

# Is there a Cooperative Advantage? Experimental Evidence on Economic and Social Variables as Determinants of Demand

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through Market Relations.”

# Related Projects & Papers

## **PAPERS**

- Altman, Morris (2006). “Workers Cooperatives as an Alternative Competitive Organizational Form,” Advances in the Economic Analysis of Participatory and Labor-Managed Firms, Vol. 9: 213-235.
- Altman, Morris (2005). “Reconciling Altruistic, Moralistic, and Ethical Behavior with the Rational Economic Agent and Competitive Markets,” Journal of Economic Psychology, Vol. 26: 732-757.
- Altman, Morris (2006) “Opening-Up the Objective Function: Choice Behavior and Economic and Non-Economic, 4: I-II, URL: <http://economicsbulletin.vanderbilt.edu/2006/volume4/EB-06D00022A.pdf>.
- **Working Paper**
- Altman, Morris, “Modeling Consumer Cooperatives: Is there a Cooperative Advantage?”
- **This presentation consists of two papers.**

# • Introduction

- In a very broad sense, I test the hypothesis that a consumer cooperative holds a competitive advantage on the market by virtue that it is a cooperative.
- In others words I ask, are consumers willing to pay something extra, if necessary, when the preferred commodity is sold by a cooperative.
- In this case, the cooperative provides commodities with an additional characteristic desired by the consumer which improves the utility or wellbeing of consumers.



- **Introduction**

- More specifically, this paper presents results from a survey experiment which examines the hypothesis that consumer choice is a function of relative prices, given income, all other things remaining the same (based on conventional economic theory).



- Introduction

- My findings challenge the narrow economic worldview that only economic variables count; but supports a core economic assumption that economic variables are of fundamental importance to individual's choice decisions.
- I find that individuals are willing to make material sacrifice to reward organizations which have certain preferred or desired characteristics.

## • Introduction

- In this paper, it is assumed that consumer cooperatives do not derive an advantage in terms superior productivity or in terms of the quality or uniqueness of the good or service supplied.
- The cooperative advantage, where one exists, is situated in social cohesion and identity with the cooperative.
  - Some economics might dub this as part of the warm glow effect (Andreoni)—individuals doing their shopping from an organization which they feel good about. This would be akin to charitable giving or purchasing higher priced ethical products.
- Members of the cooperative are assumed to receive a year-end bonus as well.
- No such material benefit exists for non-members.
  - Such bonuses are not very different from what is offered by many non-cooperative retailers and wholesalers.

- **Theoretical Conclusions**

- If the consumer cooperative provides no advantage in terms of price or quality over non-cooperative, the cooperative's market share might be greater than it would otherwise be due to the preference which cooperative members would have for cooperative output.
  - Such preferences yield a degree of market power to the consumer cooperative (monopolistic).
  - But in this case there are no material benefits to society at large generated by the consumer cooperative per se.

## • **Theoretical Conclusions**

- If the consumer cooperative is not competitive in the domain of price and quantity, the survival of the cooperative critically depends on the costs which consumers are willing to incur in purchasing high priced or poor quality cooperative products.
- In this case, consumers of cooperative products must be maximizing their 'utility' while reducing their level of material wellbeing.

- **$U = f(M[Y], NM[SC, WG])$**

- Members might be willing to sacrifice real income and quality in consumption for the utility generated by the purchase of the output from the cooperative.





- **Theoretical Conclusions**

- In this instance, one would expect that firm survival would be price sensitive and would critically depend on the strength of social cohesion and identity amongst cooperative members (Altman 2005, 2000).
- Increasing social cohesion and identity serves to make the demand for cooperative products more price inelastic.



## • **Theoretical Conclusions**

- To the extent that there exists no social cohesion or identity with regards to the cooperative, then the survival of the consumer cooperative critically depends upon its price and quality competitiveness.
- Such cooperatives are not dissimilar to the traditional firm (retailer or wholesaler).

## • **Theoretical Conclusions**

- Consumer cooperatives which dominate the market can be expected to be price and quality competitive.
- Their competitiveness is enhanced by the existence of dimensions of social cohesion or warm glow amongst cooperative members.
- Social cohesion or warm glow can effect the elasticity of demand for the cooperative output.
- Amongst workers in the cooperative, social cohesion or warm glow can positively impact on their quantity and quality of effort inputs per unit of time and, therefore, upon productivity.

## • **Theoretical Conclusions**

- Consumer cooperatives whose price simply matches that of traditional firms have an advantage over the latter when there exists a degree of social cohesion and identity amongst cooperative members.
- This advantage increases as the strength this social-psychological relationship increases.
- Such cooperatives yield at least the level of material welfare generated by non-cooperative firms whilst also matching the preferences of consumers thereby enhancing their utility.



- **Theoretical Conclusions**

- Consumer cooperatives which survive simply on the basis of social cohesion and identity are socially costly in terms of material welfare and survive entirely on the basis of consumer preferences for cooperative products irrespective of price or quality.
- To the extent that individuals tend to be at least somewhat price and quality sensitive such cooperatives' survival can be predicted to be tentative at best.

- **Theoretical Conclusions**
- ***To the extent*** that social cohesion and identity is a substitute (making demand price and quality insensitive) for economic efficiency and quality production, they contribute towards reducing society's overall level of material wellbeing.
  - But the latter might be consistent with cooperative members' maximizing their utility.
- It is unlikely that such consumer cooperatives are sustainable in a competitive environment unless subsidized or if demand is highly inelastic.

# • **The Experiment**

- The objective of the experiment is to test the proposition that demand is largely a function of relative prices, all other things remaining the same.
  - This hypothesis is derived from the conventional economic modeling.
  - If the results do not conform with this hypothesis then we have evidence for the significance of non-economic variables in the determination of demand.
  - In this experiment, this speaks to the importance of social cohesion and warm glow as determinants of demand.

## • **The Experiment**

- I survey of over 298 students at the University of Saskatchewan and the University of Regina.
- Economic experiments usually have a sample size which are no more than 100 and typically much less and are more narrowly focused in terms subject population.
- My results are, therefore, much more statistically rigorous than the results from typical survey experiments.





# • **The Experiment**

- No real money is used in this experiment.
- No material incentives are built into the experimental framework.

# • The Experiment

- However, this framework is not unlike what one finds in contingent evaluation studies where individuals stipulate (imagine) how much they would be willing to pay for a particular product at a given point in time.
- Also, this is similar to many experiments in economic psychology and behavioral economics.
- Therefore, my results rely upon participants to imagine how they would behave under particular incentive environments.
  - Strong evidence that incentive do not have a substantive impact on experimental results.

# • **The Experiment**

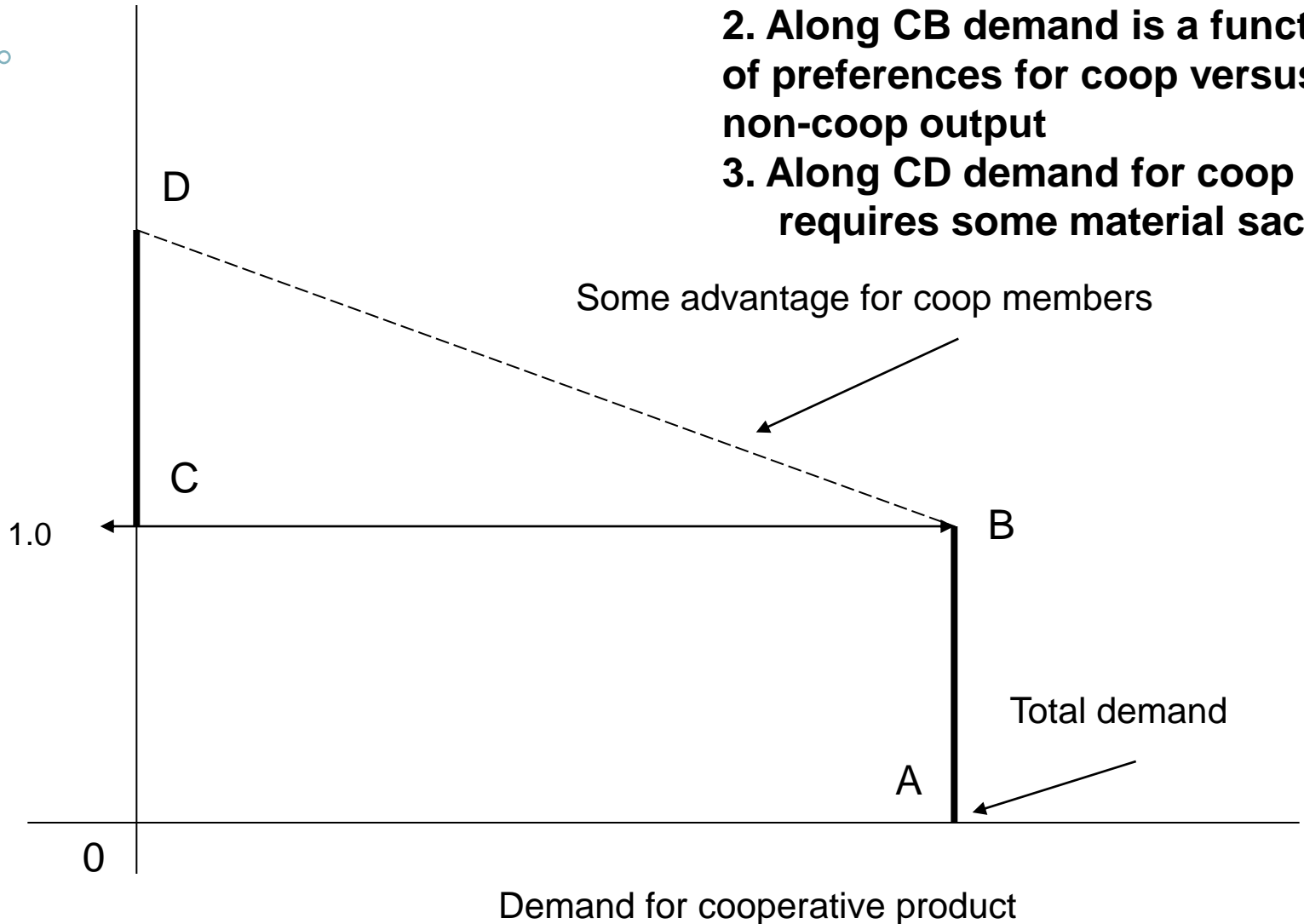
- Null (default) Hypothesis: as the relative price of cooperatives output increases, demand for cooperative output should fall, *ceteris paribus*.
  - In fact, such an increase should yield a collapse of demand to zero, *ceteris paribus*.
    - If individuals maximize their utility in terms of material welfare, this is what one would expect.
    - If one does not reduce one's demand to zero as relative price increases, one's real income diminishes.
    - Any reduction in the demand for the coop product keeps real income from falling by as much as it would otherwise.

# • **The Experiment**

- If individuals are material maximizers, then if the price in the coop and non-coop is the same, individuals would be indifferent between the two unless non-economic variables impact upon individual choice.
- In reality non-coop members may not so readily choose to buy at coops even if the price is the same as in a non-coop if:
  - They have shopped at the non-coop previously and there is some loyalty attached to remain a customer (path dependency—history matters).
  - Transaction costs increase (start-up costs of shopping elsewhere) if one switches to a coop.

# Demand for Cooperative Products

1. Maximizers Demand=ABCD
2. Along CB demand is a function of preferences for coop versus non-coop output
3. Along CD demand for coop requires some material sacrifice

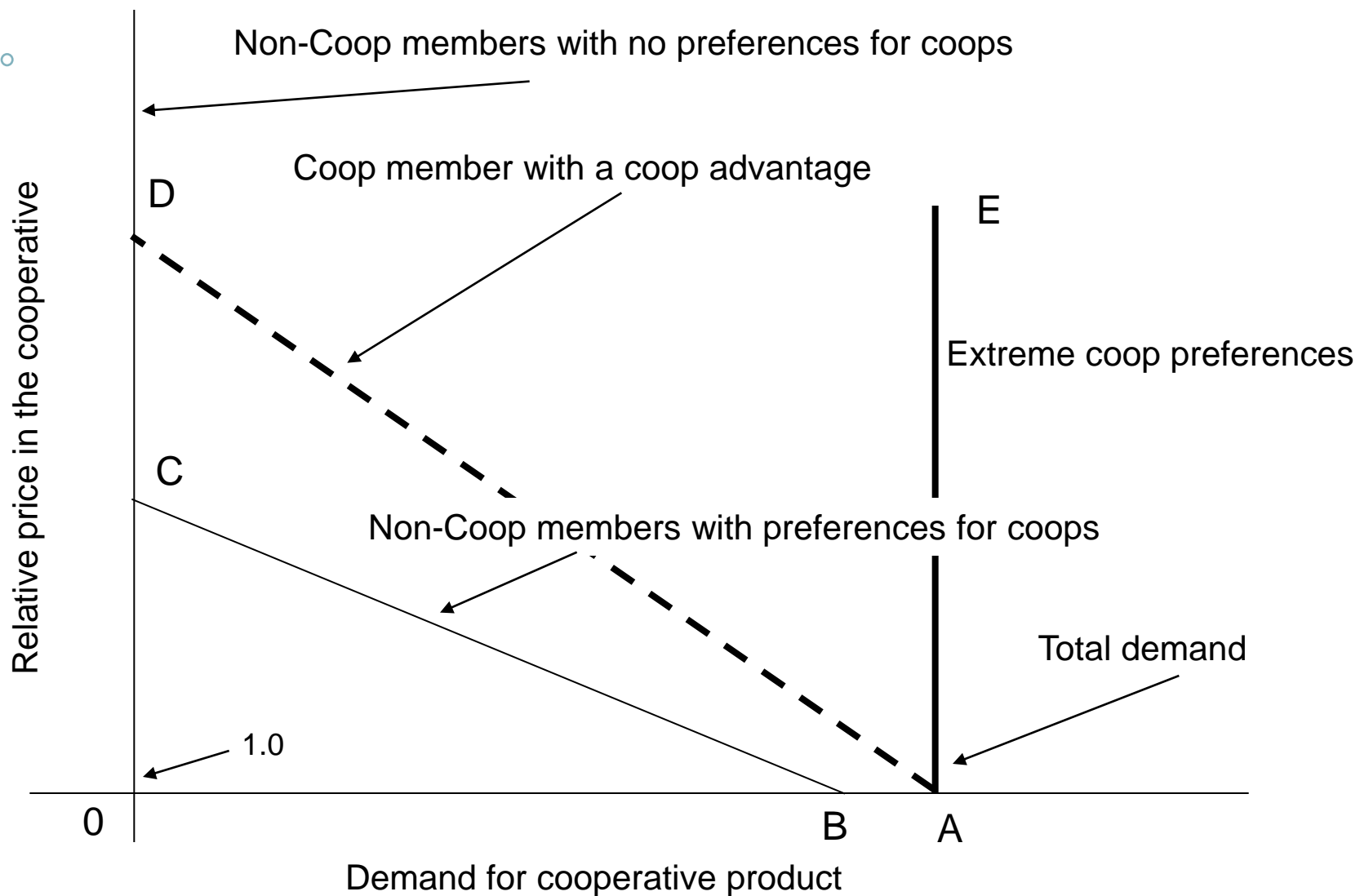


Relative price in the cooperative

# • **The Experiment**

- Coop members would be affected by economic advantages (year-end bonuses) garnered from being cooperative members and can be expected to maintain purchases from cooperatives in the face of relative price increases to the extent that the latter do not outweigh their cooperative advantages.
- If the coop advantage is less than the relative price increase, cooperative members should reduce their demand to zero unless non-economic variables (social cohesion cum warm glow) impact upon individual choice.

# Demand for Cooperative Products and Preferences for Coops



## • **The Experiment (results)**

- When price is identical, both *hypothetical* members and non-members of coops would purchase largely from the coop, albeit a larger percentage of coop members would purchase from the coop.
  - About 90 percent of non-coop members would purchase from the coop at the lower prices (coop and non-coop price are the same).
  - At the higher prices between 75 and 85 percent of the non-coop members would purchase from the coop (coop and non-coop price are the same).
  - This suggests that there are strong non-economic reasons for people to purchase from coops and represents an important cooperative advantage.
  - Over 90 percent of the coop members would purchase from the coops irrespective of price when the coop and non-coop price are the same .



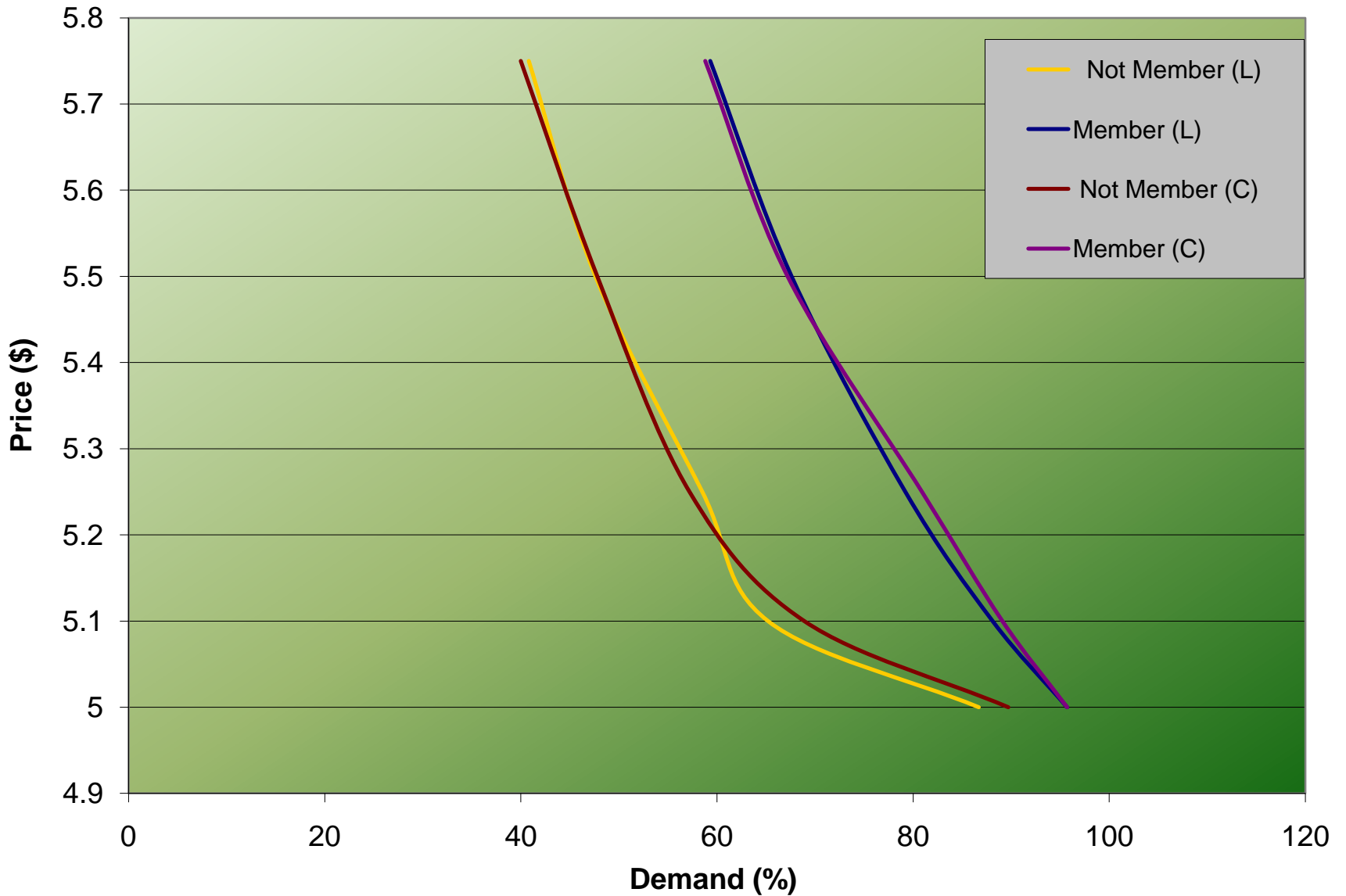
- **The Experiment (results)**
- When price increases the percentage of non-coop members and coop members who purchase from the coop drops.
- Also the difference or gap between the percentage of non-coop and coop members willing to purchase from the coop increases.
  - The demand for cooperative products diminishes at a faster rate amongst non-coop members.

- **The Experiment (results)**
- But even as relative price increases in the cooperative, a large percentage of non-coop members would still purchase from coops.
  - 40 percent at a low price (>\$5)
  - 13 percent at a high price (>\$1,000)
- These results suggests that even non-coop members retain an affinity for the consumer coop in face of relative price increases.
- This suggests the importance of non-economic variables at work in choice decisions.

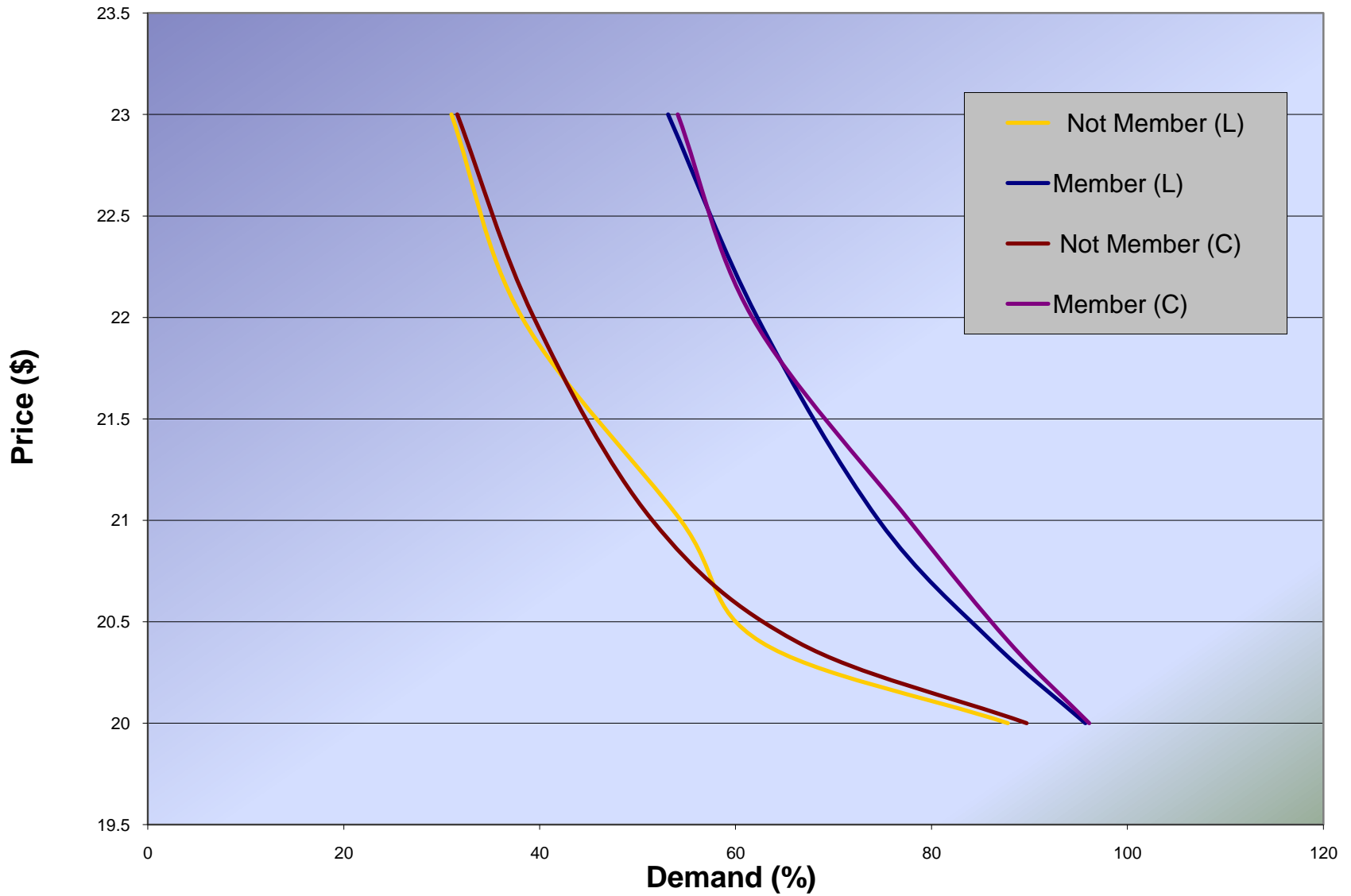
- **The Experiment (results)**
- Given that the revealed preference of many consumers is the willingness to pay a higher price for the coop product, it might be deduced that such individuals derive a higher level of utility from the higher-priced coop product, ceteris paribus.
  - Such individuals are willing to trade-off real income for the purchase of coop products.
    - Of course, if the coop price was the same as the non-coop price, the individual's utility would be even higher.

Price	Labour Controlled				Consumer Controlled			
	Demand (%)				Demand (%)			
	Not Member (L)	Member (L)	M-NM	(M-NM)/NM	Not Member (C)	Member (C)	M-NM	(M-NM)/NM
5	86.7	95.7	9.0	10.4%	89.7	95.7	6.0	6.7%
5.1	65.2	88.1	22.9	35.1%	68.9	89.1	20.2	29.3%
5.25	58.5	79.2	20.7	35.4%	57.2	80.9	23.7	41.4%
5.5	47.6	67.6	20.0	42.0%	47.8	67.2	19.4	40.6%
5.75	40.8	59.3	18.5	45.3%	40	58.8	18.8	47.0%
20	87.8	95.7	7.9	9.0%	89.7	96.1	6.4	7.1%
20.4	62.6	86.2	23.6	37.7%	66.3	87.9	21.6	32.6%
21	54.4	74.6	20.2	37.1%	51.5	77.7	26.2	50.9%
22	38.2	62.2	24.0	62.8%	39.4	61.7	22.3	56.6%
23	31	53.1	22.1	71.3%	31.6	54.1	22.5	71.2%
50	84.5	94.6	10.1	12.0%	87.8	94.9	7.1	8.1%
51	53.5	85.4	31.9	59.6%	59.3	85.2	25.9	43.7%
52.5	41.5	68.1	26.6	64.1%	43.3	70.3	27.0	62.4%
55	25.6	54.3	28.7	112.1%	28.3	52.2	23.9	84.5%
57.5	19.5	39.9	20.4	104.6%	18.6	38.7	20.1	108.1%
200	78.1	92.6	14.5	18.6%	85.5	93.8	8.3	9.7%
204	45.4	82.3	36.9	81.3%	49.6	77.4	27.8	56.0%
210	29.8	58.5	28.7	96.3%	30	58	28.0	93.3%
220	16.1	39.9	23.8	147.8%	19	38.8	19.8	104.2%
230	14	28.3	14.3	102.1%	13	26.2	13.2	101.5%
1000	75.7	91.9	16.2	21.4%	84.7	91.4	6.7	7.9%
1020	35.9	69.9	34.0	94.7%	41.6	67.7	26.1	62.7%
1050	23.2	45.6	22.4	96.6%	24.3	45.1	20.8	85.6%
1100	13.2	29.2	16.0	121.2%	14.1	27	12.9	91.5%
1150	12.9	22	9.1	70.5%	13.4	22.2	8.8	65.7%

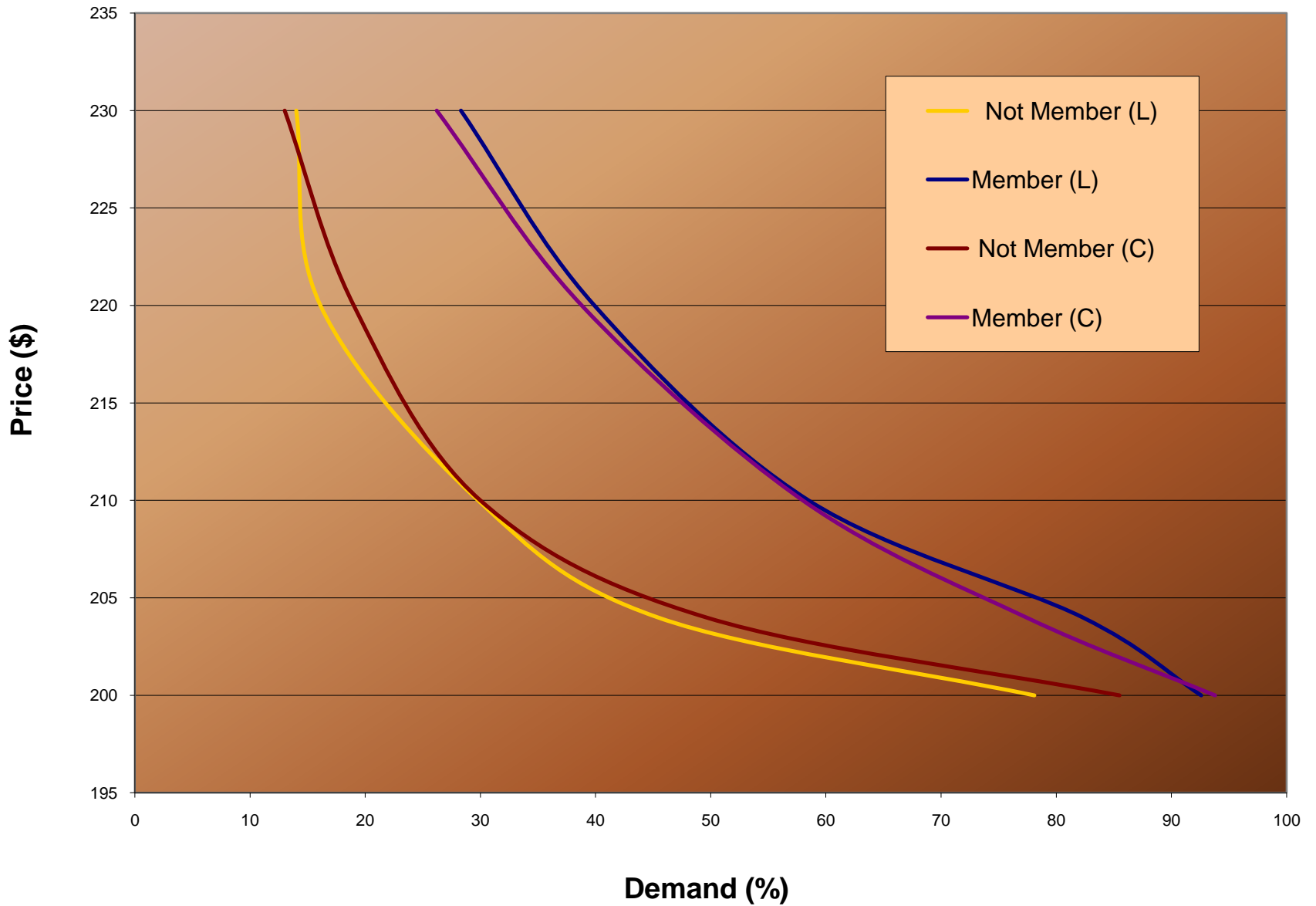
### Comparing Product Price (\$5) - Labour & Consumer Controlled



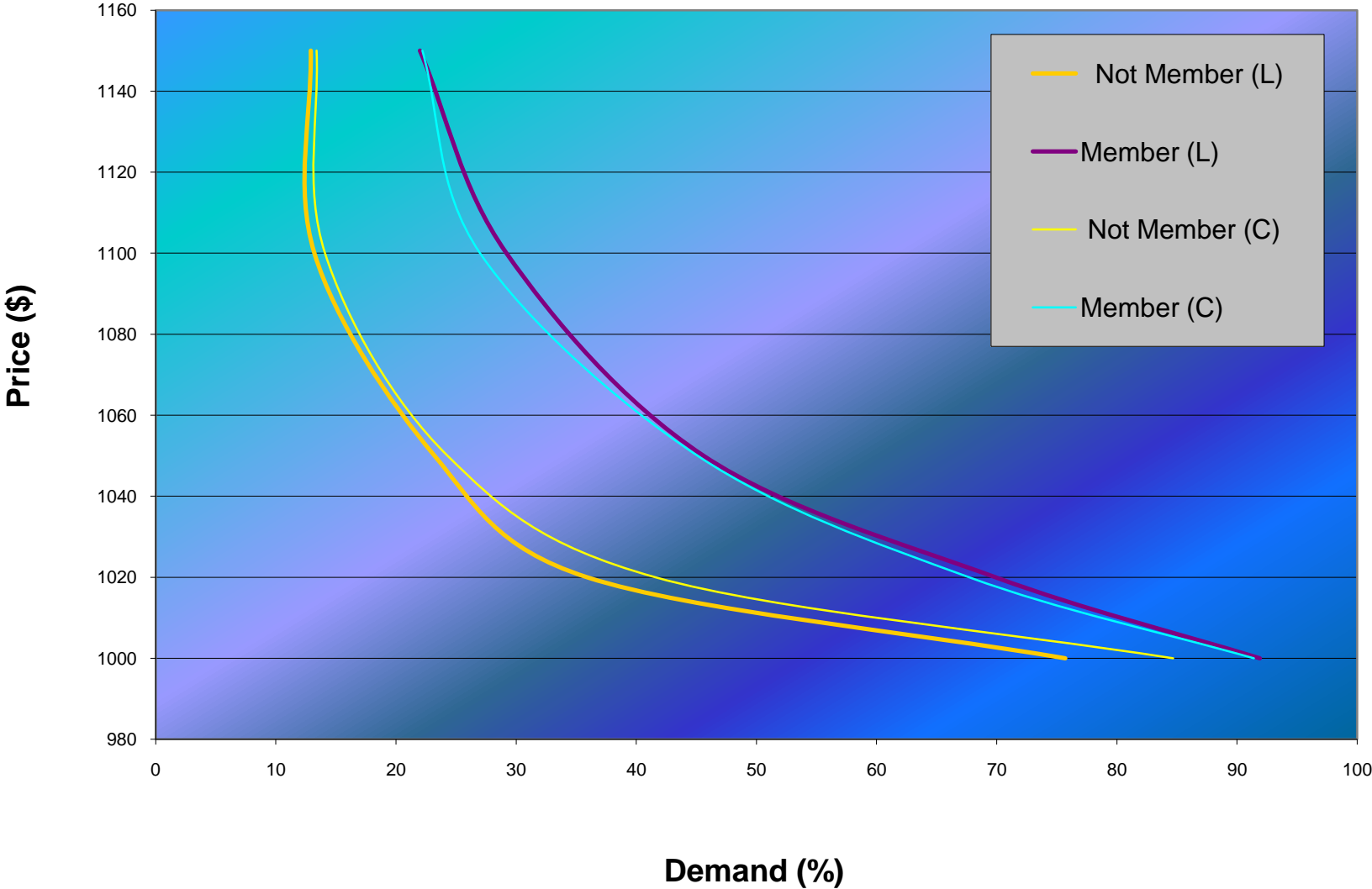
# Comparing Product Price (\$20) - Labour & Consumer Controlled



# Comparing Product Price (\$200) - Labour & Consumer Controlled



### Comparing Product Price (\$1000) - Labour & Consumer Controlled





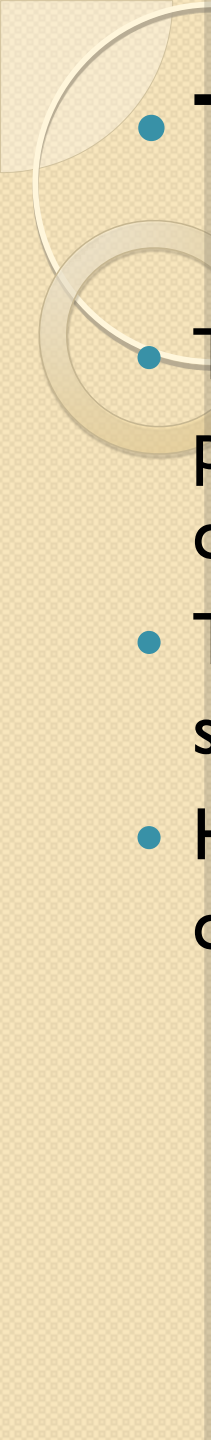
## • **The Experiment (results)**

- These results are affirmed by probit analyses of the data.
- The fact that demand is sensitive to changes in relative price supports a weaker version of the conventional economic wisdom that individuals are sensitive to relative price changes—economic factors impact upon individuals choice decisions.
- The experimental evidence is characterized by elastic demand (price elasticity greater than one) for both non-coop and coop members.
- Therefore any relative increase in the price of a coop product yields a fall in income.
- This elasticity is greater for products at the higher price point and is also greatest for the non-coop members at the initial increase in relative price—when the coop price is first increased above that of the non-coop price.

- To illustrate the impact which the estimated elasticities have upon income as relative price increases, I simulate the income of the coop as relative price increases.
- I assume that the market for the coop and non-coop firms comprise of 1,000 units and that these 1,000 units are purchased either from the coops or non-coops.
- Income falls as price increase when the percentage increase in price is less than the percentage decrease in demand.
- Income diminishes as prices increase with regards to the demand from coop members or non-members.

- **The Experiment (Conclusions)**
- Both economic social variables impact upon the choice decisions of subjects.
- Ceteris paribus, coop members have a stronger affinity (warm glow) for coop products irrespective of price.
- Non-coop members have an affinity (warm-glow) for coop output even though this involves some material self-sacrifice.
- There is little difference in responses when the coop is hypothesized to be consumer controlled or labor controlled.

- **The Experiment (Conclusions)**
- At identical prices the coop advantage is huge.
  - Given individual preferences which are predisposed towards cooperatives, coops have a competitive advantage over non-coops, *ceteris paribus*.
  - This advantage can be expected to be diminished by a positive reputation of the non-coop and consumer loyalty.
- The coop advantage diminishes as relative price increases and coop income diminishes.
- If coop members were income maximizers they would keep prices on par with non-coop.

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- **The Experiment (Conclusions)**
  - The coop advantage provides coops with a protective belt against competition from non-coops—a monopolistic position on the market.
  - This allows coops to produce inefficiently and survive on the competitive market.
  - However, efficient coops can dominate the market, *ceteris paribus*.

## • **The Experiment (Conclusions)**

- The cooperative advantage can be used to protect inefficient firms or to increase market share.
- The coop advantage also provides coop with flexibility to transform itself from inefficient to efficient supplies given that inefficient coop will not easily be wiped out of the market.
  - But social variables go only so far, and high priced-inefficient cooperatives will suffer the wrath of consumers searching for relatively low priced-high quality output.

- **The Experiment (Conclusions)**
- Our experimental results speak to the potential strength of consumer coops in competitive markets.
- This relates to the pro-coop preferences of subjects.
- A important question which must be asked of any social science experimental result is are such preferences global in nature and how do they evolve.
- **Be this as it may, consumer cooperatives appear to have more degrees of freedom to increase their market share, especially if they are well managed, responding to the price and quality concerns of consumers.**

## **PROBIT ANALYSIS SUMMARY:**

**ALL THE VARIABLES IN MODEL ARE DUMMY VARIABLES**

**DEPENDENT VAR WILL BUY – TAKES A VALUE OF 1 IF INDIVIDUALS BUY, ELSE 0**

$$\text{Eq1: Will buy} = \beta_0 + \beta_1 \text{FCOOP} + \beta_2 \text{MEMBER} + \beta_3 \text{CANADIAN} + \beta_4 \text{CHINESE} + \beta_5 \text{ECONOMICS}$$

### **Marginal Effects**

#### **Entire Sample**

Base Case: Not Familiar

**FCOOP: 0.048194**

Base Case: Not Member

**MEMBER: 0.15109**

#### **FEMALE SAMPLE**

Base Case: Not Familiar

**FCOOP: 0.092212**

Base Case: Not Member

**MEMBER: 0.13729**

#### **MALE SAMPLE**

Base Case: Not Familiar

**FCOOP : 0.016427**

Base Case: Not Member

**MEMBER: 0.16290**



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# Consumer Cooperative Survey Questionnaire

## Consumer Behavior and Consumer Cooperatives

### General Survey

**You are about to participate in a research project on Consumer Behavior with respect to consumer cooperatives.**

**The consumer cooperative can take different forms such as grocery, hardware store, or department store.**

Completing the questionnaire should take about 15 minutes.

Please do not speak with the other participants in the room during the session.

Please answer the following questions carefully.

**First, please provide the following information about yourself:**

Age: \_\_\_\_\_

Sex: Male / Female

Place of Origin: Canada / Other (Please specify—Mainland China, Hong Kong, Pakistan, India, USA, etc):  
\_\_\_\_\_

Major: Economics / Other (Please specify): \_\_\_\_\_

Year of Study: Undergraduate / Graduate

Are you familiar with consumer cooperatives? Yes/No \_\_\_\_\_

Are you a member of a cooperative? Yes/No \_\_\_\_\_

Do you work for a cooperative? Yes/No \_\_\_\_\_

Would you consider yourself to be politically left, right or middle of the road?

Left/Right/Middle \_\_\_\_\_

After-tax income (including parental or other support): \$\_\_\_\_\_ per month

Is your housing paid for by a third party (i.e. parents, friends, scholarships)? Yes / No

Is your tuition paid for by a third party (i.e. parents, friends, scholarships)? Yes / No

A. Consumer controlled cooperative (workers are simply employees as one would find in typical private firm such as IGA, Safeway, Canadian Tire.

B. You are not a member.

11. Would you purchase from a coop if the price and quality of its product is the same as for a non-cooperative store?

	Non-Coop Price	Coop Price	Yes/No
f.	Product price = \$5	\$5	_____
g.	Product price = \$20	\$20	_____
h.	Product price = \$50	\$50	_____
i.	Product price = \$200	\$200	_____
j.	Product price = \$1,000	\$1,000	_____

12. Would you purchase from a coop if the price of its product is slightly higher (2 percent) than what it is in a non-cooperative store?

	Non-Coop Price	Coop Price	Yes/No
a.	Product price = \$5	\$5.10	_____
b.	Product price = \$20	\$20.40	_____
c.	Product price = \$50	\$51.0	_____
d.	Product price = \$200	\$204	_____
e.	Product price = \$1,000	\$1,020	_____

13. Would you purchase from a coop if the price of its product is a bit higher (5 percent) than what it is in a non-cooperative store?

	Non-Coop Price	Coop Price	Yes/No
a.	Product price = \$5	\$5.25	_____
b.	Product price = \$20	\$21.0	_____
c.	Product price = \$50	\$52.5	_____
d.	Product price = \$200	\$210	_____
e.	Product price = \$1,000	\$1,050	_____

14. Would you purchase from a coop if the price of its product is somewhat higher (10 percent) than what it is in a non-cooperative store?

	Non-Coop Price	Coop Price	Yes/No
a.	Product price = \$5	\$5.5	_____
b.	Product price = \$20	\$22.0	_____
c.	Product price = \$50	\$55.0	_____
d.	Product price = \$200	\$220	_____
e.	Product price = \$1,000	\$1,100	_____

15. Would you purchase from a coop if the price of its product is a lot higher (15 percent) than what it is in a non-cooperative store?

	Non-Coop Price	Coop Price	Yes/No
a.	Product price = \$5	\$5.75	_____
b.	Product price = \$20	\$23	_____
c.	Product price = \$50	\$57.5	_____
d.	Product price = \$200	\$230	_____
e.	Product price = \$1,000	\$1,150	_____

## PART A2

A. Labor controlled consumer cooperative

B. **You are a member** (You receive a year-end share of profits based on purchases and can participate in coop meetings)

Questions as in A1

## PART B1

A. Consumer controlled cooperative (workers are simply employees as one would find in typical private firm such as IGA, Safeway, Canadian Tire.

B. **You are not a member.**

Questions as in A1

## PART B2

A. Consumer controlled cooperative (workers are simply employees as one would find in typical private firm such as IGA, Safeway, Canadian Tire.

B. You are a member (You receive a year-end share of profits based on purchases and can participate in coop meetings).

Questions as in A1