

BAR-ILAN UNIVERSITY

Central Bank Policy Capture
in Times of Crisis

Roi Frayberg

Submitted in partial fulfillment of the requirements for
the Master's Degree in the Department of Economics,
Bar-Ilan University

Ramat Gan, Israel

2013

This work was carried out under the supervision of:

Prof. Warren Young

Department of Economics, Bar-Ilan University

Table of Contents

Abstract.....	I–III
1. Introduction.....	1
2. Theory.....	3
2.1. The role of the central bank- targets and instruments.....	3
2.2. Central bank independence.....	5
2.3. Institutional separation of the agencies in charge of monetary policy and banking supervision.....	7
2.4. Policy choice.....	8
2.5. Entities surrounding the central bank and policy capture.....	13
3. Model.....	17
3.1. Model type A—"Complete independence".....	18
3.2. Model type B—"Vulnerable independence".....	25
3.3. Summary of models results.....	29
4. Case Studies.....	31
4.1. Political capture.....	31
4.2. Financial capture.....	47
5. Summary and conclusions.....	52
6. References.....	54
Abstract- Hebrew.....	2-8

Abstract

This work discusses central bank (CB) policy and target fulfillment in times of economic shocks, when various entities, such as the government or financial institutions, apply strong pressure on it, so as to ensure policy decisions suitable for them. As this occurs in these times, when there is a consensus that a CB should have independence in implementing monetary policy or fulfilling other supervisory or regulatory functions, it raises significant questions about the impact of this phenomenon on the CB's functions and policy performance. Indeed, it can be hypothesized that during a boom, the CB's activity is less affected by any kind of pressure; in contrast, during a shock, strong pressure is applied on the CB by these entities, and it may, in turn, lose its independence. Therefore, we try to provide a straightforward answer to the question: is intervention by a CB in time of economic crisis an outcome of its independence, or is it a reflection or manifestation of its *capture* resulting from *external pressure*?

In order to answer these questions, and in order to illustrate this phenomenon, we present two polar types of models that describe the utility function of an independent CB. In the first model, the assumption is that the CB has "*complete independence*", which means in our perspective that entities surrounding the CB can't influence on it. On the other hand, in the second model, the CB has "*vulnerable independence*", which means there is *external pressure* that is applied on the CB, and interferes with its target and policy setting.

In both models, the CB tries to set an optimal policy which will maximize the targets of price stability, economic growth and financial stability and efficiency. These models are subject to number of restrictions which describe the correlation between growth rate, inflation environment, financial stability and efficiency, and the

II

instruments the CB utilizes to fulfill its targets, which are: the short run nominal interest rate and regulation of financial institutions. The external pressure in the second model is reflected by three parameters: the nominal interest rate, the strength of regulation, and the severity of the shock. It is based on the following assumptions: the higher the interest rate, the greater the pressure that political entities will apply on the CB to reduce it so as to support economic growth; as the regulation is more conservative, financial institutions will put pressure on the CB to ease regulation, as it damages their revenues; and the severity of the shock will cause panic in the financial system, which will bring about more pressure on the CB to intervene.

The two models generated different equilibrium values. The second model generated a lower interest rate and an easier regulation, which brought about, in turn, a higher growth rate and level of financial efficiency, but a more inflationary environment and less financial stability, which may expose the economy to shocks in the future. The differences in the results are explained by the degree of external pressure applied on the CB. Additional results are in line with our hypothesis, in which we assumed that during a boom or in equilibrium, the CB's activity is less affected by the external pressure. but, during a shock, and as the shock becomes severe, strong pressure is applied on the CB by these entities, and it may, in the extreme cases bring about *policy capture*—in those cases, the CB will prefer to engage "popular policy" then "optimal policy".

To highlight the descriptive efficacy of these models, we analyzed a number of events from the history of the US Federal Reserve System and the Bank of Israel, which illustrate episodes where it appears that policies were captured or partially captured in times of economic shocks. The outcome of these events reflected the results of our models.

III

We conclude that even today, when the CB is ostensibly independent, this phenomenon *could* occur and bring *undesired* results. As such, we can say, that while *de-jure*, it is possible to give independence to a central bank, *de-facto* it is a burden that may be hard for the CB to live with.

1. Introduction

The expectation that central banks will intervene, and attempt to solve economic crises, has increased over the years, as central banks have become very dominant in the modern economic structure. In light of the European debt crisis and the US sub-prime crisis, politicians, commercial banks, and other financial institutions demand that central banks will use all available "weapons" to boost the economy¹. The crucial question is, therefore, do they succeed in influencing central banks' policy decisions?

This paper discusses the phenomenon in which the central bank (CB)—the institution charged with managing monetary policy and in most cases, supervision and regulation of the banking system—has to achieve its targets (price stability, economic growth and maximum employment, and financial stability and efficiency), while different entities, like the government and financial institutions, apply strong pressure on it, so as to ensure policy decisions suitable for them. Indeed, it can be hypothesized that during a boom, the CB's activity is less affected by any kind of pressure. On the other hand, during a shock, strong pressure is applied on the CB by these entities, and it may, in turn, lose its independence in setting interest rate targets, managing monetary policy or fulfilling supervisory or regulatory functions.

We must ask, then, if intervention of central banks in a time of crisis is an outcome of its independence, or is a reflection or manifestation of its *capture* resulting from political or private intervention. It should be noted, however, that proclaiming that a CB is independent or captured is not a simple matter, as there are different levels of independence², and various *types* of *capture*.

¹ For example see the "World Economic Forum" held in Switzerland at 23-27 January, 2013.

² See Grilli, Masciandaro and Tabellini (1991), and Cukierman, Webb, and Neypati (1992), for indexes of central bank independence by measuring its characteristics.

In an age in which there is a consensus that a CB should have independence³, there is virtually no dispute in the literature of the benefits of providing independence to a CB with regard to seeking price stability⁴, but there are disagreements with regard to other benefits resulting from providing independence to a CB, such as the influence on growth or employment.⁵

It is well established in the literature that government agencies (in this matter, the central bank) can be the subject of lobbying by private interests and by politicians.⁶ Canova (2007, p. 3) discussed the non-state actors that impacted on the present global economic order by capturing state institutions—the regulated industry capturing the regulator, often with promises of future employment, political support, and campaign contributions. But he mentioned that there was a "relative silence regarding the capture of CBs, perhaps the most significant agency capture by non-state actors in today's de-jure international financial setup".

It can be also hypothesized that the more a CB is independent of the government, the more vulnerable it will be to pressure of interest groups. Gabillon and Martimort (2002) have shown that different legal statuses of a CB are, in fact, associated with different opportunities for capture of monetary policy by interest groups. The degree of political independence thus affects the agency costs paid to control the CB.

³ In light of the sub-prime crisis and its results, members (especially Republican) of the US Congress wish to proscribe some of the authority of the Federal Reserve Bank, and reduce its independence. One of the proposals is to increase the transparency and accountability of the Fed through an annual audit of the Fed's activities. A more radical proposal is to end the "dual mandate" of the Fed (achieving the goals of maximum employment and price stability) and to leave it with only the goal of price stability. Despite this, recent US presidents have all been supportive of Fed independence.

⁴ Pollard (1993) wondered if inflation aversion is the primary causal factor behind low inflation or if it is the level of independence of the CB.

⁵ Alesina and Summers (1993) found that there is no correlation between average economic growth and the level of CB independence.

⁶ See Stigler (1971), Posner (1974) Peltzman (1976) and Laffont and Tirole (1993), who have discussed "regulatory capture".

To answer the questions set out above, in Section 2, we discuss the theory of central banking, its role and function in setting economic policy targets, the entities surrounding the CB that take part in the economic sphere, and we explain our theoretical approach. In Section 3, we present a model: we assume two types of CB independence status: (a) “complete independence”; and (b) “vulnerable independence”. We show that these assumptions generate different values in equilibrium and in times of shocks. In Section 4, we present case studies from the history of the US Federal Reserve and the Bank of Israel, which illustrate episodes where it seems their policies were captured or partly captured in times of shocks. In Section 5 we discuss our results and present our conclusions.

2. Theory

In order to discuss central banking theory in general—that is, the purpose, functions and objectives of the CB—we would have to devote hundreds of pages, and it still would not be adequate. In this section, we survey the issues which are relevant to describe this thesis.

2.1. The role of the central bank—targets and instruments

Today, the central bank's main roles and functions are usually: managing monetary policy, supporting the orderly activity and stability of the financial system, regulating the payment, clearing, and cash systems, issuing currency, collating and disseminating information and data on the economy, and providing

financial services to the government.⁷ In most cases, they also bear the authority to supervise and regulate the banking system.

Generally, the main targets of monetary policy are: first, maintaining price stability, thus contributing to creating a business environment that supports long-term financial growth; and second, supporting maximum employment and output growth. The CB has one major instrument it can use to achieve monetary targets— the nominal interest rate. Thus, it implements monetary policy through its control over the interest rate in the money market. For this purpose, the CB uses the following tools: open market operations, reserve requirements, and discount-window lending. This means that to achieve price stability and maximum employment, the CB is basically using only one instrument—the nominal interest rate.⁸

The main goals of banking supervision are to achieve stability and efficiency of the financial system. The banking system is a major part of the financial system, fulfilling vital tasks, and is essential to the development of the economy and to fulfilling its growth potential. Thus, a failure of that system to perform will have a severe effect on the functioning of the economy. Spong (2000) referred to other accepted goals of banking supervision, including protection of depositors, creation of an efficient and competitive financial system, and protecting consumers.

The other roles of the CB are not relevant to our discussion, and therefore we decided to disregard them.

⁷ Based on the Federal Reserve System and the Bank of Israel. Other central banks may have different targets and instruments.

⁸ Fischer (2010, p. 2) maintained that the idea which central bankers hold is something like: "We have only one instrument, money growth (or the interest rate), and so we can have only one target, inflation". In his opinion, this view is not correct if "the problem is set up as is typical in microeconomics, where the goal is to maximize a utility function subject to constraints, in a situation where, for whatever reason it is not possible to hit all the targets precisely and all the time. For instance, when the central bank maximizes a function of output and growth, in that case we have to find marginal conditions for a maximum and to talk about tradeoffs in explaining the optimum".

2.2. Central Bank Independence

Macroeconomic theory supports the separation between entities charged with fiscal policy and those responsible for monetary policy, management and control. In most developed countries, the entity that manages fiscal policy is the government, and the entity that manages monetary policy is the CB. This means that the government (principal) or legislature delegates the authority to determine monetary policy to an independent institution (agent), one that is ostensibly beyond political influence, and has risk aversion for inflation. A few explanations for this arrangement exist in the literature:

Kydland and Prescott (1977), and Barro and Gordon (1983), addressed the time inconsistency problem—that is, policy makers attempt to reduce unemployment in the short run by creating surprise inflation, inconsistent with the economy's best long run interests. Firms and consumers who are aware of this policy act accordingly (raising inflation expectations), and in the long run, policy makers can't reduce unemployment, and excessive inflation is a result. One solution is to set a consistent rule for monetary policy, with some freedom to implement discretionary policy, and to maintain the credibility of the central bank; Rogoff (1985) suggested the appointment of conservative central bankers as a solution to the inflationary bias problem. Central banks that target inflation could reduce the inflationary environment.

McCallum (1995) referred to the "fallacy" in CB independence, as he argued that the solution to the time inconsistency problem is not obtained by the appointment of an independent CB— a contract between the government and the CB does not overcome the motivation for dynamic inconsistency, it "merely relocates it". Specifically when inflation is high, the government has to enforce the contract— e.g., reduce the financial rewards of the CB— "but the government has exactly the

same incentive not to do so as is identified by the Kydland – Prescott, and Barro – Gordon analysis".

Another interesting view is presented by Eggertsson and Le Borgne (2010, p. 38), who propose a political agency theory of CB independence which is unrelated to the standard time inconsistency problem. In their opinion the rationale for delegating monetary policy to an independent CB is: "It is essentially given a long term job contract; this, in turn, enables the central banker to commit more effort to the conduct of monetary policy than an elected politician could ever afford to. This extra effort translates in expectations, in better forecasts and fewer policy mistakes, which increases social welfare".

Debelle and Fischer (1994) differentiate between two types of independence: the first relates to the target setting, which is known as "goal independence"—the central bank has goal independence when it is free to set the final goals of monetary policy⁹; the second concerns the instruments the CB uses to achieve its targets—this is known as "instrument independence". A bank that has instrument independence is free to choose the means by which it seeks to achieve its goals. In Fischer's opinion (1995, p. 202), a CB should have instrument independence: "The CB should be given a clearly defined goal or set of goals and the power to achieve them, and should be accountable for doing so". Fischer (2006) also noted that today, most independent central banks have "instrument independence". In practice the independence of the CB is a characteristic which the IMF and the World Bank

⁹ Cukierman (1996) made practical distinction between two types of goal independence—"narrow goal independence" and "broad goal independence". In his opinion, the first type may be possessed by the Bundesbank, as it free to choose its own nominal targets, while the second is not possessed by any existing CB.

refer to, when they assess, for example, the Financial System Stability of each country.¹⁰

2.3. Institutional separation of the agencies responsible for monetary policy and banking supervision

The question of whether or not to separate between the agencies in charges of monetary policy and banking supervision does not have a definitive answer in the literature. Goodhart and Schoenmaker (1995) found that there is no overwhelming argument for either model—in their opinion, the appropriate design of the regulatory system may need to be considered in the context of the particular financial/banking system structure of each country. Di Noia and Di Giorgio (1999) found that in OECD countries, where the CB acts as a monopolist in banking supervision, the inflation rate is considerably higher and more volatile. In addition, they argued that the evaluation of financial intermediaries, moral hazard problems and especially cost accountability seem to suggest that separation would be a better solution for industrialized countries.

Peek, Rosengren and Tootell (2003) argued that when the CB serves as banking supervisor, it helps it obtain useful information which helps the CB carry out other duties, and it particularly helps the CB to improve activist monetary policy. Franck and Krausz (2008) explain why European Monetary Union member states, which have led low-inflation policies since the mid-1980s, retained national banking authorities to supervise their banking systems when they created the ECB. In their opinion, the separation between these two functions best serves the objectives of Conservative parties (which are assumed to favor a stable price level), provided the probability of banking crises is low.

¹⁰ See the Financial Sector Assessment Program (FSAP).

In most cases the CB only has supervisory authority over the banking system. Some CBs have responsibilities for the entire financial system; a good example is the Bank of Israel, to which the new Bank of Israel Law gives the responsibility for supporting the stability of the whole financial system, including the authority to undertake monetary actions vis-à-vis non-bank financial institutions as well. Placing all financial supervisory authorities under the responsibility of the CB is an idea which has recently emerged in Israel, and re-emerged elsewhere, such as in the UK, after the failure of its non-CB regulatory agency (FSA) in the recent crisis (Masciandaro and Quintyn, 2010).

Another big change in the supervisory structure is currently being planned in the EU: On October 19, 2012, the European Council decided to set up a Single Supervisory Mechanism (SSM), which is expected to be effectively operational sometime in the course of 2013.¹¹ According to the European Council (EUCO 156/12), there is a need to ensure a clear separation between ECB monetary policy and supervision functions, but the ECB will be able, in a differentiated way, to carry out direct supervision of the banking system.

2.4. Policy choice

Achieving the CB's targets is not a simple task, especially in times of economic shocks. Following are some of the reasons:

❖ Orthogonal targets

Some of the targets are orthogonal to each other. We can see an obvious conflict between economic growth and the rate of inflation, as setting expansionary monetary policy may increase economic growth in the short run, but will only lead to higher inflation in the long run. Romer and Romer (1989) found that the fight against

¹¹ At this moment, the ECB doesn't have supervisory authority over the banking system, which it leaves to the EU national central banks and supervisory authorities.

inflation by monetary tightening led to higher interest rates, which negatively impacted the level of investment and to the pace of growth of the economy in the US. Steelman (2011) referred to the Federal Reserve Bank's "Dual Mandate"—promoting the goals of maximum employment and price stability, which may at times, create tensions for monetary policy. The implication of this policy conflict brings the CB to prefer specific targets in the short run. For example, consider a supply shock which brings the economy into recession, and causes inflationary pressures. The CB would like to boost economic activity, so it implements expansionary monetary policy. The CB will have to abandon its price stability target if it wants to keep supporting the growth target. In the short run, the CB is willing to make a tradeoff between growth and price stability. Bernanke and Mishkin (1997) referred to this conflict by using a flexible inflation targeting approach. The CB thereby aims to achieve the price stability target in the medium-term horizon, and does not have to hit the inflation target exactly, all the time.¹² In this way, the CB keeps its ability to implement discretionary monetary policy, which they also refer as a "constrained discretion" approach.

Other example of orthogonality can be seen, as between financial stability and financial efficiency—it occurs when the CB sets tighter regulation (for example, high capital requirements, restrictions on banks' activities), which increases stability, but lowers efficiency, as it negatively impacts on the banking system's functioning, growth, and competitiveness. Chortareas, Girardone and Ventouri (2011) showed that strengthening capital restrictions and official supervisory powers can improve the efficient operations of banks. But they also indicated that interventionist supervisory and regulatory policies, such as monitoring the private sector and restricting bank

¹² The Bank of Israel operates a flexible inflation targeting policy that allows temporary deviations from the target, but is designed to ensure that inflation returns to the target range within two years at most.

activities, can result in higher bank inefficiency levels. Pasiouras, Tanna and Zopounidis (2009) found evidence on the impact of the regulatory and supervision framework on bank efficiency. The empirical results showed a robust association of some of the regulatory and environmental measures with cost efficiency and, to a limited extent, with profit efficiency.

Another conflict may arise between price stability and financial stability, when the CB prefers to protect banks rather than to impose monetary restrictions, which is supposed to depress inflationary pressure. Pittaluga and Seghezza (2008, pp.1-2) address this conflict: "In the light of the time-inconsistency hypothesis, the main reason for separating monetary and supervisory responsibilities is to avoid a conflict of interest: in a case of rising inflation, a central bank may be reluctant to impose monetary restrictions due to the negative effects this will have on the banks it supervises. The CB may opt to protect commercial banks rather than the welfare of society as a whole". Ioannidou (2005, p. 82) found that when the Federal Reserve Bank tightens monetary policy, it becomes less strict in bank supervision. She gives an explanation for that phenomenon: "The Fed compensates banks for the extra pressure it puts on them, either because it views them as its constituency or because it is concerned about the micro-stability of the financial sector".

Finally, another conflict which may arise is between economic growth and financial stability—in the case of an acceleration in asset prices, which may, in turn, lead to a "bubble". In this case, the CB would take into consideration the consequences of the bubble exploding, when it sets monetary policy or macroprudential policy, and the growth target may be abandoned, given the necessity to ensure stability of the financial system. Jalilian, Kirkpatrick and Parker (2007)

found a strong causal link between regulatory quality and economic growth, and confirm that the standard of regulation matters for economic performance.

❖ **Lag Effects and Policy Impact**

Monetary policy affects the economy with lags. If the CB does not recognize a shock when it occurs, or chooses a policy affecting the economy but not at the right time, then the policy will not be effective. Batini and Nelson (2002) ratify Friedman's (1972) evidence on the lag between monetary policy actions and the response of inflation—it takes over a year before monetary policy actions have their peak effect on inflation.

Another important point is the uncertainty about the policy's impact on the economy, because of uncertainty about expectations of firms and consumers, or about the structure of the economy.

❖ **Stochastic shocks and policy method**

Shocks are stochastic; the CB can't always predict them and recognize if they are permanent or transitory. The CB needs to match policy to the different types of shocks, and to decide whether to intervene to offset every shock, or focus on stabilizing the economy only after major shocks. Fischer (1980) referred to a "modified activist policy" which responds very little or not at all to minor actual and prospective disturbances, but with proportionately more vigor to actual and potential major disturbances. He also argued that there is no reason why policy should not react to major disturbances, actual or prospective, when it is clear that either expansionary or contractionary policy is required.

❖ **Policy coordination**

Coordination between fiscal policy and monetary policy has an important role in achieving better outcomes for the economy. Anderson and Schneider (1986)

compared policy cooperation as against non-cooperation in three different models. The outcomes of economic activity in all three models were Pareto-optimal in the case of policy cooperation, as compared with that of policy non-cooperation.

Other coordination is required between financial supervisors. This is important for achieving affective policy implementation and strong financial stability. One of the lessons of the "sub-prime" crisis is that in order to improve the structure of the supervisory authorities and upgrade their coordination, cooperation and exchange of information is needed among them¹³. According to Hizkiyahu (2009), the former Supervisor of Banks in Israel, cooperation among supervisors, as good it is, is difficult in times of crisis. In routine times, it is possible to cooperate, but in times of crisis each supervisor will emphasize the stability of his institutions and therefore the corporation will fail.¹⁴

According to the OECD Economic Survey on Israel 2011:¹⁵

International debate on the structure of financial supervision, including in the wake of the 2008-09 crisis, has not yielded any particular consensus on this topic, and a definitive ranking of institutional frameworks is unlikely to emerge because their relative merits depend heavily on country-specific aspects of financial systems and regulatory structures. It seems that the quality of supervision depends more on the strengths of the supervisors, rather than any specific institutional arrangement. In any event, whatever decision is made, continued close co-operation among supervisors will remain of key importance (p. 78).

These issues oblige the CB to estimate future policies of other players (entities) in the economic sphere, and to design its policy accordingly.

¹³ See "Israel and the Global Crisis 2007–09, Bank of Israel, 2011.

¹⁴ Address at a seminar on "Financial Markets Development and Regulation Following the Global Crisis", March 30, 2009.

¹⁵ Another insight of this Economic Survey: "Responsibilities in the current three-agency structure are divided along institutional lines (banks, non-banking institutions and capital markets). While this has some advantages, it requires strong co-ordination to ensure that cross-cutting issues are properly covered. The supervisors meet regularly now, but continuing efforts are needed in this area (p. 17)".

2.5. Entities surrounding the central bank and policy capture

If we assume that the outcomes of CB activity have a major effect on each economic entity, then we would expect those entities will have quite an interest in CB targets, and the policies it sets.

Above, we dealt with the separation between entities charged with fiscal policy (government), as opposed to monetary policy (CB). Suppose a government, which yielded its power to set monetary policy to a CB, is not "satisfied" with CB functioning, because it sets policy which is not supportive of the government's "best interests" in the short run. Should we expect the government to act, or to do nothing?

Much has been written about political pressure and what can be called the "political business cycle".¹⁶ The rationale of this theory is clear, the current government would like to boost the economy before upcoming elections to affect its popularity in the eyes of the public, and therefore influence their votes. The empirical evidence is mixed: Meiselman (1986), Grier (1984) and Pollard (1983), found that there is evidence of a political monetary policy cycle in the US between the years 1960 to 1980, but Drazen (2002) thinks otherwise.

Cukierman and Webb (1995, p. 415) demonstrate that "political instability causes instability at the CB as well." They go on and conclude that "each new government would want to use the CB to try to stay in power as long as possible and would have little concern for the associated detrimental longer-run effects".

Franzese (1998) stresses the point that autonomy of policy-making by CBs is, by definition, a matter of degree, as independence from political authority can never be complete, because the CB's authority derives from statutes or constitutional provisions, any of which can be changed by the political authority. Therefore,

¹⁶ See also Nordhaus (1975).

monetary policy, and thus inflation, is always partially controlled by central banks, and partially by governments in power.

As mentioned above, most of the central banks have the authority to supervise and regulate the banking system. The CB tries to prevent the banking system from taking excessive risks which have implications on the system's stability (systemic risk), and to protect the public interest. Therefore, banking system activity is subject to rules and limitations in the area of proper management and risk control, such as adequate capital requirements.¹⁷ Then, if the CB has low risk preference for banking system failure, it will regulate prudential rules and limitations.¹⁸

Nevertheless, if the CB sets regulation that is too conservative, and becomes too involved with managing the risks of banking corporations, it jeopardizes the potential growth of that system which is essential to the development of the economy, harming, in turn, the competitiveness of the system, and preventing the market from determining prices and quantities independently. It should be recalled that the banking system's growth potential and its profits depend considerably on the level of regulation the CB sets, and we can assume that as the regulation is more conservative, the profits of the banking system will be lower. This, of course, makes it very important for the banking institutions to be involved with that process, and therefore to influence it.

Kroszner and Strahan (2001) argued that financial institutions play an important role in shaping regulation setting. Their research shows that interest group competition and the battle among the interests (for example, big banks versus small banks and banking system versus the insurance industry) are a key determinant to explaining regulatory outcomes.

¹⁷ Bank of Israel Banking Supervision Department.

¹⁸ For an example, see the latest standards given by Basel Committee on Banking Supervision—"Basel III", as a response to the sub-prime crisis.

In light of what we have discussed above, two main types of policy capture exist: The first, capture by a political group, that is to say—*political capture*, occurs when politicians attempt, and often times succeed, in *de-facto* asserting authority over—and setting policy in lieu of—what is *de-jure* an ostensibly independent CB. To implement this type of capture the political entity can use: close associate political nominations; Executive Orders—political and Presidential intervention; non-cooperation fiscal policy; and Constitutional or legal amendment—legislative intervention.

The second, capture by a financial institution, that is to say—*financial capture*, occurs when financial institutions, and particularly banking corporations, are able to assert influence over CB's policy and, in particular, its regulatory stances, so as to enable manipulation, which sometimes results in easing regulation and in extreme cases, with bail-out plans. The latter happens when financial entities can exploit the CB's function as lender of last resort (LOLR), to enable them to take higher risks, while they rely on the CB to use its LOLR function in the case of a default.

These types of captures can also be defined as External Pressure (EP). It is important to note that there could be an "alternative cost" to the CB if it decides to ignore this EP. The extreme case is that the government may change the status of the CB's independence, as a response to implementing policy which is opposition to government targets ("cutting the CB's wings"). A moderate case is that the reputation of the CB, which is important to its functioning, will suffer, as the government and the financial system will attempt to harm it, while they concomitantly attempt to achieve benefits from influencing policy implementation. The impact of EP on CB's credibility could be critical, as it is important in maintaining its monopoly power in

the money market, and enables it to fulfill its role as supervisor and regulator of the financial system,

We can also assume that the worse the effects of shocks on the economy, the stronger the EP may be, and thus the possibility of CB capture increases accordingly. One of the lessons from the "sub-prime" crisis mentioned by Fischer (2012, p. 4) is: "In crises we find ourselves obliged to take steps that we never imagined we would have to take, and that we cannot believe we are taking. It is best not to state that we will never do such and such. In crises we have to be very flexible with regard to the measures we have to implement, and it is advisable to maintain and allow ourselves to use that flexibility".¹⁹ The entities surrounding the CB are well aware of CB's instruments, and in time of crisis they will try to influence the CB regarding their utilization.

Campbell (2010) has shown that financial crises and asset price bubbles—system shocks—create an environment in which the Federal Reserve is pushed in a policy shifting direction implemented via the federal funds rate instrument. The result of his statistical analysis indicates that federal funds rate policy is set differently during moments of what he terms "punctuation", as against those of "normality".

Finally, we can divide the possible outcomes of EP into two categories: the first possibility is that pressure on the CB by these entities does not influence CB policy at all. This means that there was an *attempt to capture* CB policy, but it was unsuccessful; the second possibility—which is the extreme case—is where CB policy has been captured. In that case the CB will prefer to engage "popular policy" rather than "optimal policy".

¹⁹ Address by the Governor of the Bank of Israel at a Bank of Israel seminar on the occasion of the publication of the report "Israel and the Global Crisis", January 12, 2012.

3. The model

In order to provide a formal representation of the theory above, and present it in a model, we assume an economy where the government delegates the determination of monetary policy and the responsibility to supervise and regulate the financial system to an independent and conservative CB. In order to simplify the model, we assume the banking system covers the entire financial system. Therefore, from now on, we refer to the banking system as the financial system.²⁰

We specify two polar types of CB independence: In the first model (type A), the CB has "*complete independence*".²¹ In our perspective, it means there is no *external pressure* applied on the CB; in the second model (type B), the CB has "*vulnerable independence*", which means the government and financial institutions attempt to influence the target setting of the CB, while the CB tries to achieve its targets independently.

In both models, we determine the equilibrium values *quantitatively*, and discuss the impact of shocks on the economy by using a *qualitative*, or in other words, a *descriptive- analytic* approach.

²⁰ As mentioned in Section 2.3 above, some central banks have the authority to undertake monetary actions vis-à-vis non-bank financial institutions as well. Furthermore, the idea to place all financial supervisory authorities under the responsibility of the CB is an idea which has recently emerged in some developed countries. In addition the CB is a major part of the financial system. These arguments strengthen the rationale of this assumption.

²¹ Fischer (2006, p. 16) referred to a "fully independent central bank"—the case where the CB has both "goal" and "instrument" independence.

3.1. Model type A—"complete independence"

The utility function of the CB depends on the economic growth, inflation rate and the stability and efficiency of the financial system.

The CB maximizes²² its utility function by bringing targets to their optimal level:

- Economic growth to maximum;
- Inflation to within the "price-stability range";
- The stability and efficiency of the financial system to the "stability-efficiency range".

The utility function of the CB is:

$$(1A) U(\text{CB}) = \alpha Y + \beta P + \gamma \text{SE}$$

Where, Y- is the nominal²³ growth rate of the economy; P represents a price index target, which measures the target rate of inflation— the higher level of P is where the CB achieves the inflation target (center of price stability range); SE is the index which represents the level of stability and efficiency of the financial system; $\alpha, \beta, \gamma > 0$ are the relative weight placed on targets, where $\beta > \alpha$, as the CB is conservative.

The CB utilizes the nominal interest rate— i^n , and sets the level of regulation on the financial system— R^n , as main instruments to achieve its targets. To carry out a static comparison when we discuss how Y, P and SE are determined in the model, index n of i^n and R^n represents a range of the policy tools the CB implements,

²² Unlike a "Taylor rule", which tries to *minimize* the deviation of actual real output from potential real output ("output gap") and the deviation of inflation from its target by using the nominal interest rate (Orphanides 2007), in this model we assume that the CB tries to *maximize* the targets of nominal output growth and price stability.

²³ The assumption is that the CB needs to achieve price stability; therefore, by this restriction the CB will try to maximize nominal output.

Where

i^1 = expansionary monetary policy

R^1 = "loose" regulation

i^2 = equilibrium monetary policy²⁴

R^2 = equilibrium regulation

i^3 = restrictive monetary policy

R^3 = conservative regulation

R^4 = nationalization²⁵

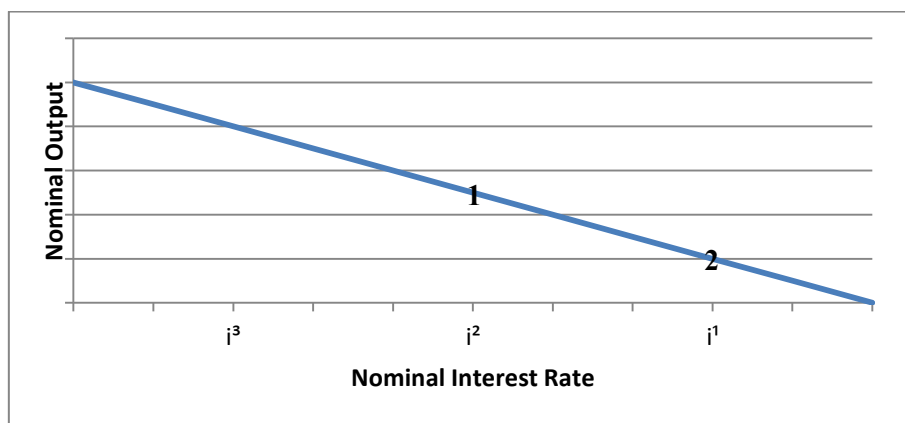
We assume that the CB observes the following equations:

$$(2A) Y = f - e(i^n) + Z$$

Nominal output depends on the level of the nominal interest rate and Z which represents a stochastic shock to the economy²⁶. "e" is the monetary policy multiplier, e and $f > 0$,²⁷

In Figure 3.1, we can see that if a negative shock occurs and reduces output, the CB reduces the interest rate—implementing expansionary monetary policy—to support the economy (state 2) until the shock ends (back to state 1).

Figure 3.1—Relationship between Nominal Interest Rate and Output



²⁴ Equilibrium policy is taken where the economy is in equilibrium. This means there are no large fluctuations in output, inflation, or in the stability of the financial system, and the policy instrument are rarely changed.

²⁵ The CB uses nationalization as a policy tool to bring back stability to the financial system. After it become stable again, the CB privatizes the institutions. .

²⁶ The shock Z can be positive or negative.

²⁷ To simplify the model, we assume a linear correlation between output and the nominal interest rate.

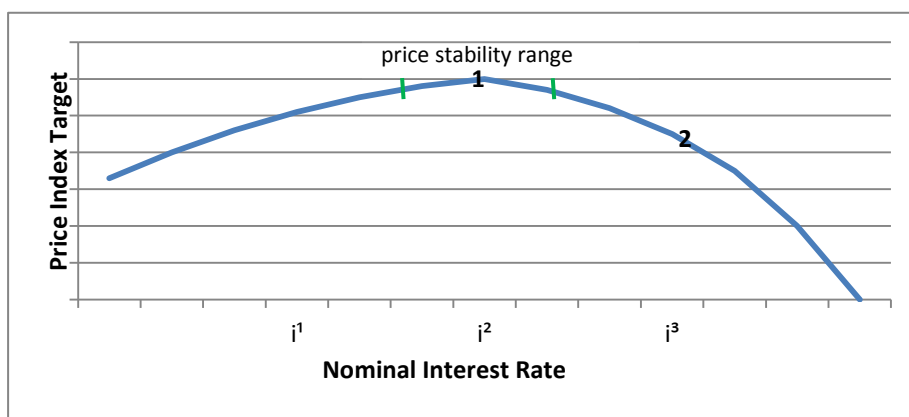
$$(3A) P = h - g(i^n)^2 + j(i^n) + Z$$

The price index target (P) depends on the level of the interest rate and Z (stochastic shock), where h, g, and j > 0;

Index P measures the gap between actual inflation and the "price stability range". Thus, it takes each gap and transforms it to values of P. Achieving the price stability target range is related to a the higher level of P (state 1 in Figure 3.2). In contrast, the further actual inflation is from the "price stability range" the lower index P is.

We can see in Figure 3.2, that to the right side of the "price stability range", P is decreasing, because the rate of inflation is higher than the "price stability range"; To the left side of the "price stability range", p is also decreasing, because the rate of inflation is low (it can also be negative).²⁸ We can also see that if a shock affects the economy and raises the inflation rate, the CB will implement a restrictive monetary policy to bring the inflation rate back to price stability range (state 2) and continue it until the shock ends (back to state 1).

Figure 3.2—Response of the CB to Changes in the Price Index Target



²⁸ We can see that p is decreasing by the lower slope. As we assume the CB is conservative, a low rate of inflation is "better" than a high rate of inflation. To simplify the model, equation (3A) does not reflect this.

$$(4A) \text{ SE} = -k(R^n)^2 + l(R^n) + m + Z$$

The stability and efficiency of the financial system (SE) depend on the level of regulation²⁹ the CB sets and Z (stochastic shock), where l, k and $m > 0$ ³⁰;

The more conservative is the regulation, the greater the stability of the financial system. The CB monitors the risks of the financial system and sets the level of regulation which will decrease exposure to those risks. But setting conservative regulation for the financial system may also damage the functioning of the system, as it does not allow the market to set prices and quantities independently— thus reducing the efficiency of the financial system. The CB must set regulation which will bring the combination of stability and efficiency to a maximum, that is, R^2 – equilibrium regulation, which brings the economy to the "stability-efficiency range".

We assume the CB has low risk preference regarding systemic financial default, which leads it to put a higher weight on stability than on efficiency. In Figure 3.3, we can see this assumption illustrated on the left side of the "stability-efficiency range", where the slope of SE is moderate, which is a slight reduction in the value of SE index - because in this region stability is high, but efficiency is low. On the right side of "stability-efficiency range" the slope of SE is steeper, which reduces the value of the SE index much more than on the left side, because stability is low and efficiency is high.³¹

If a shock impacts the economy and endangers the stability of the financial system, the CB will implement R^3 (conservative regulation) to ensure the functioning

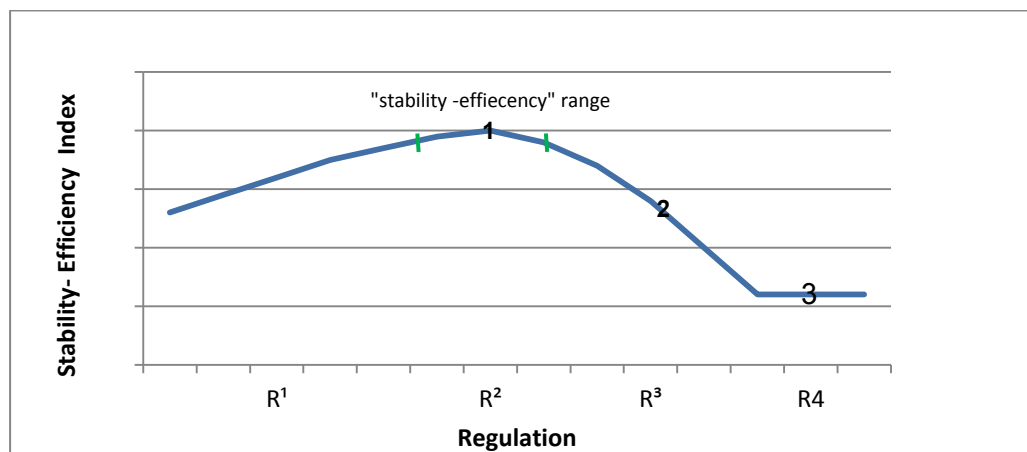
²⁹ The level of regulation of the banking system also influences economic growth, as it influences the revenue of the banking system. Levintal (2010) asserts that using the level of regulation of the banking system as a tool to boost the economy can actually expose the banking system to a shock which can, in turn, cause more harm than good.

³⁰ It is clear that stabilization of the financial system also depends on the level of the interest rate, but the main instrument—the supervisory and regulatory authority—is the most effective tool for that purpose.

³¹ To simplify the model eq.(4A) does not reflect this.

of the financial system (state 2) until the shock ends (back to state 1). In extreme cases, the CB will use R^4 -nationalization (bailout), when it wants to neutralize all risks and prevent bankruptcy of the financial system. In this case the CB will not accept more risk to the financial system (state 3). After the financial system regains stability, it passes control back to private hands, thus lowering the level of regulation from R^4 .

Figure 3.3—Response of the CB to Changes at SE Index



❖ **Model type A: solution**

To find the values of the targets and the instruments the CB utilizes, in equilibrium, the solution is divided into two parts:

- The first part deals with the growth rate of the economy and the price index target: the CB will use the nominal interest rate to maximize those targets;
- The second part deals with the stability and efficiency of the financial system: the CB will use the regulation instrument to maximize those targets.

Solution for the first part

In the first part we face the following problem:

$$U_1(\text{CB}) = \alpha Y + \beta P$$

Subject to:

$$(2A) Y = f - e(i^n) + Z$$

$$(3A) P = h - g(i^n)^2 + j(i^n) + Z$$

Y and P depend on the interest rate tool- i^n , which the CB will set to maximize this function.

After substituting equations (2A) and (3A) into U_1 , we obtain the following:

$$(5A) U_1(\text{CB}) = \alpha(f - e(i^n) + Z) + \beta(h - g(i^n)^2 + j(i^n) + Z)$$

The derivative of eq.(5A) with respect to i^n is³²:

$$(6A) \frac{\partial U_1}{\partial i^n} = -\alpha e - 2\beta g(i^n) + \beta j$$

The interest rate that maximizes the utility of the CB is:

$$(7A) i^* = \frac{j}{2g} - \frac{\alpha e}{2\beta g}$$

The CB sets this interest rate when the economy is in equilibrium. Not surprisingly, we can see that in eq.(7A), when α is higher (or β is lower), the interest rate the CB will set will be lower, as α is the weight the CB puts in the utility function on the growth target.

These are the values of Y and P in equilibrium:

$$(8A) Y^* = f - \frac{ej}{2g} + \frac{e^2\alpha}{2\beta g}$$

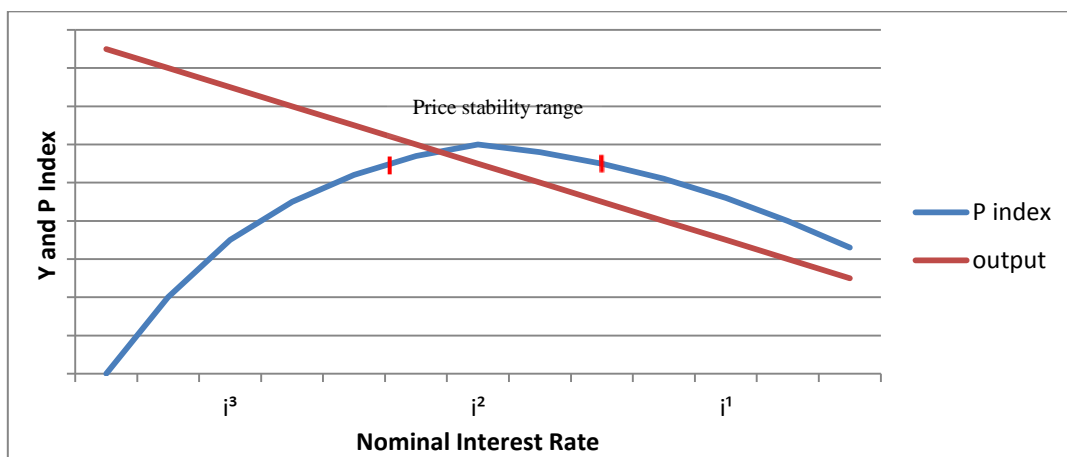
$$(9A) P^* = h - g\left(\frac{j}{2g} - \frac{e\alpha}{2\beta g}\right)^2 + j\left(\frac{j}{2g} - \frac{e\alpha}{2\beta g}\right)$$

³² The solution of the model is where the economy in equilibrium, therefore we assume $Z=0$.

In equilibrium, the interest rate the CB will set has to be on the left side of the price stability range (including the center); this because the CB can get higher output with the same level of the price index as on the right side.³³ The CB will choose the interest rate for which the marginal utility it gets from the growth of the output ($M_{u(y)}$) is equal to the marginal utility it gets from the increase in the price index target ($M_{u(p)}$). When $(M_{u(y)}) \neq (M_{u(p)})$, the CB will change the interest rate until they will be equal. This will be the equilibrium point, where Y and P offer the higher level of utility to the CB. The interest rate at that point is i^3 – equilibrium monetary policy.

As β is higher (or α is lower), the CB puts much more weight on the price index target, bringing it to choose the interest rate which will be close to the center of price stability range. As α is higher (or β is lower) the CB puts much more weight on the growth target, bringing the CB to implement a lower interest rate.

Figure 3.4—Equilibrium Point- Y, P and i^n



³³ This conclusion is based on the model results and is not proven empirically.

Solution for the second part

In the second part we face the problem:

$$U_2(CB) = \gamma SE$$

Subject to:

$$(4A) SE = -k(R^n)^2 + l(R^n) + m + Z$$

SE depends on the regulation (R), which the CB will set to maximize this target.

After substituting equation (4A) into utility function U_2 , we obtain the following:

$$(10A) U_2(CB) = \gamma(-k(R^n)^2 + l(R^n) + m + Z)$$

The derivative of eq.(10A) with respect to R^n is:

$$(11A) \frac{\partial U_2}{\partial R^n} = -2\gamma k R^n + \gamma l$$

The level of regulation that maximizes the utility of the CB is:

$$(12A) R^* = \frac{l}{2k}$$

In eq.(12A) we can see the equilibrium regulation- R^2 , which generates the "stability-efficiency range". The level of SE index in equilibrium is:

$$(13A) SE^* = \frac{l^2}{4k} + m$$

3.2. Model type B—"vulnerable independence"

This model includes the interaction of the CB with other entities in the economic sphere.³⁴ For this purpose, we add the *external pressure index* (EP) to the utility function of the CB, which reflects the level of pressure the entities surrounding the CB (government and financial institutions) apply to change CB policy. The stronger the pressure, the higher is EP - which reduces the utility of the CB. The CB will try to keep EP at an acceptable level; this will help it to maintain credibility in the

³⁴ If not indicated otherwise, the assumptions we made in the previous model are the same.

economic environment, and its monopoly power in the money market, enabling it to fulfill its role, in spite of the changes demanded by the entities surrounding it.

The utility function of the CB is:

$$(1B) U(CB) = \alpha Y + \beta P + \gamma SE - \delta EP$$

Where, $\delta > 0$.

The CB observes the following equations: With the exception of equation (5B), all other equations are the same as in model type A:

$$(2B) Y = f - e(i^n) + Z$$

$$(3B) P = h - g(i^n)^2 + j(i^n) + Z$$

$$(4B) SE = -k(R^n)^2 + l(R^n) + m + Z$$

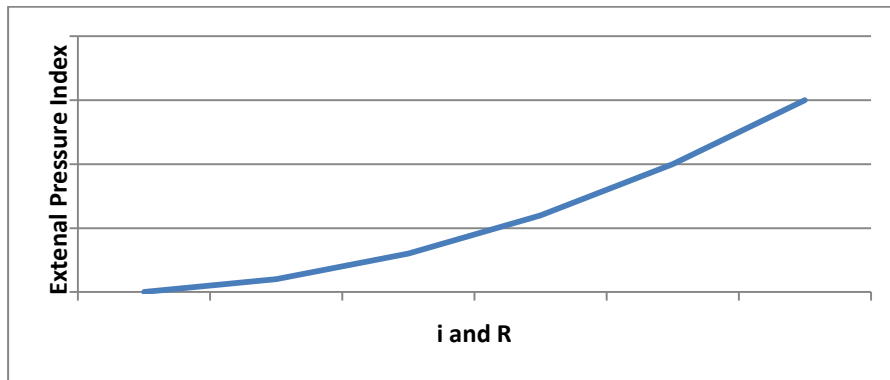
And:

$$(5B) EP = qi^n + wR^n - Z$$

The external pressure index depends on the nominal interest rate, the level of regulation and Z, where q and w > 0;

In fact, the EP is the combination of the level of the nominal interest rate, the level of regulation, and the severity of Z. As the interest rate is higher, the government will push the CB to implement monetary policy that will be much more supportive of the growth target, as we assume it is the main target of the government; as the CB sets stronger regulation, the financial system will push the CB to moderate it, as we assume that high level of regulation reduces financial system revenues; and as the shock is more severe (negative effect), the entities surrounding the CB will put more pressure on it, so as to ensure policies that will be suitable for them.

Figure 3.5—The External Pressure Index³⁵



❖ **Model type B: solution**

The steps in finding a solution for this model will be the same as model type A. We start with maximizing growth and price targets, and then deal with the targets of stability and efficiency. In each part, we add the EP index, as it depends on the relevant policy tool.

Solution for the first part

In the first part we face the following problem:

$$U_1(\text{CB}) = \alpha Y + \beta P - \delta EP$$

Subject to:

$$(2B) Y = f - e(i^n) + Z$$

$$(3B) P = h - g(i^n)^2 + j(i^n) + Z$$

$$(5B) EP = qi^n + wR^n - Z$$

Y, P and EP depend on the interest rate tool- i^n , which the CB will set to maximize this function.

After substituting equations (2B), (3B) and (5B) into U_1 , we obtain the following:

³⁵To simplify the model eq.(5B) reflects a linear correlation between EP and the combination of i^n and R^n , and not an exponential correlation.

$$(6B) U_1(CB) = \alpha(f - e(i^n) + Z) + \beta(h - g(i^n)^2 + j(i^n) + Z) - \delta(qi^n + wR^n - Z)$$

The derivative of eq.(6B) with respect to i^n is:

$$(7B) \frac{\partial U_1}{\partial i^n} = -\alpha e - 2\beta g(i^n) + \beta j - \delta q$$

The interest rate that maximizes the utility of the CB is:

$$(8B) i^* = \frac{j}{2g} - \frac{\alpha e + \delta q}{2\beta g}$$

Not surprisingly, when δ is higher, then the interest rate the CB will set will be lower.

The following are the values of the Y and P in equilibrium:

$$(9B) Y^* = f - \frac{j}{2g} + \frac{e\alpha + \delta q}{2\beta g}$$

$$(10B) P^* = h - g\left(\frac{j}{2g} - \frac{e\alpha + \delta q}{2\beta g}\right)^2 + j\left(\frac{j}{2g} - \frac{e\alpha + \delta q}{2\beta g}\right)$$

The solution for the second part

In the second part we face the problem:

$$U_2(CB) = \gamma SE - \delta EP$$

Subject to:

$$(4B) SE = -k(R^n)^2 + l(R^n) + m + Z$$

$$(5B) EP = qi^n + wR^n - Z$$

SE and EP depend on the level of regulation (R), which the CB will set to maximize those targets.

After substituting equation (4B) and (5B) into utility function U_2 , we obtain the following:

$$(11B) U_2(CB) = \gamma(-k(R^n)^2 + l(R^n) + m + Z) - \delta(qi^n + wR^n - Z)$$

The derivative of eq.(11B) with respect to R^n is:

$$(12B) \frac{\partial U_2}{\partial R^n} = -2\gamma k R^n + \gamma l - \delta w$$

The level of regulation that maximizes the utility of the CB is:

$$(13B) R^* = \frac{l}{2k} - \frac{\delta w}{2\gamma k}$$

In eq. (13B) we can see that if δ is higher, the CB will set weaker regulation.

This is the value of SE in equilibrium:

$$(14B) SE^* = -k \left(\frac{l}{2k} - \frac{\delta w}{2\gamma k} \right)^2 + l \left(\frac{l}{2k} - \frac{\delta w}{2\gamma k} \right) + m$$

After we substitute eq.(8B) and eq.(13B) into eq.(5B), the value of EP in equilibrium is:

$$(15B) EP^* = q \left(\frac{j}{2g} - \frac{e\alpha + \delta q}{2\beta g} \right) + w \left(\frac{l}{2k} - \frac{\delta w}{2\gamma k} \right)$$

We see that as the CB gives more weight to output and external pressure (α and δ are higher) the EP index is lower, and when the CB gives more weight to price index target and to the stability and efficiency of the financial system (β and γ are higher) the EP index is higher.

3.3. Summary of the model's results

❖ **Equilibrium results**

When we compare the results of the two models, we find that in model type B- "vulnerable independence", in equilibrium, the interest rate is lower and regulation is weaker. This is because the CB is influenced by external pressure.

As a result, in equilibrium, output, the inflation rate and the efficiency of the financial system are higher, *but the stability of the financial system is lower, which exposes the economy to shocks in the future*. We also found that the weights the CB puts on its targets have significance regarding the strength of the external pressure.

This means that in equilibrium, there is *continual* external pressure applied on the CB which generates different equilibrium values.

❖ **The impact of shocks on the model's results**

If we allow the economy to diverge from equilibrium, due to a shock (Z), it will bring about a decrease in the level of the utility function of the CB, as the utility function depends on the impact of Z on the economy. The CB will implement a policy which brings the economy back to a path toward equilibrium in the long run again, thus, it will change i^* and R^* . We will refer to it as "optimal policy", which is basically a stabilization policy. For example, if Z endangers the stability of the financial system, and also brings an inflationary outbreak, then, the CB will set conservative regulation and will implement restrictive monetary policy.³⁶

In model type A, the CB does not have any problem to implement this type of policy. But in model type B, it will cause EP to increase, first because i^* and R^* have risen, and second, because of the influence of Z on EP:

$$\begin{array}{c} \uparrow\uparrow \\ EP = qi^* + wR^* - Z \end{array}$$

And as a result, the strengthening of EP causes a decrease in the CB's utility.

In fact, the EP index illustrates the preference of the government and the financial institutions, to a policy which will be much more supportive with their targets and goals. We will refer to it as "popular policy". In general, we can say that in this kind of situation the CB would assess which policy will bring higher utility:

³⁶ The model does not refer to a "structural" or sustained shock, as we focus on a cyclical shock. It means that the shock can't turn into a "long run" shock. When the CB uses stabilization policy it will encourage the economy to return to an equilibrium path.

If — $\Delta U(CB)_{optimal} > \Delta U(CB)_{popular}$ — Then we can say that this was an attempt to capture the policy of the CB, albeit unsuccessfully, as the CB will implement the "optimal policy".

But if — $\Delta U(CB)_{optimal} < \Delta U(CB)_{popular}$ — then in such a case we can say that the policy of the CB has been captured, as the CB will implement the "popular policy".

These results are in line with our hypothesis, in which we assumed that during a boom or in equilibrium, the CB's activity is less affected by the external pressure. On the other hand, during a shock, and as the shock becomes more severe, strong pressure is applied on the CB by these entities, and may, in extreme cases, bring about policy capture.

4. Case Studies

In this chapter we describe 4 case studies from the history of the US Federal Reserve System (the Fed) and the Bank of Israel (BOI), which illustrate episodes where it seems their policies were captured or partially captured in times of economic shocks.

4.1. Political capture

❖ **Supporting government security prices, 1942-1951**

In 1942, after the United States entered World War II, the US Government needed to finance the heavy costs of the war. To enable cheap financing of the war effort, it set the goal of stabilizing the price of Government securities it offered at a low interest rate³⁷. On December 8th, 1942, the Fed formally committed itself to

³⁷ According to Eichengreen and Garber (1991), this policy was also implemented in various years between 1935 and 1940, but not as strongly as in the wartime period.

maintaining a low interest rate peg on Government bonds, as expressed in its Annual Report:

The existing supply of funds and of bank reserves is fully adequate to meet all present and prospective needs of the Government and of private activity. The Federal Reserve System has powers to add to these resources to whatever extent may be required in the future. The System is prepared to use its powers to assure that an ample supply of funds is available at all times for financing the war effort and to exert its influence toward maintaining conditions in the United States Government security market that are satisfactory from the standpoint of the Government's requirements. Continuing the policy which was announced following the outbreak of war in Europe, Federal Reserve Banks stand ready to advance funds on United States Government securities at par to all banks (Board of Governors Annual Report, 1941, p. 1).

In practice, the Fed was committed to maintaining an interest rate of 3/8% on short term Treasury bills and 2 1/2% for long-term Government bonds. This policy allowed the Government to engage in cheaper war financing, and in particular over the period 1942-1945, when the Government was engaging in massive borrowing. But, in order to maintain the pegged rate, the Fed was forced to give up control of the size of its portfolio as well as the money stock—that is, when the Treasury sold new securities, or the public became less willing to hold existing Treasury securities, the Fed was forced to purchase them on the open market to prevent yields from rising. By the end of the war, the Fed held virtually the entire supply of Treasury bills³⁸.

The Fed's support for government security prices during World War II kept yields from rising and reduced the direct cost to the Treasury of financing wartime deficits. In the immediate postwar period, the Fed was increasingly concerned about

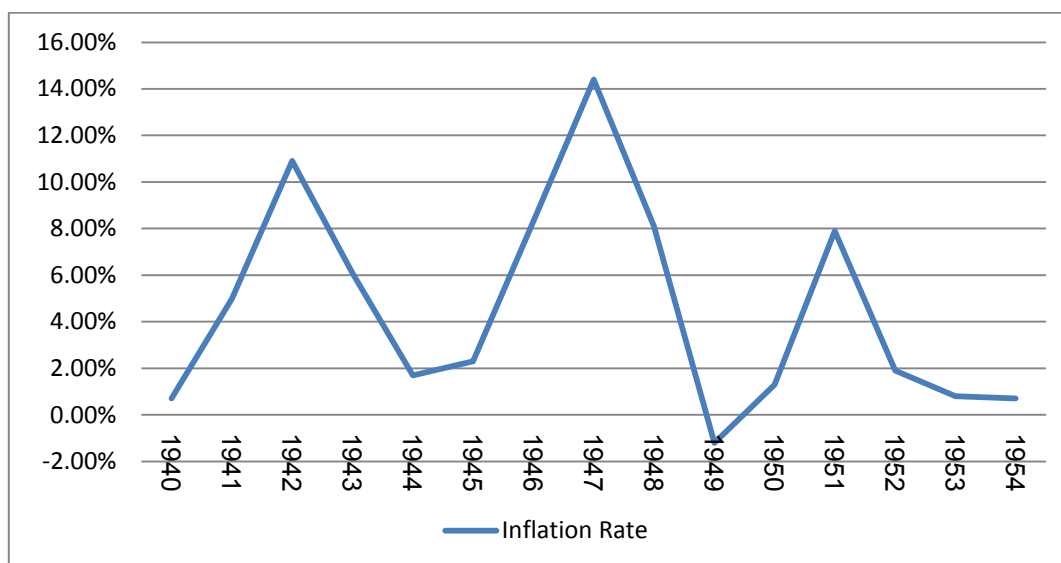
³⁸ See Eichengreen and Garber (1991, p. 181).

its inability to prevent inflation as long as it was required to support the price of government debt. The Consumer Price Index rose more than 14% during 1947 and nearly 8% during 1948, and the Fed believed it needed to control money and credit growth. In the middle of 1947, the Fed allowed the bill rate to rise, and one of the consequences was a rise in the Fed's interest income on the Treasury bills it held. To ensure the support of the Treasury for the rate increase, the Fed agreed to turn over 90 percent of its revenue to the Treasury.

The Fed continued to support bond prices after the war for several reasons: First, the policy supported government borrowing. The low interest rates reduced the cost of government borrowing, and the Fed commitment ensured that the Treasury could always sell its new bond issues, and by insuring the market against capital losses that would occur if interest rates rose—the bond support program increased the overall demand for government debt; Second, any increase in interest rates on Government debt would also raise interest rates faced by private borrowers, thereby resulting in reduced private sector investment and increased unemployment. This concern reflected the fears of a postwar recession.³⁹ According to Eichengreen and Garber (1991), the Fed continued to support Government bond prices, in order to prevent capital losses to commercial bank bond portfolios, which could undermine the stability of the financial system.

³⁹ The Federal Reserve Bank of San Francisco, Weekly Newsletter, Number 93-21, May 28, 1993.

Figure 4.1—Annual Inflation Rate⁴⁰

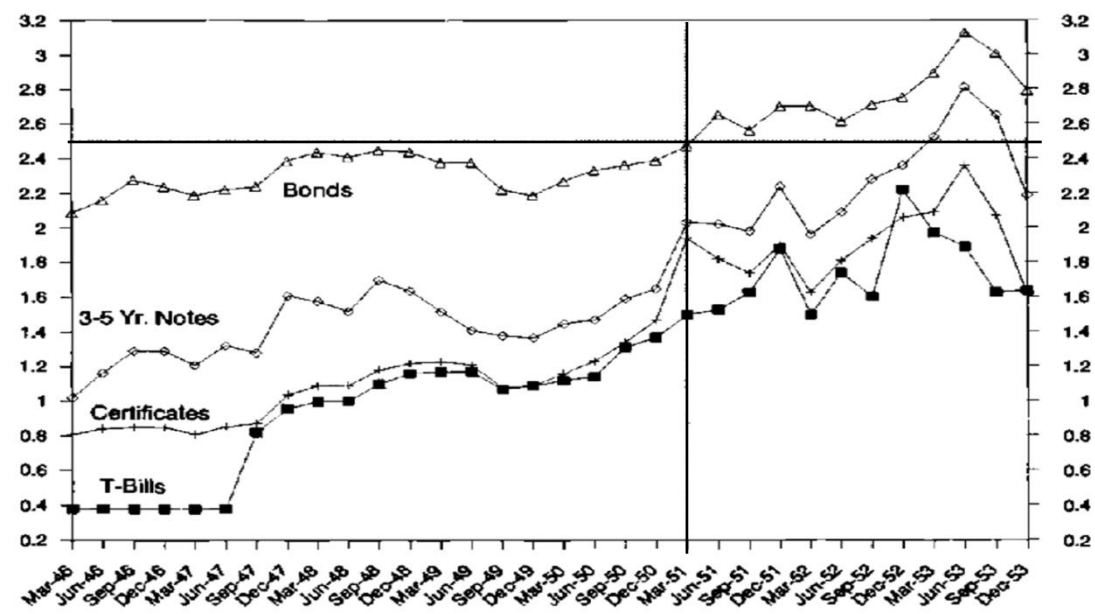


In the period up to 1951, tensions rose between the Fed and the Treasury over the Fed's desire to establish monetary policy control. The central issue at stake was control of the Fed's balance sheet. Since Fed asset purchases required increases in the Fed's monetary liabilities—either currency or reserve account balances—the Fed also effectively surrendered control over the monetary base.

Marriner Eccles, who had been appointed Chairman of the Fed's Board of Governors in 1934 and who openly argued against the bond support policy, was not reappointed by President Truman in 1948. The policy of supporting government security prices was still in effect when hostilities broke out on the Korean peninsula in the middle of 1950. As inflationary pressures emerged later that year, the Federal Open Market Committee sought to raise short-term interest rates.

⁴⁰ Bureau of Labor Statistics, Databases.

Figure 4.2—Government Securities Interest Rate⁴¹



Conflict between the Treasury and the Fed came to the fore when the Treasury directed the Fed to maintain the peg after the start of the Korean War in 1950. President Harry Truman and then Secretary of the Treasury John Snyder were both strong supporters of the low interest rate peg. The President felt that it was his duty to protect patriotic citizens by not lowering the value of the bonds that they had purchased during the war. Because bond prices vary inversely with bond interest rates, a rise in interest rates would have made the same bonds purchased at the lower interest rates worth less on the Government securities market.

Hetzl and Leach (2001, p. 36), described the superiority of the Treasury position over that of the Fed at the time:

In the summer of 1950, the FOMC had asked the Treasury to replace the 2 1/2 percent marketable bonds with nonmarketable bonds. If market forces pushed up long-term interest rates, the Fed would not have to buy the nonmarketable bonds. However, the Treasury refused the Fed request. This one-way conversations reflected the Treasury’s dominant position.

⁴¹ Eichengreen and Garber (1991, p. 176).

On January 31, 1951, Truman invited the Chairman of the Board of Governors and members of the FOMC, and Secretary of the Treasury, and senior Treasury officials to the White House to discuss the debate between them. He hoped to get the assurance from the FOMC to continue supporting low interest rate peg, but there was no such a commitment forthcoming from the FOMC.

On February 2, 1951, Truman wrote to McCabe, the Chairman of the Board of Governors, trying to force his hand by saying:

Your assurance that you would fully support the Treasury Defense financing program, both as to refunding and new issues, is of vital importance to me. As I understand it, I have your assurance that the market on Government securities will be stabilized and maintained at present levels in order to assure the successful financing requirements and to establish in the minds of the people confidence concerning Government credit (Harry S. Truman, Library and Museum, Public Papers of the Presidents 1945- 1953).

But the Fed was focused on the need to contain inflationary pressures in the economy caused by the intensification of the Korean War. Many on the Board of Governors, including Eccles (who had stayed on as a Governor), understood that the forced obligation to maintain the low peg on interest rates produced an excessive monetary expansion that caused the inflation, which was, in effect, monetization of the debt. A compromise was finally reached in March 1951. After the unpleasant debate between the Fed and the Treasury for the control over interest rates and monetary policy, on March 4, 1951, there was a joint announcement by the Secretary of the Treasury and the Chairman of the Board of Governors that stated:

The Treasury and the Federal Reserve System have reached full accord with respect to debt-management and monetary policies to be pursued in furthering their common purpose to assure the successful financing of the Government's

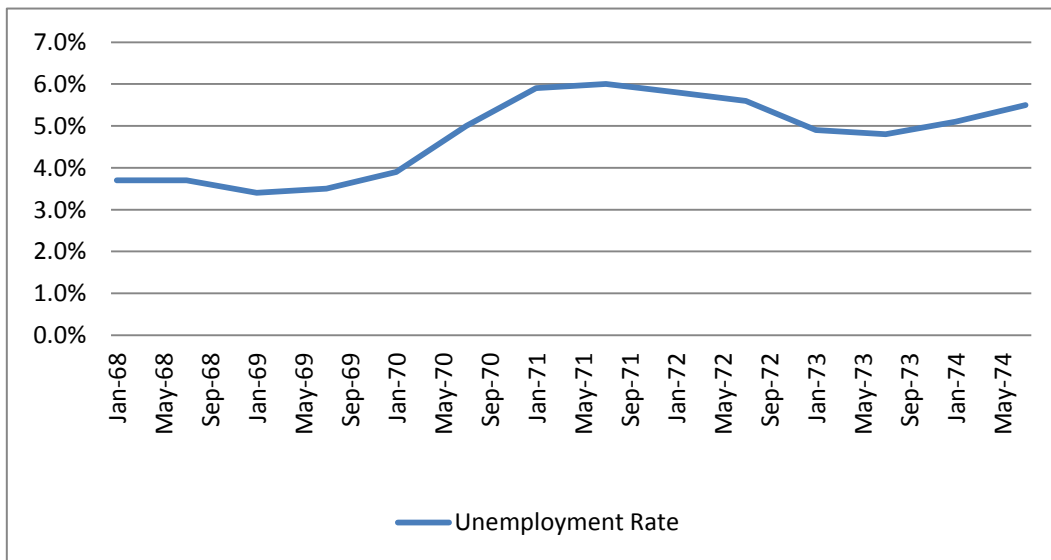
requirements and, at the same time, to minimize monetization of the public debt (FRASER, Federal Reserve Archive System, 1951).

The resulting agreement, known as the "Treasury-Fed Accord", eliminated the obligation of the Fed to monetize the debt of the Treasury at a fixed rate, and established, in the eyes of many observers, the Fed's "independence". The period of 1942–1951, then, can be characterized by a continuous *political capture* of CB monetary policy.

❖ **Expansionary monetary policy under Nixon and his re-election, 1970–1972**

Richard Nixon was inaugurated President of the US in January 1969. By the end of the year the US economy suffered a slowdown, which only ended in November 1970, and despite the recovery, the unemployment rate continued to rise into 1971. Nixon was well aware that improving employment situation was an important factor in winning re-election.

Figure 4.3 - US Unemployment Rate, 1968–1974⁴²



⁴² Bureau of Labor Statistics, Databases.

In November 1972, Herbert Stein, who was a member of the Council of Economic Advisers from the start of Nixon's first term, recalled that:

When Mr. Nixon asked what I thought the country's biggest economic problem was, I replied with some discussion of inflation. He nodded, but then said that we must never forget unemployment. I should have been prepared for that, for I knew that he had thought the rise of unemployment was one of the reasons he had lost the 1960 election...(Stein, 1995, p. 96).

In 1969, Nixon nominated Dr. Arthur F. Burns as the Chairman of the Board of Governors of the Federal Reserve, instead of re-appointing William McChesney Martin, whose term as Chairman was ending. According to John Ehrlichman, who was Counsel and Assistant to the President for Domestic Affairs, the President did not want to re-appoint Martin, viewing him as wholly independent of the Nixon Administration⁴³, as Erlichman recalled:

By law the Fed is to be strictly independent, unbuffeted by political changes in the country, but the President and his economists found it difficult, if not impossible, to deal with economic problems without some handle on the monetary machinery. Nixon wanted his own man as head of the Fed. I was instructed to tell Martin that the President would soon be naming his replacement and wished the transition to begin as soon as possible. Martin seemed a little surprised to be hearing from me about his retirement five months before his term expired, but he took it in good grace (Ehrlichman, 1982, p. 248).

According to Abrams (2006, p. 177): "Although Arthur Burns was an eminent economist, Nixon was probably more impressed by the fact that he was a sympathetic Republican loyalist". Nixon had even indicated to Burns about what was going to happen in his term the day Burns was sworn in as chairman of the Board of

⁴³ See also Wood (2006).

Governors: "I respect his [Burns's] independence. However, I hope that independently he will conclude that my views are the ones that should be followed".⁴⁴

Burns took office on February 1, 1970, when the federal funds rate was 9%, while the inflation rate was 5.5% in 1969 and unemployment stood at 4.2%. According to Abrams (2006), evidence from the Nixon tapes⁴⁵ clearly reveals that Nixon pressured Burns, both directly and indirectly, through Office of Management and Budget Director George Shultz, to engage in expansionary monetary policies prior to the 1972 election. Abrams gives some examples for this. In October 1971, Nixon expressed to Burns his concern about the economy: "I don't want to go out of town fast", while in December 1971, as a response to Burns, who had informed him that the FOMC had decided to lower the discount rate and planned to continue in that direction, Nixon replied: "Great. Great, you can lead 'em. You can lead 'em. You always have, now. Just kick 'em in the rump a little." In February 1972, Nixon said "I really don't care what you do in April, but between now and April . . . [garbled] that can hurt us . . . [garbled] in November (the reelection date)".⁴⁶ In a telephone conversation between Nixon and Shultz in December 1971, Nixon said to Shultz: "do you feel, as far as Arthur and the money supply, we got that about as far as we can turn it right now, have we? I mean as far as my influence on him, that's what I'm really asking."

In August 1971, Nixon imposed a Wage and Price Control program (incomes policy), starting with a 90 day of wage and price freeze, the purpose of which was to fight the inflation, which had briefly exceeded 6% in 1970, and persisted above 4%

⁴⁴ The American Presidency Project. Nixon's remarks at the swearing-in of Dr. Arthur F. Burns as Chairman of the Board of Governors of the Federal Reserve System, January 31, 1970.

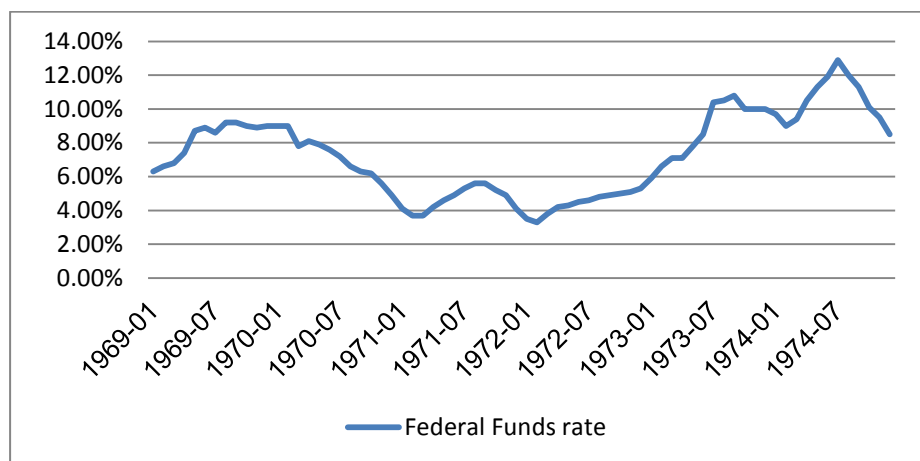
⁴⁵ The Nixon tapes are audio recordings of the communications of US President Nixon and various Nixon administration officials and White House staff, ordered by the President for personal records.

⁴⁶ Nixon was aware that monetary policy impacted with a lag, so he gave Burns a "promise" that after April (half a year before the 1972 election) he really would not care about the policy Burns would implement.

in 1971; continuing on in 1972-1973, and finally ending in April 1974. This program was the first undertaken in peacetime, compared to other wage-price control programs that were undertaken in wartime (e.g., during World War II, and the Korean War).⁴⁷

This policy gave Burns the freedom to set expansionary monetary policy without worrying about inflation. The Fed lowered the federal funds rate from 9% in the beginning of 1970 to 3.4% in February 1972; at that point the federal funds rate changed direction, and went up to 12.9% in July 1974.

Figure 4.4—Federal Funds Rate, 1969–1974⁴⁸

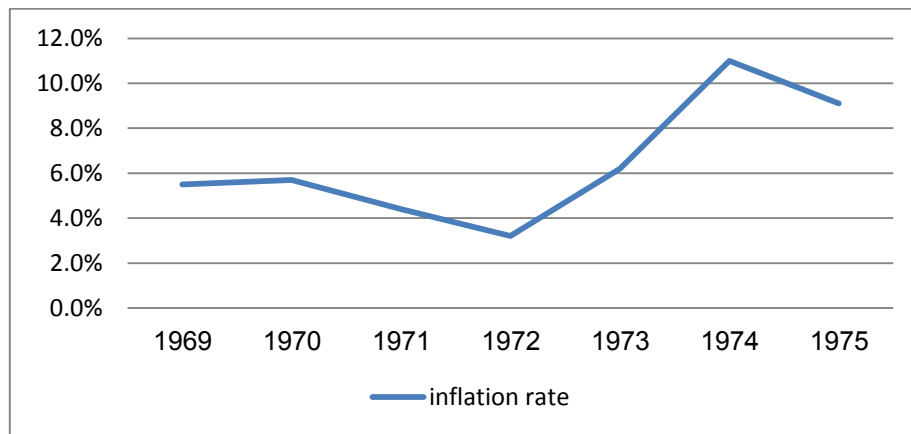


The policy of wage and price controls and the excessively aggressive monetary policy of 1971–72 produced an inflationary boom, which impacted, in turn, on the US economy, with the unemployment rate declining to 5.3% in November 1972—just in time for the upcoming election. However, the inflation rate increased to 6.2% in 1973, 11% in 1974, and 9.1% in 1975. In a response to the post-election tightening and OPEC I, the economy entered a slowdown at the end of 1973.

⁴⁷ US Office of Emergency Preparedness (1972), "Stemming Inflation: The Office of Emergency Preparedness and the 90 Day Freeze", FRASER, Federal Reserve Archive.

⁴⁸ Board of Governors of the Federal Reserve System, historical data, H.15.

Figure 4.5—Inflation Rate 1969–1975



Burns (1987, p. 692) referred to Fed policy in that period: "Facing these political realities, the Federal Reserve was still willing to step hard on the monetary brake at times—as in 1966, 1969, and 1974—but its restrictive stance was not maintained long enough to end inflation. By and large, monetary policy came to be governed by the principle of under-nourishing the inflationary process while still accommodating a good part of the pressures in the marketplace".

Chappell and McGregor (2003, p. 1) use evidence from detailed records of FOMC deliberations to argue that: "The theory of the time inconsistency problem provides a reasonable explanation of the Federal Reserve's excessively expansionary policy stance over the 1970-1978 period, when Arthur Burns chaired the Board of Governors. The records suggest that the Fed perceived a Phillips curve tradeoff and *political pressures that made it difficult to adopt disinflationary policies at any moment in time* (my emphasis)".

Weise (2008, p. 55), for his part, presented evidence that political constraints prevented the Federal Reserve from initiating a serious assault on inflation during the 1970s: "As Arthur Burns noted in his 1979 speech, the Fed was well aware that it had the ability to control inflation if it was willing to subject the economy to recession. Inflation could have been brought under control at any time during the Great Inflation

through a simple, technically feasible policy: raise interest rates, and keep them high until the inflation rate fell to the Fed's target level. Members of the FOMC understood that such a policy would succeed in reducing inflation, at a cost..."

Cukierman (2009, p. 23) refers to the reasons for the "Great Inflation" in the US during Burns' tenure: "My feeling is that there were strong interactions between those two explanations under Burns's tenure (Burns's inability to stand up to political pressures, and the Fed's belief in faulty models of the economy). In particular, Burns's ability to resist political pressures would, most likely, have been much enhanced had there been a consensus about the right model of the economy and the consequent policy recommendations within the economic profession. Unfortunately for him and for his ability to resist political pressures, this was not the case".

The period of 1970–1972, then, seems to exhibit a *political capture* of the Fed and its monetary policy prior to the re-election of Nixon.

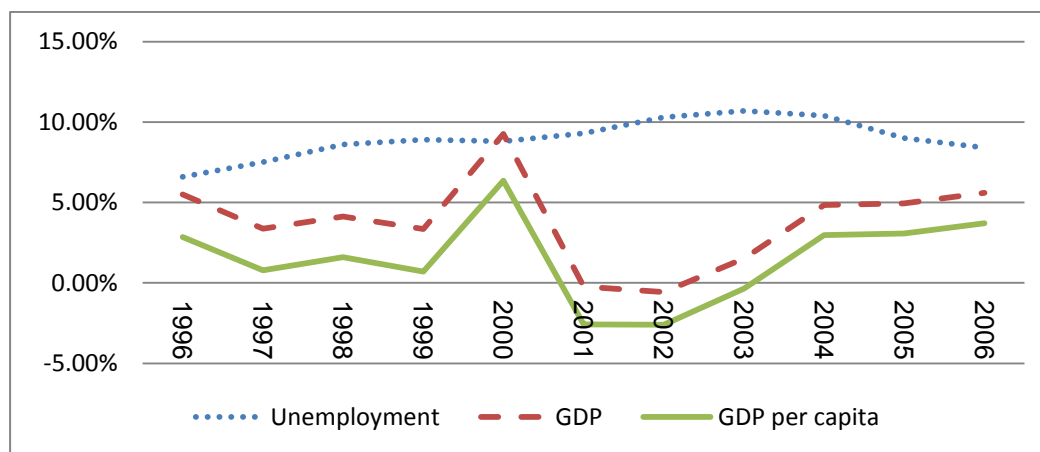
❖ **BOI in a "Package Deal" with the Government, 2001**

In 2001, Israel's economy suffered a severe slowdown, with the unemployment rate reaching 10.2% at the end of the year. The Consumer Price Index increased by 1.4% during the year, below the lower limit of the inflation target range of 2.5%-3.5% for the year, but within the range defined as price stability.⁴⁹ Signs of the slowdown were evident in all parts of the business sector, with high-tech, construction, and tourism the worst hit. The main causes of the slowdown in economic activity, which started in the last quarter of 2000, were external shocks and the geopolitical situation in Israel. The worldwide slowdown, particularly in the US, resulted from crisis in

⁴⁹ On August 16, 2000, the government decided that the annual inflation target would be in the range of 2.5-3.5 percent for 2001, 2-3 percent for 2002 and 1-3 percent for the year 2003.

high-tech industries, and crisis in capital markets throughout the world⁵⁰; all this even before the economic disruptions brought about by the events of 9/11.

Figure 4.6—Israel's Economic Indicators⁵¹



That year the new government⁵², with Prime Minister Ariel Sharon and Minister of Finance Sylvan Shalom, pressured the Governor of the BOI to lower the nominal interest rate to stimulate the economy which had slowed down significantly. The tension between the BOI and the Ministry of Finance was high during this period. Evidence for the strong pressure which was applied could be seen in speeches made by Sharon and Shalom at every opportunity. Examples can be seen in Sharon's speech at the annual conference of the Federation of Israeli Chambers of Commerce on June 12, 2001, when he said, "It is very clear that the interest rate must go down and it will go down"⁵³; and in his speech at the annual economic conference in Caesarea, on June 16, 2001, when he stated, "Correspondingly, it is clear to me that we must decrease the interest rate faster than we do. I am currently in consultation with the Governor and other economic officials regarding the report of the Judge Dov

⁵⁰ Bank of Israel, Bank of Israel Annual Report 2001.

⁵¹ Source: Israel Central Bureau of Statistics.

⁵² Took office on March 2001.

⁵³ Yedioth Ahronoth- Israeli newspaper, website.

Levin committee⁵⁴, which will legally fix the position of the Bank of Israel, which I intend to advance".⁵⁵

This pressure on BOI to lower interest rate was not unique to the year 2001. In the 1990s, according to David Klein⁵⁶, the former Governor of the BOI⁵⁷, the pressure on BOI was continuous, and increased considerably when it raised the interest rate to restrain inflationary outbreaks. Entities including the government, the Minister of Finance, the President of the Federation of Israeli Chambers of Commerce, and the President of the Manufacturers Association of Israel (MAI), all tried to influence the Governor of the BOI to lower the interest rate. Another former governor of BOI, Jacob Frenkel (1996, p. 143), referred to these situations: "We decided to use tight monetary policy, and interest rates went up very significantly. I know that monetary policy was tight, because during that first month, the Governor had to travel with bodyguards".

On December 23, 2001, the BOI and the government announced a "package deal" which contained several policy measures, including a 2% point reduction in BOI key interest rate to 3.8%, in exchange for number of structural changes to the money markets.⁵⁸ In its announcement, the BOI explained this change in interest rate policy as the outcome of Government's decision to return to a path of fiscal discipline.⁵⁹ According to the BOI, the decision would lead to improvements in the financial and foreign exchange markets. These were: (i) the abolition of the ceiling on the issuance of Treasury bills, making it possible to replace bank deposits in the Bank of Israel,

⁵⁴ In late 1998, the Levin Committee presented the Government with recommendations for a new Bank of Israel Law.

⁵⁵ Prime Minister's Office, Archive, speeches.

⁵⁶ See Klein (2009, pp. 170-245).

⁵⁷ Governor of the BOI, January 17, 2001–January 16, 2005.

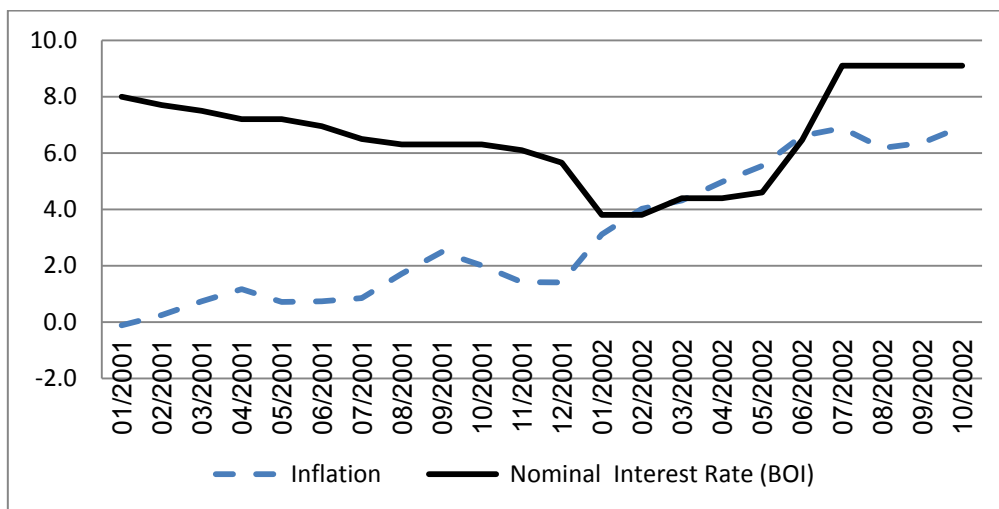
⁵⁸ Bank of Israel, December 23, 2001, Office of the Spokesperson and Economic Information, "Changes in the Bank of Israel's Monetary Program, December 2001 and January 2002".

⁵⁹ In December 2001, the government decided that the deficit (as a percentage of GDP) would stand at 3% in 2002 with declining path of the deficit, to 1% in 2005.

which are not negotiable, with Treasury bills, which are traded on the stock market; (ii) increasing the share of investments which institutional investors would be allowed to invest abroad, from 5% to 20%, to be followed by the complete removal of the limit by the end of 2002; and (iii), making the exchange-rate regime more flexible.

While the government found it difficult to achieve the deficit target it set, the uncertainty with attaining fiscal goals brought about quick reaction in the local markets. The outcome of this "package deal" on Israel's economy was severe and immediate: the CPI increased by 6.3% in the first half of 2002—above the upper limit of the inflation target range; local-currency depreciation amounted to 14.5%; the rise in inflation and its causes contributed to the growing instability of the financial markets in general, and the foreign exchange market in particular.

Figure 4.7—Inflation and Nominal Interest Rate, 2001–2002



These developments in the second half of 2002, and the local-currency depreciation in particular, indicated the erosion of public confidence in the commitment of macroeconomic policy to maintaining price stability, as well as the erosion of foreign investors' confidence in Israel's economic stability. This could be seen from the reduction in capital inflow—which is motivated by long-term

considerations. As a response, the BOI raised its key interest rate by a cumulative 5.3 Percentage points over the period January through June 2002 overall, and by 4.5 Percentage points in June itself, to a level, in June 2002, of 9.1%.⁶⁰

The Governor of the BOI, David Klein, referred to the outcome of the deal⁶¹, by saying that without a doubt he would do it again, as the experience taught him that, regrettably, there were essential structural changes needed in the middle run, and there was no other way to accomplish them unless the BOI made concessions in the short run.

Cukiermen (2004) referred to the "package deal" in December 2001 as a temporary decline in the level of actual independence of the BOI, as a result of the significant decrease in the real interest rate.

Liviatan (2004) believed that what seemed to many to be a policy mistake, was actually repeated time and again (in 1993, 1998, and 2001), and was because the BOI surrendered to Ministry of Finance pressure to increase the tempo of interest rate declines, a behavior that the public interpreted as an assault on BOI's independence.

This case study illustrates an explicit act of temporary *political capture*. The act of reducing the interest rate by 2% was against Governor Klein's belief of how to keep the inflation rate low. During his term, Klein was even threatened with the termination of his tenure as Governor of the BOI. The response, in the following year, when Klein significantly raised the interest rate, was a signal both of the capture of the BOI, and his mistake in letting it occur.

⁶⁰ Bank of Israel, Inflation Report 2002, January – June.

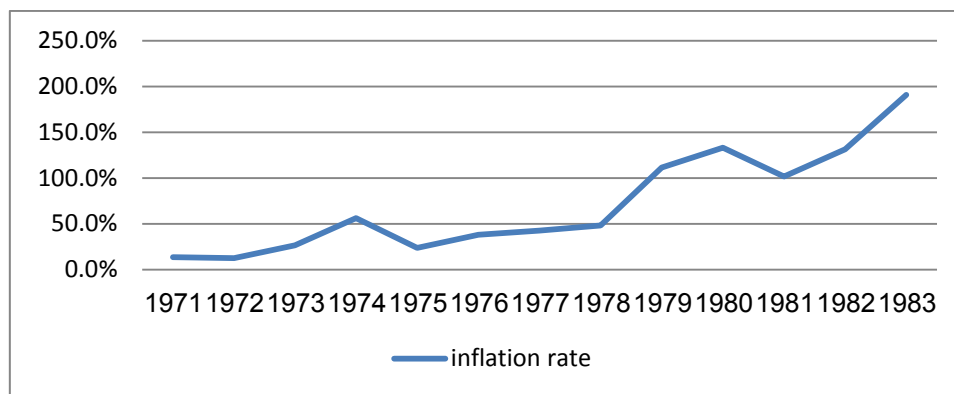
⁶¹ See Klein (2009, pp. 348-350).

4.2. Financial capture

❖ **Bank shares manipulation, 1983**

During the 1970s, major Israeli banks began to manipulate the prices of their own shares ("visut"), as they encouraged the public and institutions to purchase shares that were ostensibly "inflation-proof".⁶² During the period, the inflation rate in Israel was very high—an average of 40% Per year, over the period 1973–1978, and an average of 120% Per year, over the period 1979–1983. According to the banks, this inflationary environment had a negative effect on their nominal balance sheet—they had to find ways to increase capital, the value of which was eroded by inflation, so as to satisfy capital requirements.⁶³

Figure 4.8—Inflation Rate, 1971–1983⁶⁴



The "visut" helped the banks to raise equity in periods of slowdown in the markets; an example can be seen in 1974, where 93% of shares issued in the market were banks' shares. In fact, it released the banks from the conditions of the market.

Over the period, the government basically did the same with its indexed bonds to service its debt, and in 1977 the banks' shares started to compete with government

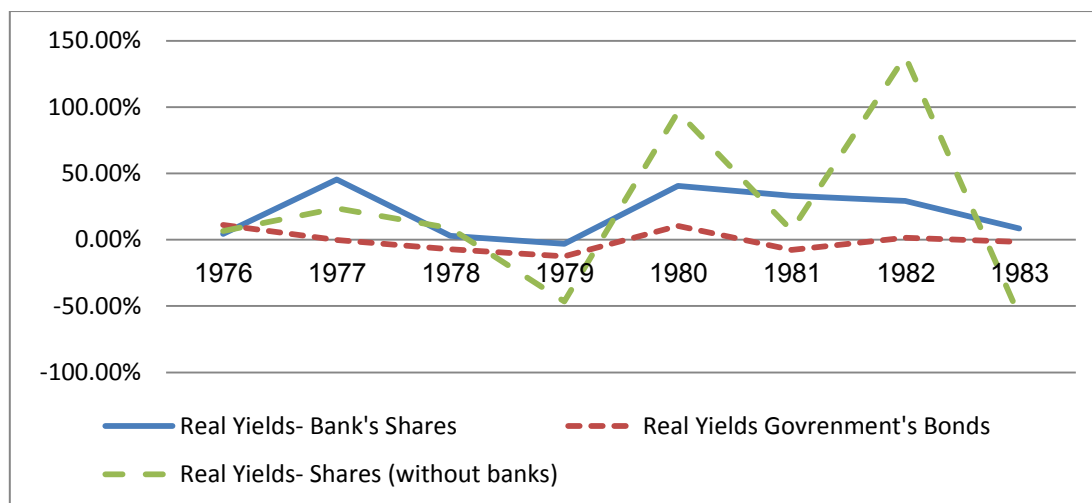
⁶² Most of the information in this chapter is taken from the "Baisky Report"- Investigative Committee on Manipulation of Banks Shares (1986).

⁶³ This was the argument of the banks for the "visut" in the Baisky Report. The committee did not find this argument satisfactory.

⁶⁴ Baisky Report (1986), table 47.

indexed bonds- which were considered as a safe investment.⁶⁵ For that purpose, they had to reduce the volatility of returns, and give extra yield over that of government bonds. By using their own financial advisory services, they marketed their shares to the public as a risk free investment. The successful marketing created increased demand for their shares. The banks even extended loans to customers to buy shares, with the shares serving as collateral. The annual real rate of return of banks shares was 40.6% in 1980, 33.2% in 1981, and 20.3% in 1982.

Figure 4.9—Real Yields, 1976– September 1983⁶⁶



Another good example of the strong intervention of the banks to support their share prices was in January 1983, when the Tel Aviv Stock exchange fell significantly, but the banks succeeded in keeping their share values up. Over the first 9 months of 1983, the annual real rate of return on banks' shares was 8.6%, while the stock market, without bank shares, declined by 57.1%.

During the period of banks' stock manipulation, the gap between the price of the stocks and their "fair value" increased, and reached billions of dollars. The public even exchanged other financial assets in its investment portfolio, including real estate,

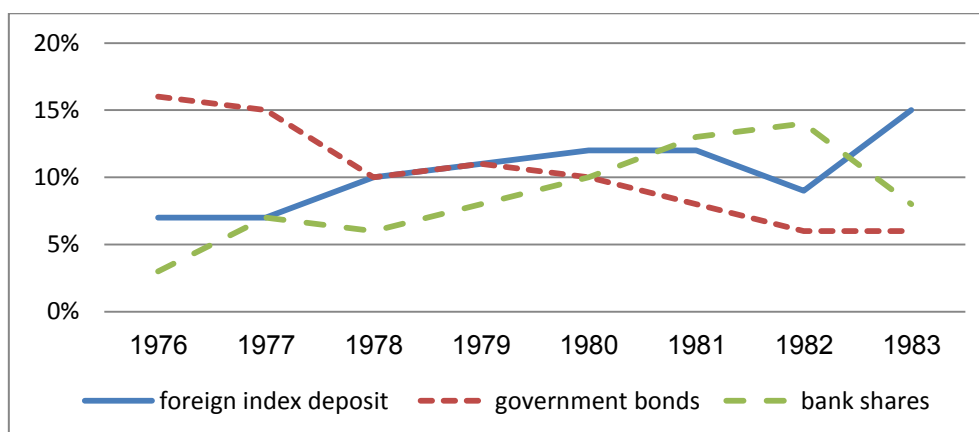
⁶⁵ See Paroush (2004, pp. 130-132).

⁶⁶ Baisky Report (1986), table 18.

and purchased bank shares. As mentioned above, in early 1983 the stock market declined significantly, and during the year the public began to lose faith in banks' shares (the public was unaware of the "visut" process, but the Bank of Israel and Government were fully aware of it, and the Bank actually supported it *de-facto*). Due to the failure of the efforts of the government and Bank of Israel to control and stabilize the economy, the public also expected a big devaluation of the shekel; it started to sell banks' shares to purchase foreign index-linked assets, so as to benefit from the expected devaluation and protect itself against inflation.

As the banks found it difficult to raise funds from the public, they started to finance the "visut" with foreign currency loans. In the beginning, the banks managed to control the shares' sell-off, but as the sell-off increased, the banks stood helpless, as they didn't have the funds to buy back all their shares. The value of banks' shares held by the banks themselves increased sharply, from \$200 million during 1982, to more than \$400 million in May 1983, and to more than \$600 million dollars at the beginning of October 1983.⁶⁷ The outcome was unavoidable. The banks failed to maintain the price of their shares, and they turned to the Government, and the Bank of Israel, which had supported the shares.

Figure 4.10—Public Liquidity Assets⁶⁸



⁶⁷ See Sargent and Zeira (2011, pp. 422-423).

⁶⁸ Baisky Report (1986), table 5.

In the first week of October 1983, the bank shares collapsed. On October 6, 1983, the Minister of Finance had to close the Stock Exchange for two weeks, as there was real concern that the financial system would collapse. In that period, the government, the Bank of Israel, and the banks settled an agreement, "the bank shares agreement", where the government and the Bank of Israel bailed out the banks⁶⁹. The agreement included the end of the "visut", and the government took on the responsibility to reimburse some vulnerable sections of the public who bought the shares (old-age pensioners). To take into consideration the responsibility of Controlling shareholders in the "visut", the government excluded them from the agreement.⁷⁰ This crisis resulted in nationalization of 7 banks and significant increase in Government debt– the costs to the Government at the end of 1991 were \$6.9 billion dollars. The question we have to ask is why the BOI, and the Supervisor of Banks of the BOI at the time, didn't act to stop the "visut" or to reduce it?

On December 31, 1984, the Israel State Comptroller published a report⁷¹ on the bank shares agreement. Following his recommendations, the government appointed a Judicial Investigative Committee ("Baisky Committee") to investigate the reasons that brought about the failures, and to assess the responsibility of the banks' supervisors in this process (Governors and BOI employees), as their job was to prevent this from happening. In April 1986, the committee published its conclusions. It asserted that the responsibility for the crisis was the fault of, among others, two governors and two banking supervisors of the BOI.

The report concluded that even though the direct responsibility was that of the banks which initiated the "visut", it could not have developed and grown as it did, if

⁶⁹ The shares were transferred to the government without voting rights, and the management was retained by the former controlling interests.

⁷⁰ See Zelekha and Tsur (2007, p. 63).

⁷¹ State Comptroller (1984), "Report on banking shares- the crisis of October 1983".

the Governors of the BOI, and the banking supervisors, would have taken action to stop it, and not given it tacit approval by doing nothing to stop the share manipulation. The report provided two main conclusions about BOI functioning: The first was that since 1978 the BOI had been aware of the negative effects of the "visut" on monetary policy, the capital market, investors and the banks. The second conclusion was that during the period, BOI did not implement any real effort to deal with the phenomenon. This deliberate failure to try to solve the problem made things worse. The crisis was not prevented and the opposite occurred. Had the BOI acted when it ascertained the severity of the negative impact of "visut", as noted above, it could have prevented the crisis without causing significant damage to the economy.

The committee's report also concluded that there was no justification for the failures of the BOI—its hesitant position and unwillingness to force the banks to stop the "visut", or to take steps that signaled the banks that they did not have the free hand to act as they wished. The management of the banks, therefore, understood that even if the "visut" process clashed with the public interest and was opposite to the policy of BOI, the BOI's Governor and the Supervisor of Banks would have to get approval from the banks themselves for each step they would implement to eliminate the manipulation. This brought the banks to deprecate the Banking Supervisors occasional reports and warnings, and to act as if the supervisors did not exist.⁷²

This case study illustrates *financial capture* of BOI, as the activities of the banks brought about a situation of "too big to fail"—as the "visut" process became so severe, that the BOI was trapped by the banks due to its own actions, or more correctly, inaction, and then could not act to end the banks' share manipulation, even if it wanted to do so.

⁷² Baisky Report, pp. 281-288.

5. Summary and conclusions

The objective of this thesis is to demonstrate the difficulty the CB has in achieving its targets and objectives while entities surrounding it try to influence its policy setting behavior. This phenomenon occurs even though the CB is meant to be independent.

We presented two types of models, based on maximization of CB's targets. This approach is different than the standard models of CB decision making. These models bring about different equilibrium values: the "vulnerable independence" model (type B) generated a lower interest rate and easier level of regulation than the "complete independence" model (type A), which brought about a higher growth rate and level of financial efficiency, albeit with more inflation and less financial stability.

As we let the economy diverge from equilibrium, we found that external pressure may bring the CB to change its policy setting. It occurs when the CB prefers to implement the "popular policy" rather than "optimal policy". In that case we can say that the policy of the CB has been captured. These results are in line with our hypothesis, which assumed that during a boom or in equilibrium, the CB's activity is less affected by the external pressure; in contrast, during a shock, and as the shock becomes severe, strong pressure is applied on the CB by these entities, and it may, in the extreme cases bring about *policy capture*. These results also predict that external pressure may expose the economy to shocks in the future, as it interrupts the CB to engage with optimal policy.

We described a number of events from the history of the US Federal Reserve System and the Bank of Israel, which illustrate episodes where it seems their policies were captured or partially captured in times of economic shocks. These events

confirm the results of our models. It seems that throughout history some governments and financial institutions have found creative ways to capture the policy of the CB.

It is too early to determine if the ongoing sub-prime crisis in the U.S is also a case study which matches to our hypothesis. Does the Fed implement an optimal policy?; or is it captured by political or private forces, which have recognized the Fed's policy mistakes, before and during the crisis, and binding it to implement long-run zero interest rate and quantitative easing policies (i.e., "popular policies")?

Nevertheless, it appears that influencing CB policy-setting is also a phenomenon that could occur today. *De-jure*, it is possible to give independence to a central bank, but *de-facto* it is a task that hard to perform. The CB will continue to search for an optimum policy, in a stressful environment, that, metaphorically, builds "walls of glass" surrounding it, which can sometimes constrain the CB in its day to day functions.

6. References

Abrams, B. (2006), "How Richard Nixon Pressured Arthur Burns: Evidence from the Nixon Tapes", *Journal of Economic Perspectives*, 20, 4, pp. 177-88.

Alesina, A. and Summers, L. (1993), "Central Bank Independence and Banking, Macroeconomic Performance: Some Comparative Evidence", *Journal of Money, Credit and Banking*, 25, pp. 151-162.

Anderson, T. and Schneider, F. (1986), "Coordination of Fiscal and Monetary Policy under Different Institutional Arrangements", *European Journal of Political Economy*, 2, pp. 169-191.

Baisky Report (1986), "Investigative Committee on Manipulation of Banks Shares", Jerusalem, Israel.

Bank of Israel (2011), "The Bank of Israel Explained: Goals, Functions and Authority", Jerusalem, Israel.

Bank of Israel (2011), "Israel and the Global Crisis 2007-09", Jerusalem, Israel.

Barro, R. and Gordon, D. (1983), "Rules, Discretion and Reputation in a Model of Monetary Policy", *Journal of Political Economy*, 12, pp. 101-121.

Batini, N. and Nelson, E. (2002), "The Lag from Monetary Policy Actions to Inflation: Friedman Revisited", External MPC Unit, Bank of England.

Bernanke, Ben S. and Mishkin, Frederic, S. (1997), "Inflation Targeting: A New Framework For Monetary Policy?", *Journal of Economic Perspectives*, 11, pp. 97-116.

Burns, A. (1979), "The Anguish of Central Banking", Washington: International Monetary Fund, Per Jacobsson Foundation.

Campbell, M. (2010), "Policy Shifting at the Federal Reserve Bank: A Punctuated-Equilibrium Perspective", Oregon State University.

Canova, T. (2007), "Non-state Actors and International Institutional Order: Central Bank Capture and the Globalization of Monetary Amnesia", *American Society of International Law Annual Proceedings* 101, pp. 8-16.

Chappell, H. and McGregor, R. (2004), "Did Time Inconsistency Contribute to the Great Inflation? Evidence from FOMC Transcripts", *Economics and Politics*, 16, pp. 233-51.

Chortareas, G., Girardone C., Ventouri, A. (2011), "Bank Supervision, Regulation, and Efficiency: Evidence from the European Union", *Journal of Financial Stability*, Volume 8, Issue 4, pp. 292-302.

Cukierman, A., Webb, S. (1995), "Political Influence on the Central Bank-International Evidence", *The World Bank Economic Review*, 9, pp.397-423.

Cukierman, A. (1996), "The Economics of Central Banking", in Wolf Holger (ed.) IEA, *Contemporary Economic Issues-Macroeconomics and Finance*, V.5, The MacMillan Press, 1998. (IEA conference volume 125), pp.37-82.

Cukierman, A. (2004), "Legal, Actual and Desirable Independence: A Case Study of the Bank of Israel", *Bank of Israel—50 Years of Rowing to Monetary Control*.

Cukierman, A. (2009), "The Anguish of Central Banking: Another Look at the Great US Inflation and its Aftermath", the Fifteenth Dubrovnik Economic Conference, Croatia.

Drazen, A. (2002), "Lying Low During Elections: Political Pressure and Monetary Accommodation", Tel Aviv University, University of Maryland, CEPR, and NBER.

Debelle, G. and Fischer, S. (1994), "How Independent Should A Central Bank Be?", Working Papers in Applied Economic Theory 94-05, Federal Reserve Bank of San Francisco.

Di Noia, C. and Di Giorgio, G. (1999), "Should Banking Supervision and Monetary Policy Tasks be Given to Different Agencies?", *International Finance* 2 (3), 361-378.

Eichengreen, B. and Garber, P. (1991), "Before the Accord: U.S. Monetary-Financial Policy, 1945-51," NBER, Chapters in: *Financial Markets and Financial Crises*, pages 175-206, National Bureau of Economic Research.

Eggertsson, G. and Borgne, E. (2010), "A Political Agency Theory of Central Bank Independence," *Journal of Money, Credit and Banking*, Blackwell Publishing, vol. 42(4), pp. 647-677, 06.

Ehrlichman, J. (1982), "Witness to Power: The Nixon Years", Simon and Schuster, NY, p. 248.

Fischer, S. (1980), "On Activist Monetary Policy with Rational Expectations", *Rational Expectations and Economic Policy*, edited by Stanley Fischer, NBER and University of Chicago Press, pp. 211-248.

Fischer, S. (1995), "Central Bank Independence Revisited", *The American Economic Review*, Vol. 85, No.2, pp. 201-206.

Fischer, S. (2006), "The Role of the Central bank: the Israeli Case", *Israel Economic Review*, Vol. 4, 1, pp. 15-25.

Fischer, S. (2010), "Myths of Monetary Policy", *Israel Economic Review*, 8, 2, pp. 1-5.

Forder, J. (2000). "Traps in the Measurement of Independence and Accountability of Central Banks," University of Oxford Economics Series Working Papers 023.

Franck, R. and Krausz, M. (2008), "Why Separate Monetary Policy from Banking Supervision?", *Journal of Comparative Economics*, Elsevier, vol. 36(3), pages 388-411, September.

Franzese, R. (1998), "Partially Independent Central Banks, Politically Responsive Governments, and Inflation", *American Journal of Political Science* 43(3).

Frenkel, J. (1996), "Israel's Experience with Inflation", Achieving Price Stability, Federal Reserve Bank of Kansas City, Proceedings, pp.139-146.

Gabillon E. and Martimort, D. (2004), "The Benefits of Central Bank's Political Independence", *European Economic Review* 48, pp. 353-378.

Goodhart, C. Schoenmaker, D. (1995), "Should the functions of monetary policy and banking supervision be separated?", *Oxford Economic Papers* 47, pp. 539-560.

Grier, K. (1984), "Presidential Elections and Federal Reserve Policy: An Empirical Test", Working Paper, George Mason University.

Hetzel, R. and Leach, R. (2001), "The Treasury-Fed Accord: A New Narrative Account," *Economic Quarterly*, Federal Reserve Bank of Richmond, Winter issue, pp. 33-55.

Ioannidou, V. (2005), "Does Monetary Policy Affect the Central Bank's Role in Bank Supervision?", *Journal of Financial Intermediation* 14, pp. 58-85.

Jalilian, H., Kirkpatrick, C. and Parker, D. (2007), "The Impact of Regulation on Economic Growth in Developing Countries: A Cross-Country Analysis", *World Development*, 2007, 35, 1, pp. 87-103.

Klein, D. (2009), "Against the Flow", Yedioth Ahronoth Books and Chemed Books, pp. 55- 326.

Kroszner, R. and Strahan, P. (2001), "Obstacles to Optimal Policy: The Interplay of Politics and Economics in Shaping Bank Supervision and Regulation Reforms", in: Mishkin, Frederic (Ed.), *Prudential Supervision: What Works and What Doesn't*, The University of Chicago Press, Chicago, pp. 233-272.

Kydland, F. and Prescott, E. (1977), "Rules Rather Than Discretion: The Inconsistency of Optimal Plans", *Journal of Political Economy*, 85, pp. 473-491.

Levintal, O. (2009), "The Real Effects of Banking Shocks: Evidence from OECD Countries", The Hebrew University of Jerusalem, Social Science Research Network.

Liviatan, N. (2004), "The Rise of Independent Monetary Policy and the Macro Economic Developments after the Stabilization Program in 1985", Bank of Israel—50 Years of Rowing to Monetary Control.

Maman D. and Rosenhek Z. (2007), "The politics of institutional reform: the 'Declaration of Independence' of the Israeli central bank", *Review of International Political Economy*, 14, pp. 251-275.

Masciandaro, D. and Quintyn, M. (2009), "Regulating the Regulators: The Changing Face of Financial Supervision Architectures before and after the Crisis", *European Company Law*, Issue 5, pp. 187–196.

McCallum B. (1984), "Credibility and Monetary Policy." *Price Stability and Public Policy*, pp. 105-128. Kansas City, MO: Federal Reserve Bank of Kansas City.

McCallum, B. (1995), "Two Fallacies Concerning Central Bank Independence", *American Economic Review Papers and Proceedings*, vol. 85, no. 2, pp. 207- 211.

Meiselman, D. (1986), "Is there a Political Monetary Cycle?", *Cato Journal*, Vol. 6, pp. 563–586.

Nordhaus, W. (1975), "The Political Business Cycle", *Review of Economic Studies*. 42, 2, pp. 169-190.

Orphanides, A. (2007), "Taylor Rules", Finance and Economics Discussion Series Divisions of Research and Statistics and Monetary Affairs, Federal Reserve Board.

Paroush, J. (2004), "Banking Supervision in Israel" in *Bank of Israel—50 Years of Rowing to Monetary Control*, pp. 130-132.

Pasiouras, F., Tanna, S. and Zopounidis, C. (2009), "The Impact of Banking Regulations on Banks' Cost and Profit Efficiency: Cross-country Evidence", *International Review of Financial Analysis*, 18(5), pp. 294-302, December.

Pittaluga, G.B. and Seghezza E. (2008), "Central Banks as Political Players", University of Genoa, Disefin working paper, number.6.

Peek, J., Rosengren, E. and Tootell, G. (2003), "Does the Federal Reserve Possess an Exploitable Informational Advantage?", *Journal of Monetary Economics* 50 (4), pp. 817-839.

Pollard, W. (1983), "Presidential Elections: Cyclical and Distributional Economic Effects". *Public Finance Quarterly* 11, pp. 291-304.

Pollard, P. (1993), "Central Bank Independence and Economic Performance", *Federal Reserve Bank of St. Louis Review*, pp. 21-36.

Poole, W. (2007), "Understanding the Fed", *Federal Reserve Bank of St. Louis Review*, January/February, 89(1), pp. 3-13.

Rogoff, K. (1985), "The Optimal Degree of Commitment to an Intermediate Monetary Target", *Quarterly Journal of Economics*, 110, pp. 1169-1190.

Romer, C. and Romer, D. (1989), "Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz". In *NBER Macroeconomics Annual*, 4, pp. 121-184.

Sargent, T. and Zeira, J. (2011), "Israel 1983: A bout of Unpleasant Monetarist Arithmetic", *Review of Economic Dynamics* 14, pp. 419-431.

Spong, K. (2000), "Banking Regulations: Its Purposes, Implementation, and Effects", Fifth Edition, Division of Supervision and Risk Management, Federal Reserve Bank of Kansas City. pp. 5-11.

Steelman, A. (2011), "The Federal Reserve's "Dual Mandate": The Evolution of an Idea", The Federal Reserve Bank of Richmond, EB, pp. 11-12.

Stein, H. (1995), "On the Other Hand: Essays on Economics, Economists, and Politics", American Enterprise Institute for Public Policy Research.

The Federal Reserve Bank of Richmond Special Report, "The 50th Anniversary of the Treasury-Federal Reserve Accord 1951-2001".

The Federal Reserve Bank of San Francisco (1993), "Federal Reserve Independence and the Accord of 1951". *Weekly Newsletter*, Number 93-21, May 28, 1993.

The Federal Reserve System (2005), "Purposes & Functions", Board of Governors of the Federal Reserve System, Washington, D.C., Ninth Edition.

Weise, Charles L. (2008), "Political Constraints on Monetary Policy During the Great Inflation", MPRA paper, number 8694.

Wood, J. (2006), "William McChesney Martin, Jr.: A Reevaluation." *Region Focus*, Winter, pp. 2-7.

Zelekha, Y. and Tsur, A. (2007), "The Bank Shares Crisis", *Quarterly Banking Review*, March 2007, pp. 61-92.

תקציר

עבודה זו עוסקת במדיניות הבנק המרכזי ויישום מטרותיו בזמנים של משבר, כאשר ישויות שונות, ביניהן הממשלה ומוסדות פיננסים, מפעילות לחצים על הבנק המרכזי ליישם מדיניות שתהיה תואמת את צורכיהן. תופעה זו – המתקיימת בעידן בו קיימת תמימות דעים בדבר מתן עצמאות לבנק המרכזי – מעלה מספר שאלות לגבי השפעתה על תפקודו של הבנק המרכזי ותוצאות מדיניותו. אכן, ניתן לשער כי בזמנים של שווי משקל, כמעט ולא מופעל לחץ חיצוני על הבנק המרכזי. אך בזמנים של משבר, לחץ כבד מופעל על הבנק המרכזי באמצעות גורמים אלו דבר שעלול לגרום לו לאבד את עצמאותו. על כן, נשאלת השאלה: האם התערבותו של הבנק המרכזי בזמנים של משבר נובעת מעצמאותו או מכך שמדיניותו מושפעת או נשבת על ידי גורמים חיצוניים?

לצורך מתן מענה לשאלה זו, ועל מנת להמחיש את התופעה, מוצגים שני מודלים המתארים פונקציית תועלת של בנק מרכזי עצמאי: במודל הראשון, הנחת היסוד היא כי לבנק המרכזי יש "עצמאות מלאה", ולפיכך לא מופעל לחץ חיצוני כלשהו על הבנק המרכזי; במודל השני, ההנחה היא כי לבנק המרכזי ישנה "עצמאות פגיעה", שכן גורמים חיצוניים מפעילים לחץ על הבנק המרכזי, דבר המפריע לתפקודו. בשני המקרים, הבנק המרכזי מנסה ליישם מדיניות אופטימלית שתמקסם את המטרות של צמיחה כלכלית, יציבות מחירים, ויציבות ויעילות של המערכת הפיננסית. פונקציות התועלת של הבנק המרכזי בשני המודלים, כפופות למספר מגבלות המתארות את הקשר שבין צמיחת התוצר, ערכי הסביבה האינפלציונית, וערכי היציבות והיעילות של המערכת הפיננסית, לבין האמצעים בהם משתמש הבנק המרכזי על מנת ליישם את מטרותיו: שער הריבית הנומינלי והרגולציה שהוא מסדיר. בנוסף, ערכים אלו חשופים לזעזועים שליליים או חיוביים. הלחץ החיצוני במודל השני נקבע על ידי שילוב של 3 גורמים: גובה הריבית הנומינלית, עוצמת הרגולציה וחוזק הזעזוע הכלכלי. ההנחה שבבסיס קשר זה היא שככל שהריבית גבוהה יותר, אזי גופים פוליטיים ילחצו את הבנק המרכזי להפחית ריבית על מנת לתמוך בצמיחת התוצר, ככל שהרגולציה הדוקה יותר גופים פיננסיים ילחצו את הבנק המרכזי להקל ברגולציה, שכן רגולציה הדוקה פוגעת ברווחיותם, ועוצמת הזעזוע תיצור בהתאם פאניקה במערכת הפיננסית שתביא ללחץ נוסף על הבנק המרכזי.

כאשר משווים בין תוצאות שווי המשקל בשני המודלים, ניתן לראות כי במודל השני, שיעור הריבית שנקבע נמוך יותר והרגולציה שנקבעה מקלה יותר מאשר במודל הראשון. דבר הגורם

לשיעור צמיחה ויעילות פיננסית גבוהים יותר, אך לסביבה אינפלציונית גבוהה יותר ויציבות פיננסית חלשה יותר. כתוצאה מכך, המשק חשוף לזעזועים פוטנציאליים בעתיד. ההבדל בערכי שווי המשקל בין המודלים מוסבר על ידי הלחץ החיצוני שמופעל על הבנק המרכזי. תוצאה נוספת שמתקבלת ותואמת את ההנחה שבבסיס העבודה היא שבשווי משקל או בתקופה של צמיחה קיים לחץ חיצוני מועט על הבנק המרכזי, ואילו בזמנים של משבר, וככל שהמשבר חמור יותר, לחץ כבד מופעל על הבנק המרכזי על ידי גופים החיצוניים, שעלול לגרום, במקרים קיצוניים, לשבי מדיניות הבנק המרכזי—במקרים אלו הבנק המרכזי מעדיף ליישם מדיניות "פופולרית" מאשר מדיניות אופטימלית.

על מנת לבסס את המודל הוצגו מספר מקרים מההיסטוריה של הבנק המרכזי בארה"ב והבנק המרכזי בישראל, המתארים מצבים בהם נדמה היה שעקב לחץ חיצוני שהופעל על הבנק המרכזי, מדיניותו נשבתה דוגמאות אלו המחישו את התופעה, ואף תיקפו את המודל. המסקנה שעולה מעבודה זו היא כי גם כיום בעידן בו קיימת עצמאות לבנק המרכזי, יתכנו מקרים בהם מדיניות הבנק המרכזי עלולה להישבות על ידי גופים שונים, דבר שעלול לגרום לתוצאות לא רצויות. אכן, מתן עצמאות לבנק המרכזי היא אפשרית בתיאוריה אך קשה ליישום בפרקטיקה, לכן על הבנק המרכזי להמשיך ליישם מדיניות זהירה המתחשבת בלחצים המופעלים על ידי הגופים השונים, דבר שימשיך להקשות על תפקודו היומיומי.

עבודה זו נעשתה בהדרכתו של

פרופסור וורן יונג

המחלקה לכלכלה באוניברסיטת בר-אילן

אוניברסיטת בר-אילן

**שבי מדיניות הבנק המרכזי
בזמנים של משבר**

רועי פרייברג

עבודה זו מוגשת כחלק מהדרישות לשם קבלת תואר מוסמך
במחלקה לכלכלה של אוניברסיטת בר-אילן

תשע"ג

רמת-גן