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The Effects of Firm Exit in a Retail Grocery Market

by

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Economic research on the food retailing industry can be divided into two broad areas: competition/concentration studies (i.e., Marion et al.) and price formation studies (i.e., Reed and Robbins). Studies in these areas generally conclude that the retail food market is characterized by some degree of price competition, but, especially in the short-run, the industry is imperfectly competitive.

Such findings are consistent with the study by Handy and Stafford on competitive effects of a new entrant into a local retail food market. They found that the entrance of a limited-assortment, no-frills warehouse store forced increased price and non-price competition; thus altering the competitive structure of the local market.

This study investigates the effects of a firm's exit on the competitive situation in a local retail grocery market. Prices of sixty-eight grocery items for three firms are compared before and after the exit announcement by the fourth firm. General observations

on non-price competition are also presented. Specifically, the objective of this paper is to investigate the competitive reaction of firms in the market to the withdrawal of an established competitor.

Methodology

The analyzed market included four firms, each considered to operate in the same market area (a two-mile radius). The four firms from which price data were collected can be described as follows:

- Store A: An affiliate of a local chain.
- Store B: An affiliate of a national chain.
- Store C: An affiliate of a regional chain.
- Store D: An affiliate of a national chain.

Throughout the remainder of this paper any references made to individual stores will be consistent with the above terminology.

Retail prices on sixty-eight items were collected on a weekly basis during a one-year period beginning in February of 1981. Other

data and general market information were obtained by means of personal interviews with store managers in the study area to capture other competitive effects.

The analysis of the effect of a competitor exiting the market was performed by using descriptive statistical techniques. The purpose was to identify differences in price levels among the sample stores during the study period which were attributable to the exit of Store D. The analysis also provides general price level information on each store.

In order to carry out the analysis, the data were transformed into relative prices to allow for comparisons of price level movements between stores over time. The transformation consisted of taking the *i*th product in the *j*th store each week and dividing it by the average price of the item in all stores during that week. This procedure allows the price of a specific item to be converted into a value which reflects the price of that item relative to the rest of the market (Handy and Stafford). For instance, if the average price of bread in the market is \$.79 and the price in a certain store is \$.85, then the relative price for that store during that particular week would be 1.07 (.85/.79). Further, all price indexes were formed weighting the individual items by typical sales quantities.

Results

The average relative prices data were weighted by sales to derive the indexes presented in Tables 1 through 3. The tables present the weighted average of relative prices for each store broken down into departments for three different time periods. The relative price indicates the level at which that particular store sold an item relative to the market average. That is, if the relative price is greater than 1.0, the store was offering that specific item at a price above the market average. Table 1 covers week one through week forty-nine (the period prior to the announcement of Store D's exit). Table 2 presents the weighted average of relative prices during the final eight weeks (weeks 50-57) of the study. The figures for Store D include only observations for weeks 50-54, since the store was closed during the final

three weeks of the study. Table 3 presents the average relative price level for each store and department for the entire study period.

Table 1

**Weighted Average Relative Prices
By Department During Weeks 1-49**

	Store			
	A	B	C	D
Dairy	1.0081	.9820	1.0046	1.0053
Produce	.9642	1.0091	1.0058	1.0209
Meat	1.0014	.9741	.9433	1.0812
Grocery	.9889	.9982	.9871	1.0257
Overall	.9974	.9820	.9652	1.0553

Table 1 indicates that during the first forty-nine weeks Store A had the lowest weighted average relative price in the produce department, Store B had the lowest prices in the dairy department, and Store C was lowest in meat and grocery. Store A had the highest prices in the dairy department and Store D was highest in the produce, meat, and grocery departments. The final line of Table 1 reports the overall store average price level. The results indicate that, prior to the exit period, Store C had the lowest overall price level followed by Store B, Store A and Store D, respectively.

Table 2
Weighted Average Relative Prices
By Departments During Weeks 50-57

	Store			
	A	B	C	D
Dairy	1.0162	.9793	1.0004	1.0065
Produce	.9463	.9897	1.0875	.9622
Meat	1.0151	.9622	.9553	1.1078
Grocery	.9976	1.0040	.9516	1.0748
Overall	1.0073	.9750	.9695	1.0772

Table 2 illustrates the price level results for the final eight weeks of the study. The only change in rankings for departments was in the produce department, where the order of two of the stores changed (Store D and Store C switched places in the rankings). One interesting observation is that Store B was the only store with lower overall weighted relative prices. Note that the mean of the weighted relative prices do not equal 1.0 because observations on Store D were missing for the final three weeks.

Table 3
Weighted Average Relative Prices
By Departments During Weeks 1-57

	Store			
	A	B	C	D
Dairy	1.0093	.9816	1.0040	1.0054
Produce	.9615	1.0062	1.0179	1.0151
Meat	1.0034	.9724	.9450	1.0838
Grocery	.9902	.9991	.9819	1.0305
Overall	.9989	.9810	.9658	1.0575

The results in Table 3 report the average relative prices for each store and department for the entire study period. Again, the only difference between the store rankings in this period is for the produce department. The order from lowest to highest price relative was Store A, Store B, Store D, and Store C.

Three t-tests were used to determine whether the differential in overall weighted relative prices between stores changed from weeks 1-49 and 50-57. The results of the tests indicated that there was no significant change (at the 5 percent level) in overall relative prices between stores after the announced closing of Store D.

In order to present a descriptive view of the price levels in each store over the study period, the overall weighted relative price levels were calculated on a weekly basis for each store and are plotted in Figures 1 through 4. Again, a value of 1.0 indicates that the store was pricing at the market average. Values greater than 1.0 are above the market average and values less than 1.0 are below the market average. Figures 1 through 4 have no observations for weeks 32, 36 and 45 since there was incomplete data during these weeks.

A close perusal of Figure 1 indicates that Store A's overall weighted price relative varies a great deal from week to week, but in general it was above the market average for the first fifteen weeks, below average for the next twenty weeks, and above the market average for the final twenty-two weeks. The relative price level of this store varied from a low of .9289 (week 24) to a high of 1.0833 (week 42).

The weighted overall relative price level of Store B (Figure 2) is above 1.0 in only 11 of the 54 weeks. The relative price level of this store ranged from .9427 (week 46) to 1.0438 (week 33), which is the smallest variation among the four sample stores.

The weighted relative price level observed in Store C (Figure 3) was even lower than Store B for most weeks. Store C's relative price was above the market average in only six weeks of the sample period. The

Figure 1 Plot of Weekly Weighted Relative Price Level in Store A

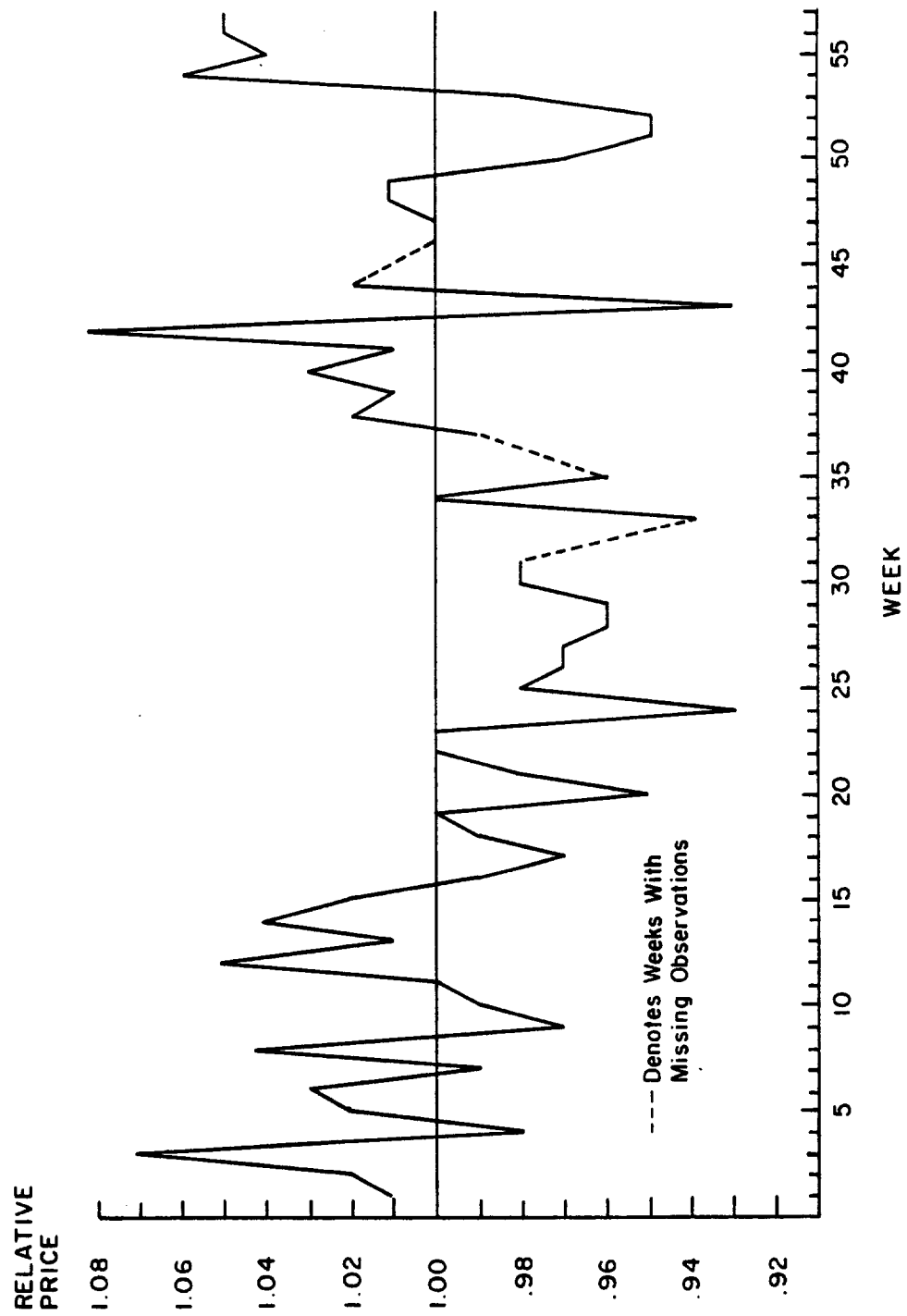


Figure 2 Plot of Weekly Weighted Relative Price Level in Store B

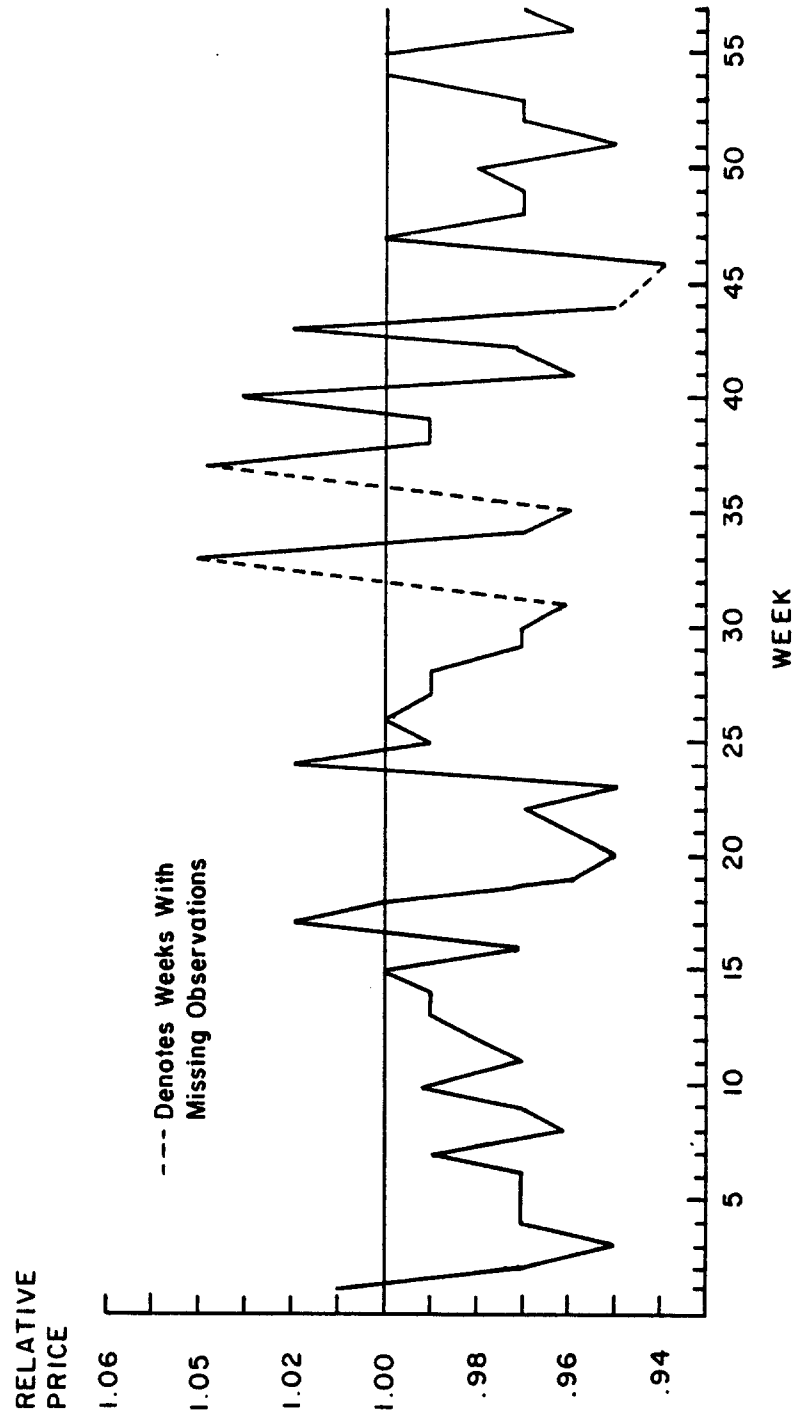
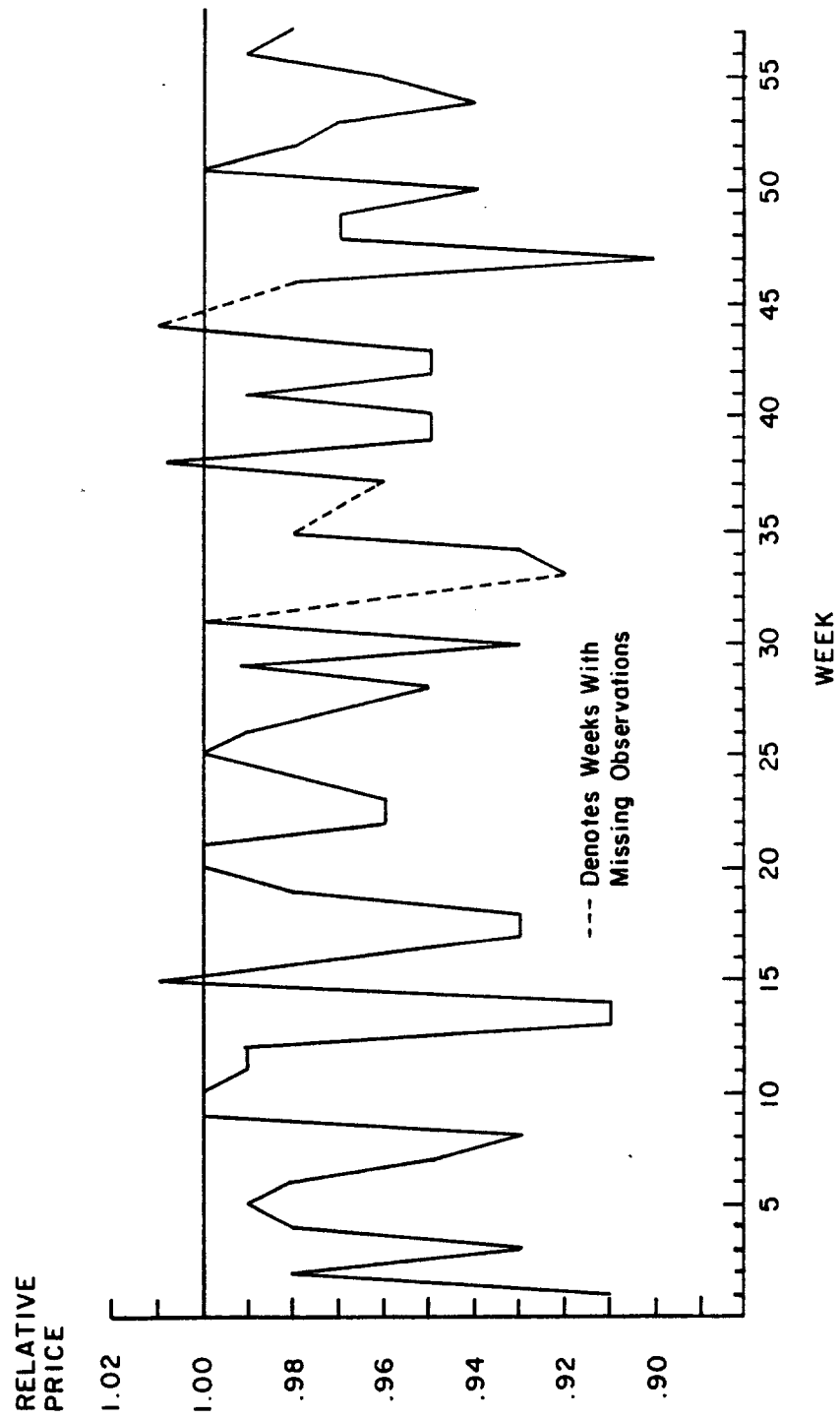


Figure 3 Plot of Weekly Weighted Relative Price Level in Store C



range of relative prices in this store was .8972 (week 47) to 1.0105 (week 45).

The observed pattern of relative prices associated with Store D (Figure 4) is clearly in contrast with the rest of the market. Chain D was consistently above the market average and priced at or below the average in only six weeks in contrast to Stores B and C, which were above the average in only six and eleven weeks, respectively. This latter point is interesting since both Store B and D are quite similar in size and structure (nationally), yet they appear to have been pursuing opposite pricing philosophies in this market. The observed weighted relative price level of Store D ranged from .9732 (week 15) to 1.1233 (week 32). It should also be noted that there are no observations during weeks 55-57 for Store D. This is due to the fact that it had ceased operating in the market at that time.

The preceding information provides insight into the evaluation of a competitor exiting the market. The events leading up to the exit of Store D were a direct result of a reorganization of this chain which entailed closing stores in the case market region. Public notice of the closing was given approximately six to eight weeks prior to the actual closure (weeks 50-52).

Personal interviews with store managers revealed that the competitors (Stores A, B and C) learned of Store D's exit plan at the same time as the public. Further, several of these managers felt that Store D did not control a large enough share of the market to be considered a major competitor, though store D did have an 8 to 12 percent share of the market.

Interviews with the store managers revealed that few, if any, strategies of price competition were employed by Store A, B and C to capture the market share forfeited by Store D.[1] The managers also reported that no major deviations in their merchandising plan occurred during the exit period. The exit of Store D was perceived as inevitable and thus was not expected to create any significant disequilibrium in the market.

The only type of reaction taken by competitors was the use of non-price competition. Acceptance of Store D's check cashing cards, stocking new products requested by former Store D shoppers and offering couponing specials to attract patrons of Store D were examples of strategies utilized. Stores A, B and C only attempted to maintain pre-exit service standards and implemented no other merchandising strategies.

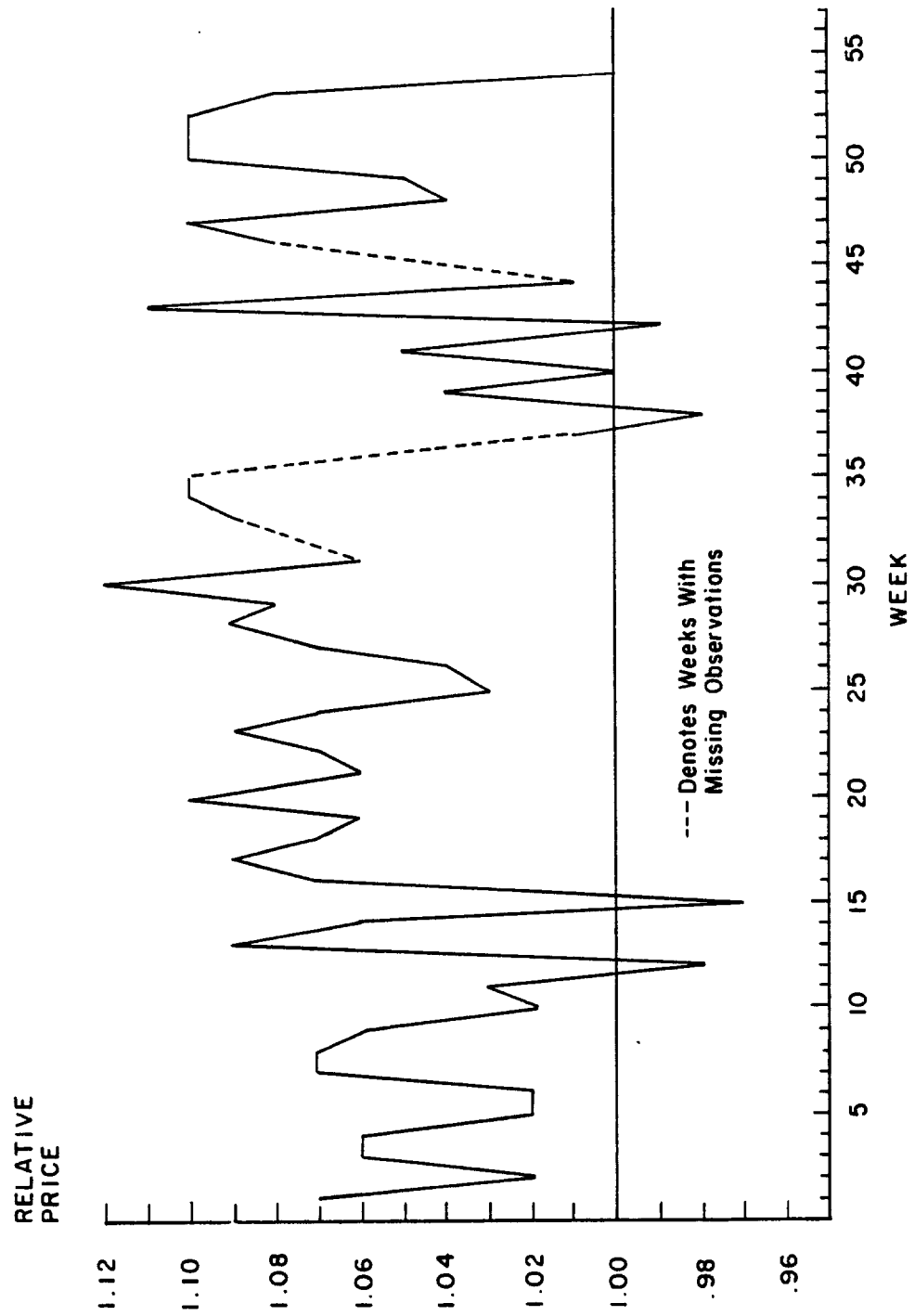
From the data and interviews it appears that the exit of Store D had little or no effect in the market. Figures 2 and 3 show that both Store B and C remained relatively stable in terms of price during these final weeks. Store A demonstrated a slight upward trend during those weeks.

Conclusions and Implications

Data indicate that stores typically differ in price levels on a weekly basis and often have prices that move in opposite directions during the same week. However, the general conclusion to be drawn from this analysis is that the level of prices in this market, and even in specific stores, remained basically stable during the study period. The price level analysis offers little evidence of price reaction to the exit of Store D. These conclusions were drawn using the relative price information, but examination of actual prices reveals the same results.

The results of this study suggest that the level of prices within individual stores, and even the level of prices for specific items, tended to remain relatively stable during the study period. However, instances of considerable price level fluctuations were observed. There were no strong indications of any of the firms exhibiting drastic tendencies toward change. These results appear to suggest that individual stores tend to operate within a "safe range" of prices. That is, a retailer may perceive a range of prices, for a given item, that consumers will tolerate and will thus set a price somewhere within this range in order to correspond with the stores' profit objective.

Figure 4 *Plot of Weekly Weighted Relative Price Level in Store D*



Finally, the results contrast sharply with Handy and Stafford's findings concerning firm entrance. The price competition in the firm entrance case is replaced with non-price competition in the firm exit case. In the former instance, the original firms in the industry changed prices in order to keep market share, much like many imperfectly competitive models predict. However, when faced with an opportunity to increase market share in the firm exit case, the remaining firms were content to divide the exiting firm's volume without substantial price competition.

Endnote

- [1] Local officials for Stores A and C definitely have the authority to change overall pricing strategies for the studied market. There is evidence that Store B has changed its pricing strategies in recent years. Thus, it is concluded that all stores had the flexibility to change their pricing strategies as a result of Store D's exit.

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