Item Pricing Laws and their Possible Effects on Prices: Research Findings

Daniel Levy, Ph.D.

Bar-Ilan University and Emory University

Sourav Ray, Ph.D.

McMaster University

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Introducing the Faculty

- Daniel Levy, Bar-Ilan University, Israel and Emory University, USA
  - Ph.D. in Economics, University of California – Irvine
  - Emory University, Economics Department, 14+ years
  - Director of the Aaron-Meyer Center for Banking Research
  - Academic Head of the Israeli Government's Committee on Item Pricing Law

- Sourav Ray, McMaster University, Canada
  - Ph.D. in Business Administration, University of Minnesota
  - Concordia University in Canada, 4+ years

- Between us:
  - Over 30 years experience Teaching and Researching in Pricing
  - Published in over 30 leading journals, including the *Journal of Law and Economics*, *Quarterly Journal of Economics*, *Journal of Marketing Research*, *Marketing Science*, *Review of Economics and Statistics*, *Harvard Business Review*, *Sloan Management Review* etc.
  - Done research on the economic impact of item pricing laws

Background Study:
Costs of Changing Prices

➤ Direct measurement of costs of changing prices

  ➤ Detailed field studies, 5 major US retail chains, one of them subject to IPL

➤ Findings for IPL stores:

  ➤ Roughly 2.5 times more costly to change a price

  ➤ Prices changed roughly 2.5 times less frequently

	Cost of a Price Change per Price Change	No. of Price Changes per Week
IPL	$1.33	1,578
No-IPL	$0.52	3,916

(Source: Levy et al. 1997, *Quarterly Journal of Economics*)

We found that Item Pricing Laws

➢Increased retailers costs

➢Affected their pricing decisions

Research Questions for the IPL Study

➢ What are the effects of IPLs on consumer prices?

➢ How to measure these effects?

➢ Could we assess the economic efficiency of IPLs?

This led us to design and implement an IPL study

Research Design

➢ 3 types of stores: (1) IPL, (2) non-IPL, and (3) ESL

➢ Tri-State: Connecticut, New Jersey and New York

➢ Natural experiment

➢ Geographical proximity

➢ Demographically and socio-economically, very similar

➢ Same/similar supermarket chain/s

➢ EDLP stores

➢ Brand name products

➢ Prices collected manually

Chart 1: The Tri-State Area of New York, New Jersey and Connecticut

Note: Clifton, New Jersey, is in the bottom left, Tarrytown, New York, is in the top middle, and Greenwich, Connecticut, in the top right. (Scale 1 inch=13.5 KM)

Stores Sampled

IPL	NO-IPL
NEW YORK: S1. Stop & Shop, Tarrytown, NY S2. C Town, Ossining, NY S3. A&P, White Plains, NY S4. Path Mark, Hartsdale, NY S5. A&P Scarsdale, NY S6. Path Mark, Yonkers, NY S7. Food Emporium, Hastings, NY S8. Shop Rite, Monsey, NY S9. Food Emporium, NYC, NY S10. Food Emporium, Armonk, NY **CONNECTICUT:** S16. Food Emporium, Greenwich, CT S17. Shaws, New Canaan, CT	**NEW JERSEY**: S11. A&P, Montvale, NJ S12. Shop Rite, Rochelle Park., NJ S13. A&P, Pompton Lakes, NJ S14. Path Mark, Montclair, NJ S15. Stop & Shop, Clifton, NJ

ESL

CONNECTICUT:
S18. Stop & Shop, Greenwich, CT
S19. Stop & Shop, Stamford, CT
S20. Shop Rite, Norwalk, CT

Data Collected

- Dataset 1
  - 4 stores (2 IPL, 1 no-IPL, 1 ESL)
  - 11 categories, 15 products in each category
  - 4 trips at one-month intervals (January–April, 2001)
  - 2,640 price observations (660 from ESL stores)

- Dataset 2
  - 20 stores (12 IPL, 5 no-IPL, 3 ESL)
  - 2 categories, 15 products in each category
  - 1 trip
  - 600 price observations (90 from ESL stores)

# Table 1.2: Categories and Products Included in Data Set I

Findings, IPL versus No-IPL

➢ **Prices are consistently higher at stores subject to the IPL**

➢ IPL store prices > non-IPL store prices,

  ➢ overall (T1.3, T2.3)
  ➢ by category (T1.3, F1.1, T2.3, F2.1)

➢ Within-Chain: IPL store prices > non-IPL store prices,

  ➢ by category, (T2.4, F2.2), (T1.4, F1.2)

➢ **Average price difference = $0.25 per item**

Findings, ESL versus IPL

- **Prices are consistently lower at the ESL stores**

- ESL store prices < IPL store prices, overall (T5.1, T6.1)

- ESL store prices < IPL store prices, by category (T5.1, F5.1)

- Within-state: ESL store prices < IPL store prices, overall
  Control for a possible cross-state variation (T5.2, F6.2)

- **Average price difference = $0.15 per item**

Summary:
Average Price Differences

IPL   >   ESL   >   no-IPL

$0.15 $0.10

← ──────────────────── →

$0.25
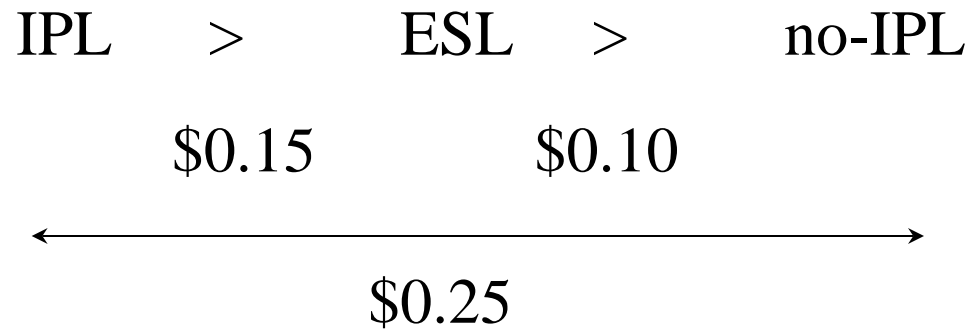
How big is $0.25?

- ➢ Average price $2.71 (Dataset I) and $2.50 (Dataset II)

- ➢ Price difference ($0.25): 9.2%–10%

- ➢ Average consumer spends approximately 14% on groceries

- ➢ Real income decreases by 1.4%

Quantifiable Benefits of IPLs: Pricing Accuracy

➤ *Money* (1993); Goodstein (1994):

5%–10% of products overcharged

Average overcharge $0.20–$0.70 per item

➤ FTC Studies: Two Studies

    ➤ Price Check I (1996):
- 294 Stores
- 17,928 items
- Only 4.28% error rate

    ➤ Price Check II (1998):
- 1,033 Stores
- 107,096 items
- Only 3.33% error rate

Costs versus Quantified Benefits

IPL benefits:

➤ Percent of products overcharged: 5%–10%

➤ Average overcharge per item: $0.20–$0.70

➤ Maximum benefit: $7 per 100 items

IPL costs:

➤ Higher prices paid (🕐 $0.25 per item)

➤ Cost is of the order of $25 per 100 items

Costs = Three times the benefits, $25 versus $7

Possible Biases and Other Shortcomings

➢ <u>Variation</u> across states/localities in wage rate, tax rate, household income, wholesale prices, etc.

➢ <u>Unmeasured costs</u>: monitoring, prosecution, audit, price check survey (<u>hard to measure</u>)

➢ <u>Unmeasured benefits</u>: comparison shopping, slows down price increases, misplaced items, difficult to read labels (<u>even harder to measure</u>)

Implications for Michigan

➢ IPLs clearly impose costs on retailers

➢ IPLs may be inefficient

➢ Most likely: the Michigan consumers are paying the cost

Thank You!

Findings: Product Level Comparison
IPL versus Non-IPL

- IPL store prices > non-IPL store prices

    - for 148 of the 165 of the individual products (F1.3)
    - i.e., 90% of the individual products in data set 1

    - for all 30 individual products (F2.3)
    - i.e., 100% of the individual products in data set 2

Costs vs. Benefits

IPL benefits:

➢ Percent of products overcharged: 1.36%

➢ Average overcharge per item: $0.66

➢ Maximum benefit: $0.90 per 100 items

IPL costs:

➢ Higher prices paid (🕐 $0.25 per item)

➢ Cost is of the order of $25 per 100 items

Costs = 27+ times the Benefits, $25 versus $0.90

Findings, ESL versus IPL: Data Set II

➢ ESL store prices < IPL store prices, overall (T6.1)

➢ ESL store prices < IPL store prices, by category (T6.1, F6.1)

➢ Within-state: ESL store prices < IPL store prices, overall and by category, control for a possible cross-state variation (T6.2, F6.2)

➢ Within-state and locality: ESL store prices < IPL store prices, overall and by category, control for a possible cross-state and cross-locality variation (T6.2, F6.3)

➢ Within-state and locality (+intersection): ESL store prices < IPL store prices, overall and by category, control for a possible cross state and (even finer) cross locality variation (T6.2, F6.4)

➢ Average difference = $0.16 per item

Findings, ESL versus No-IPL: Data Set I

➢ **Prices are consistently higher at the ESL stores**

➢ Stop & Shop: ESL store prices > non-IPL store prices, overall (T3.1)

➢ Stop & Shop: ESL store prices > non-IPL store prices, by category Control for a possible cross-chain variation (T3.1, F3.1)

➢ **Average price difference = $0.10 per item**

The Effect of IPLs on Retail Prices

❖ IPLs increase retailers' <u>variable costs</u>

➤ **IPLs increase retailers operating costs**
(Price sticker on every item)

➤ **IPLs increase retailers price adjustment costs**
(i.e., price adjustment cost increases with the number of units sold. Menu costs, in contrast, are a fixed cost.)

<u>Example</u>: Time and motion measurements

❖ IPLs will lead to higher retail prices (even under competition)

Electronic Shelf Label Systems

❖ Two supermarkets with ESL systems (exempted from IPL)

➢ **Fixed cost:**
Purchase cost, installation cost, training cost, conversation downtime cost

➢ **Variable costs**
Continuous maintenance, ongoing battery replacement, periodic software upgrade, periodic hardware upgrade, replace lost labels (break, tempering)

➢ **Our Prediction**:
     ESL store prices > No-IPL store prices
     ESL store prices < IPL store prices

Are these Unmeasured Benefits Important? Perhaps Not!

➢ Many search consumers mostly look at sales/weekend promotion prices *which are exempted from IPL.*

➢ Unit Price Law is more useful for search consumers. UPL will make <u>weighing out</u> harder.

➢ Shelf Price Law and Unit Price Law, together, offer the consumers most of the benefits at zero marginal cost

➢ Sellers have powerful incentive not to overcharge: lawsuits & persecution —> mistrust & reputation damage

➢ Recent developments: Rational Inattention