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INFORMATIONALLY IMPERFECT MARKETS: THEIR DOCUMENTATION AND POLICY IMPLICATIONS*

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Starred items (*) will be included in the oral presentations; others represent back-up materials.

*I. Introduction

A. Objectives

1. To demonstrate, with data for two sample products, how the informational imperfections of local consumer markets might be documented.

2. To spell out two major policy implications of informationally imperfect markets.

B. Why Document Informational Imperfections?

1. Neither a priori arguments asserting the likelihood of informational imperfections [4, pp. 305-325] nor deductive models of informationally imperfect markets [1,7,8,9,10] tell us to what extent local markets for different products are informationally imperfect. In addition, efforts to establish price-quality correlations [6,11] have been unsatisfactory since they rely on quality rankings and list prices.

2. Only a quantitative assessment of informationally imperfections will do this.

3. Before considering corrective policies, skeptical economists and citizens will want to know just how informationally imperfect markets are.

II. Informational Imperfections: Two Examples

*A. The Products

1. A product of (approximately) uniform quality: term life insurance.

2. A product of variable quality: pocket cameras.

*B. The Central Concepts and Assumptions

1. Informational Perfection or Imperfection. As a first approximation, a local consumer market is:

a. Informationally perfect when a single price is charged by all sellers for the same quality.

b. Informationally imperfect to the extent that different prices are charged for the same quality.

*2. The Perfect Information Frontier, our basic instrument in assessing informational imperfections, is defined on a chart depicting price and quality as "the positively sloped line segments connecting those points, representing price and quality, for which a given quality may be purchased for the lowest price."

a. For a product of uniform quality, the frontier consists of a single point.

*3. Variety vs. Specimen

a. A variety of a product is a product-brand-model combination, e.g., a 1977 Ford Maverick sedan.

b. A specimen of a product is a product-brand-model-retailer combination, e.g., a 1977 Ford Maverick sedan purchased at Faithful Ford.

c. On the charts, quality pertains to varieties of products while prices, necessarily, pertain to specimens.

4. Quality

*a. Briefly, quality consists of "a subjectively weighted average of service characteristics." [3] is the basic reference while [4], provides a simplified presentation.

*b. Service Characteristics ("characteristics")

(1) Defined: "the basic factor giving rise to utility." Examples: durability, beauty, safety.

(2) May be viewed as the output of a production process embodied in a good.

(a) The durability of a hot water heater is a service characteristic that is "produced" by copper pipes and glass lining.

(3) Lancaster [2] and the hedonists often use identity inputs (such as copper pipes) as their "characteristics".

*c. Formally, the quality of the k^{th} variety, G_k^{ij}, is given by

$$G_k^{ij} = \frac{\sum_{\ell=1}^{L} (W_\ell^{ij} \cdot Ch_{k\ell}^{ij})}{\sum_{\ell=1}^{L} W_\ell^{ij}}$$

where $G_{k\ell}^{ij}$ = the quality of the k^{th} variety of the j^{th} product class as assessed by the i^{th} individual.

W_ℓ^{ij} = the weight assigned to the ℓ^{th} characteristic in the j^{th} product class by the i^{th} individual. (Note that for different varieties of the same product class the weights assigned to a particular characteristic are identical.)

$Ch_{k\ell}^{ij}$ = the characteristic score assigned to the ℓ^{th} characteristic of the k^{th} variety in the j^{th} product class by the i^{th} individual.

Characteristic scores, Ch, range from 0.00 to 1.00 and denote the marginal utility conferred by the amount of the characteristic possessed by the variety under consideration. A score of 0.00 denotes zero marginal utility, 1.00 the marginal utility of the ideal variety (with respect to that characteristic) and other real numbers the ratio of MU_k to MU_{k^o} where k^o is the "ideal" variety.

d. In the actual assessments of quality reported in this study, we will utilize numerical quality scores published by Consumers Union or the authors' quantification of ratings and descriptive materials published in Consumer Reports. The CU model conforms to the theoretical model just presented with several exceptions:

(1) CU's quality scores omit intrinsically subjective service characteristics, e.g., prestige, and service characteristics for which "satisfactory" product tests cannot be devised, e.g., durability for some products.

(2) Sometimes CU's interest in the defensibility and reproducibility of its test results cause it sometimes to assess the desired output, braking ability, by its inputs, e.g., whether a car has disc brakes.

(3) CU sometimes departs--as we would--from the additivity assumption embodied in the quality formula. Possible non-additives: safety or other thresholds, quality homogeneity as a separate service characteristic.

5. Product

a. Need for the concept: to decide which varieties will be appropriately included in the class for which quality evaluations and comparisons are to be made, e.g., in Figure 1-A and 1-B.

b. Defined:

A product is "the set of goods which, for some maximum outlay, will serve the same general purpose in the judgment of the purchasing consumer."

c. Comments:

a. Subjective.

b. The maximum outlay restriction would, for example, exclude the Mercedes-Benz from the "product" class of "compact automobiles" even though it qualifies by virture of size and some other attributes.

c. Though, in principle, this definition would appear to be difficult to apply, the expected difficulties have not materialized in practice.

6. Market

a. Need for the concept: to delineate the set of sellers whose price and quality of offerings it is appropriate to compare.

b. Defined:

A market consists of "set of sellers the consumer might consider if he possessed accurate information regarding the existence of sellers and brands as

well as the probability distribution of prices and qualities available." The market also consists--though it will not concern us here--of "any consumers who might purchase from the sellers defined above."

c. Comments:

a. Subjective.

b. Again, this concept poses no problem in practice.

c. A market need not be limited spatially; it might include mail-order or out-of-town sellers.

d. This concept is highly similar to the "trading areas" term used in marketing.

*C. Assumptions

1. Identification of varieties of products and retail outlets is complete and accurate for some representative consumer in a particular market.

2. Prices quoted are accurate.

a. In the data depicted the "actual" price represents the lowest price a seller was willing to quote when told that the information he provided would be widely distributed.

3. Fully informed consumers would accept Consumer Union's assessment of quality for different varieties of products.

*D. Term Life Insurance: A Product of Uniform Quality

1. The data on Charts 1-A, 1-B, and 1-C:

a. Prices are the widely accepted 20-year interest-adjusted index, computed by Consumers Union (Consumer Reports, March, 1974).

b. Local accessibility was ascertained by local shoppers. "Easily accessible", denoted by the filled circle (●), means that the company name may be found in the Yellow Pages.

c. The sample of companies includes all of the 20 largest and a large fraction of other companies offering term policies.

2. For illustrative purposes, we will focus on Chart 1-B (Ann Arbor) for nonparticipating policies.

3. The strategy for interpretation:

a. Tick off and assess the effects of other factors that might account for this degree of price dispersion.

b. To the extent that other factors do not account for the extent of price dispersion here, we will conclude that this market is informationally imperfect.

4. Term life insurance as a single-characteristic product.

a. ESM assertion: term insurance provides a single service: income protection for survivors. As long as any company is financially viable at time of death, it will perform this service equally well.

b. Possible objection: customers of insurance agents may receive other services, e.g., advice on estate planning, or insurance needs.

c. Rebuttal: insurance prices are company-wide and pertain to the policy, not to ancillary services. Unless it can be shown that the average agent for high-priced policies provides such services in proportion to the price, one must conclude that prices do not reflect such services.

5. Screening-out of "poor" risks.

a. By accepting as insurees only individuals in "excellent" health, a company could provide "protection" at a lower cost.

b. Rebuttal: With few exceptions[1], all policies charted are purchasable by anyone able to pass a prescribed physical examination. A large group of individuals should be able to "pass" all physicals. If they could, why should they pay more than the lowest price?

6. The inference:

a. Each of you will have to draw your own conclusion. ESM concludes that this is an informationally imperfect market. The difficulties of ascertaining price (a sophisticated concept for this product) and the high cost of search (talking with life insurance agents) lead to inadequate searching and a high degree of price dispersion.

*E. Pocket Cameras

1. The Data on Charts 2-A, 2-B, and 2-C:

a. Numerical quality scores are those published by Consumers Union. They conform approximately to the author's model of quality.

b. The sample of retail outlets includes all retailers selling the set of pocket cameras tested by Consumers Union.

2. For illustrative purposes, focus on Chart 2-B for Ann Arbor.

3. Strategy for interpretation: same as for life insurance.

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[1] Some policies are purchasable only by persons belonging to special groups, e.g., teachers or engineers.

4. Omitted characteristics:

a. Subjective characteristics. Consumers Union (CU) does not take account of intrinsically subjective characteristics, e.g., the prestige of a brand or the appearance of a camera, in assessing quality. To the extent that (hypoethetical) fully informed consumers were willing to pay more for such characteristics, an above-frontier price would not indicate informational imperfection.

b. Characteristics for which valid tests cannot be devised do not enter CU's quality ratings, in this case, for example, durability.

5. Characteristics of retailers.

a. Characteristics of retailers (convenience, politeness, reliability, etc.) are not incorporated in the quality measure, but may affect the price.

b. It is tempting to suppose that above-frontier prices are attributable to such retailer characteristics.

c. Unfortunately, the data do not support the hypothesis. The statistic: the ratio of actual price to the corresponding frontier price for each specimen. For Twin Cities retailers, the following ratios:

Retailer (Ratio of actual price to frontier price for each variety of camera.)

Brown Photo (1, 1.26, 1.67, 1.67, 1.79, 1.81, 2.16, 2.22, 2.22, 4.11, 5.21)
Clark Pharmacy (4.44)
Pako (1.87, 1.89, 2.10, 2.35, 2.84, 4.11)
Dayton's (1, 1.23, 1.79, 1.80, 2.0, 4.22)
Jay's (1.23, 1.73, 2.20, 2.67, 3.0, 3.0, 3.25, 3.6, 3.8, 4.67, 6.25)
Woolworth's (1.29, 1.6, 2.26, 4.58, 4.7)
Brand's (1, 1.21, 1.31, 1.53, 2.08, 2.22, 3.67, 4.48)
Century (1.38, 1.63, 1.87, 2.74)
Sears (1, 1.67, 3.57, 3.89)
K-Mart (1.43, 3.29)
National Cameras (1, 1.22, 2.17, 2.42, 3.33, 4.48)
Holiday (1.23, 1.33, 1.67, 1.87, 2.78, 3.89)
Target (1, 1.22, 1.29, 1.5, 1.67, 1.74, 1.79, 3.78)
Zayre's (1.29, 1.67, 2.26, 6.56)
LaBelle's (1.4, 1.61, 2.5, 3.33)

d. The data here conform closely to that predicted by one of Salop models (Salop, [9]): "The noisy monopolist utilizes price dispersion as a sorting device to separate consumers into submarkets to permit price discrimination." (p. 22).

6. Non-Uniform Quality Assessments

a. It is possible that fully informed consumers would arrive at different quality assessments than CU and that such differences in tastes would account for some of the above-frontier price dispersion observed.

7. Non-Uniform "Product" and "Market" Sets

a. For some consumers, some of the varieties included in the chart may not be sufficiently good substitutes for one another to be counted as the "same" product. Similarly, a lower budget constraint might lead to the exclusion of some high-price varieties.

b. For some consumers, higher (lower) search costs might lead to a smaller (larger) set of retailers in "their" market.

8. Price Discrimination based on objective factors, e.g., where different-aged customers are charged different prices.

a. Seems unlikely here.

9. The Inference:

a. Again each of you will have to draw your own conclusions.

b. Especially after (1) digesting the evidence on retailer effects and (2) noting the dispersion in prices charged by different retailers for the same camera, ESM concludes that this market is characterized by substantial information imperfections.

*III. Corrective Policies

A. Dependence Upon Research Results

1. If most markets are found to be informationally perfect or near-perfect—not my expectation—no corrective policies are necessary: proclaim it!

2. If widespread informational imperfections are found, it would constitute an indictment of existing arrangements and imply the need for major changes. My nominations: (1) the provision of resources for pro-consumer information; (2) the development and perfection of a local consumer information system.

B. Provision of Resources for Pro-Consumer Information

1. What consumers need to function effectively is the information on and behind Charts 1 and 2, including the names of retailers.

a. They need it for their local market.

2. The character of information provided by sellers.

a. It is in the interests of all sellers to provide information regarding the existence of (1) their products and (2) their firms. This they do very effectively.

b. The interests of most sellers is best served by not providing—through advertising or sales personnel—the information in Charts 1 and 2. The reasons are straightforward and compelling:

(1) Only "winners" and consumers have an interest in the full information of Charts 1 and 2.

(2) Winners are usually a small minority. What is more, under modern conditions a firm cannot tell in advance whether it will design and market a winner. Ordinarily, a multi-product firm will market many average products, some losers, and a few winners.

c. Hence, most of the information in Charts 1 and 2 is not provided by sellers.

3. Information-persuasion expenses are financed by what amounts to a (variable) sales tax.

a. The test: can you purchase a box of breakfast sales without paying for the information-persuasion expenses (advertising, sales personnel) of some cereal manufacturer?

3. The imbalance of seller-controlled vs. consumer-controlled information-persuasion activities.

a. In 1970 business-controlled exceeded consumer-controlled expenses by a ratio of 5,000 to 1. [4]

4. The corrective policy:

a. Transfer resources to a consumer-controlled organization.

(1) A sales tax of 1/4 of 1 percent in 1970 would have yielded $1.75 billion or roughly 135 times as much as the consumer product-testing organizations spent that year.

(2) A 1 percent tax on business expenditures for information and persuasion would have yielded $670 million.

b. The activities of a pro-consumer information organization:

a. Let it do what it deems most useful: product-testing, hiring Madison Avenue for pro-consumer advertising, sponsorship of network television, perfecting the local consumer information system.

C. A Local Consumer Information System

1. For a detailed discussion of this proposal, see [5]. For a review of such organizations that have "sprung up", see Ray-Dunn, 1977, Carnegie-Mellon paper.

2. The type of information provided:

a. Local Price Information. Where is the cheapest place locally to buy (say) term life insurance?

b. Local Accessibility to Products Quality-Rated by CU. What does the local price-quality map look like for (say) pocket cameras? What models lie on the perfect information frontier? What retailers sell these models at frontier prices? For a given model, what range of prices is available?

c. Experience Rating of Vendor Serices. Where should I take my disabled television set (or car, high-fidelity system, child or other consumer durable) to have it repaired cheaply and effectively?

d. Consumer Ratings of Retailers. What have been consumers' reactions to their purchase experience with particular local retailers—their advertising, dealings with salespersons, their promptness, their post-purchase service, refund experience, and correction of consumer grievances?

3. The objectives of such a system:

a. To provide individual payoffs to users;
b. To improve the working of the local market;
c. To reproduce itself and thus to improve other markets;
d. To document the informational imperfections of markets and the influence of the system on this.

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