

The Influence of Consumer Price Information on Retail Pricing and Consumer Behavior

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Comparative price information for major Ottawa supermarkets was collected over a twenty-eight-week period and published in daily newspapers during a five-week test period. In response to the information, the dispersion of prices across stores and chains narrowed, the average level of prices of the market dropped, and consumer satisfaction increased relative to the control market. Consumers transferred patronage to the lower priced stores. Consumers indicated a willingness to pay 34¢ per week on average for the price comparison information. Estimated consumer benefits far exceeded the cost of the program.

Key words: competition, consumer benefit, food prices, food retailing, information.

This article reports the results of research in which the authors had the rare opportunity to manipulate the variable of interest—market information (retail food prices)—and to monitor the effects. Contrary to conventional assumptions, it was assumed that consumers have inadequate information with which to choose rationally among retail food stores and hence are unable to express accurately their preferences in the market place. The research examined the influence of increased comparative price information (provided by a public agency) on the level and dispersion of retail food prices and the level of consumer satisfaction. Perceived and estimated benefits of the information program were also assessed.

quences of inadequate information or of altering the level of market information. Existing theoretical treatments of market information also have concentrated on competitive markets; the theory of information in imperfectly competitive markets approaches a zero set.

Conceptually, market information is an element of market structure, may influence other structural dimensions (concentration, entry conditions, and product or enterprise differentiation), and also affects market conduct and performance. Of particular interest in the study reported here is the effect of price information on two aspects of allocative efficiency—price dispersion and price level—and on consumer satisfaction.

Theoretical Effects of Information

Most economic models assume (implicitly or explicitly) that market participants have adequate information for rational decision making. Notwithstanding the work of Stigler, Diamond, Rothschild and Salop, few economists have considered the theoretical conse-

Expected Effects on Price Dispersion and Price Levels

In one of the early articles on information, Stigler emphasized that price dispersion is “ubiquitous even for homogeneous goods” and contended that the degree of price dispersion for homogeneous goods depends upon the level of buyer search.

In a homogeneous product market, price dispersion represents an undesirable imperfection. In such markets, the dissemination of additional price information is expected to reduce price dispersion and, if competition is effective, to lower price levels toward margi-

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nal costs. The results of increased information are theoretically predictable.

In markets with differentiated product-service offers, some degree of price dispersion is expected if buyers perceive alternative offers as imperfect substitutes. The concern in these markets is not whether price dispersion exists, but whether price differences reflect buyer preferences and seller costs. Inadequate price information is expected to result in price dispersions which do not accurately reflect differences in costs and preferences. However, it is theoretically impossible to predict whether price dispersions will be too wide or too narrow and hence to posit the expected effect of increased price information on price dispersion.

Theory provides somewhat more guidance concerning the expected effect of information on price levels in differentiated product markets. To the extent that increased price information erodes elements of market power, such as entry barriers, an information program likely would lead to lower prices. In an under-informed market, increased information also is likely to shift the competitive emphasis. When price information is poor and perceived store price differences are slight, consumers are expected to rely heavily on nonprice factors (store location, cleanliness, product selection, customer service, etc.) in selecting a store. Increased price information is expected to reverse this phenomenon—at least until the distribution of prices reaches a new equilibrium. Consumers are likely to become more sensitive to price in selecting stores; individual retailers will find the demand curve they face has shifted and become more elastic, encouraging price competition. At least in the short run, prices are expected to decline.

The above provides modest support for hypothesizing a drop in price levels in differentiated product markets when a price information program is initiated. The effect of such a program on price dispersion cannot be hypothesized, however.

Expected Effects on Consumer Satisfaction

The level of consumer satisfaction provides one measure of what Henderson has called "allocative accuracy." Allocative accuracy refers to the extent to which demand preferences and supply offerings match in terms of the quantity, quality and price of products, and the location and timing of production and

marketing. Marion and Handy have proposed direct measures of consumer satisfaction as indicators of the degree of "match" between actual supply offerings and the preference schedules of consumers.

Increased price information is expected to effect positively consumer satisfaction in several ways. Increased information should reduce the search time and the uncertainty of store selection decisions for individual consumers. Because consumers should be able to reveal more accurately their preferences through their store selection decisions, allocative accuracy would tend to be improved. At least in the long run, this should enhance consumer satisfaction. If price information reduces the level of prices, as hypothesized above, this also would be expected to increase consumer satisfaction unless preferred services or product quality are sacrificed in the process. Thus, a price information program is hypothesized to have a positive effect on consumer satisfaction.

Research Design

A pretest, post-test control-group research design was employed. Two Canadian metropolitan areas, Ottawa-Hull and Winnipeg, were used as test and control markets, respectively. Prices were collected weekly by trained enumerators on sixty-five food products in twenty-six supermarkets in the test market and in six supermarkets in the control market. The sixty-five food items were selected to represent adequately the major food categories of meat, fresh fruits and vegetables, dairy products, canned fruits and vegetables, major beverages, and cooking materials. A weighted price index (using expenditure weights) for the sixty-five item market basket was calculated each week for each store and each chain.

There were three phases of the study, all of which were done under the auspices of the Food Price Review Board of Canada. Phase I was a seventeen-week preinformation period during which prices in test market stores were collected and summarized but not published. Surveys of consumer satisfaction and shopping behavior in the test and control markets were also conducted. To improve the response rate normally associated with a mail questionnaire and simultaneously to avoid the cost of personal delivery and pickup, a premailing telephone survey was employed to identify

consumers willing to participate in the study. (Manitoba Government Telephones estimates that 95% of the households in the Winnipeg market have telephones. Bell Canada estimates that 99% of the households in Ottawa-Hull had telephones in 1976.)

Questionnaires were sent to 1,800 Ottawa consumers beginning the latter part of June. After a follow-up letter in mid-July, the final response rate was higher than 60%; 1,137 questionnaires had been completed and returned. Questionnaires were sent to 1,500 Winnipeg consumers in mid-July; 743 were returned by the first week in August.

Phase II was a five-week information period during which prices were collected weekly in both the test and control market supermarkets. Comparative price information on one-half of the individual items and for a weighted market basket was published weekly in the test market through daily newspapers and by direct mail to the sample of consumers participating in the Phase I survey of consumer satisfaction. Prices in the control market were collected but not published.

Phase III was a six-week postinformation period during which prices in both test and control markets were collected and summarized but not published. Post-test surveys of consumer satisfaction and shopping behavior were conducted in November in both markets. Questionnaires were sent to the 1,137 Ottawa consumers and 743 Winnipeg consumers who responded to the Phase I survey. Usable responses were received from 507 and 363 consumers, respectively.

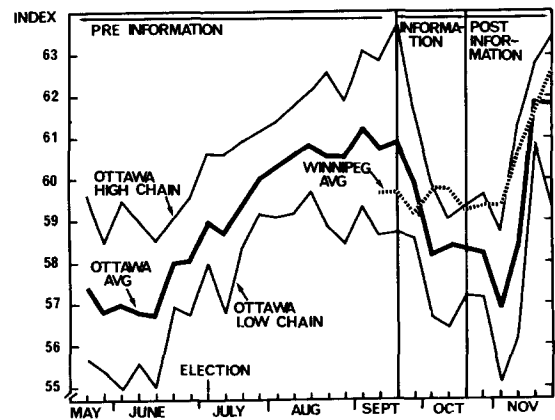
Major study hypotheses were: (a) significantly different prices for a standardized market basket of food products would be charged by competing sellers prior to the dissemination of comparative price information. (b) The public dissemination of comparative price information would alter the dispersion of prices across stores and lower the average market price level in the test market. (c) The level of consumer satisfaction with food stores and food products would increase significantly in the test market as a result of the comparative price information program. (d) The perceived and estimated value of comparative price information would exceed the cost of providing such information.

Findings

During the preinformation monitoring period, retail food prices rose steadily and reached a

peak immediately prior to the information program (fig. 1 and table 1). Statistically significant differences were found between the mean prices of the individual stores, between the mean prices of different chains, and between the mean prices in submarkets within the metropolitan area of Ottawa-Hull using analysis of variance (tables 2, 3, and 4).

Subsequent to the publication of comparative price information, average food prices declined 1.5% the first week, 3.0% the following week, and then remained relatively steady for the next three weeks (fig. 1 and table 1).¹ An additional price decline of 2.5% occurred during the week of 2 November, bringing the total decline over a six-week period to 7.1%. The price declines during the first, second, and sixth week after the start of the comparative price information program were greater than any price declines that occurred during the preinformation period. Mean prices in the Ottawa-Hull market were significantly lower midway through and immediately following the information program. As might be expected, the higher priced stores dropped prices more than relatively low priced stores. Similarly the higher priced chains reduced their prices more than the lower priced chains



Source: Food Prices Review Board Survey 1974, table 5.

Figure 1. Average weighted store price index levels for selected supermarkets, Ottawa-Hull and Winnipeg, 1974

¹ Prices were collected on Thursday, Friday, or Saturday and published in daily newspapers the following Thursday. Thus, on Thursday, 19 Sept., the first price comparisons were published and were for the week ending 14 Sept. Since retailers could not adjust their prices until the week after publication, retailer response to the comparison of prices in effect during the week of 14 Sept. was not evident until the week ending 28 Sept.

Table 1. Average Weekly Store Price Index Levels All Stores Ottawa-Hull and Winnipeg Plus High-Low Extremes for Ottawa-Hull, 1974

Date	Average Price Index Winnipeg	Average Price Index Ottawa	Ottawa-Hull By Firm			Ottawa-Hull By Store		
			Low Chain or Group	High Chain or Group	Percentage Difference	Low Store	High Store	Percentage Difference
May 19		57.41	55.62	59.60	6.67	53.23	61.46	7.87
May 26		56.81	55.36	58.43	5.25	54.81	59.44	7.78
June 2		56.93	54.98	59.46	7.53	53.61	61.37	12.64
June 7		56.81	55.56	58.98	5.47	54.35	59.57	7.63
June 14		56.75	54.99	58.49	5.98	54.32	59.59	8.84
June 21		57.99	56.91	59.05	3.94	56.36	59.95	6.04
June 28		58.09	56.70	59.60	4.86	55.91	60.13	7.01
July 5		58.99	57.99	60.74	4.52	57.65	62.91	8.36
July 12		58.65	56.73	60.69	6.52	56.49	62.90	10.19
July 19		59.30	58.31	60.94	4.31	57.27	62.22	7.95
July 26		59.94	59.11	61.18	3.38	57.34	62.93	8.88
Aug. 2		60.30	59.09	61.34	3.81	58.32	63.19	7.70
Aug. 9		60.58	59.18	61.75	4.32	58.76	62.84	5.82
Aug. 16		60.80	59.70	62.14	3.92	58.56	62.88	6.87
Aug. 23		60.60	58.81	62.58	6.02	58.09	63.71	8.82
Aug. 30		60.55	58.41	61.92	5.66	57.98	63.91	9.27
Sept. 7		61.15	59.37	63.07	5.86	58.38	65.59	10.99
Sept. 14 ^a	59.67	60.74	58.61	62.90	6.96	57.71	66.30	12.95
Sept. 21 ^a	59.70	60.89	58.70	63.70	7.84	57.59	67.78	15.03
Sept. 28 ^a	59.17	59.96	58.57	61.69	5.05	58.24	63.42	8.16
Oct. 5 ^a	59.73	58.12	56.61	59.83	5.38	55.98	60.73	7.82
Oct. 12 ^a	59.73	58.37	56.42	59.01	4.38	56.37	59.58	5.38
Oct. 19	59.29	58.29	57.18	59.37	3.68	55.60	60.93	8.74
Oct. 26	59.31	58.22	57.13	59.66	4.24	55.24	60.33	8.43
Nov. 2	59.35	56.85	55.17	58.72	6.04	54.17	59.87	9.52
Nov. 9	60.54	58.35	56.19	61.27	8.29	55.07	62.29	11.59
Nov. 23	61.78	61.85	60.86	62.79	3.07	59.97	63.77	5.95
Nov. 30	62.57	61.77	59.50	63.39	6.36	58.79	63.89	7.98

Source: Food Prices Review Board Survey, 1974.

^a Weeks for which Ottawa prices were published during the following week.

(table 3). The difference in price index levels between high and low priced stores dropped from a maximum of 15% during the pre-information period to a low of 5.4% after the

publication of information (table 1). During the same period, the range of prices between high and low priced chains declined from a maximum of 7.3% to a low of 3.1%.

Table 2. Analysis of Variance of Food Price Index Levels for Individual Stores during Selected Time Periods, Ottawa-Hull, 1974

Time Period/ Selected Statistics	Mean Price Index	Price Index Range		Percentage Difference	F Value
		Low Store	High Store		
a. Pre-election period 19 May to 28 June	57.25	55.01	59.97	8.66	12.42 ^a
b. Postelection preinformation 5 July to 21 September	60.20	57.70	63.55	9.71	12.73 ^a
c. Immediate information period 28 September to 26 October	58.59	57.40	61.98	7.83	2.18 ^a
d. Entire survey period 19 May to 9 November ^b	58.89	56.70	61.06	7.40	11.18 ^a

^a Significant at the 99% level of confidence.^b Although the Food Price Review Board collected price data during the weeks of 23 November and 30 November, it would not release data to the authors on individual stores. For this reason, the significance of price differences during the post-information period could not be examined. The Board did release data on the price index of the high and low stores and chains for these weeks, however (table 1.).

Table 3. Average Food Price Indices for Voluntary or Corporate Chains during Pretest and Post-test Periods, Ottawa-Hull, 1974

	Preinformation Price Indices (19 May to 21 Sept.)	Information and Postinformation Price Indices (28 Sept. to 9 Nov.)	Change in Price Index	
			Absolute	Percent
IGA	60.81	59.41	-1.40	-2.30
Dominion	57.64	57.16	-0.48	-0.80
Loblaws	59.70	59.18	-0.52	-0.87
A&P	60.31	58.73	-1.58	-2.61
Steinbergs	58.23	57.67	-0.56	-0.96
A.L. Raymond	59.50	57.82	-1.68	-2.82
Range	3.17	2.25		
F value, analysis of variance	9.51 ^a	3.85 ^a		

Source: Food Prices Review Board Survey, 1974.

^a Statistically significant at 99% confidence level.

It should be noted, however, that the dispersion of prices in the market reached its high during the week ending 21 September, the first week of publishing comparative price information but before initial retailer response. It is more appropriate to compare the average range of prices during the twelve weeks prior to the information program (9.71%) to the range in prices during the information program (7.83%). The decline in the dispersion of prices was statistically significant at the 90% level based upon an *F* test of the difference in normalized variances.

Within two weeks after the termination of the public information program, average retail food prices in the test market began to rise and increased 8.8% by the end of the research period.

Although there were statistically significant declines in the overall price level and in the price dispersion among stores, significant differences between the price level of individual retail outlets remained during the information period (table 2). The differences in the average prices of individual chains declined but also

remained statistically significant (table 3). Dominion and IGA maintained their positions as the low and high priced chains, respectively.

It was expected that the lack of information might be particularly detrimental in low income areas where a lower level of consumer search is less able to police competition. Price data supported this expectation. Ottawa South and Gatineau-Hull, the lower income areas, had significantly higher prices during the pre-information period than Ottawa East, a higher income area (table 4). During the information program, prices in Gatineau-Hull dropped by 4%, to make it the lowest priced of the four areas. Statistical tests, however, revealed no significant difference in the prices in the four areas during the post information period.

Average prices in the control market (Winnipeg) were relatively stable during the test market information period (prices declined 0.6% compared to 7.0% in the test market). During the postinformation period, average prices in Winnipeg increased 5.4% (compared to 8.8% in test market). The cost of the market

Table 4. Store Price Levels by Geographic Area during Pretest and Post-test Period, Ottawa-Hull, 1974

Area	Income per Family (\$)	Preinformation Average Price Index	Information and Postinformation Average Price Index	Percentage of Change
Ottawa West	12,890	60.08	58.07	-3.34
Ottawa South	10,540	60.60	59.27	-2.19
Ottawa East	12,561	59.29 ^a	58.27	-1.95
Gatineau-Hull	9,508	60.32	57.93	-3.96

Source: Food Prices Review Board Survey Data, 1974.

^a Significantly different at the 95% confidence level.

basket was 2% higher in the test market than in the control market at the beginning of the information period. During the final week monitored, prices were 1.3% lower in the test market. Thus, although the sharp price increases in the test market during the post-information period offset the price reductions sustained during the information period, prices in the test market relative to prices in the control market were 3.3% lower at the end of the study than at the start of the information program. The Canadian Consumer Price Index, constructed by Statistics Canada, reflected the price changes that occurred in Ottawa and Winnipeg during this period (fig. 2).

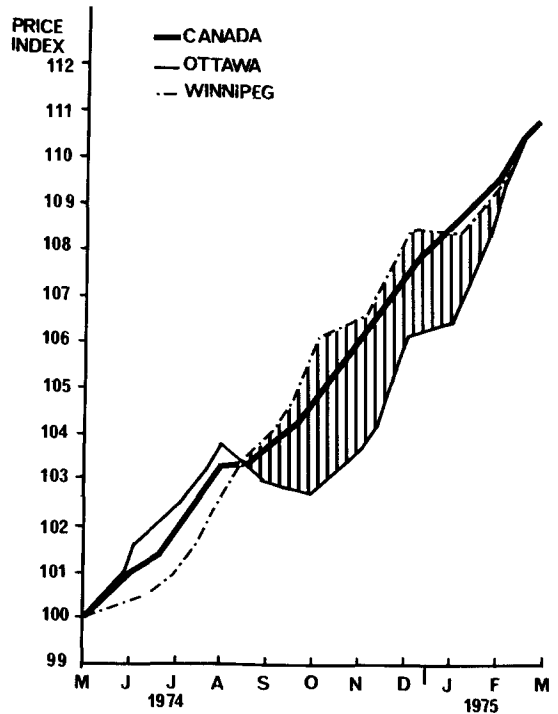
On average, stores changed prices each week on 43% of the items price-checked. The frequency of price changes was surprisingly similar for different chains, ranging from 40.6% for Dominion to 46.5% for Loblaws. Higher priced firms tended to change prices slightly more often than lower priced firms. This may have been largely in response to the price comparison program, as higher priced stores and firms dropped their prices to become "competitive."

Half of the items included in the market basket were identified in the weekly publishing of comparative prices. Because the identity of the remaining items in the market basket were never revealed, it was expected that price adjustments by retailers necessarily would be made on a broad range of products.

Changes in the price index for published items were compared with changes in the price index of nonidentified items. The price index for published items declined 5.8% during the information period compared to 7.8% for the unidentified items. The price index for the published items then increased by 9.8% by the end of the study compared to a 5.6% increase for unidentified items. Statistical tests (*t* test) revealed no significant difference in the price level changes or the frequency of price changes made in the two groups of items.

Results of Consumer Satisfaction Surveys

Table 5 summarizes the pretest and post-test surveys of consumer satisfaction in the test and control markets. Possible scores range from 1.00 if all consumers surveyed indicated they were "always satisfied" to 5.00 if all consumers said they were "never satisfied". Because higher scores indicate higher levels of



Note: Observations are made once a month during first two weeks of each month. Source: Statistics Canada.

Figure 2. Consumer price index for food consumed at home, May 1974 to March 1975 (May 1974 = 100)

dissatisfaction, we refer to the scores as "Mean Dissatisfaction Scores."

An examination of the first column of scores in table 5 indicates that Ottawa consumers were generally quite satisfied with both food products and food stores during the pretest period. With respect to information provided by food stores, consumers were moderately satisfied with the information in stores about prices (MDS of 2.77) and the reliability and truthfulness of advertisements sponsored by stores (MDS of 2.81). They were least satisfied with information about the freshness of perishable food products (MDS of 3.26), with manufacturer advertising (MDS of 3.27), and nutritional labeling (MDS of 3.32).

Although consumers were, on average, "almost always satisfied" with their ability to choose between stores (MDS of 2.08), they were less satisfied with the information available for making store comparisons (MDS of 2.91). When asked, "How often could you use additional information to help you compare products and choose between stores?" 21% said always, 32% almost always, and 36% said

Table 5. Levels of Consumer Satisfaction during Pretest and Post-test, Ottawa-Hull and Winnipeg, 1974

	Ottawa-Hull Pretest	Ottawa-Hull Post-test	Winnipeg Pretest	Winnipeg Post-Test	Change in Ottawa Relative to Change in Winnipeg (%)
1. Food products in general	2.42	2.36	2.18	2.26	6.14
2. Ingredient labeling	2.50	NA	2.46	NA	
3. Manufacturers' advertising	3.27	NA	3.11	NA	
4. Nutritional labeling	3.32	NA	3.10	NA	
5. Food stores in general	2.52	2.49	2.23	2.24	1.64
6. Instore price information	2.77	NA	2.23	NA	
7. Store advertisements	2.81	NA	2.52	NA	
8. Information about freshness	3.26	NA	2.71	NA	
9. Food store prices	3.47	3.40	3.28	3.36	4.46
10. Store services	2.52	2.50	2.13	2.25	6.42
11. Clerk friendliness	2.29	2.20	1.93	1.96	5.48
12. Store cleanliness	2.23	2.21	1.89	1.96	4.60
13. Selection of foods	2.23	2.37	1.91	2.13	6.51
14. Speed of checkout	3.16	3.12	2.45	2.60	7.40
15. Store layout	2.20	2.21	1.91	1.99	3.74
16. Parking space	1.85	1.75	1.72	1.70	4.24
17. Prices on weekly specials	2.76	2.66	2.47	2.67	11.72
18. Availability of advertised items	2.54	2.50	2.14	2.27	8.22
19. Accuracy of checkout clerks	1.97	1.98	1.89	1.88	-1.00
20. Clarity of price markings	2.85	2.86	2.33	2.55	8.90
21. Your ability to choose between stores	2.08	2.13	1.82	1.97	5.84
22. Information available for comparing stores	2.91	2.82	2.54	2.78	12.53
Average (Var. 1, 5, 9-22)	2.50	2.47	2.18	2.29	6.18

sometimes. Only 10% indicated they rarely or never needed additional information. Young and better-educated consumers were significantly less satisfied with the information available for making store comparisons.

The student's *t* statistic was used to test the hypothesis that the increase in consumer satisfaction in the test market was significantly greater than the increase in consumer satisfaction in the control market. The specific test involved sixteen variables concerning food stores and their characteristics (1, 5, and 9-22 in table 5). The change in attitude among Ottawa-Hull respondents concerning store characteristics was significantly different than the change in attitude among Winnipeg consumers. Whereas Winnipeg respondents generally became more dissatisfied between the pretest and post-test, Ottawa-Hull respondents either increased in satisfaction or their dissatisfaction increased less than their Winnipeg counterparts.

The last column in table 5 indicates that for fifteen of the sixteen characteristics, Ottawa consumers increased their satisfaction relative

to Winnipeg consumers from pretest to post-test. The relative increases in satisfaction were greatest for the "information available for comparing stores" and for "prices on weekly specials." This was expected. The relative increase in Ottawa consumers' satisfaction with their "ability to choose between stores" was less than expected.

The comparative price information program appears to have generally enhanced consumer satisfaction with food stores and their characteristics, even when the characteristics were unrelated to price information. (It is doubtful, for example, that the comparative price information program had an effect on store layout or parking space, yet Ottawa consumers indicated a relative increase in satisfaction with these factors over the study period.) This so-called "halo effect" has been found in other attitudinal studies and complicates the interpretation of results.

Consumers in both the test and control markets were asked in the post-test mail survey if they had recently changed stores. Approximately 43% of the Ottawa-Hull respondents

indicated they had temporarily or permanently changed stores compared to 18% of the Winnipeg respondents.

Consumer patronage in the Ottawa-Hull market shifted to retail stores with lower price index levels—suggesting that preinformation differences in prices did not reflect accurately consumer valuation of the differences in product-service offerings.² This led to an increase in the share of market held by the top four corporate chains from 74% to 81%. By comparison, the major store types in Winnipeg maintained relatively constant market shares.

Perceived Value of Information Program

Consumers in the test market were asked to indicate the maximum value they would be willing to pay to receive the comparative price information on a weekly basis. The mean value was 34.14¢ per week. There was no significant difference in the willingness to pay by that half of the sample who received the price comparison information by direct mail (as well as through newspapers) and the half who received the information through newspapers only.

Consumers in the test market were asked several specific questions about the experimental information program. When asked if the information program saved them time, 87% of the respondents replied “yes” or “sometimes.” Similarly, 94% of the respondents indicated that the information program made them more aware of price differences between stores and between products. When asked to describe what they thought of the information program, the majority of consumers indicated that the program either (a) made them more aware, (b) reduced price levels, (c) increased competition, or (d) some combination thereof.

² When asked, “At what store do you buy most of your food?” test market consumers responded as follows during the pretest and post-test periods.

	Pretest	Post-test
A&P	1	1
Dominion	20	25
IGA	17	15
Loblaws	25	23
Steinbergs	27	32
A L. Raymond	8	3.5
Others	2	0.5

Measures of Consumer Benefit

The information on food price comparisons provided by the study was a short-term “public good.” Its value was not determined by the traditional market forces of supply and demand. Consequently, consumers’ perceived value of the information served as a proxy in the absence of a market estimate.

Consumers indicated they would, on average, be willing to pay 34.14¢ per week or \$1.36 per month for the price comparison information. With 118,000 families in the Ottawa-Hull market, the potential support for such a program would be about \$174,541 a month and \$2,094,500 annually. Although we expect these to be inflated estimates due to response bias, they provide a “ball park” estimate of the perceived value of the information program. The cost of the program, including consumer questionnaires, was approximately \$3,500 per month.

The benefits of the comparative price program also can be estimated by computing the change in consumer surplus. With total monthly expenditures on food in the test market of \$17,700,000, and assuming an aggregate demand elasticity of -0.2, a 5% drop in prices would result in an estimated gain in consumer surplus of \$892,525.00 and a loss to retailers of \$883,691.00. The resulting net benefit to society is \$8,834.00 per month, assuming no changes in firm costs. If the price decline was associated at least in part with cost reductions, the net benefit to society would be correspondingly larger. It is of interest to note that if a permanent drop in price of 1% is assumed, the estimated gain in consumer surplus is \$178,505 per month. This compares to \$174,541 per month that consumers indicated they would be willing to pay for price comparison information.

Economic Implications

The results of this study indicate that the performance of markets can be affected significantly by the distribution of accurate and credible market information. Statistical analyses confirmed the major study hypotheses. (a) Significantly different prices for a standardized market basket of food products would be charged by competing sellers prior to the dissemination of comparative price information. (b) The public dissemination of comparative

price information would alter the dispersion of prices between stores and lower the average price level in the market. (c) Consumers in the test market who received information on comparative price offerings would show a significant increase in the level of satisfaction with market performance compared to consumers in the control group. (d) The perceived and estimated value of comparative price information would exceed the cost of providing such information.

Although the short period during which information was published precludes an assessment of the long-run results of such a program, in the short run, both pricing efficiency and consumer satisfaction were enhanced. In highly concentrated markets, the long-run consequences of a price information program might not be as laudable. The program might be used as an instrument for price collusion. If prices were monitored simultaneously in several markets, some of which were effectively competitive, collusive behavior might be detectable, however. The long-run effects of both continuous and intermittent information programs are currently being examined by the authors (Devine, 1978).

Market information is itself a dimension of market structure; however, it also influences other market structure dimensions. Estimated four-firm concentration in the test market increased from 74% to 81% between the pretest and post-test surveys. Because lower priced chains increased their market shares at the expense of higher priced firms, this shift appears to have resulted from the information program. Although the information program also was expected to reduce entry barriers, no measure of this structural dimension was attempted. In the long run, the structural change potential of market information may be more important than the immediate changes in market conduct and performance.

Consumers in the market derived benefit from the public dissemination of information whether they used the information or not. The fact that they could have used the information was enough of an impetus to generate a general price decline from which all consumers benefited. Additional benefits were realized by consumers who used the information to select lower priced stores. Forty-three percent of the test market respondents indicated that they changed stores as a result of the information program. This suggests that a significant proportion of consumers captured both the pri-

mary and secondary benefits of the additional information.

The results of this research indicate that public dissemination of retail price information deserves serious consideration. In addition to the effects indicated above, additional factors to be considered include:

(a) Comparative price information is essentially a public good.

(b) An inherent free rider problem is likely to prevent the private provision of comparative price information on a sufficient scale to police markets. Consumers quickly recognize that as long as "other" consumers search, the fruits of search activity can be enjoyed without the labor.

(c) Markets cannot be responsive to consumer preferences without some minimum level of consumer knowledge. Although the minimum is as yet undefined, existing levels of information in many consumer markets are thought to be inadequate. The response of consumers and retailers to increased information in this study indicates that pretest information levels were not sufficient to provide a stable informed equilibrium.

(d) Markets for consumer goods are becoming increasingly complex, making the search and evaluation process more difficult.

(e) Market price information is widely accepted in many commodity markets (both spot and futures), the stock exchanges, money markets, etc. In some of these, public agencies are responsible for gathering and reporting information; in others, private agencies do the job. Newspapers report much of this information free because of reader interest.

Consumers obviously choose their food stores on the basis of price and nonprice factors. Price comparison programs generally ignore differences in nonprice factors and leave it to consumers to evaluate such factors as store location, customer services, meat and produce quality, and store environment. Because nonprice factors are difficult to measure and are valued differently by different consumers, programs to provide comparative information on nonprice factors would appear to hold less potential for social benefits than a price comparison program.

Some may argue that developing price information programs is public invasion of business establishments. However, we contend that public comparison of privately publicized prices is a legitimate function of the public sector. Although privately produced, prices

are publicly displayed on counters, shelves, and in media advertisements every day of the week. Retail prices are therefore neither confidential nor private information. Only if price information is adequate and is shared among participants can we expect markets to perform efficiently.

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