ADVERTISING AND THE FOOD SYSTEM

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PUBLIC PROVISION OF COMPARATIVE FOODSTORE PRICE INFORMATION: PROBLEMS, POTENTIALS, AND ISSUES

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Commercial buyer-seller communications may be categorized by their sponsorship (private versus public), origin (seller-dominated versus buyer-dominated), intent (persuasive versus informative) and by the object of the communication (ideas, products, services or features such as quality and price). Conventional advertising occupies only one box of this communication matrix, although it is dominant box. The purpose of this paper is to examine another cell of this matrix, that occupied by public systems of comparative food price information. While this is not an empty economic box, neither is it a crowded one.

The bias here is that these various forms of commercial communications are more complementary than competitive. The emphasis on the advertising component of this communication spectrum simply results from a market bias in favor of communications which meet a private market test and further profit-oriented objectives. The failure to develop a comprehensive set of commercial communications is a standard form of market failure. Public policies may be one appropriate remedy for this imbalance of commercial communications.

A recent study at Purdue University provides some insights into the problems and potentials of public price reporting (Uhl *et al.* 1981). This experiment in price reporting raised a number of questions about the desirability, possibility and operational procedures involved in this form of commercial communication. This paper focuses more on the process and problems of public food price reporting than on the results of the experiment.

Let me say at the outset that I do not believe retail food prices and profits are necessarily exploitive, that food consumers are only interested in prices, that food consumers make poor judgements with the presently available information, or that the weekly retail food ads are devoid of valuable price information. In buying food, consumers generally have available to them better price information than is the case for some other products which take a larger share of the consumers' dollar, notably housing and transportation.

COMPARATIVE FOOD PRICE REPORTING

Comparative food price information (CFPI) is defined as any information which increases consumers' knowledge and understanding of the structure of food prices at competing food stores in a local market. Two relevant characteristics of this price structure are relative price levels and dispersion. CFPI can be secured from a number of sources: consumers' shopping history, interpersonal communications, direct market experiences, and seller-dominated communication channels. Little is really known about the processes by which consumers form perceptions of relative foodstore price structures and even less about their accuracy.

The weekly food ads of grocers are an important source of comparative food price information. These reports contain considerable amounts of useful price information, though there is a question of whether they provide *comparative* information. It would appear that these ads do contain somewhat biased data on comparative marketbasket costs which can be of substantial interest and value to consumers who are quite flexible in their puchase decision. However, the weekly food ads do not provide item-to-item comparisons and are less useful for consumers with fixed and unique marketbaskets.

It is helpful to view retail food price information along a spectrum of store and product information. At one end of the spectrum are global market reports such as those of the Bureau of Labor Statistics.[2] At the other end of this continuum are reports which provide direct item and store level comparisons of local grocers. Somewhere in between are the grocery ads and the state and local market reports which give general market price levels. Each source provides useful information for food consumers but does not tell all consumers everything they might wish to know about food prices.

Table 1. Food Price Reporting Agencies

The following agencies were known or believed to be producing a retail food price report in early 1980. Some of these reports include specific store and item prices while others give only marketbasket totals or price ranges for a market. The frequency of publication also varies widely.

Newspapers
Miami *Herald*
Racine (Wisc.) *Journal-Times*
Fort Wayne (Ind.) *News-Sentinel*
Kalamazoo (Mich.) *Gazette*
Rockford (Ill.) *Register-Republic*
Joplin (Mo.) *Globe*
Boston *Globe*
Jackson (Miss.) *News*
Chicago *Tribune*
Lafayette (Ind.) *Journal-Courier*
Terre Haute *Tribune-Star*
Evansville (Ind.) *Courier-Press*
Honolulu (Haw.) *Advertiser*

Broadcast
KLIF (Dallas)
KAAM (Dallas)

Local, State & Federal Government
State of New York, Department of Agriculture & Markets
New York, Department of Consumer Affairs
California Cooperative Extension Service, Sacramento
Dade County Cooperative Extension Service
Honolulu Department of Agriculture, Honolulu, HI

Other Agencies
Arkansas Consumer Research, Little Rock, Ark.
Indiana Public Interest Research Group, Bloomington, Ind.
Vector Enterprises, Santa Monica, California (15 cities, Cable-TV).
Consumer Checkbook, Center For the Study of Services, Washington D.C.
Charles Ambler & Associates, Ld., Toronto, Canada
San Diego Public Interest Group
Illinois Public Interest Group, Carbondale

Table 1 provides an incomplete list of agencies involved in comparative food price reporting as of early 1980. This includes newspapers, broadcast media, local consumer groups and state and local government agencies. Food price reporting is in its infancy and most of these programs can be labeled experimental.

THE FOOD CONSUMERS' INFORMATION PROBLEM

The rationale for comparative food price reporting rests on there being economically significant price differences between competing food stores which consumers are not fully aware of, do not search for, and if known to consumers would influence their shopping and purchasing behavior. The costs of this potential information market failure are manifest in sub-optional matches of consumer preferences with store alternatives and losses in economic efficiency. The food consumers' information problem is caused by the large number of products offered and purchased, the complex price-quality comparisons required of food consumers, the pricing strategies of food processors and retailers, and the frequency of food price changes.

This information problem is not the fault of consumers or grocers alone. It is an economic problem. Information is expensive to produce, distribute, and process. The market may not automatically produce all relevant information which might improve food consumers' decisions, and some information may even confuse their decisions. Nor do consumers always encourage or use such information.

There are three general approaches to solving the food consumers' information problem: (1) direct consumer search and observation; (2) trade-supplied mass media information (chiefly ads); and (3) third-party consumer information services. The Purdue price report was an example of the latter. One surprising result of the Purdue study is that consumers judged the weekly ads as generally more useful sources of food price information than the comparative price reports. In part, this may have reflected familiarity with these alternative information sources, but it also underscores the complementarity of these forms of information.

Consumer search and voluntary price disclosure are the private market solutions to the food consumers' information problem. No doubt these do provide considerable information for food consumers. However, the cost of information and the combining of merchandising strategies with the provision of food price information would appear to result in some imperfect information. The magnitude and costs of this information imperfection are difficult to estimate but important in judging the case for public price reporting.

REVIEW OF PRICE REPORTING RESEARCH

Research into the practicality and effects of retail price reporting is rather sparse. The extension of market news to the retail-consumer level of the market no doubt occurred to the early pioneers of market news. However, federal market news has been confined for the most part to the producer and wholesale levels of the food system. It is puzzling that market

news has been so accepted and appreciated at those levels of the market and yet so unappreciated and untried at the retail level.

In 1952, the USDA Production and Marketing Administration conducted an inquiry into the benefits, practicality and costs of retail food market news programs in Boston, Providence, New York City, and Baltimore (McCallister *et al.* 1952). Although the data are rather sketchy, the study concluded that programs tended to improve pricing efficiency in those markets and brought about an overall economic improvement. Food price reporting lay dormant for some 20 years following this study. Interest in retail food market news intensified with the accelerated rates of food price rises after 1972. The Associated Press began publishing its 13-city food marketbasket report in 1973. Many of the newspaper price reports cited in Table 1 also started in the early 1970's. The Vector Consumer Newsletter began providing food price comparisons at several Los Angeles stores in 1973. Today Vector is doing comparative food price reporting in several cities broadcasting this information over cable-TV systems.

In 1973, the Federal Trade Commission issued a request for proposals to design an experimental comparative supermarket price reporting system.[3] The stated purposes were to generate data which would be useful in documenting alleged unfair methods of competition and advertising; to encourage supermarkets to make truthful price claims; and to aid consumers in supermarket selection. No action came of this program and the proposals solicited by this request are still not available to the public.

Several retail grocery firms have attempted various forms of comparative food price reporting in recent years. Usually, this involves a comparative price report for a standardized marketbasket at several competing stores. The methodology is quite similar to that which has been used by public price reporting programs. The Kroger Price Patrol program was an example.

Grant Devine conducted the first comprehensive evaluation of comparative food price reporting (Devine 1976, Devine and Marion 1979). Comparative food prices were collected and published for several grocery stores in Ottawa-Hull, Canada over five consecutive weeks in the spring of 1974. Price movements were compared in this market prior to, during and following the price reports and also with prices in a control market (Winnipeg) where prices were monitored but not published. Some conclusions were that: (1) food prices fell about 7 percent as a result of the Ottawa price reports at a time while prices were generally rising in the control market; (2) prices rebounded 8.8 percent—or returned to about the original levels—shortly after the price reports were terminated; and (3) some 43 percent of consumers in the test market changed stores as a result of this information program. These very powerful results appear to give strong support to the concept of comparative price reporting. Total U.S. expenditures for home food consumption were $173 billion in 1979. A hypothetical 7 percent price reduction would amount to a $12 billion annual savings on the U.S. food bill, or $5.60 per week on the average family's home food expenditure of $80.

Needless to say the Devine study created a great deal of interest in price reporting. Not even the most ardent supporters would have predicted *that* much price or consumer response to price reporting. The study had

numerous problems that have been criticized—lack of replications, a short reporting period, trade opposition and other assorted limitations. It is suggestive, but not conclusive. Devine has indicated that another 1975 study of price reporting in Saskatchewan—with six months of price reporting—produced quite similar results.

Researchers at Purdue conducted a rather comprehensive study of comparative food price reporting in late 1979 and early 1980. The project was jointly sponsored by the USDA's Agricultural Marketing Service (AMS) and Purdue's Department of Agricultural Economics. The AMS's interest in this area reflects its market news mission and responsibility for insuring the timely dissemination of relevant, unbiased information to participants in agricultural markets. The Purdue study resulted from a 1978 USDA-AMS task force report which recommended that the agency investigate the potential benefits and alternative methods of retail food price reporting (Task Force 1978).

The plan of the Purdue study was to replicate Devine's method in more than one U.S. city and to publish prices for 18 weeks. Although the Purdue reports were terminated early because of trade opposition, a considerable amount of information about price reporting was collected. The results in some cases parallel those of Devine and in other cases do not support his findings. Reports were published for from 6 to 12 weeks in four medium-sized cities: Springfield, Missouri; Des Moines, Iowa; South Bend, Indiana; and Erie, Pennsylvania. Each of these cities was matched with another city in the same state where prices were monitored but not published. Prices were collected in all eight cities for 5 weeks prior to the publication of the price reports, 6-12 weeks during the publication period and for 8 weeks after the price reports were no longer published.

A sample of the Purdue price report is shown in Figure 1. These reports contained three types of information on the eight stores in each market: (1) comparative item prices; (2) departmental comparisons; and (3) 100-item marketbasket comparisons. The items for the report were chosen to represent important and frequently purchased grocery products, including some non-foods.

There were numerous judgments to be made in this type of study. How many stores should be in the report? Which ones? How large is the market area? How often should prices be reported? How large should the marketbasket be? Which items should be included? Should the items in the marketbasket change periodically? How should the report be constructed and disseminated? What should the grocers be told? How will the prices be collected, and by whom, and when? Cost will often be a factor in these decisions, as will comprehensiveness, fairness, accuracy, timeliness, ease of use and understanding, and credibility. Each food price reporting system will satisfy these criteria to varying degrees and compromises are inevitable.

Although the final report of this study has not been issued as of this writing, a few results can be summarized. First, the four markets responded quite differently to the price reporting experiments. Prices in Springfield fell about 5 percent relative to those in the control city during the 6 weeks of published price reports. This is similar to Devine's result. The Springfield grocers contended that the reports triggered a price war in

Figure 1

Your grocery shopping guide

The Des Moines Tribune-Purdue University food price survey is compiled from prices checked at eight Des Moines area stores each Wednesday. The survey was designed by economists at Purdue and data are collected by people trained in price reporting. The chart includes price comparisons for 26 commonly purchased items, plus a marketbasket of 100 food and non-food items found in the typical consumer's food budget.

The survey does not tell consumers where to shop, but it may be used as a guide in weekly grocery selections. Survey officials note that quality, convenience and other factors—along with prices—influence consumer choices.

PRICES OF SELECTED INDIVIDUAL ITEMS (Lowest price in bold type)	Average	Dahl's 4121 Fleur Dr.	Dahl's 4343 Merle Hay Rd.	Hinky Dinky 4415 Douglas Ave.	HY-VEE Foods 170 35th St., W.D.M.	HI-VEE Foods 2559 E. Euclid Ave.	Safeway 329 Grand Ave., W.D.M.	Safeway 3200 S.W. 9th St.	Sherman's Super-Valu 2627 E. Univ. Ave.
CORN FLAKES Kellogg, 12 oz.	.74	.74	.74	.75	.74	.74	**.73**	**.73**	N.A.
WHEAT BREAD Roman Meal, 16 oz.	**.91**	**.91**	**.91**	**.91**	**.91**	**.91**	N.A.	**.91**	**.91**
GROUND BEEF least expensive, 1 lb.	1.50	1.45	1.45	1.59	**1.29**	1.55	1.53	1.59	1.55
PORTERHOUSE STEAK 1 lb.	3.14	3.19	3.09	2.99	3.19	3.09	N.A.	3.73	**2.69**
BEEF LIVER 1 lb.	1.16	1.49	1.29	1.09	1.29	**.99**	**.98**	**.98**	1.19
PORK CHOPS loin end, thick cut	1.57	N.A.	N.A.	N.A.	1.59	N.A.	**1.44**	**1.44**	1.79
BACON Oscar Mayer, 1 lb.	1.82	**1.39**	1.69	1.99	1.59	2.19	1.89	2.09	1.69
FRANKS beef, Oscar Mayer, 1 lb.	1.88	**1.59**	1.69	2.19	1.79	1.89	2.09	2.09	1.69
TURKEY Swift's Premium Butterball, 1 lb.	1.00	**.89**	**.89**	1.05	1.09	1.09	N.A.	.98	.99
CHICKEN BREASTS 1 lb.	1.21	1.29	1.29	1.19	1.39	1.29	**.98**	**.98**	1.29
EGGS Grade A, medium, doz.	.75	.81	.81	**.66**	.79	.79	.79	.69	.68
LOW-FAT MILK 2%, least expensive, ½ gal.	.98	1.01	1.01	1.01	1.01	1.01	**.89**	**.89**	1.03
COTTAGE CHEESE least expensive, 24 oz.	1.32	1.37	1.37	1.33	**1.29**	**1.29**	**1.29**	**1.29**	**1.29**
AMERICAN CHEESE SLICES Kraft, 12 oz.	1.64	1.72	1.72	1.75	**1.19**	1.69	1.75	1.69	1.61
CARROTS 1 lb. bag	.26	.25	.25	.34	**.20**	**.20**	.25	.25	.35
POTATOES russet, 5 lb. bag	.92	.99	.99	.89	.89	.99	N.A.	**.79**	N.A.
APPLES Golden Delicious, 3 lb. bag	1.35	1.39	1.39	**1.19**	1.59	1.49	**1.19**	**1.19**	N.A.
GREEN BEANS canned, least expensive, 15½-16 oz.	.34	.34	**.29**	.34	.34	.34	.34	.34	.40
FRUIT COCKTAIL Del Monte, 17 oz.	.63	.62	.62	.63	**.58**	.63	.63	.63	.67

***MARGARINE** least expensive, 1 lb. quarters*

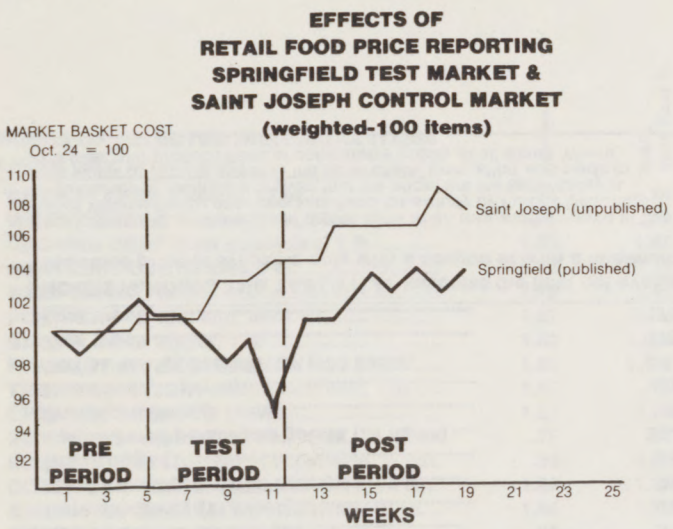
***MARGARINE** least expensive, 1 lb. quarters*	*.46*	*.43*	*.42*	***.40***	*.49*	*.49*	*.59*	*.44*	*.41*
***COFFEE** Butternut, regular grind, 1 lb. can...*	***3.19***	***3.19***	***3.19***	***3.19***	***3.19***	***3.19***	***3.19***	***3.19***	***3.19***
COLA least expensive, 12 oz. can.....	.20	**.17**	**.17**	.22	.22	.22	.21	.21	N.A.
BEEF DINNER Swansons, 11.5 oz.....	1.56	1.66	1.66	1.75	**1.31**	1.32	1.39	1.77	1.65
TOOTHPASTE Crest, 7 oz.....	1.25	1.36	1.36	1.24	1.24	1.24	**.99**	**.99**	1.58
TOILET PAPER least expensive, 4 roll pkg.	.72	**.59**	**.59**	.69	.79	.90	.79	**.59**	.80
LAUNDRY DETERGENT Tide, 49 oz.....	1.49	**1.29**	**1.29**	1.82	**1.29**	**1.29**	1.73	1.73	N.A.
COST OF ASSORTED MARKETBASKETS (Lowest price in bold type)									
Cereal/bakery (11 items).....		14.60	14.39	14.33	14.57	14.49	14.16	**14.12**	14.60
Meat, poultry, fish (30 items).....		71.75	**70.29**	71.34	73.05	73.19	75.71	78.02	71.67
Dairy/eggs (14 items).....		24.47	24.47	23.06	**22.15**	24.16	23.56	23.18	24.48
Canned and packaged goods (24 items)		**36.08**	36.11	37.33	36.23	36.38	36.89	37.08	37.59
Fresh produce (9 items).....		5.88	5.95	5.79	5.83	5.73	5.18	**4.97**	5.84
Non-food (12 items).....		22.35	22.11	22.74	21.43	22.01	23.92	**20.62**	24.89
TOTAL MARKETBASKET (100 items)									
This week.....		175.13	173.32	174.59	**173.26**	175.96	179.42	177.99	179.07
Last week.....		176.63	175.09	180.10	**173.09**	174.34	180.32	179.20	178.73

UNDERSTANDING THE TABLE N.A. Indicates the item not available this week in the listed size

• Indicates price is available only with a coupon or with a minimum purchase; or there is a limit to the quantity that may be purchased at this price

Prices quoted are those listed on the items when they were surveyed in Des Moines Wednesday by-price checkers hired for a study by Purdue University. No guarantee or assurance is given that the prices are the same today in these stores or in other stores in the same chain. Every effort was made to price meat and produce items of comparable quality at all stores. Where "least expensive" brands are priced some variation in the quality may exist due to differences in stores' standards for private- and plain-label products. In these cases, each shopper will have to decide which item is the best buy.

Figure 2


EFFECTS OF
RETAIL FOOD PRICE REPORTING
SPRINGFIELD TEST MARKET &
SAINT JOSEPH CONTROL MARKET
(weighted-100 items)
MARKET BASKET COST
Oct. 24 = 100
110
108
106
104
102
100
98
96
94
92
Saint Joseph (unpublished)
Springfield (published)
PRE PERIOD
TEST PERIOD
POST PERIOD
1 3 5 7 9 11 13 15 17 19 21 23 25
WEEKS

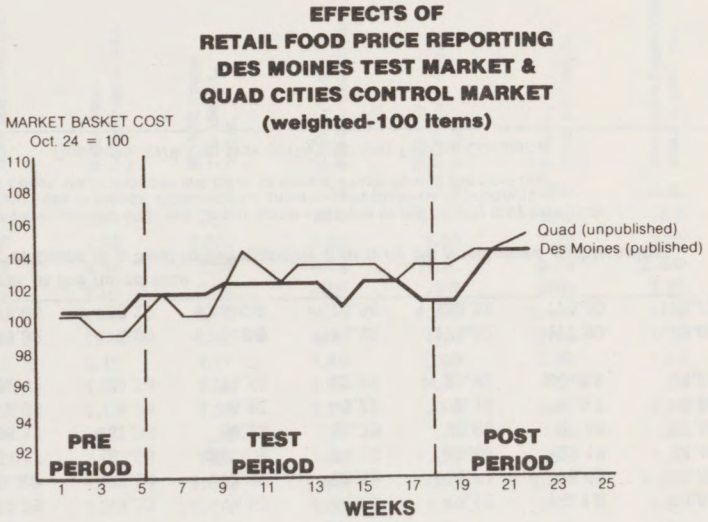
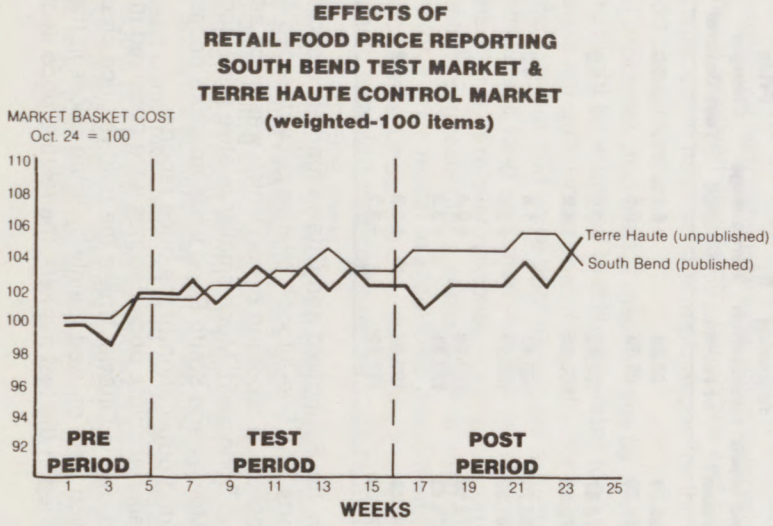
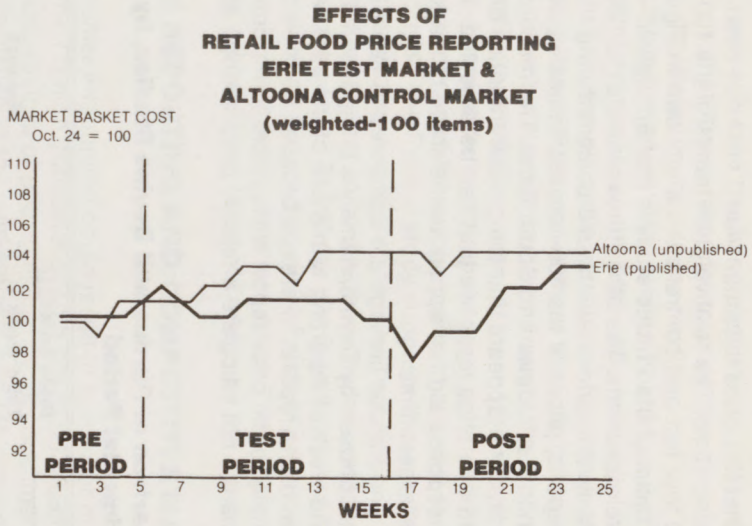

EFFECTS OF
RETAIL FOOD PRICE REPORTING
DES MOINES TEST MARKET &
QUAD CITIES CONTROL MARKET
(weighted-100 items)
MARKET BASKET COST
Oct. 24 = 100
110
108
106
104
102
100
98
96
94
92
Quad (unpublished)
Des Moines (published)
PRE PERIOD
TEST PERIOD
POST PERIOD
1 3 5 7 9 11 13 15 17 19 21 23 25
WEEKS

Figure 2


EFFECTS OF
RETAIL FOOD PRICE REPORTING
SOUTH BEND TEST MARKET &
TERRE HAUTE CONTROL MARKET
(weighted-100 items)
MARKET BASKET COST
Oct. 24 = 100
110
108
106
104
102
100
98
96
94
92
Terre Haute (unpublished)
South Bend (published)
PRE PERIOD
TEST PERIOD
POST PERIOD
1 3 5 7 9 11 13 15 17 19 21 23 25
WEEKS


EFFECTS OF
RETAIL FOOD PRICE REPORTING
ERIE TEST MARKET &
ALTOONA CONTROL MARKET
(weighted-100 items)
MARKET BASKET COST
Oct. 24 = 100
110
108
106
104
102
100
98
96
94
92
Altoona (unpublished)
Erie (published)
PRE PERIOD
TEST PERIOD
POST PERIOD
1 3 5 7 9 11 13 15 17 19 21 23 25
WEEKS

that market and that this price reduction would not have been sustainable over longer periods of time. The relative price trends of the 100-item market-baskets in the four test and control cities are shown in Figure 2.

The important result of the Purdue study is that Springfield—and probably Ottawa—were exceptions. The other three markets did not respond as dramatically. While Erie prices fell about 2 percent during the publication of the price reports, prices of the 100-item marketbasket actually *rose* during publication in Des Moines and South Bend. The reasons for this are not totally clear, but it appears that the greater the price dispersion in a market, the more of a price response that can be expected. The magnitude of the price response did not appear to the share of market controlled by the four largest firms.

The Canadian and Purdue findings are compared in Table 2. The analytical period is that chosen by Devine, namely a comparison of price levels in the second week of reporting with those of the third week following the termination of the reports.[4] Perhaps because Devine's test market responded drastically to the price report while prices in his control market were stable, Devine did not calculate a relative price change as has been done in Table 2.

Table 2. Comparison of Purdue and Devine Studies, by Cities, Experimental Period

Market	Price Index: Second week of report	Price Index: Third week following termination of report	Percentage Change	Relative Price Change: Test/Control	Length of reporting period (weeks)
Ottawa	60.89	56.85	−6.6%	−6.0	5
Winnipeg	59.70	59.35	−0.6		
Springfield	172.87	172.42	−0.3	−5.2	6
Saint Joseph	178.82	187.66	+4.9		
Erie	183.78	180.43	−1.8	−4.3	11
Altoona	181.38	185.87	+2.5		
South Bend	172.60	173.20	+0.4	−2.9	10
Terre Haute	165.43	170.81	+3.3		
Des Moines	180.38	185.59	+2.9	−0.8	12
Quad Cities	170.89	177.12	+3.7		

As can be seen, the Springfield and Ottawa markets responded similarly to their price reports. The Erie-Altoona relative price declined 4.3 percent over this period, despite a reporting period which was twice as long as that of Ottawa and Springfield. Much smaller relative price declines were observed in Des Moines and South Bend while absolute prices rose in these markets during publication of the price reports.

In general, smaller absolute price declines were observed in the U.S. test markets than occurred in Ottawa. Unlike the relative price changes in the Purdue study, which were caused mainly by rising prices in the control markets not matched in the test markets, the relative price decline in Ot-

tawa was caused primarily by a declining absolute price level in the reported market. Thus, the Ottawa response to price reporting was unique and was not fully duplicated in the Purdue study.

Consumers in the test markets were surveyed before and after the price reports. The consumer response to the price reports was not impressive. About 38 percent of the sample consumers in the four markets were aware of the Purdue reports and 60 percent of these thought the reports were "useful." Over 90 pecent of the respondents thought the reports were accurate, despite some trade effort to discredit them. However, the data do not show any significant shifts in store patronage patterns which can be traced to awareness or use of the price reports. In contrast to Devine's 43 percent store switching, the Purdue study suggests that very few consumers actually switched stores in response to price reporting.

Price reporting does appear to be a rather inexpensive operation. The Purdue system involved about $1,000 per city fixed costs and $180/week out-of-pocket costs for an 8-store survey. Even rather small benefits of price reporting could compensate for these costs. The benefit/cost ratios for price reporting will be shown to be quite high by the Purdue report.

RETAIL PRICE REPORTING AND COMPETITIVE MARKET PROCESSES

Imperfect consumer information could result in a number of market performance problems: (1) high consumer search costs; (2) misallocation of consumer resources; (3) loss of pricing efficiency as consumer preferences are imperfectly transmitted to the marketplace; and (4) impairment of the competitive processes by which consumers discipline competing firms. Depending upon what is assumed about entry conditions and pricing interdependency, the latter could have serious implications for the level of prices paid by food consumers.

The behavioral processes and market mechanisms by which comparative price reporting might be expected to influence retail food pricing patterns and price levels are quite complex and perhaps not fully understood. These involve consumer exit and voice options, retailer expectations and competitive responses, and long and short-run grocery pricing strategies.

A model of consumer and retailer responses to price reporting is shown in Figure 3. This model suggests that a complex set of interrelated behaviors are necessary for a price report to produce a procompetitive effect on retail foodstore price levels. Under the circumstances, it would be quite surprising if one could establish that comparative price reporting causes a detectable change in food price levels.

Actual or anticipated changes in store patronage paterns—associated with economically significant changes in store sales or profits—are the trigger to any pro-competitive effect of a price report. And yet, there are several reasons why a price report might not trigger a change in store patronage patterns. Some consumers may not be exposed to or aware of the report. Even exposed consumers may not read or believe the report. In addition, the report would not be expected to influence store patronage patterns if it merely confirmed what consumers knew or suspected to be true. Finally, consumers must judge the significance of the price differences and

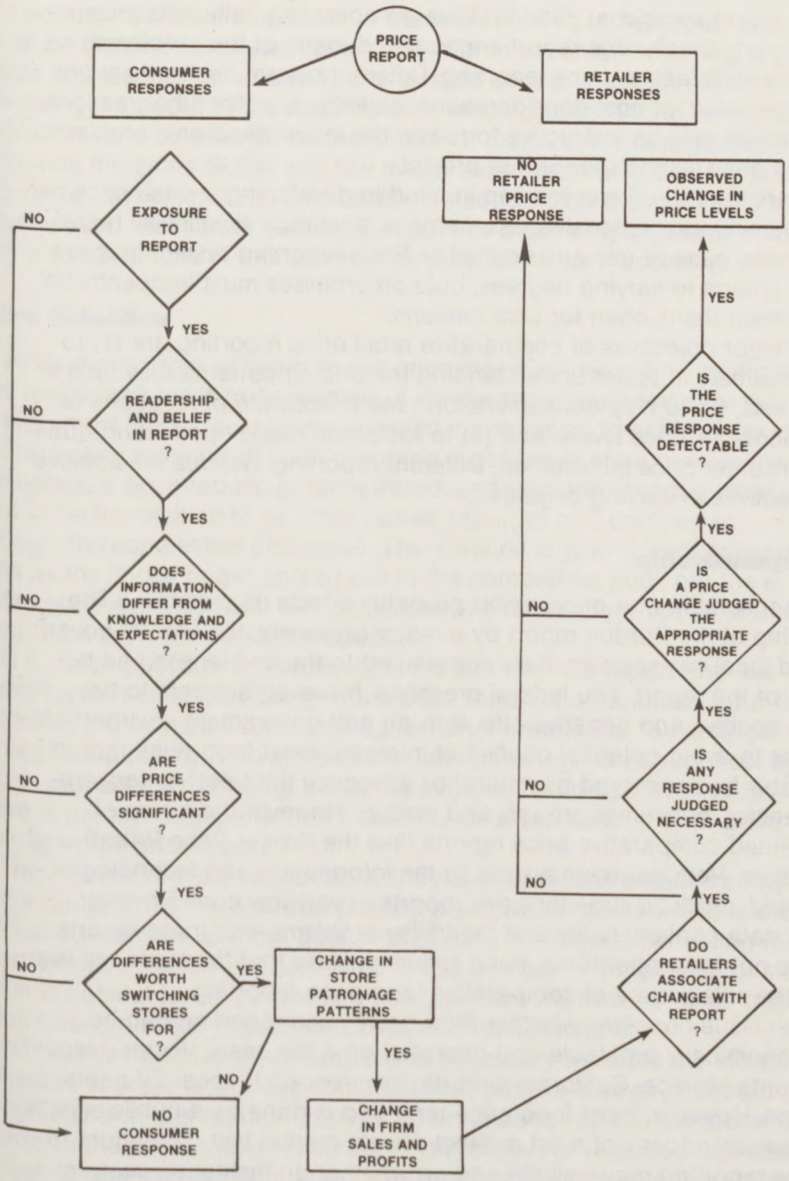
decide whether these differences justify a change in behavior. Given this chain of reactions and decisions, it is not so surprisng that the Purdue study could not document significant changes in consumer behavior which would reinforce the pro-competitive effects of price reporting.

This is not to say that price reporting has no value for consumers. The information provided by a price report could be useful to consumers in matching their preferences with alternative food stores and products, even if the information had no effect on overall store price levels. However, the lack of any price response to price reporting would confine the benefits of price reporting to those consumers who actually use the price information. The benefits of price reporting would be much more widely diffused if the price report lowered overall food price levels for all consumers, whether or not they use the report.

As shown in Figure 3, food retailers' decisions also enter into the price report response. Retailers must associate any changes in sales and profits with the price report. This may be difficult in noisy and dynamic food markets where numerous pricing forces are at work. The subtlety of a price report may simply be overshadowed by other events. Even if managers are persuaded that sales and profits are being influenced by a price report, some may not judge that any price response is warranted. Or, the firm may choose to make a non-price response to the report.

This is not to say that price reporting does not result in procompetitive price responses. Rather, it suggests that these responses may be rather difficult to isolate and document in some markets. In these circumstances the case for price reporting will be made more difficult. Another lesson of the model in Figure 3 is that the effects of price reporting depend somewhat on the process: how the reporting is done, how the information is presented, who does it, what retailers are told, and other aspects of the program.

Figure 3. Alternative Consumer and Retailer Responses to Price Reporting



LESSONS FOR FUTURE PUBLIC PRICE REPORTING EFFORTS

The decisions and experiences of the Purdue Price Reporting Project may be of interest to others who are doing or considering comparative retail food price reporting. Price reporting technology is still in its infancy,

and a sharing of information is critical to the development of improved price reporting systems.

While the dictates of the research project in some cases made the Purdue price report somewhat different from an operating, full-scale price reporting system, the Purdue report encountered many of the problems which others will face in price reporting. Different system decisions might be made because of cost considerations, objectives, or for other reasons. Nevertheless, it may be instructive to review the major decisions, problems, and issues dealt with in the Purdue project.

There are several criteria to keep in mind in developing a retail price reporting system: comprehensiveness, fairness, accuracy, timeliness, representativeness, ease of use and credibility. Each reporting system may satisfy these criteria to varying degrees, but compromises must frequently be made between them, often for cost reasons.

Three major objectives of comparative retail price reporting are (1) to assist consumers in better understanding the pricing patterns they face in local markets; (2) to help consumers form more accurate perceptions of relative foodstore price levels; and (3) to foster the market-perfecting qualities of consumer price information. Different reporting systems will achieve these objectives in varying degrees.

Report Sponsorship

The sponsorship of a price report probably affects its credibility. The sponsorship of the Purdue report by a major university, the federal government, and local newspapers likely contributed to the awareness and acceptance of the report. The federal presence, however, appears to have had both positive and negative effects in an anti-government environment.

In order to avoid potential conflict of interests, most food price reports will probably be sponsored by neutral or advocacy third parties (government agencies, consumer groups, and media). However the future of trade-oriented comparative price reports (like the Kroger Price Patrol) is of great interest. Retailers have access to the information and technologies which *could* produce superior price reports at very low cost. However, there are data confidentiality and credibility problems with trade reports. These are not insurmountable, but it seems unlikely that the trade will ever become the sole source of comparative food price reporting.

Another issue concerns whether third-party price reporting can be made economically profitable and operated on a fee basis. Vector Associates of Santa Monica, California sells its price reports to local TV cable companies. However, most food price reporting is done as a public service and presumably does not meet a direct private market test. The future of food price reporting may well depend on whether an institution evolves with the mission and capability of supporting comparative price reporting on a for-fee basis.

Selection of Market Area

Food price reporting is of necessity local. But for each system there is a question of how large a geographic area to include in the report. For cities such as those used in the Purdue project (100,000-500,000 population), the

SMSA is an appropriate market area since consumers can shop the entire market. In larger cities, neighborhood or regional submarkets may be appropriate price reporting regions.

Two approaches are possible in the large SMSA's. A separate report could be developed for each submarket within the SMSA with only local stores represented. Alternatively, there could be a total-SMSA report emphasizing the prices of the major chains which operate in the SMSA. This decision would be affected by the choice of media since newspapers tend to service the entire SMSA and few media exist which would target price reports to the submarkets. This decision also turns on the sponsor's attitudes toward the market perfecting nature of a price report which contains only a small sample of foodstores that consumers have access to.

Store Selection

While the number of stores in the price report influences its credibility and direct usefulness to consumers, it does not appear necessary that all or even most stores must be represented in the report to achieve the market perfecting qualities of price reporting. Because of store cross-price elasticities, a price-reducing force introduced into one reported store will tend to be transmitted to all other stores, reported and unreported, through the competitive processes. There will be lags and weakening effects as the "price rings" spread out in the competitive pool, but the effects are nevertheless real and constitute one reason that not all stores need to be represented in the report.

Is it fair to publicize the prices of some stores in the report and not others? It isn't clear that being in the price report is a handicap for a firm, especially if it occupies a favorable position. Perhaps the "advantage" of getting free publicity for a store's favorable price level is about offset by the "disadvantage" of being a leading edge in the competitive process. There is no such compensation, however, for a store with a high-price ranking in the price report.

The number of stores included in the price report will be affected by media constraints, the desire to provide a sample of stores which is useful to local consumers, and the goal of triggering the market perfecting mechanism of price reporting. There is no single number or proportion of stores which is optimal for all purposes. Price reporters will have to make this decision based on their objectives, costs, and other factors.

In large cities it may be desirable and necessary to rotate the stores in the report in order to achieve some of these goals. However, it should be recognized that this rotation introduces an uncertainty into the stores' response to the price report which could undermine or reinforce the market perfecting qualities of price reporting. On the one hand, rotation adds a random element and a risk-taking game to the stores' response which could prevent the initial ripple in the competitive pond. However, the rotation and expectations could make more ripples.

A set store rotation should probably not be adopted in order to prevent stores from knowing who will be in the report in any particular week and thus "prevent them from manipulating their prices to look good on the report." Pricing to announced levels is normal competitive behavior in food retailing and is commonplace in the weekly ads. Moreover, it is the trigger

for the market perfecting nature of price reporting and should not be stifled by secrecy measures. So long as the market-basket is sufficiently comprehensive that full cross-subsidization is not possible without some effect on store profits, this form of oligopolistic interdependency should be permitted and encouraged.

There may be legitimate reasons for rotating stores in the report, but this decision involves a balancing of priorities relating to the comprehensiveness, credibility, usefulness, and market-perfecting qualities of price reporting.

A similar problem arises in the choice of kinds of stores to be included in the price report. Fairness seems to dictate that the stores in the report be similar in size, ownership, costs, and merchandising strategies. This is difficult to achieve in practice since stores attempt to differentiate themselves and do not always wish to be considered close substitutes. In fact, store homogeneity may not be necessary in a price report if one argues that the various kinds of foodstores (conventional supermarkets, warehouse stores, convenience stores, roadside markets, etc.) all handle similar products and are viewed as imperfect food supply substitutes. Their quality and service differences can be addressed in other ways: consumer education, reliance on consumer experience, etc. Consumers should not be considered so naive as not to understand that price differences are to some extent related to quality and service differences.

The Purdue report, however, attempted to achieve reasonable store homogeneity by choosing only full-line, conventional supermarkets for the reports. This approach probably maximized the market-perfecting qualities of price reporting among this subset of foodstores. However, it sacrificed the competitive interplay between conventional supermarkets and other food sources by eliminating some price-quality alternatives set on their own, and it can be assumed that the competitive processes transferred some of the price reporting effects from the reported to the non-reported food supply sources.

Considering the pervasiveness of the market-perfecting mechanism, the fact that consumers have some knowledge of store quality and service differences, and the desirability of encouraging consumers to consider a wide variety of food supply alternatives, it would seem appropriate to include heterogeneous food sources (gardening, restaurants?) in a comparative food price report. Perhaps a compromise would be one portion of the report which compares heterogeneous food supply sources and another section comparing conventional supermarkets.

Similar comments apply to the geographic location of stores throughout the market and the choices of chain or independent stores for the report. Representativeness and usefulness to consumers call for a balance here (or proportional representation), but the competitive mechanism can be relied upon to spread the effects of price reporting beyond the reported stores.

Most reporting systems will probably have each of the major firms in the market represented in the price report, perhaps proportional to market shares. It may also be desirable to include more than one store of certain chains, where market shares or other factors dictate. The Purdue experience was that store prices will differ even within the same chain. This sug-

gests that each store should be considered a somewhat independent pricing unit, no single store should be taken to represent all stores of a chain, and each store should be identified by address.

Marketbasket Selection

The key issues here are the number and identity of items to be surveyed and reported. Compromises must be struck between comprehensiveness, representativeness and simplicity. With present technology it appears economically prohibitive, if not impossible, to survey the entire universe of 10,000-15,000 food items in the modern grocery store. Sampling from this universe appears necessary and perhaps desirable considering the difficulties a complete census would involve.

Initially, a random selection of items for the marketbasket appeals to many. However, a judgment sample can represent a larger share of the typical consumers' food budget with fewer items than can a random sample. This judgement sample can also provide more useful price information for consumers if specific prices of important items are included in the price report.

The statisticians preference for a random sample is based on an assumption of independent prices. However, several demand studies have shown a complex network of price interrelationships among all food products (Brandow 1961, Brandow and King 1971). A change in the price of one food item influences other food product prices according to the cross elasticities of demand between items. To be sure, the relationships are extremely complex, frequently very subtle, and different for complementary and substitute items. But they nevertheless insure that a food price report of any size and composition will influence prices beyond those in the report.

Gossard (1975) found that foodstore rankings were not very sensitive to rather large changes in the composition and size of the food marketbasket surveyed. This suggests that these decisions can be based more on cost considerations, consumer credibility, and usefulness to consumers of the items reported than by statistical considerations.

Until all the item cross price elasticities are known and put into a simultaneous demand system it is impossible to say how large a marketbasket must be or what it should be composed of to achieve specified levels of statistical confidence. Larger samples are to be preferred to smaller ones, but it is conceivable that small sample marketbaskets would have significant market-perfecting effects.

Quality differences present special problems for food price reporters. It must be admitted that no two stores are exactly alike in their services or in the quality of products they handle. Furthermore, few price reporters will have the ability or time to make expert quality comparisons, even if there was agreement on the criteria for these comparisons.

Four alternatives are possible. The marketbasket could be composed of only nationally labelled items. This eliminates quality comparisons but also eliminates meats, fresh produce, and private labels from the marketbasket. It seems doubtful that the market-perfecting qualities of price reporting can be achieved with so limited a marketbasket.

A second alternative is to employ highly trained price reporters and authorize them to make difficult product comparisons between stores. Such reporters are currently employed by the food industry to make competitive price checks. They reportedly can compare the different labels of distributors and the different qualities of meats and produce offered by competing stores. How well this can be done with present grading systems is questionable, however.

A third alternative is to hire amateur price reporters and train them to search out specific brands and qualities for price reporting but not give them responsibility for quality comparisons. This was the approach used in the Purdue study. It is inexpensive, but inflexible, and also results in a large number of "not availables" when specific items cannot be found in the store.

A fourth approach, which has not been tried, is to give amateur price reporters authority to make quality comparisons as they appear in the eyes of a representative consumer. This is closest to the task faced by food consumers in the marketplace and assumes some agreement among consumers about quality comparisons and substitutions. Therefore, it will result in a controversial marketbasket.

The treatment of quality differences in price reporting depends upon one's assumptions about consumers' knowledge of quality differences in the absence of a price report and the relationship between price and quality in food markets. Similar problems arise in the handling of service differences between stores which is another aspect of foodstore quality.

The existence of these quality differences is not a persuasive argument against the concept of price reporting. Indeed, the differences contribute to search costs in food markets and can be taken as a rationale for price reporting. In any case, these quality differences require some consumer education to accompany the price reports and explain the report's approach to quality comparisons.

Important criteria for the selection of brands and sizes include: (1) store availabilities, (2) shelf space allocation, and (3) frequency of purchase or market volume. The latter information is difficult to secure at the item level, but shelf space allocation can be taken as an approximation to popularity and frequency of purchase. Stores should be observed over a long period before selecting the marketbasket items in order to avoid unusual conditions.

It is advisable to include private and generic labels in the marketbasket. These necessarily introduce reporter judgements and quality heterogeneity into the marketbasket. It is doubtful that even experts can compare alternative private labels on the criteria which consumers use in their buying decisions.

Four approaches to the non-national label situation are: (1) select the lowest or highest priced non-national label in each store; (2) select the "least expensive" version of an item available in each store (national or non-national label) — the Purdue approach; (3) report a price range of non-national label prices; or (4) report an average non-national label price.

Price Collection Procedures

The timing of price collection and reporting present problems. Ideally, the report would contain the prices which consumers would find in the marketplace when they do their shopping. However, this level of recency is difficult to attain considering the time it takes to collect and process the prices, prepare the report, and meet media deadlines. The Purdue reports achieved a one-day turn-around as prices were collected on Wednesday and published in Thursday newspaper editions.

This level of timeliness may be difficult to achieve in some price reports. It is possible that less timely price information (for example, prices collected one week and published the next) would produce some of the market-perfecting qualities of price reporting, but an historical report such as this would be of less direct use to consumers than a current price report. Moreover, a report which is not current could seriously mislead consumers in a market where relative foodstore price rankings change from week to week.

What is the best day for collecting and reporting prices? Many grocery stores change prices at mid-week in preparation for the weekend shopping period, but there is a trend toward changing prices twice a week, on Sunday and Wednesday. If timeliness is important, prices should be collected immediately following one of these price changes.

Prices and availability of foods change daily, so it is desirable to survey prices at the same time or period in all stores to be compared. This snapshot will inevitably catch some stores out of stock or in the process of a price change, but this will also happen to consumers.

The Purdue procedure was to only take prices from items on shelves, not from store personnel or managers. There are discrepancies between the manager's price book and shelf prices, so book prices should not be relied upon. The goal is to record the price which consumers will be charged at the checkout counter.

Other than permitting reporters into the store, price reporting does not require trade cooperation. Most of the efficiencies which might be gained by trade cooperation in the collection of prices have the potential of lowering the accuracy and credibility of the reports. Trade cooperation also raises the specter of conflict of interest.

Careful training of price reporters is advisable with precise instructions covering: (1) out-of-stock situations; (2) cents-off and coupon rebates; (3) unusual meat nomenclature; (4) size and item pricing (e.g. 10¢ per cucumber); (5) minimum purchase requirements or maximum purchases; (6) substitutions; and other situations. How these are handled is less important than the fact that there are standardized procedures for reporters to follow.

It is advisable to have a policy dealing with errors and publication retractions. The legal liabilities for price reporting errors are not clear. Vector and the cooperating newspapers felt they were protected as media who were disseminating what they believed to be accurate information. The legal status of a price report sponsor, however, has not been settled.

Publication Procedures

There are several decisions to be made in presenting the price survey results to consumers: choice of media, report format, aggregation and summary measures, and consumer education messages. Balances must be struck between comprehensiveness and ease of understanding by consumers.

There are numerous report formats. In its simplest form a price report might rank all stores from highest to lowest-priced on the marketbasket. This may be particularly appropriate for broadcast media. The Purdue report provided three levels of price information: individual prices, departmental prices, and marketbasket prices. This expanded report allows more detailed study by consumers and is appropriate for print media. In order to trigger the market-perfecting mechanism of price reporting, signal appropriate responses to retailers, and insure that consumers receive some price reductions, it is probably advisable to include the specific prices of some food products in the price report.

It is appropriate to flag certain special sale conditions in the price report. Minimum purchase requirements, maximum allowances, and the like can be asterisked. The Purdue report did not indicate special prices since no accepted definition of a temporary special exists, and the report was not designed for promotional purposes.

It is probably desirable to publish consumer education materials with the report. These might indiciate how the prices were gathered and what they mean. However, it is impossible to tell consumers everything they might need to know about the price report, and it is possible to put too much information into this effort.

The Purdue report was published weekly but there are monthly price reports. Weekly reports coincide with the weekly food shopping trip and seem most useful to consumers. However, a less frequent price report would likely have some market-perfecting qualities, and cost considerations may warrant this.

Dollar costs are probably best understood by consumers, although store ranks may be sufficient to convey relative foodstore price information in some cases. Some reports may simply add up a marketbasket of prices to arrive at departmental or store totals, but it should be recognized that this procedure assigns equal importance to two products with equal prices (e.g., 1 pound of steak and 5 pounds of potatoes) even though their contribution to the consumers' food bill may be quite different. The preferred procedure is to weight each price by the relative importance of the item in the consumers' food budget. The U.S. Bureau of Labor Statistics has the most comprehensive and current set of relative importance weights for foods. These are not published at the item levels but are available upon request.

The use of index numbers makes the reported marketbasket cost strictly speaking a unitless number rather than a dollar total. This should be recognized but need not be announced to the consumer. The Purdue report placed a dollar sign on these index numbers and treated them as dollar totals. This does not affect relative store price comparisons in any important way.

CONCLUSIONS

There appears to be sufficient evidence to support further investigation of public price reporting as a form of consumer information. There are some unanswered questions, but the basic findings to date suggest that public price reporting can have pro-competitive results and potentially may alter market performance in desirable directions. We need to better understand the precise mechanisms by which this information operates in the marketplace, and there a number of operational issues to be decided. Nevertheless, the Canadian and Purdue studies provide tentative support for the concept of price reporting.

But, is *public* price reporting necessary? Could price reporting meet a private market test? The answers to this depend upon the social costs of present, imperfect information sources of food consumers and the cost-benefit ratios of public price reporting systems. The tentative answer at this point is that public price reporting systems are justified and cost-effective. However, there will be considerable experimentation with private, for-fee price reporting systems in the near future as well as continued exploration of this information form on the part of the print and broadcast media.

There are also legal issues facing public price reporting systems. These include questions of rights of access of reporters and legal responsibility for errors. A recent Ohio supreme Court decision appears to uphold the right of grocers to bar price reporters from their stores.[5] The media publishing public price reports are apparently protected by first amendment rights, and providers of consumer information are apparently protected under the law of mercantile privilege so long as reasonable care is taken in collecting and disseminating consumer information, even if some information is in error (Bower 1978). Still, there are some legal issues in public price reporting yet to be settled.

Is public food price reporting a threat to the retail food industry? Probably not. Food consumers seem satisfied with the information provided by the weekly food ads. It is doubtful that a public price reporting system will replace these ads as the major source of consumers' food price information. Rather, public price reports will develop in some markets where consumers will support them as complements to the weekly food ads. Some grocery firms will sponsor comparative food price reports, but it is unlikely these will gain the credibility of third-party reports.

There is as yet no government policy in the area of comparative food price reporting. Developments here will depend upon the strength of the case that is made for public food price reporting by present research efforts and the political attractiveness of the concept.

FOOTNOTES

[1] Dr. Robert Boynton and Dr. Brian Blake were valued colleagues in the research reported here. However, they are not responsible for the views in this paper.

[2] The BLS "Retail Food Prices By Cities" was discontinued in June 1978. However, a new monthly data series, "Consumer Prices: Food" was begun by the BLS in August 1980. These CPI prices will be available for the U.S. city average and for four geographic areas.

[3] "FTC Announces An Experimental Program To Survey Comparative Supermarket Prices; Requests Comments" *FTC News,* Washington D.C., January 11, 1973.

[4] The choice of this period for demonstrating the effects of price reporting has been questioned by Lesser and Bryant, "The Influence of Consumer Price Information On Retail Pricing and Consumer Behavior; Comment," *American Journal of Agricultural Economics,* May 1980, p. 265. It *is* somewhat difficult to imagine a retail behavioral response to price reporting which would result in this lag. This period produces the largest possible response to price reporting using Devine's data.

[5] Mosher v. Cook United, Inc., 1980, 62 Ohio St. 2d.

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