Are Retailing Mergers Anticompetitive?
An Event Study Analysis

Abstract

We examine the abnormal returns of rival firms to determine whether four retailing mergers that occurred during the late 1980s reduced competition. We use the stock returns of retailers in geographic markets unaffected by the merger to control for the efficiency-signaling effect of the merger. Using this methodology, we find that rival firms experienced positive abnormal returns from May Company's 1986 acquisition of Associated Dry Goods and American Stores' 1988 acquisition of Lucky Stores. These results offer some evidence that retailing mergers that lead to large increases in concentration in already concentrated markets may lessen competition and lead to higher product market prices.

John David Simpson
Federal Trade Commission

and

Daniel Hosken
Federal Trade Commission

January 1998

I) Introduction

Antitrust enforcement of retailing mergers has varied over time. In the 1960s, the antitrust agencies and the courts pursued a very aggressive antitrust policy. For example, the Supreme Court blocked a 1960 merger between Von's Grocery and Shopping Bag Food Stores that would have given the merged firm a 7.5 percent share of the grocery retailing business in Los Angeles.[1] In contrast, the antitrust agencies followed a much more relaxed antitrust policy in the 1980s. For instance, the Federal Trade Commission did not challenge May Department Stores Company's 1986 acquisition of Associated Dry Goods which would have given the combined firm control of nearly all of the traditional department stores in the Pittsburgh area.[2] More recently, the antitrust agencies and the courts have adopted a more moderate position with respect to retailing mergers. In 1997, a district court granted the FTC a preliminary injunction blocking the proposed merger of Staples and Office Depot, a merger that would have reduced the number of national office supply firms from three to two.

Existing empirical work provides only limited guidance in selecting the appropriate level of antitrust enforcement in the retailing industry. Several researchers (e.g., Cotterill (1986)) have examined the relationship between price and concentration across geographic areas and have found that supermarket prices tend to be higher in more concentrated markets. This result, which suggests that supermarket mergers are harmful to consumers, should be viewed with caution for

---

[1] United States v. Von's Grocery Company 384 U.S. 270 (1966).

[2] See "May Stores to sell Associated Dry Goods unit in Pittsburgh," Wall Street Journal, September 25, 1986, p. 55. May Department Store Company sold these stores to settle an antitrust suit brought by the city of Pittsburgh, Allegheny County, and the state of Pennsylvania. The FTC did not challenge this acquisition.

at least two reasons. First, many of the factors that affect supermarket prices (e.g., wage rates, per capita income, economies of scale) are correlated with market concentration. For instance, supermarkets in small cities, where concentration tends to be higher, may have high costs because they are unable to attain economies of scale. Thus, the estimated relationship between price and concentration will be biased unless the statistical model correctly accounts for these factors. In fact, Anderson (1990) notes that the price-concentration studies of the supermarket industry generally have failed to adequately account for cost and quality differences across metropolitan areas. Second, price-concentration studies fail to account for the endogeneity of market structure: While market concentration affects the price that a supermarket sets, the price that a supermarket sets also affects market structure. Failing to account for the endogeneity of market structure yields a biased estimate of the relationship between price and market structure (Schmalensee (1988), Bresnahan (1988)).

This study seeks to provide some additional guidance in determining whether retailing mergers harm consumers. If a merger is expected to lead to higher product prices, then investors should bid up the price of rival firms' stock in anticipation of higher profits in this market. Thus, we potentially can identify those retailing mergers that the stock market believed would lead to higher product prices by examining changes in the share price of rival firms following the announcement of a merger. We can then relate these mergers to the Herfindahl-Hirschman index (HHI) computed for the area or areas affected by the merger. In some cases, the geographic areas for which we compute the HHI's will be broader than the geographic market that would be defined using the Department of Justice and Federal Trade Commission 1992 Merger Guidelines. Nevertheless, we believe that relating the HHI statistics for these areas to an indicator of

anticompetitive harm gives a rough indication of what change in concentration across a broad region will lead to higher product prices.

This study examines four retailing mergers. Rival firms realized economically significant, positive abnormal returns in two retailing mergers that increased the HHI by several hundred points resulting in a post-merger HHI of roughly 2500. Rival firms did not realize economically significant, positive abnormal returns in two retailing mergers in which smaller changes in the HHI led to post-merger HHI's below 2000. The rest of the paper is structured as follows. Section II explains the event study methodology that we use in more detail. Section III describes the data and the sample. The selection of event dates is discussed in Section IV. Results are presented in Section V, and Section VI concludes.

II) Event Study Methodology[3]

The event study methodology assumes that stock markets swiftly incorporate new information in valuing a firm's stock. Given this, the announcement of a merger between two firms would convey information that would prompt investors to bid up the price of a competing firm's stock under any of the following four conditions. First, a competitor would benefit if an anticompetitive merger led to higher product prices and thus higher profits. Second, competitors would benefit if a merger revealed previously unknown opportunities for them to obtain

[3] Eckbo (1983) and Stillman (1983) first used the event study methodology to analyze the competitive effects of mergers. Others (e.g., Mullin, Mullin, and Mullin (1995)) have since used this methodology to examine either specific mergers or mergers in specific industries.

Chevalier (1995) uses the event study methodology to study the effect of leveraged buyouts on a competitor's share price in the supermarket industry. She finds that the share price of competitors rose when leveraged buyouts are announced. From this, she concludes that leverage increases lead to softer competition in the supermarket industry.

efficiencies through merger. Third, competitors could benefit if the merging firms would be forced to divest assets at a discount in order to satisfy antitrust requirements. Fourth, competitors would benefit if the merged firm attained a scale that enabled it to profitably undertake an investment that benefits the entire industry (e.g., an advertising campaign).[4] Thus, event studies can conclude that a merger is anticompetitive if the share price of a competitor increases when the merger is announced and if we can discount the efficiency explanation, the divestiture explanation, and the free-rider explanation.[5]

Because many retailers serve only local or regional markets, we can largely control for the explanation that a retailing merger signals previously unknown opportunities for other firms to obtain efficiencies from mergers. If a retailing merger signals that retailers in any geographic region can gain efficiencies through mergers, then all retailers with stores of a similar format should see their share price increase. Thus, we can use the share price response of retailers in markets unaffected by the merger to control for any nationwide efficiency-signaling effect of the merger. Although we cannot explicitly control for any signaling of region-specific efficiencies from mergers, we do not see this as a major problem for two reasons. First, the efficiency that rival firms could also exploit presumably relates to economies of scale. This is unlikely to be an

[4] We are indebted to Arthur Strong for this point.

[5] Although event studies of past mergers and acquisitions can provide some information about the type of mergers that may lead to price increases, using event studies of this type to evaluate pending acquisitions may be problematic. If stock traders believe that an anticompetitive acquisition will be blocked if rival firms realize large positive abnormal returns, then they will have little incentive to buy the rival firms' stock. In this case, rival firms would be much less likely to receive abnormal returns when anticompetitive mergers are announced.

efficiency that is region-specific. Second, in one of the mergers that we consider, additional evidence indicates that the merger was unlikely to have signaled region-specific efficiencies.

Although we cannot explicitly control for the divestiture effect, we believe that we can largely discount it. The divestiture effect requires that investors believe that a competitor has a significant probability of purchasing divested stores at a large discount. However, in many cases, mergers do not lead to divestitures. Where mergers do lead to divestitures, the divested assets are often purchased by a firm outside of the market. Finally, even where a competitor does purchase the divested assets, competition among potential purchasers likely limits the amount of any discount. Given this, we believe that the divestiture effect will increase a competitor's share price only in rare circumstances.[6]

We also cannot explicitly account for the free-rider effect. Rival firms in the retailing industry might be able to free-ride on the merged firm's investment in technology. However, the mergers that we examine probably did not enhance the development of new technologies (e.g., scanner systems, theft deterrence systems) since none of the mergers created the largest nationwide firm. Rival firms in the retailing industry might also be able to free-ride on a competitor's advertising. However, a rival firm would only benefit from an increase in the

[6] In a prominent recent case, the proposed Staples/Office Depot merger, the trade press speculated that Office Max would have been able to acquire a number of divested stores at a substantial discount if the Federal Trade Commission (FTC) and the merging parties reached a settlement. However, in this case, the FTC's brief (Plaintiff's Memorandum of Points and Authorities in Support of Motion for Temporary Restraining Order and Preliminary Injunction) suggested that the FTC would only have been satisfied if the merged firm divested the stores to Office Max. Hence, in this case, the trade press could have reasonably concluded that Office Max could have purchased the divested stores at a discount. In contrast, in the cases analyzed in this study, competition among several potential purchasers seemingly would have ensured that divested stores would not have been sold at a substantial discount.

merged firm's advertising to the extent that this increase in advertising acted to increase market demand rather than shift market share from the rival firms to the merged firm. Among supermarkets this seems unlikely. Since supermarkets constitute such a large share of grocery retailing, increased advertising presumably has little scope to increase market demand. While increasing market demand seems somewhat more likely among department stores, in the one department store merger that we consider, additional evidence suggests that the merged firm did not significantly increase its advertising after the merger.

III) Data and Sample

We use W.T. Grimm's Mergerstat to identify large transactions in the retailing sector.[7] In order to examine those mergers that would have been most likely to reduce competition, we draw our sample from the set of transactions that occurred between 1984 and 1993. In 1983, the Federal Trade Commission (FTC) dismissed its complaint against the Grand Union Company. In dismissing its complaint, the FTC found that the product market included all grocery stores and concluded that entry barriers were relatively low at least in much of the Southeastern United States. We believe that this decision signaled a less restrictive period of antitrust enforcement of retailing mergers. Conversely, during the mid-1990s, antitrust enforcement of retailing mergers appears to have become more stringent. In 1996, a threat of an antitrust challenge prompted Rite Aid and Revco to abandon their proposed merger. In 1997, the FTC obtained a preliminary

[7] We added Von's Grocery's 1988 acquisition of the Southern California operations of Safeway Supermarkets even though it was not listed by Mergerstat. Mergerstat lists only those acquisitions that involve 10 percent of the selling firm's assets. We believe that this acquisition failed this criteria.

injunction against the proposed merger of Staples and Office Depot, which prompted those two firms to abandon their merger. The year 1993 is chosen to predate this shift in enforcement.

We further restrict our sample to supermarket and department store mergers for two reasons. First, entry barriers into the supermarket and department store businesses should be higher than for other types of retailing: Because supermarkets and department stores tend to be larger than most other types of stores, identifying and developing sites for these stores is probably more difficult than identifying and developing sites for other stores. Second, because supermarkets and department stores are relatively large, we can obtain data on the location of the various supermarkets and department stores at the time of past transactions.

Of the remaining transactions, we eliminate all leveraged buyouts and all transactions in which there was not a significant product market or geographic market overlap. This leaves seven transactions. To conduct event studies for these transactions, we must first identify the geographic overlaps between the two merging firms and then identify a publicly traded competitor that obtained a significant share of its revenue from the overlap area.[8] To do this, we use Supermarket News' Annual Distribution Study of Grocery Store Sales for supermarket mergers and the Chain Store Guide Directory for department store mergers.

We dropped A&P's 1988 purchase of Borman's and Miller Tabak Hirsch & Co.'s 1989 purchase of Grand Union because no publicly traded competitor obtained a significant share of its revenue from the overlap area. We also dropped Campeau Corporation's 1988 acquisition of Federated Department Stores from our sample. Because Federated Department Stores was the

[8] McAfee and Williams (1988) note that rival firms are unlikely to have positive abnormal returns when an anticompetitive merger is announced if they receive only a small amount of their total revenue from markets affected by the merger.

object of a bidding war between Campeau Corporation and Macy's Department Stores, it is difficult to infer on what date the market believed particular geographic markets would become more concentrated. This left the four mergers analyzed in this study: May Department Stores Company's 1986 acquisition of Associated Dry Goods, Great Atlantic & Pacific Tea Company's 1986 acquisition of Waldbaum Inc., Von Companies' 1987-1988 acquisition of Safeway's Southern California stores, and American Stores' 1988 acquisition of Lucky Stores Inc. Thus, while we set out to study all department store and supermarket mergers that took place between 1984 and 1993, our selection process resulted in a sample of four mergers that take place between 1986 and 1988.

We used the Wall Street Journal Index to identify the announcement date of a particular transaction and used the Center for Research in Security Prices (CRSP) NYSE database to obtain stock return data. We supplemented this database with stock returns for Nordstrom and Waldbaum's, two firms listed on the NASDAQ exchange, from Standard & Poor's Daily Stock Price Record. For these two companies, we computed the returns based on the mean of bid and ask prices.

IV) Event Selection

We identify event dates in the following way. For each acquisition in our sample, we first collect a list of dates on which the Wall Street Journal reported new information about the acquisition. Since previous studies have found that target firms realize large positive abnormal returns when acquisitions are announced (e.g. Jarrell and Poulson (1989)), we can use the target firm's abnormal returns to identify those dates when new information about the acquisition

reached the market. Therefore, we use the market model to identify those dates on which the target firm experienced large and statistically significant abnormal returns from the list of dates from the Wall Street Journal. This pared list of dates constitutes our event dates in analyzing the abnormal returns to rivals.[9]

We visually checked the abnormal returns of the acquired firm to identify any dates where news of the acquisition clearly reached the market prior to the publication of the Wall Street Journal article. In the one case where this happened, we added this date as an event date.[10] We also checked the Wall Street Journal to see whether any additional information (e.g., an earnings announcement) might have affected a rival's share price on the event dates that we examine. Footnotes indicate the few cases where the Wall Street Journal reported such additional information.

---

[9] For example, in our analysis of Great Atlantic & Pacific Tea Company's acquisition of Waldbaum Inc., two articles appeared in the Wall Street Journal discussing the merger, one on November 28, 1986 and the other on December 1, 1986. We estimated the market model (equation 1) for Waldbaum including indicator variables for both potential event dates: November 28 and December 1. Waldbaum earned a large statistically significant (70.5%) abnormal return on November 28, and no statistically significant abnormal return on December 1. Thus, we concluded that important information about the merger reached the market on November 28 while no important information about the merger reached the market on December 1. Hence, in estimating the market model for the rival firm, Supermarket General Company, we only included a dummy variable for November 28.

[10] The Wall Street Journal reported American Stores' tender offer for Lucky Stores on March 23, 1988. Lucky Stores realized an abnormal return of 44.8 percent on March 22, 1988.

V. Results

We compute the abnormal share price returns to rival firms using a modified version of the market model used by Eckbo (1983), Stillman (1983) and others.

$$(1) \qquad R_{it} = a_i + \beta_i R_{mt} + \gamma_i R_{Rt} + \delta_{it} D_{it} + e_{it}$$

where:

R_{it} is the daily rate of return to firm i;

R_{mt} is the daily value-weighted return for stocks on the New York Stock Exchange;

R_{Rt} is the daily rate of return for an equal value weighted retailing index comprised of firms with operations in geographic markets unaffected by the merger. R_{Rt} should control for any efficiency-signaling effect of a merger. (The firms in this index are listed in Appendix A for each acquisition studied.);

D_{it} is a dummy variable with a value of 1 if an event occurs on day t; and

e_t is a serially uncorrelated random disturbance.

We estimate equation (1) using data from the interval beginning two hundred trading days before the first event date and ending ten trading days after the last event date. Because the window in which events takes place varies for each merger, the number of observations used in each set of regressions varies.

The estimated coefficient for D_{it} measures a stock's abnormal return on a particular event day. We present two measures of statistical significance for these coefficients. The first is a t-statistic based on the standard errors computed assuming that abnormal stock returns are normally distributed. This measure may understate the likelihood of Type 1 error since Fama

(1976) and Brown and Warner (1985) have found that abnormal returns to a single stock tend to have more dispersion about the mean than a normal distribution would predict.

The second measure is based on the percentile that the coefficient corresponds to in the empirical distribution of excess returns of the stock.[11] For the interval four hundred trading days before the event date to two hundred and one trading days before the event date, we estimate a slightly modified version of the market model in which we do not control for any event dates (1').

$$(1') \qquad R_{it} = a_i + \beta_i R_{mt} + \gamma_i R_{Rt} + e_{it}$$

We then determine what percentile the estimated excess return (D_{it}) in equation (1) corresponds to in the empirical distribution of excess returns generated by equation (1'). The difference of 1 minus this percentile ranking corresponds to the p-value for a one-sided hypothesis test that the coefficient is less than or equal to zero. These p-values are reported along with our other results.[12]

A. May Department Stores Company's acquisition of Associated Dry Goods (1986)

May Department Stores Company's (May) 1986 acquisition of Associated Dry Goods substantially increased concentration among department stores in the greater Pittsburgh, Denver, and St. Louis areas, and in Southern California. In Pittsburgh, the acquisition would have left no

[11] We would like to thank Sanjai Bhagat for suggesting this approach.

[12] The variance of excess returns may increase during periods in which significant new information reaches the market (e.g., Brown and Warner (1985)). Hence, the technique described above might understate the p-value corresponding to the event period. To address this concern, we also calculated the frequency distribution of abnormal returns corresponding to the event period. These p-values, however, do not substantially differ from the p-values computed for the previous period.

competing publicly-traded department stores.[13] In Denver, Joslins, which is owned by Mercantile Stores Company, competed with the two merging chains. Mercantile Stores Company, however, does not appear to be a suitable candidate for study because it apparently received less than 10 percent of its revenue from areas affected by the acquisition. Although Dillard Department Stores competed with the two merging chains in St. Louis, Dillard Department Stores is also a poor candidate for study because it apparently received less than 10 percent of its revenue from areas affected by the acquisition.

In Southern California, the acquisition increased concentration as measured by the HHI from 1937 to 2615 in a product market that includes all traditional department stores but excludes mass merchandisers such as Sears, J.C. Penney, and K Mart, and discount department stores such as WalMart (see Tables 1 and 2 on the following page). At the time of the acquisition, Nordstrom, Carter Hawley Hale, Federated Department Stores (Federated), and Buffum's all competed with the merging chains. Of these competitors, Nordstrom, Carter Hawley Hale, and Federated appear to be good candidates for study:[14] In 1986, 40 percent of Nordstrom's store square footage was in Southern California, and Carter Hawley Hale derived about 40 percent of its revenue from its Broadway division, which is located in Southern California. Two of Federated's fifteen divisions (Bullock's and I. Magnin) had significant

[13] May Department Stores agreed to divest Associated Dry Goods's Joseph Horne department store division to settle an antitrust lawsuit brought by Pittsburgh, Allegheny County, and the state of Pennsylvania.

[14] Buffum's is not publicly traded.

Table 1
Department Stores in Southern California[15]

	Robinsons	May	Carter Hawley Hale	Nordstrom	Federated	Total Dept. Stores[16]
Los Angeles County	12	13	14	5	21	78
San Diego County	2	5	4	4	3	24
Orange County	4	6	6	2	10	35
San Bernardino County	0	2	2	1	0	7
Riverside County	1	1	1	0	3	11
Ventura County	1	2	2	0	1	6
Total	20	31	29	12	38	161

Table 2
Market Shares in Southern California based on 1986 Sales[17]

	Sales (millions)	Share
Robinsons (Associated Dry Goods)	**524**	**16.0**
May Company	**696**	**21.2**
Broadway (Carter Hawley Hale)	707	21.6
Nordstrom	281	8.6
Buffum's	110	3.4
Bullock's & I. Magnin (Federated)	854	26.0
Boston Stores (Carson Pirie Scott & Co)	15	0.5
Harris Department Stores	50	1.5
Walker Scott Company	41	1.2

pre-merger HHI	1937
change in HHI	678
post-merger HHI	2615

[15] Source: 1986 Chain Store Guide, 1994 Nordstrom 10-K, Fairchild's.

[16] Includes Robinson's, May, Carter Hawley Hale (Broadway), Nordstrom, Buffums, Bullocks, I Magnin, Boston Stores, Harris, and Walker Scott Company.

[17] Sales are estimated by multiplying the number of stores a company has in Southern California by the chain's average sales per store in 1986.

operations in Southern California. If May's acquisition of Associated Dry Goods reduced competition among department stores, then the share price of Nordstrom, Carter Hawley Hale, and Federated should increase on those dates when new information suggests the acquisition is more likely to occur.

Table 3 lists all of the Wall Street Journal articles relating to May's acquisition of Associated Dry Goods. Significant new information apparently reached the market on two days. On June 23, the day the Wall Street Journal reported that May Department Stores planned to acquire Associated Dry Goods, Associated Dry Goods had an abnormal positive return of 41.5 percent. On July 17, the day the Wall Street Journal reported that Associated Dry Goods accepted May's offer, Associated Dry Goods had an abnormal positive return of 3.8 percent.

Table 4 lists the abnormal returns for Nordstrom, Carter Hawley Hale, and Federated on June 23 and July 17. On June 23, Nordstrom realized an abnormal return of 4.3 percent, which is statistically significant at the 1 percent level, Carter Hawley Hale realized an abnormal return of 4.1 percent, which is statistically significant at the 5 percent level, and Federated realized an abnormal return of 2.7 percent, which is statistically significant at the 5 percent level. These abnormal returns also appear to be extreme values in the empirical distribution of these stocks' abnormal returns. For each of these firms, these abnormal returns score above the 98th percentile in the empirical distribution of abnormal returns.[18] If the empirical distribution corresponds to the actual sampling distribution of each stock, we could reject at the 2 percent level the null

[18] As described earlier, the abnormal returns for this empirical distribution are drawn from the period 400 to 201 trading days prior to the first event date.

Table 3

Wall Street Journal articles: May Department Stores acquisition of Associated Dry Goods

6/23/86	WSJ	May Department Stores to acquire Associated Dry Goods for $2.7 billion
6/25/86	WSJ	May Department Stores' bid of $2.7 billion for Associated Dry Goods will continue indefinitely
6/26/86	WSJ	May Department Stores may acquire Associated Dry Goods in hostile tender offer of $60 per share
6/27/86	WSJ	May Department Stores raises bid for Associated Dry Goods to $60 per share
7/2/86	WSJ	Associated Dry Goods rejects as inadequate $2.4-2.7 billion takeover offer
7/11/86	WSJ	May Department Stores may acquire Associated Dry Goods for $2.7 billion but talks are stalled
7/15/86	WSJ	Associated Dry Goods would accept sweetened takeover bid of $2.77 billion
7/17/86	WSJ	Associated Dry Goods accepts May Stores' bid
9/4/86	WSJ	May Department Stores may acquire Associated Dry Goods; bid rejected by City of Pittsburgh
9/25/86	WSJ	May Department Stores to sell Joseph Horne division of Associated Dry Goods after it acquires Associated Dry Goods
11/18/86	WSJ	May Department Stores will sell Joseph Horne to investor group for undisclosed amount.

Table 4

Estimated Event Response: Carter Hawley Hale, Nordstrom, and Federated

	Carter Hawley Hale	Nordstrom	Federated
intercept	-0.000022 (.0013)	0.0011 (0.0011)	0.00026 (0.00086)
market return	0.97*** (0.18)	0.71*** (0.16)	1.02*** (0.12)
department store index	0.19* (0.11)	0.13 (0.098)	0.18** (0.073)
6/23/86	0.041** (.019) [.005]	0.043*** (0.017) [.00]	0.027** (0.013) [.02]
7/17/87	0.0068[19] (.019) [.24]	0.014 (0.017) [.13]	0.0066 (0.013) [.25]
R-squared	.1621	.1325	.3131
Observations	229	224	229

standard errors in parentheses.
*** significant at 1 percent level
** significant at 5 percent level
* significant at 10 percent level
p-values corresponding to residuals in period 400 to 201 trading days before first event are listed in brackets

[19] On this date, a Wall Street Journal article reported that Carter Hawley Hale retained Morgan Stanley to find a buyer for its John Wanamaker department store chain. As a result, Standard & Poor's affirmed its triple B minus rating on the firm's debt.

hypothesis that no event that would lead to positive abnormal returns occurred on June 23, 1986. None of the three rival firms had statistically significant abnormal returns on July 17.

The event study indicates that Nordstrom and Carter Hawley Hale both had an abnormal positive return of roughly 4 percent when news of May's acquisition of Associated Dry Goods reached the stock market. This increase in share price is consistent with a small, short-lived increase in department store prices. Since the net income of department stores appears to be about four percent of net sales,[20] a one percent increase in department store prices would represent a 25 percent increase in profit. Since Carter Hawley Hale and Nordstrom would realize this added profit on the 40 percent of their operations that were in Southern California, they would realize a 10 percent increase in company profits. This 10 percent increase in profit would explain the four percent increase in share price at Carter Hawley Hale and Nordstrom if it persisted for three years assuming a 15 percent discount rate and assuming that the stock market believed that May's tender offer would succeed with certainty. Traditional department stores in Southern California appear to have had sales of roughly 7.5 billion dollars in 1986.[21] Given this, a one percent price increase lasting three years amounts to roughly 225 million dollars.

Finally, as we noted earlier, our empirical test does not differentiate between positive abnormal returns that are due to an expectation of higher product market prices and positive abnormal returns that are due to an expectation that other retailers in the geographic region can

---

[20] This estimate is based on figures in recent 10K reports of Carter Hawley Hale, Nordstrom, Dillard Department Stores, and May Department Stores Company.

[21] This figure is computed using Carter Hawley Hale's and Nordstoms' 1986 sales, the percentage of their sales that are likely from Southern California, and their market share in Southern California.

obtain efficiencies through mergers. In this merger, however, some additional evidence suggests that the acquisition probably did not signal region-specific efficiencies from mergers. First, May did not fully integrate the operations of its May Company and Robinson's chains until early 1993,[22] six years after the acquisition. If integration would have led to large efficiencies, then the two chains presumably should have been combined sooner. Second, since 1986, little further consolidation occurred in this market. Nordstrom, The Broadway, and Bullocks still operate as separate department store chains.

Our empirical test also does not differentiate between positive abnormal returns that are due to an expectation of higher product market prices and positive abnormal returns that are due to an expectation that rival firms could free-ride on increased advertising expenditures by May. However, we can largely discount this free-rider effect since other evidence suggests that May did not substantially increase its advertising expenditures after its acquisition of Associated Dry Goods.[23] May spent $337 million in 1985 and $345 million in 1987 on advertising and sales promotion. This represented roughly 3.9 percent of net retail sales in 1985 and 3.3 percent of net retail sales in 1987.[24]

---

[22] See May Department Stores Company 10-K for the fiscal year ending 1/29/94.

[23] In 1987, roughly one-third of May's department stores were in markets where the acquisition would have increased concentration (i.e., Pittsburgh, St. Louis, Denver, Southern California). Thus, we would expect to see a significant increase in advertising if the acquisition enabled May to realize economies of scale in advertising.

[24] See May Department Stores Company 10-K for the fiscal year ending 1/30/88.

B. Great Atlantic & Pacific Tea Company's acquisition of Waldbaum Inc. (1986)

In December 1986, A&P acquired Waldbaum. In the New York/New Jersey metropolitan area, this acquisition increased A&P's share of supermarket sales from about 16 percent to about 27 percent and increased the HHI from 1075 to 1337 (See Table 5). Of course, to the extent that some New York/New Jersey metropolitan supermarkets only serve certain geographic areas, these figures understate or overstate both A&P's post-merger market share and market concentration in certain geographic areas.

Supermarket General Corporation, which owns the Pathmark chain, is the only firm competing against A&P and Waldbaum in the New York metropolitan area for which we could obtain data on stock prices. Since Supermarket General Corporation operated 84 of its 200 stores in the New York Metropolitan area, its share price should have increased if A&P's acquisition of Waldbaum reduced supermarket competition.

Two articles in the Wall Street Journal discussed this acquisition. A November 28 article stated that A&P seeks to buy Waldbaum, and a December 1 article stated that A&P will acquire Waldbaum. Waldbaum experienced an abnormal return of 70.5 percent on November 28 and experienced an abnormal return of 0 percent on December 1. Table 6 presents Supermarket General's abnormal return for the November 28, 1986 event date. The abnormal return is negative but not statistically significant. This suggests that stock market participants did not expect that A&P's acquisition of Waldbaum would lead to higher grocery prices in the broad New York/New Jersey metropolitan area.[25]

[25] This does not, however, rule out the possibility that A&P's acquisition of Waldbaum might have led to higher grocery prices in a small number of geographic locations within this metropolitan area.

Table 5[26]

Market Shares in New York/New Jersey metropolitan statistical area
(leading supermarket chains and voluntary groups)

A&P (includes Shopwell)	**16.1**
Waldbaum	**10.9**
Pathmark	17.1
ShopRite	13.6
Foodtown	10.2
Grand Union	5.5
Key Food	5.5
King Kullen	4.1
Acme	2.7
Gristedes	2.7
First National	2.7
Sloan's	1.4
Royal Farms	1.4
Met	2.7
Krasdale C Town	2.0
Associated	1.4

pre-merger HHI = 1075
change in HHI = 262
post-merger HHI = 1337

[26] Source: Supermarket News 1986 Distribution Study of Grocery Store Sales

Table 6
Estimated Event Response: Supermarket General

	Supermarket General
Intercept	-0.00090 (0.0011)
market return	0.54*** (0.18)
grocery index	0.28 (0.19)
announcement date (11/28/86)	-0.019 (0.016) [.85]
R-squared	.1321
Observations	212

standard errors in parentheses.
*** significant at 1 percent level
** significant at 5 percent level
* significant at 10 percent level
p-values corresponding to residuals in period 400 to 201 trading days before first event are listed in brackets

C. Vons Companies' acquisition of Safeway's Southern California stores (1987-1988)

Vons Companies' 1988 acquisition of Safeway's Southern California supermarkets substantially increased concentration in several metropolitan areas in Southern California and Nevada. Table 7 lists these metropolitan areas along with the relevant concentration statistics. The major competitors of Vons and Safeway when this merger was announced were Lucky Stores Inc. (Lucky), Albertson's Inc., American Stores Company's Alpha Beta division (American), Federated Department Stores' Ralph's division (Federated), and Stater Brothers. Of these competitors, Lucky, Albertson's, American, and Federated are good candidates for study.[27] In 1988, roughly 30 percent of Lucky's 579 stores, roughly 23 percent of Albertson's 452 stores, and roughly 11 percent of American's 1498 stores were in metropolitan areas affected by the acquisition. Federated obtained about 20 percent of its revenue from its Ralph's supermarket division. Nearly all of the Ralph's stores were in metropolitan areas affected by the acquisition. Table 7 shows the HHI statistics for the metropolitan areas where rival firms' stores are located. For these stores, Vons' acquisition of Safeway's Southern California stores, on average, increased the HHI by about 300 to about 1900. Thus, if Vons' acquisition of Safeway's Southern California stores was anticompetitive, then the share price of Lucky, Albertson's, and Federated should increase while the share price of American should increase by a smaller amount.

Table 8 lists all of the Wall Street Journal and New York Times articles relating to Vons' acquisition of Safeway. Because Safeway was privately held during the time of this acquisition, we cannot verify that news of the acquisition reached the market on these dates. In addition, American bid to acquire Lucky on March 3, 1988. As Table 11 indicates, this set off a series of

[27] Stater Brothers was privately held.

Table 7[28]

HHI statistics for Vons' acquisition of Safeway's Southern California stores

	pre-merger HHI	change in HHI	post-merger HHI	Lucky stores	AlphaBeta Stores	Albertson's stores	Ralph's stores
Los Angeles	1359	303	1662	131	168	55	113
San Diego	1897	706	2603	26	23	2	13
Riverside	2774	452	3266	7	9	3	1
San Bernardino	2692	271	2963	8	19	1	3
Bakersfield	1634	886	2520	0	2	3	1
Santa Barbara	2082	1091	3173	13	1	1	0
Ventura	2356	1778	4134	1	3	1	1
Las Vegas	1834	363	2197	12	4	11	0
Anaheim/Santa Ana	1521	106	1627	36	41	25	32

Table 8

Wall Street Journal articles: Vons Companies acquisition of Safeway's Southern California Stores

12/04/87	NY Times	Safeway Stores Inc. to sell 172 stores to Vons Companies in deal valued at about $408.2 million
12/04/87	WSJ	Vons Companies may acquire all Southern California operations of Safeway Supermarkets
5/31/88	WSJ	FTC preliminarily approved plans for Vons to acquire all of Safeway Supermarkets Southern California operations, but FTC required Vons to sell 12 stores.
7/28/88	NY Times	California Attorney General challenges Vons' acquisition of Safeway stores
8/30/88	WSJ	Vons buys 172 stores from Safeway Stores

[28] Source: Supermarket News 1988 Distribution Study of Grocery Store Sales

events affecting the likely future market structure of supermarket retailing in Southern California. Since any event that makes Vons' acquisition of Safeway more likely may also make American's acquisition of Lucky more likely, we cannot determine exactly what new information causes a market response. For this reason, we focus our attention on two event dates. The first event date is December 4, 1987, the date when the Wall Street Journal first reported Von's acquisition of Safeway's Southern California stores. A second event date, December 3, 1987, accounts for the possibility that information about the acquisition reached the market one day prior to publication of the Wall Street Journal article.

Table 9 lists the abnormal returns for Albertson's, Lucky, American, and Federated on December 3, 1987 and December 4, 1987. On each of these days, some firms realized positive abnormal returns and some firms realized negative abnormal returns. None of these returns were statistically significant at standard levels. Taken together, these results do not suggest that Vons' acquisition of Safeway broadly reduced competition throughout Southern California.[29]

[29] These results, however, do not rule out the possibility that this acquisition could have reduced competition in small isolated markets.

Table 9

Estimated Event Response: Lucky Stores, Albertsons, American Stores, Federated (Ralphs)

	Lucky Stores	Albertsons	American Stores	Ralphs
intercept	0.0015 (0.0012)	0.0016 (0.0012)	0.00012 (0.0011)	-0.0002 (0.0014)
market return	0.74*** (0.12)	0.93*** (0.11)	1.25*** (0.11)	1.04*** (0.14)
grocery index	0.36 (0.15)	0.025 (0.14)	0.067** (0.14)	0.095 (0.17)
12/3/87	0.018 (0.018) [0.14]	-0.023 (0.017) [0.92]	-0.0011 (0.017) [0.55]	-0.023 (0.021) [0.96]
12/4/87	0.018[30] (0.018) [.14]	0.023 (0.017) [.08]	-.0046 (0.016) [.63]	-0.013[31] (0.021) [0.84]
R-squared	.5421	.5499	.7041	0.5316
Observations	212	212	212	212

standard errors in parentheses
*** significant at 1 percent level
** significant at 5 percent level
* significant at 10 percent level
p-values corresponding to residuals in period 400 to 201 trading days before first event are listed in brackets

[30] A Wall Street Journal article reported Lucky's quarterly dividend on this date.

[31] On this date, a Wall Street Journal article reported that sales for the first 43 weeks of 1987 rose 4.7 percent.

D. American Stores acquisition of Lucky Stores Inc. (1988)

In March 1988, American Stores Company (American) made a tender offer for Lucky Stores Inc (Lucky). A combination of these two chains would have increased concentration in metropolitan areas in both the Midwest and California. We focus our attention on California because we could not find a publicly traded firm in the Midwest that received a substantial share of its revenue from areas affected by the merger.

In California, Albertson's is the only rival that we study: Other rival supermarket chains were either privately owned, accounted for only a small portion of their corporate parent's total profits, or, as was the case with Federated Department Stores' Ralph's Division, were the target of an acquisition themselves. Table 10 shows the proposed combination's effect on market share in those metropolitan areas in which Albertson's operated stores. Albertson's operated roughly 26 percent of its 452 stores in the metropolitan areas affected by the acquisition. For these stores, the proposed combination would have led to an average increase in HHI of 361 and would have led to an average post-merger HHI of 2324.

Table 11 lists all of the Wall Street Journal articles relating to American's purchase of Lucky. Using Table 11 and the abnormal returns to Lucky, we identify four event dates when new information about market structure in California might have affected Albertson's stock. On March 22, Lucky realized a positive abnormal return of 44.8 percent. This appears to be the date when news of American's bid for Lucky reached the market. Lucky also realized a positive abnormal return of 3.9 percent on March 23, the day the Wall Street Journal reported the bid, a positive abnormal return of 9.9 percent on April 28, the day Lucky announced that American's bid was lower than another bid, which turned out to be a leverage buyout (LBO), and a positive abnormal return of 2.3 percent on May 18, the

Table 10[32]

HHI statistics for American's acquisition of Lucky

	pre-merger HHI	change in HHI	post-merger HHI	Albertson's stores
Los Angeles	1662	242	1904	55
San Diego	2603	559	3162	2
Riverside	3266	126	3392	3
San Bernardino	2963	387	3350	1
Santa Barbara	3173	1721	3345	1
Ventura	4134	2688	4402	1
Las Vegas	2197	413	2610	11
Anaheim/Santa Ana	1627	632	2259	25
San Francisco	2522	302	2824	12
San Jose	1788	857	2645	1
Monterey	3196	277	3473	2
Oxnard	1730	916	2646	1
Santa Cruz	3327	220	3547	3

Table 11
Wall Street Journal articles: American Stores Company's acquisition of Lucky Stores

3/23/88	WSJ	American Stores Co. makes an unsolicited tender offer of $1.74 billion, or $45 a share, for Lucky
3/24/88	WSJ	Lucky Stores Inc. shares climbed $2 as arbitragers bet a higher bid will emerge
3/29/88	WSJ	American Stores may boost bid for Lucky Stores to $50 a share if Lucky agrees to a quick and friendly transaction
4/8/88	WSJ	Lucky Stores rejects $1.93 billion takeover offer
4/13/88	WSJ	American Stores ready to negotiate tender offer
4/21/88	WSJ	Lucky Stores is continuing to review variety of alternatives to American Stores $45 a share tender offer and also delayed implementing further step in 'poison pill' defense

[32] Source: Supermarket News 1988 Distribution Study of Grocery Store Sales

4/26/88	WSJ	American Stores seeks Lucky Stores for $ 1.74 billion; latter closes bidding
4/27/88	WSJ	American Stores seeks Lucky stores; pressures Lucky to set up formal auction
4/28/88	WSJ	Lucky says American Stores bid is lower than others
4/29/88	WSJ	Lucky Stores agreed to estimated $61 a share or 2.35 billion LBO, but American Stores may press rival bid
5/2/88	WSJ	American Stores extends bid for Lucky, which has agreed to an LBO
5/10/88	WSJ	Lucky makes ultimatum that American Stores either boost bid or end takeover attempt
5/16/88	WSJ	American Stores extends $1.74 billion takeover bid
5/18/88	WSJ	American Stores bids $2.51 billion, or $65 a share, for Lucky stores
5/23/88	WSJ	American Stores will buy Lucky for $ 2.51 billion
6/1/88	WSJ	FTC gave preliminary approval to American Stores acquisition of Lucky stores provided American Stores divests a limited number of stores.
7/28/88	NY Times	California Attorney General challenges Von's acquisition of Safeway stores
8/4/88	WSJ	California Attorney General asked FTC to reject American Stores purchase of Lucky stores, citing possible anti-competitive effects
8/15/88	WSJ	American Stores to sell Kash 'n Karry for $305 million; sells 38 Lucky Stores to ABCO markets
8/30/88	WSJ	Vons buys 172 stores from Safeway Stores
9/2/88	WSJ	American Stores gets final FTC approval for purchase of Lucky Stores
9/8/88	WSJ	American Stores acquisition of Lucky Stores is temporarily blocked by federal judge
9/30/88	WSJ	A federal judge issued a preliminary injunction blocking American Stores' acquisition of Lucky
10/27/88	WSJ	American Stores receives FTC approval to sell 37 stores as part of Lucky acquisition
4/3/89	WSJ	A federal appeals court overturned a preliminary injunction that barred American Stores from acquiring Lucky
7/7/89	WSJ	American Stores Inc. said that a federal appeals court dismissed an action by the California attorney general that sought to undo American's merger with Lucky Stores Inc.
7/13/89	WSJ	The 9th U.S. Circuit Court of Appeals granted a request by the California attorney general for a 30 day stay affecting American Stores's acquisition of Lucky Stores Inc.
8/22/89	WSJ	Supreme Court Justice Sandra Day O'Connor issued a last-minute order temporarily blocking the merger of American Stores Co's Lucky and Alpha Beta supermarket chains
11/8/89	WSJ	The California Attorney general agreed to modify a preliminary federal court injunction that blocked American Stores Co.'s merger of Alpha Beta and Lucky
5/1/89	WSJ	The Supreme Court ruled that federal courts have broad powers to dismantle anticompetitive mergers. This means that California officials may proceed in their effort to block American Stores Co.'s takeover of Lucky
5/18/89	WSJ	American Stores Co. plans to sell its Alpha Beta chain in order to settle an antitrust action brought by the California attorney general.

day that American matched Lucky's LBO bid. Based on this, we use March 22, March 23, April 28, and May 18 as dates when new information about future market structure might have affected Albertson's stock. We cannot use Lucky's abnormal returns to identify important dates after June 9, 1988 because Lucky ceased to be traded after this date. Consequently, we do not use these dates as event dates.

Table 12 lists the abnormal returns for Albertson's. On March 22, the day that Lucky realized a positive abnormal return of 44.8 percent, Albertson's realized a positive abnormal return of 2.9 percent. While this abnormal return is statistically significant at only the 14 percent level using the t-test, the abnormal return falls in the 95th percentile of the empirical distribution of Albertson's abnormal returns. Hence, if the empirical distribution of Albertson's abnormal returns exactly corresponded to the underlying sampling distribution, we could reject the null hypothesis that Albertsons did not experience a positive return on March 22 at the 0.05 level using a one-sided test. Albertson's realized a negative abnormal return that was not statistically significant at any standard level on March 23 and realized a positive abnormal return that was not statistically significant at any standard level on April 28. On May 18, the day that American matched Lucky's competing bid, Albertson's realized a positive abnormal return of 2.2 percent that is not statistically significant at any standard level, although this return corresponds to the 90th percentile of the empirical distribution of Albertson's abnormal returns. We believe that the results for the March 22 and May 18 event dates represent limited evidence that the stock market believed that American's acquisition of Lucky would have led to higher supermarket prices in California.

An event subsequent to American's acquisition of Lucky offers some additional evidence that the stock market believed that this acquisition would lead to higher supermarket prices. Both the

Table 12

Estimated event Response: Albertsons

	Albertsons
Intercept	0.0012 (0.0012)
market return	0.90*** (0.11)
supermarket index	0.083 (0.13)
3/22/88	0.028 (0.018) [.05]
3/23/88	-0.012 (0.018) [.20]
4/28/88	0.006 (0.018) [.30]
5/18/88	0.022 (0.018) [.07]
R-squared	.5026
Observations	251

standard errors in parentheses
*** significant at 1 percent level
** significant at 5 percent level
* significant at 10 percent level
p-values corresponding to residuals in period 400 to 201 trading days before first event are listed in brackets

Federal Trade Commission (FTC) and the California Attorney General's office reviewed both Von's acquisition of Safeway and American's acquisition of Lucky. While the FTC entered into a consent with Vons that required Vons to divest 12 stores and entered into a consent with American that required American to divest between 31 and 37 stores, the California Attorney General took a tougher stance. The California Attorney General's consent agreement with Vons required Vons to sell some additional stores. In addition, the California Attorney General challenged American's purchase of Lucky in Federal Court and ultimately forced American to divest its Alpha Beta chain. The first article in either the Wall Street Journal or the New York Times that indicated the California Attorney General's tougher stance was a July 28, 1988 New York Times article. On the day that this article appeared, Albertson's realized a negative abnormal return of 3.2 percent, which was statistically significant at the 8 percent level using a t-test.[33]

The event study indicates that Albertsons' realized abnormal returns of nearly 3 percent when news of American's tender offer for Lucky reached the market. By making several assumptions, we can relate this increase in share price to an increase in product market prices. If we assume that supermarkets have profit margins equal to roughly 2 percent of gross revenues,[34] then a change in market structure that increased price by 1 percent would increase supermarket profits by 50 percent. Assuming that the average revenue generated by Albertsons' California stores equals the average revenue generated by its other stores, a 50 percent increase in profit at the 26 percent of its stores that operate in areas affected by the acquisition would lead to a 13 percent increase in overall profits.

---

[33] This return corresponds to the 98th percentile of the empirical distribution of Albertson's excess returns.

[34] This estimate is based on figures in recent 10K reports for Albertson's, Winn Dixie, Weis Markets, and Safeway Stores.

Assuming that the price increase lasted 2 years and assuming a discount rate of 15 percent, the 2 year increase in profit should lead to a 3.5 percent increase in share price. Thus, the nearly 3 percent increase in Albertson's share price is roughly consistent with a 1 percent increase in supermarket prices lasting 2 years based on our assumptions and the additional assumption that the stock market believed that the tender offer would succeed with certainty. In 1988, the metropolitan areas of Los Angeles, Anaheim/Santa Ana, San Diego, Riverside/San Bernardino, San Francisco, and San Jose had combined supermarket sales of 23 billion dollars.[35] Thus, a one percent price increase in these metropolitan areas that lasted two years would amount to half a billion dollars.

VI Conclusion

This study examines the abnormal stock returns of rival firms in order to determine whether certain retailing mergers lead to higher product prices. Using a methodology that explicitly controls for any nationwide efficiency-signaling effect, we find some evidence that two acquisitions may have led to higher prices. Nordstrom, Carter Hawley Hale, and Federated experienced statistically significant positive abnormal returns when May Department Stores announced its acquisition of Associated Dry Goods. This acquisition increased the HHI computed for traditional department stores in Southern California by 678 points to 2615. Using this methodology, we also find that Albertson's experienced abnormal returns that are consistent with American Stores' acquisition of Lucky Stores leading to a reduction in competition. This acquisition would have increased the HHI among supermarkets in the affected metropolitan areas by 361 points to 2324. As described earlier, the abnormal stock returns of the rival firms in these two mergers are roughly consistent with a one percent price increase lasting two

[35] Supermarket News 1990 Distribution Study of Grocery Store Sales.

or three years. These results offer some limited evidence that retailing mergers that lead to large increases in concentration in already concentrated markets may lessen competition and lead to higher product prices.[36]

We find no evidence that A&P's 1986 acquisition of Waldbaum's, which increased HHI by 262 points to 1337, or Von's 1988 acquisition of Safeway's Southern California stores, which increased the HHI by 335 points to 1929, broadly reduced competition in the affected metropolitan areas. The results for these two acquisitions suggest that mergers in relatively unconcentrated markets do not harm competition.

[36] Because the geographic markets over which we compute the HHI statistics listed above are broader than the geographic markets that likely would be defined using the Department of Justice and Federal Trade Commission 1992 Merger Guidelines, we cannot say at what exact HHI level the anticompetitive harm occurs. For instance, the anticompetitive harm found in the American Stores/Lucky transaction may result entirely from antitrust markets where the post-merger HHI exceeds 3000.

References

Anderson, K., 1990, *A Review of Structure-Performance Studies in Grocery Retailing*, Federal Trade Commission

Bresnahan, T., 1989, "Empirical Studies of Industries with Market Power," in Richard Schmalensee and Robert Willig, eds., *Handbook of Industrial Organization*, New York: Elsevier Science Publishing Co., Inc.

Brown, S., and J. Warner, 1985, "Using daily stock returns: The case of event studies," *Journal of Financial Economics*, 14, 3-31.

Chevalier, J., 1995, "Capital structure and product-market competition: Empirical evidence from the supermarket industry," *American Economic Review*, 85(3), 415-435.

Cotterill, R., 1986, "Market power in the retail food industry: Evidence from Vermont," *The Review of Economics and Statistics*, 68(3), pp. 379-386.

Eckbo, E., 1983, "Horizontal mergers, collusion, and stockholder wealth, *Journal of Financial Economics*, 11, 241-273.

Fama, E., 1976, *Foundations of Finance*, Basic Books, Inc., New York.

Jarrell, G., and A. Poulson, 1989, "The returns to acquiring firms in tender offers: evidence from three decades," *Financial Management*, 18(3), 12-19.

McAfee, P., and M. Williams, 1988, "Can event studies detect anticompetitive mergers?," *Economic Letters*, 28, 199-203.

Mullin, G., J. Mullin, and W. Mullin, 1995, "The competitive effects of mergers: stock market evidence from the U.S. Steel dissolution suit, *Rand Journal of Economics*, 26(2), 314- 330.

Prager, R., 1992, "The effects of horizontal mergers on competition : the case of the Northern Securities Company," *Rand Journal of Economics*, 23(1), 123-133.

Schmalensee, R., 1989, "Inter-Industry Studies of Structure and Performance," in Richard Schmalensee and Robert Willig, eds., *Handbook of Industrial Organization*, New York: Elsevier Science Publishing Co., Inc.

Stillman, R., 1983, "Examining antitrust policy towards horizontal mergers," *Journal of Financial Economics*, 11, 225-240.

Appendix A

Index for May Company's acquisition of Associated Dry Goods[37]

Alexanders Inc.
Carson Pirie Scott & Co.
Crowley Milner & Co.
Macy R H & Co Inc.
Neiman Marcus Group Inc.
Wieboldt Stores Inc.

Index for Great Atlantic & Pacific Tea Company's acquisition of Waldbaum's[38]

Albertsons Inc.
Big V Supermarkets Inc.
Bormans Inc.
Fisher Foods Inc.
Foodarama Supermarkets Inc
Giant Food Inc
Kroger Company
Lucky Stores Inc.
Motts Holdings Inc.
Penn Traffic Co.
Pueblo International Inc.
Safeway Stores Inc.
Stop&Shop Cos. Inc.
Sunshine Jr. Stores Inc.
Vons Companies Inc.
Weis Markets Inc.
Winn Dixie Stores Inc.

Index for Von's acquisition of Safeway and American Stores acquisition of Lucky

Big V Supermarkets
Bormans Inc.
Fisher Foods Inc.
Foodarama Supermarkets Inc.
Giant Food Inc.
Great Atlantic & Pacific Tea Co
Kroger Company
Motts Holdings Inc.
Penn Traffic Co.
Penn Traffic Co. New
Pueblo International Inc.
Smiths Food & Drug Centers Inc.
Stop & Shop Cos
Sunshine Jr. Stores Inc
Supermarkets General Corp.
Weis Markets Inc.
Winn Dixie Stores Inc.

[37] We constructed this index by selecting those firms in SIC code 5311 (department stores) for which CRSP had data during the relevant time period. We then deleted those firms that Fairchild's Financial Manual of Retail Stores (1986) did not list as operators of department stores.

[38] We constructed this index by selecting those firms in SIC code 5141 (groceries - general line) for which CRSP had data during the relevant time period. We then deleted those firms (e.g., Southland Corporation) that Fairchild's Financial Manual of Retail Stores (1987) did not list as operators of supermarkets.