Importance of the Processed Food Sector for the U.S. Agricultural Industry

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1. Introduction

The United States accounts for about 25 percent of processed food production in the developed countries (Henderson, Handy, and Neff).[1] The total value of U.S. processed food production in 1996 was about $450 billion (U.S. Department of Commerce). The significance of the processed food sector for the U.S. agricultural industry is growing because of growth in domestic production and foreign trade. The importance of the processed food sector in the domestic market arises in part due to the value-added in the production process. The prominence of the processed food sector in the overseas market arises because the United States is one of the leading countries in food product trade.

The purpose of this study is to a) compare and contrast the growth and performance of the processed food sector and farm sector both in the domestic and international market and their contributions to the overall U.S. economy; b) identify the factors behind the growing prominence of the processed food sector; c) examine the importance of changes in domestic farm policy and global trade and competition for the U.S. food processing sector; and d) present the implications of growth in food processing industry and processed food trade to U.S. basic commodity producers.

2. Processed Food vs. Farm Commodity

2.1. Domestic Production Growth

Over the last three decades, the processed food sector has grown much faster than the farm sector. In 1972, the value of processed food production ($115.05 billion) was 1.89 times more than the cash receipts from the marketings of farm commodities ($61 billion) (U.S. Department of Commerce and USDA, various issues). In contrast, in 1995, the value of processed food production ($441 billion) was 2.37 times more than the cash receipts from farm commodities ($186 billion) (see Figure 1). From 1972 to 1995, the value of processed food production increased by 283 percent, while farm commodity production grew by only 204 percent.

A key difference exists between growth in the two sectors. Growth in the food processing sector has been largely due to an increase in the number of differentiated products produced to meet the consumer demand (e.g., various meat products, brands of cereals, and frozen entrees). The demand for variety and differentiated products is the result of high per capita income, the individualistic nature of U.S. consumers, the need for oven-ready meals, and highly sophisticated marketing capabilities (through research and advertising) of U.S. food manufacturers. The major categories that have contributed to the rise in processed food production include meat and poultry products, fish, flour and grain milling products, breakfast cereals, soft drinks, canned fruit and vegetables, frozen fruit and vegetables, candy and confectioneries, vegetable oils, etc.

2.2. Value Added

Value-added by the processing sector to the general economy has also grown at a faster rate than value-added by the farm sector. The food processing sector generated $35.5 billion in value-added in 1972, which increased to $92.2 billion in 1985 and $124.8 billion in 1996 (USDA, 1998).[2] In contrast, value-added by the farm sector increased from $18.5 billion in 1972 to only $41.5 billion in 1985 and $51.6 billion in 1996. Thus, between 1972 and 1996, value-added by the processing sector grew by 3.52 times and by the farm sector by only 2.79 times. As a result, by 1996 value-added by the processing sector was 2.42 times larger than the value-added by the farm sector (see Figure 2).

Labor is the largest cost category in the food processing sector. Unlike other high-tech industries where U.S. jobs have been lost to Mexico, Caribbean and East Asian countries, the food manufacturing industry has not experienced a significant job loss (Neff et al.). The employment generated by the processing sector has remained relatively stable, ranging from 1.8 million in 1972 to 1.7 million in 1985, and experienced a modest decline to 1.4 million in 1996. On the other hand, farm sector employment fell sharply from 2.5 million in 1972 to 1.6 million in 1985, and declined further to 1.5 million by 1996.

2.3. Trade

World trade in processed food has outpaced bulk commodity trade. From 1980 to 1995, world trade in processed food grew 8.3 percent annually, while bulk commodity trade grew only by 2.1 percent. Consequently, the share of word trade in bulk commodity declined from 50 percent of total agricultural trade in 1980 to 32 percent in 1995 (Coyle et al.). Furthermore, trade in processed products is predominantly among developed countries with a relatively similar level of per capita income and economic conditions, whereas trade in bulk commodities is primarily between countries with dissimilar economic features (Handy et al.).

Not long ago, the major focus of the U.S. agricultural trade was on bulk commodity rather than the processed food trade. The dominance of the basic commodity trade in the 1950s, 60s, and 70s is attributed to several factors. Chief among them are a) processed food industries are in the early stages of development; b) continued growth and importance in grain trade; c) U.S. policies favoring bulk commodity trade; d) grain shortages in the rest of the world in the 1970s and the resulting high grain prices; e) visible publicity for the trade surplus generated by commodity exports; f) lack of taste and preference of foreign consumers for U.S. processed food; g) global trade barriers favoring bulk commodity to processed food; and h) slower income growth in many parts of the world which favored commodity imports rather than processed food imports. However, in the last two decades, because of the value-added to the domestic market through employment and other input uses, and due to the growing significance of processed products in total U.S. agricultural exports, greater emphasis is being put on promoting processed food products (through market promotion programs and mass media advertising) than bulk commodities (also see Amponsah, Adu-Nyako, and Pick). Consequently, the United States has become an important player in the global processed food markets. As a result, it ranks near or at the top in several categories, including total production of processed food, labor productivity, and firm size

(Ruppel, Handy, and Henderson). Currently, the United States is one of the leading countries in both exports and imports of manufactured food products.

U.S. high-value product exports rose from $6.03 billion to $34.07 billion between 1975 and 1997, an increase of 465% (ERS electronic database). In contrast, bulk commodity exports rose from $15.8 billion to $23.3 billion between 1975 and 1997, an increase of only 47.6% (see Figure 3). [3] Since 1991, high-value product exports have been larger than bulk commodity exports. In 1997, high-value product exports accounted for 59% of U.S. agricultural exports compared with an average of less than 35% prior to 1980. Figure 3 also reveals an important point, i.e., high-value product exports show a relatively smooth upward trend, whereas primary commodity exports exhibit a significant fluctuation, reaching their peak in 1981 and their low in 1986. This indicates that bulk exports are affected significantly more than the high value-product exports by such factors as weather and slower economic growth. For instance, the current Asian economic crisis seems to have hit the primary commodity markets harder causing depressed commodity prices and exports. Consequently, commodity producers are not insulated from the factors that adversely affect the supply and demand. On the other hand, the steady and faster growth of high-value product exports is the result of the emphasis to add value to bulk commodities through processing before exporting to foreign countries. Also, the growth in the processed food exports is attributed to stable income growth in countries like European Union, Japan, and East Asian countries, which increased the demand for western style consumer-ready processed food.

Some of the major processed food exports in 1997 were meat products (18.4% of total processed food exports); soybean oil (10.1%); poultry products (8.1%); fresh and frozen seafood (7.3%); wet corn mill products (5.1%); food preparations (4.1%); canned fruits and vegetables, preserves, jams and jellies (3.6%); and salted and roasted nuts and seeds (3.3%). Leading bulk agricultural exports were soybeans (31.4% of bulk commodity exports), coarse grains (25.4%), wheat (17.4%), cotton (11.5%), tobacco (6.6%), and rice (4.0%).

The U.S. is also a leading importer of processed foods. U.S. processed food imports rose from $19.53 billion to $30.17 billion between 1989 to 1997, an increase of 54%. Only in 1992, did the United States reach a trade surplus in processed foods. (see Figure 4).[4] Some of the major processed food imports in 1997 were prepared fresh and frozen seafood (20.6% of total processed food imports); meat products (9.4%); wines and brandy (6.7%); canned fruits and vegetables, preserves, jams and jellies (6.0%); distilled and blended liquors (5.9%); vegetable oil excluding corn, cottonseed, and soybean oils (5.0%); malt beverages (5.0%); chocolate and cocoa products (4.9%); canned and cured fish and seafood (4.4%); and food preparations (4.0%).

Even though the U.S. has experienced trade surplus in processed food trade, the U.S. processed food export share of total agricultural export is less than that of other developed countries such as European Union. It could be argued that reasons for this smaller share of U.S. processed food exports relative to other developed countries are that the U.S. has comparative advantage in bulk commodity exports, and U.S. food processing firms are not highly subsidized as foreign food processing firms. However, as observed by Sheldon, most U.S. food processing firms tend to focus on investing in foreign countries rather than on exporting. For instance, between 1982 and 1995, processed food sales by U.S. foreign affiliates in the overseas market had grown by 189 percent, and reached $113 billion which is four times higher than processed food exports of $29.39 billion (Sheldon). Thus, foreign direct investments tend to dwarf the U.S. exports of processed food.

3. Factors Contributing to the U.S. Processed Food Export Growth

There are several factors behind the increase in U.S. processed food exports. Here, I briefly summarize a few of them (also see Neff et al.).

The United States is endowed with abundant and fertile cultivable land, which supplies plenty of raw agricultural commodities at a lower cost to food manufacturing industries. Since agricultural commodities account for a significant portion of the variable cost of food production, the abundant and

fertile lands help the competitive position of the U.S. food processing firms relative to those in the foreign countries.

Advanced technology, the capital-intensive production process, assembly-line production process, and well-equipped storage facilities have reduced the cost of processed food production and made the food manufacturing firms more efficient. However, the high labor cost, which is the largest component of the processed food production cost, hurts the competitive advantage of U.S. food manufacturers.

U.S. processed food export companies are well-equipped and well-positioned through capital endowment, sophisticated market research, and advertisement in expanding overseas markets for their products. These companies generally keep abreast of changes in economic climate, political situations, cultural practices, and tastes and preferences. Since processed food markets, unlike raw agricultural commodity markets, are more dynamic and sensitive to the above factors, it is imperative on the part of U.S. exporting firms to keep up-to-date on factors in foreign markets (e.g. the recent political and economic crisis in the East Asian countries), which can influence the consumption of processed food. Also, aggressive market research, expansion, and product promotion (partly assisted by the government through the market promotion program) have helped U.S. firms secure a market for their processed food exports.

Establishment of fast food restaurants (McDonalds, Kentucky Fried Chicken, Pizza Hut, Subway) in the overseas market have accelerated the taste and preference of consumers in foreign countries for American food. In 1994, 29 of the top 50 U.S. food service chains operated a total of 17,038 units in foreign countries. These fast food outlets also contributed to increased exports of such processed foods as french fries (Lanclos, Devadoss, and Guenthner), and hamburger beef.

While the issue of whether Foreign Direct Investment (FDI) helps to augment or reduce exports is unresolved, Malanoski, Handy, and Henderson note that leading U.S. food processors tend to increase

their exports even as they expand their FDI sales, indicating that U.S. food industries use exports and FDI as joint international marketing strategies. They also conclude from their aggregate level analysis that exports may serve as precursors to foreign investment, which is a strategy many firms employ. That is, the firms use exports to secure an entry to the door and, if market opportunity arises, they shift to local production.

Global and regional trade reforms (the Uruguay Round, Canada-US Free Trade Agreement [CUSTA], North American Free Trade Agreement [NAFTA], Asia Pacific Economic Cooperation [APEC]) have accelerated trade in processed food since the provisions of these reforms have liberalized trade barriers, enhanced market access, and reduced the cost of processed food sales by the food manufacturers in overseas markets. For example, Tweeten, Sharples, and Evers-Smith conclude that since CUSTA, bilateral trade between Canada and the United States in manufactured food products have increased. They estimate that U.S. processed food exports to Canada increased by 58%. They also note that U.S. dairy and egg producers have benefitted from the CUSTA. Novakovic, Doyon, and Bishop note that the free trade between Canada and the United States would have increased the price received by New York dairy farmers from $40.50 to $46.00 per hectoliter in May 1995.

Strong economic booms in the early 1990s among the APEC countries have created increased demand for U.S. agricultural exports, particularly for processed food products. Even the recent financial and economic crisis did not slow down U.S. processed food exports to APEC countries in 1997, though bulk commodity exports did decline.[5] Between 1993 and 1997, intermediate and consumer-oriented food exports to APEC countries increased from $15.90 billion to $21.75 billion. In 1997, of the total U.S. agricultural product exports of $34.77 billion to APEC countries, intermediate and consumer-oriented food exports accounted for 73% and bulk commodity exports accounted for only 37% (FAS).

4. Policy Changes and Implications for the Processed Food Market

In this section, I discuss how U.S. farm policies, trade reforms, and global competition policies will influence the processed food market.

4.1. Agricultural Policy Changes

Since the mid 1980s considerable pressure has been put on governments across the globe to reduce financial support for agricultural policies. This was partly brought about by the beginning of the negotiation process for the Uruguay Round and to a greater extent by the need to trim the domestic budget deficit and by the growing demand for scarce public funds from numerous sectors. The consequence of these developments has been the reduction in agricultural price supports, lesser supply controls, and more market oriented policies (e.g., Federal Agricultural Improvement and Reform (FAIR) Act of 1996). These policy changes have allowed farmers to be more flexible in their crop choices to meet market conditions and have also exposed farmers to competition from the world market. Thus, the switch in farm policies has strengthened the competitive position of the agricultural sector, made the farmers more price responsive, and increased the supply of basic commodities for processing. These changes benefit the processing sector as they lower raw material prices and augment the consumer demand for processed food through lower prices (also refer to Jones and Blandford).

4.2. Trade Policies

Three major provisions of the Uruguay Round Agreement on agriculture, namely market access, domestic support, and export subsidies, deal with both primary commodities and processed food. However, past studies have focused mostly on the effect of trade reforms on primary commodities, and processed foods have received scant attention. Some note that by not including the effects of the Uruguay Round on processed food trade, its total effect on agriculture is severely underestimated (Jones and Blandford). In general, the effects of the trade liberalization will help food manufacturers because of the

increased market opportunities for processed foods and the availability of basic commodities at lower costs.

Some specific provisions of the Uruguay Round that will enhance processed food trade include regulation of technical barriers to trade, sanitary and phytosanitary standards, and transparency requirements. Rules on technical barriers to trade require countries to follow international standards which are based on scientific procedures. These rules govern food packaging and labeling, and inspection and certification procedures to safeguard the interest of the public. Agreement on sanitary and phytosanitary measures requires countries to adhere to international standards on issues related to disease, pest, chemical and radiation treatment of commodities, which may affect human, animal, and plant health and safety (Neff). Transparency requires a country to make changes governing import commodities explicitly available to the foreign exporters. Furthermore, these changes have to be in agreement with the norms of the World Trade Organization principles. Implementation of agreements on technical barriers to trade, sanitary and phytosanitary, and transparency along with effective dispute settlement mechanism in the WTO should provide increased market opportunity for U.S. processed food exports.

NAFTA, in addition to increasing trade among Canada, Mexico, and the United States, has warranted an improved infrastructure to transport commodities between north and south. A sustained investment to insure a well-functioning infrastructure will augment the growth in processed food trade by reducing transportation costs and facilitating the easy movement of commodities.

4.2.1. Tariff Escalation

Tariffs imposed on processed food products are generally higher than those tariffs applied to raw commodities (OECDb). This illustrates the pattern of tariff escalation, i.e., tariffs increase with the degree of processing, that is common in most industries and in most countries. The reason for tariff escalation is to augment domestic processing capacities and protect the processing industries because of

the value-added by these industries. The tariffication process, i.e., conversion of non-tariff barriers to equivalent tariffs, initiated by the Uruguay Round requires that the developed countries reduce tariffs by 36 percent on average over a period of 6 years; however, the minimum reduction for any commodity is only 15 percent. Consequently, tariff reductions for many processed products were less than the averages (OECDb). Tariffication has also helped to compare the tariffs in bulk and processed food commodities. Countries generally reduce tariffs by high percentage on products with low tariff levels and face less domestic competition and minimize cuts on sensitive products with high tariffs (OECDb). Examples of products with minimal tariff reductions are dairy and sugar products. Jones and Blandford have observed that countries which liberalized trade under the Uruguay Round have cut high tariffs less than the low tariffs. This has exacerbated the tariff escalation since processed foods generally face higher tariffs than the basic commodities.

4.3. Competition Policies

The global economic reforms have not only accelerated foreign direct investment but also competitive policy measures. Implementation of more market-oriented policy measures by the Asian countries, Russia, other former Soviet Union blocks, and Central and South American countries have opened their markets for investment and trade and created greater opportunities for U.S. firms. Jones and Blandford note that pressure is building up across these countries to further expand the scope of competition policy enforcement and intensify the convergence of competition policies across countries. Implementations of these policies would lead to a more economically unified globe. Such developments will speed up the phasing out of restrictive competition policies aimed at protecting the domestic industries and cumbersome exemptions surrounding the agro-food sector (OECDa). Under such progress, U.S. food processing firms, which are relatively more efficient than the firms in foreign countries, are likely to benefit from expanded market opportunities.

Thus, economic reforms, globalization of the world market, and a move toward a more unified global economy will augment foreign direct investment, trade liberalization, and financial capital flows. These developments in the international arena will lead to technological advancement, production efficiency, increased competition, and market proficiency. These changes have important implications for the food processing industries in terms of joint ventures, vertical coordination, location selection, cultural challenges, organizational adjustments, market concentration, regulatory challenges, marketing tools, product combinations, and economy of scale.

5. Implications to Commodity Producers

Growth in the food processing industry and processed food trade has several important implications to commodity producers. Increase in the domestic demand for processed food products generally benefits primary commodity producers as the processing industries use more of primary commodities. However, positive impacts of increased processed food production may not fully accrue to farmers if the processing industries use imported primary commodities. For example, processing firms in the east coast can use imported potatoes from Canada rather than the potatoes produced in the Pacific Northwest. Also, increase in processed food exports will benefit farmers through higher demand for their products if primary commodity imports do not displace the domestically produced commodity in processed food production.

As discussed previously, many of the U.S. food processors set up multinational firms abroad. They sell processed food in foreign countries both through exports of processed food produced in the United States and also from the processed food produced by their subsidiaries. In many cases, these U.S. affiliate firms procure locally grown agricultural commodities, rather than importing from U.S. producers, because the primary commodities may be cheaper in the local market and also they can cut down the transportation cost. For instance, U.S. food processing firms in the East Asian countries source locally produced vegetables rather than purchase from the U.S. producers and transport to their

processing plants in the East Asian countries. Some food processing firms in the East Asian countries which produces pasta and noodles buy soft white wheat from Australia rather than from the Pacific Northwest. Thus, establishment of multinational food processing firms by the U.S. companies in the overseas market may not necessarily lead to increased demand for the primary commodities produced in the domestic market. In contrast, expansion of foreign owned food processing subsidiaries in the United States will generate higher demand for U.S. agricultural commodities.

Consolidation of food processing firms in the United States has been a growing trend. This is particularly evident in the meat processing industry (Azzam and Pagoulatos). As food processing firms grow in size and decline in number, these firms have the potential to exert monopsony and oligopsony power in buying primary commodities. When firms exercise market power in the input market, they tend to buy smaller quantity and pay lower price for primary commodities than the firms operating under perfect competition. Since these firms tend to buy smaller quantity at lower prices, primary commodity producers' revenues will decline. Also these large firms may exercise monopoly and oligopoly power in selling the processed food to retail market. When firms exert market power in the output market, they tend to sell smaller quantity at a higher price than the firms operating under perfect competition. Since these firms sell smaller quantity, their demand for primary commodity will decline, which will affect the profitability of farmers.

6. Conclusion

The food processing sector has outpaced the farm sector both in terms of growth and value-added to the economy. This relative difference between the two sectors has also carried over to international marketing, and is expected to be magnified further as regional and global trade reforms continue to evolve.

Though commerce in processed food is concentrated among the developed countries, as economic reforms in many developing countries increase the per capita income and the standard of

living, commerce in processed food, both through FDI and trade, is expected to rise at a much faster rate. This will further spur the growth of the U.S. food processing industry. Though the U.S. agricultural industry and the economy will gain from this growth both in domestic and export markets, establishment of multinational food processing firms in the overseas market by the U.S. companies and consolidation of food processing firms in the domestic market should be of concern to U.S. primary commodity producers.

Endnotes

1. Following Henderson, Handy, and Neff, the processed food products are defined as "Food and Kindred Products" as given by the standard industrial classification-20 (SIC-20) grouping, which comprise 49 industries in the processed food sector.
2. It is important to note that value-added by the processing sector does not include the value-added by the food sector and retailing and wholesaling sector, which contributed, respectively, $586.8 and $131.7 billion in 1993.
3. High-value products encompass slightly broader categories than processed food products. For example fresh fruits and vegetables, and unshelled nuts, which have not undergone any processing, are included in high-value products but excluded from processed food categories. Though this study's emphasis is on processed food products, because of the lack of consistent data availability for processed foods for periods earlier than 1989, the discussion related to Figure 3 is based on high-value products. The data used in Figure 3 is on a fiscal year (October-September) basis.
4. The data used in Figure 4 is on a calendar year (January-December) basis.
5. Intermediate and consumer-oriented processed food exports to APEC countries increased from $20.5 billion in 1996 to $21.75 billion in 1997, whereas bulk agricultural exports declined from $16.9 billion to $13.0 billion.

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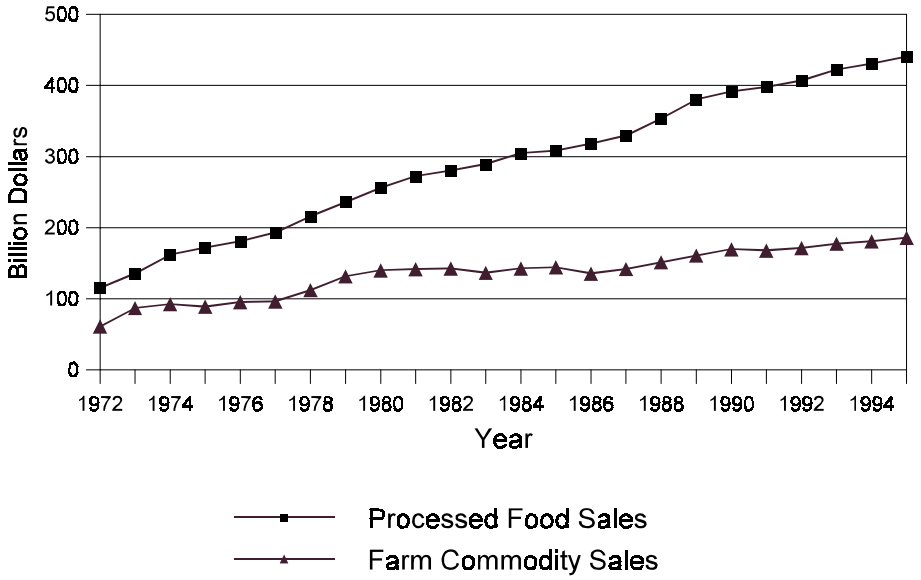

Figure 1. Comparison of Processed Food and Farm Commodity Sales

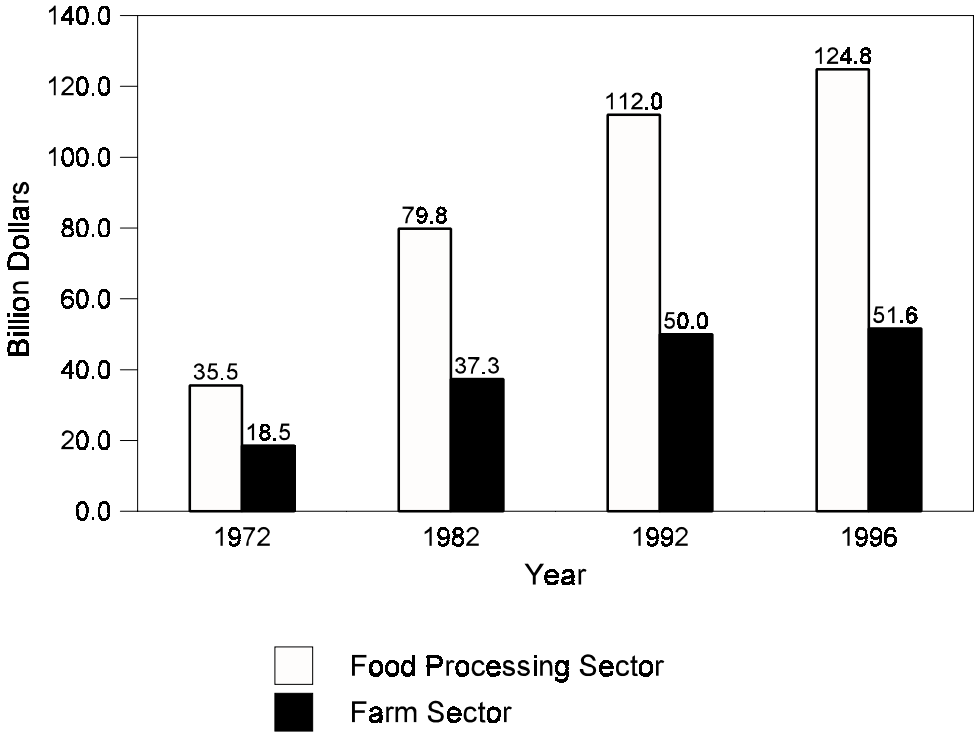

Figure 2. Value Added by the Food Processing and Farm Sectors

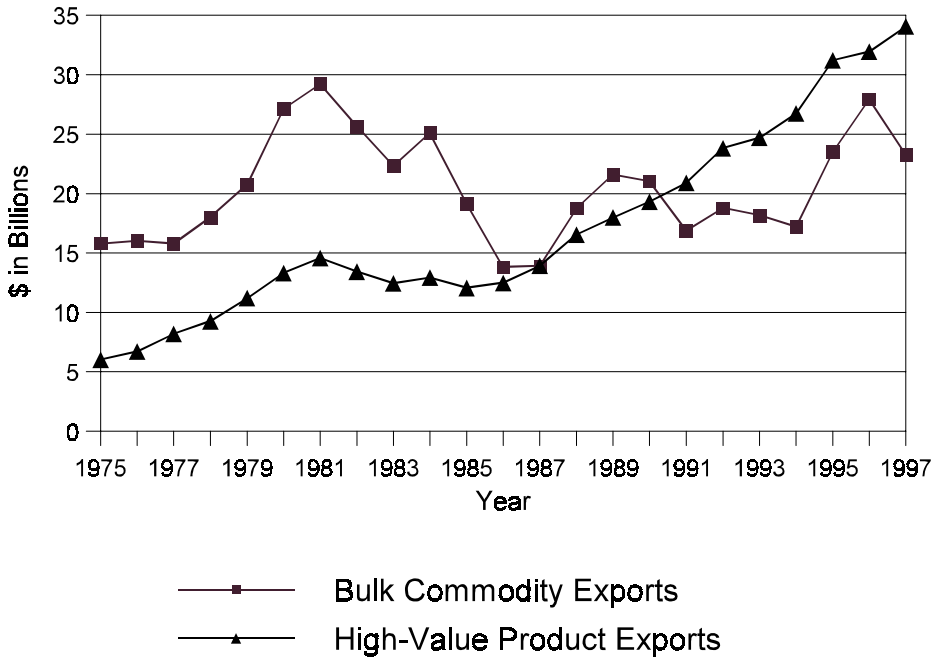

Figure 3. Comparison of Bulk Commodity and High-Value Product Exports

Figure 4. Comparison of Processed Food Exports and Imports