-of-value, but the discussion asks students to examine their values from an economic perspective. The question is: should firms and individuals spend for current consumption, or save in order to build equity? This lesson also gives a practical illustration of "opportunity costs".

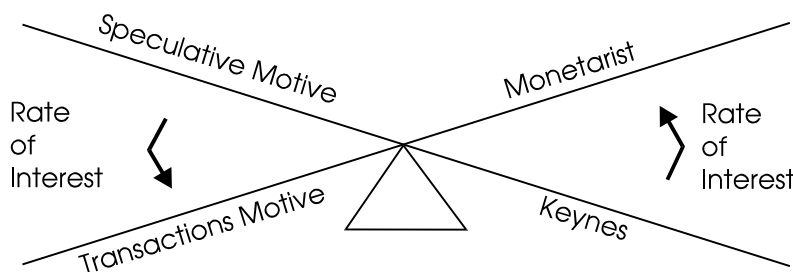


Figure 14-1

The Welfare Cost of Inflation and the Inflation Tax

T. Windsor Fields, Miami University of Ohio

Students often have trouble understanding the welfare cost of anticipated inflation and the welfare tax. The following analogy seems to help. Suppose that at current gasoline prices the average car is driven 15,000 miles per year. The government then imposes a tax on gasoline which consumers partially evade by reducing their driving, say to 12,000 miles per car per year. This results in a loss of transportation services amounting to 3,000 miles per car per year. No one gains from this, so it is a net loss (or cost) to society. At the same time, car owners pay tax on the now smaller amount of gasoline purchased to drive the 12,000 miles per car per year. But since these taxes are received by the government, there is no loss to society as a whole.

In the same way, inflation imposes a tax on money holders which they partially evade by reducing their holdings of real money balances. This results in a decline in the aggregate value of the services provided by money which we call the welfare cost of inflation. Since no one gains, the loss of these services is a net loss to society. This is analogous to the transportation services lost when car owners try to evade part of the gasoline tax. The inflation tax arises because inflation requires money holders to continuously increase their nominal money holdings in order to keep their real money holdings constant at the now lower level. This is a loss to them but not to society. Why? Because the government and the banking system appropriate this revenue by creating new money, which fuels the inflation, at virtually no cost. Thus, the tax on money holders is a gain to money producers. This is a transfer, not a social cost, and it is wholly analogous to the revenue that the government derives from gasoline taxes.

Bond Prices and Interest Rates

Steven T. Call, Metropolitan State College-Denver and University of Colorado-Denver

Many students are mystified by the inverse relationship between the selling price of bonds and the interest rate on that bond. In order to reinforce the relationship, I construct a bond right in class and sell it. The bond is a perpetuity and looks like this:

I, Steven T. Call, promise to pay bearer of this
note 10 cents each December 31st, forever.

Signed,

(8-1/2 x 11 sheet of note paper)

Someone can invariably be cajoled into buying the bond. If the bond sells for \$1.00, I have a dollar and the purchaser has an I.O.U. at a calculated annual interest rate of 10 percent. The holder now offers the bond for sale again. Usually, another student will only offer 50 cents or less for the bond, particularly if I make noises about defaulting. If the bond price sags to 50 cents, the calculated interest rate jumps to 20 percent, due to the fixed interest payment. I usually put the \$1.00 I received for the original bond sale in my pocket and attempt to leave class. Students invariably wish to reverse all transactions, so I 'retire' the bond.

The exercise is particularly useful to help students make the jump from series E bonds to the theoretical perpetuity. Capital gains and losses are also easy to identify. Students also quickly see the reason for the inverse relationship between bond prices and interest rates: the interest is fixed in dollar terms.

The Functions of Money and the Motives for Holding It

Ralph T. Byrns

The functions of money can be useful in explaining the motives for holding money. Transactions demands and precautionary demands are held to meet respectively meet expected or unexpected expenditures; therefore, the most important function of money associated with these motives is medium of exchange. The asset demand for money emphasizes money as a store of value. The difference between the Classical and Keynesian views on the cost of holding money ($100/CPI$ and i , respectively) can now be easily explained also by this method.

The Tennis Racquet -- Explaining Liquidity

Philip J. McLewin, Ramapo College of New Jersey

Decision making under conditions of uncertainty means that hoarding is rational at times. By not spending businessmen withhold a commitment to invest in one project over another. They remain liquid, but are prepared to move when conditions are more certain.

To illustrate this process ask a student-tennis player to come before the class. Give him/her a tennis racquet, you step back, and prepare "to serve" the ball, which is no more than a crumpled up sheet of paper. If the student is good (and serious) he/she will be in a crouched position, racquet in front, moving fluidly between both feet. This stance shows liquidity, where the student is not willing to commit to any one direction. The student is uncertain where I will serve the ball of paper. Once it is thrown, the student shifts to (invests in) a proper stance, and smacks the ball.

If the student is not cooperative, or cannot play tennis, the point can still be made because it is easy to throw the serve past the unprepared (and illiquid) player.

Forecasting 13-Week Treasury Bills Auctions

Elia Kacapyr, Ithaca College

Students must submit evidence (usually a Wall Street Journal article) about how the supply and demand for 13-week treasury bills (primary market) will change. This evidence must be correctly analyzed and then a forecast is made. They can check their forecast in Tuesday's WSJ. Forecasts with bad evidence or faulty analysis are rejected. At the end of the semester, the students who forecast best are rewarded with bonus points on their final. Make sure to have the forecast due before Monday's auction each week. (I've had students call the FED to get the results just after the auction.)

Monetary and Fiscal College Bowl

Peter M. Schwarz, University of North Carolina-Charlotte

To solidify student's understanding of a topic, such as the differences between the Monetarist and Keynesian points of view, I assign a medium-length (10-15 pages) interview with an economist on material that has been covered in the text and in class. I divide the class up into teams (4 to 7 students per team), with a maximum of 4 teams. Those students who are not adequately prepared act as scorekeepers and referees, and play the role of the audience.

From here, I test the student's knowledge in a class formatted like the old TV-game show College Bowl. I toss out a question, and the first hand raised (or buzzer rung on TV) represents the team. Without consultation with team members, a correct response earns the team 10 points. At the end of the response, I tell whether the answer was correct or incorrect; if correct, I might paraphrase the answer to get the key point across. If incorrect, I state this and then recognize the next hand, with this team getting 10 points for a correct answer. If the answer is not correct, any remaining teams have a chance.

In some cases, there is a bonus question worth 5 points. Answering the initial question correctly entitles that team only a chance at the bonus. Usually, this is a slightly more difficult question. The team is allowed to confer on the bonus for 30 seconds, and one member must then give an answer. If the answer is correct, I go on to the next question. If incorrect, I ask for volunteer responses from the other teams or audience, but there are no points for a correct response.

There must be some reward for participation, and an additional reward to the winning team. (I often get rid of left-over Halloween candy or give out inexpensive business or economics books). The technique is a useful change of pace that gets students excited.

Fiscal and Monetary Policy

By: Kay Johnson, Penn State - Erie

While it is extremely easy to criticize our government officials for the state of the economy, it is extremely difficult to develop an alternative fiscal and monetary policy that will solve all of our country's economic woes. To help students understand the enormity of the task and also to develop a greater interest in fiscal and monetary policies, I have implemented the following project as a large portion of the final exam in Introductory Macroeconomics courses. This project is assigned about mid-point in the semester to enable the students ample time to develop their ideas and also to allow them time to review their preliminary outlines with me. I do, however, require that the students actually write their final papers in class during the final exam period as a guarantee that they are doing their own work.

The project consists of three parts. First, the students must define what they feel the primary economic goal of the United States should be at this time. Secondly, they must outline the fiscal and monetary steps which should be taken to achieve that goal and explain the effects of each step. Lastly, the students must identify other economic problems which will likely result from their actions. These projects are not graded based upon the goal selected, but on whether or not their actions would be likely to achieve their goal and if they identified the major secondary problems which would be created.

By assigning this project early in the semester, the students will take an increased interest in the class and also in related news events and articles. I have been told that this assignment creates a lot of "dining room" conversations and debates on campus as well as at home with their families.

Controlling Inflation and Unemployment

Richard J. Pullen, Mt. Wachusett Community College

First, I split the class in half and give one half the right to "raise" various elements and the other half the right to "lower" the same elements. I then list the elements on the blackboard:

1. Federal Reserve's Discount Rate
2. Bank Reserve Requirements
3. Government Spending
4. Federal Taxes
5. Government Short Term Funds

To control inflation, I explain how each of the five elements must be "raised" except government spending which must be lowered. To control unemployment, I explain how each of the five elements must be lowered except government spending which is raised. The class participates in the following days by responding to my inquiry "How does the government control the money supply to fight inflation?" The half of the class assigned "raise", verbally list off the elements 1, 2, 4, & 5. The other half of the class assigned "lower", verbally respond by lowering government spending, element 3. A week of repetition reinforces the desired correct responses.

Chapter Thirty-One

Deficits and Public Debt

Our \$3.3 Trillion Debt

Michael Kuehlwein, Pomona College

As of June of 1990, the gross debt of our federal government was \$3.3 trillion. This is such a huge number, most students cannot comprehend it. To help, I tell them that if they spent \$1 million per minute 24 hours a day 365 days a year, it would take longer than 6 years to spend \$3.3 trillion. That usually stuns even the most avid shoppers in the class.

The FED as the Federal Government's Watchdog

Rona S. Weiss, Iona College

To explain the complex, semiautonomous relationship between the Federal Reserve and the central government, I ask my students to imagine that they are on a diet and must therefore control food intake. Therefore, they ask a trusted friend or relative (FED) to stand guard at their refrigerator. Although they asked the guard to control intake of food (money or credit creation) in the morning, when evening television time comes and they want a snack, they find themselves in conflict with this guard whom they have charged with a responsibility that may be both necessary and beneficial to their own survival.

Balanced Budgets and Monetary Growth Rules: Conflicts?

Ralph T. Byrns

The government budget constraint equation may be used to show how a monetary growth rule (any fixed percentage rate of growth in the money supply exceeding zero) and a balanced budget may be incompatible. These two proposals are often supported by the same people. If a monetary growth rule of a fixed 4% annually were adopted today and if the FED used only open market operations as a basis for this growth, in the absence of further budget deficits the entire national debt would be owned by the FED in roughly three decades. If the budget continued to be balanced annually, further monetary expansion would require continually reducing reserve requirements. Once this avenue for expansion was exhausted, the FED might be forced to set the discount rate slightly below the market interest rate, but tightly regulating the growth of the monetary base with this mechanism would be exceedingly difficult.

An alternative to balancing the budget that would permit open market operations as the mechanism by which the rate of monetary growth could be regulated would be to set tax rates so that a tiny budget deficit would typically be run each year. This would stabilize the national debt and permit a fixed rate of monetary growth as desired by those who prefer rules to discretionary policy making. This approach was first suggested in the 1920s by a University of Chicago economist.

Are the FED's Holdings of Federal Debt Meaningful?

Ralph T. Byrns

Remind students that expansionary open market operations entail FED purchases of U.S. Treasury bonds and that the FED is actually an arm of the federal government, regardless of legal fictions to the contrary. Identify your left pocket as the Treasury and your right pocket as the FED. Then pull some money (a big bill will help students remember this point) out of your right pocket. Show it to your class. Stick the bill in your left pocket. Now state that if you were a government accountant, you would alter your books to show that the left pocket (Treasury) owes the right (the FED), say \$20.

Now explain that the Treasury does formally (on paper) pay all interest due on the FED's bondholdings. Illustrate this by visibly moving a few coins from your left pocket to your right pocket, showing your students the amount moved. Follow up by explaining that the FED must regularly return its surpluses (annual receipts exceeding 6% of member banks' "stockholdings") back to the Treasury. Visibly move most of the coins that represented "interest payments" back to your left pocket. Ask your students if any of them would ever keep records of how much money was in which of their pockets, and if transferring corresponding payments between pockets makes any sense. Admit that the government does need to keep track of where its money and bonds are, but point out that anyone who asserts that the amount of federal debt held by the FED (roughly 1/3 of the total) represents an external burden is either naive or a demagogue. The point is, of course, that the FED's total holdings of Treasury bonds are strictly internal to the government, and are almost totally irrelevant to private individuals.

The Hot Air Balloon Show

H. Bruce Throckmorton, Tennessee Technological University

This past summer, I took my six year old son, Adam, to a hot air balloon show. The largest balloon was dark green with the word MONEY emblazoned on it in gold letters. Adam asked me about the big green balloon. I said, "That is money. It is made up of those green pieces of paper that your grandparents send you for Christmas and your birthday. But that's not all it's made of. Remember, some of your money is in your bank account. All of your paper money and bank accounts and all of my paper money and bank accounts and all of everyone's paper money and bank accounts are in that big green balloon."

"What makes it go?" Adam asked me. "Does it burn up all our pieces of paper and bank books to make hot air?" "No," I calmly answered. "The only hot air that fuels that balloon is the ability of people, business, and governments to borrow."

"If we wanted to hold our money in our hands, the balloon would have to be deflated," I told him. "To give us our money, the banks, the Federal Reserve banks, and all other organizations that deal with this big balloon would have to make sure their loans were repaid right now. The

government would have to slaughter the national debt and give part of it to the banks. We would have to give part of our house and cars to the bank. I don't think I would like to do that."

Adam said that he certainly didn't want to give up his room or his seat in the car. He didn't even want to give up part of his school or the street in front of the house.

We decided that if the balloon collapsed, we would be much worse off than we are now. "But," Adam asked, "why doesn't it just collapse? What if somebody shot it with a gun?" I had to answer that it couldn't collapse because our faith in the dollar would cause it to heal itself. "Remember what the preacher says in church?" I asked. "He says have faith and nothing will be impossible for you. If we have faith in the Almighty Dollar, that big green balloon will keep on getting bigger and bigger."

"Then someday it will just go boom and be all gone," Adam replied to me. I chose not to argue with the logic of a six-year old.

Public Debt is an Incurable Disease

H. Bruce Throckmorton, Tennessee Technological University

Many students, as well as other persons, are appalled at the size of the Federal debt. They often believe that something should be done immediately to reduce the debt. I compare reducing the debt to a situation in which an individual is told by his doctor that he has an incurable disease, but the disease can be controlled so that he may live a long and productive life. The only way the disease can be cured is to end the patient's life. Therefore, the cure is worse than the disease. The cures for a large public debt such as printing money, raising taxes, assessments, repudiation, would eliminate the disease of the debt but would cause economic problems more severe than the debt itself. Living with the debt may be better than eliminating it.

Deficits and the Laffer Curve

Ralph T. Byrns

Discuss whether the massive deficits of 1981-87 are negative evidence for the suggestion that we were in the upper range of the Laffer curve. Suggest that it is more likely for an individual state or municipality to be in the upper region of a Laffer curve than it is for the federal government. The reason is that very low taxes (especially on businesses) may cause relocations between states raising revenues in states with lower taxes, but this is not as likely at the federal level.

Taxes, Deficits, and the Printing Press

Ralph T. Byrns

Ask students whether rising budget deficits threaten the federal government with bankruptcy. Then discuss:

- a. the advisability of a Constitutional amendment that requires annual (each time Earth orbits the sun) budget balance.
- b. the proposition that the budget showed balance over the business cycle, with deficits during recessions and surpluses during prosperity.
- c. functional finance; the idea that the economy, not the budget per se, should be balanced.

This may be an opportune time for you to mention that federal spending need not be financed strictly by taxes. Borrowing and printing new monetary base are also possibilities. (These are explored in more detail in Chapter 15.) One interesting question for students is to ask them if they would do anything to collect money elsewhere if they had the right to print it. To the "No" response, ask why the federal government collects taxes; it can (through the Federal Reserve System) print money. Students will conclude that federal government spending would cause huge increases in the supply of money and inflation. This raises the point, made by Abba Lerner among others, that the primary reason for federal taxes is their deflationary effect.

Be sure that students understand why a recession may cause a budget deficit (rising transfer payments and shrinking tax revenues). Then discuss the possibility that attempts to eliminate such a deficit may substantially deepen a depression, and could conceivably be self-defeating, e.g., cutting government purchases may so deflate induced income that revenues from a progressive income tax system actually fall.

Deficits and Increases in the Money Supply

Tracy C. Miller, Grove City College

Many students have difficulty understanding the connection between deficits and increases in the money supply. This exercise involves the students in role playing to demonstrate how deficits can be funded.

I ask for several volunteers to be wealth holders in the economy, someone to be a government employee and one person to act as the Treasury representative. I play the role of the Federal Reserve. The wealth holders are each given \$10,000 in play money.

The following problem is considered: The Treasury needs to pay the government employee and they have run out of money. The student who represents the Treasury is given the task of selling a government security to a member of the public (one of the students who has the play

money). I use a facsimile of a \$10,000 five-year treasury bond paying a coupon rate of interest. Upon receipt of payment, the Treasury agent then pays the \$10,000 to government employee.

At this point I ask the class what has happened to the money supply. It is obvious to all that this method of financing the deficit has not affected the money supply. I then note that the Treasury will have to use tax money or additional borrowing to pay interest and retire the principle when the security comes due. But I emphasize that this will not cause a change in the money supply.

Next, I introduce the role of the Federal Reserve. Government borrowing puts upward pressure on interest rates so the FED decides to purchase government securities on the open market to reduce interest rates. The FED bids on the outstanding government security, and pays for it by creating the money. To show this I write the dollar amount of the transaction on a blank piece of paper and pay it to the person who purchased the security from the treasury. As the representative of the FED I then obtain ownership of the treasury bond. I emphasize that this is newly created money that the FED is using to purchase the bond. I explain to the class that since the FED is an arm of the government there is no need for the government to pay itself the principle when the security comes due. In effect the government has financed part of the deficit by creating money.

I conclude the discussion by reemphasizing the point made earlier, that the treasury borrowing had no effect on the money supply. It is only if the FED chooses to increase the money supply to maintain an interest rate target that there is any connection between the amount of treasury borrowing and increases in the money supply.

Chapter Thirty-Two

Microfoundations of Macroeconomic Policy

The Common Sense of Aggregate Demand and Aggregate Supply

*Mark E. Schaefer, Georgia State University
and C. Richard Long, Georgia State University*

A) What are the AD and AS curves?

The aggregate demand curve AD, asserts the existence of a stable meaningful inverse comparative static relation between the average price level, AP, of final goods and services and the total or aggregate quantity demanded, AQ_d , of final goods and services per unit of time. The aggregate supply curve, AS, makes the symmetrical assertion that the flow of total quantity supplied, AQ_s , is directly (rather than inversely) related to AP.

Why is the AQ_d inversely related to AP? Given the money supply, M, and given the velocity, V, at which money moves from hand to hand in exchange for final output, then the equation of exchange tells us that the product of AP and AQ_d is a constant or that AQ_d is inversely related to AP. In other words, a larger demand for a quantity flow of final sales, AQ_d , can be transacted with the current stock of money only at lower average prices bid by the demanders, AP_d , when the velocity of money is stable. Of course, when AQ_d is relatively large and money is relatively scarce, then loans will be relatively hard to get, the interest rate will be relatively high and transactors will economize on "barren" cash by using it more intensively and moving faster, i.e., by increasing the velocity of cash, which partly migrates the initial scarcity.

Why is the AQ_s directly related to AP? The lower marginal productivity of labor associated with a larger aggregate quantity flow of final output supplied, AQ_s , can be absorbed only at a lower real wage, which implies a higher average price level offered by suppliers, AP_s , when the nominal wage is fixed.

B) Of what use are the AD and AS curves?

Inflation and unemployment always top the list of citizens' concerns in public opinion polls on the macro economy. The AD and AS curves are useful for analyzing the effect on equilibrium AP and AQ either of a shift in AD and the implied movement along AD. Thus, AD and AS help us to understand the two main macro economic issues of inflation, which is the percentage rate of increase of issues of inflation, which is the percentage rate of increase of AP over time, and unemployment, which is related through Okun's law to the percent by which AQ falls short of its potential.

What are the limitations of the use of the AD and AS curves? 1) We actually have only fuzzy curves at best, rather than clear-cut ones, so AP and AQ are only imprecisely "determined" as a result. 2) We are repeatedly tempted to use the curves to analyze dynamical situations when they were derived under static assumptions. In other words, knowledge of the starting and ending positions of the system does not tell us the intervening pathway over time. 3) The dynamical path may be destabilizing, thus preventing the system from ever achieving the ending position implied by comparative static analysis. The very existence of motion in an economic system may stir up

momentum effects that were quiescent in the calm world of static equilibrium, where the future will be like the present. My present demand depends on the future price as well as the present price. When the future price may be higher (or lower) than the present price, then a new speculative component of demand is introduced which was absent before. When the economy is launched on a pathway of change, participants who formerly knew what to expect must now guess about an uncertain future. In turn, these guesses influence behavior which influences the pathway which influences guesses and so on in a feedback process that gets so entangled as to appear chaotic to the imperfectly informed observer. In fact, the newly developing mathematical theory of "Chaos" attempts to sort out this seemingly unpatterned random complexity into its underlying deterministic simplicity.

C) How are the AD and AS curves different from their microeconomic counterparts DD and SS?

Total income of the economic system is taken as a fixed parameter in the microeconomic "partial equilibrium" analysis of a particular market, so individual price can be determined (which explains why micro economics used to be called the theory of price). But when we look at the whole economic system, total income is no given, but is precisely the thing whose equilibrium value we want to discover. So aggregate income (which cannot differ, for the system as a whole, from total real output, AQ_e explains why whole-system or "macro" economics used to be called the theory of income determination).

AD differs from DD because the macro view sees the entire circular flow which feeds back any initial change of spending to create additional re-spending of income. This multiplies the total effect over time of any initial change of spending by capturing the secondary, tertiary and later effects in the circular flow, thus magnifying the horizontal shift of AD. Increasing the money stock increases the ability of buyers to bid over one another for goods, thus driving up AP_d at any AQ_d and shifting AD upwards, i.e., vertically rather than horizontally.

Similarly, AS differs from SS in that AS includes a multiplied effect compared to SS because reinvestment of part of the flow of output multiplies the capacity to produce over time, thus magnifying the rightward shift of AS. Moreover, strong (weak) AD over time raises (lowers) the reservation wage of labor, thus raising (lowering) the bargaining floor and shifting AS upward (downward). For a given AD, this drives AP_e upward (downward) and AQ_e leftward (rightward).

True Supply Side Miracles

Michael Kuehlwein, Pomona College

There are lots of good examples of how a combination of an increase in the number of producers and technological innovation can shift the supply curve out, leading to dramatically lower prices and higher sales. When ballpoint pens were first introduced in 1945, Gimbel's started selling them for \$12. In today's prices that would be around \$80. Macy's soon introduced their own version for \$19.95. Competition and probably advances in production lowered prices steadily until by 1948 you could buy one for 38 cents. Sales boomed. In 1973 hand-held calculators that could merely do

the four basic arithmetic operations cost over \$100. By the late 1980s, solar-powered calculators that could do more could be purchased for less than \$5 and were commonplace. In 1979 the average cost of a VCR was \$1300. By 1990, you could buy a much more sophisticated model for less than \$300 and over half the households in the US owned one.

Illustration of an Aggregate Supply Curve of Labor

Peter Hess, Davidson College

I begin the series of lectures on factor markets with a classroom illustration of a supply curve of labor. Suppose the college is offering part-time employment to students during the next term. For each wage called out, the students are asked to indicate how many hours of labor (0, 5, 10, or 20) they would be willing to supply each week. The table for the entire class is then filled in to derive the class supply of labor.

Number of Students Supplying Labor

wage per hour	<u>5 hours</u>	<u>10 hours</u>	<u>20 hours</u>	<u>Total</u>
\$2	—	—	—	—
\$4	—	—	—	—
\$6	—	—	—	—
\$8	—	—	—	—
\$10	—	—	—	—

The class or aggregate supply curve could then be plotted. The expectation would be an upward sloping curve indicating the rising opportunity cost of leisure although for higher wages you may find a backward bending curve if the income effect outweighs the substitution effect. At this point the instructor can return to indifference curve analysis and the labor/leisure trade-off's or discuss the following:

1. the elasticity of supply, reservation wages, transfer earnings, and economic rent.
2. shifts in the supply curve due first to the type of employment, e.g., fringe benefits and non-monetary considerations which affect the quantity of labor supplied at any wage and, second, to incentives, e.g., the effect of an increase in the tax rate on labor income, or an increase in student aid, or an increase in the expected inflation rate, or the willingness to work at any nominal wage rate. This could easily lead into a discussion of supply-side economics.

I find that not only does this simple derivation of an aggregate supply curve of labor interest the students by bringing home a number of important concepts, but it leads nicely to the demand curve for labor and equilibrium in the labor market, including the effects of labor unions and minimum wage laws, and sets the stage for later analysis with the aggregate supply curve for national output.

Supply-Side vs. Demand Side Exercises

Ralph T. Byrns

We have integrated much of modern discussions of fiscal policies from a supply-side perspective. Discuss with students whether the following monetary and fiscal policies will stimulate or detract from Aggregate Demand or Aggregate Supply, if they do anything.

Policy	Aggregate Demand	Aggregate Supply
a. Raise tax rates		
b. Raise government spending		
c. Raise transfer payments		
d. Make income taxes more progressive		
e. Lower corporate income taxes		
f. Extend unemployment compensation		
g. Increase investment tax credits		
h. Accelerate depreciation allowances		
i. Allow investment as a deduction from income taxation		
j. Allow saving as a deduction from income taxation		
k. Eliminate mortgage interest payments as a deduction from income taxation.		
l. Raise the discount rate		
m. The FED sells Treasury bonds		
n. Raise the reserve requirement ratio		
o. Threaten to audit banks that borrow too much or too often from the FED		
p. Raise margins required to buy stock		

Cost-Push Inflation

Diane Cunningham, Rancho Santiago College

To explain the idea of cost-push inflation I introduce the new field of laser-frisbee technology, which consists of three firms employing a total labor force of 10 engineers. Each of the engineers works up to her fullest capacity, contributing \$50,000 worth of labor services to industry output, for which she receives \$50,000 income. It is physically impossible for any of the engineers to be more productive, and it will be at least two years before any new firms or engineers will be available to expand the industry.

Once the engineers become aware of their position as a resource oligopoly they demand more pay by threatening to move to one of the other firms. This is an effective ploy, since other firms might well be willing to offer more money in an attempt to capture a dominant position in the market by acquiring control of most of the available engineering resources. At the end of the ensuing bidding/negotiation process, the average pay of engineers in the industry is \$62,000. The competitive value of industry output is still \$500,000 (\$50,000 worth of engineers' services x 10 engineers) but costs have risen to \$620,000 (\$62,000 per engineer x 10 engineers). This cost increase will be reflected in a higher product price overall for the same amount of product.

Super Bowl Tickets and Why the LM Curve Slopes Upward

William C. Lee, St. Mary's College of California

One of the more difficult concepts for Macroeconomics students to grasp is why the LM curve slopes upwards. Because the demand for money is inversely related to the interest rate, they somehow feel that LM must slope downward as well. I find it helpful to suggest an analogy in a market with which they are familiar - for example, super bowl tickets (or any market where supply is fixed).

First I draw a fixed supply curve (suggesting 80,000 tickets) intersecting a normal downward sloping demand curve for super bowl tickets (Figure 1a). I ask them to remember back to Economics 1 and tell me what factors other than price will determine how many super bowl tickets buyers will demand. Eventually someone says "income". I then label the demand curve representing an average income of \$50,000, and show the equilibrium price to be \$100. I then ask how Figure 1a would change if buyers' average income rose to \$75,000. The students realize that at a price of \$100 a shortage would occur and the now richer buyers would bid up the price of the 80,000 tickets to say, \$150.

Now I suggest to them that even though we have never been concerned with anything like this before, we have all the information necessary to easily graph the relationship between different income levels and equilibrium prices holding the supply of tickets fixed. I then take the information from Figure 16-1a and plot the two points on Figure 16-1b with price on the vertical axis and income on the horizontal axis. I call the curve that connects the two points a PINC curve. This upward sloping PINC curve shows the different income levels and prices where the demand for super bowl tickets equals the 80,000 supply. When income was \$50,000, equilibrium price was

\$100 while when income was \$75,000 equilibrium price rose to \$150. Because supply is fixed, as income increases, so must the equilibrium price.

I then remind them that the interest rate is the price that equilibrates money demand and money supply. Because money demand is positively related to income (transactions demand), they now see that for a given money supply a higher income must result in a higher equilibrium interest rate. I then draw the conventional money supply equal money demand relationship (Figure 16-2a) and translate the information to an LM curve (Figure 16-2b). For example, with a money supply of 1000 and an income of \$5,000, the equilibrium interest rate would be 10%. If income increases to \$7,500 money demand will shift outward raising the equilibrium interest rate to 15%. Students see that these curves are similar to the curves in the super bowl example.

Eventually I demonstrate that if the fixed supply of tickets increases, the PINC would shift outward. They then realize that when the money supply increases, the LM curve shifts outward in a similar way.

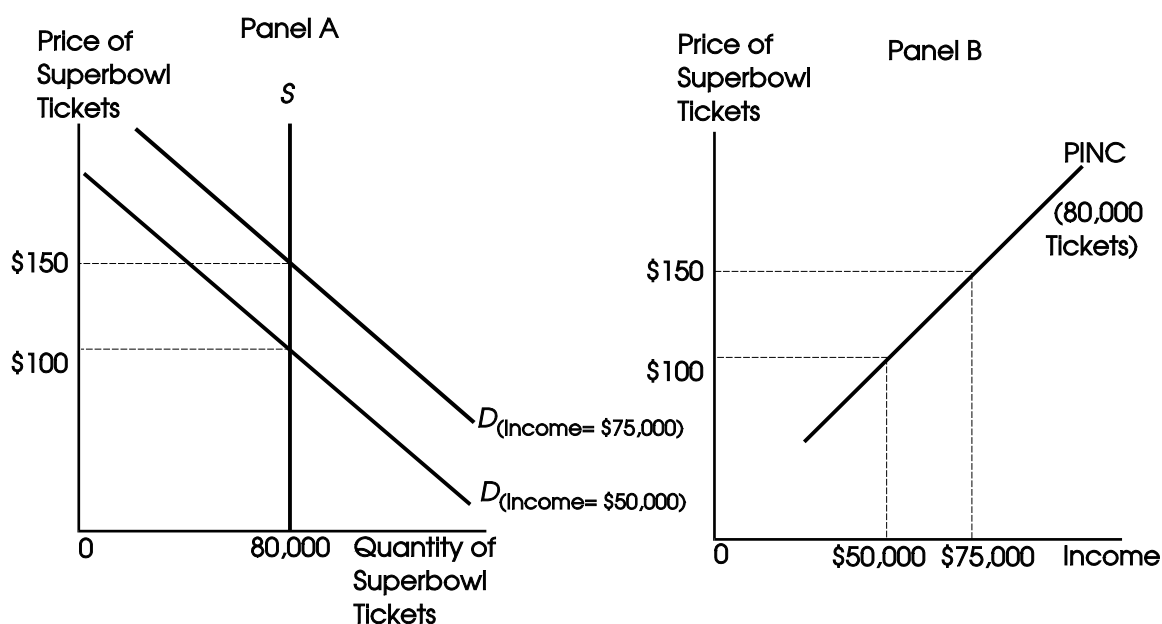


Figure 16-1

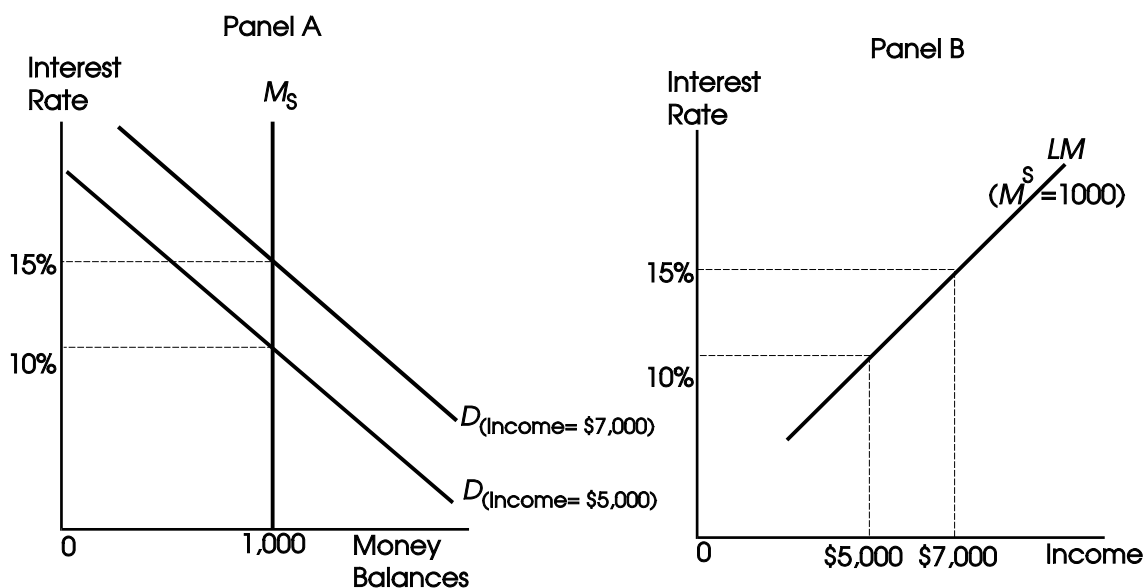


Figure 16-2

Speedboat Modeling

Loren Guffey, University of Central Arkansas

I like to use IS-LM models to illustrate phases in the development of macroeconomic theory. This IS schedule is derived from the investment demand function and the LM Schedule is derived from the liquidity preference schedule. Students need a gimmick to help them remember what is being measured on the axes and what the slopes of the lines should be. At the end of a rather extensive lecture I end up with the graphical models shown below. There is a way to check to see if the student has depicted the relationship correctly. I explain that they can remember that the LM model should remind them of the wake of a boat speeding away from them. The IS model should remind them of the wake of a boat speeding across their bow from starboard to port. Those in the class who are familiar with nautical terms delight in explaining what they see to the others. They end up remembering what each model should look like and learn some nautical terms as a bonus!

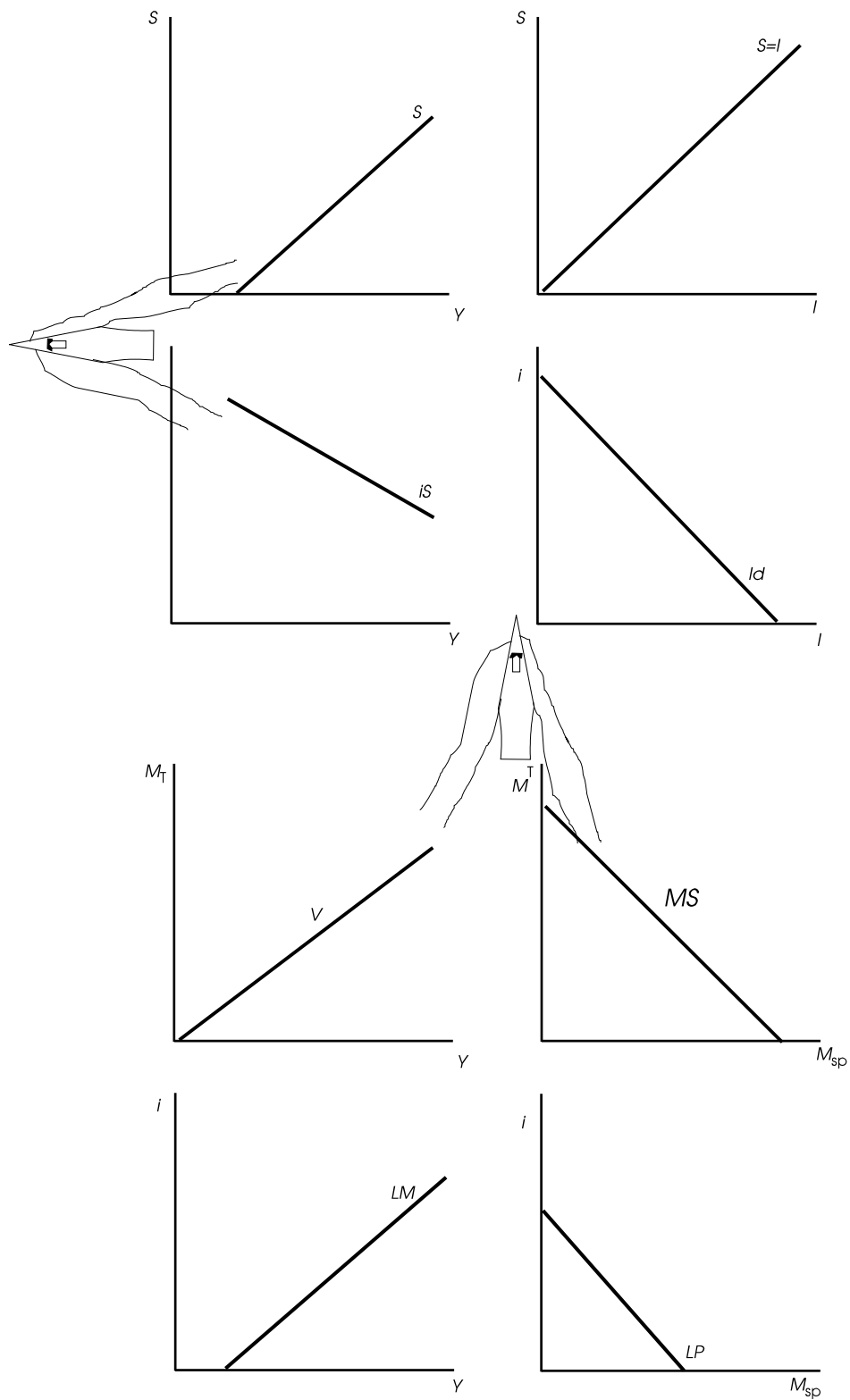


Figure 16-3

Chapter Thirty-Three

Active vs. Passive Policy Making

The Supply-Side Squeeze Leading to Stagflation

Dr. Carl B Montano, Lamar University

The analogy often used to illustrate demand-pull inflation with the aid of a (Keynesian) GDP Tank Model is water overflowing from one's bath tub at home. A corresponding analogy for cost-push inflation with the same GDP Tank Model is generally impractical to do.

A creative alternative is suggested here using an ordinary can of soft drink, such as e.g. Dr.Pepper. First, explain that stagflation is the simultaneous occurrence of high unemployment, or a recession, and high inflation. Then open the can of Dr. Pepper and take a few sips to reduce the liquid content. Tell students that the can represents an economy's production capacity or GDP Tank. Show the partly empty can to some students seated in the front row, telling them that the vacant space in the can represents unemployment. Ask them, "How is it possible for a real-world economy to have so much production slack, or unemployment, and yet have high inflation?" Point to the can and say, "How could this can, representing the GDP Tank, be partly empty, yet overflowing at the same time?" Answer your query by saying that stagflation occurs because the economy's aggregate supply, represented by the can's capacity, has decreased.

Gripping the can in the middle section, hold it up before the class (Note: Be sure to put a garbage can lined with a plastic bag underneath!) and squeeze hard, compressing the can until the liquid content overflows. Say that the supply-side squeeze on the economy caused the inflation (overflow) in spite of the fact that there was high unemployment (vacant space in the can).

The Phillips Curve and a Seesaw

Ki Hoon Kim, Central Connecticut State University

As an economy approaches full employment, certain sectors within the economy face shortage and the price begins to rise. This is what economists call premature inflation. If the aggregate demand continues to increase and surpasses full employment, we will have pure inflation.

The Phillips curve shows the relationship between the price level (on the vertical axis) and the unemployment rate (on the horizontal axis). In other words, there is a tradeoff between these two variables which are inversely related. Hence, we can see the relationship on a seesaw diagram:



Figure 17-1

If unemployment is reduced, the price level goes up, and vice versa.

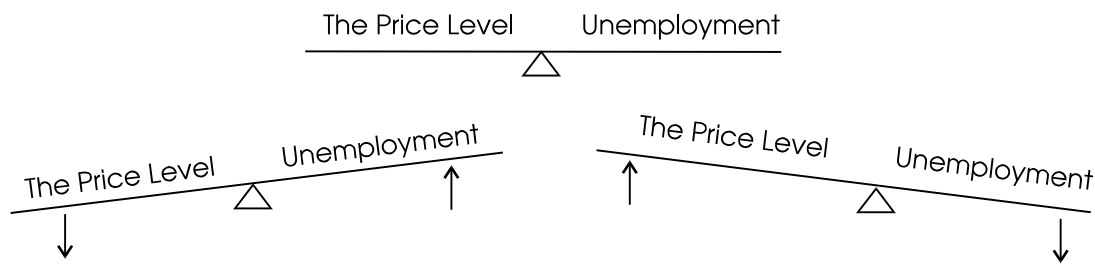


Figure 17-2

INFLATION ILLUSION, RELATIVE PRICES, AND PHILLIPS CURVES

Joe Brocato North Tarleton State University

Visually, at least, the Phillips Curve is a useful concept when discussing inflation and unemployment. While at first glance the inflation/unemployment tradeoff seems plausible enough, however, students often become confused when the instructor attempts to distinguish the short-run negatively-sloped Phillips Curve from its long-run vertical counterpart, especially when this distinction is couched in terms of general as opposed to specific price movements. Specifically, students are perplexed about the crucial role that absolute and perceived relative prices play in the dynamic response of the economy to an increase in the actual inflation rate.

Here is a pedagogical technique that I use in my principles classes to visually demonstrate how, because of individual "price myopia" and the inertia which characterizes the dissemination of relative price knowledge, a sudden inflation can cause market participants (e.g., employers and employees) to become confused about relative versus absolute price changes. The demonstration provides students with keen insights into: 1) why, at least temporarily, a rise in the inflation rate can result in reduced unemployment, and, 2) how microeconomic behavior fits into the macroeconomic concept of the Phillips Curve.

First you might want to review what relative and absolute prices are and how resource allocations respond to perceived movements in relative prices, but not in absolute prices alone. Now assemble several pencils between the palms and fingers of your hands (ten or so--assorted colors would be best). Be sure the pencils are in line and vertical to the ceiling. Explain that the height of each pencil above your hands represents the absolute (i.e., dollar) price of products and labor inputs. In order to reflect the existence of a relative price structure in the economy, the pencils should be arranged at slightly different heights, as if determined by individual supply and demand conditions in each market. Now, as the students watch the pencils, begin to raise your hands toward the ceiling, simultaneously explaining that this, in effect, is what a general inflation does; assuming that the inflation is "even," it raises all absolute prices proportionately. After you stop elevating your hands point out that the relative heights of the pencils are still the same; the economy-wide inflation has not changed one price relative to another and, therefore, should not alter how resources are allocated.

Now comes the hard part. Lower your hands once again and ask each student to fix his/her vision on just one pencil, ignoring the others. Begin to raise your hands again slowly toward the ceiling, reminding the class that all other pencil heights are perceived to be stationary. When your hands come to a stop ask if the pencil each student was watching has risen relative to the others. There should be a general consensus among the students that each individual's "own" pencil has risen relative to the others as he/she perceives it. Now point out that the perceived higher pencil heights really represent higher perceived relative prices received for various commodities and labor services and that resources will be allocated accordingly. For example, an employer will believe the price of his product has risen relative to input costs (other pencil heights) and will be prompted, via the profit motive, to supply more. Likewise, an employee will believe the price of his/her labor services (the wage rate) to have risen relative to the prices paid for commodities (other pencil heights) and will be inclined to trade leisure time for labor hours worked.

Continuing your demonstration with your hands still elevated, ask the class to once again train their vision on all pencils simultaneously and ask if relative pencil heights (i.e., relative prices) have, in fact, really changed. Of course, since you have not allowed relative pencil heights to change, there should be general agreement to this effect. Quickly follow with this question: "If the relative height of (your) pencil didn't really change, why did you respond as if it did?" Each student will say, "I thought it did because (you) told me other pencils weren't going up also." The class should now get the message you wish to convey: a general inflation which, in fact, raises all prices by the same amount, initially creates the illusion that the price (wage) of a particular commodity or resource input is rising relative to other prices when, in fact, it is not. Point out that this is how a spurt in the inflation rate can temporarily cause the marketplace to suffer from "price narrow-mindedness"--a tendency to concentrate just on the price or wage particularly relevant to them without regard for other price movements in the economy. Tell the class that you artificially created this narrow-mindedness when you asked them to concentrate on the movement of just one pencil, and that you removed the resulting relative/absolute price illusion when you asked them to once again visualize the (elevated) heights of all pencils simultaneously. Be sure to explain that knowledge about the "true" relative price structure is not provided this quickly in the real world, however, because information lags characterize an individual's awareness about one price relative to another.

You can close your demonstration by relating the relative - absolute price illusion phenomenon to the short- and long-run Phillips Curves, alluding to how inflationary expectations can lag actual inflation as long as this illusion exists.

The Search Model and the Mating Game

Herbert M. Bernstein, Drexel University

In macroeconomics I often utilize a simple search model that incorporates time into the employment situation:

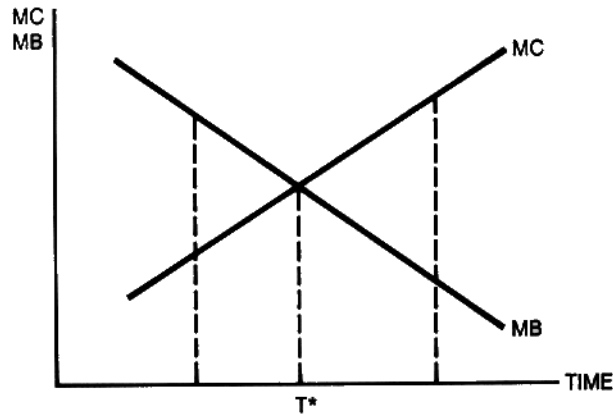


Figure 17-3

With time on the horizontal axis and MC, MB on the vertical axis with MC representing the rising marginal or opportunity cost of not working and MB representing the declining marginal benefit of additional job information, I indicate that there is an optimal time for the worker to remain unemployed. If he utilizes less time than optimal, then there is still much job information to be gotten while incurring minimal opportunity cost; if more time than optimal, then the opportunity cost exceeds the meager additional job information to be had. I use the analogy of mating. You do not marry the first person you date nor do you seek information on every possible candidate. There will be an optimal amount of time expended for the search!

Simulating A Natural Rate Of Unemployment

Jack Ochs University of Pittsburgh

The following demonstration with students effectively illustrates the concept of search unemployment in an economy where aggregate demand for labor equals aggregate supply, and where the labor market is decentralized. First, determine the number of students in the room. Then list on the board several job sites--A, B, C, D. At each site, s, post a notice of vacancies such that the number of vacancies summed over all sites equals the number of students in the room. Explain that all jobs are identical. Then, ask each student to write down on a slip of paper a single site which (s)he selects to apply for a job.

Collect the responses and compare the distribution of responses to the distribution of posted vacancies. You can then point out that since there are always new entrants to the labor market and deaths and retirements create a new distribution of vacancies, search unemployment may be a steady state phenomenon even when the number of job searchers is always identical to the number of available jobs. The demonstration should get students to think about why there is not a central labor exchange and the problem of achieving coordination in the absence of perfect communication or idealized central direction.

Inflationary Acceleration And The Phillips Curve

William S. Franklin and Marshall College

I have found the following analogy useful in conveying to students the idea of the accelerationist view of the Phillips Curve in the short run and long run.

I ask students to compare a policymaker attempting to manage aggregate demand to cure unemployment with a doctor using chemotherapy to fight cancer in a patient. Our doctor administers a cancer-killing drug that is effective in reducing the size of the cancer, but this treatment has unpleasant side effects (loss of appetite, hair loss, nausea). Similarly, our policymaker will discover that inflation results from "treatment" of unemployment.

The doctor must make a choice as to whether to press on with the treatment in order to reduce the size of the cancer, or decrease treatment to lessen the side effects. Thus, doctors face trade-offs between cancer reduction and side effects just as policymakers must choose between inflation or unemployment.

In the long run the doctor discovers that the cancer has become resistant to the drug, and must prescribe even larger doses in order to secure the same degree of remission as before, causing the patient to endure even more side effects. This is similar to the policymaker who discovers that reducing the unemployment rate once the economy has adapted to inflation requires accelerated inflation.

At some point the patient may decide that the side effects are more painful than the disease. But if the doctor ceases using the drug, the cancer will worsen, i.e., if policymakers reverse course in order to fight inflation, the likely result is a rise in unemployment.

The doctor has two choices: administer an additional drug to offset the side effects of the original treatment, or explore alternative treatments of the problem. Similarly, policymakers have the options of, e.g., imposing incomes policies in order to cure the inflation caused by the original treatment, or, perhaps, optimistically adopting supply side policies.

Setting the Alarm Clock from a Rational Expectations Perspective

Carlos Ulibarri, University of New Mexico

I begin by stipulating 9:00 as the appointed arrival time at the workplace. Being late irritates the boss. I ask, "For what time should the 'rational-minded' individual set his alarm if on the average it takes between 40-50 minutes to leave the household and between 30-50 minutes to drive to the workplace?" Adding the two expected values, the students arrive at the answer that the individual should wake up promptly at 7:30. One can discuss how the individual might adjust the alarm clock in the event of either (anticipated delay due to road construction or unanticipated delay due to adverse weather.)

From these examples the concept of how rational expectations work seems to become understandable and applicable.

Rational Expectations, Behavior and Credibility

Arthur J. Raymond, Muhlenberg College

To impress upon students the idea that behavior depends upon expectations try the following instructive, although somewhat underhanded exercise.

Choose a relevant day in the semester and announce that because of an important personal commitment, class will only last fifteen minutes. At the fifteen-minute mark there will be noticeable fidgeting. Continue to lecture for another fifteen minutes despite rising anxiety levels. Plan to let class out earlier than the official time but a good fifteen minutes after the announced end of class.

You have dramatically demonstrated that changes in behavior are motivated not by actual events, but by deviations of actual events from expected events. After all, disappointment occurred despite dismissing class early. The anxiety occurred because class was held longer than expected.

At this point the role of credibility can be introduced. Discuss class behavior if you announced a fifteen-minute class every day and held it for thirty minutes. Eventually this new information would become part of expectations and the rational students would expect the class to last 30 minutes. Disappointment would not occur after 15 minutes as was the initial case.

After this demonstration it is easier to introduce a number of models in which expectations are important, e.g., expectations-augmented Phillips Curves and money supply "surprises."

Tuition Increases and the Role of Expectations

Janet M. Thomas, Bentley College

At the principles level, it is sometimes difficult to explain something as intangible as the role of expectations in the macroeconomy. One semester, the timing of this part of the course followed a recent outbreak of rumors on campus of an impending tuition hike. Typically, many students anticipated a tuition increase that turned out to be highly exaggerated.

The temporary impact of mistaken expectations in the macroeconomy was more readily understood when discussion was opened in the classroom to instances of student reaction based on their own erroneous anticipations about the tuition increase. During the interim period when many believed the worst about the following year's tuition expense, some students began to seek extra work hours during the semester or a more lucrative summer job. Others investigated the possibility of transferring to a less expensive institution, etc. These actions reportedly waned once the official announcement of the true tuition expense was given.

The students readily understood the importance of information in decision-making behavior. They recognized that their immediate reactions based on mistaken expectations were temporary and that responses were minimal once these expectations adjusted over time. The transition of these ideas to the macroeconomy and the important discussion of speed of adjustment followed with relative ease.

Inflation as a Story

Michael B. McElroy, North Carolina State University

The distinction between one-shot price level changes and the continuing changes that constitute inflation is often neglected by students, politicians, and the media who then fall into the trap of seeing inflation lurking in virtually any event that expands demand or contracts supply.

An effective way to make the point that inflation must be a sequence of events is to characterize it as a story, with beginning, middle, and end. The beginning can be associated with any event that alters the price level. By itself, however, this is a one-shot event and cannot result in continued excess demand. The inflation story proceeds only if the initial event continues or is followed by other ongoing events, e.g., continually growing deficits, continually worsening supply shocks, or, logically and empirically most likely, continued monetary expansion for accommodative purposes, such as a tax or to achieve an ill-advised interest rate or other targets. The relatively minor characters (events) from the beginning disappear or are transformed into either scapegoats or red herrings by the middle of the story. The end of inflation can occur only when the more potent characters or sequences of events, from the middle section are eliminated.

Economics of Information and the Job Search

Dennis Sebrecht, Carroll College

To drive home the point that information is a scarce resource and that one should economize on the use of it, I use the example of job search in my principles of economics courses. Since most of the students in the class are freshmen and sophomores, I begin by asking the class what things they would do if they were seniors looking for a job. Invariably, the students will respond that they would prepare a resume, search through job openings lists in their fields, set up interviews, and the like. I then point out that these things they have mentioned refer to the costs of the job search for the potential employee. Then I ask the class if they would have perfect information on all jobs and job characteristics throughout the United States for which they would be qualified. An answer of, "No" follows. When I ask why, eventually one student responds that it is simply not worth the effort. This gets us into a consideration of the benefits side, e.g., salary, health, and retirement benefits, of the job search for the prospective employer in order to point out that perfect information is too costly to obtain.

Peter Pan And The Phillips Curve

Paul Cantor, University of California-Davis

A humorous handout that supplements the typical textbook discussion of the Phillips curve has been popular with my students. The handout is titled *The Story Behind the Phillips Curve*. The story takes place in Never-Never land (NNL) in three successive years. The civilian labor force in NNL is 10,000 in each year. Every week 100 people quit or are fired from their jobs so the number of people unemployed at any one moment is determined by the average length of time spent looking

for work. A typical job seeker in the handout is always represented by a fictional character. In year 1 the rate of inflation and expected rate of inflation are 0%. Captain Hook is made to walk the plank, i.e., is fired. He had been earning \$10,000 a year as a stevedore. So he searches for a new \$10,000 a year job. It takes him five weeks to find what he is looking for Vice President Bush hires him to pirate a new idea for his presidential campaign. In year 2, a year in which the rate of inflation is 20% and the expected rate of inflation 0%, Hook is fired again. He is fired for suggesting Bush hire a voodoo witch doctor as an economic advisor. This time, however, it takes him only three weeks to find and accept a \$10,000 a year job. He takes the job because he mistakenly believes it pays him a wage equivalent in real terms to what he was earning before. In year 3 the rate of inflation is still 20% but workers are aware of it, understand its effect on their purchasing power, and expect it to continue. Therefore, when Peter fires Tinkerbell from her \$100,000 a year job she searches until she gets a \$120,000 a year offer. It takes her five weeks to find and accept such an offer. The offer comes from the National Aeronautics and Space Administration.

Peter Pan and the Phillips Curve, Part II

Paul Cantor, University of California-Davis

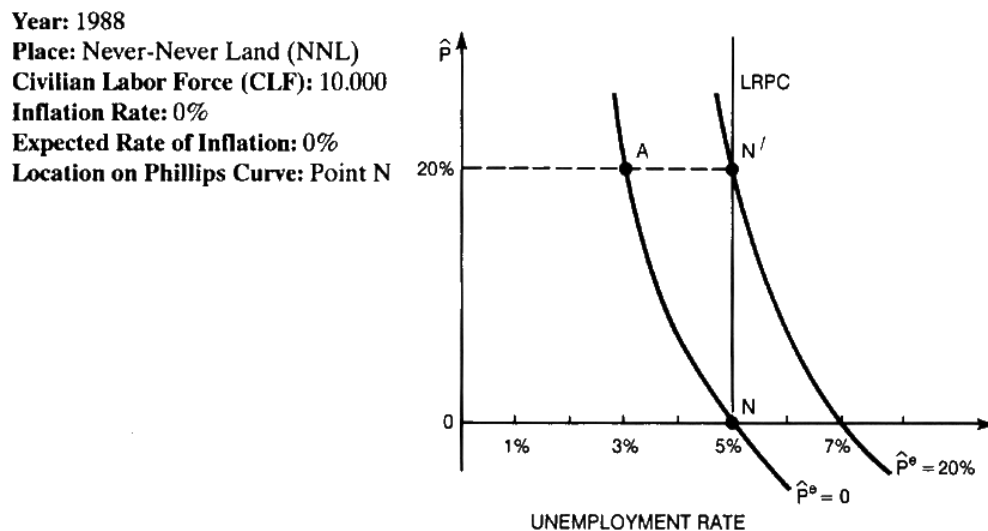


Figure 17-4

* P is the rate of inflation. P_e is the expected rate of inflation. LRPC is an acronym for "long run Phillips curve". The curves labeled $P_e = 20\%$ and $P_e = 0\%$ are, respectively, the Phillips curve when the expected rate of inflation is 20% and the Phillips curve when the expected rate of inflation is 0%.

Every week 100 people quit or are fired from their jobs. On the average it takes each person five weeks to find a job. Therefore, there are always 500 people looking for work at any one moment. They are in between jobs and together they constitute NATURAL or FRACTIONAL

unemployment. The natural rate of unemployment in percentage terms is, therefore, $500/10,000 \times 100$ or 5%.

YEAR: 1989

PLACE: NNL

CLF: 10,000

INFLATION RATE: 20%

EXPECTED RATE OF INFLATION: 0%

LOCATION ON THE PHILLIPS CURVE: POINT A

Captain Hook is fired again. This time, however, it takes him only three weeks in the pipeline between jobs before he gets and accepts a new \$10,000 a year offer. He accepts this offer because he does not understand that his real wage has gone down though his nominal wage remains unchanged. Had he insisted on receiving the same real wage that he received before, he would have continued to search until he was offered a \$12,000 a year.

Workers have no idea that inflation is eroding the purchasing power of their wages because they lack brains or information or both. Every week the quits and layoffs continue and 100 new job seekers begin their search for jobs. But now there is inflation and the job seekers are unaware of it or unaware of how it is cutting into their purchasing power. Bosses, however, know they can offer workers 20% more and still make the same (real) profits because the prices they receive for their products are 20% higher. So bosses jack up their wage offers something less than 20% and workers find that from the moment they begin wage offers than they expected. If we assume it now takes workers only three weeks to find and accept a job which pays them a nominal wage equal to what they were earning before, then at any one moment there are only 300 people looking for work. Therefore, the unemployment rate is 3% ($300/10,000 \times 100$) or two percentage points less than the natural rate of unemployment.

YEAR: 1990

PLACE: NNL

CLF: 10,000

INFLATION RATE: 20%

EXPECTED RATE OF INFLATION : 20%

LOCATION: POINT N' ON A NEW PHILLIPS CURVE.

Peter gives Tinkerbelle the ax. Tinkerbelle earned \$100,000 in 1989. So she searches for a job that will pay her enough to buy what \$100,000 would buy in 1989. She searches, in other words, until she finds a job offer of \$120,000 a year. It takes her five weeks to find and accept such an offer.

Workers have seen the light. They are aware of inflation, understand its effect on their purchasing power, and expect it to continue. Every week 100 people continue to be laid off or quit but now they aren't tricked by higher nominal wage offers. They expect to get, and they hold out for, nominal wages 20% higher than the wages they earned before they lost or left their former jobs. They hold out for higher nominal wages in order to be able to maintain their former standard of living. So once again, as in every period when workers are aware of the rate of inflation, i.e., do not suffer from money illusion, it takes each worker on the average five weeks to find a wage offer she or he will accept, i.e., which is equivalent in real terms to the wage he or she earned before.

NOTE: The Phillips Curve shifts whenever workers' expectations of inflation change.

Key Concepts: Nominal Wage, Real Wage, Money Illusion, Natural Rate Of Unemployment.

	1988	1989	1990
Civilian Labor Force	10,000	10,000	10,000
Quit + Fired Each Week	100	100	100
CPI (1987=100)	100	120	144
Rate Of Inflation (P)	0	20%	20%
Expected P	0	0	500
Daily # Of Job Seekers	500	300	500
Unemployment Rate	5%	3%	5%

Table 17-1

The Illusion of High Interest Rates

Robert J. Tokle, Idaho State University

When explaining the difference between nominal and real interest rates, it can be helpful to think about a person investing in instruments such as Treasury bills or CDs in the 1980s. Nominal interests rates on 6-month Treasury bills, the inflation rate, and the resulting real interest rate are shown in the table. (More correctly, the nominal interest rate is equal to the real interest rate plus the expected rate of inflation. Since the expected inflation rate is difficult to measure, the actual inflation rate is frequently substituted as proxy measure of it, as is done here.)

<u>Average Interest Rates on 6-Month U.S. Treasury Bills</u>			
	Nominal Interest Rate	Inflation Rate	Real Interest Rate
1981	13.8%	10.3%	3.5%
1986	6.0%	1.9%	4.1%

Source: Economic Report of the President, 1991.

Table 17-2

Many investors felt that they were "doing very well" by earning, say 13.8% on a 6-month Treasury bill in 1981. However, by 1986, when this interest rate fell to 6.0%, they felt disappointed in their investments. But, we know that nominal interest rates fell in the 1980s because inflation rates fell. After adjusting for inflation, the real interest rate on 6-month Treasury bills rose from 3.5% in 1981 to 4.1% in 1986. Some economists attributed this increase in the real interest rate mainly to the large increase in U.S. government deficits in the 1980s. Therefore, the investors of 6-month Treasury bills and similar instruments often earned a higher real return in the mid-1980s than

the early 1980s. And the actual return is even greater after considering that income taxes must be paid on the inflation component of the nominal interest rate.

Chapter Thirty-Four

The Limitations of Stabilization Policy

Why Worry About Lags in Monetary Policy?

Steven T. Call, Metropolitan State College-Denver

This analogy illustrates that discretionary policies can be dangerous because the effects of monetary lags are long and variable: As you prepare to shave one morning, you turn the faucet on but there is no water pressure. After some unsuccessful amateur plumbing, you borrow hot water from a neighbor. Just when you bend down to splash a bit of borrowed water on your face, you get the very thing you do not expect or want--your own faucet, opened earlier, begins to flood your bathroom; drowning is even a possibility.

Timing is Everything in Dueling and in Macro Policy

Steven T. Call, Metropolitan State College-Denver

This exercise illustrates the problem of proper timing in monetary and fiscal policy. Select two students and instruct them to role-play a duel. Give each an imaginary gun (they can use their index fingers) with one bullet. Starting back to back, have them pace off 20 paces, turn, and fire. Should a dueler shoot immediately? If the participants are out of range, an immediate firing could mean certain death. However, once in range, delaying too long will also mean certain death. Conclusion. Success in dueling depends on correct timing. The same is true in making fiscal and monetary policy.

Lags in Dampening Fiscal and Monetary Effects

Jack Chism, Greenville College

When government tries to stimulate the economy, there will often be delayed effects that reduce the effect of the change. For example, a sudden increase in the money supply might initially drop the market interest rate, but lagged demand effects might raise nominal income and also boost money demand, resulting in a hike in interest rates.

Here is a crude illustration of such cycles: imagine 30 or 40 grouchy farmers circling in a picket line in front of a grain elevator. The rainy weather is unpleasant, and one irate farmer hauls off and delivers a swift kick to the seat of the pants of the farmer marching in front of him. He immediately feels much better, and his spirits rise. The farmer in front of him responds by delivering a swift kick to the farmer in front of him, who relays it to the next. This continues around the circle with spirits rising as each man delivers a kick. The first farmer actually has a huge smile on his face until finally the echo of his action comes around and he is kicked, which point his spirits drop because of the slight pain he feels. He may feel better than before he started, but not as well as he did after he first delivered the kick. His feelings of happiness and well-being are analogous to interest rates, or national income, or any other variable that shifts substantially and then corrects itself as all the related markets pursue equilibrium.

This colorful illustration sticks in my students' memories, and helps them remember the time factor when they trace the effects of various government attempts to manipulate the economy.

The Problem of Lags

Ralph T. Byrns

An example that helps illustrate problems from discretionary policies if lags are long and variable: A gun that fires after the trigger is pulled, but the period between when you pull the trigger until the round fires is unpredictable. Institutional lags in monetary and fiscal policy making can also make a lasting impression. One of our favorite examples of an administrative lag is the Federal Reserve Act of 1913--passed in response to the Panic of 1907. This example stresses the problem for fiscal policies that must pass Congress.

What If the Wrong Monetary Growth Rule is Adopted?

Ralph T. Byrns

Students often find the idea of a monetary growth rule appealing, but wonder what would happen if the rate of monetary growth selected were wrong, or if the federal budget, which is supposed to be roughly balanced at full employment, was based on erroneous estimates. Those who favor fixed rules view the precise rule set as less important to those who abhor discretion than strict adherence to a fixed rule. Suppose, for example, that a budget is erroneously set so that it generates a \$50 billion deficit at full employment, that velocity is falling by 1% annually, and that the natural rate of economic growth is 3.5%. Ideally, the annual percentage growth of the money supply would be set at 4.5%. Suppose that a fixed percentage growth of 3% is imposed instead, so that consistent pressures for 1.5% deflation are realized each year. Should this rule be adjusted at policymakers' discretion? Advocates of rules say NO, predicting that people will make automatic adjustments superior to those of policymakers. Here is an analogy to suggest why.

Imagine that a tourist enters a freeway going the wrong way. Should s/he attempt to drive as quickly as possible to the nearest exit, swerving wildly to avoid collisions? A better strategy would be to hug the left lane (the right lane from the perspective of oncoming traffic) and drive slowly but steadily to allow other drivers to adjust. This same advice is proffered the FED by those who favor a rule, however erroneous. (NOTE: A colleague drove into Chicago early one morning and encountered an oncoming motorist going the wrong way on the freeway. The motorist was creeping along in the right hand lane. After consulting a map, our colleague concluded that this car must have entered the freeway at least 15 miles earlier. We have wondered if a banished University of Chicago economist was leaving town behind the wheel of that car.)

Monetary Policy and Insecticides

Joseph F. Winter, Metropolitan State College-Denver

Here is an analogy that enables students to understand why, after fifty years of activist policies, the effectiveness of discretionary monetary or fiscal policy seems exhausted.

Suppose that discretionary policy had never been used before. Businesses and financial institutions would have adjusted to the normal vagaries of the marketplace. The first dose of, say, contractionary monetary policy, would decrease excess reserves and the firms and intermediaries most vulnerable to "tight money" policies would succumb. More resilient enterprises would prosper, at least in a relative sense, while those weakened most would quickly learn to adapt to tight money by conserving on their cash balances, or, when next the FED tightened the money supply, they too would perish from the business scene. Like insects with variations in natural defense against a new insecticide, the survivors of tight money will grow increasingly immune through a Darwinian "survival of the fittest" process, while the gradual demise of all firms that are vulnerable to monetary restraint will ultimately render it ineffective, just as even the most potent of newly developed insecticides eventually loses its effectiveness. The adaptable groups survive and, with each renewed application, the effect on the adaptable group lessens. The result is an order immune to the pesticide and made stronger by lack of less adaptable predators or competition. The controllers answer with a new formula (or law), but they are pitted against a stronger and more adaptable foe. The result is the gradual erosion of the effectiveness of controls except as a barrier to competition (natural predation).

A Drinking Man's Guide to Monetary Policy

Gary Galles, Pepperdine University

I have found that several drinking analogies can be helpful in getting students to remember some issues in monetary policy. They include the following:

- a. Just like drinking, expansionary monetary policy provides a temporary high at first (real output growth and reduced unemployment), while the ill effects come later (an inflation "hangover"), and if you do enough of it for long enough, you can do serious lasting damage to yourself (cirrhosis of the economy).
- b. Society builds up a tolerance for expansionary monetary policy (expectations adapt), requiring ever increasing amounts of monetary expansion to stay "high" (as in the accelerationist model).
- c. Once a tolerance to drink (expansionary monetary policy) is established, withdrawal symptoms worse than any hangover can result if you stop (a stagflationary scenario) and may persist awhile (decelerating inflation) before you feel better again (unemployment falls back to the natural rate) and can lead a "normal" life.
- d. Attempts to stop (expansionary monetary policy or drinking) are often short-lived because the adverse effects come first and the good effects come later, and you may

- yield to short-run pressures to feel better now (drink or reflate) despite the long-run consequences.
- e. As with some alcoholics who don't deliver on their promises to quit, if monetary authorities fail to fulfill promises to restrain inflation (i.e., they expand the money supply excessively), we learn not to believe their promises (we become hard to convince that monetary restraint will persist long enough to do much good about inflation before a reflation scenario occurs).
 - f. Some alcoholism counselors believe that drinking is hard to quit despite its known adverse effects (like hangovers) because the hangovers come enough later that your subconscious doesn't connect cause and effect, so that when the emotional decision to drink or not is made, the subconscious takes over and often results in the decision to drink. Similarly, expansionary monetary policy may be hard to quit because the long and variable lags make it hard to connect a specific policy decision to a specific result.
 - g. Just as alcoholics may join AA and become teetotalers, monetary authorities may give up trying to vary the money supply to engineer the "best" results and adopt a monetary growth rule (i.e., they may forego the short term high they could engineer because the long-term adverse consequences are considered too costly).
 - h. Just as it may be hard for a drunken sailor to precisely determine where he is going (or for an observer to accurately predict where he is going) because of indecisiveness and imperfect control over his motor movements; it may be hard for the FED to precisely determine (or FED-watchers to accurately guess) the growth path for the money supply, because of indecisiveness (they are supposed to hit many targets with monetary policy: unemployment, real output, inflation, value of the dollar internationally, foreign debt crises, etc. Unless we know which of these the FED is aiming at today, it will be hard to predict what growth path it was aiming for) or imperfect control (the FED has only indirect control over the money supply and that control is subject to long and variable lags).
 - i. Just as alcoholics might like a painless "cure" and researchers will search for one, economists might wish for and research into a painless "cure" for inflation (a change in policy regime).

Physicians and Phorecasters

Gary Galles, Pepperdine University

A useful analogy exists between physicians and macroeconomic forecasters/policy makers. What everyone wants of each is the same, but the forecaster has a more difficult problem.

Everyone wants, first, an instant diagnosis that nothing is seriously wrong and, second, a cheap, painless and immediate cure with no side effects. Both physicians and macroeconomic policy makers/forecasters have problems in doing this, but the policy maker has more difficulty for several reasons: first, both inside and outside lag problems are more difficult because problems cannot be observed or responses chosen as quickly and how long before effects occur is more uncertain; second, the data problem is worse because you don't have the patient's current

temperature, only the past temperature, which is constantly being revised, and what you want to know isn't always knowable, such as how much of inventory investment was unplanned; third, side effects of treatments are often worse and sometimes precede the beneficial effects, e.g., slowing money growth to slow inflation, with a recession that comes before the benefit; fourth, people start responding to announced policies while they occur, and even before, in some hard to predict ways, while viruses and molecules don't, e.g., rational expectations effects; fifth, forecasting problems are worse, because macroeconomic policy is not subject to controlled experimentation to establish expected responses and there are so many other variables that affect the result which must therefore also be forecast rather than known; sixth, there are the confounding effects of political self-interest in biasing forecasts as a way to push a political agenda, i.e., intentional mis-diagnosis, without effective peer review and clear, accepted standards; etc.

The analogy can be extended as instructors see fit, but the basic comparison between macroeconomic policy, definitely not part of the world undergraduates live in and something more familiar that is part of their experience is helpful in setting forth the difficulties faced by forecasters, training students not to expect simple, clear, correct policy actions, and seeing that the issue is one of imperfect information and forecasts vs. even worse ones, not perfects vs. imperfect.

Forecasting: The Economist and the Meteorologist

Mike Cohick, Collin County Community College

I like to compare the economist's use of data for forecasting to the meteorologist's. The meteorologist has timely data, collected by highly calibrated instruments which are positioned in a dense network around the world. This data is updated frequently, some data hourly, some twice daily, and is entered into a global communications network for nearly instantaneous use. The forecasting models used by meteorologists are based on the equations of physics, consider second- and third-order perturbations, and require enormous capacity, high speed computations. With all this, the accuracy of forecasts diminishes quickly beyond 72 hours from data collection time.

The economist must use data that is not timely, frequently 2 weeks to a month old, collected by people who are not positioned as densely across the world as would be desirable. The data is updated monthly, or even less frequently in some parts of the world, and there is no equivalent global communications network. The forecasting models used by economists are based upon empirical fits of small bits of data and upon mathematical formulations of human behavior patterns. Mainly first-order perturbations are considered. With these handicaps, the economist tries to forecast economic activity one to two years out. It is little wonder that economic forecasting accuracy is not very high.

Improve the U.S. Economy by Electing a President Every Year

Edward C. Koziara, Drexel University

One way to excite students about macroeconomics is to relate economic objectives to politics and in particular to elections. In the United States all years may be classified into one of four categories.

Presidential Election Year

Year After Presidential Election Year

Mid-Term Congressional Elections

Year Prior to Presidential Election Year

Have students look at unemployment rates, inflation rates and growth rates from 1946 to the present by type of year. Does the economy perform better in presidential election years as opposed to other years? Ask the students whether the evidence indicates a connection between an incumbent president running for reelection and improved economic numbers as opposed to a situation where the president has served out his two terms and the numbers are not as good. What happens in mid-term congressional elections? Are the incumbent parties' losses at mid-term explained by economics or other factors? Does the economy do worse right after a presidential election? Or, does the economy bottom out at mid-term? Is there a political business cycle? What evidence for such a cycle exists and how can it be manipulated? Using the same data, have students decide if there is evidence which supports the Democrats as the party of full employment and the Republicans as the party of price stability. Would the United States be economically better or worse off if a president were elected every year?

Bees and Rational Expectations

Ali T. Akarca, University Of Illinois-Chicago

Of all the assumptions in economics, the one that annoys students the most is that of rationality. The students simply do not believe that most people, including themselves, behave in a rational manner. Because they have even less faith in the rationality of non-human species, dramatic examples of rational behavior on the part of animals and insects really surprise them and cause them to give more credit to this assumption.

In this regard, I found the following real-life experiment on bees, which I read in the science section of a newspaper, to be very helpful in motivating students to understand the rational expectations assumption. The aim of the experiment was to study communication between bees. It involved placing a container of nectar in the field to be discovered by a bee from the colony being observed. When the latter occurs, the bee immediately returns to its hive to inform the others of the find through an elaborate dance which is what the scientists wanted to observe. In order to generate more observations, every morning the experimenters would move the nectar container a couple of

hundred yards away. In each of the first three days, they noticed that it was taking less and less time for the first bee to find the nectar and for the others to follow. On the fourth morning, however, when they went to place the nectar container in a new position, they were shocked to find the bees already there, waiting for them.

Without realizing, the scientists must have been moving the nectar in a certain pattern. It was not important for their experiment. It was, however, important for the bees, and apparently, they learned to form rational expectations about it.

Price Ceilings

Dick Kennedy, Odessa College

A price ceiling is a price set below the market price. Governments use price ceilings in attempts to curtail inflation at various times. The best examples of the use of price ceilings are World War II and in 1971-74, during the Nixon Administration. How do price ceilings affect the economy?

- a. If imposed for any length of time, price ceilings will result in shortages of goods and services. In Figure 18-1, buyers or demanders want 120 million pounds of butter at the price ceiling of \$.75, but sellers wish to supply only 80 million pounds of butter at the administered price. The result is a 40 million pound shortage at the administered price of \$.75.
- b. To cope with the shortage, some centralized form of rationing will probably be imposed, as during World War II.
- c. How are ration stamps to be issued equitably? How many stamps for a family of four? For a family of six?
- d. Black markets will develop in which butter is sold above the legal price. Even with the patriotism associated with winning WWII, black markets were widespread by 1944, and price ceilings were not imposed until early 1943.
- e. Enforcement problems--in an economy as vast as the U.S. economy, it is not possible to check on every "mom and pop" grocery store to be sure they do not charge above the legal price.
- f. There are hundreds of ways to circumvent price controls. Make candy bars smaller; put less chocolate or nuts in them; sell a cheaper grade of lumber; provide shoddy service, etc.
- g. Finally price ceilings do not truly curtail inflation; price ceilings only treat the symptoms of this disease, not its root causes.

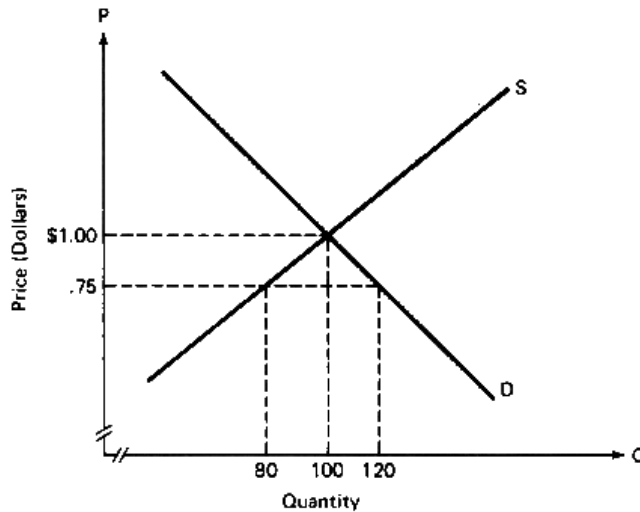


Figure 18-1

Wage and Price Control Illusions

Gerald J. Lynch, Purdue University

I often find medical analogies helpful in explaining economic concepts to undergraduates. I have had particular success with a comparison between wage and price controls as a solution for inflation and a shot of cortisone taken for a knee injury. The cortisone masks the real problem in the knee by deadening the nerve endings. If those nerve endings were allowed to do their job they would send signals to the brain telling it that something is wrong with that knee and it should not be abused. The result of the cortisone not allowing these nerve endings to transmit that vital information is often much more serious and causes more long-term damage than was originally experienced.

The same is true with wage and price controls and the effect they have on price. Price changes are often signals which tell the economy that something is amiss--the rate of growth of the money supply is too high, government is spending too much, or consumers want less home heating oil and more gasoline. The only way we know, for example, that the forces which lead to inflation are strong, is when we observe that inflation through price increases. If that price signal is squelched through controls, then often more severe damage and misallocations can occur than before the cortisone-like wage and price controls were applied. Although it is difficult to support the point that either inflation or pain is good, it is relatively easy to show that they may be better than illusions.

Arraying Macroeconomic Views

Ralph T. Byrns

Compare and contrast the New Classical Macroeconomics, i.e. the natural unemployment and interest rate theories and its rational expectations extensions, to the predictions and policy

conclusions to the classical model. A circle can represent the theoretical developments since 1936. Place the classical model at the top of the circle. At 9:00 place the Keynesian developments, at 6:00 the early monetarists, at 3:00 the neo-classical synthesis, and finally near the top again, the natural rate and the new classical models.

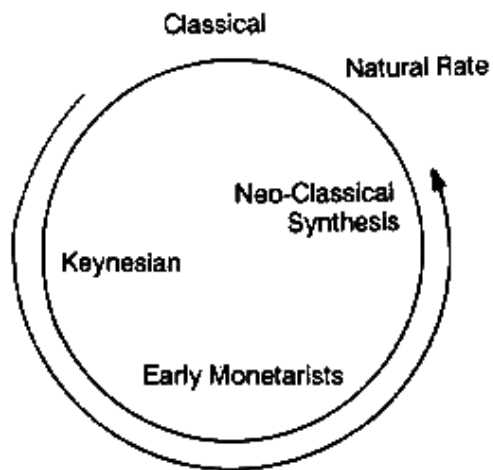


Figure 18-2

Chapter Thirty-Five

International Trade

Price Differentials and Geographic Market Definitions

Roy B. Levy, Pennsylvania State University

To delineate separate markets on the basis of price differentials and barriers to interregional competition, I divide the class into eastern and western sections. Three or four students act as border guards to preempt interaction between sections. For each section, I select a group of consumers and a group of suppliers. The suppliers in each section purchase pencils, at a positive cost, for resale to the respective consumer groups. One can administer an auction to derive the equilibrium set of prices.

Typically, the equilibrium price in the east differs from the equilibrium price in the west. The prices are revealed to the entire class. If the eastern price of pencils is higher than the western price of pencils, for example, then ask the standard questions below:

1. In the absence of border guards, would eastern consumers have purchased pencils exclusively from eastern suppliers?
2. Other factors equal, how would the change in the behavior of eastern consumers impact upon eastern and western prices?
3. In the absence of border guards, would western suppliers have sold pencils exclusively to western consumers?
4. Other factors equal, how would the change in the behavior of western suppliers impact upon eastern and western prices?
5. Given an absence of any geographic barriers, what would halt the interaction between the eastern and western sections?

The students learn that price differentials and the presence of geographic barriers are indications of distinct geographic markets. Students also recognize that uniform prices and an absence of geographic barriers are indications of a single geographic market.

One can easily extend the exercise to discuss the role of product differentials in the delineation of distinct markets. For example, one could derive an eastern price for pencils and a western price for pens.

Specialization and Least Comparative Disadvantage

Dale M. Sievert, University of Wisconsin-Madison

Comparative advantage is commonly expressed in terms of relative advantage. I have found that students understand this concept more easily if you emphasize least disadvantage. For example, this approach can be used to describe a situation where a child who wants to help his father with gardening chores, involving weeding, watering, and harvesting. Suppose the child is slower than the father in all tasks but most closely approximates his father in watering. The boy has a comparative advantage in watering and should do that chore, for he is least worst at watering.

Comparative Advantage in Yard Work

By Thomas Mitchell, Southern Illinois University at Carbondale

Teaching Ricardo's theory of comparative advantage in principles classes always presents two challenges: (1) distinguishing between *absolute* and *comparative* advantage; and (2) demonstrating the gains from specialization and trade based on the pattern of *comparative* advantages, regardless of the pattern of *absolute* advantages. The textbook examples always seem too abstract and out of the students' experiences to be much help.

Recently, however, I have used the following numerical example with great success in meeting both of the challenges described above. The example concerns two homeowners who live next door to each other--"My Neighbor" and "Me"--each of whom must perform two weekly tasks: mowing the lawn (including edging and clean-up) and gardening (weeding, pruning, and clean-up). Suppose that the time requirements for performing each of these tasks are given in the following table:

Time Requirements for My Neighbor and Me to Perform Two Weekly Tasks

Task	My Neighbor	Me
Mowing lawn	2 hours	3 hours
Gardening	1 hour	4 hours

Clearly, "My Neighbor" has an *absolute* advantage over "Me" in doing each task: "My Neighbor" requires only 2 hours to mow the lawn, which is one hour less than the 3 hours required by "Me"; and "My Neighbor" requires only 1 hour for gardening, which is three hours less than the 4 hours required by "Me".

Notwithstanding the fact that "My Neighbor" has an *absolute* advantage over "Me" in doing each of these tasks, the *comparative* advantage in mowing the lawn goes to "Me". To see this, we express the relative costs of doing each task in terms of doing the other task, but the significance is found in the gains accruing to each from specialization and trade. If the individuals specialize and trade so that "My Neighbor" does the gardening for "me" in exchange for having "Me" mow the lawn for "My Neighbor", then each individual saves time, or in economic terms, "is better off"; both "My Neighbor" and "Me" save an hour of work by specializing and "trading."

Hours to Do Both Tasks: A Comparison of the "No Trade" and "Trade" (Specialization) Outcomes

Outcome	My Neighbor	Me
No Trade*	3 hours	7 hours
Trade**	2 hours	6 hours

*Each individual mows his own lawn and does his own gardening.

**Gardening done by "My Neighbor"; lawn mowing done by "Me".

(Note in this case that the trader who is absolutely more efficient, "My Neighbor", achieves a greater relative time savings: roughly 33% versus roughly 14%!)

It is now obvious that even if one trading partner has an *absolute* advantage in doing both tasks, there may nevertheless be a strong economic incentive to trade, even with a partner who is "absolutely" less efficient.

International Competitiveness and Productivity Growth

Michael Kuehlwein, Pomona College

Productivity growth may be important from an international perspective because of its effects on the standard of living in the U.S. vis-à-vis standards of living elsewhere in the world, and consequently, on the ability of the United States to be a world leader by setting an example. Some people, however, twist this reasonable argument into a common misconception that productivity growth is important so that we can compete in foreign markets. To refute this notion, I point out that most of what we use (consume and invest) is produced in the U.S. In fact, in 1989, almost 90% of what we produced stated and was used here:

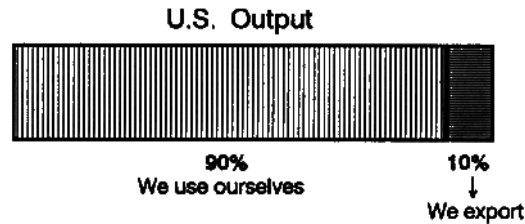


Figure 36-1

The remaining 10% we export, which we can think of trading for goods that we import. Now if productivity increased, we would have more and possibly better goods to export, so we could import more goods. But that increase would affect only about 10% of what determines our living standards. The main effect is that most of any increase in output goes directly to boost consumption and investment at home. So it's the remaining 90% which matters most for our standard of living. Saying that we need productivity growth to boost our exports is a bit like the proverbial tail wagging the dog.

War and/or Peace

Loren Guffey, University of Central Arkansas

Students remember longer those lessons learned in association with a game or activity. A game that is simple, quickly done, and drives home some important fundamentals is Unequal Resources.

Four teams of three to five students each are necessary to play the game. They first choose a name for their country. Each group is given a manila envelope containing resources and a task sheet of items to construct. The items must be constructed to specifications, for example, a green "T" four inches high, and represent food, clothing, industry, shelter and education. The task sheets are the same for all groups but, when they open their envelopes, they discover that the resources of scissors, paper clips, rulers, different colored paper, etc., are very unevenly distributed.

The instructor should record the time required by each group to complete the tasks. When the tasks are completed, several lessons will have been drawn and should be expressed by the students in post game discussion.

1. Resources are limited.
2. Technology (ruler, scissors) is important in providing necessary goods and services for society.
3. There is variation in the quality of products produced.

4. Resource rich countries and resource poor countries find trade mutually beneficial.
5. Feelings and attitudes develop between countries and these emotional factors effect trade relationships between them.

Establishing the Basis for Trade

Andrew D. Zimmerman, Delaware Technical and Community College

This exercise draws upon students' own skills and abilities in the process of teaching them the basic concepts of subsistence, specialization, absolute and comparative advantage, unequal wealth, and interdependence among producers, so that they can understand the basis and logic of trade, whether at the individual, organizational, community, regional, or international level.

First, have each student identify one or two skills/abilities he currently possesses toward the production of a good or service, preferably one with direct survival value. Each student should then estimate the quantities of this good or service that she/he could produce in a given time period, e.g., a month or year, and a price per unit. For the sake of simplification, the possession of all necessary factor input will be assumed. The second major task requires that the students be organized into groups of five or six. Each member of the group is then given an endowment, in this case a sum of money ranging from \$15,000 to \$50,000. The important thing is that these endowments be unequally distributed within the group, although it is possible for two group members to receive the same amount. Each group is then charged with the task of developing, the basis for their collective survival. They will naturally have to engage in bargaining and trade, and can be encouraged to use both their endowments and their producible commodities for this purpose. Whether they utilize a competitive (market-based) or cooperative approach is up to them.

After engaging in this part of the exercise for at least a half-hour, stop the proceedings and ask each group to report to the class on the following issues:

1. Was the group able to work out the basis for the survival of its members? If not, why not? Get them to think about the implications of what was or was not accomplished.
2. Did the group utilize a competitive or cooperative approach in working out the solution? Ask them to explain why they chose the approach they did.
3. How did the unequal endowments affect the outcome of trade arrangements? What are the implications of this for poorer as opposed to richer individuals, communities, nations, etc.? This is a good opportunity to discuss the example of Japan, a country that is relatively poor in natural resources, but relatively rich in human resources.
4. What did the students in the various groups learn about the concepts of specialization, advantage, interdependence, etc., as they relate to the value of engaging in trade?

As a follow-up, a more detailed discussion of trade can be presented. Ricardo's ideas about advantage through resource endowments can be understood in the context of the exercise since the student's monetary endowments can be used to symbolize unequal resource endowments. A more contemporary discussion can be developed around the issues of uneven development, wage and other competitive advantages in a global economy made up of both developed and developing nations, both market-based and centrally-planned economies, etc.

If there is time and interest, the exercise can be continued by asking the groups to negotiate with each other as groups, where each group represents a community or nation. The goal would be to work out trade agreements which would be of mutual benefit. If this were done, it could be followed by a discussion of bilateral and multilateral trade agreements, including a discussion of trade policies.

Comparative Advantage in the Home

Kristine L. Chase, Saint Mary's College of California

Families "live" the principle of comparative advantage everyday, and mine is no exception. Imagine a harried working mother at dinnertime, and two hungry children hanging out in the kitchen. For the family to eat, dinner must be cooked, the dishwasher unloaded and the table set. Mom can do all three tasks faster than the children; she has the absolute advantage over the children in cooking, unloading dishes, and setting the table. If she were to do all three, however, the family would not eat as soon, nor as well! Instead, each person in the kitchen should do the task in which he/she has a comparative advantage.

The task in which you have a comparative advantage is the one for which you have the lowest opportunity cost. For Mom this task is cooking; her opportunity cost is not setting the table or unloading the dishes. This cost to the family is low, compared to the cost of her not cooking dinner. The kids should unload dishes and set the table; their opportunity cost for these tasks is the loss of leisure time, which is quite small at this point.

By allocating tasks this way, the family (society) is much better off, rather than worrying about who is absolutely most efficient. Finally, note that everyone, efficient and not efficient, has a contribution to make in maximizing the welfare of the group as a whole.

Life without Gains from Specialization and Exchange

Ralph T. Byrns

Quote the suggestion that life in a state of nature would be "nasty, brutish and short." See if a student can provide the reference (Thomas Hobbes's *Leviathan*). Ask what life would be like if families had to be totally self sufficient, and suggest that Hobbes was correct for any situation without specialized production and exchange. Then suggest that the conclusion that there are gains from exchange is equally valid for both domestic and international transactions.

Comparative Advantage in a Pie Eating Contest

Paul G. Coldagelli, The Pennsylvania State University

This is a welcome diversion from the usual "two country-two good" comparative advantage problem. Suppose that the three stooges decide to enter a pie baking and eating contest. There are 2 kinds of pies: apple and pumpkin. Contest rules state that prize money will be awarded only if contestants collectively bake and eat at least 5 of each kind of pie. If this requirement is met, one dollar is paid for each pie eaten. The stooges' pie baking and/or eating production possibilities tables are as follows:

Curly		Moe		Larry	
Apple	Pumpkin	Apple	Pumpkin	Apple	Pumpkin
0	15	12	0	0	10
1	12	10	1	1	9
2	9	8	2	2	8
3	6	6	3	3	7
4	3	4	4	4	6
5	0	2	5	5	5
		0	6	6	4
				7	3
				8	2
				9	1
				10	0

- Draw each stooge's pie production possibility curve.
- If the stooges bake the pies they will be eating, how much in prize money can each win? (Though Curly and Moe can bake more pies, only Larry could earn prize money.)
- Suppose Curly and Moe decide to bake pies for each other in order to qualify for prize money. What is the maximum amount of prize money they could earn together?
- What terms of trade are favorable to Curly? (That is, at what terms of trade (apple for pumpkin) could Curly earn at least some prize money?)
- What terms are favorable to Moe?
- Suppose Moe determines the terms of trade which make it just worthwhile for Curly to trade. Larry offers an alternative, "Trade with me and we'll split the prize money." Should Curly accept Larry's offer? If so, how should they divide production? How much could each win?

Comparative Advantages in Higher Education

Mark Zupan, University of Arizona

I ask students why trade occurs, the general answer being that it's because the autarkic (no-trade) prices at which domestic supply and demand curves within two different countries meet are unequal and that the resulting price differential is less than transportation costs between the two countries, as reflected in Figure 36-2. The reasons why equilibrium prices differ are varied: differences in tastes, relative factor abundances (i.e., Heckscher-Ohlin models of trade), taxes/subsidies, technology, etc.

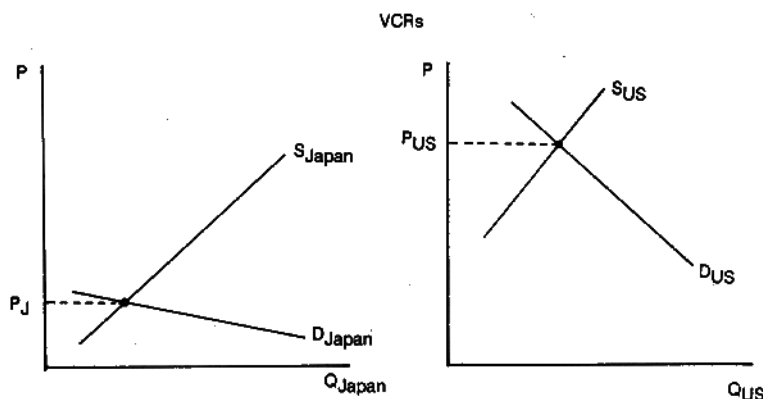


Figure 36-2 Autarkic Price Differentials

The Ricardian model focuses on technological reasons for differences in equilibrium prices. To demonstrate how this model works I give them the example of two countries (Massachusetts Institute of Technology and Ohio State University), two goods (jocks and works or tools), and input (freshmen). With the resources and technology possessed by the two countries (e.g., weight rooms, cyclotrons, libraries), I tell them that at MIT it takes 10 incoming freshmen to produce a certified jock (the others perish under Nautilus machines) and 1 incoming freshman to produce a tool. At OSU, however, only 2 freshmen are needed to get a jock while 5 freshmen are needed to produce a tool.

From this data set, I can go into absolute and comparative cost advantages (tying it into opportunity cost--it doesn't matter how many absolute number of freshmen you need to produce each jock, but what else that absolute number could be used for), having the students draw the two countries' PPFs before trade, and how the PPFs pivot with trade (Ricardo's theory says go to the corner of your PPF where you have a comparative advantage, produce only the good on that axis, and trade for the other good), and what the total supply and demand curves for jocks look like between the two countries. Figure 36-3 shows how the with-trade price is determined by the intersection of these two curves, and can be used to explain why both countries end up being better off as a result.

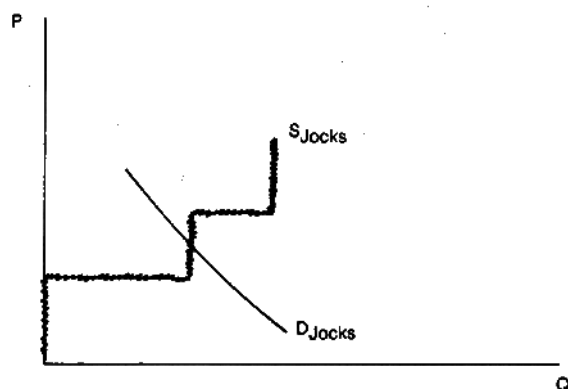


Figure 36-3 Ricardian Price Determination

Illustrating Import Quotas

Mark Zupan, University of Arizona

In covering quotas and their effect on total within-country supply curves, I typically pull out a ruler, piece of chalk, and a student's notebook or pencil and ask students to imagine that the quotas on cars is the length of the notebook long--with the notebook being less than $Q_c - Q_p$ long, as reflected in Figure 36-4. up to p_w , the total within-country supply curve is thus domestic. At p_w , the notebook's length of cars can come in--no more and no less. After that, all cars come only from domestic sources. the within-country supply curve is thus the bold line. using a notebook that you have ferreted out from one of the students in the class is incredibly effective at getting the students to visualize and understand how a quota affects a marketplace.

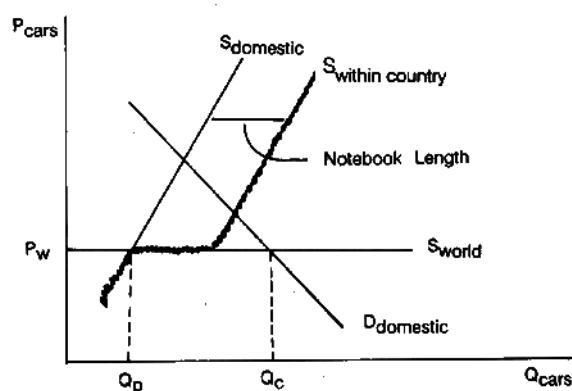


Figure 36-4

The Auto Industry and Imports

James A. Kurre, The Penn State University - Erie

In the early 1960s, imported cars accounted for less than 10 percent of U. S. new car registrations, but by the early 1980s they made up nearly 30 percent of new car sales. The effect of imports on the industry is easily emphasized to students by assigning them to draw supply and demand graphs to help them analyze what has happened in the auto industry.

- (a) Draw two supply and demand graphs, one showing the market for American-made cars, and the other showing the U.S. market for imported cars like Hondas and Toyotas. In the early 1970s, American auto makers were making mostly large gas hogs, while most foreign cars were small and fuel efficient. Show what effect the dramatic increases in gasoline prices in the 1970s would have on each market. Which curve would shift on each graph, and what would cause it to shift? Indicate what would happen to the equilibrium price, and number of each type of car sold.
- (b) What effect would you expect this to have on the market for inputs used in making cars in this country? Specifically, what effect would this have on employment for auto workers? In terms of supply and demand for auto workers, which curve would shift, and what effect would this have on the number of jobs in the industry?
- (c) In 1980, the United Auto Workers and the American automobile producers joined in requesting mandatory auto import quotas from the government. The Reagan Administration responded by asking the Japanese to "voluntarily" restrict the number of cars they export to this country. Show how these import restrictions would affect both the market for imported cars and the market for domestically-produced cars. If you were in the market for a Honda, what effect would the restrictions have on the price that you'll pay, and the availability of the car for which you're looking? What effect will the import restrictions have on the market for American auto workers?
- (d) As is the case with most government actions, this one had an effect on the distribution of the economy's output. In other words, it redistributed the American pie, taking income or resources away from some participants and giving them to others. Who benefits from the import restrictions? In other words, who would you expect to back the import quotas politically? Who loses from (i.e., bears the costs of) the import restrictions?
- (e) Normative implications. Are you for or against import quotas for foreign automobiles? Before answering, realize that your answer will depend in large part on whether you personally would gain or lose as a result of the quotas. Taking a larger view, if the cost to American consumers were only \$50 for each job saved, would you be willing to vote for quotas? . . . if it were only \$5? . . . if it were \$5,000? In other words, might you agree with this policy, even though it would redistribute from some people to others, if the

benefits received by the gainers were much greater than the costs to the losers? Or would that still be "unfair"?

I have placed in the Library a two-page reading from Consumer Reports (March 1985, pp. 149-150) that discusses these ideas. It cites an economic study that estimates the cost to consumers of each job saved by the quotas to be about \$160,000 per year. You might wish to take a look at it and see if their analysis agrees with yours.

ANSWERS

- (a) Figure 36-5 shows the results typical students should be able to illustrate graphically. The price of a complement (gas) went up, causing the demand for domestic cars to decrease. While gas is also a complement for imported cars, as the cost of driving big cars (a substitute for the small imports) increased, the demand for imports increased. The quantity of domestic cars sold would be expected to fall, while the quantity of imports would rise.

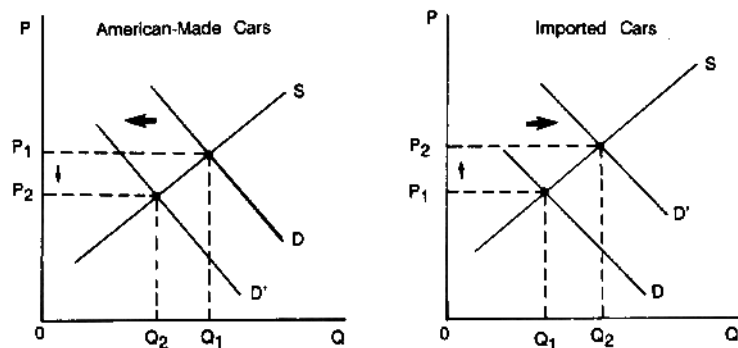


Figure 36-5

- (b) The demand for U.S. auto workers derives from the demand for American-made cars, so if demand for domestically-made cars falls, demand for auto workers will also fall--i.e., there will be fewer jobs for them. If the UAW resists a wage cut ($P_1 - P_2$) --i.e., if the supply curve of labor is relatively flat at the current wage--the decrease in the number of jobs will be even larger. (Draw two graphs, one with a flat and one with a steep supply curve, and look at the effect on employment.)

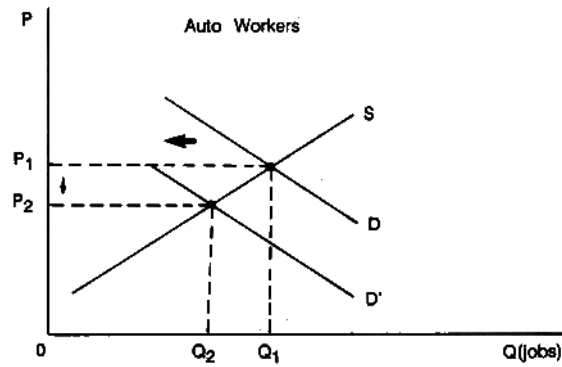


Figure 36-6

- (c) Import quotas would reduce the supply of imports, driving their price up and quantity down. At the old price there would be a shortage of Hondas, so dealers will add premiums to their sticker prices and imports may be harder to get. These price hikes for imports will raise demand for domestically-produced cars (which are substitutes), with the effects on P and Q shown in Figure 36-7. More U. S. auto workers will have jobs.

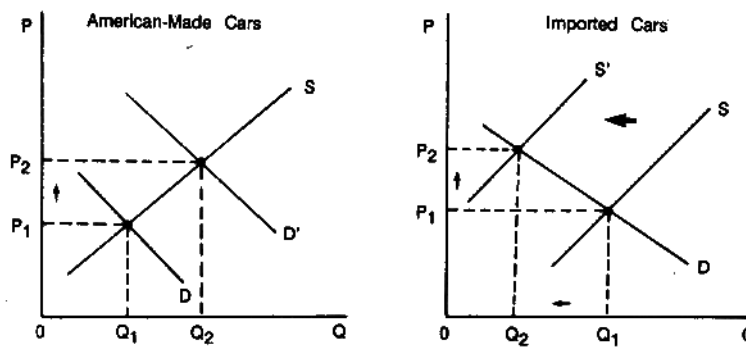


Figure 36-7

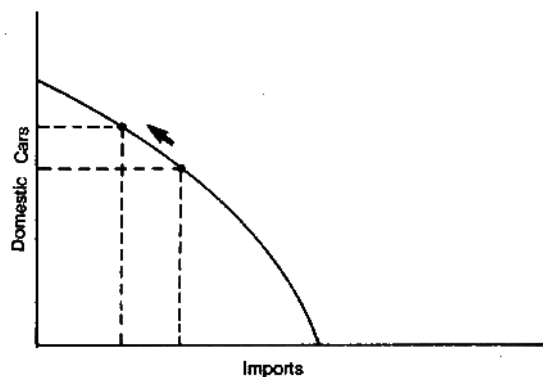


Figure 36-8

- (d) The auto workers benefit because there will be more jobs for them than without the quotas, perhaps at a higher wage, also. The owners (i.e., stockholders) of the American auto companies would benefit from higher prices, and profits, for their product. Consumers of both domestic and imported cars would pay higher prices, and have a harder time finding the import cars that they might want. They lose. Also, don't the quotas cause (allocative) inefficiency? They push us to a different point on the production possibilities curve than we would otherwise choose, as illustrated in Figure 36-8.

Evaluating Some Arguments Against Free Trade

Ralph T. Byrns

Discuss the widespread alarm at recent huge U.S. trade deficits. Much of this alarm harks back to mercantilist reasoning (rebutted by Adam Smith in his *Wealth of Nations*) or parallels Keynes's rationale for trade restrictions during a depression (see his appendix on mercantilism in the *General Theory*). One stimulating rebuttal to mercantilist thinking is to ask how many students believe that in commercial transactions, "it is better to give than to receive". Few hands will rise. Then ask how many believe that people who "get more than they give" are ahead. Most students will raise their hands. This leads to the following points:

- (a) The U.S. trade deficit is a situation wherein we give up less than we get from foreigners, making up the difference by "exporting" dirty green paper that has a very low production cost. Argue that the largest U.S. export since 1951 have been the dollar and dollar-denominated securities. To answer the response that this paper will return and imposes a future burden, point out that Japanese use dollars to buy Brazilian coffee, Arabs use dollars to buy Toyotas, etc. The U.S. dollar is the world's major medium of exchange, so Americans gain through international "seignorage" when our balance of trade (or payments) is in deficit because our FED is the de facto world's banker.

- (b) When a pattern of trade first emerges, both sides to any exchange may believe that it has "cheated" the other, because it trades something with a low subjective value for something it values comparatively highly. After the pattern of trade becomes customary and both sides have adjusted their patterns of consumption and production, the gains from exchange are taken for granted.
- (c) Point out that the static gains from trade are positively related to the autarkic production cost differentials, and that relative prices will change most (and be most disruptive to the status quo) when potential gains are greatest. That is, the domestic prices of exported goods will rise more and the domestic prices of imported goods will fall farther the greater are the gains from trade.

Perhaps nothing attests to the power of the gains from trade more than the diversity of the arguments against free trade policies. In addition to those cited in the text, you may want to address the following anti-trade positions:

- (a) **XENOPHOBIA.** Nationalistic or chauvinistic pleas to "Buy American" (or from local merchants instead of going to a big town, etc.) entail asking or requiring people to act against their own interests. Policymakers who impose barriers to trade on the basis of such arguments deny us the gains from exchange by doing this (although there may be some psychic income generated by such behavior) in order to e.g., subsidize domestic producers or hold down the real incomes of foreigners. But you should point out to students that our own economic power is reduced when trade restrictions are imposed, and so these may be contrary to our national interests.
- (b) **SCIENTIFIC BALANCE.** The argument for "scientific balance" suggests that tariffs should be structured to eliminate cost disadvantages to American producers (e.g., higher cost American labor versus "cheap" foreign labor), and then "let the best man win." The fallacy of this argument is that a "scientific tariff" voids comparative advantage. Should an Alaskan coffee grower be protected from cost disadvantages relative to a Columbian grower? The gains from trade derive from differences in production costs; with a scientific tariff there would be no gains from trade and hence, no trade in the long run.
- (c) **SAVING MARGINAL PRODUCERS.** Point out that competition always yields producers who are at the margin of extinction. Moving some currently marginal producers into an inframarginal category by restricting imports of competing goods may work, but in short order such a policy will simply generate another group of firms that will hover on the brink of failure and another group of workers threatened with unemployment.
- (d) **COUNTERING DEPRESSION.** Point out that Keynes's suggestion that trade barriers can bolster aggregate demand (raising $X-M$) to help offset recessionary pressures is only valid if retaliation by other countries is insignificant, and may backfire if retaliation is significant. Indicate that, moreover, restrictions are very difficult to eliminate once in place. For example, rescinding the "voluntary" restrictions of Japanese exports of

automobiles to the United States was powerfully opposed by U. S. automakers even after our domestic industry had recovered (by 1984) so that even Chrysler was profitable. Students also enjoy discussing just how voluntary Japanese export restrictions on autos have been.

Trade Restrictions and our Standard of Living

David E. R. Gay, University of Arkansas

When discussing the trade balance, I emphasize that foreigners will hold more dollars when they sell more to us than we buy from them. They do not burn the money. Instead they use it to buy American property (the Japanese will pay the top dollar in cash) and they buy part of the U.S. debt issues (otherwise we would have to buy more of it ourselves and that would require higher interest rates), among other things. Prior to class I collect a sack full of goods, or their container's, and begin to pull them out of the sack. With tariffs and quotas rising then goods like coffee would be more expensive, aiding Hawaiian producers but lowering out standard of living in general, and then I toss the coffee can into the waste basket about 20 feet away. And just like sinking basketball shots this continues until the sack of goods is empty. Then I check my shoes and likewise toss each into the trash can, which is nearly full by now. After tossing my belt into the trash can, I begin to remove my trousers but stop before going too far , although you could come prepared to actually remove them for the grand dunk. Thus, you have attempted to strip for free trade. Ha!

Chapter Thirty-Six

International Finance

May I Have My Change Please?

Roger H. Goldberg, University of Memphis

To motivate the necessity of a market for foreign exchange, I offer to purchase a pen at the outset of class. The willing seller who comes forth is given a 1000 lira note in payment. (I stress the "one thousand" denomination for the benefit of the class when concluding the transaction). The recipient of the note invariably asks, "What do I do with this?" This provides the instructor with immediate opportunity to highlight the different mediums of exchange economies use and to suggest the necessity of markets which will allow for exchange between the monetary instruments of different nations. The class is asked as a concluding exercise to research the current exchange value of the lira and other currencies from their daily newspapers. (Postscript: Did the teacher "get a good deal" on the pen?)

Permanent International Seignorage

Robert T. Averitt, Smith College

I tell the following story when discussing international exchange markets. One of four friends dies. The three remaining friends decide to honor their friendship while standing at the open grave. The first friend drops a \$100 bill into the open grave. The second friend does the same. The third friend does not have a \$100 bill, so he writes the deceased a check for \$100 and drops the check in the grave. Then the open grave is covered. The first two friends have lowered their net worth by \$100, the third friend has not. Dollars in international trade are like checks. If dollars do not return to the United States as claims on U.S. goods and services, the Americans who spent the dollars receive valuable goods or services while the U.S. economy only gives up money, a commodity with an extremely low marginal cost of production.

A Strong Currency for a Net Importer

Gautam Mukerjee, University of Pittsburgh-Bradford

I explain the need for a strong currency for a country such as Great Britain by using the marriage of Prince Charles and Lady Diana as an example. I try to impress on the students how the British government saw the marriage as an opportunity to boost tourism and the publicity department steeped the interest of foreigners through carefully planted mysteries about the wedding dress and other paraphernalia of the wedding. All this was aimed at strengthening an all too weak British currency in an economy riddled with inflation. Although the campaign to promote tourism was not too successful in the wake of terrorism, this example shows how a fascination with royalty may be tapped for its economic potential.

An International Big McTasty Attack

John P. Manzer, Purdue University

Students frequently do not understand the nature of foreign exchange conversions or the significance of rate changes upon international trade. This short exercise is designed to involve students in a quick analysis demonstrating the importance of the process.

McTasty, Inc. is a U.S. based fast food chain with a large number of outlets in the United Kingdom and West Germany. Over 80% of its European summer and fall sales are to U.S. residents traveling abroad. Because of your excellent progress in your economics studies, you have been asked to analyze this season's European price schedule. Currently the pound is selling for \$2 and the mark for \$.50. Using the European price schedules in Table 37-1, determine the dollar costs to U.S. travelers of eating McTasty's outlets in the United Kingdom and West Germany.

Item	Pound United Kingdom Price	\$ Cost in United Kingdom for U.S. Traveler	Mark West Germany Price	\$ Cost in West Germany for U.S. Traveler
Mctasty Burger	1.5	_____	5	_____
Deluxe Mctasty Burger	2	_____	8	_____
French Fries	1	_____	2	_____
Ice Cream Sundae	.5	_____	2.5	_____

Table 37-1

It appears that a number of international events may change exchange rates next season. It is predicted that the pound will sell for \$1.80 and the mark for \$.60. Using the same European prices calculate the dollar costs to U.S. travelers for next season for Table 37-2.

Item	New \$ Cost in United Kingdom for U.S. Traveler	New \$ Cost in West Germany for U.S. Traveler
Mctasty Burger	_____	_____
Deluxe McTasty Burger	_____	_____
French Fries	_____	_____
Ice Cream Sundae	_____	_____

Table 37-2

Using the new exchange rates, complete Table 37-3 and determine the costs of McTasty products for West Germany and the United Kingdom travelers.

Item	Pound United Kingdom Price	Mark Cost in United Kingdom for West Germany Travelers	West Germany for Germany Price	United Kingdom Travelers
Mctasty Burger	1.5	_____	5	_____
Deluxe Mctasty Burger	2	_____	8	_____
French Fries	1	_____	2	_____
Ice Cream Sundae	.5	_____	2.5	_____

Table 37-3

Item	Pound United Kingdom Price	\$ Mark Cost in United Kingdom for German Travelers	Mark Germany Price	\$ Cost in Germany for United Kingdom Travelers
Mctasty Burger	1.5	_____	5	_____
Deluxe Mctasty Burger	2	_____	8	_____
French Fries	1	_____	2	_____
Ice Cream Sundae	.5	_____	2.5	_____

How have changes in exchange rates affected the relative prices of McTasty's European products?

What types events may effect the supply and demand for different currencies?

Additional issues of class discussion might include the effects of changing currency values upon a firm's profitability and the types strategies they might utilize to protect themselves from non-operating currency fluctuation losses.

The International Trade Triangle

Anthony N. Duruh, Warner Southern College

The International Trade Triangle is very suitable for clarifying how the imbalance of trade can occur between two countries. For example, trade imbalance between the United States and Japan can be illustrated with the International Trade Triangle:



Figure 37-1

Winners and Losers

The International Trade Triangle produces a winner and a loser. The winner is the country with trade surplus, while the loser is the country with a trade deficit.

How Japan Creates Trade Surpluses

Japan does it by exporting raw materials to Mexico. Mexico has abundant cheap labor compared to labor costs in either Japan or the United States. Japanese subsidiaries in Mexico utilize Mexican cheap labor and low overhead cost to produce goods inside Mexico. The finished goods and sometimes semi-finished goods are re-exported to the United States to be sold here for hard cash. The hard currency is then returned to Japan to pay for raw materials and purchase more raw materials. The excess of revenue over cost results in super-normal profit for Japan.

A look at the graph reveals the imbalance of trade between Japan and the United States.

The Loser

The United States becomes the loser in this international trade triangle. How? The United States exports less to Japan than what Japan sells in the United States, thereby creating an imbalance of trade between the two trading partners.

Other Uses of the International Trade Triangle

The International Trade Triangle is useful for explaining the following:

1. Comparative Advantage
2. Foreign currency transactions
3. Arbitrage
4. Dumping
5. Non-restrictive and restrictive foreign currency.

Introducing the Balance of Payments

*Jannett K. Highfill, Bradley University, and
William V. Weber, Eastern Illinois University*

The foreign exchange market for dollars can be used to help students understand the economic balance of payments. Foreign agents demand U.S. dollars when they (1) buy U.S. exports (recorded as U.S. current account exports, abbreviated CAX) and (2) lend financial capital in the U.S. (recorded as U.S. capital account inflows, abbreviated KAI). Thus we can write the foreign demand for dollars as $CAX + KAI$. Similarly, dollars are supplied as foreign exchange by domestic agents in order to acquire the foreign currency that they need to (1) import goods and services from abroad (recorded as U.S. current account imports, abbreviated CAM) and (2) loan capital abroad (recorded as U.S. capital account outflows, abbreviated KAO). So the U.S. supply of dollars in the foreign exchange market can be written as $CAM + KAO$.

When these relationships are placed on the supply/demand diagram of the foreign exchange market for dollars (see attached figure), the economic balance of payments is readily seen to be the difference between the quantity demanded and quantity supplied of dollars. The easiest case, of course, corresponds to the supply/demand equilibrium. It is virtually self-evident from the graph that if exchange rates are truly flexible, then the economic balance of payments is neither in surplus nor in deficit at the equilibrium exchange rate. If instead the value of the dollar is above its equilibrium level (which might occur under fixed or managed-float exchange rates), the graph makes it apparent that the sum of current account exports and capital account inflows (i.e., the quantity demanded of dollars) is smaller than the sum of current account imports and capital account outflows (i.e., the quantity supplied of dollars), and thus the balance of payments is in deficit and official transactions on the official settlements balance are required.

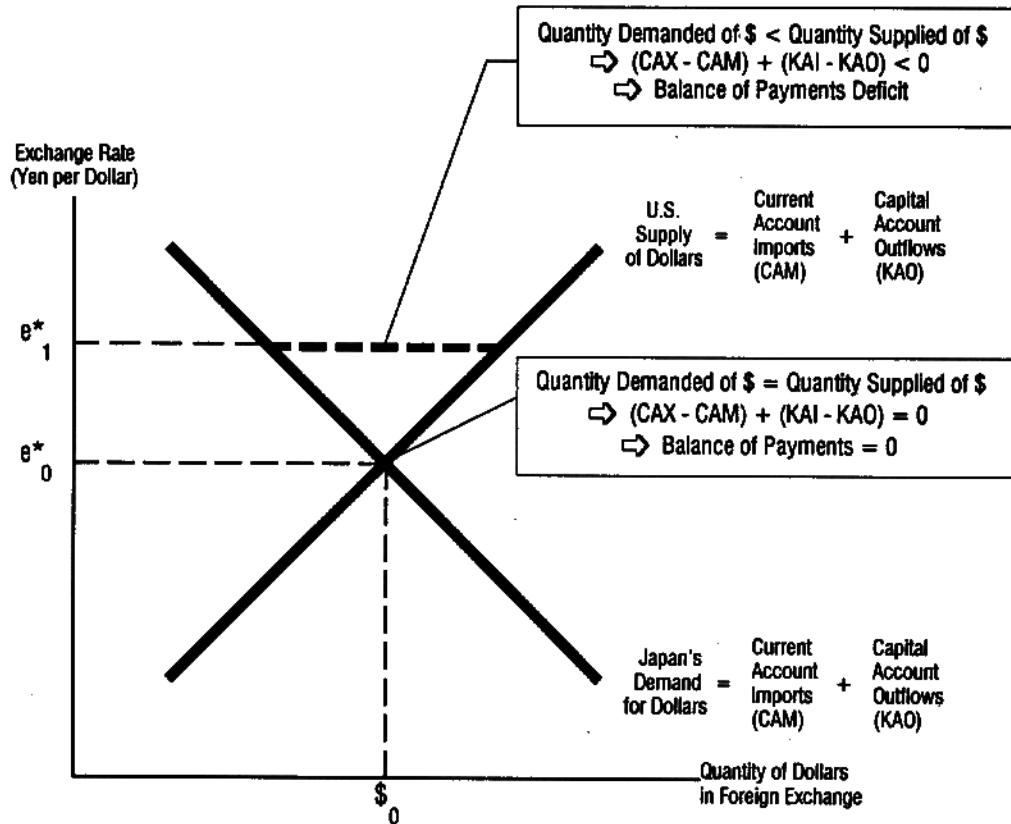


Figure 37-2

Are Trade and Payments Deficits Harmful?

Ralph T. Byrns

Many people, including quite a few economists, are alarmed by the persistence of huge U.S. deficits in international trade and our balance of payments. An alternative perspective is that a U.S. trade deficit reflects a situation wherein we give up goods that absorb fewer resources than the goods we import from foreigners, and make up the difference by "exporting" dirty green paper that has a very low production cost. Suggest to your students that the most valuable U.S. exports since 1951 have been the dollar and dollar-denominated securities.

Argue, further, that foreigners who have absorbed dollars must have perceived that they were gaining from their payments surpluses because they acquired units of an international medium of exchange. The dollar is also highly valued internationally for precautionary reasons because it is considered a secure asset. Suggest to your students that our international "seignorage" has also yielded several kinds of gains to most Americans:

- a. American consumers gain from trade deficits because more goods are available in total, and at lower prices.

- b. American firms have gained because U.S. payments deficits have facilitated their investments abroad.
- c. American policymakers have used the worldwide acceptability of the dollar as leverage in international negotiations, and have often secured concessions by foreign governments. "Dollar diplomacy" is generally preferable to gunboat diplomacy.

The basic question here is whether the persistent outflows of dollars can be viewed as semi-permanent exports. To rebut the counterargument that foreign holdings of dollars will return and imposes a future burden on Americans, point out that foreigners have demonstrated a huge appetite for dollars; the U.S. has experienced payments deficits in the current account persistently for more than a decade. Japanese use dollars to buy Brazilian coffee, Arabs use dollars to buy Toyotas, etc. The U.S. dollar is the world's major medium of exchange, and it is also perceived as an appropriate store of value by residents of countries that are economically or politically unstable. Thus, most Americans gain through international seignorage when our balance of trade (or payments) is in deficit because our FED is, de facto, the world's banker.

Interest Rate Parity Theorems

J. Harold McClure, Jr., Claremont Graduate School

I offer a way to motivate a students' desire to learn interest rate parity theorems found in basic international economics. The international Fisher equivalent gives the market's best forecast of future spot exchange rates under ideal conditions. However, to make profits, one must beat a market (if one can). At the beginning of the second quarter of 1985, Eurosterling interest rates were about three percentage points above Eurodollars rates so the market would be forecasting a 3 percent per year dollar appreciation (its value would go from 1.2443 \$/pound to 1.2350 \$/pound in 90 days. If one accepted a global monetarist guess that differential money growth determines exchange rate behavior, the fact that U.S. M1 growth was two percentage points higher than U.K. M1 growth suggests dollar devaluation. Holding British assets would earn higher nominal return plus an expected capital gain. One can then warn students of exchange rate risks, failures of predictive models, etc.

NOTE: Sources for recent Eurocurrency rates and forward/spot exchange rates include The Economist and Wall Street Journal.

Exchange Controls and Black Markets

Ralph T. Byrns

The governments of many less developed countries and countries within the Soviet sphere often fix the exchange rates for their currencies at untenably high levels. They will buy foreign currencies at the official rate, but refuse to redeem most privately-held currency at comparable rates for foreign currencies. The result is that black markets for foreign currencies abound, and fortunes can be made

by government insiders who can get domestic currency exchanged at official rates for foreign currency.

For example, Vietnamese piasters could not legally be redeemed for U.S. currency by private individuals during 1964-74, but U.S. currency legally was supposed to be exchanged for piasters only at government offices. Top level noncommissioned U.S. soldiers in Vietnam were caught buying piasters with dollars on the black market, then exchanging the piasters for dollars at the official rate, then returning to the black market, *ad infinitum*. Many U.S. soldiers and Vietnamese officials made fortunes through this illegal form of arbitrage, and most were never apprehended.

Does Exchange Flexibility Spread Inflation Internationally or Isolate It?

Ralph T. Byrns

Point out to your students that standard theory predicts that flexible exchange rates should insulate a domestic economy from foreign inflation. Exchange rates should fall for currencies issued by countries experiencing relatively high inflation, and should rise for currencies where price levels are relatively stable.

Many critics of flexible exchange rates take a contrary position and have blamed flexibility for high rates of inflation. Presumably, their argument rests on high-inflation countries' inability to export and diffuse their inflationary pressures; the exchange rates of other countries simply appreciate so that a country experiencing rapid inflation is isolated as effectively as quarantined patients in TB wards once were. Classroom discussions of the implications of both approaches tends to be lively.

Chapter Thirty-Seven

Economic Growth and Development

The Production Possibilities Curve of a Third World Country

Robert C. Graham, University of North Carolina-Charlotte

Economics studies the process by which scarce resources are allocated. Therefore, scarcity of resources is the most fundamental concept in economics. However, given the relative abundance of commodities available in the United States, students typically underemphasize the importance of scarcity of resources as a concept. The following hypothetical illustration is designed to reemphasize the importance of scarcity of resources as a concept.

Tell the class that they represent the government of a third world country. The country is characterized by a command economy and a high rate of population growth. The country's production possibilities curve looks as follows:

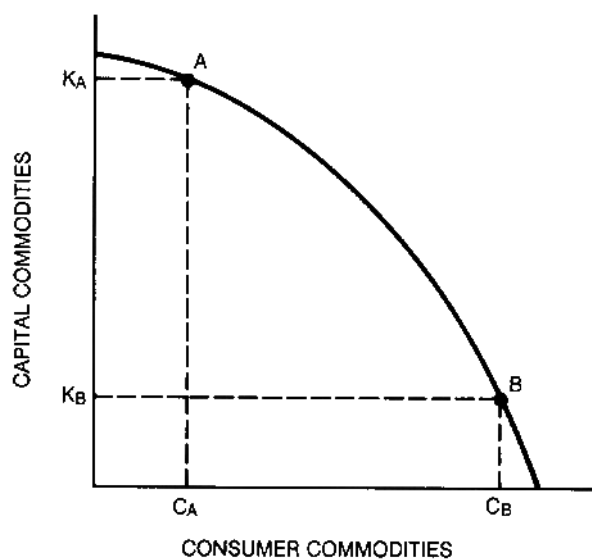


Figure 19-1

Since the country has a command economy, it is up to the class to choose the combination of commodities that will be produced in the economy. However, their choices will be limited to either point A or point B on the production possibilities curve. Remind the students that in making their choices they need to take into account that consumer commodities include the food necessary to feed the people of the country, while capital commodities represent a resource which can shift the production possibilities curve outward in subsequent years. Inform students that by choosing point B the quantity of capital commodities produced is just sufficient to replace the machinery and equipment that wears out; therefore, no economic growth will occur. On the other hand, if point A is chosen, the amount of capital commodities produced is sufficient to shift the production possibilities curve to the dashed line in the following diagram.

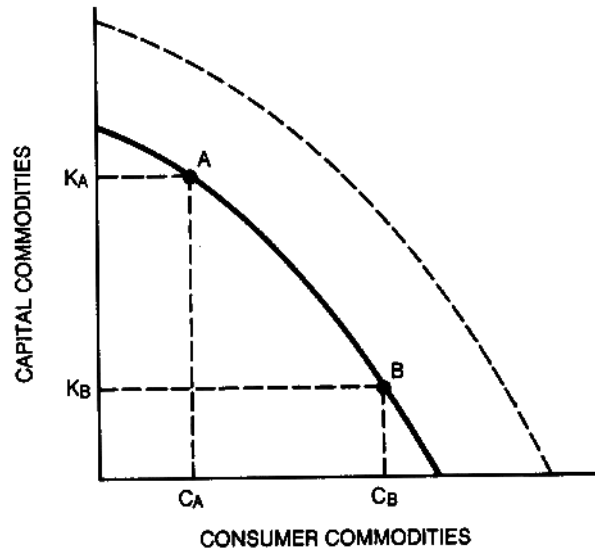


Figure 19-2

The students must now decide which combination of commodities to produce, the combination represented by point A or by point B.

One last thing to note, however, is the cost of a wrong decision. It is possible that a wrong choice of output combinations will result in the removal of our government from power, and, perhaps, in imprisonment.

It is now time to take a vote among students. First ask the students who have chosen point A the reason for their choice, which will be the economic growth for next year. Explain that the economic growth is great, but unfortunately people are starving this year because insufficient consumer commodities have been produced. As a consequence, they will be removed from office and imprisoned.

Now ask the students who have chosen point B the reason for their choice. They will respond with the comment that they wanted to produce enough food for the population. Explain that the concern for food production this year is great, but unfortunately people will be starving next year due to insufficient economic growth. As a consequence, they will be removed from office and imprisoned.

Typically students will now want some choice between point A and B. Reply that such a combination will result in some starvation both this year and next year. The problem for this country is that it needs both C_B in consumer commodities and K_A in capital commodities to provide for both this year and next year. However, this combination of commodities is unobtainable (outside of the curve) due to scarcity of resources. Therefore, in this illustration, the scarcity of resources is such that there is no best answer; starvation will always occur.

This illustration can also be used as a springboard for discussion of foreign aid or loans. It is only with this type of assistance from another country that the constraint imposed by scarcity can be overcome.

Economic Growth and the Capital-Consumption Tradeoff

Thomas Wyrick, Grove City College

The production possibilities model is often used to examine the rationale for investing in capital goods. If a nation forgoes consumption goods now, it can accumulate a larger capital stock and thereby experience more rapid economic growth than was previously possible. The higher rate of growth ultimately permits a higher level of consumption than was achievable along the original production possibilities frontier.

Not being national policy makers, some students do not identify with this example and eventually forget the underlying message about the tradeoff between present and future consumption.

The principle is more memorable if applied to something in the students' own experience. At one point or another, all students have decided to forego present consumption in order to invest in human capital, which they expect will increase their lifetime standards of living. Given their common experience, investments in human capital should be used to illustrate the tradeoff between present and future consumption before developing more complicated examples.

In Figure 19-3, the decision maker allocates time between work and study. As one moves up the production possibilities curve from A to B, less time is available for earning an income so current consumption declines. However, the investment in human capital pushes the production (and consumption) possibilities curve outward over time, so, in the long run, consumption (at C) is far greater than would have been possible by following the no-education alternative (A).

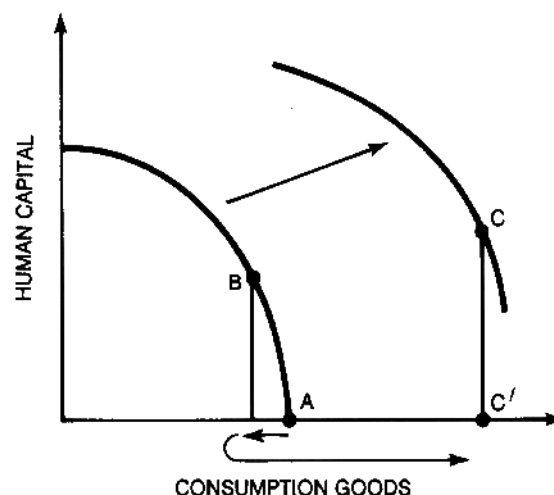


Figure 19-3

Figure 19-4 shows the relationship between academic degree and monthly earnings. Earnings are directly related to the level of education attained, which reflects the amount invested in human capital. Whether or not education is a wise investment requires a comparison between the additional earnings and the costs of acquiring more education, which goes beyond the limits of the production possibilities model.

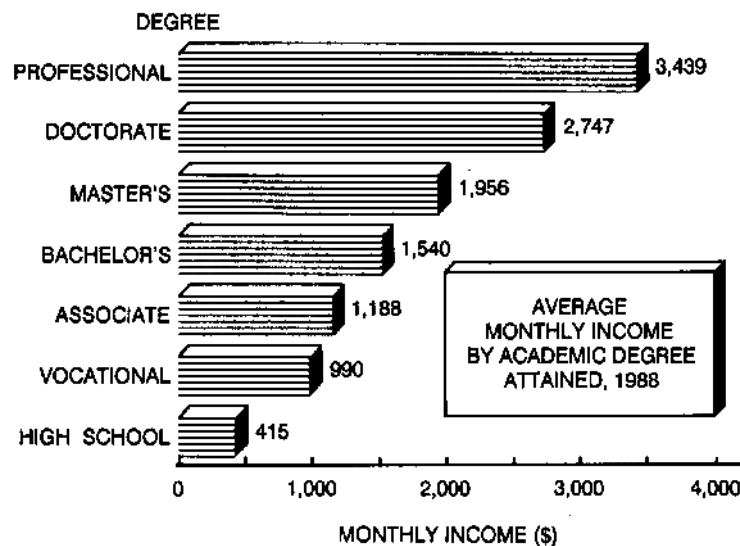


Figure 19-4

Foreign Investment and Capital Depletion

James S. Hanson

Professor of Economics

Willamette University

A frequent criticism of multinational corporations and banks which invest real capital or financial capital in third world nations is that nations are exploited through such activity because the corporations or banks repatriate in profits and principle much more than they initially invest.

To encourage my students to carefully analyze this contention I ask them to imagine that they have earned \$5,000 in a summer job and deposit half of this in a bank savings account for use during the second semester. They deposit \$2,500 and expect to withdraw \$2,575 in six months (assuming simple interest at a 6 per cent annual rate). I then ask them if they would feel that as struggling college students they had "exploited" the rich, capitalist bank by taking out more than they had put in. They respond, of course, with sharp denial, pointing out that the bank probably earned a return greater than 6 per cent by investing their funds for the six months.

I conclude with a brief review of net present value analysis, showing that any investment with a net present value greater than zero requires that the future return flow exceed the initial investment.

The key point is that both parties expect the investment to be a "positive sum game" in which the borrower gains enough from the use of funds to repay the loan or investment with interest and still retain net benefits. This applies to third world loans or the more recent Japanese investments in the U.S. Mutual gains never are guaranteed, of course, so caution is advised; exploitation does occur, bad loans are made, and banks do fail. But future outflows exceeding initial inflows is no evidence of loss or exploitation.

Foreign Aid: Who Really Provides?

James S. Hanson, Willamette University

Aid donors are criticized because private firms within their own country often benefit from the resulting export contracts. I ask students to consider an alternative. Suppose that the U.S. government gives one million dollars in grant aid to Bolivia. The value of foreign aid resides in its ability to finance imports, but what if Bolivia uses the funds to buy mining equipment from Germany, who then keeps the dollars as reserves? Who gave the aid? The U.S. gave up dollars which are costless to produce, while Germany gave up mining equipment which took considerable resources to produce, importing nothing in return. Germany made the real sacrifice. This would change if Germany used the dollars to purchase products from the U.S., or if Bolivia bought directly from the U.S.

This exercise does not support the tying of aid to purchases within the donor country, a practice which reduces the real value of aid to the recipient and often distorts development. The point is that foreign assistance is not "really" given by the formal donor unless or until actual products or services leave the donor country with no imports flowing back in exchange. U.S. export firms may gain contracts, but this represents the real resource cost of providing the aid, not an offsetting benefit to the donor country.

Why is Population Growth in the Third World so Rapid?

J. Michael Swint, The University of Texas Health Science Center

To partially explain the behavior of the leaders of some third world countries who encourage high rates of population growth in their countries (and accuse the West of racial bigotry):

- a. $GDP = f(L, K, \text{technology, etc.})$ and $L = g(\text{population})$. There is evidence that at least over the short-to-medium run GDP is a positive function of population growth.
- b. The growth rate in GDP/POP roughly equals the net rate of investment divided by the incremental capital-output ratio, with the percent growth in population then subtracted from that fraction. Thus GDP/POP, except in unusual circumstances, is negatively influenced by population growth.

GDP simply represents economic growth and is a better gauge of political and military power of a country internationally than GDP/POP. Per Capita Gross Domestic Product is a better measure of social economic development, i.e., more closely related to the welfare of the population than is GDP. Thus the motivations of those favoring continuing high population growth may not be fully inspired by the desire for improvements in the welfare of the populace.

Investment Distortions in Developing Countries

J. Michael Swint, The University of Texas Health Science Center

Even where there is little investment risk in developing countries, the local government often tends to operate with a higher necessary internal rate of return required for investments—including situations where there is not an abundance of attractive projects. This in part can be explained by considering one component of the social discount rate (the standard to which the internal rate of return (IRR) is compared for project approval)—the social time rate of preference (STP). This reflects society's impatience to have commodities now rather than later, and this impatience will reflect the personal "costs" of postponement. In societies where a large portion of the population lives at the subsistence margin, postponement means greatly increased mortality rates, and the STP is very high. Thus the social discount rate, comprised of the STP and the social opportunity cost of capital, is driven upward as a standard which the IRR must exceed for project approval.

The Problem of Third World Underdevelopment

James Angresano, Hampden-Sydney College

Most students are inclined to assume that all nations, including the underdeveloped countries, can experience economic growth and development by emulating our strategies and institutions. To dispel this misconception I ask students to list a few factors that contributed to our own successful development efforts.

Their list usually includes: favorable climate; an abundance and variety of natural resources; low population density with frontiers to absorb excess population; a stable, honest system of government; an immigrant labor force eager to work for modest wages; the establishment of land-grant institutions of higher learning (which contributed to the development of technology suitable for our own particular resource development); and an absence of foreign influence in the form of a colonial power imposing its rules and technology upon us.

I then emphasize that all of these factors have been absent in nearly every underdeveloped nation, putting these countries at a significant disadvantage. Students generally understand at this point that the third world nations cannot simply realize economic development and cultural change by emulating our own methods.

A Dilemma for Third World Development Strategies

Scott Brunger, Maryville College

Imagine you are a college student in the Third World. Most of your relatives are small farmers. Your father owns and operates a store and your mother is a teacher. You are one of seven children. Among your relatives, only half of the children ever went to school. One-tenth of them entered high school. If you finish college and find a job, you are expected to help pay tuition for your relatives' children.

Your country has been independent since 1960. Since then, it has experienced three military revolts. Most educated people work for the government. Some big foreign companies are setting up business and employing college graduates at starting salaries of U.S. \$6,000 per year. The minimum wage is 40 cents per hour. You know life is better in North America, Europe, and Japan. The best things you buy come from there. Your favorite T.V. program is "Dallas."

Question: How would you explain why your country is poor?

The Rule of 72

Ralph T. Byrns

One way to induce students to learn the Rule of 72 is to apply it to business situations. For example, if you suggest that this is a way to compute how long it takes a bank account to double if the compounded interest rate is fixed, business students especially are prone to learn this rule. We also suggest that they learn the formula for the relationships between rates of return, annuities, and prices ($P = A/i$, or $PV = A/r$) for much the same reason, and this does get students to learn how to use these formulas.

The Costs and Benefits of Growth

Ralph T. Byrns

Discuss the pros and cons of economic growth with your class. Among the benefits of development are the eradication of poverty, illiteracy, and health problems that are almost unknown in the developed countries. If there is growth in per capita GDP, longevity expands and the income distribution tends to become somewhat more equal. Growth also seems to induce political stability. The costs of growth include environmental pollution, urban congestion, alienation and the breakdowns of families.

Development Paths

Ralph T. Byrns

Many countries that seek more rapid development, including even China and the USSR, appear to increasingly rely on elements of the market system and international trade for sources of economic development. Discuss with students why how China under Deng, the USSR under Gorbachev, and numerous countries in Africa and Asia have diverged from the largely socialist paths they pursued for decades in their quest for growth and development. Were desires to reshape human nature (e.g., Mao Zedong) doomed to failure? The work of P.T. Bauer is directed at the importance of the development of markets on the path for development, and may be of interest if you want to extend this lecture.

Price Formation in Developing Countries

Eduardo F. Goldszal, John Jay College of Criminal Justice

Students of macroeconomics learn from the neoclassical theory that one of the effects of a decline in the aggregate demand is a decrease in the price level. And that prices are determined by the relationship between demand and supply. Although, when we demonstrate some practical examples for many developing countries, in particular Latin American countries with historically high rates of inflation, we may find that the juxtaposition of demand and supply curves inadequate in explaining price formation for those countries. For instance, in Brazil during the recession of 1981-1983, the GDP per capita fell by 1.5 percent in 1982, and 4.9 percent in 1983. In the recovery year of 1984, the per capita GDP was still below its 1981-1982 level, as shown in table 19-1:

Real GDP per capita, and Index of Inflation in Brazil, 1981-1984		
Years	Dollar GDP Per Capita (1980 Prices)	Index Of Inflation (CPI)
1981	1,908	100
1982	1,879	101.2
1983	1,787	176.8
1984	1,844	207.5

Source: Baer, W., 1989, *The Brazilian Economy* (Praeger, New York).

Table 19-1

The expected result would then be a fall in the inflation rate due to a decline in the aggregate demand. But in fact, the inflation rate, as measured by the CPI, rose 1.2 percent in 1982, about 75 percent in 1983, and more than 17 percent in 1984. So, is the neoclassical supply and demand mechanism of price formation inappropriate in explaining this real world example? Because the neoclassical analysis presupposes the formation of prices through the market mechanism, this answer shall be in the positive. Unlike competitive systems, Brazil and other developing countries have "imperfect" market systems that hinder the full operation of the market mechanism. The market in this case is replaced by large firms with monopolistic or oligopolistic powers. Quite apart from the world based on demand and supply, firms in these systems (both private and public) have the ability to exercise markup pricing over normal costs of production, therefore determining prices, which seem insensitive from variations in the aggregate demand. According to our example, the recession of 1981-1983 decreased the overall sales, pressuring firms to increase their markup in order to maintain their profit margin, consequently increasing prices. An alternative interpretation of the above price-cost relationship may be denoted as a structuralist price equation, such as: $P = ac$, where P is equal to price, a is the markup over cost, and c is the normal production costs.

Chapter Thirty-Eight

Alternatives to Capitalism

Capitalism is a Big Garage Sale

Frank Whitesell, University of Southern Mississippi

We tend to take the forces that operate within a free market for granted. To get our students to appreciate what a free market accomplishes, have them imagine they are holding a garage sale, but one that is a lot different from the usual.

Suppose garage sales in your city were closely regulated go by the local government. A delegated representative from the city has to inspect every item and set every price. Prices cannot be changed during the sale. Unsold items would require additional trips by the government representative, perhaps a meeting of a price-setting committee, new prices established, and another sale.

Have your students make a list of the problems that such a system would create. For example, this list would include:

Many more government employees (thus higher taxes)

Wasted time for everyone involved

Shortages and surpluses

Incentives to cheat

And, of course, in addition to these problems add the loss of fun that people get from shopping around, dealing with each other, add maybe finding a bargain. Now multiply the problems and costs of a controlled garage sale by a few billion, and you have some idea of the problems that are faced by a large centralized economy, like that of the Soviet Union.

Understanding the Variety of Economic Systems

Norma S. Friedman, Indiana Institute of Technology

It is difficult to convey to students the flavor and reality of economic diversity of “other” economic systems outside the United States. With so many international students on our campuses and in our classes it is possible to use their experiential expertise by asking American students to interview international students and vice versa.

Identification of the types of economic system, (i.e. capitalism, socialism, mixed, etc.)

Economic advantages of living in that system

Economic disadvantages of living in that system

Differences in wages, resource allocation, education, health, etc.

NOTE: This exercise can be done in class with pairs of students or as a homework or optional paper. Students have stayed as long as an hour after class to finish this information exchange!

Problems and Prospects of Employee-Owned Firms

Mark H. Maier, Glendale College

Students usually find the idea of employee participation in management to be attractive both because it seems fair and because it may increase productivity. Somewhat less easy for them to see are the problems which employee-run firms may encounter both in managing their internal affairs as well as in dealing with the outside “orthodox” economic world. The following simulation provides an “inside the classroom” look at these issues.

Prior to the simulation, each student is asked to read one article from a long list of articles on employee-ownership. (For examples of available articles and further explanation of this teaching technique see my “Workers Control in the Classroom,” *Radical Teacher*, Fall 1982.) When they arrive at the next session I point out that each of them has read a different article and collectively the class has considerable knowledge on the issue of employee ownership, probably more than I do as a single person. Consequently, I argue that it makes sense for me to turn over the discussion to them and I retreat to the back of the room. What proceeds obviously depends on the particular nature of the students, but in my experience the result always simulates the problems and prospects of employee ownership. Initially students are confused and not sure how to proceed (as are workers in most employee-owned firms). Subsequently, they “solve” the problem by doing things as they were done previously, but soon become disgruntled because the new-found freedom has changed nothing. Eventually, students must face up to decisions about what is worth learning and what is the most effective way to run a classroom, just as employee-owners must decide what and how to produce.

The experiment also simulates the real-world dynamic of employee ownership in which an owner (teacher) simply dumps control into the hands of former employees. (Students will have read about several such examples.) as a result, the role of managers is left in limbo, just as students are not sure how to make use of the teacher. Should he be an equal, a consultant or a leader? Finally, the outside economic system constrains many employee-ownership experiments by the need to be profitable, while the student-controlled classroom sooner or later asks questions about the institutional constraint of grades.

I usually let the experiment run its course for two class sessions, asking only that students stop ten minutes early each time for reflection on the process of the class thus far, at which time I note the similarities between the classroom and employee control experiments.

A Quiz on Marx vs. Friedman

John A. Miller, Wheaton College

Discussion Questions: Understanding Marx's view requires a clear idea of where he essentially agreed with the market model as a description of capitalism, and where he disagreed. To begin thinking about this, answer the questions below, first, as Milton Friedman would answer them; then as Marx would have answered them.

	Milton Friedman	Marx would
	would answer T/F	have answered T/F
1. Relative prices in a capitalistic society reflect differences in relative production costs		
2. Economic arrangements must be considered not only in terms of the efficiency of resource allocations, but also in terms of their impact on human freedom.		
3. When a worker decides to sell his labor power he is entering into a bilaterally voluntary exchange with a capitalistic employer.		
4. True freedom can never be attained as long a people's work is oriented primarily toward satisfying material needs.		
5. Inherent in competitive capitalism is a tendency for increasing monopolization.		
6. Competitive markets tend to yield similar profit rates across industries.		
7. Competitive capitalism promotes political freedom because it separates economic power from political power.		

8. There is a tendency for labor productivity (output per worker per time period) to increase under competitive capitalism.

Perspectives on Freedom

Ralph T. Byrns

Point out that Marxists and, e.g., libertarians perceive freedom in very different ways. Marxists view the range of choices of typical workers as so constrained by their tiny incomes that they possess only the illusion of freedom. If the extent of freedom is defined by the range of choices available to individuals, then there can be no doubt that the healthy heirs of great wealth initially have a much greater range of choices available than people who are born with physical and mental handicaps to impoverished parents, for example. Libertarians, on the other hand, view freedom as constrained not so much by circumstances as by government rules and regulations. This is a major difference in viewpoints, and is interesting to many students.

Is it possible for individual freedom to exist without economic freedom? (Regulations constrain the extent of private enterprise in the United States, some enterprise and merit systems exist in China and the USSR. There are significant differences in the amounts of economic freedom people under different economic systems enjoy. We suspect that the complete absence of political freedom implies an absence of economic freedom (Orwell's 1984), and vice versa.)

Marx predicted that "after the revolution", a dictatorship of the proletariat would peacefully evolve into a state of pure communism in which government would have withered away. And true freedom would be enjoyed by all. The current situations in the USSR and many other nations allegedly governed by Marxists are dictatorships, but evidence of worker participation is difficult to find, nor do these governments show any tendency to wither away. Discuss with students the reasons why there is such a disparity between Marxist theory and this reality. Among the things to discuss are the self-perpetuating nature of bureaucracy and the power of nationalism and racism. For example, you might discuss the relationships between the Caucasian and Oriental parts of the USSR. The war in Afghanistan is an indication of this conflict.