

# *Food Marketing Policy Center*

**Continuing Concentration in Food Industries  
Globally: Strategic Challenges to an  
Unstable Status Quo**

By Ronald W. Cotterill

Food Marketing Policy Center  
Research Report No. 49  
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University of Connecticut  
Department of Agricultural and Resource Economics

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## Executive Summary

- Food manufacturing industries in the U.S. are more highly concentrated than in Europe. The top 20 firms account for 52% of the sector's value added and approximately 70% of the sector's advertising. Thus, branded food product marketing is more concentrated among the sector's top firms.
- Supermarket concentration at the local market level in the U.S. is high and has increased substantially over the past decade. For 94 large U.S. cities four-firm concentration averaged 74.4 % in 1998, up from 64.5% in 1987.
- Supermarket concentration in many regions of the U.S. comparable in size to countries in Western Europe has also increased and is approaching European levels. For example, the top four chains in California (population 32 million) now account for 70% of supermarket sales.
- No local market concentration ratios are available for Europe, but it is higher than the U.S. because national concentration is extremely high in most European countries. Three-firm concentration, on a national basis, is above 50% in 12 of 15 European countries.
- National supermarket concentration in the U.S. has also increased but only to a very modest level. The top four chains accounted for 31.7% of total U.S. sales in 1998, up from 23.3% in 1992.
- Foreign firms, most notably Ahold, Tengelmann, Sainsbury and Del Haize, are major players in global retailing. With the exception of WalMart, U.S. supermarket chains are not; however, leading U.S. chains, Kroger, Albertsons and Safeway are participating in the U.S. merger wave. Mergers have been the primary source of increased retail concentration at local, regional, and national levels.
- High concentration and strong brands at the manufacturing industry level combine with high local market concentration at the retail to create a vertical coordination problem. Double marginalization due to the exercise of market power at successive stages of the food channel means prices are higher and total channel profits are lower than they would be with joint, or vertically coordinated pricings by retailers and manufacturers. Many systems innovations including efficient consumer response, (ECR) and category management programs are best seen as attempts to eliminate double marginalization.
- In the ECR framework trade promotions are seen as inefficient and wasteful. Nonetheless, every day low pricing (EDLP) programs have failed to supplant trade promotion because trade promotion is one of the most effective strategies for eliminating double marginalization.
- Copycat private labels are an alternative coordination strategy that lower prices to consumers and allow retailers to capture a larger share of increased channel profits.
- National market concentration in the U.S. and pan European concentration in the U.S. may well double in the near future if the leading chains, which are still essentially regional in the U.S. or national in Europe, merge to form truly national or pan European supermarket chains.
- In the U.S. truly national supermarket chains may attain the critical mass needed to establish retailer brands as leading European chains have done. Branding the chain requires national media scope, e.g. WalMart in the U.S. This "out of the box" solution could severely diminish the position and power of the large food manufacturers and smaller supermarket chains in the U.S.
- Antitrust enforcement in the U.S. and Europe has not impeded the steady rise in concentration at all stages of the food system. However, support for more vigorous merger enforcement may soon come from major players within the sector. Since the context of antitrust is now "double monopoly" public actions to limit mergers that tend to create monopoly power at one stage of the channel benefit not only consumers but also firms at other stages who capture higher channel profits. Powerful firms at one stage of the food marketing channel have a vested interest in preventing mergers that create or sustain powerful firms at other stages.
- In the current environment the Robinson Patman Act, in the U.S. with its proscription of discriminatory discounts by manufacturers to large retailers, i.e. better trade terms that are not cost justified, may become a more binding constraint. Third party marketing firms may boom as an end run around Robinson-Patman.
- Ultimately, the evolution and performance of the global food system depends upon strategic moves by leading global manufacturers and retailers and public policy actions, especially antitrust enforcement. Given the current unstable environment, the stakes for winners and losers in this game are very high.

## 1. Introduction

Both food retailing and food manufacturing industries continue to consolidate throughout the world. This paper will focus on strategic trends in the U.S. and Western Europe, however the same factors are at work in Latin America and Asia. The trend towards a global food system has traditionally been led by global food manufacturers with “local” retailers in each country serving a passive and cooperative role as shopkeepers for manufacturer’s branded products. Today, however, retailers are going global. Moreover, the increase in retail concentration and power in distribution channels is fundamentally altering retailer-manufacturer relations and is fueling the rapid growth of third party market intermediaries. No one knows with certainty how this dynamic scenario will play out. It depends on strategic moves by the world’s leading food firms and public policy, especially antitrust enforcement.

This paper documents key trends in concentration at both the manufacturing and retailing level in Europe and the U.S. Recent mergers have been a major contributor to retail concentration in the U.S. Mergers among leading retailers in Europe are also on the rise. Many of the recent innovations in vertical coordination including Efficient Consumer Response (ECR), Every Day Low Pricing (EDLP), category management, and other strategic moves are best understood as responses to increasing concentration at all stages of the post farm gate food system. The channel now has “shared” monopoly, i.e. tight oligopoly at both the manufacturing and retail stages. There is a need for vertical coordination between manufacturers and retailers to supplant market price determination in wholesale markets. Large manufacturers, with category dominant national brands, and large supermarket chains that occupy powerful positions in many local food markets must rely on more than independent product pricing to reduce “double marginalization” (i.e. the exercise of market power at two stages in the channel). As we show below, reducing double marginalization increases total channel profits and lowers prices to consumers.

From a public policy perspective, for whatever reason, antitrust policy has been ineffective in limiting concentration and the exercise of market power in food industries. Now we face compound market power. Antitrust challenges that enhance competition at one stage of the marketing channel should have support not only from consumers but also powerful firms at other stages of the market channel because such actions increase their profits.

### Box 1: External Forces Driving Observed Changes in the Food System.

Several forces, external to the food industry, are driving changes in the system that offer challenges and opportunities for manufacturers and retailers:

- Information technology is reconfiguring business organization and procedures with major gains in labor productivity and ability to manage. First generation uniform communication system/uniform product code scanning systems are universal. Second generation intranet and internet technologies are rapidly gaining acceptance.
- Biotechnology and other food science technologies are creating new functional foods for health needs.
- The revolution in communications is directly affecting the ability of food firms to advertise and build brands. Mass-market advertising is being fragmented into much finer consumer segments via the offer of multiple cable TV channels. Indirectly, the revolution in communications, including mobil telephones, faxes, e-mails, etc., is creating a society where instant gratification is common. Consumers have low tolerance for cumbersome, time consuming relationships, including food shopping and food preparation.
- U.S. consumers, the harbinger of western developed country economic change, envision an affluent, multicultural global society in the future. Consumer tastes and preferences in Europe are converging to a diverse set of foods and supermarket convenience. Travel, trade, and open communication ensure this. Diversity in the workplace will increase and be valued. Incomes will continue their recent strong growth. A recent survey finds that 51 percent of U.S. teenagers expect to “live outside of country of birth” (Quelch).

#### Strategic Implications

- Food manufacturers must move beyond traditional old-line brands and line extensions thereof to apply their branding skills to truly new food products that consumers find novel, interesting and valuable. This includes moving beyond “ethnic” food to international cuisine, sourced globally.
- Food retailers may find advantage in reconfiguring the superstore to offer more than rows of shelves with groceries arranged by product category for preparation at home. Superstores will take advantage of new technologies and demographic trends by offering cuisine areas (Chinese, Mexican, Brazilian, Lebanese, Italian, Indian) with prepared food entrees for on-site or at home consumption, and chilled entrees for use at home, as well as packaged groceries for preparation at home.
- Executives in both manufacturing and retailing will of necessity need a global view of the food system to capitalize on external forces affecting the food system.

## 2. Food and Tobacco Manufacturer Concentration in the U.S.: Who are the Major Players and How Dominant are They?

The U.S. food manufacturing system is highly concentrated with relatively few large firms dominating the sector. Table 1 lists the top 25 food processing companies for 1998 in the United States. Philip Morris companies with 31 billion in food sales leads the list. The top ten companies all had more than 10 billion dollars in annual sales in 1998. This list includes only the U.S. sales of Nestle, but includes global sales for U.S. companies. If Nestle total company sales (45.9 billion dollars) were, in fact, included it would rank first. Note that two farmer owned cooperatives are in the top 25. Dairy Farmers of America is the recent combination of several large regional milk bargaining cooperatives that now represent farmers from New York to the Rocky Mountains. Land O'Lakes is another dairy cooperative with extensive processing operations and branded products.

Figure 1 documents the increase in dominance in the U.S. by the top 20 food and tobacco manufacturing companies over the past 30 years. In 1995, the top 20 food and tobacco manufacturing companies are estimated to account for over 52 percent of the sector's value added. This is up from 23 percent of value added in 1967. In 1995, if one adds the value added from the remaining top 100 food manufacturers they account for 77 percent of the sector's value added. This figure is up from 50.8 percent of value added in 1967. Table 2 gives four-firm concentration ratios and other information for each of the 53 U.S. census defined industries. Concentration in 1992 was highest in chewing gum (96%), cigarettes (93%), malt beverages (90%), vegetable oil mill products (89%), breakfast cereal (85%), refined cane sugar (85%), and macaroni/spaghetti (78%). For the 53 industries four-firm concentration averaged 53.3%. This is not a particularly high level. Some manufacturing industries are very unconcentrated, and in local or regional market industries, e.g. fluid milk, concentration is dramatically understated.

The last column in Table 2 gives the share of industry sales made by agricultural cooperatives. Cooperatives do not play a major role in most food and tobacco processing industries. The average share is only 6.9 percent; however, they are major players in butter (62.5%—Land O'Lakes), rice (44.5%—Riceland Foods), cheese (23.7%) and condensed milk (27.1%).

Since advertising is the key component in branded food product marketing, an examination of company advertising outlays gives us an indication of who the

major players are in branded food product marketing. Table 3 lists the top 21 advertisers in the food and tobacco processing sector for 1997. Sixteen of these leading advertisers are among the top 25 food processing companies in the country. Philip Morris leads both lists and is far and away the largest food advertiser with advertising expenditures of over 1.3 billion dollars in 1997. Note that the top 20 advertisers in food and tobacco processing accounted for 71.9 percent of all food advertising in 1997. This compares 52 percent value added in 1995. Thus, food advertising and branded food product production is even more concentrated than all food and tobacco manufacturing activity. Fresh product, i.e. fruit, vegetable, and meat industry concentration is also very high at the packer stage with a few agricultural cooperatives, as well as private firms, capturing large market shares.

From the standpoint of food manufacturer/food retailer relationships in the U.S. it is clear that food retailers are dealing with relatively few large organizations for a very significant proportion of the products that they sell in their supermarkets. Moreover, these companies sell highly differentiated products that have strong consumer acceptance; i.e. these brands have relatively inelastic demand curves.

## 3. Food Manufacturing Concentration in Europe: Pan European Integration Will Accelerate

Concentration in food manufacturing industries in Europe is, as we shall see, higher than in the U.S. when one looks at individual countries but much lower when one considers Europe as a single market. Table 4 gives the top 20 European food manufacturers as of January 1997. Just as the American list focuses on U.S. companies, this European list includes only European companies. Combining the two lists gives global rankings. Unilever, the top European firm at \$49.1 billion is the global leader. Nestle, the second European firm, is the second largest global firm. Philip Morris is third globally. Danone, GrandMet and possibly other European firms have multinational sales including sales in the U.S. However, only 12 European food manufacturers, as opposed to 25 U.S. firms have sales over \$4 billion.

Table 5 gives three-firm concentration ratios for 20 industries for each of ten countries. Average three-firm concentration for these industries ranges from 89% in Ireland to 55% in Germany. Thus, industry level concentration tends to be higher than concentration in the U.S. (average  $CR_4 = 53.3\%$  in Table 2).

As Europe integrates into a single market, mergers between leading manufacturers in different countries



will occur. Figure 2 corroborates this point. Today, 64 companies are the top company in an industry in only one country. Ten companies occupy the top position in two countries. Thereafter, multi-country leadership diminishes rapidly. Only 11 companies have top positions in more than four countries. Manufacturing firms that heretofore were leaders in their country now face the challenge of rising via growth or merger to leadership positions in Europe and worldwide. Mergers will dominate internal growth. Table 6 identifies the leading firms in each country for a set of industries. Although some of these firms are well known global operators, most are relatively obscure and unknown outside of Europe.

#### 4. Retail Concentration in Europe

Supermarkets have clearly become the mainstream distribution channel for consumers throughout Europe. Although slower than the U.S. to adopt supermarket technology after World War II, today European retailers lead the U.S. in store appearance, product mix, supply chain management, and related information technology applications. As in the manufacturing sector, supermarket chains tend to focus and dominate individual countries. Figure 3 gives three-firm national concentration ratios for several European countries. Sweden is the most concentrated. There the top three chains account for over 90% of grocery sales, however, at least one of those firms is a consumer owned cooperative. The least concentrated country is Greece where the top three firms capture approximately 30% of sales. As we shall see below even Greece is more concentrated than the U.S. if one uses national concentration figures for the U.S. A more appropriate comparison would be pan European concentration to regional concentration in the U.S.

Pan European concentration in food retailing is considerably lower than country level concentration because, as Table 7 illustrates, leading retailers in one country often have no or small operations in other countries. Leclerc leads in France but is not among the top five food retailers in any other country. Royal Ahold leads in the Netherlands and is the 5<sup>th</sup> largest retailer in the U.S. but has no top five presence in other European countries. Recently, Royal Ahold expanded its Spanish operations to 200 into Spain by acquiring ten supermarkets (Company Press Release, 9/7/99). A larger and much more powerful move is the recent merger of Promodes and Carrefour. The combined company will supply 25% of the Spanish market and will become the leading French food retailer. Spanish, French, and European Commission antitrust authorities

are currently reviewing this merger (WSJ, 9/2/99, p. A8, NY Times 9/6/99). It may require substantial divestiture of supermarkets to protect consumers. The Promodes Carrefour merger is widely regarded as a response to WalMart's acquisition of Asda in the UK earlier this year and its aggressive pursuit of acquisitions on the continent. WalMart is perhaps the only U.S. company that matches or exceeds the European food retailers in their drive to coordinate supply chains to achieve vertical efficiencies. It is almost certain that several other mergers between European food retailers and possibly with U.S. retailers will surface in the next few years.

#### 5. Food Retailer Concentration in the U.S.: Local Market, Regional and National Concentration Estimates

Commentaries on retailer power often do not appreciate the important distinction between supermarket concentration in local city markets and aggregate concentration measured at the regional or national level. They quickly leap to the latter and the issue of "bargaining power" against manufacturers assuming that it is the paramount issue. This is a mistake, because the problem of successive monopoly and its attendant demand for increased coordination between manufacturers and retailers is, by far, more important for understanding today's market place. Local market concentration measures the ability of supermarkets to exercise market power and raise retail prices. Figure 4 reports the distribution of four-firm concentration ratios in 94 of the top 100 U.S. cities for 1987 and 1998. There is a clear upward shift in four-firm concentration over this 11-year period. For example, in 1998 one third of these markets (31) had four-firm concentration above 80 percent of supermarket sales. In 1987 only 12 markets were that concentrated. Four firm concentration for 1998 averaged 74.4 percent. In 1987 four-firm concentration averaged 64.5 percent. Markets with four-firm concentration above 60 percent would routinely be expected to offer selling supermarkets some ability to exercise market power over retail prices. (See Box 2 on the relationship between seller concentration and price.) All but 12 of these 94 markets had four-firm concentration above 60 percent.

Table 8 gives the mean value for metropolitan statistical area concentration ratios for selected regions of the country as well as for the entire country. Local market concentration is highest in California at 90.7 percent average and lowest in the Midwest at 69.3 percent in 1998. Local market concentration uniformly increased throughout the country.

Since European authors often quote country level concentration ratios when discussing European food retailing, I have computed regional concentration ratios for regions of the United States that are of a similar size to European countries. Table 9 gives such concentration ratios for 1992, and Table 10 gives them for 1998 so that we can evaluate in detail the increase in retail concentration for these regions of the United States. In Table 9 the state of California with population of 29.7 million had four-firm concentration of 50.1% in 1992. Four-firm concentration for the state of Florida with population of 12.9 million was 77.7% in 1992, considerably higher than for the state of California. The Northeast and the upper Midwest both had four-firm concentration ratios of roughly 31% in 1992.

Moving now to Table 10, by 1998 four-firm concentration in the state of California had increased 19.7 points to 69.8%. This dramatic increase of four-firm concentration is due primarily to two major mergers in California. Albertsons acquired American Stores, and Safeway acquired the Von's grocery store company. By 1998 concentration in the state of Florida also increased increasing 10 points to 87.7%. In the Northeast with a population of 57.9 million people, which is similar in size to the United Kingdom, four-firm concentration increased 10.7 percentage points to 41.3 percent. Again, a major source of this increase in four-firm concentration was mergers between firms in the region, especially mergers under the Royal Ahold corporate umbrella. In 1992 Ahold wasn't even listed in the top 5 retailers for the Northeast region, but by 1998 it was ranked first because it had acquired the Stop & Shop chain in New England, the Giant Food chain in Washington, D.C. and Baltimore, and the Pathmark chain in the greater New York City region. Note also that Sainsbury with its acquisition of Shaw's and Star Markets in New England joined the Tengelmann/A&P chain in the top 4 ranking for the Northeast. Thus, 3 of the 4 leading supermarket chains in Northeastern United States are now European owned.

In the upper Midwest, retail concentration increased only 2.3 percentage points to 34 percent of the market. The region was relatively calm on the merger front, however, Safeway acquired the Chicago based Dominick's chain and the Jewel chain, a subsidiary of American stores, was acquired by Albertsons.

Note that the regional four-firm concentration ratios in Table 10 are all uniformly lower than the corresponding average local market concentration ratios for cities reported in Table 8. For example, local market concentration in California in 1998 in its 6 major cities averaged 90.7 percent, which is significantly higher than the statewide four-firm concentration ratio of 69.8. This

### **Box 2: The Relationship between Local Market Concentration and Prices**

Figure 5 is an illustration of the relationship between market concentration and price levels. Prices for several Royal Ahold supermarkets for a set of local markets with variation in concentration were collected in March 1999. The lowest priced supermarket was assigned an index value of 100. Prices across these markets were as much as 20 percent higher than the lowest priced store. Some of this price variation is due to factors other than market concentration; however, as this plot reveals a very significant proportion of observed price variation is explained by market concentration.\*

Market concentration in Figure 5 is measured by the Herfindahl Index, which is the sum of the square of each market share. The Herfindahl ranges from near zero (many small share firms) to 10,000 (one firm with 100 percent SOM). Four-firm concentration ratios are highly correlated with the Herfindahl. A four-firm ratio of 60 percent is roughly equivalent to a Herfindahl value of 1,000. A four-firm ratio of 80 percent is roughly equivalent to a Herfindahl of 1,800. The U.S. federal merger guidelines consider markets with Herfindahls below 1,000 to so unconcentrated as to offer no chance for the exercise of market power. Between 1,000 and 1,800, the exercise of power is deemed feasible. Above 1,800 the U.S. government becomes very concerned. Figure 5 supports the government's conjecture. Between 1,000 and 2,000 prices clearly rise, and thereafter, the price rise continues but at a less steep rate.

\*Fitting a logarithmic line to these data explains 60.1 percent of the variation in price.

means regional concentration ratios uniformly tend to understate local market concentration and thus uniformly tend to understate the degree of seller power that supermarket chains have in local geographic markets. This insight also holds for country vs. local city market comparisons in Europe. The relevant concentration figures are for local urban food markets, e.g., Manchester or Birmingham, or possibly sections of such major urban areas, not the total U.K.

Table 10 also gives the regional dollar sales and the total U.S. corporate sales for each chain. For, multi-national chains it gives a total global sales as well. Note that Walmart with 136.6 billion dollars (which includes all of its non-food operations as well as its food operations globally) is by far the largest retail organization. Kroger is next with total sales all in the US of 43 billion dollars, then Albertsons with total sales, again all in the US, of 35.7 billion. Three leading European chains rank among the largest retailers globally. The Tengelmann chain has total sales of 29.6

billion (10.5 billion in the United States.) The Ahold chain has global sales of 25.9 billion with 19.7 billion in the United States and the Sainsbury chain has a total global sales of 23.8 billion with only 4.2 billion in the United States.

Moving on to national market concentration one finds a significantly weaker but very visible trend towards increased concentration. Table 11 reports the sales and market share position for the top 20 supermarket chains in 1992. The top four chains nationally in 1992 were Kroger, American Stores, Safeway and A&P/Tengelmann. Those four firms together, however, accounted for only 23.3% of U.S. supermarket sales. The top 20 firms in 1992 accounted for 51.0% of supermarket sales in 1998. Table 12 shows that top chain, Kroger, increased sales by 21.9 billion dollars to 43.1 billion. Kroger's market share increased from 7.7% in 1992 to 10.8% in 1998. Much of this gain was due to acquisitions (see Table 13.). The number 2 chain in 1998 is the combination of Albertsons and American at 35.7 billion with an 8.9% market share. The number 3 chain is the combination of Safeway and Vons with 25 billion in sales and 6.2% market share. The number 4 chain is the Ahold companies, which moved up from number 8 in 1992 to sales of 23.4 billion in 1998 and a market share of 5.8%. The top four firms in 1998 account for 31.7% of the market up from 23.3% in 1992. The top 20 firms in 1998 accounted for 60.4% of the market, up 10.2 percentage points from 1992. Thus, we can conclude if one is comparing national concentration to national concentration across the Atlantic, concentration at the national level is indeed lower in the United States than it is in most of the smaller European nations. However, American supermarket chains are larger in absolute dollar volume size than European companies in Europe. This suggests that they should, if anything, enjoy larger economies of scale and scope related to the production and physical distribution of food products than European chains.

With regard to the exercise of retailer power against manufacturers and other suppliers in the U.S. food system, local and regional concentration is more important than national concentration because suppliers can't threaten to switch sales to other geographic localities. Fully national distribution is important to them. This improves retailers' bargaining position in any coordination games and is a major reason for the rise in slotting allowances, street money, and other transfers to retailers.

Table 13 lists the major supermarket mergers for 1991 through the first half of 1999. Kroger's acquisition conduct is a classic example of smaller fish being swallowed by progressively larger fish. Kroger, the big

fish, acquired Fred Meyer in 1998, which acquired Ralphs and Quality Foods in 1997, and Quality Foods acquired Hughes in 1996. Over the 1991 to 1999 period, the aggregate value (price paid) for acquired supermarkets relative to their annual sales has increased from the .2 to .3 range in 1991 to the .5 to .8 range in 1998-99. Acquirers are now paying a higher premium per dollar retail sales. To make such a merger pay for acquiring firm shareholders, even larger efficiencies and/or more pricing power needs to flow from the combination.

In summary, two related major forces contributed to increased retail concentration in the United States during the 1990s: the entry of European chains into US markets, and mergers. In many instances these mergers had significant horizontal components, i.e., the merged chains competed with each other in one or more local geographic markets. Only one merger was stopped by antitrust authorities. The state of California successfully challenged the American Stores-Lucky merger forcing American to divest its Alpha Beta chain to Food 4 Less in 1991 (see Table 13). In all other mergers Federal Trade Commission and state antitrust authorities have routinely forced divestiture of only overlapping stores in an attempt to preserve competition. The regional and local market concentration data presented here, however, indicate that in spite of antitrust authority efforts, concentration has increased significantly. Recently, individual firms, the American Antitrust Institute, and other trade associations representing consumers, farmers, and food firms, have called for stiffer anti-merger enforcement in food industries, especially food retailing (Foer, 1999, Cotterill, 1999b).

## **6. Shifting Power Balances Drive New Coordination Programs: The U.S. Example**

In the 1980s leading U.S. food-manufacturing firms enjoyed powerful market positions with strongly differentiated brands supported by significant advertising expenditures. Their position has not appreciably changed since then, however, the position of food retailers has. Local market retail concentration has increased significantly giving retailers the ability to exercise market power on a more systematic and pervasive basis than in the 1980s. Consequently, we have a food system that is predominantly served by powerful food manufacturers selling to powerful food retailers.

A successive monopoly model of the distribution channel captures the essence of the channel coordination problem in the U.S. and in individual European countries. Food manufacturing industries such as

carbonated beverages, breakfast cereal, and beer are tight oligopolies that sell highly differentiated brands that have reasonably inelastic (-1.5 to -3.0) brand level demand curves at retail (Tellis, 1988, Cotterill et al. 1996, Langan and Cotterill 1994, Langan 1997, Ma 1997, Nevo 1997, Cotterill and Haller 1997). The observed brand inelasticity is primarily due to product differentiation, however, some is also due to coordinated pricing, i.e. price followship tends to reduce brand elasticities (Cotterill et al. 2000). Consumer pull advertising and promotion by the brand manufacturer reduces any bargaining power of buying groups (Cotterill 1997, Gerstner and Hess, 1991). Consumers want the brand so retailers must carry it. Thus each brand tends to be a monopoly; i.e. food manufacturers face brand level demand curves that have slope. As we have explained, however, retailers also have market power in the local markets where they sell products due to high seller concentration in such local markets (Also see Marion et al. 1979, Weiss, 1989, Cotterill, 1986, 1999a, Foer, 1999).

Spengler (1950) was the first to analyze the impact of successive monopoly on channel coordination and economic efficiency. Figure 6 can be used to explain the problem.<sup>1</sup>  $D_r$  is the retailers demand curve.  $MR_r$  is the corresponding retail marginal revenue curve. If we assume, without loss of generality and for ease of illustration, that the retailer has a fixed cost of retailing and that the only variable cost is the purchase of the product  $Q$ , then the retailers marginal cost is the manufacturer price,  $w$ . Since a profit maximizing retailer always equates marginal revenue and marginal cost ( $MR_r = w$ ) the retailers marginal revenue curve is the demand curve for  $Q$  at the manufacturer level. The manufacturer therefore equates the marginal revenue of the retailers input demand curve ( $MR_m$ ) to its marginal cost of manufacturing the product. In other words, the manufacturer computes the marginal revenue of the retailer's marginal revenue, hence the name double marginalization. In Figure 6 the profit maximizing manufacturer offers quantity  $q_2$  at price  $p_1 = w$ , and the profit maximizing retailer sells this quantity at price  $p_2$ . If the two firms integrated the new single monopolist would maximize profits by lowering price to  $p_1$  and selling  $q_1$ . The integrated firm's total profits are greater than the profits of the two successive monopolists.

<sup>1</sup> This analysis of double marginalization to explain formally the role of trade promotions and private labels in the food system was first presented in Cotterill (1999d).

The implications of this double marginalization phenomena are very real for the US food marketing system today. Food manufacturers and food retailers, can in fact, increase their profits if they discard independent pricing practices and talk to each other to coordinate pricing and other terms of trade. To the extent that retailers also have power in wholesale markets, this "big buyer power" affects their bargaining ability to capture a larger share of the coordination gains. The double marginalization model predicts that vertical coordination will increase channel profits and lower prices to consumers. This is a very rare win-win situation in economics, the "dismal science" of trade offs!

With this economic model one can begin to understand why strategic moves such as the efficient consumer response (ECR) program with its everyday low pricing (EDLP) component was only partially successful. ECR moves to improve the logistical flow of products through the system, such as just-in-time inventory management procedures, have been successful because they reduce cost. However, one of the largest projected savings due to the innovation of ECR was related to the elimination of stop-go price promotions via the establishment of everyday low prices (EDLP) throughout the food system. EDLP didn't work and savings due to smoother product flow haven't accrued. EDLP has failed in the United States precisely because of the need for trade promotion programs as a vehicle to control or eliminate double marginalization in the channel.

Consider Figure 7. The manufacturer can offer product to the retailer on the condition that it be promoted at price  $p_1$  the channel profit-maximizing price. To obtain the retailers cooperation, the manufacturer need only lower  $w$  to a level that increases the retailer's profits from the non-promoted level. Figure 5 illustrates a trade promotion's impact on prices and profits. At the non-promoted retail price level,  $p_2$ , the channel profit the manufacturer has profits equal to the area,  $wbde$ . The retailer earns profits equal to area,  $p_2abw$ . With promotion the retailer agrees to sell at  $p_1$  and the manufacturer lowers the wholesale price to  $w_1$ . The retailer participates in the trade promotion because its profits, area  $p_1fiw_1$ , are greater than its non-promotion profits, area  $p_2abw$ . Manufacturer profits under promotion are area  $w_1ige$ , which is larger than non-promotion profits,  $wbde$ .

Under the trade promotion scenario both the manufacturer and retailer share the increased profits due

to the elimination of double marginalization. Thus an old logistically inefficient workhorse in the food system, trade promotions, has not been put out to pasture. It has a new more central role for pricing efficiency in concentrated food channels.

The retailer, however, has a second marketing strategy that can dominate participation in a trade promotion. If the retailer can introduce a private label product of equal quality and consumer acceptance, i.e. a product that destroys all manufacturer brand equity built up due to advertising, product trademarks, and design, the retailer can appropriate all of the profits earned at  $p_1q_1$  in Figures 6 and 7. Private label products, however, rarely are so successful that they eliminate manufacturer brands. Nonetheless, they clearly diminish national brand pricing power (Cotterill et al. 2000). Trade promotion by manufacturers reduces the incentives for development of private labels, and the amount of brand equity that manufacturers have created also affects retailers ability to introduce private label products. One cannot analyze private label pricing in a vacuum. Nonetheless, the rapid growth of private label products in the 1990's is in large part due to the problem of successive monopoly in the food system.

## 7. An Out of the Box Solution: Truly National Supermarket Chains

Moves to improve channel coordination and pricing efficiency such as trade promotions, ECR, category management, and copycat private label programs are “in the box” solutions. They don't challenge the structure of the food-marketing channel, essentially leaving the food-manufacturing firms intact and in control of the content of the system. Although U.S. supermarket chains are larger in absolute size than their European markets counterparts, and they dominate regions of the U.S. comparable in size to many European countries, unlike many European supermarket chains they have not established themselves as channel captains by instituting strong retail brands via supply chain management programs.<sup>2</sup> In the U.S. this is an “out of the box” move that would diminish the position and stock market value of large U.S. food manufacturers. The breakfast cereal industry has experienced a very strong taste of this since 1995 (Cotterill, 1999c). Box 3 provides the executive summary from a very insightful paper written by

<sup>2</sup> Cotterill (1997) discusses this option and whether developed nations' food systems might converge to it. See Wrigley (1999), a leading British geographer, for a very interesting European perspective on the transformation of U.S. food retailing.

Richard Bell, Institute of Retailing, Oxford University that focuses on the current status of European food distribution. Leading supermarket chains in Europe are clearly the channel captains, and their market power continues to increase. Leading manufacturer brands no longer automatically command distribution. Retailers are branding their stores and their full own label lines. The litany continues with retailers dominating manufacturers, and with antitrust authorities focusing more attention on food industries.

The next phase in the U.S. food system may well be the harbinger of such a radical shift in economic fortunes. That phase could be the emergence of truly national supermarket chains, unseen in the U.S. since the heyday of A&P in the 1930's and 1940s. In the near future, we undoubtedly will see more mergers among the top 10 supermarket chains. Since this is an “out of the box” solution, let's speculate on some feasible geographic combinations that would assemble truly national chains with significant national market shares. Using Table 12 as a base, and ignoring the impact of horizontal divestitures that attempt to protect competition in local market areas, if Kroger, Safeway, Winn Dixie and Shaws (Midwest, West, South, and Northeast) combined, the resulting company would be truly national in scope with sales of \$86.4 billion and a national market share of 21.5%. A second combination could be Albertsons, Ahold, Food Lion, and Meijer (West, East, South and Midwest). It would have sales of \$77.9 billion and a national market share of 19.3 percent. These two mammoth chains would account for slightly over 40 percent of supermarket sales. Walmart's much ballyhooed expansion by building supercenters is trivial in comparison. A third combination could assemble another 20 percent firm in response to these conjectured consolidations. These three firms plus a larger Walmart, e.g. 10 percent SOM, would put national four-firm concentration at 70 percent.

Consolidation to this level would have two major impacts. The first is a quantum leap in retailer bargaining power that was the basis for the Robinson Patman Act (the anti A&P act) in the 1930's. Recently, the American Antitrust Institute (AAI) and Wakefern Food Corporation, Elizabeth, New Jersey, the nation's largest retailer-owned cooperative wholesale, petitioned the FTC on, among other things, this issue. The AAI already is concerned that recent mergers have, in fact, generated sufficient size disparity in the supermarket industry to trigger Robinson Patman claims:

“What we are calling the mega-chains—the five largest retail grocery sellers—exercise enormous buying power, which they employ against the food producers and manufacturers. The sheer size of the

**Box 3: Executive Summary: The Challenge Of Food Distribution (In Europe)**

1. The process of distribution has developed from a conduit between the functions of production and consumption to a position where it exerts considerable influence on both the process of production and the pattern of consumption.
2. Product brand owners can no longer presume that numerical distribution will occur automatically given brand awareness and product acceptance.
3. The structure of retailing in most countries of European Union countries is largely oligopolistic and the level of concentration continues to increase.
4. Information technology, led by epos data, has enabled retailers to integrate the process of distribution and reverse the supply chain from producer push to consumer pull.
5. Retailers are now vertically integrated with dedicated distribution systems substantially replacing the role of the wholesaler. This has further disadvantaged small retailers, and created an effective entry barrier.
6. Retailers are now seeking strategic alliances to allow them to maximise the utilisation of their logistics infrastructure and their buying power. The UK and US are now experiencing horizontal integration of the replenishment process.
7. Food retailers have developed large surface out of town sites which have increased consumer search costs. Each site contains just one food retailer thus minimising the opportunity for consumers to compare prices. The combined effect of these developments is a reduced ability for the consumer to switch between stores and, as a consequence, a greater willingness to purchase substitute products.
8. Grocery retailers are developing their chains into retail brands thus differentiating themselves from their competitors. The manifestation is the growth of private label products and increased selective listing of branded items. The effect is reduced head-to-head price competition.
9. The benefit of product branding is that the manufacturer has controlled most of the down and up stream variables through the bond of the brand with the consumer. Retailers now control the in-store marketing levers and act as gatekeeper to the consumer. This, together with their up-stream control, weakens the control of the product brand owner.
10. The manufacturer is now confronted by:- the conflicting demands of individual retailer driven supply chains; the loss of control of the in-store marketing levers (for which category management is a partial response); a situation where the customer is also competitor (through private label); and an adverse tilting in the balance of information availability.
11. Patterns of ownership and financial control of many continental European retailers preclude them from achieving all of the benefits of vertical integration that are available to Walmart and leading British food retailers. They are thus disadvantaged as Walmart enters European markets.
12. New channels of distribution are opening, driven by changes in consumer lifestyle and developments in information technology. The pace of development is retarded by site availability (partially through the land planning process) and the practical difficulties of delivering perishable items for daily consumption via the Internet.
13. Competition authorities are taking an increasing interest in the oligopolistic structure of food retailing; but their criteria is consumer welfare rather than producer protection.

Source: Bell, Richard. 1999. *The Challenge of Food Distribution*. In *The Future of the Global Food Industry-Strategic Directions*, B. Ramsay, ed. Financial Times Retail and Consumer Publishing Monograph Series: London.

mega-chains looms as a lever—the manufacturers must get their products onto the shelves of the largest retailers, even if they have to pay higher, even exorbitant, slotting and other allowances and make other costly concessions—which they are forced to do. As a result, manufacturers may raise their prices to all customers in order to earn an acceptable return on investment. In that case, all other customers subsidize the mega-chains. ...smaller customers are always at a competitive disadvantage, because they are not receiving the higher allowances and other concessions, which effectively raises their cost of goods.”(Foer, 1999, p.7).

The R-P Act may come to the forefront after decades of relatively inactive and marginal enforcement. It gives retailers (read smaller ones) legal recourse against manufacturers that grant discounts to other retailers (read larger ones) that are not cost justified. Under a rejuvenated Robinson-Patman Act, manufacturers would have three options: either give all retailers non-cost justified discounts that large retailers demand, use third party firms “targeted marketing” programs to offer benefits to favored retailers, or give no discounts.

Examples of the second option include Catalina’s check-out coupon program and Actmedia’s in store at shelf coupon dispensing machines. These programs are chain specific, i.e. they are not market wide such as a free standing insert of coupons in a local newspaper. Thus, a manufacturer is offering a price discount only to consumers who shop at a particular chain. This increases that chain’s movement and profitability essentially in a similar fashion to selective cost rebates.

The last option (giving no discounts) may not be sustainable in the long run because the truly national chains may go out of the box. They may develop strong retail brands that supplant or at least significantly curtail time honored manufacturer brands. Leading manufacturers and smaller retail chains would both lose position in the food system.

Whether large chains can succeed in branding depends upon the trade off between economies of specialization versus economies of scope in branding food products. Economies of scale and scope in production and distribution are not an issue. Branded food companies, for example, in fruits, vegetables and cheese have spun off production to agricultural cooperatives. They buy the product as a graded commodity and then put their brand on it. Supermarkets in Europe do the same with their supply chain management approach.

**Box 4: Goodbye to Advertising As We Know It**

“Thanks to smart new VCR-like machines from Silicon Valley, the viewer is king, media moguls are fretting, and advertisers are terrified. A DVR (Digital Video Recorder) incorporates a hard-disk drive, a modem, and silicon circuitry. It converts TV programs entering your home via cable, satellite dish, or antenna into digital bits (up to 30 hours’ worth) that the hard drive can store for you to view at your convenience... It’s a Trojan horse that could surprise...advertisers with radical change... That’s because, yes, DVRs let you skip commercials with ease. Advertisers will feel added pressure to come up with ads “sticky” enough to keep viewers from zapping them... Forrester Research of Cambridge, Mass., predicts that 13% of U.S. households will have one by 2004, an adoption rate faster than that of VCRs.” (Schlender 1999)

Does a company such as Kellogg’s or Campbell’s have a competitive advantage in branding new products in cereal or soups, or does a truly national supermarket chain have the edge because of scope economies? If advertising is losing its punch due to new technologies, then the era of branding food products with TV media may be over (see Box 4).

If a retailer can establish a uniform high quality reputation across several categories, the retailer name alone would be the brand, and it would be transferable to new product categories. Underlying this economy of scope argument is the supposition that truly national chains could develop extensive managerial cadre that could work with smaller manufacturers in a supply chain management context to produce and market truly innovative new foods and high quality established foods. Truly national chains could make more effective use of TV media that is segmented along demographic rather than geographic lines. These chains would not rely on leading manufacturer brands to do category management. Their own management would do it. Fundamentally, this battle for channel control distills down to whether large old-line food manufacturers, or new retailer “product development and marketing” departments working with smaller possibly more experimental and entrepreneurial food manufacturers can be the most innovative and creative.

Truly national chains may also be able to capitalize more quickly on two emerging trends: meal solutions and international cuisine affinity centers within stores. With continuing economic growth, wealthier consumers will pay for prepared meals rather than branded

ingredients to combine and cook at home. Affinity centers will replace the traditional aisles of packaged groceries with more circular areas that will offer an array of prepared ready-to-eat meals and ingredients for a particular cuisine such as Indian or Mexican.

If, in fact, economies of scope at retail can dominate economies of specialization at the manufacturing level for the marketing of specific food products, we may very well eliminate double marginalization in food channels; however, we would be left with a food system dominated by retailers who are shared monopolists/monopsonists. Can three or four huge retail bureaucracies truly be efficient and responsive? The monopsonistic power of large retailers against primary food producers is already becoming a concern among U.S. farmers. Recently, farmer groups were concerned when a glut of pork depressed farm level prices by more than 50 percent for several months, but retail pork prices remained unchanged. Rapid and responsive price transmission is necessary to expand consumer demand in such situations to reduce the severity of commodity price cycles.

Unless antitrust enforcement is significantly tightened, mergers will continue to contribute to concentration at all stages of the food system. Antitrust challenges at retail may very well be supported by manufacturers and small retailers as well as consumers to the extent that they curtail double marginalization, limit the bargaining power of large retailers, and preclude the European solution. Nonetheless, if concentration in local retail markets and in food manufacturing markets continues to increase, problems of double marginalization will increase creating even more impetus for vertical coordination. Third party marketing firms that facilitate vertical coordination in all phases of marketing will thrive. Those include A.C. Nielsen Information Resources, Inc., Catalina Marketing with its electronic in-store coupons, Vlassis and News America with newspaper coupons, and Actmedia (a subsidiary of News America) with in-store electronic and paper promotion programs.

The European retail brand/supply chain management model is a real and viable option (Cotterill 1997). But most American marketing pundits prefer a more diverse less bureaucratic food system with cooperative efforts in the vertical channel to improve coordination. A tougher stance against retailer mergers by antitrust agencies would preserve a more diverse system. We end this essay with the insight proffered in the introduction. No one knows with certainty how this dynamic scenario will play out. It depends on strategic moves by the world’s leading food firms and public policy, especially antitrust enforcement.

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Table 1. Food Processing Magazine's Top 25 U.S. Food Processing Companies, 1998

Rank	Company	Millions \$		Percent Food
		Food Sales	Total Sales	
1	Philip Morris Companies, Inc.	31,527	71,592	44
2	Conagra, Inc.	28,840	28,840	100
3	Cargill, Inc.	21,400	51,000	42
4	Pepsico, Inc.	20,917	20,917	100
5	The Coca-Cola Company	18,800	18,868	100
6	Archer Daniels Midland Company	16,109	16,109	100
7	Mars Inc.	14,000	14,000	100
8	IBP, Inc.	13,259	13,259	100
9	Anheuser-Busch Companies, Inc.	12,832	12,832	100
10	Sara Lee Corporation	10,800	20,000	54
11	H.J. Heinz Company	9,209	9,209	100
12	Nabisco, Inc.	8,734	8,734	100
13	Bestfoods	8,400	8,400	100
14	Nestle USA, Inc.	7,800	7,800	100
15	Dairy Farmers of America	7,000	7,000	100
16	Kellogg Company	6,830	6,830	100
17	Campbell Soup Company	6,696	6,696	100
18	The Pillsbury Company	6,500	6,500	100
19	Tyson Foods, Inc.	6,356	6,356	100
20	General Mills, Inc.	6,033	6,033	100
21	Quaker Oats Company	5,010	5,010	100
22	The Proctor & Gamble Company	4,376	37,154	12
23	Dole Food Co., Inc.	4,336	4,336	100
24	Hershey Foods Corporation	4,300	4,300	100
25	Land O'Lakes, Inc.	4,195	4,195	100

Source: The 1998 Top 100 Food Companies, *Food Processing*, December 1998 Issue.

**Table 2. Concentration in U.S. Food and Tobacco Processing Industries, 1967 to 1992**

SIC	Name	Concentration-CR4			Change 67-87	Change 87-92	Number of Companies			% Change 67-87	% Change 87-92	VA/VS	Ag Input Share	Co-op VS Share
		1967	1987	1992			1967	1987	1992					
20+21	All food & tobacco products (a)	51	66	75	15	9	26958	15790	16151	-41.4	2.3	38.8	-	5.4
2011	Meat packing plant products	26	32	50	6	18	2529	1328	1296	-47.5	-2.4	11.6	75.9	0.1
2013	Sausages & prepared meats	15	26	25	11	-1	1294	1207	1128	-6.7	-6.5	26.9	0.0	0.1
2015	Poultry and egg processing	15	28	34	13	6	709	284	373	-59.9	31.3	27.6	68.5	5.0
2021	Butter	15	40	49	25	9	510	44	31	-91.4	-29.5	9.4	19.1	62.8
2022	Cheese, natural and processed	44	43	42	-1	-1	891	508	418	-43.0	-17.7	20.2	47.2	23.4
2023	Condensed and evaporated milk	41	45	43	4	-2	179	124	153	-30.7	23.4	40.8	36.1	27.1
2024	Ice cream and ices	33	25	24	-8	-1	713	469	411	-34.2	-12.4	32.4	7.2	6.0
2026	Fluid milk	22	21	22	-1	1	2988	652	525	-78.2	-19.5	26.4	56.4	17.2
2032	Canned specialities	69	59	69	-10	10	150	183	200	22.0	9.3	49.6	5.7	0.5
2033	Canned fruits and vegetables	22	29	27	7	-2	930	462	502	-50.3	8.7	45.8	28.0	13.7
2034	Dehyd. fruits, vegetables, soups	32	39	39	7	0	134	107	124	-20.1	15.9	51.2	15.0	14.2
2035	Pickles, sauces, salad dressings	33	43	41	10	-2	479	344	332	-28.2	-3.5	50.4	10.3	1.8
2037	Frozen fruits and vegetables (b)		31	28	2	-3		194	182	42.6	-6.2	45.2	46.2	8.4
2038	Frozen specialties (b)		43	40	5	-3		244	308	-37.1	26.2	49.9	5.9	0.2
2041	Flour & other grain mill products	30	44	56	14	12	438	237	230	-45.9	-3.0	26.8	70.1	1.0
2043	Cereal breakfast foods	88	87	85	-1	-2	30	33	42	10.0	27.3	74.7	8.7	0.0
2044	Milled rice and byproducts	45	56	50	11	-6	54	48	44	-11.1	-8.3	38.0	88.2	44.5
2045	Prep. flour mixes & refr. doughs	63	43	39	-20	-4	126	120	156	-4.8	30.0	48.7	0.0	0.0
2046	Wet corn milling	68	74	73	6	-1	32	31	28	-3.1	-9.7	43.3	53.3	0.0
2047	Dog, cat, and other pet food	46	61	58	15	-3		130	102	-11.6	-21.5	54.1	7.0	0.2
2048	Prepared feeds, n.e.c. , (b) (e)	22	20	23	-2	3		1182	1161	-25.1	-1.8	22.7	16.0	4.2
2051	Bread, cake, & related products	26	34	34	8	0	3445	1948	2180	-43.5	11.9	64.9	0.0	0.2
2052	Cookies and crackers	59	58	56	-1	-2	286	316	374	10.5	18.4	65.0	0.0	0.0
2053	Frozen bakery products		59	45		-14		103	160		55.3	51.5	0.0	0.0
2061	Sugar cane mill products	43	48	52	5	4	61	31	37	-49.2	19.4	40.7	81.3	10.7
2062	Refined cane sugar	59	87	85	28	-2	22	14	12	-36.4	-14.3	18.1	0.0	15.5

SIC	Name	Concentration-CR4			Change 67-87	Change 87-92	Number of Companies			% Change 67-87	% Change 87-92	VA/VS	Ag Input Share	Co-op VS Share
		1967	1987	1992			1967	1987	1992					
2063	Refined beet sugar	66	72	71	6	-1	15	14	13	-6.7	-7.1	33.5	75.3	29.3
2064	Candy & confectionary (c)		45	45		0			705			55.0	1.9	0.7
2066	Chocolate and cocoa products		69	75		6		173	146		-15.6	46.6	0.3 d	0.0
2067	Chewing gum (c)	86	96	96	10	0	19	8	8	-57.9	0.0	68.8	0.0	0.0
2068	Nuts & seeds		43	42		-1		79	102		29.1	39.8	35.5	25.9
2074	Cottonseed oil mill products	42	43	62	1	19	91	31	22	-65.9	-29.0	22.7	67.6	16.0
2075	Soybean oil mill products	55	71	71	16	0	60	47	42	-21.7	-10.6	11.1	76.0	16.8
2076	Vegetable oil mill products, n.e.c.	56	74	89	18	15	34	20	18	-41.2	-10.0	19.2	70.8	4.3
2077	Animal and marine fats and oils	28	35	37	7	2	477	194	159	-59.3	-18.0	42.7	0.0	1.5
2079	Shortening and cooking oils	43	45	35	2	-10	63	67	72	6.3	7.5	30.4	0.0	4.3
2082	Malt beverages	40	87	90	47	3	125	101	160	-19.2	58.4	53.5	1.9	0.0
2083	Malt and malt byproducts	39	64	65	25	1	32	15	16	-53.1	6.7	28.9	85.4	0.0
2084	Wines, brandy, and brandy spirits	48	37	54	-11	17	175	469	514	168.0	9.6	43.0	27.0	2.5
2085	Distilled liquor, except brandy	54	53	62	-1	9	70	48	43	-31.4	-10.4	59.5	2.0	0.1
2086	Bottled and canned soft drinks	13	30	37	17	7	3057	846	637	-72.3	-24.7	38.5	0.0	4.1
2087	Flavoring extracts & syrups n.e.c.	67	65	69	-2	4	401	245	264	-38.9	7.8	70.6	0.0	0.3
2091	Canned & cured seafood inc soup	44	26	29	-18	3	268	153	144	-42.9	-5.9	36.9	0.0 d	0.0
2092	Fresh or frozen packaged fish	26	18	19	-8	1		579	600		3.6	26.8	0.0 d	0.0
2095	Roasted coffee	53	66	66	13	0	206	110	134	-46.6	21.8	40.5	0.0 d	0.6
2096	Potato chips and similar products	41	62	70	21	8		277	333		20.2	65.5	19.4	0.0
2097	Manufactured ice	33	19	24	-14	5	688	503	513	-26.9	2.0	70.0	0.0	0.0
2098	Macaroni and spaghetti	34	73	78	39	5	190	196	182	3.2	-7.1	58.6	0.0	0.0
2099	Food preparations, n.e.c.	23	26	22	3	-4	1824	1510	1644	-17.2	8.9	52.4	8.3	0.6
2111	Cigarettes	81	92	93	11	1	8	9	8	12.5	-11.1	74.7	2.3	0.0
2121	Cigars	59	73	74	14	1	126	16	25	-87.3	56.3	55.5	4.7	0.0
2131	Chewing, smoking tobacco, snuff	51	85	87	34	2	41	23	23	-43.9	0.0	71.1	4.2	0.0
2141	Tobacco stemming and redrying	63	66	72	3	6	54	62	32	14.8	-48.4	19.0	49.5	0.0
means for SIC 20-21		43.9	51.1	53.3	7.5	2.1				-25.5	3.0	42.8	24.1	6.9

Note: CR4s are from 4-digit industry data, where available, else 4 digit product class data from Rogers.

(a): For SIC 20+21 the concentration data are the percent of the sector's value-added held by the top 100 food and tobacco companies.

(b): The changes are from 1972, not 1967.

(c): In 1992, SIC 2067, Chewing Gum, was combined with SIC 2064. The 1992 data for SIC 2067 are estimated by Rogers.

(e): 1967 CR4 is estimated.

(d): Cocoa, coffee, and fish inputs were ignored.

Where: VA/VS is the ratio of value-added to the value-of-shipments, percent, 1987 data.

Ag Input share is the percentage of total cost of materials accounted for by agricultural inputs, 1987 data.

Co-op VS Share is the 1987 estimated percent of value-of-shipments accounted for by the 100 largest agricultural marketing cooperatives.

Source: Census of Manufacturing, prepared by Richard T. Rogers, Department of Resource Economics, UMass, Amherst, MA 01003.

Table 3. Leading Company Advertisers in Food and Tobacco Processing, 1997

Rank	Company	1997 Advertising Expenditure	Percent Of Total	Cumulative Percent
1	Philip Morris Inc.	\$1,313,430.9	17.48	17.48
2	General Mill's	416,684.6	5.55	23.03
3	Kellogg Co.	403,215.5	5.37	28.39
4	Coca-Cola Co.	317,190.1	4.22	32.62
5	Pepsico Inc.	292,467.8	3.89	36.51
6	RJR Nabisco	287,243.6	3.82	40.33
7	Anheuser-Busch Inc.	263,366.1	3.51	43.84
8	Diageo PLC*	251,715.8	3.35	47.19
9	Campbell Soup Co.	250,726.4	3.34	50.53
10	Mars	192,424.4	2.56	53.09
11	Nestle	183,748.4	2.45	55.53
12	Quaker Oats Co	176,602.1	2.35	57.88
13	Proctor & Gamble	174,623.4	2.32	60.21
14	Hershey Foods Corp	174,331.7	2.32	62.53
15	Unilever	142,082.1	1.89	64.42
16	William Wrigley Co	139,334.7	1.85	66.27
17	Adolph Coors	139,289.6	1.85	68.13
18	Seagram Co	114,412.9	1.52	69.65
19	Conagra Inc.	91,537.2	1.22	70.87
20	Slim Fast	78,959.0	1.05	71.92
21	Bat Industries	68,861.6	0.92	72.84

\* Includes the following subsidiaries: Pillsbury, Green Giant Vegetables, Haagen-Dazs, Old El Paso, Guinness.

Source: Calculated from Competitive Media Reporting, 1998. Based on a total \$7.513 billion in advertising for cigarettes and food products.

Table 4. Top European Food Manufacturers\*

Company	Total turnover (\$m)	Profit margin %	ROCE %	employees (000)	Market CAP (\$m)	Country Source
1. Unilever	49.159	7.4	22.3	308	43.063	UK/Netherlands
2. Nestlé	45.859	8.0	16.2	220	44.746	Switzerland
3. Danone	15.503	5.0	7.6	74	10.686	France
4. GrandMet	12.518	11.5	16.1	58	15.601	UK
5. Eridania Béghin-Say	9.914	4.8	11.4	21	4.034	France/Italy
6. Dalgety	7.655	1.9	19.3	18	1.379	UK
7. Assoc. British Foods	7.634	7.7	16.6	44	5.739	UK
8. Cadbury Schweppes	7.450	11.0	26.7	42	7.991	UK
9. Tate & Lyle	7.034	6.9	19.8	18	3.196	UK
10. Saint Louis	6.681	5.7	9.5	23	6.681	France
11. Tomkins	5.620	9.0	28.8	45	5.136	UK
12. Hilldown	5.386	loss	N/A	34	1.980	UK
13. Sudzucker	4.971	4.8	10.1	20	1.808	Germany
14. United Biscuits	4.681	loss	N/A	38	1.639	UK
15. Orkla	3.336	8.9	16.6	18	2.639	Norway
16. Unigate	3.328	14.0	58.9	30	1.543	UK
17. Northern Foods	3.052	6.1	22.4	26	1.787	UK
18. Parmalat	2.825	5.2	12.5	17	2.137	Italy
19. Danisco	2.792	9.9	16.2	13	3.218	Denmark
20. Kerry Group	1.932	3.6	10.2	9	1.742	Eire

\* Public companies only significant food portfolios, e.g. one-third or more of turnover Source: Financial Times European 500, January 1997.

Table 5. Three-firm Concentration Ratios by Country and Category in Food Manufacturing

	Ireland	Norway	Finland	Sweden	Denmark	Italy	France	Spain	UK	Germany	Average
Baby Foods	98	100	100	100	99	96	93 <sup>1</sup>	54	78	>86	91
Canned Soups	100	96	85	75	91	>50	84	n/a	79	41 <sup>1</sup>	87
Ice Cream	n/a	100	84	85	90	73 <sup>1</sup>	52	84	45	72	76
Coffee	91	69	72	71	70	60	100	n/a	74	67	75
Yoghurts	69	100	83 <sup>1</sup>	90	99 <sup>1</sup>	36	67	73	50	76	70
Chocolate Confectionery	95	75	74	n/a	39	93	61	79	74	n/a	74
Pet Foods	98	n/a	80	84	>40	64 <sup>1</sup>	73	53	77	87	79
Breakfast Cereals	92	70	n/a	52	70	88	70	82	65	67	73
Tea	96	81	90	63	64	80	82	62	52	55	72
Savoury Snacks	72	88	70 <sup>1</sup>	80	78	71	50	56	73	48	68
Carbonates	85	90	>50	62	n/a	60	69	79	55	60 <sup>1</sup>	71
Butter	n/a	100	n/a	n/a	100	n/a	32 <sup>1</sup>	n/a	65	<30	65
Pasta	83	64	97	82	61	51	57	65	37	49	65
Frozen Ready Meals	n/a	76	n/a	63	n/a	90	62	39	39	65	62
Wrapped Bread	<85	68	44	47	59	80	70	96	58 <sup>1</sup>	9	59
Biscuits	83	67	73	51	44	<55	61	53	42	50	58
Canned Fish	n/a	68	70	72	49	68	43 <sup>1</sup>	33	43 <sup>1</sup>	n/a	55
Mineral Water	n/a	n/a	100	74	70	37	n/a	31	14	22	50
Fruit Juices	n/a	51	70	50	65 <sup>1</sup>	62	26	38	35	46	48
Canned Vegetables	n/a	61	68	47	50	36	29	n/a	n/a	n/a	47
<b>Average</b>	<b>89</b>	<b>79</b>	<b>79</b>	<b>69</b>	<b>69</b>	<b>67</b>	<b>63</b>	<b>61</b>	<b>56</b>	<b>55</b>	<b>68</b>

↑ Increasing concentration

← Increasing concentration

Note: Averages are unweighted  
 1. Top 2 manufacturers  
 Source: Seymour Cooke, OC&C Analysis

Table 6. Identity of Leading Firms by Country and Category in Food Manufacturing.

	UK & Ireland		Scandinavia				Northern Continent		Southern Continent	
	UK	Ireland	Denmark	Finland	Norway	Sweden	France	Germany	Italy	Spain
Baby Foods	Heinz	Numic	Numico	Valio	Nestle	Semper	Danone	Nestle	Heinz	Nestle
Biscuits	UB	Danone	UB	UB	Orkla	Orkla	Danone	Bahlsen	Barilla	Nabisco
Breakfast Cereals	Kellogg	Kellogg	Kellogg	Kellogg	Kellogg	Kellogg	Kellogg	Kellogg	Kellogg	Kellogg
Butter	Anchor	n/a	MD Foods	Valio	Norske Mejerier	Arla	Besnier	n/a	Giglio	n/a
Canned Fish	Heinz	Boyne Valley Group	Orkla	Orkla	Orkla	Orkla	Saupiquet	Appel & Frenzel	Trinity Alimentari	Conservas Garavilla
Canned Soups	Heinz	Campbell	Campbell	Nestle	Heinz	Nestle	Campbell	Heinz	Knorr	n/a
Canned Veg	n/a	n/a	Dagrofa	Bonduelle	Agil	Nordquist	Bonduelle	Bonduelle	Cirio	SAAL
Carbonates	Coca-Cola	Coca-Cola	n/a	Hartwall	Coca-Cola	Coca-Cola	Coca-Cola	Coca-Cola	Coca-Cola	Coca-Cola
Chocolate Confectionery	Cadbury	Cadbury	Mars	Frazer Suklaa	KJS	Cloetta	KJS	n/a	Ferrero	Nestle
Coffee	Nestle	KJS	Sara Lee	Paulig	Kaffeindustri	KJS	KJS	KJS	Lavazza	Nestle
Frozen Ready Meals	Unilever	Golden Vale	Nestle	n/a	Orkla	Nestle	Nestle	Nordstem Gruppe	Unilever	Pycasa La Cocinera Juvere
Fruit Juices	Del Monte	n/a	MD Foods / Carlsberg	Marli	Orkla	Arla	Rea Vergers d'Alsace	Eckes - Granini	Parmalat	
Ice Cream	Unilever	Unilever	Unilever	Valio	Diplom	Unilever	Unilever	Unilever	Unilever	Nestle
Mineral Water	Danone	n/a	Carlsberg	Hartwall	Ringnes	Pripps	n/a	Gerolsteiner	Nestle	Danone
Dry Pasta	Nestle	Allegro	Dansk Supermarked	Barilla	Nestle	Barilla	Paribas Affaires Industrielles	VK Muhlen Chef Dieroff	Barilla	Grupo Gallo
Pet Foods	Mars	Mars	Mars	Mars	Mars	Mars	Nestle	Mars	Mars	Purina
Savoury Snacks	UB	Tayto	Orkla	Estrella	Maarud	KJS	Bahlsen	Bahlsen	Unichips	Snack Ventures
Tea	Tetley	Unilever	Sara Lee	ABF	Unilever	Unilever	Unilever	Teekanne	n/a	Sara Lee
Wrapped Bread	Allied Bakeries	Brennan's	Schulstad	Oululainen	Orkla	Pagen	Artal	Wendeln	Barilla	Bimbo
Yoghurts	Muller	Glanbia	MD Foods	Valio	Norske Mejerier	Arla	Danone	Nestle	Sita -Yomo	Danone

Source: Seymour Cooke, OC&C Analysis

Table 7. Top 5 Food Retailers by Country.

France	Germany	Ireland	Italy	Netherlands	Spain	UK
Leclerc	Metro	Tesco	Crai	Ahold	Euromadi / Vima	Tesco
Intermarché	Rewe	Musgrave	Sicom	Superunie	IFA	Sainsbury
Promodés	Edeka	Dunnes	Co-op italia	Vendex	Espanola	Somerfield / Kwiksave
Auchan	Aldi	BWG	A&O Selex	Markant	Promodés	Safeway
Carrefour	Tengelmann	Superquinn	Despar	Schuitema	Carrefour Auchan	Asda (Wal- Mart)

Source: Retail Rankings

Table 8. Mean Values for Supermarket Four Firm Concentration Ratios in MSA Areas: 1987 and 1998

	All MSA's	FL	CA	NE	MW
1998	74.4	72.4	90.7	73.5	69.3
1987	64.5	60.0	82.9	59.7	60.6
n=	94	10	6	26	13

Source: Trade Dimensions *Market Scope* 1988, 1999.

Table 9. Supermarket Sales and Concentration Ratios for Selected Regions in the U.S., 1992

Area	Rank	Chain	Region Share	Population
<b>California</b>				<b>29,760,000</b>
	1	Lucky	19.0	
	2	Vons	13.8	
	3	Ralphs	9.4	
	4	Safeway	7.8	
	5	Alpha Beta(Food 4 Less)	5.4	
		C <sub>2</sub> =	32.8	
		C <sub>4</sub> =	50.1	
<b>Florida</b>				<b>12,938,000</b>
	1	Publix	35.2	
	2	Winn-Dixie	27.6	
	3	Albertson's	9.2	
	4	Kash N Karry	5.7	
	5	Food Lion(Del Haize)	5.1	
		C <sub>2</sub> =	62.8	
		C <sub>4</sub> =	77.7	
<b>North East<sup>1</sup></b>				<b>53,798,000</b>
	1	A&P(Tengelma)	12.4	
	2	Pathmark	8.0	
	3	Giant Food Inc.	5.5	
	4	Acme (American)	4.7	
	5	Stop & Shop	4.2	
		C <sub>2</sub> =	20.4	
		C <sub>4</sub> =	30.6	
<b>Upper Midwest<sup>2</sup></b>				<b>32,820,000</b>
	1	Kroger	10.6	
	2	Jewel(American)	10.0	
	3	Dominick's	5.8	
	4	A&P(Tengelma)	5.3	
	5	Cub(SuperValu)	3.8	
		C <sub>2</sub> =	20.6	
		C <sub>4</sub> =	31.7	

<sup>1</sup> Includes Washington D.C., Baltimore, Pennsylvania, New York, and New England

<sup>2</sup> Includes Michigan, Wisconsin, Illinois, Indiana, Ohio, and Minnesota.

Source: Cotterill, R.W. 1997. The Food Distribution System of the Future: Convergence Towards the US or UK Model? *Agribusiness* 13(2):123-135.



Table 10. Supermarket Sales and Concentration Ratios for Selected Regions in the U.S. 1998

Area (population)	Rank	Chain	Region Sales (\$ Billion)	Region Share	Total U.S. Corporate Sales (\$ Billion)	Total Global Sales (\$ Billion)
<b>California</b>			<b>\$31.1</b>			
(32 million)	1	Albertsons/Lucky	7.6	24.5	35.7	
	2	Safeway/Vons	6.9	22.0	25.0	
	3	Ralphs(Kroger)	5.6	18.1	43.1	
	4	Stater Bros.	1.6	5.2	1.7	
	5	Raleys	0.7	2.4	2.5	
			C <sub>2</sub> =		46.5	
			C <sub>4</sub> =		69.8	
<b>Florida</b>			<b>\$16.2</b>			
(14.6 million)	1	Publix	7.0	43.1	12.1	
	2	Winn Dixie	4.4	26.9	13.9	
	3	Albertson's	1.5	9.5	35.7	
	4	Food Lion(Del Haize)	1.3	8.2	10.2	14.5
	5	Wal Mart	0.4	2.5	12.8 <sup>1</sup>	136.6
			C <sub>2</sub> =		70.0	
			C <sub>4</sub> =		87.7	
<b>North East<sup>2</sup></b>			<b>\$69.7</b>			
(57.9 million)	1	Ahold <sup>3</sup>	15.9	22.8	23.4	25.9
	2	A&P(Tengelmann)	5.3	7.6	10.5	29.6
	3	Shop Rite/Wakefern	3.9	5.6	5.2	
	4	Shaws(Sainsbury)	3.7	5.3	4.2	23.8
	5	Acme (Albertson's)	2.2	3.2	35.7	
			C <sub>2</sub> =		30.4	
			C <sub>4</sub> =		41.3	
<b>Upper Midwest<sup>4</sup></b>			<b>\$40.6</b>			
(34.1 million)	1	Kroger	6.1	15.1	43.1	
	2	Jewel(Albertsons)	3.3	8.2	35.7	
	3	Dominick's (Safeway)	2.5	6.3	25.0	
	4	A&P(Tengelmann)	1.8	4.4	10.5	29.6
	5	Meijer	1.7	4.2	8.6	
			C <sub>2</sub> =		23.3	
			C <sub>4</sub> =		34.0	

<sup>1</sup> Grocery sales account for 40% of the total Wal Mart sales or \$12.8b.

<sup>2</sup> Includes Washington D.C., Baltimore, Pennsylvania, New York, and New England

<sup>3</sup> AHOLD operates Bi-Lo, Edwards/Finast, Giant Food Stores, Tops, Stop & Shop, Giant (Landover MD), and Pathmark (assuming approval with no divestiture).

<sup>4</sup> Includes Michigan, Wisconsin, Illinois, Indiana, Ohio, and Minnesota.

Source: Trade Dimensions, *Market Scope* 1999, Trade Dimensions, *Marketing Guidebook* 1999, Bureau of Census Population. *Fortune* Global 500, 1998, www.fortune.com. *Forbes*, Top 100 Largest Private Companies, www.forbes.com.

Table 11. Top 20 Supermarket Chains, Total U.S. 1992

Rank	Chain	Sales (\$ Billion)	Share
1	Kroger	21.9	7.7
2	American	19.0	6.6
3	Safeway	15.1	5.3
4	A&P/Tengelmann	10.7	3.7
5	Winn-Dixie	10.3	3.6
6	Albertson's	10.2	3.6
7	Food Lion	7.1	2.5
8	AHOLD*	6.3	2.2
9	Publix	6.1	2.1
10	Vons	5.6	2.0
11	Penn Traffic/Grand Union	5.6	2.0
12	Supermarkets General	4.7	1.6
13	HE Butt	3.8	1.3
14	Giant Food (Landover, MD)	3.5	1.2
15	Stop & Shop	3.2	1.1
16	Food 4 Less	3.0	1.0
17	Ralph's	2.9	1.0
18	Bruno's	2.7	0.9
19	Roundy's	2.5	0.9
20	Spartan Stores	2.4	0.8
C <sub>2</sub> =		14.3	
C <sub>4</sub> =		23.3	
C <sub>8</sub> =		35.2	
C <sub>20</sub> =		51.0	

\* Ahold operated Bi-Lo, Edwards/Finast, Giant Food Stores, Tops.

Source: *Supermarket News* January 18, 1993. The Food Institute *Food Retailing Review 1994*, Fair Lawn, NJ. Trade Dimensions, *Marketing Guidebook*, 1994, Supermarket sales of \$286.3b.

Table 12. Top 20 Supermarket Chains, Total U.S. 1998

Rank	Chain	Sales (\$ Billion)	Share
1	Kroger	43.1	10.8
2	Albertsons/American	35.7	8.9
3	Safeway/Vons	25.0	6.2
4	AHOLD*	23.4	5.8
5	Winn-Dixie	13.9	3.5
6	Wal Mart	12.8	3.2
7	Publix	12.1	3.0
8	A&P(Tengelmann)	10.5	2.6
9	Food Lion(Del Haize)	10.2	2.5
10	Meijer	8.6	2.1
11	H.E. Butt	6.9	1.7
12	ShopRite(Wakefern )	5.2	1.3
13	Shaw's(Sainsbury)	4.2	1.0
14	SuperValu	4.1	1.0
15	Giant Eagle	4.0	1.0
16	Fleming	3.5	0.9
17	Hannaford(Sobey's)	3.4	0.8
18	Hy Vee	3.2	0.8
19	Penn Traffic/Grand Union	2.8	0.7
20	Randall's	2.5	0.6
	C <sub>2</sub> =	19.7	
	C <sub>4</sub> =	31.7	
	C <sub>8</sub> =	44.0	
	C <sub>20</sub> =	60.4	

\* AHOLD operates Bi-Lo, Edwards/Finast, Giant Food Stores, Tops, Stop & Shop, Giant (Landover MD), and Pathmark (assuming approval with no divestiture).

Source: *Supermarket News* January 25, 1999. Supermarket sales of \$400.5b.

Table 13. Supermarket Merger Activity in the U.S., 1991 to 1999

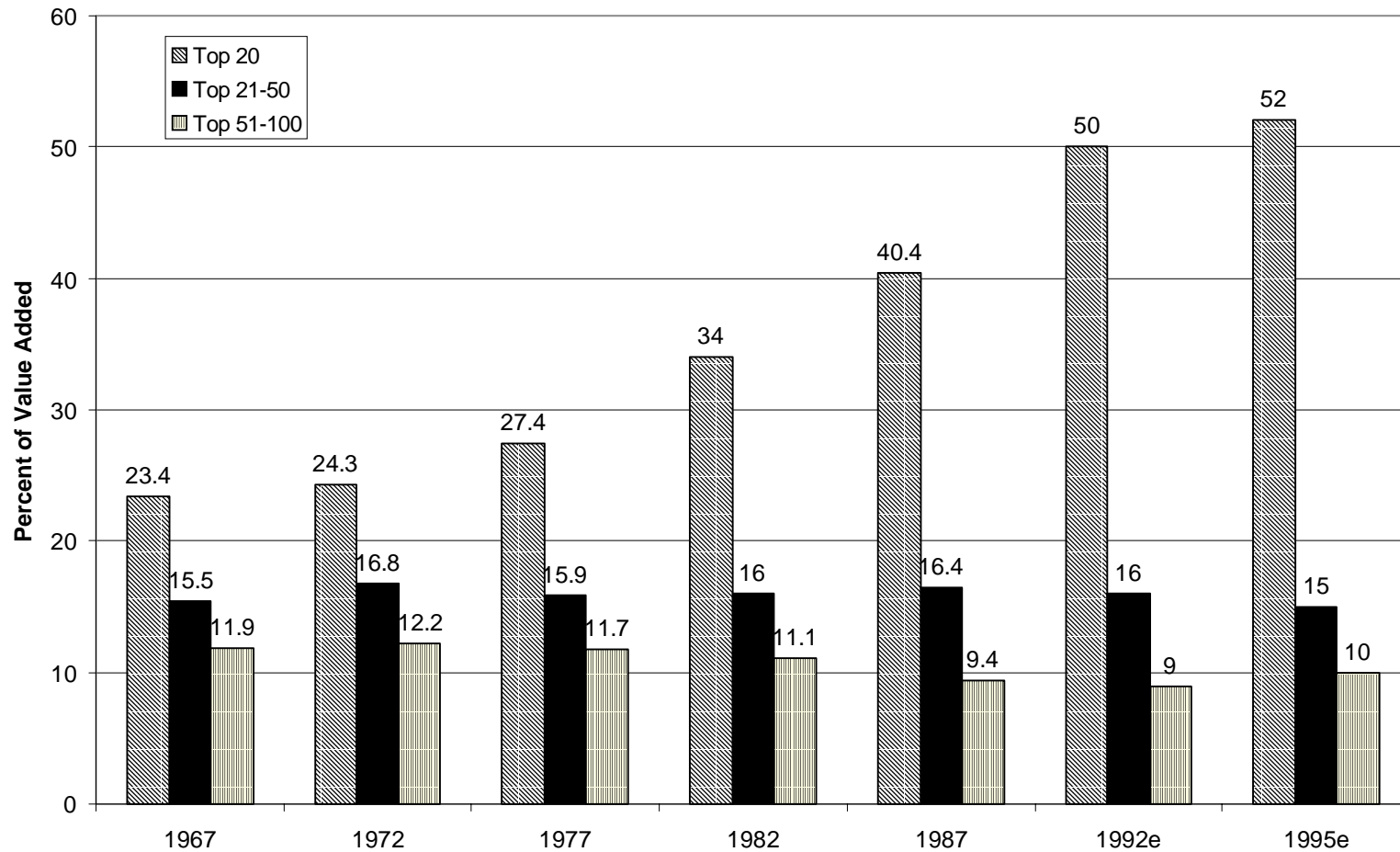
Year	Acquiree	Acquirer	Transaction Value <sup>1</sup>	Aggregate Value <sup>2</sup>	
				Sales	EBITDA
1991	Almac's	Leonard Green	125.0	N.A.	7.5
	American Stores	Food 4 Less	248.0	0.2	4.5
	Tops(Freeman Spogli)	Royal Ahold	125.5	0.2	6.4
	Purity Supreme	Freeman Spogli	319.9	0.3	5.9
	Williams Brothers	Vons Companies	48.0	0.2	N.A.
1992	Baker's Supermarkets	Fleming Cos.	50.0	0.2	N.A.
	Cullum	Randall's	468.0	0.4	7.7
	Grand Union <sup>3</sup>	Grand Union	1,404.7	0.5	7.1
	Jewel (TX/OK/FL)	Albertson's	455.0	0.3	5.3
	Wetterau Inc.	SUPERVALU	1,164.6	0.2	6.8
1993	Big Star Stores	Great A&P	121.0	0.3	N.A.
	Insalaco	Penn Traffic	45.0	0.3	N.A.
	Pueblo International	Cisneros Group	418.0	0.3	5.9
1994	Acme N.E. PA	Penn Traffic	94.0	0.3	5.8
	Ralph's Grocery	Food 4 Less	1,581.0	0.6	6.9
	Scrivner, Inc.	Fleming Cos.	1,085.0	0.2	6.4
	Smitty's	Yucaipa	168.0	0.3	6.2
	Star Markets	Investcorp	285.0	0.3	6.7
	Wilson's	Hannaford Bros.	127.0	0.6	7.4
1995	Bruno's	KKR	1,233.3	0.4	8.0
	Dominick's	Yucaipa	693.0	0.3	6.2
	Jitney Jungle	Bruckman, Rosser	317.5	N.A.	5.9
	Mayfair	Royal Ahold	188.0	0.3	7.6
	Purity Supreme	Stop & Shop	255.0	0.3	7.9
1996	Hughes	Quality Foods	391.5	0.3	6.4
	Kash & Karry	Food Lion	342.5	0.3	6.0
	Smitty's	Smith's Food & Drug	195.4	0.3	6.7
	Stop & Shop	Royal Ahold	2,900.0	0.7	8.9
	Vons	Safeway	3,447.2	0.6	9.9
1997	Delchamps	Jitney Jungle	244.4	0.2	6.6
	Quality Food Centers	Fred Meyer	1,700.0	0.9	11.2
	Ralph's Grocery	Fred Meyer	3,100.0	0.6	8.2
	Randall's Food Markets	KKR	N.A.	N.A.	N.A.
	Riser Foods	Giant Eagle	403.0	0.3	7.2
	Smith's Food & Drugs	Fred Meyer	2,000.0	0.7	7.3
1998	American Stores	Albertson's Inc.	11,700.0	0.6	8.5
	Buttrey Foods	Albertson's Inc.	169.0	0.5	10.2
	Carr Gottstein	Safeway	330.0	0.6	7.2
	Dominick's	Safeway	1,846.2	0.7	10.0
	Fred Meyer	Kroger	12,800.0	0.8	10.0
	Giant Food	Royal Ahold	2,790.3	0.7	12.2
	John C. Groub Co.	Kroger	121.5	0.5	11.0
	Sessel Holdings	Albertson's Inc.	88.0	0.5	9.3
	Star Markets	J. Sainsbury	759.0	0.5	N.A.
1999 (1 <sup>st</sup> half)	Pathmark	Royal Ahold	1,750.0	0.5	N.A.
	Glen's Markets	Spartan Stores	N.A.	N.A.	N.A.
	Family Fare Supermarkets	Spartan Stores	N.A.	N.A.	N.A.
	Cox Supermarkets	Marsh Supermarkets, Inc	N.A.	N.A.	N.A.

Note: All sales figures in million dollars. 1 Includes completed and pending transactions. 2 "Aggregate Value" equals net debt plus equity.

3 As part of recapitalization, Salomon Brothers sold its 40.7% stake in Grand Union.

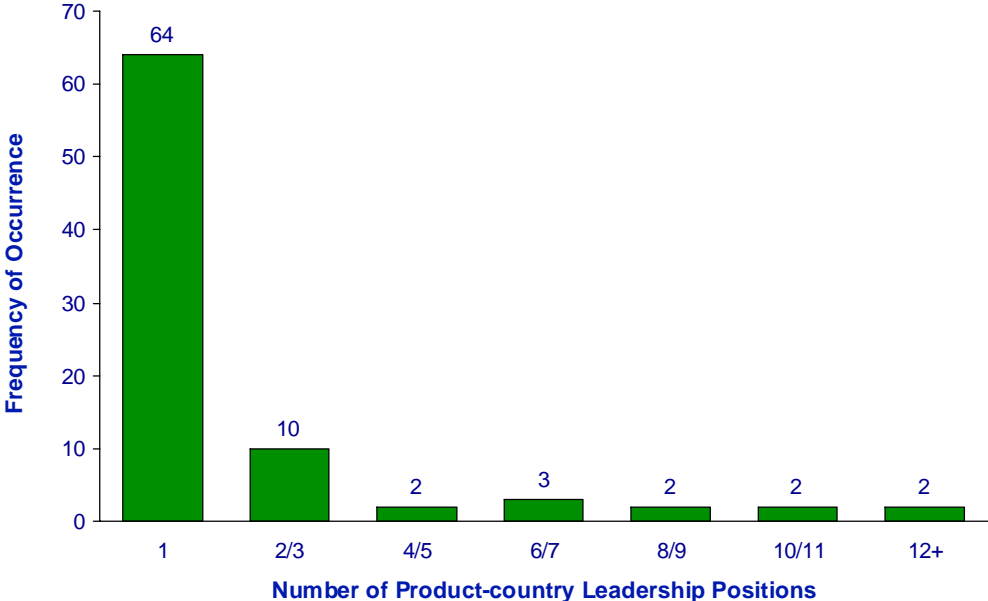
Source: Goch, 1999; The Food Institute: *Food Institute Report*, various issues.

**Figure 1. Increasing Dominance by the Top 20 Food and Tobacco Manufacturing Companies  
Census Years 1967-1995**



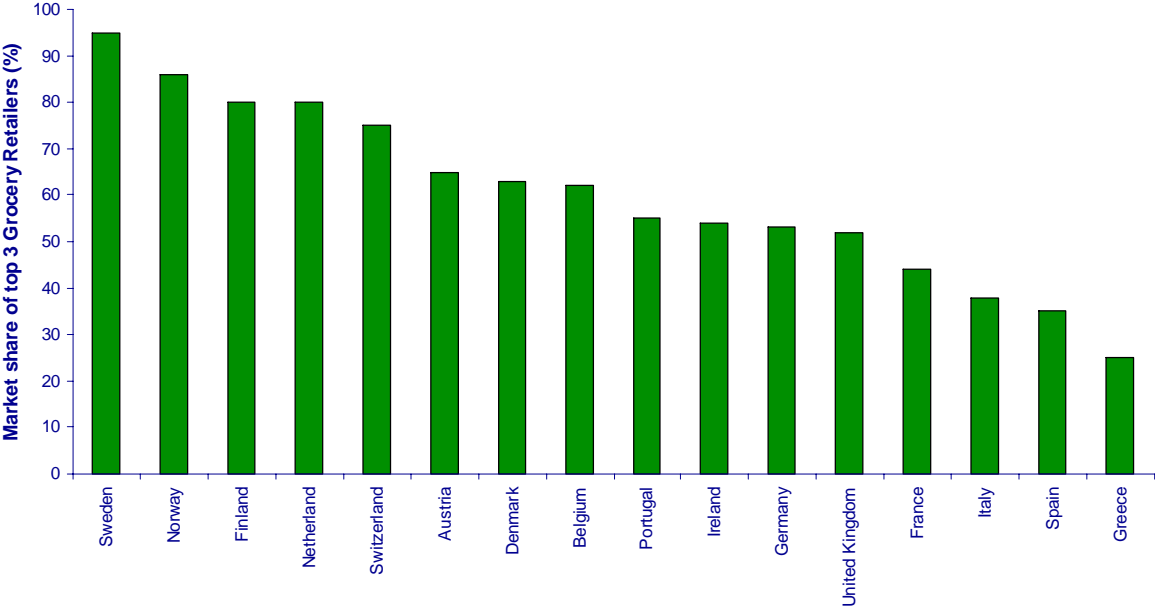
Source: Rogers, 1999

Figure 2. Frequency Distribution of Country/Category Leadership Positions in Food Retailing



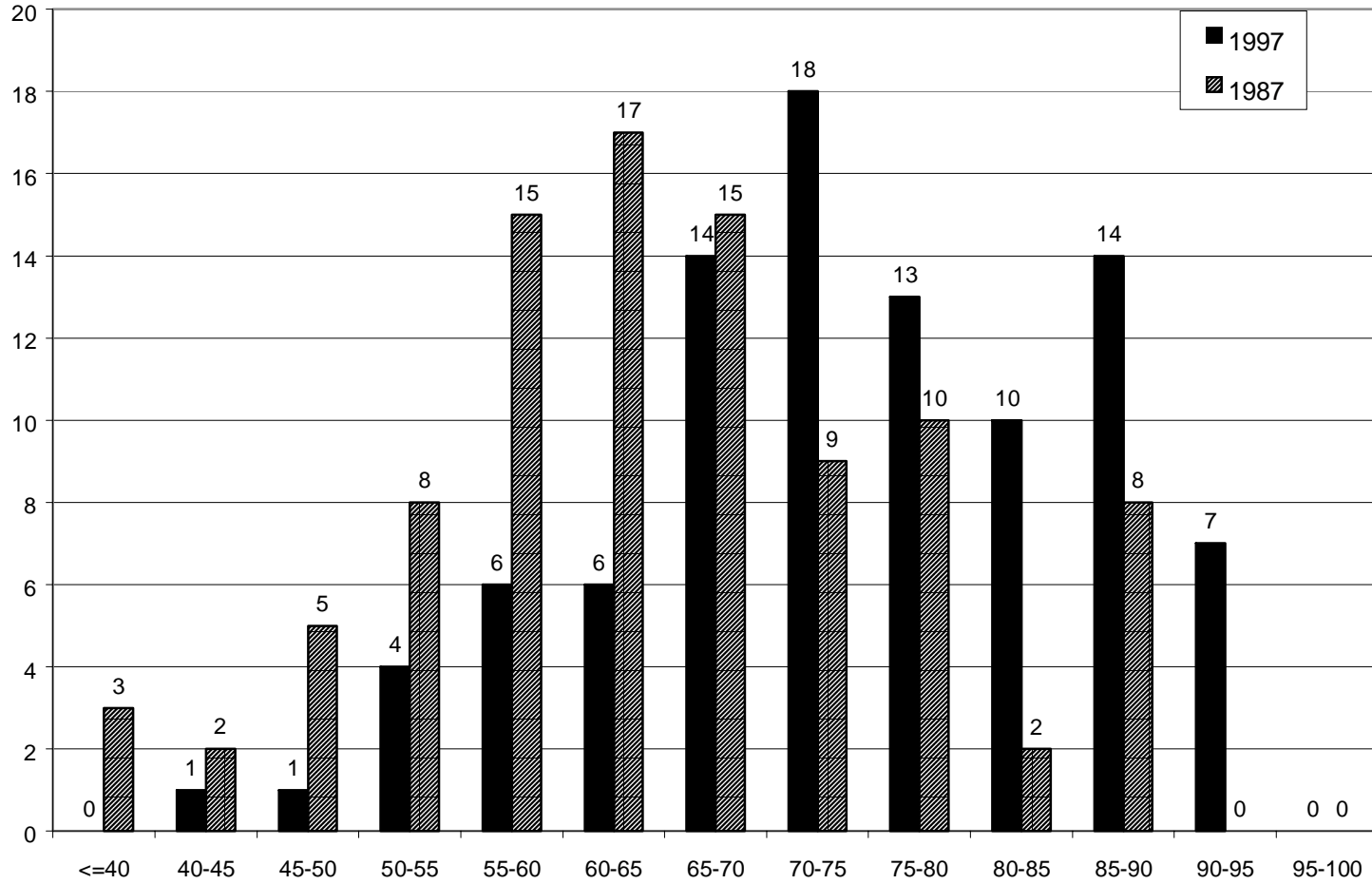
Source: Seymour Cooke, OC&C Analysis

Figure 3. 3-Firm Concentration Ratios x Country in Food Retailing



Source: Nielsen

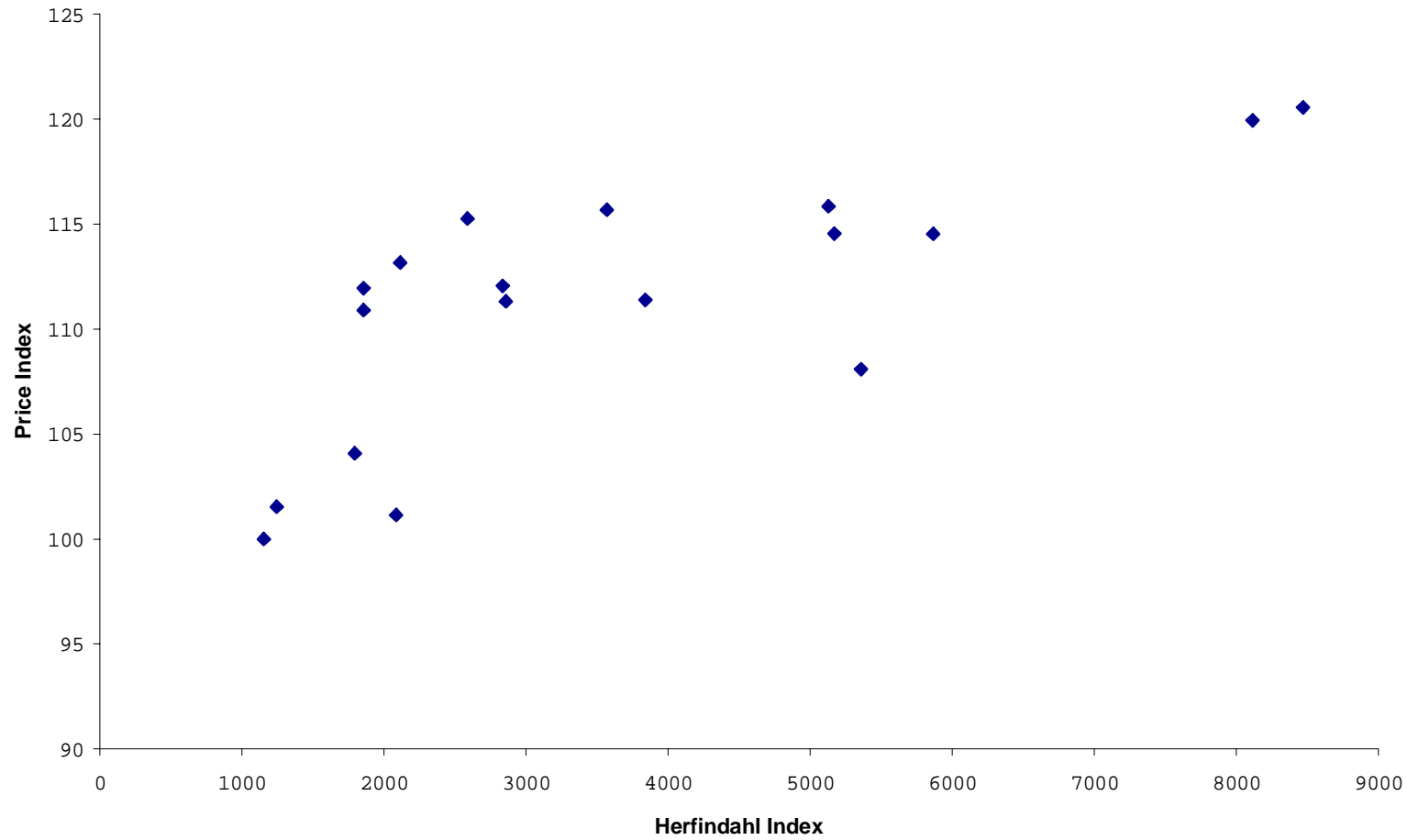
**Figure 4. Histogram of Supermarket Four Firm Concentration Ratios in Metropolitan Statistical Areas: 1987 and 1998**



Source: Trade Dimensions Market Scope 1999, 1988, n=94



**Figure 5. Scatterplot for Local Market Concentration and Price Level:  
Royal Ahold Prices in Selected Connecticut and Pennsylvania Markets**



Source: Cotterill, R.W. 1999. An Antitrust Economic Analysis of the Proposed Acquisition of Supermarkets General Holdings Corporation by Ahold Acquisition Inc. Food Marketing Policy Center, University of Connecticut Storrs, CT 06269, April 19.

Figure 6. The Problem of Channel Coordination: Successive Monopoly

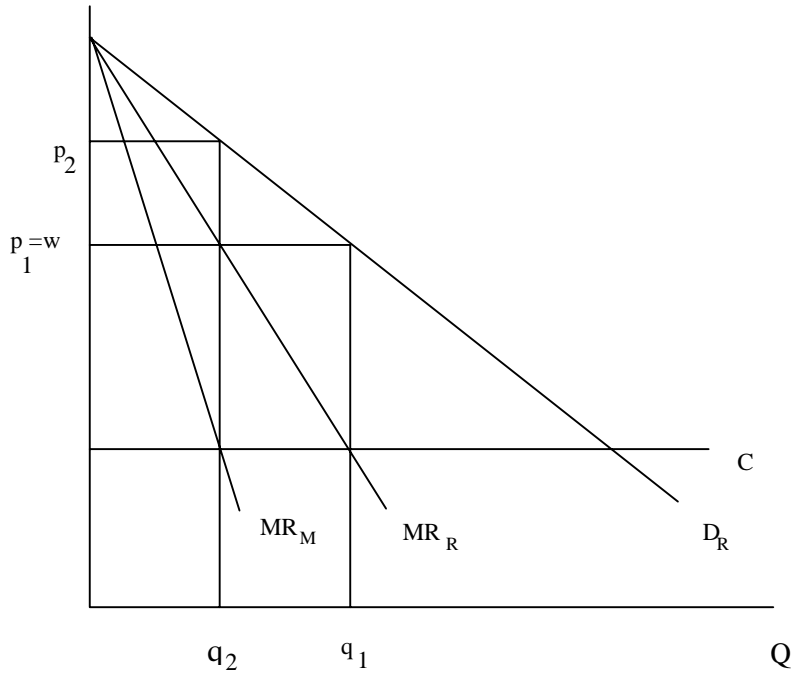
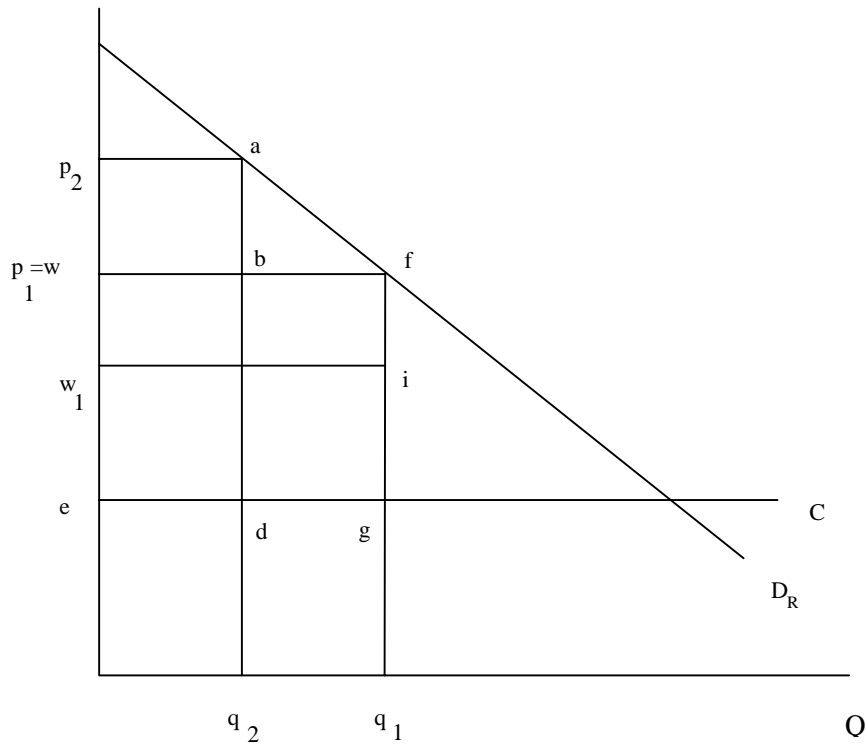


Figure 7. Elimination of Double Marginalization by Trade Promotion



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Food Marketing Policy Center  
1376 Storrs Road, U-21  
University of Connecticut  
Storrs, CT 06269-4021

Tel: (860) 486-1927  
FAX: (860) 486-2461  
email: [fmpc@canr.uconn.edu](mailto:fmpc@canr.uconn.edu)  
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