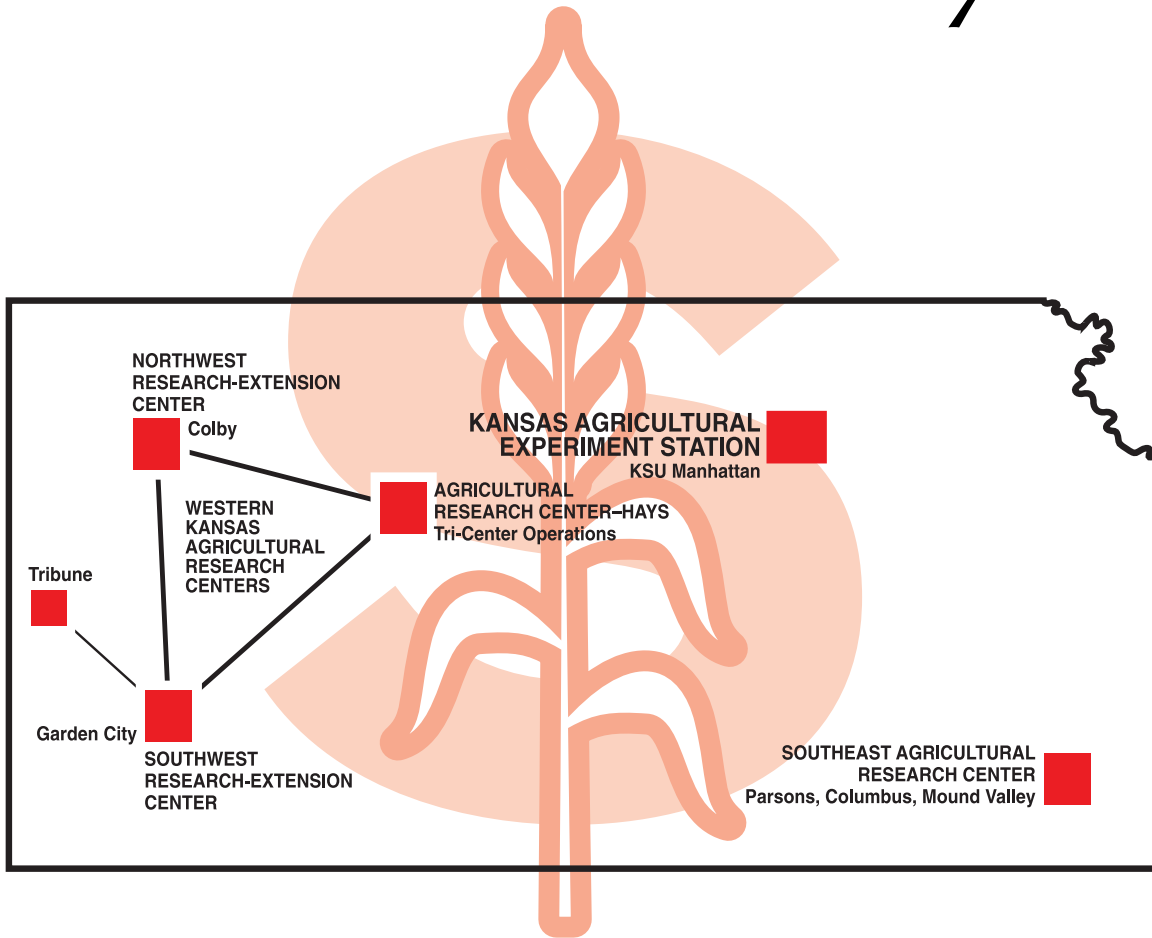


# *Economic Issues with Food and Agribusiness Firm Profitability*



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# ***Economic Issues with Food and Agribusiness Firm Profitability***

One common economic concept throughout much of the past 15 years has been the need for a firm to add value to its products. In agriculture, there is concern about the widening farm-to-retail price spread. This spread implies food firms are benefitting from consumer preferences for further processed foods and additional marketing services. It is clear that vertical coordination has been increasing (Boland, Barton, and Domine), but there is little evidence as to how this has affected food and agribusiness firm profitability in recent years.

One common form of vertical coordination is integration. Many producers are contemplating or have made investments in closed-membership cooperatives or as they are more commonly known, new generation cooperatives. As owners, producers elect a board of directors who help formulate a vision and mission for the cooperative. These directors then hire a manager to craft a strategy to implement the vision and mission. Successfully implemented, these strategies can improve profitability and financial performance over time. Several questions are often asked by producers and directors. How profitable is an industry over time? Can a firm be expected to repeat their performance over time? Little quantitative evidence is available to answer these questions.

The objective of this research was to compare business performance (accounting profitability) for publicly traded food and agribusiness firms in various states. Return on investment and return on equity and economic value added was determined for 103 firms in 15 U.S. Department of Commerce Standardized Industry Classifications (SIC) categories over the 1980 to 1997 time period. A much longer and more detailed copy of this research is reported in several publications listed in the references and available at [www.agecon.ksu.edu/](http://www.agecon.ksu.edu/) or by contacting Michael Boland (email: [mboland@agecon.ksu.edu](mailto:mboland@agecon.ksu.edu) or phone 785 532-4449).

## **Profitability Measures**

### ***Return on Investment***

Return on investment (ROI) measures the percentage return of a firm based on the amount invested in the firm by providers of capital, common stock holders, preferred stock holders, and bondholders.

This definition of ROI is equal to net assets minus current liabilities or can be derived by dividing income before taxes by the total of long-term debt, book value of preferred stock, and book value of common stock.

The ROI measures the rate at which a corporation is increasing or decreasing the level of a corporation's common equity as a portion of the sum of total equity and total long-term debt.

Since debt is repaid before equity when a corporation is dissolved, this measurement effectively reflects the corporation's ability to raise capital internally through profitability to repay debt and equity holders.

### ***Return on Equity***

Return on equity (ROE) is income before taxes divided by the book value of the total amount of equity. Equity is the sum of capital paid-in through primary market sales of common stock, any capital surplus, and retained earnings plus preferred stock outstanding (less any treasury stock held by the company).

Since equity represents the total share of the corporation's value the shareholders are entitled to in the event of dissolution of the corporation, the ROE of a firm indicates the rate at which a firm is increasing or decreasing the level of common shareholder equity as a percentage of total common equity.

### ***Equity Risk Premium***

The equity risk premium is the difference between holding equity and debt (ROE minus ROI). It is a measure of a firm's ability to manage debt and equity. As a company issues more debt to acquire income-producing assets, the risk and return on the assets does not change.

Return on equity does change, however, because more of the remaining profits are used to cover debt payments. Companies in industries that have high levels of tangible assets, such as manufacturing, normally are associated with high use of debt financing. Growth oriented firms in industries such as life sciences, generally have higher levels of risk and have high levels of intangible assets are financed predominantly through equity.

### ***Economic Value Added***

Economic Value Added (EVA®) is a measurement of how much economic value is actually added through the company's operations. It is often referred to as "Value Added."

EVA is computed by taking the net operating income after taxes and subtracting the cost of debt and equity capital. The cost of debt and operating capital is the product of operating capital (total capital raised through primary sales of stock, debt, and retained earnings) and the weighted average cost of capital (weighted average of the required rates of return on both equity and debt securities). Because the weighted average cost of capital is an indicator of the level of risk involved in an investment, EVA represents the wealth created for the owners that is above and beyond the returns they could expect to receive from investments of similar risk elsewhere.

ROI, ROE, and EVA are commonly used to measure profitability. The amount of long-term debt held by the company can affect the ROE measurement due to the fact that long-term debt that is used to purchase or finance income-enhancing assets could increase income without significantly changing the amount of equity paid into company. A highly leveraged firm could appear to increase the shareholders' equity, yet the firm would not necessarily increase its ability to repay both debt and equity holders. EVA measures the ability of a company to increase the value of a company's equity over and above the required costs of equity and debt capital. Companies with the ability to increase the value of equity are attractive to investors.

### **Data**

Financial data were obtained from Standard and Poor's Compustat Financial DataBase and Stern Stewart's EVA database. Each firm was classified using the first three digits of its SIC. For example, the industries of Meat Packing Plants, Sausages and Other Prepared Meats, and Poultry Slaughtering and Processing were aggregated into one industry classification as Meat and Poultry Products. The classification resulted in 60 sub-industry categories that were aggregated into 15 different industries.

The 15 industries were Agriculture Production-Crops (note that this industry is **not** farming but rather firms who own fruit and vegetable plantations and seed companies), Food and Kindred Products, Meat and Poultry Products, Dairy Products and Ice Cream, Fruits and Vegetables-Preserved, Grain Mill Products, Bakery Products, Sugar Products, Fats and Oils, Beverages, Miscellaneous Food Products, Farm Machinery, Groceries and Related Products, Grocery and Convenience Stores, and Eating Places.

### **Food and Agribusiness Firm Profitability Over Time**

The average of all industries' ROE increased from near 16 percent in 1980 to almost 25 percent in 1997, an increase of 8.5 percent (Figure 1) while ROI increased from 11.3 percent in 1980 to 15.3 percent in 1997. During this period of time interest rates decreased, making it less expensive to borrow. The difference between ROI and ROE indicates an increase in the amount of debt used to finance investments during this period of time. The weighted-average across all industries for ROE was 18.3 percent and ROI was 10.99 percent.

Industries which were characterized by essentially marketing commodities with little processing directly to retailers (Dairy Products and Ice Cream, Meat and Poultry, Bakery Products, Groceries and Related Products) had lower returns than other food marketing and industrial or food processors during this time period.

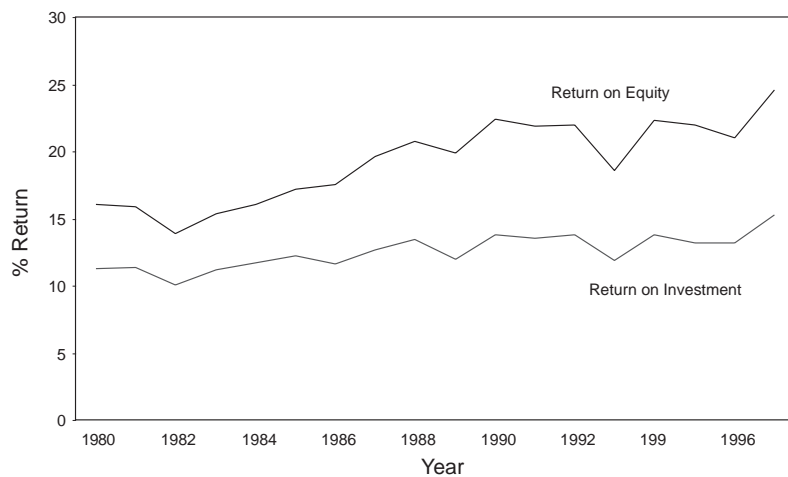
Significant declining profitability over time was noted for these four industries. Eating and Drinking Places industry also had a significant declining trend as this industry was characterized by high rates of entry and exit as consumer preferences changed, which likely affected the profitability of some firms in this industry.

Interestingly, since 1997, there has been new entrants in several of these industries. Producers have invested in cooperatives to process bakery products made from wheat (United Spring Bakers and 21<sup>st</sup> Century Flour Milling Cooperative) and process beef products (US Premium Beef). In addition, existing firms have invested in further processing of beef and pork. IBP, Cargill (Excel), Con Agra, and Smithfield have established new branding strategies in beef and pork, while Tyson's has refocused on poultry.

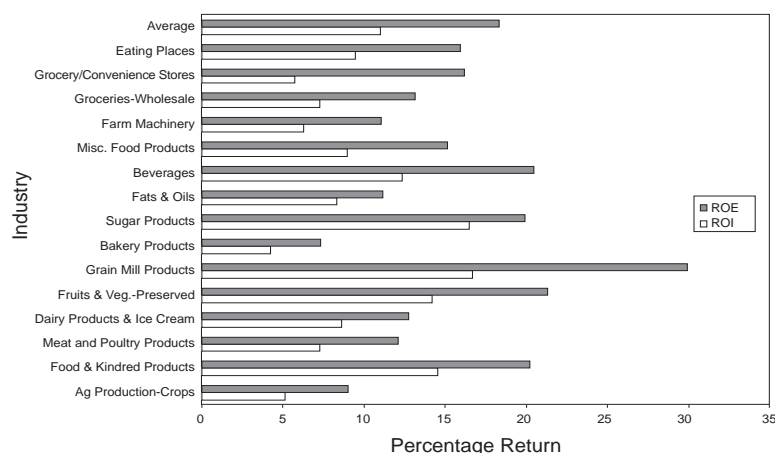
Significantly increasing trends in profitability were found for Grain Mill Products, Sugar Products, Food and Kindred Products, Beverages, and Farm Machinery. The other industries (Fats and Oils, Agriculture Production-Crops, Grocery and Convenience Stores, Miscellaneous Food Products, and Fruits and Vegetables - Preserved) had no significant trends over this time period. Freberg summarized reasons why these trends were observed and which trends were likely significant determinants of profitability in these industries during this time period.

Increasing a firm's leverage and financing growth through debt generally works well when interest rates are declining as they did over much of the late 1980s and early 1990s. For example, Grain Mill Products had the highest amount of leverage (equity risk premium) during this time period as firms borrowed money to finance industries such as soybean processing and corn milling (Figure 3). However, factors such as changes in interest rates, capacity, and raw material prices can have dramatic effects upon leveraged firms on a firm's equity structure (Figure 4).

The standard deviation of ROI was plotted against the average ROI for each industry (Figure 5). In general, variability



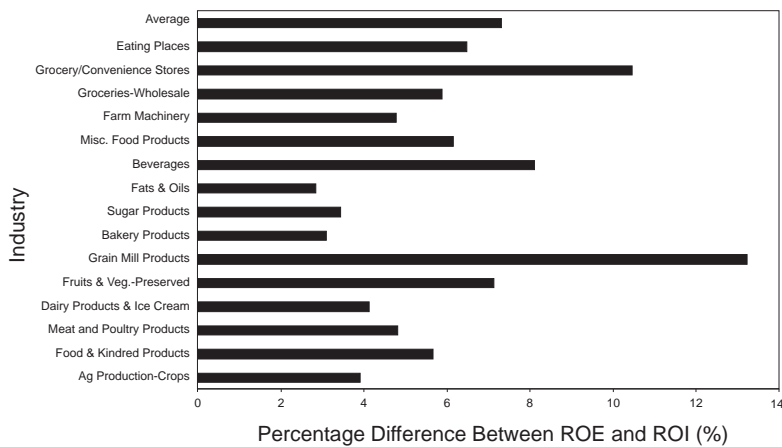
**Figure 1.** Overall ROE and ROI for 103 Food Processing, Wholesaling, and Retailing Firms, 1980-1997



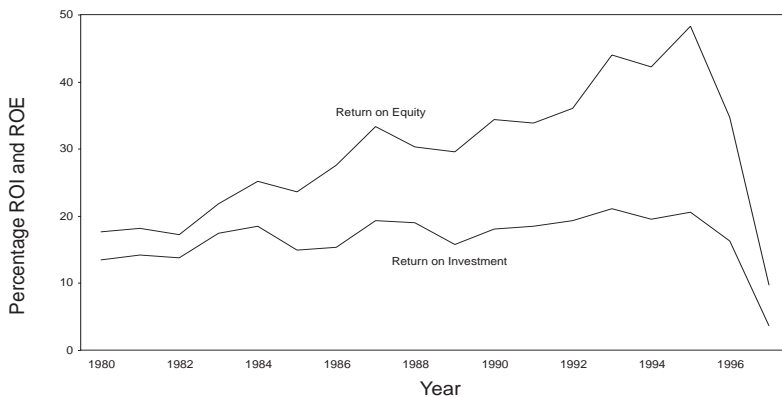
**Figure 2.** Aggregated Return on Equity and Return on Investment By Industry, 1980-1997

(as measured by the standard deviation) was greatest for industries which supplied inputs to agriculture (e.g., Farm Machinery, Production Agriculture) and provided little marketing services (e.g., Bakery Products, Dairy Products and Ice Cream). This is not unexpected as weather and high productivity affects the supply of most commodities in most years. Variability was lower for industries where there was increasing demand (increasing demand for high fructose corn syrup made from Grain Mill Products and used in Beverages, sweeteners made from Sugar Products, etc.) and changes in consumer preferences (single serve packaging for smaller households and microwaveable products developed by Food and Kindred Products' firms).

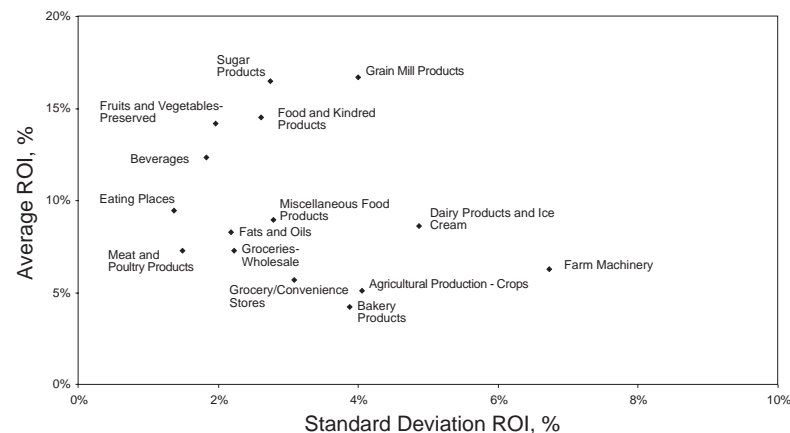
Economic Value Added was determined for each industry. Figure 6 shows that EVA was variable during this time



**Figure 3.** Average Equity Risk Premium, 1980-1997



**Figure 4.** Grain Mill Products Average Annual Return on Equity (ROE) and Return on Investment (ROI), 1980-1997



**Figure 5.** Standard Deviation of, and Mean Return on Investment (ROI), by Industry over 1980-1997

period for Food and Kindred Products' firms. Much of the variability is likely driven by changes in industrial food product prices during this period. Figure 7 shows similar results for Meat and Poultry Products. Much of the variability was driven by changes in livestock and meat prices, which affected net income. In addition, this industry became more leveraged over time as firms used debt to

invest in further processing through acquisitions and investments in food safety and other technologies.

Grain Mill Products had a significant increase in EVA, which was driven by investments in further processing of commodities such as corn and soybeans in the late 1980s and early 1990s (Figure 8). Overcapacity in this industry had a dramatic effect by the mid-1990s and helped decrease profitability. Finally, the Bakery Products industry created little EVA relative to the three previous industries and has had extremely variable returns due to price fluctuations in wheat and other inputs (Figure 9).

The ability of a single firm to repeat performance was reported in Boland, Freberg, and Barton. With respect to individual firm performance over this time period, the results suggested that there were non-random factors that influence performance. For example, only 5 percent of the firms consistently ranked in the top 25 percent on ROI over this time period which suggests successful strategy implementation while 10 percent remained in the bottom 25 percent which suggests less successful strategy execution. But a greater number of firms developed and implemented different strategies that significantly increased or decreased their performance between the early 1980s and mid-1990s. Almost 40 percent of all firms were able to repeat their performance (good, average, and poor) from year-to-year during this time period.

Not all firms were able to craft a strategy that enabled them to achieve high business performance as measured by accounting profitability. Less than 5 percent of the 103 firms went from the top 25 percent to the bottom 25 percent over this time period while 10 percent went from the bottom 25 percent to the top 25 percent. Almost 30 percent of the 103 firms merged, were acquired by another firm, or exited during this time period. This is not uncommon. However, some common indicators across successful firms in this study included large market share, valuable brands, clearly differentiated image or products, and a broad product line.

## Conclusions and Implications

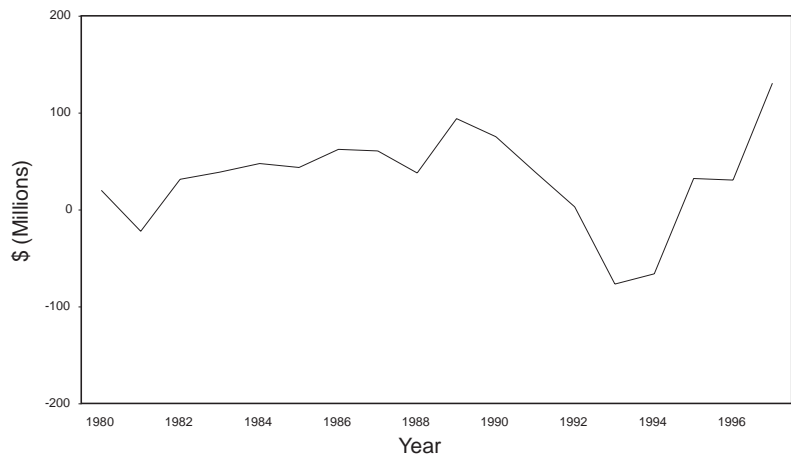
How profitable was the food and agribusiness industry over the 1980 to 1997 time period? In the aggregate, ROI did not change significantly for the 103 leading food and agribusiness firms analyzed in this study. However, ROE did increase significantly, which suggests that the value of firms increased over time even though profitability did not significantly change. Some of this likely reflects the degree of leverage used in strategy implementation in the food and agribusiness industry during this period.

There were significant differences between industries. One important finding was that industries where there was little “value-added” (Dairy Products and Ice Cream, Meat and Poultry, Bakery Products, Groceries and Related Products) had a significant decline in ROI over this time period relative to other industries that were involved in further processing and providing marketing services.

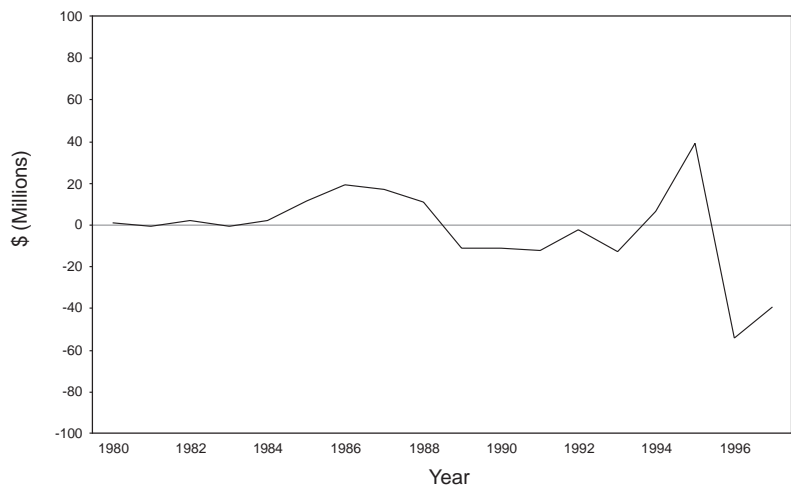
In general, approximately 40 percent of these firms could repeat their performance each year which suggests that successful or unsuccessful strategy implementation is critical to a firm’s profitability. Producers contemplating investments in cooperatives must recognize the risks involved in such ventures. These risks include unsuccessful strategy implementation and lack of information on why some industries have declining profitability over time. Competition, overcapacity, changing technology, development of clearly differentiated products, and other factors are important determinants of industry and firm profitability.

## Key Questions and Answers

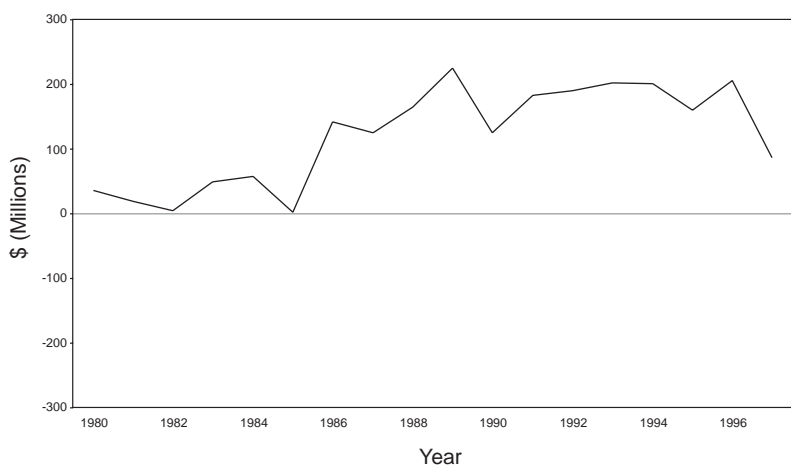
**How profitable were food and agribusiness firms over the 1980 to 1997 time period?** The weighted-average across all industries for return on equity was 18.3 percent and return on investment was 10.99 percent. These figures are comparable to the S&P 500 averages for this time period. Return on investment did not change significantly over this time period while return on equity increased which suggests that the total value of food and agribusiness firm’s increased.



**Figure 6.** Food and Kindred Products Average Annual Economic Value Added, 1980-1997

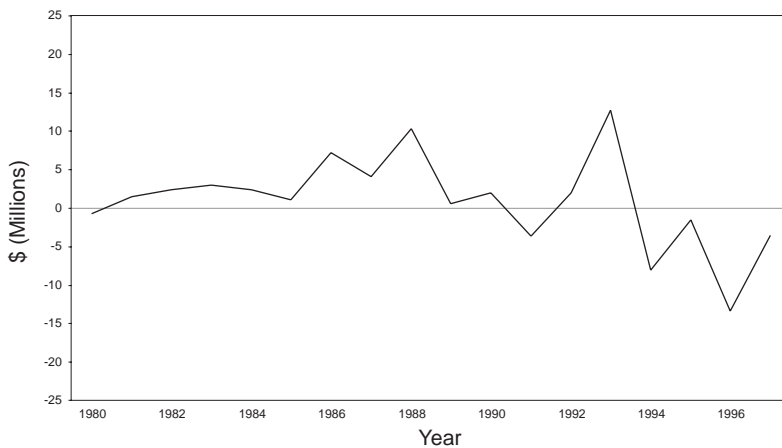


**Figure 7.** Meat and Poultry Products Average Annual Economic Value Added, 1980-1997



**Figure 8.** Grain Mill Products Average Annual Economic Value Added, 1980-1997

**Which industries had decreased or increased profitability during this time period?** Dairy Products and Ice Cream, Meat and Poultry, Bakery Products, Groceries and Related Products, Eating and Drinking Places) had significantly lower returns than other food marketing, and



**Figure 9.** Bakery Products Average Annual Economic Value Added, 1980-1997

industrial or food processors during this time period. Significantly increasing trends in profitability were found for Grain Mill Products, Sugar Products, Food and Kindred Products, Beverages, and Farm Machinery.

**Which industries were most profitable overall?** Grain Mill Products, Beverages, and Food and Kindred Products had the highest return on investment and return on equity. These industries were also more highly leveraged relative to other industries.

**Can a firm implement a successful strategy and repeat or increase their performance over time?** Approximately 40 percent of the 103 food and agribusiness firms were able to repeat their performance (good, average, and not as successful) across this time period. Only 5 percent were able to remain significantly above-average overall. However, there was a great deal of movement between top and bottom groups of firms with respect to profitability.

**Which industries add the greatest economic value?** Beverages, Grain Mill Products, Food and Kindred Products, and

Food and Vegetables-Preserved had the greatest amount of economic value creation. These industries were also among the most profitable and the most highly leveraged which indicates that firms in these industries have a great deal of fixed assets and that there are economies of size. Changes in demand (e.g., mature markets) or excess capacity would likely cause these industries to experience a decline in profitability.

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