Industry & Trade Summary

Live Swine and Fresh, Chilled, or Frozen Pork

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PREFACE

In 1991 the United States International Trade Commission initiated its current *Industry and Trade Summary* series of informational reports on the thousands of products imported into and exported from the United States. Each summary addresses a different commodity/industry area and contains information on product uses, U.S. and foreign producers, and customs treatment. Also included is an analysis of the basic factors affecting trends in consumption, production, and trade of the commodity, as well as those bearing on the competitiveness of U.S. industries in domestic and foreign markets.[1]

This report on live swine and meat of swine (pork) covers the period 1986 through 1990 and represents one of approximately 250 to 300 individual reports to be produced in this series during the first half of the 1990s. Listed below are the individual summary reports published to date on the agricultural, animal, and vegetable products sector.

USITC publication number	*Publication date*	*Title*
2459 (AG-1)	November 1991	Live Sheep and Meat of Sheep
2462 (AG-2)	November 1991	Cigarettes
2477 (AG-3)	January 1992	Dairy Produce
2478 (AG-4)	January 1992	Oil seeds
2511 (AG-5)	March 1992	Live Swine and Fresh, Chilled, or Frozen Pork

[1] The information and analysis provided in this report are for the purposes of this report only. Nothing in this report should be construed to indicate how the Commission would find in an investigation conducted under the statutory authority covering the same or similar subject matter.

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INTRODUCTION

This summary includes both live swine and fresh, chilled, or frozen meat (edible muscle) of swine that is fit for human consumption.[1] It gives information on the structure of the U.S. industry (including swine growers and meat packers) and certain foreign industries, on domestic and foreign tariffs and nontariff measures, and on the competitiveness of U.S. producers in both domestic and foreign markets. The report generally covers the period 1986 through 1990.

In general usage, swine are referred to as hogs and pigs. The term "hogs" generally refers to mature animals and "pigs" to young animals. Swine are monogastric, litter-bearing animals that may weigh from 400 to 600 pounds at maturity, depending on breed and sex. In common usage, meat of swine is referred to as pork, which is light red in color. White fat covers much of the swine carcass, and some fat is dispersed throughout the meat. U.S. consumption of fresh, chilled, or frozen pork for table use or for processing is estimated by the Commission to have totaled 15.6 billion pounds, equal to about 38 percent of U.S. consumption of red meat in 1990.

U.S. imports of live swine, almost all from Canada, amounted to about 890,000 animals in 1990, equal to about 1 percent of U.S. slaughter in that year. About 23 percent of the imported animals weighed less than 110 pounds each and consequently are thought to be feeder animals intended to be raised to slaughter weights (about 240 pounds) in the United States. Industry sources indicate that nearly all (a few animals were for breeding purposes) of the remaining animals were imported for immediate slaughter. Total fresh, chilled, or frozen pork imports, most of which came from Canada or the EC, amounted to 516 million pounds (carcass-weight equivalent) in 1990, and were equivalent to about 3 percent of U.S. production and consumption in that year.

Swine are omnivorous and they adapt to various types of feed. They are highly efficient in converting grain and protein supplement to meat, and may gain about 1 pound of weight for each 4 pounds of feed. In the United States, the typical swine feed consists of corn and soybean meal with mineral and vitamin supplements. Worldwide, live swine are divided into three types based on usage—meat type, lard type, and bacon type—although all three types yield at least some of the other products. Almost all swine raised in the United States are of the meat type, and meat production is virtually the only purpose for which they are kept.

Pigs are born (farrowed) after a gestation period, normally 114 days. A few days after birth, most male pigs are castrated and are thereafter referred to as barrows. The barrows and gilts (female swine that have not farrowed) are raised to a weight of about 40 to 50 pounds in about 6-8 weeks. These animals are referred to as feeder pigs, and the businesses that raise them are referred to as feeder pig producers. The feeder pigs may be sold to finishers, who raise them to a slaughter weight of about 220 to 240 pounds in about 4 months. At that point, these animals (which are now about 6 months of age) are referred to as slaughter hogs. However, many U.S. swine today are produced by "farrow-to-finish" enterprises, which combine the feeder pig production and finishing businesses into one operation. A few enterprises specialize in raising animals for breeding purposes. Many of the animals for breeding purposes are crosses of two or more breeds.

In the manufacturing process or slaughtering operation, live swine are inspected, stunned (usually by an electric charge), bled, eviscerated, scalded, dehaired, and partially decapitated. The animal's carcass is then generally split along the spinal column and chilled; the carcass may be partially or fully processed at the meatpacking plant or shipped to retail outlets for processing. The carcass is cut up to yield hams, loins, chops, and other parts. Other products, including lard, offals, and sometimes hides are also derived from the slaughtering process.

Pork that is ready for cooking and consumption without further processing is referred to as fresh pork, and a significant portion of some pork cuts, such as loins, are so consumed. Overall, according to the National Pork Producer's Council (NPPC), approximately two-thirds of all fresh pork ends up being further processed, prepared, or preserved. The fresh pork that is consumed in the United States is primarily sourced from domestically raised slaughter hogs.[2]

U.S. INDUSTRY PROFILE

Industry Structure

The structure of the swine industry in the United States is illustrated in figure 1. The Standard Industrial Classification (SIC) categories that pertain to the products in this summary are Hogs (0213), Meat Packing Plants (2011 pt.), and Wholesale Meats and Meat Products (5147 pt.).

Number of Firms and Concentration Among Firms

Growers

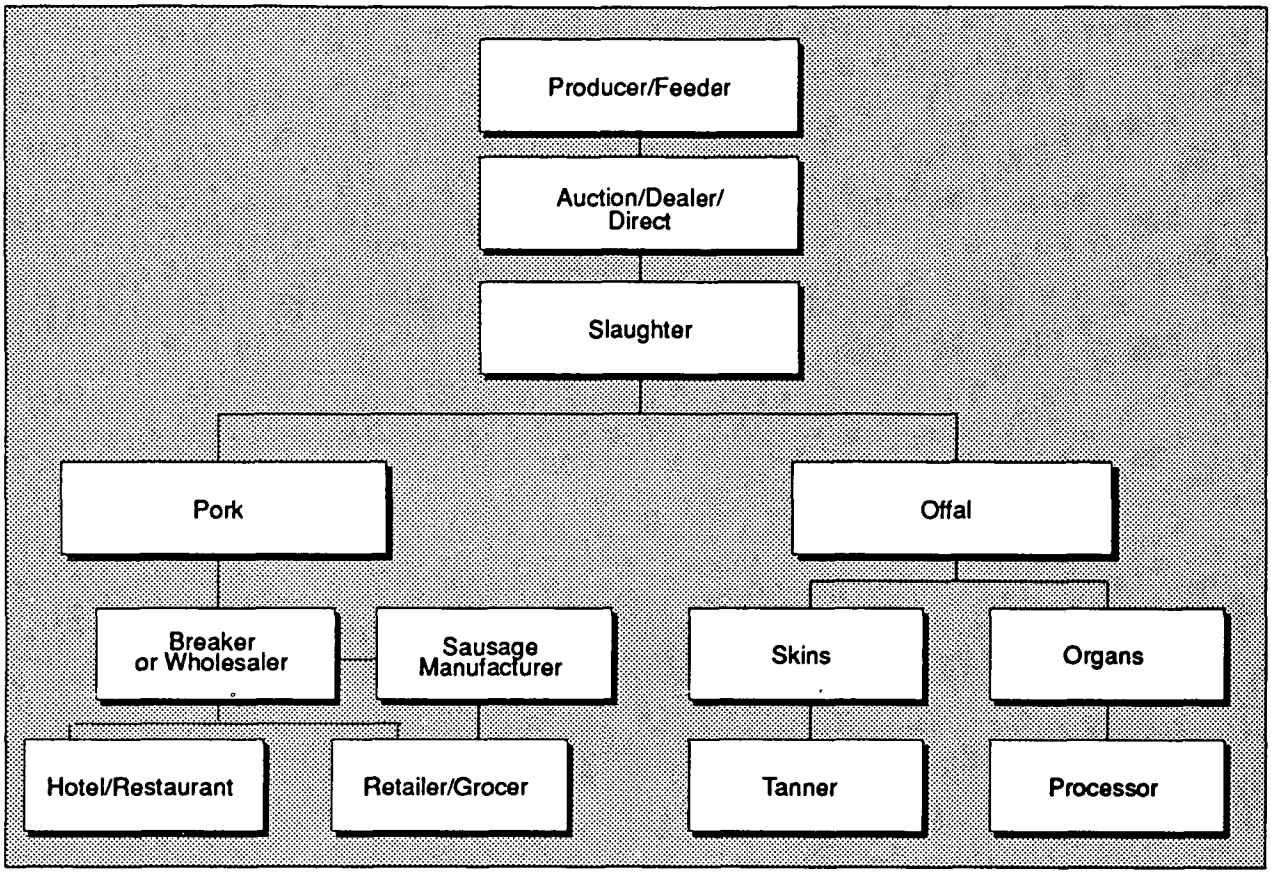
In 1990, the number of operations with swine[3] in the United States totaled 278,040, down by 20 percent from 1986 (table A-1, appendix A). As with much of U.S. agriculture, there has been a long-term trend toward larger volume, capital-intensive operations.

[1] This summary does not include swine offals or meat preparations such as sausages or canned hams.

[2] Much of the meat of mature animals that are slaughtered after they are too old to be used for breeding purposes is used in the production of sausage.

[3] The USDA defines an operation with swine as an operation having one or more swine on hand at any time during the year.

Figure 1
Live swine and pork: structure of the U.S. industry



Source: USITC staff.

However, most swine-growing operations are still family owned and operated, and the industry is not generally described as highly concentrated. A few large food-processing firms are known to be involved in swine raising, and some relatively large operations with several thousand sows are known to exist.

The following tabulation shows the number of swine raising operations by size and the share of the U.S. swine population by operation size for 1990 as reported by the National Agricultural Statistics Service (NASS) of the United States Department of Agriculture (USDA)[4]:

Inventory	*Number of Operations*	*Share of U.S. swine population*
1-99	179,892	6.5
100-499	69,510	28.0
500-999	18,073	23.5
1,000 or more	10,565	42.0
Total	278,040	100

[4] Source: USDA NASS *Hogs and Pigs* (MtAn 4) Jan. 4, 1991, p. 18.

Packers

The number of Federally Inspected (FI) swine-slaughtering plants in the United States declined steadily during 1986-90 as shown in the following tabulation:[5] [6]

Year	*Federally Inspected plants*
1986	1,250
1987	1,182
1988	1,150
1989	1,114
1990	1,028

[5] During 1986-90, FI swine slaughtering plants annually accounted for 95 percent or more of commercial swine slaughter.
[6] USDA NASS *Livestock Slaughter Summary*, annual issues, 1986-90.

In 1990, 22 plants slaughtered 1.5 million or more animals each, and accounted for 65 percent of the total FI slaughter of 82.7 million animals. Six hundred seventy-six plants slaughtered fewer than 1,000 animals each and accounted for less than 0.5 percent of the total FI slaughter. Concentration in the swine-slaughtering sector appears to have increased during 1986-90. In 1986, 23 plants (which slaughtered 1.5 million or more animals), accounted for 56 percent of total FI slaughter and 811 plants (which slaughtered fewer than 1,000 animals) accounted for less than 0.5 percent of total FI slaughter.

Trade sources report that in 1989 the four largest-volume swine-slaughtering companies in the United States held a 37.0 percent share of the commercial swine slaughter compared with 32.5 percent in 1986.[7]

Employment

Growers

Employment in the swine-growing sector is difficult to measure because of several factors. Swine are commonly kept as components of diversified farming operations. Thus, swine-growing constitutes only part-time employment. Also, many of the swine growing operations are family-run businesses, wherein much of the labor is performed by family members at little or no out-of-pocket cost (unpaid labor).

The number of man-hours required to produce pork can indicate employment trends in the swine-raising sector. The USDA Economic Research Service (ERS) has estimated that an average of 1.09 man-hours was required to produce 100 pounds of pork (live-weight basis) during 1987-89[8] and 1.1 man-hours during 1972-86.[9] The following tabulation shows yearly U.S. pork production and the estimated total man-hours required to produce it (millions of pounds and millions of man-hours):[10]

Year	Pork production	Man-hours
1986	19,565	177.9
1987	20,060	184.0
1988	21,838	200.4
1989	22,027	202.1
1990	21,230	194.8

Packers

Employment in the swine-slaughtering sector fluctuated during 1986-90. Industry sources indicate employment is generally influenced by the hog cycle (which is discussed later in this summary), as modified by labor agreements.

Employment in the swine-slaughtering sector is shown in the following tabulation:[11]

Year	Employment (1,000 employees)
1986	49.3
1987	50.3
1988	54.6
1989	55.3
1990	54.8

Geographic Distribution

Swine raising is concentrated in the Corn Belt States[12] where 48 percent of U.S. swine operations were in 1990 (table A-1). Swine operations in the Corn Belt tend to be large volume (table A-2). The Corn Belt States accounted for about 74 percent of the U.S. swine population as of December 1, 1990. The Corn Belt has an excellent climate for growing corn and soybeans, a skilled and experienced labor force, and an extensive infrastructure (i.e., facilities for swine housing, marketing, and processing, as well as feed-manufacturing facilities). The Southeastern States[13] have been another major swine-growing region and 21 percent of U.S. swine operations were there in 1990. Swine operations in the Southeastern States tend to be smaller volume (table A-2). The Southeastern States accounted for about 13 percent of the U.S. swine population as of December 1, 1990. The Southeastern States have some of the same advantages as the Corn Belt. Although the soils are generally not as fertile as the Corn Belt, land prices are generally lower. As shown in table A-3, swine are generally slaughtered and processed where they are raised.

Labor Intensity; Level of Automation

Growers

Costs of production studies by the ERS suggest that swine growing is becoming less labor intensive. The estimated cost of labor, total economic costs to produce 100 pounds of pork, and share of total economic costs accounted for by labor during 1985-90, are shown in table A-4. These data reported by ERS indicate that the labor share of the total cost to produce pork declined steadily from 15 percent in 1985 to 12 percent in 1988 and 1989.

Industry and government sources report that in general there has been a long-term trend toward increased automation in the swine-growing sector and

[7] American Meat Institute, *Meatfacts 1990*, Aug. 1991, p. 28.
[8] USDA ERS, *Economic Indicators of the Farm Sector Costs of Production—Livestock and Dairy 1989*, (ECIFS 9-1) Aug. 1990, p. 45.
[9] USDA ERS, *Costs of Producing U.S. Livestock, 1972-87*, (Agricultural Economic Report Number 632), Apr. 1990, p. 79.
[10] USDA *Livestock Slaughter Summary*, annual issues 1986-90.
[11] Employment was estimated by comparing the annual share of total red meat production accounted for by pork with annual employment in the meat packing sector as reported by the U.S Department of Labor.
[12] The Corn Belt consists of the States of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin.
[13] The Southeastern States are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

an increase in the share of swine raised in specialized confinement facilities.

Packers

Swine-slaughtering and processing operations tend to be highly automated and are not especially labor intensive. Information collected by the Commission (from 11 packers accounting for 52 percent of production) in a previous investigation (investigation No. 701-TA-298) on the major components of packers' costs of goods sold is presented in the tabulation below in average percentage per year.[14]

Item	1986	1987	1988	1986-88
Raw materials	90.1	90.5	88.0	89.6
Direct labor	3.6	3.5	4.4	3.8
Other factory costs .	6.2	6.0	7.6	6.6
Cost of goods sold .	100.0	100.0	100.0	100.0

Labor Skill Levels and Productivity

Swine growing, as well as the processing of pork, generally requires good management skills and an attentive labor force. Death losses of swine can be high because they are highly susceptible to diseases. Also, baby pigs need careful and timely care early in their lives. Swine raised in confinement must receive special care because they are dependent on the manager for feed, water, and temperature control. Processing of the meat at the plant level involves the health and sanitary practices, or skills associated with handling perishable foods.

As noted earlier, the ERS has estimated that an average of 1.09 man-hours was required to produce 100 pounds of pork (live-weight basis) during 1987-89 and 1.1 man-hours during 1972-86. Although the amount of time required to produce a given quantity of pork did not change significantly during 1985-90, the labor cost declined from $5.86 per 100 pounds in 1985, to $5.76 per 100 pounds in 1987. The labor cost increased to $6.01 in 1988 and $6.62 in 1989 (table A-4). The decline between 1985-87 reflected a drop in the cost of both paid and unpaid (family) labor while the increase during 1988-89 reflected an increase in the cost of both types of labor.

Data concerning costs of production and gross value of production for swine growers are published annually by the USDA. The costs of production include expenses assumed to be cash costs (feed, hired labor, machinery and building repairs, taxes, interest, and various other expenses). The gross value of production consists of the value of swine raised and sales of cull sows. Along with the costs and value of production, the USDA publishes a capital-replacement cost. The value of production less cash costs and capital-replacement costs (i.e. grower profitability) during 1985-89 is shown in the following tabulation (per cwt):

Year	Grower profitability
1985	$-1.06
1986	6.31
1987	10.60
1988	-6.19
1989	-7.53

The decline in grower profitability in 1988 and 1989 was caused primarily by lower returns because of lower prices for live animals and higher costs, principally rising feed costs.

Vertical and Horizontal and Foreign Integration

Most swine farmers are somewhat vertically integrated. They typically grow all or most of the grain, usually corn, consumed by their animals. Also, they typically grow crops, usually soybeans, from which protein supplements are derived, although they seldom process such crops on their farms. There is also some indirect grower involvement in the pork-processing sector, primarily through cooperatives. Farmland Foods Inc., a subsidiary of a regional agricultural cooperative, is the largest pork-packing and processing cooperative in the United States. It was reported to be the 18th largest meat company in 1989, in terms of sales.[15]

However, integration between swine raisers and pork processors appears limited. The *Packers and Stockyards' Administration Statistical Report 1989 Reporting Year* (P&SA Statistical Report Number 91-1, p. 29) shows that during 1988, the last year for which statistics were collected, packers fed 36,305 swine, equal to 0.3 percent of their purchases. Trade and industry sources report that some swine are raised under various types of contractual agreements with packers and some with feed companies. There is a degree of diversification in the packing sector, as some of the largest pork packers (e.g., Con Agra, Inc. and IBP, Inc.) process other species. Trade and industry sources report little integration with foreign suppliers, producers, and assemblers. However, few domestic/foreign joint ventures may exist and at least one has been reported to involve the contract feeding of swine.[16] Also, a private U.S.-based multinational company, Cargill, has been reported to own and operate a pork-processing plant in Canada.

[14] U.S. International Trade Commission, *Fresh, Chilled, or Frozen Pork From Canada* USITC publication 2218, Sep. 1989, p. A-31.

[15] American Meat Institute, *Meat facts' 1990*, Aug. 1990, p. 23.

[16] Trade sources report that certain Italian and Japanese interests and a U.S. based feed company, Central Soya, Inc. are involved in a joint venture relating to the contract feeding of swine.

Marketing Methods and Pricing Practices

Marketing may be viewed as beginning with animals for breeding purposes that are raised by various types of growers and then sold to growers who breed these animals and raise swine for slaughter. Most of the sales by growers who raise animals for breeding purposes consist of male animals because most growers obtain their female animals for breeding purposes by selecting and retaining the most desirable animals from the litters. Corporations, including animal health product producers (e.g., Eli Lilly) and animal feed companies, are involved in the raising of male animals (boars) for breeding purposes. Also, some growers specialize in the raising of purebred animals for breeding purposes and some growers specialize in the raising of animals that are not purebred but are nonetheless kept for breeding purposes. Animals for breeding purposes may be sold at auction or by private agreements. Some swine may be sold as feeder animals at auction, through dealers who contact farmers, or by private agreements. Many feeder animal transactions are private agreements between individuals who have had long-term business relationships. In addition, many swine are raised from birth to slaughter weights by farrow-to-finish enterprises. Animals are then sold for slaughter: (1) at auctions; (2) at terminal markets where buyers for packers are congregated; (3) to buyers or dealers who contact farmers on behalf of packers; or (4) directly to packers. There has been a trend in recent years for the swine growers to receive payment on the basis of the quality of the carcass derived from the live animal, with a premium being paid for preferred carcasses and penalties being charged for undesirable carcasses. Individual companies typically develop their own standards for such quality grading systems. Some slaughterers sell pork to processors, but many are integrated enterprises that further process the pork for sale to wholesalers, retailers, or food service enterprises.

Market prices for live swine and meat are reported by Federal, State, and, in rural areas, by local government authorities, by agricultural and packer associations and by private businesses. Many market prices are negotiated on the basis of reference prices reported daily by commercial publications. Frequently meat prices are derived according to a formula often based on a commercial publication such as the National Provisioner's *Yellow Sheet*[17] or the *Meat Sheet*.[18] For example, the packer and the wholesaler may agree on a premium the same as or different from the *Yellow Sheet* price. This difference may reflect location, quality factors, or both.

Research and Development Expenditures

The Cooperative State Research Service (CSRS) of USDA collects data on public research expenditures for swine and pork. The funding includes expenditures from all sources (Federal, State, and private) and is used to research such areas as genetics, nutrition, reproduction, animal health, marketing, and promotion. CSRS reports that public research expenditures for swine and pork increased steadily, from $63.3 million in 1985 to $83.3 million in 1989.[19] Also, officials of the CSRS report that there is significant research and development on swine and pork in the private sector but that companies are reluctant to discuss such information for commercial and public relations reasons.

Other Research Affecting the U.S. Industry

Both public and private research in the live swine sector has included studies of biotechnology and genetic engineering. In the biotechnology area there has been much interest in porcine somatotropin, (pST) or swine growth hormone. Researchers have found that injection of pST (produced through the techniques of biotechnology) improves feed efficiency in swine by 15 to 20 percent, reduces fat deposition, and consequently, provides consumers with lean cuts of pork.[20] In recent years, various companies have been licensed, by the U.S. Government, to produce a genetically engineered pseudorabies virus vaccine. These vaccines are used both to prevent and control pseudorabies in swine. Pseudorabies (Aujesky's disease or "mad itch"), a contagious disease in swine and cattle, is found in the United States as well as in a number of foreign countries.[21] Industry sources reported that one of the major benefits of the genetically engineered vaccine is that its use enables veterinarians to distinguish between swine protected from the virus via vaccination and those that have been protected via the standard vaccination, but are infected with, or carriers of, the virus. Also, the NPPC, in cooperation with the USDA is conducting a 10-year control and eradication program.

Consumer Characteristics and Factors Affecting Demand

Pork is consumed throughout the United States. Most Americans consume at least some pork, and pork, beef, and poultry are the most commonly consumed meats. Pork consumption traditionally is common to people of Northern, Eastern European, and African background and is also popular with many people with Oriental and Latin backgrounds.

The demand for pork is influenced by such factors as the price of other meats (e.g. beef and poultry)consumer income, and consumer attitudes. Depending on the cut, pork prices per pound are often higher than those of chicken, but often lower than beef. Also, the demand for certain pork cuts is seasonal, such

[17] The National Provisioner is a private price-reporting service, and the *Yellow Sheet* is one of its publications.

[18] The *Meat Sheet* is the publication of another private price-reporting company.

[19] Reported by Larry R. Miller, principal animal scientist, USDA, CSRS, in a telephone conservation with USITC staff, Aug. 16, 1991.

[20] Industrial Biotechnology Association, "Animals, People, and Biotechnology," 1989, p. 5.

[21] *Animal Diseases*, 1956, p. 381, USDA, Washington, DC.

as the consumption of hams at Christmas and Easter. Industry sources maintain that health perceptions among some consumers, especially perceptions about cholesterol, may have reduced the demand for pork.

FOREIGN INDUSTRY PROFILE

Swine are raised throughout the world. They are thought to have been among the first domesticated animals and can adapt to a variety of conditions. Production facilities range from confined, factory-like facilities where they receive close monitoring and carefully prepared feed, to minimal facilities and care and feeds that consist of byproducts. China is the largest pork-producing country in the world, followed by the European Community (EC), the United States, and the Soviet Union (table A-5). The EC and the countries of Eastern Europe are the major pork exporters. It is estimated that during 1986-90, these two regions have annually accounted for about two-thirds of world pork exports.

China

China was the largest pork producer in the world during 1986-90.[22] Table A-5 shows that pork production in China increased steadily from 39.6 billion pounds in 1986 to 50.0 billion pounds in 1990, or by 26 percent. Pork production in China has been about three times as large as in the United States. Trade sources report that agriculture in China has had less central Government direction in recent years and producers have apparently responded by expanding production of pork.

Although China was the fourth or fifth-largest exporter of pork during 1986-90 (after the EC, the Central and East European countries[23] (CEE), Canada and in 1988 and 1990 after Taiwan) (table A-6) exports were equal to 1 percent or less of production annually during the period. During 1986-90, Chinese exports of pork declined irregularly from 425 million pounds in 1986 to 273 million pounds in 1990. Exports of pork from China (on a quantity basis) exceeded those from the United States during 1986-90. In relation to the United States and most of the other major pork-producing regions of the world, China benefits from abundant quantities of low-cost labor and also the relatively low-cost feed used in the growing of swine. In China, a relatively large share of the feed for swine consists of bulky vegetative matter, including byproducts of crop raising and food processing, rather than concentrates such as grain. Swine in China take longer to mature and are not as lean as swine in Europe or North America because of the feed they receive and because of genetics. However, the Chinese system makes efficient use of low-cost feed that would otherwise be of little value, and the Chinese demand for pig fat is proportionally greater than that in Europe and North America. In general environmental regulations are less stringent and costly in China than in the United States.

[22] It should be noted that Chinese agricultural statistics, including statistics on pork production, are generally subject to large revisions by the Chinese Government.

[23] Bulgaria, Czechoslovakia, East Germany (up to 1990 for statistical purposes), Hungary, Poland, Romania, and Yugoslavia.

European Community

The EC was the world's second-leading producer of pork during 1986-90 and production increased irregularly from 25.9 billion pounds in 1986 to 28.1 billion pounds in 1990, an increase of 8 percent. EC production was nearly twice as large as that of the United States although changes in rates of production were roughly similar. Swine growers in the EC benefit from the Common Agricultural Program (CAP). The CAP, among other things, provides a support or floor price for pork maintained, if necessary, by CAP purchases and disposition of pork. Also, the CAP effectively limits import competition through a system of variable levies and minimum import prices. The CAP provides an indirect benefit to livestock producers in the EC by encouraging grain production. Hence, large supplies of grain are generally available, although prices may be higher than in the United States.

In 1990, the EC was the leading world exporter of pork. Exports were equivalent to 5 percent of production in 1990, 4 percent in 1988 and 1989 and 3 percent in 1986 and 1987. During 1986-89 the EC was the world's second leading exporter of pork, after the CEE. EC exports (excluding EC intra-trade) of pork nearly doubled during 1986-90, rising from 741 million pounds to 1.4 billion pounds. Following the unification of Germany in 1990, swine herds in the former German Democratic Republic (i.e., East Germany) were sharply reduced by slaughtering excess animals and the resulting meat was exported to the Soviet Union.[24] Many of the animals were slaughtered in the former Federal Republic of Germany, contributing to an increase in pork production and exports by the EC and corresponding decline in production in the CEE. Exporters of EC pork benefit from export restitution payments from the CAP. Payments vary depending on world market prices, the country being exported to, and the cut being sold.

Besides the CAP many other factors affect the competitiveness of the EC swine and pork sectors compared with the United States. Both the EC and the United States have extensive research and development (R&D) programs, generally highly advanced production technology, and well-developed transport infrastructure. The United States Corn Belt has a nearly ideal climate for growing corn and soybeans, although a large part of the EC does not. Thus, U.S. swine growers generally have better access to feed than their EC counterparts. It is generally accepted that the producers in the United States receive no benefits comparable to the CAP.

[24] USDA FAS *Livestock Annual* (GM1076) Aug. 1, 1991, p. 11.

Soviet Union

The Soviet Union was the fourth-largest pork producer in the world in 1990. Production increased steadily from 13.4 billion pounds in 1986 to 15.0 billion pounds in 1990, an increase of 12 percent. Soviet pork production was slightly less than that of the United States during 1986-90 but grew more regularly. Soviet exports of pork are negligible in relation to production and world trade. Exports declined from 13 million pounds annually in 1986 and 1987 to 11 million pounds annually during 1988-90. In the Soviet Union swine are grown on large-volume state farms and cooperatives. Small numbers, frequently one or two sows, are kept on small plots by individuals.

The Soviet swine-growing sector is reported to be less efficient than it could be because the feed the animals receive is deficient in protein. Production efficiency could be increased by adding protein supplements obtained either by purchasing them on the world market or possibly by processing them from domestically grown crops. Because of its northern location, much of the Soviet Union has a growing season too short and a climate too cold for optimal agricultural production. The Soviet Union has, in recent years, been a net importer of grain; swine growing must compete with other high-priority alternative uses for limited supplies of grain. Consequently, swine growers in the Soviet Union are generally at a comparative disadvantage with their counterparts in the United States and the EC in terms of feed inputs.

Central and East European Countries

During 1986-89, the CEE countries were the third-largest pork producers in the world after China and the EC, but by 1990 their production had declined to less than that of the United States and Soviet Union. Production in the CEE declined irregularly from 15.6 billion pounds in 1986, to 14.6 billion pounds in 1990, or by 6 percent. Much of the decline in production (and also in exports) was accounted for by the previously discussed developments in Germany. Also, production in Romania had been at unsustainable high levels in 1989 as an excessively large number of animals were slaughtered at government direction. Apparently the government was determined to maintain meat supplies in the short term, even at the expense of the long term.

The CEE was the world's leading exporter of pork during 1986-89, but was second to the EC during 1990. The decline in exports from the CEE countries in 1990 was primarily the result of a decline in exports from Romania. One of the first decrees of the new government of Romania in 1990 was a prohibition on exports of food, including meat. The prohibition was later modified, and in 1991, was replaced by a program of export licensing and export quotas. However, exports were minimal in 1990, and are expected to remain low in 1991.

In the CEE, swine are grown on large-volume state farms and cooperatives, and depending on the country, small numbers, frequently one or two sows, are kept by individuals on small private plots. Small-volume operations are especially common in Poland, and as of December 31, 1989, accounted for about 70 percent of the swine inventory. As a result of recent political developments in various CEE countries, there has been a trend toward agricultural privatization, including the swine and pork sectors.

Advantages enjoyed by the CEE countries result from a long history of livestock and meat production and exports, indicating they have an experienced labor and management force. Many CEE meat exports, especially Polish pork, have a reputation for high quality and have developed consumer preferences and brand loyalties. However, CEE production efficiencies (as in the Soviet Union) could be improved by adding protein supplements obtained either through world market purchases or by producing supplements from domestically grown crops. In addition, sanitary regulations, especially those applicable to fresh, chilled, or frozen meat, in importing countries and perceived environmental problems in the CEE may have a negative effect on exports.

U.S. TRADE MEASURES

Tariff Measures

The provisions for live swine in the Harmonized Tariff Schedule of the United States (HTS) include categories based on weight (i.e., less than 50 kilograms each, and 50 kilograms or more each). The great bulk of animals imported and weighing less than 50 kilograms each, are thought to be feeder animals that are fed to slaughter weights in the United States. Almost all of the remaining imported animals are thought to be animals destined for immediate slaughter. The provisions for meat (fresh, chilled, or frozen) apply to the meat of all animals regardless of age, sex, or size.

Table A-7 shows the general and special column 1 rates of duty applicable to U.S. imports of live swine and fresh, chilled, or frozen pork, for 1990 and U.S. exports and U.S. imports of the articles. The aggregate trade-weighted average rate of duty for all products included in this summary averaged less than 0.05 percent in 1990. The aggregate trade-weighted average rate of duty for dutiable products included in this summary averaged 0.06 percent in 1990. Appendix B contains an explanation of tariff and trade-agreement terms.

Nontariff Measures for Health and Sanitary Regulation

U.S. imports of live swine and fresh, chilled, or frozen pork are not subject to quotas, embargoes, or safeguard actions. They are subject to health and sanitary regulations.

Certain health and sanitary regulations with respect to U.S. imports of live swine, as well as fresh, chilled, or frozen pork are administered by the USDA to protect the U.S. livestock industry and to ensure an adequate supply of safe meat for consumers. For example, sources of imports of the aforementioned articles are limited to those from countries that have been declared free of rinderpest and foot-and-mouth diseases[25] by the U.S. Secretary of Agriculture.[26] The general effect of such prohibitions has been to allow imports only from North America and certain areas of Europe.

The USDA administers section 20 of the Federal Meat Inspection Act,[27] which provides, among other things, that meat and meat products prepared or produced in foreign countries may not be imported into the United States "unless they comply with all the inspection, building construction standards, and all other provisions of this chapter [ch. 12, Meat Inspection] and regulations issued thereunder applicable to such articles in commerce in the United States." Section 20 further provides that "all such imported articles shall, upon entry into the United States, be deemed and treated as domestic articles subject to the provisions of this chapter [ch. 12, Meat Inspection] and the Federal Food, Drug, and Cosmetic Act [12 U.S.C. 301]. . . ." Thus, section 20 requires that foreign meat-exporting countries enforce inspection and other requirements with respect to the preparation of the products covered that are at least equal to those applicable to the preparation of like products at Federally inspected establishments in the United States. It also requires that the imported products be subject to inspection and other requirements upon arrival in the United States to identify them and further ensure their freedom from adulteration and misbranding at the time of entry.[28] However, section 20 does not provide that the imported products be inspected by U.S. inspectors during their preparation in the foreign country.

The U.S. Secretary of Agriculture has assigned responsibility for the administration of the Department's section 20 functions to the Foreign Programs Division, Meat and Poultry Inspection Program, Food Safety and Inspection Service (FSIS). By the end of 1990, the FSIS had certified 29 countries as having meat inspection systems with standards equal to those of the U.S. program and had certified 1,370 foreign plants, including 637 in Canada. However, some of these plants ship only beef to the United States. The FSIS has veterinarians stationed outside the United States.[29] Plants exporting large volumes and other plants of special concern are visited at least once a year.

Pursuant to the 1981 Farm Bill,[30] the FSIS has placed increasing emphasis on review of a country's regulatory system as a whole, rather than on review of individual plants. FSIS now evaluates country controls in seven basic risk areas: residues, diseases, misuse of food additives, gross contamination, microscopic contamination, economic fraud, and product integrity.[31] As required by the 1981 Farm Bill, FSIS also vigorously carries on a species identification program under which the FSIS assures that meat is properly identified by origin or species.

Under the Federal Meat Inspection Act, all imported meat being offered for entry into the United States must be accompanied by a meat inspection certificate issued by a responsible official of the exporting country. The certificate must identify the product by origin, destination, shipping marks, and amounts. It must certify that the meat comes from animals that received veterinary antemortem and postmortem inspections; that it is wholesome, not adulterated or misbranded; and that it is otherwise in compliance with U.S. requirements. Imported meat is also subject to the same labeling requirements as domestically processed meats, i.e., the label must be informative, truthful, and not misleading.

Under the Federal Meat Inspection Act, U.S. inspectors at the port of entry inspect part of each shipment of meat. Representative sampling plans similar to those used in inspecting domestic meat are applied to each import shipment. Samples of frozen products are defrosted, canned meat containers are opened, and labels are verified for prior U.S. approval and stated weight accuracy. Specimens are routinely submitted to meat inspection laboratories to check compliance with compositional standards. Sample cans are also subjected to periods of incubation for signs of spoilage. Meat imports are also monitored for residues, such as pesticides, hormones, heavy metals, and antibiotics, by selecting representative samples for laboratory analysis. Special control measures are in effect for handling meat from countries when excessive amounts of residues are detected. These measures include refusing or withholding entry of the product from countries with a history of problems until results of laboratory analysis are received.

During 1990, 3.3 million pounds of fresh, chilled, or frozen pork constituting roughly 0.6 percent of the fresh, chilled, or frozen pork offered for entry to the

[25] Rinderpest and foot-and-mouth diseases are highly contagious, infectious diseases that can afflict cloven-footed animals (such as cattle, sheep, swine, and deer). Because the diseases are easily transmitted and debilitating, they are an ever-present threat to the U.S. livestock industry. The diseases do not present a direct threat to human health.

[26] Pursuant to sec. 306 of the Tariff Act of 1930 (19 U.S.C. 1306).

[27] 21 U.S.C. 620.

[28] See U.S. Senate, Agriculture and Forestry Committee, Report on S. 2147, S. Rep. No. 799 (90th Cong. 2d sess.) 1967, as published in 2 *U.S. Code Congressional and Administrative News*, 1967, p. 2,200. S. 2147, as modified, ultimately became Public Law 90-201 (the Wholesome Meat Act), approved Dec. 15, 1967.

[29] The number of certifications refer to all meat, including beef and veal. See USDA, *Meat and Poultry Inspection, 1990, Report of the Secretary of Agriculture to the U.S. Congress*, Mar. 1, 1991, p. 39 (hereinafter, *Meat and Poultry Inspection, 1990*).

[30] Sec. 1122 of Public Law 97-98, dated Dec. 22, 1981.

[31] *Meat and Poultry Inspection*, 1984, p. 50.

United States, was condemned or refused entry.[32] Canada accounted for 77 percent of this pork; Denmark accounted for 22 percent; and Australia, Finland, and Sweden were the sources of the remainder.

U.S. Government Trade-Related Investigations

In recent years, U.S. imports of live swine and pork from Canada have been the subject of various countervailing duty (CVD) investigations by the U.S. International Trade Commission (ITC) and the International Trade Administration (ITA) of the U.S. Department of Commerce.

1984 Petition

On November 2, 1984, a petition was filed with the ITC and ITA by the National Pork Producers Council (NPPC), a trade association representing swine growers, and others alleging that an industry in the United States was materially injured, or was threatened with material injury by reason of imports from Canada of live swine and pork that were alleged to be subsidized by the Government of Canada. In the final investigation,[33] completed in July 1985, the ITC found that there were two like products, live swine and fresh, chilled, or frozen pork. The ITC determined that an industry in the United States was materially injured by reason of subsidized imports of live swine from Canada, but that an industry in the United States was not materially injured or threatened with material injury, by reason of subsidized imports of fresh, chilled, or frozen pork from Canada.[34] The ITC determinations on live swine and pork were appealed to the U.S. Court of International Trade. The negative ITC determination was affirmed and the affirmative ITC determination on live swine was remanded to the ITC. On remand, the ITC again determined on September 15, 1987, that an industry in the United States was materially injured by reason of subsidized imports of live swine from Canada.[35] The court affirmed the Commission's remand determination.

On October 7, 1991, the ITA published the results of its most recent final countervailing duty administrative review concerning live swine from Canada.[36] The ITA calculated the net subsidy for the period April 1, 1989, through March 31, 1990 and instructed the Customs Service to collect a cash deposit of estimated countervailing duties of Can$0.0049/lb. on all shipments of sows and boars and Can$0.0932/lb. for all other live swine entered or withdrawn from warehouse on or after June 21, 1991. This deposit requirement remains in effect until publication of the final results of the next administrative review.[37]

1989 Petition

On January 5, 1989, a second petition was filed with the ITC and ITA by NPPC and others alleging that an industry in the United States was materially injured, or was threatened with material injury, by reason of imports from Canada of pork that were alleged to be subsidized by the Government of Canada. On July 14, 1989, the ITA published the results of its final countervailing duty investigation concerning pork from Canada[38]. The ITA determined that the net subsidy was CAN$0.036/lb. (equal to about U.S. $0.03/lb.) for fresh, chilled, or frozen pork and *de minimis* for boar and sow meat. In its final investigation[39] the ITC, on September 13, 1989, determined that an industry in the United States was threatened with material injury by reason of subsidized imports of fresh, chilled, or frozen pork from Canada.[40]

The ITA and ITC determinations were both appealed to separate panels established pursuant to Article 1904 of the United States-Canada Free-Trade Agreement. The Panel remanded the ITC's determination twice. In response to the first remand, the ITC (on October 23, 1990) again found the domestic industry to be threatened with material injury by reason of imports of subsidized pork from Canada[41]. In response to the second remand, the ITC (on February 12, 1991) determined that an industry in the United States is not materially injured, or threatened with material injury by reason of imports of fresh, chilled, or frozen pork from Canada[42].

The ITA's determination was also the subject of two remand orders from an Article 1904 Binational Panel. In the first remand the amount of the subsidy determination was reduced, and reduced again in the second remand to the equivalent of about U.S. $0.012/lb.

On March 29, 1991, the United States Trade Representative (USTR) requested the formation of an Extraordinary Challenge Committee under Article 1904 of the United States-Canada Free- Trade Agreement. The USTR requested the Committee to review the second remand decision of the Binational Panel reviewing the ITC injury determination. In its request the USTR alleged that the second remand decision of the Article 1904 Binational Panel "resulted in a reversal of the ITC determination that subsidized pork imported from Canada threatened to injure U.S. pork producers." On June 14, 1991, the Extraordinary Challenge Committee issued its Memorandum Opinion

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[32] USDA, Food Safety and Inspection Service, *Meat and Poultry Inspection, 1990 Report of the Secretary of Agriculture to the U.S. Congress*, Mar. 1, 1991, p. 46.

[33] Investigation No. 701-TA-224 (Final).

[34] *Live Swine and Pork from Canada*, USITC publication 1733, July 1985.

[35] *Live Swine and Pork from Canada, Views on remand*, USITC publication 2108, Aug. 1988.

[36] 56 F.R. 50560 (Oct. 7, 1991).

[37] U.S. imports of live swine from Canada were also subject to final administrative reviews reported in 54 F.R. 651 (Jan. 9, 1989) and 56 F.R. 10410 (Mar. 12, 1991) and 56 F.R. 28531 (June 21, 1991). The ITA final affirmative countervailing duty determination resulting from the original petition was reported in 50 F.R. 25097 (June 17, 1985).

[38] 54 F.R. 30774 (July 14, 1989).

[39] Investigation No. 701-TA-298 (Final).

[40] USITC publication 2218, Sep. 1989.

[41] USITC publication 2230, Oct. 1990.

[42] USITC publication 2362, Feb. 1991.

and Order. The Committee announced that "the request for an extraordinary challenge is dismissed for failure to meet the standards of an extraordinary challenge set forth under FTA article 1904.13, the Binational Panel's January 22, 1991 *Memorandum Opinion and Order* shall remain in effect, and the *Order* of the Binational Panel dated January 22, 1991, is affirmed." As a result of the Committee's decision, U.S. imports of fresh, chilled, or frozen pork from Canada are no longer subject to a countervailing duty order.

Canadian GATT Complaint

Subsequent to the imposition of the CVDs on pork in September 1989, Canada filed a complaint with the General Agreement on Tariffs and Trade (GATT) contending that U.S. imposition of the CVDs are inconsistent with GATT rules. Specifically, Canada objected to a U.S. amendment to its trade laws under which a subsidy to a raw farm product could be deemed a subsidy to a processed product; Canada requested the amendment be withdrawn. Canada also contended that the CVDs were excessive. Accordingly, a GATT dispute settlement panel was formed. On October 3, 1990, the GATT panel reported its determination to the GATT Council, finding that the U.S. imposition of CVDs on imports of pork from Canada are inconsistent with GATT rules. The panel indicated that the U.S. should have demonstrated how the Canadian subsidy on swine production resulted in lower swine prices for Canadian pork packers. The GATT panel also determined that the Canadian request for amendment withdrawal was not within its mandate. However, the panel did not indicate that CVDs could not be applied to U.S. imports of fresh, chilled, or frozen pork from Canada.

FOREIGN TRADE MEASURES

Tariff Measures

Mexican imports of U.S. live swine for breeding purposes are free of duty. Imports of swine with a pedigree or selected breed certificate are dutiable at 10 percent ad valorem, and other swine and fresh, chilled, or frozen pork are dutiable at 20 percent ad valorem.[43] Japanese imports of pork from the United States receive a rate of duty that varies from year to year depending on the domestic support price for pork and the price of the imported meat. In 1991, imports priced above the so-called gate price of 612.69 yen per kilogram (equal to about $2.06 per pound with exchange rates in effect as of December 1991) were assessed a duty of 5 percent ad valorem. Imports priced below the gate price were subject to a variable levy that is the difference between a standard import price of 643.33 yen per kilogram (equal to about $2.16 per pound with exchange rates in effect as of December 1991) and the price of the imports plus cargo and freight costs.[44] This rate is estimated by the Commission to have been at approximately 8 percent ad valorem in 1990. Canadian imports of live swine and fresh, chilled, or frozen pork from the United States enter free of duty.

Nontariff Measures

Like the United States most countries have strict health and sanitary regulations pertaining to the importation of live swine and pork. Some of these regulations are similar in nature to U.S. regulations.

Canada imposes a 30-day quarantine on imports of live swine from the United States citing the presence of pseudorabies in the United States. The effect of the quarantine is to limit imports of live swine from the United States to high-value animals for breeding purposes.

Effective November 1, 1990, the EC prohibited imports of most meat (including offals) from the United States, contending that U.S. plants where the meat and offals were being processed did not meet EC sanitary requirements. On November 28, 1990, the National Pork Producers Council (NPPC) and the American Meat Institute (AMI) (a trade association representing meatpackers) filed a petition requesting the U.S. Trade Representative (USTR) "to use its authority under Section 301 of the 1974 Trade Act to retaliate on the EC's ban on U.S. pork." The associations contend that the EC action is an unfair trade barrier that cannot be supported by scientific standards or concerns about food safety. On January 10, 1991, the USTR accepted the industry petition to review the EC action against U.S. meat.[45] The USTR said, "The EC decision to halt all remaining U.S. pork and beef exports violates trade laws."[46] Shortly thereafter the USTR and the EC began discussions about the dispute.

Mexican imports of live swine from the United States are generally limited to barrows (castrated males) because of Mexican concerns about swine cholera. The United States is free of swine cholera and does not vaccinate animals for the disease. In Mexico, animals are vaccinated for the disease and Mexican swine farmers were concerned that female animals ostensibly imported for slaughter, might be used for breeding purposes.[47]

Effective December 15, 1991, Mexico prohibited imports of live swine from the United States. Mexican officials contend that the ban is necessary to protect

[43] USDA, FAS, GEDES VOLUNTARY REPORT MX1011, Jan. 30, 1991 p. 5-6 and p. 8-9. Certain live swine and fresh, chilled, or frozen pork that were dutiable at 20 percent ad valorem received a temporary duty reduction to 10 percent ad valorem between Feb. 5 and Feb. 25, 1991; USDA, FAS, GEDES VOLUNTARY REPORT MX1018, Feb. 2, 1991.

[44] USDA FAS *Livestock Semi-Annual Report* (JA1094), Aug. 9, 1991, p. 25.

[45] The USTR received comments from 41 U.S Senators and 30 Congressmen urging acceptance of the industry petition.

[46] USTR press release Jan. 10, 1991.

[47] USDA FAS *Livestock Annual* (Report # MX0144) Aug. 6, 1990, P. 17.

Mexican swine from Swine Infertility and Respiratory Syndrome (SIRS) also known as Mystery Swine Disease. Representatives of U.S. swine growers contend that the ban is a nontariff barrier and a serious threat to North American Free-Trade Agreement negotiations.

U.S. MARKET

Consumption

Live Swine

U.S. commercial slaughter (consumption) of swine is shown in fig. 2 and table A-8. Commercial slaughter rose from a low of 80 million animals in 1986 to a high of 89 million animals in 1989, but then declined to 85 million in 1990. Commercial slaughter reflects the hog cycle. The hog cycle may be described as a change in the population or inventory of live animals and a concomitant but opposite change in pork production. The cycle reflects the decisions of growers to expand or reduce production in response to economic signals as modified by biological constraints. In the United States, a hog cycle is typically 2 years in duration from peak to trough and 4 years in duration from peak to peak. A detailed discussion of the hog cycle is included in appendix C.

Imports, almost all from Canada, were equal to about 1 percent of U.S. commercial slaughter annually during 1986-90. Representatives of Canadian Provincial marketing boards and the NPPC generally agree that the market price for Canadian swine sold in the United States typically approximates the price for domestic swine sold in the United States. The much larger U.S. market is thought to establish the price for swine in both countries. The Canadian Provincial marketing boards, which have sole legal authority to sell Canadian swine for slaughter, contend that they are obligated to obtain the highest price possible for the animals they sell and thus will not accept less than market price. Trade and industry sources report that Canadian swine sold in the United States are generally comparable in quality to U.S. swine, although Canadian swine tend to be somewhat leaner and smaller muscled. The Canadian marketing system has for many years provided incentives for leaner animals and penalties for fatter ones.

Fresh, Chilled, or Frozen Pork

Apparent U.S. consumption of fresh, chilled, or frozen pork is shown in figure 3 and table A-9. Consumption of pork, which also reflects the hog cycle, rose from a low of 14.5 billion pounds in 1986 to a high of 16.1 billion pounds in 1988 but declined to 15.6 billion pounds in 1990. Per capita consumption of pork increased from 62.7 pounds in 1986 to 67.2 pounds in 1988 but declined to 64.1 pounds in 1990 (table A-10).

Imports were equivalent to 4 percent of U.S. consumption annually during 1986-88 but declined to 3 percent in 1989 and 1990. The Canadian Meat Institute, a trade association representing Canadian meat packers, has stated,

> It is a dictum in the Canadian livestock and meat business that the U.S. puts both a floor and a ceiling on Canadian prices. It has been a fact of life that Canadian prices can rise only to the point where (exchange, duty and transportation considered) U.S. product rolls in, in sufficient quantity to stop the price rise or even reduce it slightly. Similarly, if Canadian prices decline, they will only drop to the point where (exchange, duty and transportation considered) movement will commence to the U.S.[48]

Representatives of importers of pork from the EC have contended that their product sells for the same or higher prices than U.S. pork. They report that their product can sometimes command a price premium because of brand identification and consumer preference. Pork from Canada and the EC is thought to be closely comparable in quality to U.S. pork, although imports reportedly tend to be somewhat leaner than much of the domestic pork.

Officials of the NPPC contend that in assessing the impact of imports, the meat derived from imported live swine that are slaughtered in the United States should be included. Table A-11 shows that the estimated[49] quantity of meat derived from imported live swine fluctuated widely during 1986-90 ranging from a low of 75 million pounds in 1987 to a high of 173 million pounds in 1989, before declining to 138 million pounds in 1990. U.S. imports of the carcass-weight equivalent of live swine plus imports of fresh, chilled, or frozen pork ranged from a high of 757 million pounds in 1988 to a low of 653 million pounds in 1990. These imports were equal to 5 percent of the estimated U.S. consumption of fresh, chilled, or frozen pork annually during 1986-88, and 4 percent during 1989-90.

Production

Live Swine

U.S. swine production, or the number of animals born during the year (referred to as the pig crop), increased from 83 million animals in 1986 to 93 million animals in 1988 before declining to 90 million animals in 1990 and again is a reflection of the hog cycle (table A-8). The June 1 inventories of live swine, or number of animals on farms, for 1987-91 are shown in the tabulation on the next page:[50]

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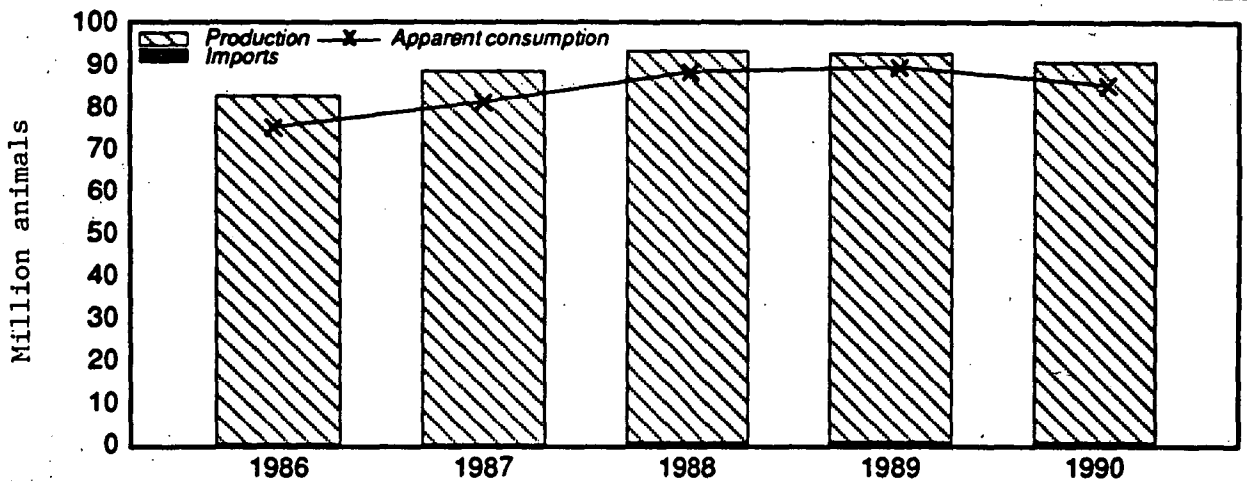
[48] *Conditions of Competition Between the U.S. and Canadian Live Swine and Pork Industries*, prehearing brief of Canadian Meat Council, p. 2, regarding investigation No. 332-186.

[49] Estimated by multiplying the total weight of imported live swine, compiled from official statistics of the U.S. Department of Commerce, second unit of quantity, by 71 percent which is the estimated packer-dressed carcass yield of live weight as reported in USDA Statistical Bulletin No. 616 *Conversion Factors and Weights and Measures*, Mar. 1979, p. 19.

[50] Reported in USDA ERS *Livestock and Poultry Situation and Outlook Report* (LPS-48) July 1991, p. 7.

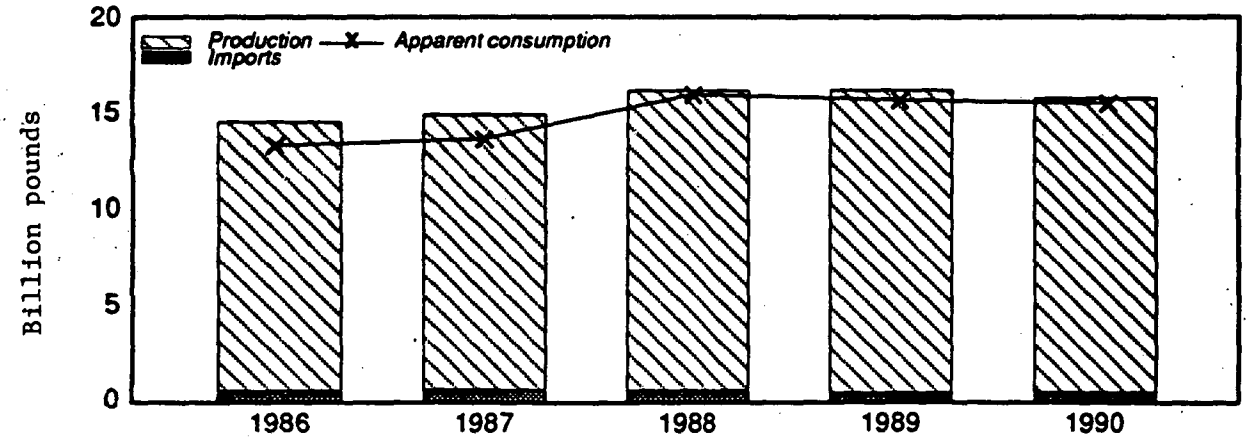
Year	Inventory (1,000 animals)
1987	52,200
1988	56,185
1989	55,880
1990	53,850
1991	56,290

Figure 2
Live Swine: U.S. imports, production, and apparent consumption



Source: Quantity of production (pig crop) compiled from USDA ERS *Livestock and Poultry Situation and Outlook Report* (LPS-48) July 1991, p. 7 (pig crop is December of previous year through November); imports and exports compiled from official statistics of the U.S. Department of Commerce; consumption (commercial slaughter) for 1987-89 *Livestock and Poultry Situation and Outlook Report* (LPS-49) August 1991, p. 17; for 1986, *Livestock and Poultry Situation and Outlook Report* (LPS-43) August 1990, p. 21.

Figure 3
Pork; fresh, chilled, or frozen: U.S. imports, production, and apparent consumption



Source: Production for 1987-90 compiled from USDA ERS *Livestock and Poultry Situation and Outlook Report* (LPS-49) August 1991, p. 17; 1986 from *Livestock and Poultry Situation and Outlook Report* (LPS-43) August 1990, p. 21; imports and exports compiled from official statistics of the U.S. Department of Commerce.

Fresh, Chilled, Or Frozen Pork

U.S. production of pork increased from 14 billion pounds in 1986 to 15.8 billion pounds in 1989, before declining to 15.3 billion pounds in 1990 (table A-9).

Inventories of fresh or chilled pork do not build up to any extent, because of the short shelf life of the product. According to industry sources, pork is usually consumed within 7 to 10 days after the animal is slaughtered. Beyond that point, bacterial growth, or so-called bacteria count, becomes excessive and the meat becomes discolored.

Freezing can significantly extend the shelf life of pork. However, pork does not freeze as well as beef or lamb. U.S. inventories of frozen pork are typically small and commercial cold storage stocks seldom exceed 300 million pounds. Consumers prefer fresh over frozen meat. Freezing lowers the value of the meat and is avoided, if possible. However, certain cuts, notably bellies that are processed into bacon, are frozen and inventories are carefully monitored by traders.

Imports

Live Swine

As noted earlier almost all U.S. imports of live swine, except for a few animals for breeding purposes, come from Canada. Officials of the USDA report that "In the early 1980's, slaughter hogs made up virtually all Canadian live hog exports to the United States. Over the last 3 years, exports of feeder hogs (less than 50 kg) increased, while exports of slaughter hogs declined."[51] With adoption of the HTS, statistics on U.S. imports of live swine by weight groups became available. U.S. statistics show that imports of swine weighing 50 kg. or less each (almost all of which are thought to consist of feeder animals from Canada), increased from 169,000 animals (16 percent of U.S. live swine imports) in 1989 to 204,000 animals in 1990 (23 percent of U.S. live swine imports). Almost all of the remainder of the imported swine have been animals destined for immediate slaughter, although there have been a few hundred animals imported for breeding purposes.

Total U.S. imports of live swine increased irregularly from 504,000 animals in 1986 to 1.1 million in 1989, before declining to 890,000 in 1990 (table A-12). Canada accounted for 99 percent of the imports. Import levels during 1986-90 reflected a number of factors, including changes in production in Canada and the effects of changes in the U.S. countervailing duty rate. In addition, certain domestic interests contend that worker strikes in Canadian packing plants result in increased exports of swine to the United States.[52] The principal import suppliers and U.S. importers of feeder pigs are thought to be livestock traders. As noted earlier, Canadian Provincial marketing boards have sole legal authority to sell swine for slaughter, and thus they supply such swine imported into the United States. Virtually all of the swine for slaughter are imported by major U.S. meat packing companies.

Fresh, Chilled, or Frozen Pork

The bulk of the U.S. imports of fresh, chilled, or frozen pork from Canada are thought to have consisted of cuts to be further processed (such as bellies to be processed into bacon and legs to be processed into hams) rather than retail cuts. A large share of the imports from the EC are reported to have been hams for processing, with much of the remainder being shoulders for processing.

Total U.S. imports of fresh, chilled, or frozen pork fluctuated during 1986-90, ranging from a high of 665 million pounds in 1987 to a low of 499 million pounds in 1989, and amounted to 515 million pounds in 1990 (table A-13). As with live swine, the changes are thought to have reflected a number of factors, including changes in production in Canada and the EC. Also, trade and industry sources contend that imports from Canada have been affected by changes in the countervailing duty rate which they contend encouraged shifts from live animals to pork or the reverse, and by the U.S.-Canada Free-Trade Agreement that has provided for duty-free or reduced duties for fresh, chilled, or frozen pork. Imports from Canada accounted for 82 percent of the quantity of all U.S. imports of fresh, chilled, or frozen pork in 1989 and 75 percent in 1990.

Domestic interests contend that EC restitution payments affect exports. Denmark is the only significant EC pork exporter that the U.S. Secretary of Agriculture has found to be free of foot-and-mouth disease and Rinderpest, and thus the only significant EC pork exporter authorized to export fresh, chilled, or frozen pork to the United States. Imports from the EC accounted for 13 percent of the subject imports in 1989, and 22 percent in 1990.

The principal import suppliers of fresh, chilled, or frozen pork are the meatpacking companies, especially Canadian and European, that sell directly or through authorized agents in the United States. The principal importers of pork are U.S. meatprocessing companies.

FOREIGN MARKETS

Foreign Market Profile

Live Swine

Live animals are costly and impractical to transport and consequently, international trade is generally limited to neighboring countries (e.g. U.S.-Canadian trade). However, U.S. exports of live swine to Canada are effectively limited to high-value animals for breeding purposes by Canadian quarantine regulations. There has traditionally been some limited international

[51] USDA FAS *Livestock* (CA1081) Aug. 1, 1991, p. 15.
[52] USITC, *Fresh, Chilled, or Frozen Pork from Canada*, investigation No. 701-TA-298 (Final) USITC publication 2218.

trade in high-value animals for breeding purposes. However, industry sources indicate that with improved technological advances, genetic improvements will increasingly depend on trade in boar semen and embryos, which are generally less difficult and expensive to transport and safer in terms of animal disease transmission.

Fresh, Chilled, or Frozen Pork

Japan was the largest U.S. export market for pork during 1986-90, and exports to that country exceeded 1 billion pounds annually during 1988-90 (table A-14). Exports to the Soviet Union fluctuated, peaking at 701 million pounds in 1987, declining to 481 million in 1988, but recovering to 617 million pounds in 1990. Exports to Hong Kong averaged slightly less than 500 million pounds annually during 1986-90.

U.S. exports to the various markets compete with exports from the EC (which benefit from EC export restitution payments and the CAP), and exports from Canada (where producers benefit from government programs that have been found to be subsidies). The EC and CEE countries benefit from their close proximity to the Soviet market and consequent lower transportation costs. Also, according to the USDA,

> Most meat imports into the Soviet Union are directly linked with some type of foreign assistance. The Soviet Union does continue to purchase some mutton from New Zealand and Australia, but for the most part has been receiving much of its imports from EC donor countries, particularly Germany. The likelihood of U.S. exporters making headway into the Soviet market would be considered slim at the present time, given the Soviet Union's over-extended credit situation and deteriorating domestic economy.[53]

Statistics reported by the USDA show that the price for U.S. pork in the Japanese market is generally close to the price for pork from Denmark, Taiwan, and Canada.[54] Trade and industry sources indicate that very lean pork is preferred in the Japanese market (in contrast to the Japanese preference for well-marbled beef). Although U.S. pork is generally accepted as high-quality, and a large and increasing share of U.S. production is lean enough for the Japanese market, U.S. exports must compete in the Japanese market with very lean pork from the EC, Canada, and Taiwan. Trade sources have indicated that the most significant competitive advantage of the United States is the ability to provide a steady supply of loin cuts in large quantities as well as the ability to supply chilled product.[55] Under a joint venture, Mitsubishi Corp. and a U.S. partner built a confinement swine feeding facility and packing house in Indiana in 1989. According to trade sources, the capacity of the packing house was 3,000 animals per day, as of August 1991, but slaughter capacity is expected to triple within the next few years. The majority of pork produced at this facility is reportedly exported to Japan.[56]

U.S. Exports

Live Swine

Trade and industry sources report that the bulk of U.S. exports of live swine to Mexico (the largest market) during 1986-90 were animals intended for slaughter, including sows too old to be useful for breeding purposes. U.S. exports of live swine to other major markets (Japan, Taiwan, the Republic of Korea, and Indonesia) in recent years are thought to have been animals for breeding purposes. Live swine exporters are thought to include animal dealers as well as individual farmers.

U.S. exports of live swine increased irregularly from about 13,000 animals, valued at $9 million, in 1986 to about 91,000 animals, valued at $17 million, in 1988 before declining to about 57,000, valued at $10 million, in 1990 (table A-15). Mexico was the largest U.S. export market for live swine during 1988-90, accounting for 92 percent (84,000 animals) of the quantity of U.S. exports in 1988, 84 percent (78,000 animals) in 1989, and 74 percent (42,000 animals) in 1990. The high level of imports in 1988 reportedly resulted from the Mexican Government's efforts to maintain low consumer prices for food, including pork, through imports of both meat and animals, including swine, for slaughter. Exports to Mexico may have been facilitated by U.S. Government credit programs in 1988, and declines in exports subsequent to that year (although higher than during 1986-87) may have been influenced by changes in the credit program.[57]

U.S. exports to markets except Mexico increased irregularly from 11,000 animals in 1986 to 15,000 animals annually in 1989 and 1990. The increase reflected expanded swine production in the importing countries and a desire to improve the quality of the swine population. U.S. swine growers and livestock traders are believed to be the primary exporters.

Fresh, Chilled, or Frozen Pork

The bulk of U.S. exports of fresh, chilled, or frozen pork have consisted of pork cuts, including primal cuts, carcasses, and half-carcasses to be processed in the importing countries. The exporters of pork include U.S. processors and Japanese trading companies.

U.S. exports of fresh, chilled, or frozen pork increased from 60 million pounds (carcass-weight equivalent), valued at $66 million, in 1986 to 215 million pounds, valued at $299 million, in 1989 before declining to 183 million pounds, valued at $288 million in 1990 (table A-16). Japan was the largest U.S. export market for fresh, chilled, or frozen pork, accounting for

[53] USDA FAS *Livestock* (AGR No. UR1064) Aug. 1, 1991, p. 12.
[54] USDA FAS *Livestock Semi-Annual Report* (JA1094) Aug. 9, 1991, p. 22.
[55] Ibid. p. 23.
[56] Ibid. p. 25.
[57] U.S. General Accounting Office *U.S.-Mexico Trade Trends and Impediments in Agricultural Trade* Jan. 1990, p. 34.

about two-thirds of the quantity and three-fourths of the value of U.S. exports in most years during 1986-90. Exports to Japan increased irregularly from 37 million pounds, valued at $51 million in 1986, to 115 million pounds, valued at $224 million, in 1990. The increase in U.S. exports to Japan reflects growth in consumption in that market that exceeded an increase in domestic production and an increase in shipments from other export suppliers. Mexico has become the second-largest U.S. export market for fresh, chilled, or frozen pork, with its share of U.S. exports increasing from less than 1 percent in 1986 and 1987 to 24 percent of the quantity, and 16 percent of the value, in 1989 before declining to 16 percent of the quantity, and 11 of the value, in 1990. Trade and industry sources report that increases in U.S. imports of meat from the United States, such as the increase in imports of pork in 1989, are sometimes encouraged by the Mexican Government in order to assure adequate supplies of meat at acceptable prices. Exports to Mexico increased from 0.6 million pounds, valued at $0.4 million, in 1986 to 50 million pounds, valued at $48 million, in 1989 but declined to 29 million pounds, valued at $31 million, in 1990.

U.S. TRADE BALANCE

Tables A-17 and A-18 show the U.S. trade balances for live swine and pork respectively. The United States has been a net importer of live swine and registered a trade deficit ranging from a low of $44 million in 1987 to highs of $87 million in 1989 and $85 million in 1990, primarily as a result of increased imports from Canada. The United States is, by far, a net importer of pork and, although the deficit declined from highs of $416 million in 1986 and $479 million in 1987 to $95 million deficit in 1989, it increased again to $223 million in 1990. The 1990 deficit was primarily the result of increased imports from Canada and the EC and reduced exports to Mexico.

APPENDIX A
STATISTICAL TABLES

Table A-1
Operations with swine, by region, 1986-90

Region	*1986*	*1987*	*1988*	*1989*	*1990*
Corn Belt States	149,500	146,900	148,700	141,400	133,400
Southeastern States	111,200	99,500	100,500	74,500	59,200
Other	85,390	82,240	84,300	90,310	85,440
Total	346,090	328,640	333,500	306,210	278,040

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from USDA, NASS *Hogs and Pigs, Final Estimates 1983-87*, Dec. 1989, p. 11 for 1986-87; *Hogs and Pigs*, Jan. 1989, p. 19 for 1988; *Hogs and Pigs*, Jan. 1991, p. 17 for 1989-90.

Table A-2
Number of swine, by region, as of Dec. 1, 1986-90

(1,000 head)

Region	*1986*	*1987*	*1988*	*1989*	*1990*
Corn Belt States	37,480	40,270	40,350	39,690	40,350
Southeastern States	7,190	7,537	8,259	7,112	7,179
Other	6,331	6,577	6,690	7,019	7,033
Total	51,001	54,384	55,299	53,821	54,562

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from USDA, NASS *Hogs and Pigs, Final Estimates 1983-87*, Dec. 1989, p. 6 for 1986-87; *Hogs and Pigs*, Jan. 1989, p. 19 for 1988; *Hogs and Pigs*, Jan. 1991, p. 17 for 1989-90.

Table A-3
Commercial swine slaughter, by region, 1986-90

(1,000 head)

Region	*1986*	*1987*	*1988*	*1989*	*1990*
Corn Belt States	52,107	54,291	60,443	61,854	59,542
Southeastern States	16,279	16,363	16,827	16,438	[1]11,167
Other	11,212	10,427	10,525	10,400	14,427
Total	79,598	81,081	87,795	88,692	85,136

[1] Kentucky and Georgia are not included in 1990 Southeastern total to avoid disclosing individual operations.

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from USDA, NASS *Livestock Slaughter 1986 Summary*, Mar. 1987 for 1986; *Livestock Slaughter 1987 Summary*, Mar. 1988 for 1987; *Livestock Slaughter 1988 Summary*, Mar. 1989 for 1988; *Livestock Slaughter 1989 Summary*, Mar. 1990 for 1989; *Livestock Slaughter 1990 Summary*, Mar. 1991 for 1990.

Table A-4
Labor and total costs to produce pork and labor share of total costs, 1986-90

	Labor costs to produce 100 pounds of pork	*Total economic costs to produce 100 pounds of pork*	*Labor costs as a share of total economic costs*
	(dollars)	*(dollars)*	*(percent)*
1985	$5.86	$39.87	15
1986	5.55	40.10	14
1987	5.76	42.86	13
1988	6.01	51.11	12
1989	6.62	54.01	12

Source: Data for 1986 derived from USDA ERS *Costs of Producing U.S. Livestock, 1972-87*, Agricultural Economic Report No. 632, Apr. 1990, p.79.; data for 1987-89 derived from USDA ERS *Costs of Producing U.S. Livestock, 1989*, (ECIFS9-1) Aug. 1990, p.45.

Table A-5
Pork: Production in selected countries and regions, 1986-90

(Million pounds)

Country or region	*1986*	*1987*	*1988*	*1989*	*1990*[1]
China	39,595	40,453	44,480	46,800	50,045
European Community	25,920	27,077	28,248	27,377	28,080
United States[2]	13,998	14,311	15,623	15,759	15,300
Soviet Union	13,371	13,942	14,551	14,771	14,991
Central & East Europe[3]	15,584	16,142	15,816	15,635	14,595
Japan	3,422	3,486	3,479	3,514	3,439
Canada	2,418	2,493	2,619	2,610	2,513

[1] Preliminary.

[2] Production data for 1987-90 compiled from USDA ERS *Livestock and Poultry Situation and Outlook Report* (LPS-49) Aug. 1991, p. 17; production data for 1986 from *Livestock and Poultry Situation and Outlook Report* (LPS-43) Aug. 1990, p. 21

[3] Bulgaria, Czechoslovakia, East Germany (for statistical purposes), Hungary, Poland, Romania, and Yugoslavia.

Source: USDA FAS *World Livestock Situation* (FL&P) 2-91 Apr. 1991, p. 50, except as noted.

Table A-6
Pork: Exports by selected countries and regions, 1986-90[1]

(Million pounds)

Country or region	*1986*	*1987*	*1988*	*1989*	*1990*[2]
European Community[3]	741	939	1,113	1,109	1,404
Central & East Europe[4]	1,567	1,508	1,506	1,748	1,107
Canada	600	664	703	672	606
China	425	441	375	448	273
United States	86	108	194	262	238
Soviet Union	13	13	11	11	11

[1] Trade data relating to fresh, chilled, or frozen pork on an international basis are difficult to compare in part because of conflicting distinctions countries used in classifying imports as fresh, chilled, or frozen; prepared or preserved; or meat preparations. The export statistics shown in table A-7 include all pork but the countries in that table are thought to include the major exporters of fresh chilled, or frozen pork.

[2] Preliminary.

[3] Excludes EC intra-trade

[4] Bulgaria, Czechoslovakia, East Germany, (for statistical purposes) Hungary, Poland, Romania, and Yugoslavia.

Source: USDA FAS *World Livestock Situation* (FL&P) 2-91 Apr. 1991, p. 50.

Table A-7
Live swine and meat of swine: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1991; U.S. exports, 1990; and U.S. imports, 1990

HTS subheading	*Brief description*	*Col. 1 rate of duty As of Jan. 1, 1991*		*U.S. exports, 1990*	*U.S. imports, 1990*
		General	*Special*[1]	*Million dollars*	
0103	Live swine:				
0103.10.00	Purebred breeding animals	Free		7,169	510
	Other live swine:				
0103.91.00	Weighing less than 50 kg each	Free		399	10,171
0103.92.00	Weighing 50 kg or more each	Free		2,569	84,621
0203	Meat of swine, fresh, chilled, or frozen:				
	Fresh or chilled:				
0203.11.00	Carcasses and half-carcasses	Free		3,661	5,763
0203.12	Hams, shoulders and cuts thereof, with bone in:				
0203.12.10	Processed	2.2¢/kg	Free (E,IL) 0.8¢/kg (CA)	6,364	665
0203.12.90	Other	Free		19,178	177,014
0203.19	Other:				
0203.19.20	Processed	2.2¢/kg	Free (E,IL) 0.8¢/kg (CA)	45,770	5,425
0203.19.40	Other	Free		48,478	136,418
	Frozen:				
0203.21.00	Carcasses and half-carcasses	Free		413	695
0203.22	Hams, shoulders and cuts thereof, with bone in:				
0203.22.10	Processed	2.2¢/kg	Free (A,E,IL) 0.8¢/kg (CA)	3,974	135
0203.22.90	Other	Free		32,754	25,870
0203.29	Other:				
0203.29.20	Processed	2.2¢/kg	Free (A,E,IL) 0.8¢/kg (CA)	54,336	3,035
0203.29.40	Other	Free		72,590	156,222

[1] Programs under which special tariff treatment may be provided, and the corresponding symbols for such programs as they are indicated in the "Special" subcolumn, are as follows: Generalized System of Preferences (A); Automotive Products Trade Act (B); Agreement on Trade in Civil Aircraft (C); United States-Canada Free-Trade Agreement (CA); Caribbean Basin Economic Recovery Act (E); and United States-Israel Free Trade Act (IL).

Table A-8
Live swine: U.S. production, exports of domestic merchandise, imports for consumption, and apparent U.S. consumption,[1] 1986-90

Year	U.S. production	U.S. exports	U.S. imports	Apparent U.S. consumption	Ratio of imports to consumption
	Quantity (1,000 animals)				Percent
1986	82,571	13	504	79,598	0.6
1987	88,423	7	446	81,082	0.6
1988	92,883	91	836	87,794	1.0
1989	92,074	93	1,074	88,691	1.2
1990	90,211	57	890	85,137	1.0
	Value (million dollars)				
1986	9,716	9	60	9,767	0.6
1987	10,288	6	50	10,332	0.5
1988	9,207	16	79	9,269	0.9
1989	9,466	14	101	9,553	1.1
1990	11,516	10	95	11,601	1.0

[1] Includes changes in inventories.

Source: Quantity of production (pig crop) compiled from USDA ERS *Livestock and Poultry Situation and Outlook Report* (LPS-48) July 1991, p. 7 (pig crop is Dec. of previous year through November); value of production compiled from USDA NASS *Meat Animals Production, Disposition and Income*, annual issues; imports and exports compiled from official statistics of the U.S. Department of Commerce; consumption (commercial slaughter) for 1987-89 *Livestock and Poultry Situation and Outlook Report* (LPS-49) Aug. 1991, p. 17; for 1986, *Livestock and Poultry Situation and Outlook Report* (LPS-43) Aug. 1990, p. 21.

Table A-9
Pork; fresh, chilled, or frozen: U.S. production, exports of domestic merchandise, imports for consumption, and apparent U.S. consumption, 1986-90

Year	U.S. production	U.S. exports	U.S. imports	Apparent U.S. consumption	Ratio of imports to consumption
	Quantity (1,000 animals)				Percent
1986	13,998	60	577	14,515	4
1987	14,311	75	665	14,901	4
1988	15,623	145	622	16,100	4
1989	15,759	215	499	16,043	3
1990	15,300	183	516	15,633	3
	Value (million dollars)				
1986	(1)	66	482	(1)	(2)
1987	(1)	99	578	(1)	(2)
1988	(1)	197	476	(1)	(2)
1989	(1)	299	394	(1)	(2)
1990	(1)	288	511	(1)	(2)

[1] Not available.

[2] Not meaningful.

Source: Production for 1987-90 compiled from USDA ERS *Livestock and Poultry Situation and Outlook Report* (LPS-49) Aug. 1991, p. 17; 1986 from *Livestock and Poultry Situation and Outlook Report* (LPS-43) Aug. 1990, p. 21; imports and exports compiled from official statistics of the U.S. Department of Commerce.

Table A-10
Beef, pork, and poultry meat: Apparent per capita consumption in the United States, 1986-90

Period	Beef		Pork	Poultry Meat	
	Carcass weight	Retail weight	Carcass weight	Retail weight	Retail weight
	Quantity (pounds)				
1986	107.6	78.5	62.7	59.0	72.7
1987	103.5	73.5	63.0	59.7	78.5
1988	102.5	72.3	67.2	63.5	81.1
1989	98.4	69.3	67.0	52.0	86.4
1990	96.1	67.8	64.1	49.8	90.7

Source: Data for 1986-88 compiled from USDA ERS *Livestock and Poultry Situation and Outlook Report* (LPS-39) Jan. 1990, p. 38-39 and p. 43., data for 1989 and 1990 compiled from *Livestock and Poultry Situation and Outlook Report* (LPS-49) Aug. 1991, pp. 34-35.

Table A-11
Swine and fresh, chilled, or frozen pork: U.S. imports for consumption, 1986-1990

Year	Swine imports[1]	Pork imports	Total imports
	(Thousand pounds)		
1986	87,577	577,022	664,599
1987	75,183	664,871	740,054
1988	135,012	621,617	756,629
1989	172,560	498,625	671,185
1990	138,266	514,854	653,120

[1] Carcass-weight equivalent.

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table A-12
Live swine: U.S. imports for consumption, by principal source, 1986-90

Source	1986	1987	1988	1989	1990
	Quantity (1,000 animals)				
Canada	(1)	(1)	(1)	1,073	886
EC	(1)	(1)	(1)	(2)	4
All other	(1)	(1)	(1)	(2)	(2)
Total	504	446	836	1,074	890
	Value (million dollars)				
Canada	(1)	(1)	(1)	101	94
EC	(1)	(1)	(1)	(3)	1
All other	(1)	(1)	(1)	(3)	(3)
Total	60	50	79	101	95

[1] Country-level detail is provided for years in which there are actual trade data under the Harmonized Tariff Schedule of the United States (HTS) and the new Schedule B (based on HTS).

[2] Less than 500 animals.

[3] Less than $500,000.

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table A-13
Pork; fresh, chilled, or frozen: U.S. imports for consumption, by principal source, 1986-90

Source	*1986*	*1987*	*1988*	*1989*	*1990*
	Quantity (million pounds)				
Canada	(1)	(1)	(1)	409	384
EC	(1)	(1)	(1)	66	112
All other	(1)	(1)	(1)	24	19
Total	577	665	622	499	515
	Value (million dollars)				
Canada	(1)	(1)	(1)	310	372
EC	(1)	(1)	(1)	64	119
All other	(1)	(1)	(1)	20	20
Total	482	578	476	394	511

[1] Country-level detail is provided for years in which there are actual trade data under the Harmonized Tariff Schedule of the United States (HTS) and the new Schedule B (based on HTS).

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table A-14
Pork: Imports by selected countries and regions 1986-90

Country or region	*1986*	*1987*	*1988*	*1989*	*1990*[1]
	Quantity (million pounds)				
Japan	655	884	1,016	1,082	1,069
United States	577	665	622	499	515
Soviet Union	575	701	481	485	617
Hong Kong	487	445	492	478	474

[1] Preliminary.

Source: USDA FAS *World Livestock Situation* (FL&P) 2-91 Apr. 1991, p. 36, except for the United States for which statistics were compiled from official statistics of the U.S. Department of Commerce.

Table A-15
Live swine: U.S. exports, by principal markets, 1986-90

Source	*1986*	*1987*	*1988*	*1989*	*1990*
	Quantity (1,000 head)				
Mexico	(1)	(1)	(1)	78	42
All other	(1)	(1)	(1)	15	15
Total	13	7	91	93	57
	Value (million dollars)				
Mexico	(1)	(1)	(1)	8	6
All other	(1)	(1)	(1)	6	4
Total	9	6	16	14	10

[1] Country-level detail is provided for years in which there are actual trade data under the Harmonized Tariff Schedule of the United States (HTS) and the new Schedule B (based on HTS).

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table A-16
Pork; fresh, chilled, or frozen: U.S. exports, by principal markets, 1986-90

Source	1986	1987	1988	1989	1990
	Quantity (million pounds)				
Japan	(1)	(1)	(1)	137	115
Mexico	(1)	(1)	(1)	50	29
All other	(1)	(1)	(1)	28	40
Total	60	75	145	215	183
	Value (million)				
Japan	(1)	(1)	(1)	222	224
Mexico	(1)	(1)	(1)	48	31
All other	(1)	(1)	(1)	29	33
Total	66	99	197	299	288

[1] Country-level detail is provided for years in which there are actual trade data under the Harmonized Tariff Schedule of the United States (HTS) and the new Schedule B (based on HTS).

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table A-17
Live swine: U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected country, 1986-90[1]

Item	1986	1987	1988	1989	1990
	(Million dollars)				
U.S. exports of domestic merchandise:					
Canada	(2)	(2)	(2)	(3)	(3)
Mexico	(2)	(2)	(2)	8	6
All other	(2)	(2)	(2)	6	4
Total	9	6	16	14	10
U.S. imports for consumption:					
Canada	(2)	(2)	(2)	101	94
Mexico	(2)	(2)	(2)	0	0
All other	(2)	(2)	(2)	(3)	1
Total	60	50	79	101	95
U.S. merchandise trade balance:					
Canada	(2)	(2)	(2)	-101	-94
Mexico	(2)	(2)	(2)	8	6
All other	(2)	(2)	(2)	6	3
Total	-51	-44	-63	-87	-85

[1] Import values are based on Customs value; export values are based on f.a.s. value, U.S. port of export.

[2] Country-level detail is provided only for years in which there are actual trade data under the *Harmonized Tariff Schedule of the United States* (HTS) and the new Schedule B (based on HTS).

[3] Less than $500,000.

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table A-18
Pork; fresh, chilled, or frozen: U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected country, 1986-90[1]

(Million dollars)

Item	*1986*	*1987*	*1988*	*1989*	*1990*
U.S. exports of domestic merchandise:					
Canada	(2)	(2)	(2)	8	13
Japan	(2)	(2)	(2)	222	224
EC	(2)	(2)	(2)	2	1
Mexico	(2)	(2)	(2)	48	31
All other	(2)	(2)	(2)	19	19
Total	66	99	197	299	288
U.S. imports for consumption:					
Canada	(2)	(2)	(2)	310	372
Japan	(2)	(2)	(2)	0	0
EC	(2)	(2)	(2)	64	119
Mexico	(2)	(2)	(2)	0	0
All other	(2)	(2)	(2)	20	20
Total	482	578	476	394	511
U.S. merchandise trade balance:					
Canada	(2)	(2)	(2)	-302	-359
Japan	(2)	(2)	(2)	222	224
EC	(2)	(2)	(2)	-62	-118
Mexico	(2)	(2)	(2)	48	31
All other	(2)	(2)	(2)	-1	-1
Total	-416	-479	-279	-95	-233

[1] Import values are based on Customs value; export values are based on f.a.s. value, U.S. port of export.

[2] Country-level detail is provided only for years in which there are actual trade data under the *Harmonized Tariff Schedule of the United States* (HTS) and the new Schedule B (based on HTS).

[3] Less than $500,000.

Note.—Because of rounding, figures may not add to the totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce.

APPENDIX B
EXPLANATION OF TARIFF AND TRADE AGREEMENT TERMS

TARIFF AND TRADE AGREEMENT TERMS

The ***Harmonized Tariff Schedule of the United States*** (HTS) replaced the ***Tariff Schedules of the United States*** (TSUS) effective January 1, 1989. Chapters 1 through 97 are based on the internationally adopted Harmonized Commodity Description and Coding System through the 6-digit level of product description, with additional U.S. product subdivisions at the 8-digit level. Chapters 98 and 99 contain special U.S. classification provisions and temporary rate provisions, respectively.

Rates of duty in the ***general*** subcolumn of HTS column 1 are most-favored-nation (MFN) rates; for the most part, they represent the final concession rate from the Tokyo Round of Multilateral Trade Negotiations. Column 1-general duty rates are applicable to imported goods from all countries except those enumerated in general note 3(b) to the HTS, whose products are dutied at the rates set forth in ***column 2***. Goods from the People's Republic of China, Czechoslovakia, Hungary, Poland, and Yugoslavia are among those eligible for MFN treatment. Among articles dutiable at column 1-general rates, particular products of enumerated countries may be eligible for reduced rates of duty or for duty-free entry under one or more preferential tariff programs. Such tariff treatment is set forth in the ***special*** subcolumn of HTS column 1.

The ***Generalized System of Preferences*** (GSP) affords nonreciprocal tariff preferences to developing countries to aid their economic development and to diversify and expand their production and exports. The U.S. GSP, enacted in title V of the Trade Act of 1974 and renewed in the Trade and Tariff Act of 1984, applies to merchandise imported on or after January 1, 1976, and before July 4, 1993. Indicated by the symbol "A" or "A*" in the special subcolumn of column 1, the GSP provides duty-free entry to eligible articles the product of and imported directly from designated beneficiary developing countries, as set forth in general note 3(c)(ii) to the HTS.

The ***Caribbean Basin Economic Recovery Act*** (CBERA) affords nonreciprocal tariff preferences to developing countries in the Caribbean Basin area to aid their economic development and to diversify and expand their production and exports. The CBERA, enacted in title II of Public Law 98-67, implemented by Presidential Proclamation 5133 of November 30, 1983, and amended by the Customs and Trade Act of 1990, applies to merchandise entered, or withdrawn from warehouse for consumption, on or after January 1, 1984; this tariff preference program has no expiration date. Indicated by the symbol "E" or "E*" in the special subcolumn of column 1, the CBERA provides duty-free entry to eligible articles the product of and imported directly from designated countries, as set forth in general note 3(c)(v) to the HTS.

Preferential rates of duty in the special subcolumn of column 1 followed by the symbol "IL" are applicable to products of Israel under the ***United States-Israel Free-Trade Area Implementation Act*** of 1985, as provided in general note 3(c)(vi) of the HTS. When no rate of duty is provided for products of Israel in the special subcolumn for a particular provision, the rate of duty in the general subcolumn of column 1 applies.

Preferential rates of duty in the special duty rates subcolumn of column 1 followed by the symbol "CA" are applicable to eligible goods originating in the territory of Canada under the ***United States-Canada Free-Trade Agreement***, as provided in general note 3(c)(vii) to the HTS.

Other special tariff treatment applies to particular ***products of insular possessions*** (general note 3(a)(iv)), goods covered by the ***Automotive Products Trade Act*** (general note 3(c)(iii)) and the ***Agreement on Trade in Civil Aircraft*** (general note 3(c)(iv)), and ***articles imported from freely associated states*** (general note 3(c)(viii)).

The ***General Agreement on Tariffs and Trade*** (GATT) (61 Stat. (pt. 5) A58; 8 UST (pt. 2) 1786) is the multilateral agreement setting forth basic principles governing international trade among its more than 90 signatories. The GATT's main obligations relate to most-favored-nation treatment, the maintenance of scheduled concession rates of duty, and national (nondiscriminatory) treatment for imported products. The GATT also provides the legal framework for customs valuation standards, "escape clause" (emergency) actions, antidumping and countervailing duties, and other measures. Results of GATT-sponsored multilateral tariff negotiations are set forth by way of separate schedules of concessions for each participat-

ing contracting party, with the U.S. schedule designated as schedule XX.

Officially known as "The Arrangement Regarding International Trade in Textiles," the ***Multifiber Arrangement*** (MFA) provides a framework for the negotiation of bilateral agreements between importing and producing countries, or for unilateral action by importing countries in the absence of an agreement. These bilateral agreements establish quantitative limits on imports of textiles and apparel, of cotton and other vegetable fibers, wool, manmade fibers, and silk blends, in order to prevent market disruption in the importing countries—restrictions that would otherwise be a departure from GATT provisions. The United States has bilateral agreements with more than 30 supplying countries, including the four largest suppliers: China, Hong Kong, the Republic of Korea, and Taiwan.

APPENDIX C
THE HOG CYCLE

The U.S. Hog Cycle

In the United States, and in many other countries and regions of the world where swine are kept, production is subject to a business cycle, generally referred to as the hog cycle. The hog cycle may be described as a change in the population or inventory of live animals and a concomitant but opposite change in pork production. The cycle reflects the decisions of growers to expand or reduce production in response to economic signals as modified by biological constraints. In the United States, a hog cycle is typically 2 years in duration from peak to trough and 4 years in duration from peak to peak.

Biological constraints

Biological constraints impose a lag in production responses, especially for decisions to expand production. When female animals, called gilts, are about 5 months old and weigh about 180 pounds, growers normally decide whether to continue to grow them to slaughter weights of about 220-240 pounds or whether to retain them for breeding purposes. If the decision is to retain them for breeding purposes, the gilts must be raised to sexual maturity (which occurs at about 8 to 10 months of age) before they are suitable for breeding. Hogs give birth, or farrow, after a gestation period of about 4 months, or as growers typically say, 3 months, 3 weeks, and 3 days. The litters that result from the farrowing are ready for slaughter in about 6 months. Thus, about 14 to 16 months elapse between the time a grower decides to keep a gilt for breeding purposes and the time that increased pork production results are seen.

Economic signals

The economic signals initiating phases of the hog cycle include fluctuations in prices or profits or even anticipation of such fluctuations. Also, because growers are accustomed to constantly fluctuating prices and profits, economic signals typically must be sustained for a period of time before production decisions are altered, depending on the magnitude of the fluctuation. According to the USDA "In past years, producers have typically begun adding to the breeding herd after 6-9 months of favorable returns"[1] The economic signals typically reflect developments occurring in the hog cycle, but may reflect largely exogenous variables. The largely exogenous variable that most often influences the cycle is the fluctuation in feed prices since feed is the largest single cost associated with raising hogs. Other exogenous variables that affect consumers include the cost and availability of alternative meats, credit considerations, and, indirectly, weather.

The economic signals that reflect developments occurring in the hog cycle are for the most part caused by changes in quantities supplied. For example, as the price for live animals rises, growers typically respond by retaining additional animals for breeding purposes in order ultimately to have more animals to sell at the higher price. Consequently, fewer animals are available for slaughter, putting even more upward pressure on the price and encouraging even more retention of animals for breeding purposes. The expanded number of animals kept for breeding purposes eventually results in supplies of animals for slaughter that are too large to clear the market at the prevailing price, and the price declines. As the price declines, growers typically respond by retaining fewer young animals for breeding purposes and by selling for slaughter mature animals that had been kept in breeding herds. The additional supplies put even more downward pressure on the prices, encouraging growers to sell even more animals for slaughter. Ultimately, animal supplies are reduced to levels that are inadequate to meet demand, and the price begins to rise initiating the next phase of the cycle. Examples of analysis of the hog cycle can be seen in several prior Commission studies. An analysis of developments between January 1979 and early 1985 is provided in appendix D of USITC publication 1733, *Live Swine and Pork From Canada*, July 1985, the Commission's report on Investigation No. 701-TA-224. An analysis of subsequent developments, including a preliminary analysis of developments through early 1989, is provided in appendix D of USITC publication 2218, *Fresh, Chilled or Frozen Pork From Canada*, September 1989, the Commission's report on Investigation No. 701-TA-298 (Final).

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[1] USDA ERS *Livestock and Poultry Situation and Outlook Report* (LPS-45) Jan. 1991, p. 4.

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