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GENERAL SESSION

Industry Information As a Precursor to Export Development: The Case of the Kentucky Food Processing Industry

Valerie L. Vantreese

The structure of the food processing industry is important to the agricultural, as well as the manufacturing, economy. In many manufacturing industries there is an appeal to produce more value-added products and reduce the sale of unprocessed or bulk products. Further, many states are engaged in tremendous bidding wars to attract new industries to their domain, while frequently ignoring or taking for granted the existing manufacturing base. The food processing industry is the target of both of these trends. Consequently, many questions are being asked regarding the structure of the existing food industry and how it has changed over time.

In addition, many states have contemplated the creation of a Food Processing Institute. Ideally, the Institute would integrate industry, university and political forces to propel the food sector into the 21st century. A holistic effort should be able to better anticipate and take advantage of emerging technologies and the evolving consumer market to create a more dynamically competitive food processing sector. The establishment of such an Institute requires a competent understanding of the industry itself.

From the international perspective, it is widely believed that the U.S. food processing industry has not fully exploited its export potential. The United States continues to be perceived as primarily a bulk commodity supplier to the world market. States themselves bemoan the movement of raw commodities across political boundaries, only to be processed in another state. It is not the intent of this paper to argue for increased processed food exports. However, this paper does assert that global processed food trade is important to production agriculture and an improved under-

standing of the food industry will better focus efforts to increase processed food exports. Thus the following section will briefly digress.

Global Food Trade

Three assertions are made regarding the global market for processed foods:

- World high-value food trade is rapidly growing
- The U.S. food processing sector is internationally competitive
- Duality exists in the U.S. food manufacturing sector, affecting international market access strategies

Figure 1 displays the growth in world agricultural exports by processing stage. Data on processed foods is difficult to evaluate, particularly on a global scale. In the United States, USDA distinguishes between agricultural products (Standard Industrial Classification 0-10) and processed foods (SIC 20). However, USDA frequently reports trade statistics using the classifications bulk, intermediate and consumer-oriented goods. The Department of Commerce reports trade statistics for SIC 20 products. Both USDA and Commerce figures are gleaned from Census of Bureau statistics collected at the point of entry to or exit from the United States. The Food and Agriculture Organization tracks world food trade using a mingled version of the two. Although this nomenclature is not comparable to SIC 20 or USDA statistics, it is often used when comparing trade statistics worldwide. (There is work in progress at USDA to compare U.S. food data with that of other countries on a more equitable basis. Complete conversion to the nine-digit Harmonized Code System will also bring consistency in global comparisons.) Despite these caveats, the global trend toward increasing processed food trade is undisputable. The same trends that are affecting buy-

Valerie Vantreese is Education Director at the Center for Agricultural Export Development, University of Kentucky, Lexington, KY.

World Ag. Exports by Processing Stage

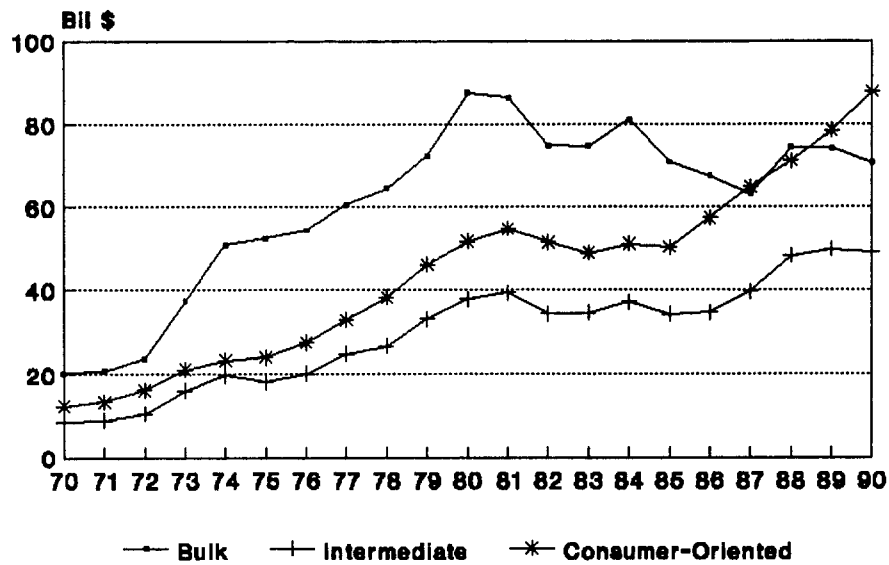


Figure 1

Source: FAO and FAS/USDA

US Exports by Processing Stage

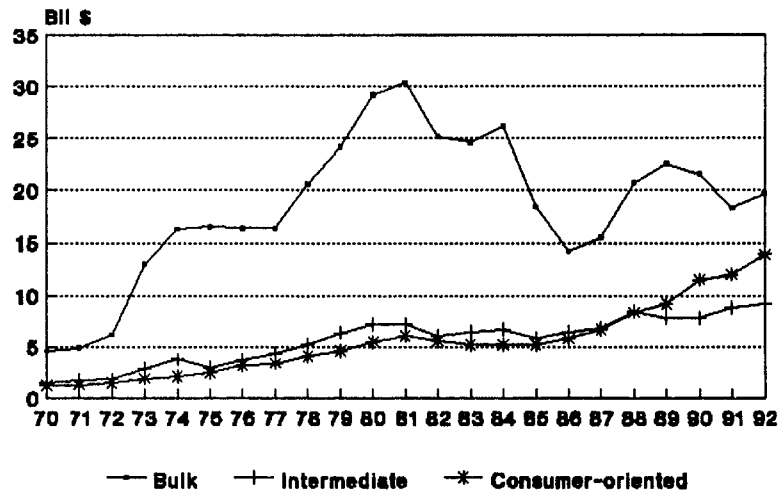


Figure 2

Source: FAS/USDA

ing patterns in the United States such as increasing per capita incomes, more women working outside of the home, and an increased demand for convenience foods, are also increasing the global demand for processed foods.

Likewise, exports of U.S. consumer-oriented foods have also grown and last year combined intermediate and consumer-oriented food exports exceeded that of bulk agricultural products (Figure 2). Further, bulk sales are much more contingent on price differentials (and currency fluctuations) due to the undifferentiated nature of the products. Thus, bulk exports are more volatile. In contrast, consumer-oriented and processed food exports (SIC 20) are growing, yet are much more stable. Surprisingly, the United States is also a large importer of processed foods. The United States frequently runs a deficit in processed food trade (for example, in six of the last ten years the United States was a net processed food importer) (Figure 3). Further, U.S. exports of consumer-oriented food products indicate only a 13 percent world market share (compared with a 27% EC market share). Consequently, the United States continues to appear primarily as a bulk agricultural supplier to the world market, undercapitalizing its export potential.

However, the manner in which the United States competes on the global processed food market is not solely through international trade. Market access for many large food processors comes through foreign investment or simply moving processing capacity abroad. For example, 12 of the 20, and 21 of the 50, largest food manufacturers in the world are U.S. multinationals. Food sales of these U.S. foreign affiliates were \$74.8 billion in 1990, compared to U.S. processed food exports of \$16.2 billion. These U.S. multinational food processors are very competitive on world markets, but U.S. export statistics do not reflect this. Importantly, the global competitiveness of an industry cannot be measured by trade statistics alone. Market access through foreign investment must also be considered. Thus, the second assertion stated above, *the U.S. food processing sector is internationally competitive*, is believed to be true.

Duality in U.S. Food Manufacture

What quickly becomes apparent in evaluating the global competitiveness of the U.S. food processing industry is the mode of market access relative to firm size. The U.S. food processing sector, like many other manufacturing sectors, is based on a duality with regard to firm size. By industry standards, the food processing sector is fairly concentrated. Using information from the U.S. Bureau of Census, Census of Manufacture, 4 of the largest food processors account for 11 percent of

the total value of shipments, and 50 of the largest account for 47 percent (Table 1). This duality with regard to firm size is also seen with regard to the number of establishments, the number of employees, the size of the establishment with respect to employment numbers, and the value-added by manufacture per company (Table 2). In general, a small number of very large food processors play a dominant role in the U.S. food processing industry. Perhaps more important, these large processors have the capital to invest in future competitiveness, as new capital expenditures per company are also positively correlated with firm size.

Table 1
Food and Kindred Products
Manufacturers (1987)

Number of Companies	15,692
Value of Shipments	329,725.4 mil
4 largest companies	11 %
8 largest companies	18 %
20 largest companies	32 %
50 largest companies	47 %

Source: Census of Manufacturers

In general, only the largest multinationals have the resources to establish manufacturing operations overseas. (Thus, the ensuing criticism of the Marketing Promotion Program, operated by USDA/FAS, which channels a considerable amount of trade promotion funds to large agribusinesses.) Alternately, smaller food processors use international trade to access the global market. Consequently, it is logical that any assistance provided to firms in entering foreign markets be primarily geared toward small- to medium-sized companies and be more trade rather than investment oriented. Further, it is advantageous for companies with limited capital and management resources to evaluate a variety of market entry strategies, including the use of export management or trading companies; access through duty-free shops, government and military procurement; the use of foreign sales representatives or distributors; and the establishment of licensing or franchising arrangements.

US Trade Balance In Processed Foods

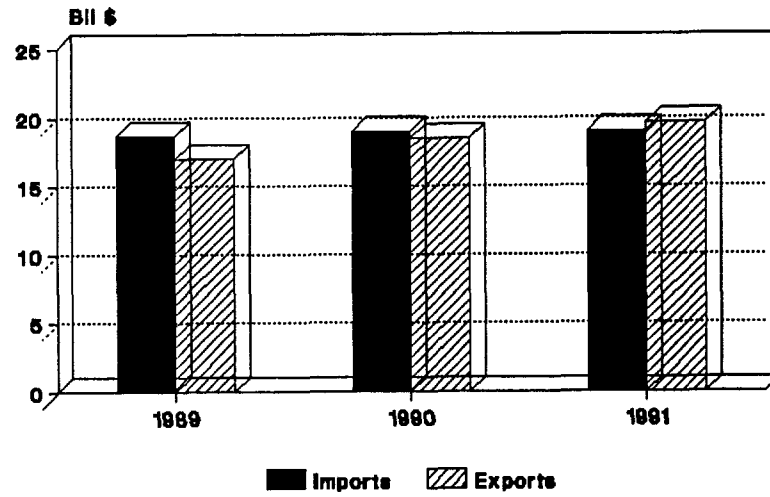


Figure 3

Source: Bureau of Census

Food Processing as a Percentage of Manufacturing Base

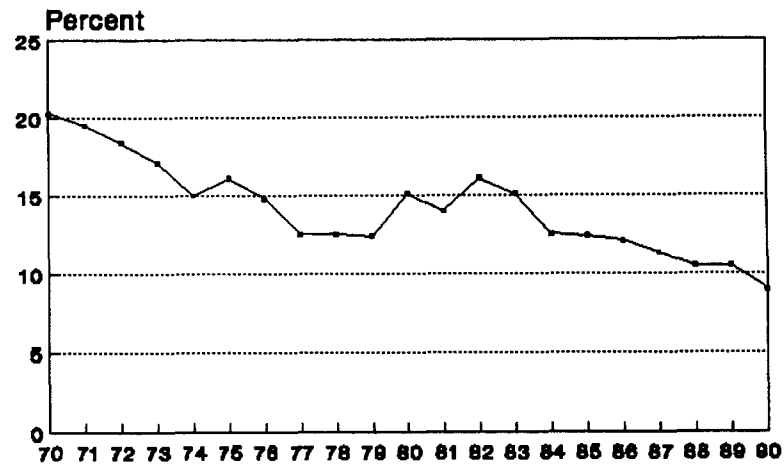


Figure 4

Source: Annual Survey of Manufacturers

Table 2
Food and Kindred Products (1987)

	Single Establish- ment	Multi- Establish- ment
No. of Companies	13,375	2,317
No. of Establishments	13,375	7,208
No. of Employees	311.9 (thous)	1,136.9 (thous)
% of Establishments > 20 employees	28.5%	81.5%
Value-added by Manufacturer per company	\$1.1 mil	\$45.9 mil
New Capital Expenditure per company	\$67,320	\$2.7 mil

Source: Census of Manufacturers

The Case of Kentucky

Like many other states, it is believed that Kentucky has the potential to increase processed food exports to global markets. In addition, Kentucky has both pursued the creation of a food processing institute and aggressively courted manufacturers to move their operations to the state. To better assist the food processing sector, simple questions have been asked; few answers have been supplied. Up-to-date information regarding the changing structure of the industry is difficult to obtain. States are usually quick to point out plant openings and expansions, but are politically restrained from promptly reporting plant closings and lay-offs. Thus, the following section relies on public information, primarily from the Bureau of Census, Census of Manufacture which was last conducted in 1987. Additional information is gleaned from the Annual Survey of Manufacture, also conducted by the Bureau of Census, using an extrapolated sample survey methodology. Unfortunately, there is a lag of about two years in publishing Annual census data, rendering immediate monitoring of the food manufacturing sector extremely difficult. County Business Patterns includes some

detailed sector information by county, but the level of aggregation is of little importance for this paper.

Like those of most states, Kentucky's agricultural and food processing sectors have declined in importance as a percentage of state GNP. While accounting for approximately 20 percent of Kentucky's manufacturing base in 1970, food processing now accounts for less than 10 percent (Figure 4). While many use this statistic to argue the demise of the food processing sector, in reality it represents a diversification of the economy, as Kentucky moves beyond an agrarian and coal producing state into a more diversified manufacturing and service-based economy. Importantly, Kentucky's food processing industry has averaged 1.5 percent annual real growth over the last ten years, comparable to U.S. growth.

The value of shipments by Kentucky food manufacturers has shown slow, albeit steady growth, after adjusting for inflation (Figure 5). In 1990, Kentucky shipped \$4.9 billion of food and kindred products. Similarly, value-added by manufacture (adjusted for inflation) has shown steady growth, although posting an unexplained decline in 1990 (Figure 6). In 1990, Kentucky added \$1.9 billion in value through food manufacture. Both of these figures were constructed using information from the Annual Survey of Manufacturers, SIC-Based Producer Price Index Series. Numbers were deflated using the food manufacture wholesale price deflator.

With regard to specific sub-sectors, beverage production is extremely important to Kentucky's food processing industry (Figure 7). In 1990, the beverage industry contributed \$798.3 mil or 42 percent of all value-added by food manufacture. This proportion has remained essentially constant over the last decade. Kentucky's beverage industry is made up primarily of the soft-drink and bourbon industries, with a small juice sub-sector. The bakery, meat and dairy sub-sectors each account for about ten percent of all food manufacture in the state. Sub-sector analysis in Kentucky is difficult due to inadequate information at the three and four digit SIC level. Due to privacy of disclosure laws, a considerable of information is unavailable from the Census. Frequently, fewer than five firms dominate any particular sub-sector, particularly in the fruit, vegetable and miscellaneous categories. Consequently, analysis over time is also inadequate. Therefore, it is extremely difficult to measure the effectiveness of State incentive plans to attract more manufacturers to specific sub-sectors. Information regarding the fast growing snack food and pasta industries, part of the miscellaneous category, is also obscured.

Job creation is an important measure of success for any economic development plan. Fairly detailed

Value of Shipments by Food Manufacturers (Adjusted for inflation)

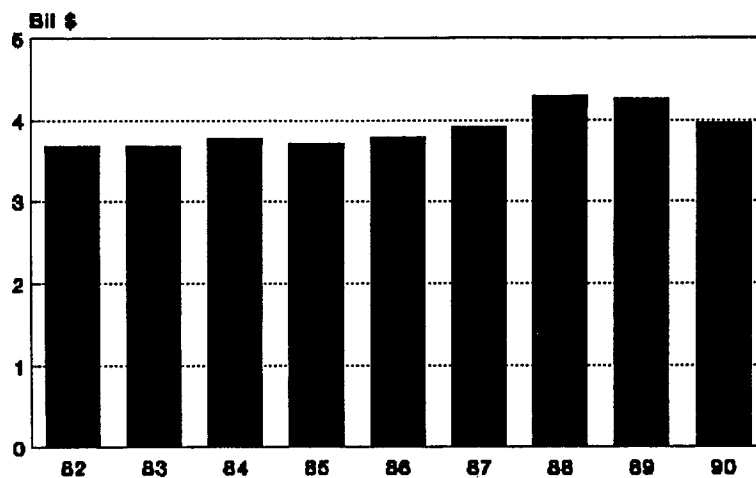


Figure 5

Source: Annual Survey of Manufacturers

Value-added by Food Manufacture

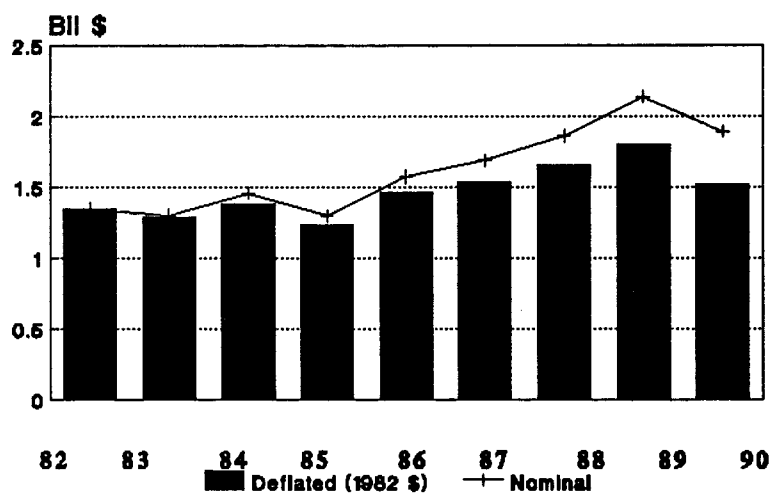


Figure 6

Source: Annual Survey of Manufacturers

Kentucky's Food Processing Sub-Sectors **Value Added by Manufacture: 1990 (mil \$)**

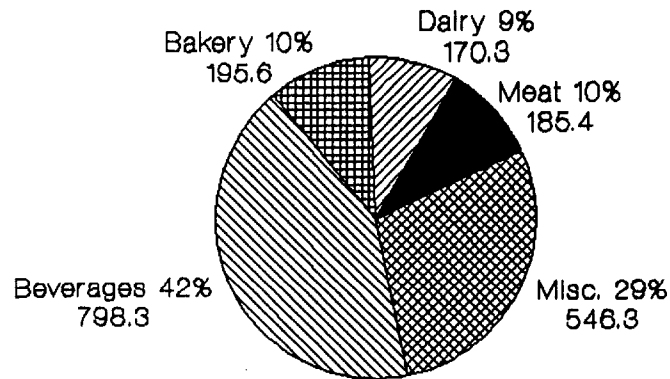


Figure 7
Source: Annual Survey of Manufacturers

Number of Processing Establishments **by Employment-size Class (1990)**

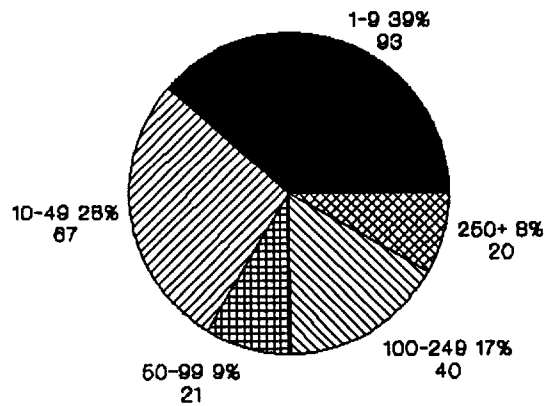


Figure 8
Source: Annual Survey of Manufacturers

employment information is available for any industry, due to government efforts to track unemployment and FICA benefits. Like the United States, employment size duality exists in Kentucky's food processing sector. Half of Kentucky's food manufacturing establishments employ fewer than 20 workers (Figure 8). Despite the amount of wage information available, problems exist in further analyzing this data. For example, no distinction is made whether workers are full or part-time, nor is there any clear correlation with benefit packages. Consequently, growth in number of employees employed by the food manufacturing sector is difficult to evaluate due to the possible substitution of part-time for full-time workers and vice-versa. Further, sub-sector analysis is virtually meaningless due to insufficient data for reasons mentioned above.

Employment statistics can be gleaned from the Annual Survey of Manufacturers (Census of Manufacturers, which also provides industry-specific correlation data), the Bureau of Labor Statistics (U.S. Department of Labor) and, in Kentucky, the Cabinet for Human Resources. As expected, none are consistent with another. Data on average weekly earnings, weekly hours and hourly earnings; and value added by manufacture per production worker and per dollar of wages is also available for cross-sector comparability. However, due to the problems mentioned above with benefit packages, uncertainty over full-time status and lack of sub-sector data, analysis is difficult.

Particularly meaningful for the long term viability of a manufacturing sector is the level of new capital investment in an industry. Like other manufacturing industries, the future competitiveness of the food processing industry is dependent on the adoption of new technologies. Despite State incentive efforts, investment in Kentucky's food processing sector is relatively stagnant and vary considerably over time compared to the United States (Figure 9). Despite inadequate sub-sector data which is meaningful for future growth and competitiveness, most of Kentucky's capital investment appears to be headed for the beverage industry. Data from the Annual Survey of Manufacture has been deflated using the food processing machinery deflator specifically developed for this industry. The five-year Census of Manufacture also distinguishes between investment in new versus used machinery.

Kentucky Food Exports

In 1990, Kentucky shipped \$132.6 million of processed food products to overseas markets (Table 3). Over \$40 million of food products were exported to Japan and another \$38 million to Canada (both of which are larger than exports to the entire European Community). Two-thirds of all shipments went by sea, one-third by

land (rail or truck) and a fraction of shipments by air. Obviously this varies by country. For example, almost all shipments to Japan travel by sea and most to Canada and Mexico by land. This information is made available from the Bureau of Census, through the U.S. Department of Commerce. (Export values are reported "F.A.S." or "free along side ship" which is the value of the product at time of export. Thus, values may include transportation, insurance and other costs to ship the goods to the point of exit from the United States.)

Table 3
1990 Processed Food Exports

Destination	FAS Value (mil \$)
Japan	40.6
Canada	38.7
United Kingdom	7.9
Australia	6.9
West Germany	6.3
Belgium/ Luxembourg	5.2
South Korea	4.5
France	4.2
Total	132.6

It must be noted that state export figures are suspect for several reasons. Export statistics are collected at the point of exit from the United States, relying on title of ownership at export. Thus, if a Chicago firm purchased sausage from a Kentucky firm and shipped it to Canada, Illinois would receive credit for the shipment and not Kentucky. Export statistics are adjusted to state production estimates, but this is extremely difficult to do for processed foods as composite parts may have been manufactured in multiple states. Despite these caveats, it is reasonable to assume that Japan, Canada and the EC are Kentucky's biggest importers of processed foods.

Among all states, Kentucky is ranked 23rd in value of food and kindred product exports. California, Louisiana and Texas rank at the top, not surprisingly given their large agricultural sectors and port access. It is estimated in the food processing sector, for every

job directly related to the export market, another job is required to support that effort.

As noted earlier, the food processing sector is continuing to restructure itself. Relevant to exports, many multinationals are moving their processing plants overseas to access foreign markets. Thus, total processed food sales from U.S.-owned foreign subsidiaries are much larger than U.S. exports of processed foods from the United States. Thus, although it appears that the U.S. food industry is experiencing slow growth, most of the growth can be found in the direct U.S. presence in overseas markets. Of the largest Kentucky food processing firms, several have a significant presence overseas. CONAGRA, Inc., the Brown-Forman Corporation, and American Brands, Inc. (which owns Jim Beam Brands Company) all rely heavily on the international market for their livelihood.

Further Research

As customary, in the attempt to answer a few questions regarding the food processing sector, more questions have arisen. Who are food processors and how do we "help" them? What could a Food Processing Institute or Association really accomplish?

Do financial incentive packages "pay"? Attracting food processors to the state can be quite advantageous. However, state and local governments must consider both the explicit costs (such as training programs and subsidized interest rates) and indirect costs (including lost future earnings through tax deferrals or pardons) per job created. Conversely, the full benefits ripple both back to agricultural producers and forward through the marketing chain. How do we measure ripple effects? How do incentives alter various markets, including labor, finance, input and transportation?

Is export potential industry or firm specific or both? Is there support for Porter's Theory of Competitive Advantage? What is the role of foreign investment in food processing trade? How can states best design assistance programs to aid small- and medium-sized food processors in accessing global markets?

New Capital Expenditures

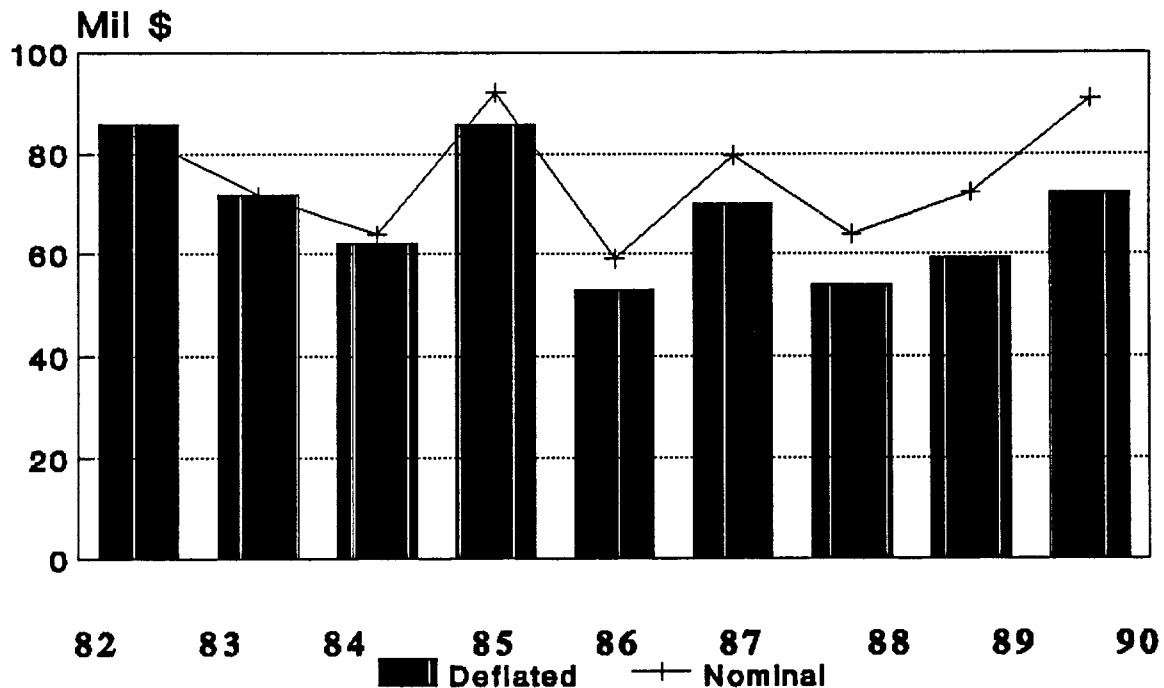


Figure 9

Source: Annual Survey of Manufacturers

