

**Japan's Beef Industry
With Emphasis on Beef Imports**

by

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Food Consumption With Emphasis on Livestock Products

By 1960, the Japanese had reached the sufficiency level of caloric intake, averaging 2,300 calories¹ (Cal.) per day. Changes in food consumption since then have been characterized by a drastic reduction in rice consumption which has been more than offset by an increase in the consumption of livestock products and fats. It is estimated that the total caloric intake will remain at the present level of 2,500 Cal. per day but the trend toward reduced rice consumption and increased livestock products and fat consumption will continue (figure 1).

As compared to some O.E.C.D. countries, the typical Japanese diet is characterized by a lower total caloric intake (about 2,500 Cal. as compared to about 3,200 Cal.) (figure 2). Japanese diets also tend to contain larger quantities of grain, usually rice or wheat, and fish and much smaller quantities of other meats. Most Japanese have attained the nutritionally "ideal" level of protein intake (about 80g per day). Their eating habits are featured by bowls of rice as a staple food with some fish, meat and vegetables as side dishes. As a result, it is unlikely that most Japanese people will consume as much meat in the foreseeable future as American or West German people do presently (tables 1 and 2). In Japan, pork has been the most important component of meat consumption (14.3 kg per capita per year in 1980) and beef the least important one (5.1 kg as compared with 48.2 kg for the United States) (table 3).

Food Supply

Japan's agricultural production had recovered to the pre-way level by 1955, ten years after the end of W.W.II. Since then, there has been a slight decrease in grain and soybean production and a remarkable increase in the production of fruits, vegetables, meat and dairy products. Expansion in the production of pork, chicken and milk has been outstanding (table 4).

Mainly due to the limitation of land resources for farming, Japan has had to rely on imports from overseas, primarily from the U.S., to meet Japan's expanding demand for food. Imports of feed grain, soybean, meat and meat products, in particular, have greatly increased since 1955 (table 5). As a result, the "aggregate self-sufficiency ratio" for agricultural products for food has dropped from 93 percent in 1955 to 74 percent in recent years (1979-1981). For meat, eggs and milk and dairy products, the ratio has been kept at fairly high levels, e.g.: chicken, 92 percent; pork, 86 percent; eggs, 98 percent; milk, 84 percent, etc. in 1981. The greater portion of feed requirements, however, has come from overseas. The self sufficiency ratio for feedstuffs has drastically dropped from 55 percent in 1965 to 28 percent in recent years, to bring the ratio for grain as a whole from 61 percent to 33 percent for the same period (tables 6 and 7).

In 1965, imports from overseas accounted for about 15 percent of the total meat supply. Although the domestic production of all meat has more than tripled since 1965, imports of meat accounted for about 20 percent of the total supply in 1980-81. The increase of beef imports has been especially dramatic. The share of imports, of total beef supply, rose from 7 percent in 1965 to 12 percent in 1970 and to almost 30 percent for the period from 1979 to 1981. Domestic beef production has not been able to catch up with the increase in demand despite the more favorable prices of beef relative to pork and chicken in recent years (see tables 8 and 22).

Of total feed concentrates produced, which increased from 8.2 million metric tons² (mmt.) in 1965 to 15.1 mmt. in 1970, 16.8 mmt. in 1975 and 22.2 mmt. in 1981, it is estimated that a fairly constant percentage of about 50 percent went to poultry production, a little over 25 percent went to hog production and 10 percent to dairy production over the past 15 year period. The share of feed concentrates which went to beef alone rose appreciably from 0.9 percent in 1965 to 6.0 percent in 1970 and to 12.0 percent in 1981 (table 9).

Of major feedstuffs imported from overseas, the United States has been a leading supplier of corn and sorghum. Total corn and sorghum imported amounted to 10 mmt. and 3.3 mmt., respectively, in 1981. The United States supplied 68 percent of the corn imported by Japan in 1970, 82 percent in 1975 and 97 percent in 1981. The United State's share of Japanese sorghum imports rose from 59 percent in 1970 to 87 percent in 1981. The U.S. supplied more than 20 percent of the barley imported in 1981 (table 10). In addition, in 1981 the U.S. supplied 95 percent of soybeans³ imports, valued at 1.4 billion dollars, and 57 percent of wheat⁴ imports, valued at 1.27 billion dollars.

Imports of beef increased from 24,300 mt. in 1970 to 63,800 mt. in 1975 and 116,000 mt. in 1981 (in wholesale cut meat weight). In 1970, Australia supplied 87 percent of all beef imports, followed by New Zealand, which supplied 10 percent. The United State's share was 11.0 percent in 1975 and steadily rose to 18.0 percent in 1979 and 23.1 percent in 1981, while the percentage of beef supplied by Australia dropped to 81.0 percent, 78.0 percent and 69.3 percent in the same respective years. New Zealand's share fell to 4.7 percent in 1981 (table 11).

Of beef imported to Japan, the United States (and Canada) supplied mainly grain-fed meat while Australia and New Zealand supplied grass-fed meat. Japanese imports of grain-fed meat almost tripled from 12,000 mt. in 1976 to 30,000 mt. in 1981 while grass-fed meat increased only moderately from 82,000 mt. in 1976 to 94,000 mt. in 1981 (table 12). This trend may partly reflect the Japanese consumers' preference for higher quality beef.

Some Features of Domestic Production of Beef

Japanese agriculture has been characterized as being small scale operations. In 1975, the average amount of agricultural land per farm in Japan was less than 1.2 hectares,⁵ as compared to 158 has. in the U.S., 64 has.

in Great Britain, 25 has. in France and 14 has. in West Germany (table 13). The average size of farm household in terms of acreage has not increased appreciably in Japan over the past 20 to 30 years, despite the rapid migration of the farm population into non-farm employment. Of 6,057,000 farm households, 2,078,000 were full-time farms and 1,942,000 were Class II⁶ part-time farms in 1960. By 1970, the number of farm households had decreased slightly to 5,402,000 of which 845,000 were full-time farms. In 1982, there were 4,567,000 farm households of which only 599,000 were full-time farms and 3,194,000 were Class II part-time farms. Of 4,567,000 farms, in 1981, only 274,000 had gross sales of \$20,000 or more.

As for livestock production, the average number of animals per farm was 2.0 head for dairy, 1.2 for beef, 2.4 for hog and 12 chickens in 1960. The average unit of livestock production has increased since then in every category despite the very slow expansion of farm sizes in terms of acreage. The average number of animals in 1971 was 6.6 head for dairy, 2.2 for beef, 17.3 for hog, 91 for hens and 3,558 for broilers. In 1982, it stood at 21.3 head, 7.0, 89.8, 770 and 16,900 in the above order, respectively. The remarkable expansion of production per farm has taken place especially in the fields of hog, egg and broiler production (table 14).

In 1965, there were only 2,000 farms, or 0.5 percent of all dairy farms, which had 20 or more head of dairy cows. In 1971, the number of farms which had 20 or more head of dairy cows had grown to 7,000, or 3.8 percent of all dairy farms. In 1981, there were 30,000 farms that had 20 or more head of dairy cows. These farms accounted for 30 percent of all dairy farms and 67.9 percent of all the dairy cows inventoried.

In 1971, there were 5,000 farms, or 0.6 percent of all beef cattle farms, which had 20 or more head of cattle. By 1981, the number of farms which had 20 or more head of beef cattle increased to 20,000, or 5.7 percent of all beef cattle farms. The total number of beef cattle farms fell from 797,000 in 1971 to 340,000 in 1981. These farms accounted for 52.4 percent of all

the beef cattle inventoried (table 15). According to the latest statistics, in 1982 there were only 3,000 beef cattle farms or 0.9 percent of all beef farms, which had 100 or more head. In 1982, 77.6 percent of all 239,200 cow-calf operations fell into the size category of 1-4 head per farm and only one percent had 20 or more cows.

The practice of feeding dairy steers started in the late 1960's and had become common throughout Japan. In 1971, only one percent of such farms had 50 head or more. By 1982, farms of this size accounted for 10 percent of all such operations and 65 percent of all dairy steers fed. The average size of a dairy feeding operation increased from 4.0 head in 1971 to 20.3 in 1982 (table 16 and figure 3).

In general, Japan has experienced a rapid expansion in the size of livestock operations in all segments of livestock production over the past 20 years. This has occurred in spite of the fact that the average acreage of a Japanese farm has increased by less than 10 percent from 1.1 has. in 1960 to 1.2 has. in 1981. The increase in the size of an operation has been particularly remarkable for poultry and hog enterprises, while expansion of beef-cattle operation has occurred at a more moderate pace, e.g., 1.6 head in 1971 to 2.9 head in 1982 for a cow-calf operation.

The supply of beef was quadrupled over the past two decades from 103,000 mt. in 1960 to 418,000 mt. in 1980 (measured in terms of wholesale cut meat weight). During the period from 1960 to 1965, imports of beef were negligible, accounting for only 4-5 percent of the total supply. Imports, however, have increased quite rapidly for the past 10 years or so. In 1970 Japan imported 23,000 mt. of beef. In 1979 beef imports amounted to 132,000 mt. and in 1980, Japan imported 120,000 mt. of beef which accounted for one third of the total supply of beef for recent years. The large increases in Japanese beef imports can be attributed to the fact that domestic production was not able to keep up with the rapid increase in demand (table 17).

Calves have not been important in Japanese domestic beef production,

accounting for only 3 percent of carcass meat production in 1965 and 0.5 percent in 1981. Beef cattle, primarily Wagyu, a breed of cattle indigenous to Japan, was the major source of production until the mid-sixties. In 1965, for example, Wagyu supplied about 75 percent of the domestic slaughter (carcass weight). Back in 1955, 2,300,000 farm households had one or two head of cattle, averaging 1.2 head per farm. The animals were kept mainly for the purpose of draft use as well as manure production. With the rapid progress in farm mechanization, especially in cultivating paddy, which took place in the latter part of the 1950's and early part of the 1960's, use of draft animal became totally obsolete by the mid-sixties. The number of farm households keeping beef cattle further declined from 2,031,000 in 1960 to 1,435,000 in 1965 and 902,000 in 1970. The total number of beef cattle also declined, but at a much slower rate, from 2,636,000 head in 1955 to 2,340,000 in 1960, 1,886,000 in 1965 and 1,789,000 in 1970. From 1965 on, Japanese farmers began to raise beef cattle for beef production per se, instead of for draft purposes. In 1981, there were 353,000 beef cattle farmers with 2,281,000 head, averaging 6.5 head per farm.

As the economy grew, the consumption of milk and dairy products increased almost proportionally, at the annual rate of approximately 10.9 percent for the 1960-65 period, 6.0 percent for the 1965-70 period, and about 3 percent for the 1970-80 period. In accordance with the growth in the consumption of milk and dairy products, the domestic production of milk increased from 3,271,000 mt. for 1965 to 4,789,000 mt. in 1970 and 6,498,000 mt. in 1980. The increases in domestic milk production were heavily dependent upon increased feed grain and soybean imports. After the mid-sixties, farmers began to feed some of the male dairy calves to the age of 15-18 months, instead of slaughtering them for sausage stuffing right after birth. In 1965, dairy cattle accounted for 24.1 percent of the 209,000 mt. of cattle the slaughter that year (measured in carcass weight).

The slaughter of dairy steers was first reported in 1967 the official statistics. In that year the slaughter of dairy steers amounted to only

6,500 mt. or 4 percent of the cattle the slaughter that year. In 1970, dairy cattle accounted for 44.0 percent of the total 259,000 mt. cattle slaughter. Dairy steers accounted for 14 percent of the cattle slaughter in that year. In 1973, just over half of all the cattle slaughter came from dairy cattle, and in 1975 dairy cattle accounted for 62.6 percent of the 349,000 mt. of cattle slaughtered. Of the cattle slaughtered in 1975, 107,000 mt. were dairy steers. By 1977, dairy steers had become as important as dairy cows in the cattle slaughter (carcass weight). In 1981, both dairy cows and steers combined accounted for 71.3 percent of the cattle slaughter. In that year more than 90 percent of dairy male calves were estimated to be fed to steers. In summary, of the total beef supply in Japan during the past few years, a little over 7/10 came from domestic production. One third of the domestic production came from indigenous Wagyu and the remaining 2/3 came from dairy steers and cows equally. The average size of a feeding operation for male dairy calves has expanded. In 1981, the average number of dairy steers was 20.3 head per farm (tables 17-19 and figure 3).

The three major components in the cost of production for a feeding operation are the feeder-steers, the feed and labor. As compared to the U.S., the cost of feed and labor (measured in yen per kg of liveweight in 1980), for Wagyu steers in Japan is 4.3 and 19.0 times greater, respectively.

Feed accounts for 38.4 percent of the total cost while labor accounts for 11.4 percent of the total cost (table 20). As the price that Japanese farmers pay for the feed may be only twice as high as in the U.S., Japan's higher feed cost per kg can be explained by such factors as lower feeding performance and higher finishing weights of the animals (613.1 kg in 1980 and 630.3 kg in 1981). In 1971, approximately 90 hours of labor, supplied by the family, were needed to raise a calf to a steer, bringing about ¥2,000 of labor earning per day. Since 1971, there has been no decrease in the amount of labor required per head. In 1980, for example, 93 hours were spent, bringing about ¥10,000 of labor earnings per day (roughly \$40.00). The amount of labor used in Japan is appreciably greater than in the U.S. (about

4.0 hours per head in 1979 according to the Livestock and Meat Situation, U.S.D.A.). In hog feeding operations, however, there has been a big labor savings for the same period, i.e. 13.9 hours in 1971 to 3.9 hours in 1980.

In Wagyu cow-calf operations, feed and labor are the two major components of the cost of production. Feed accounts for about 45 percent of the total cost and labor accounts for about 30 percent of the total cost. The average price of a feeder steer was ¥360,000 (\$1,440) in 1980, about three items higher than in the U.S. in the same year. But this did not fully cover the cost of production, estimated at ¥415,000. This means that the cow-calf operation was not, on the average, profitable and did not bring a reasonable rate of earnings to family labors employed. This has been the case in recent years (table 21).

What the Beef Issues Are All About

According to Professor I. Takahashi of Kyushu University, the demand (measured in terms of supply) for beef increased by 180 percent from an annual average of 206,000 mt. in 1964–1966 to 578,000 mt. in 1978–1980, while the demand for pork rose by 300 percent from 390,000 mt. to 1,561,000 mt. and the demand for chicken rose 434 percent from 213,000 mt. to 1,138,000 mt. for the same 14 year period. The income elasticity of demand for beef, pork and chicken may have been around 1.0, 0.2 and 0.5, respectively, for the period under consideration, according to Professor Y. Kishimoto's estimation. Beef, which had the highest income elasticity, had the smallest increase in demand, even lower than pork with the lowest elasticity.

The deflated price of beef rose by 100 percent during the period from 1964–1966 to 1978–1980 while that of pork fell by 10 percent and chicken by as much as 40 percent. Since the price elasticity of demand for beef is thought to be very high (–3.0 to –4.0) and beef prices rose substantially, the demand for beef increased only moderately in spite of beef's high in-

come elasticity. The demand for chicken, which has a fairly high price elasticity (-1.5 to -2.5) increased the most rapidly. Or one might put it this way, the supply of beef, domestic production plus imports, did not catch up with the increase in the potential demand, so the (deflated) price of beef almost doubled, while the supply of pork and chicken, despite their limited amount of imports, was expanded sufficiently to bring their deflated prices down (tables 22 and 23).

Prices of Japanese domestically produced beef are appreciably higher than prices in the beef exporting countries of Australia, New Zealand and the U.S. There are no great differences in the prices of pork and chicken between Japan and the U.S. and some other exporting countries. The average wholesale price of dairy steers, Common grade,⁷ for the 1978-1980 period, was ¥1,124 per 1.0 kg of carcass weight, 2.41 times higher than the average (cost, insurance and freight) CIF price of imported beef, while that of pork was ¥580, slightly lower than the CIF price of imported pork and that of chicken was ¥262, 20 percent lower than imported chicken (table 24). The price of beef in Japan has been kept markedly higher than international prices by means of an import quota system to protect domestic beef farmers while the imports of pork and chicken have long been liberalized. There is a low import tariff of 10 percent for pork and 20 percent for chicken.

The wholesale carcass price of beef (average of dairy steers, Medium and dairy cows, Common) in Japan was more than three times higher than in the U.S. (U.S.D.A. Choice) and six times higher than in Australia (1st and 2nd Grade, exportable) in 1978. Since 1978, these price gaps have been narrowed somewhat as beef prices have risen at a faster rate in these two countries than in Japan (table 25). The retail price of beef in Tokyo was three times higher than in N.Y. and twice as high as in Paris or London in 1977. By 1980, it was only 2.3 times higher than in New York and 10-20 percent higher than in Paris or London in 1980. On the other hand, the price of pork in Japan is almost the same as in European Community (E.C.) countries in 1980, although the price of pork is about 40 percent higher

than in the U.S. The price of chicken is about 20–30 percent cheaper in Japan than in E.C. countries, although the price of chicken in Japan is still 30 percent higher than in U.S. (tables 26 through 29).

Japanese consumers may not have been happy about very high beef prices, relative to pork and also in comparison with prices in the U.S., Australia and other exporting countries. They may have consumed considerably more beef, if the price of beef in Japan had been closer to international beef prices. Japanese beef farmers, however, have not been making unreasonably high profits from beef production, despite the protected domestic beef prices. Many people tend to attribute the high production cost of beef to high land values in Japan but rent⁸ accounts for less than 3 percent of the calculated total cost of production of Wagyu steers. Japanese farmers started raising cattle mainly for meat only 20 years ago and the whole industry is still in the stage of infancy. This may be the major reason for the inefficient production and hence high cost of production of beef in Japan. Without being able to present a concrete view of how soon they will successfully get out of this infant stage, it will be more difficult to persuade Japanese consumers as well as overseas beef suppliers of the necessity of import restrictions for some time to come.

Organizations for Imports of Beef and Other Meat

Imports of beef from overseas have long been subject to Import Quota (I.Q.) in Japan while other meats, such as pork,⁹ chicken, mutton and lamb, have been freely imported under Automatic Approval (A.A.). The Ministry of International Trade and Industry (MITI), with consultation with the Ministry of Agriculture, Forestry and Fisheries (MAFF), decides the amount of the import quota of beef on a semi-annual basis by deducting forecasted domestic production¹⁰ from forecasted total demand for the next six months.

The quota is comprised of two categories: a general quota (85 to 90 percent) and a special quota (explained later). Ninety percent of the general

quota is allocated to the Livestock Industry Promotion Corporation (LIPC), a quasi-government agency. The LIPC buys beef from trading companies within the allocated quota through bidding and sells this beef either through public auctions in wholesale markets or through open tenders by wholesalers and meat processors or directly to about 2,300 retail stores, designated by the LIPC, in major cities. In releasing imported beef in the domestic markets, the LIPC adjusts the amount for sale so that the wholesale prices of domestic beef is kept within a certain price zone discussed below.

The government sets the upper and lower price limits for pork and beef¹¹ prior to the start of each fiscal year (April), in accordance with the Livestock Product Price Stabilization Act of 1961, revised in April 1975. The government decides the import quota for beef semi-annually and, in case of pork, imposes variable tariffs. Under normal conditions a 10 percent tariff is imposed for pork, but when CIF prices are lower than 90 percent level of the stabilization center lines, variable tariffs are imposed. The LIPC buys pork in wholesale markets when they anticipate the price falling below the lower price limit and they release stock when they anticipate that the price will rise beyond the upper price limit. The LIPC has not handled domestic beef but has tried to keep domestic beef prices within the price zones¹² by regulating buying and selling operations of imported beef.

The center price for pork and beef, is determined basically according to the formula below:

$$P_i = P_0 \times I$$

Where: P_i is the center price for the i th year

P_0 is the average price for the base period (past 7 years)

I is the production cost index of the i th year against the base period

The ceiling and floor prices are determined simply by adding or deducting one standard deviation of the price to or from the center price. In any event, changes in the market situation and ups and downs in the CIF prices of imported beef do not affect the level of stabilization prices.

Beef is imported primarily in two forms, frozen and chilled. In addition,

a small number of live animals, about 14,000 head in 1981, are imported. Although it varies from year to year, the ratio between frozen and chilled averages 7 to 3 in favor of frozen (83,400 mt. of frozen beef vs. 38,500 mt. of chilled beef in the 1980 calendar year, wholesale cut meat weight). In actual transactions, the Ministry of Agriculture directs the LIPC on how much frozen and chilled beef should be imported for the coming months but in deciding the import quota on a semi-annual basis any clear cut proportion between the two forms is not determined. However, the quota for high quality beef (H.Q.B: U.S.D.A. Choice or better and equivalents, some grass-fed beef are also included) which was agreed upon at the 1978 Multi-Trade-Negotiation (MTN) between Japan and U.S., Canada and Australia¹³ is pre-determined in deciding the semi-annual overall import quota. Most of the beef from the U.S. is imported in the frozen form. Chilled beef, which is imported mostly from Australia, is imported by full-set¹⁴ and most of the frozen beef is imported by part or primal cuts.

There are special quotas such as a quota for hotel use (3,000 mt., virtually all were H.Q.B., in 1980), one for Okinawa (5,850 mt.) one for school lunches (2,250 mt.) and one for boiled beef (4,700 mt.), besides the general quota. As described earlier, the U.S. has been taking an increasing share of the beef imports to Japan, accounting for 23.1 percent of the total beef imports in 1981 as compared to 10.8 percent in 1976 while Australia's share decreased from 83.2 percent in 1976 to 69.3 percent in 1981, although the absolute amount of Australia's exports to Japan increased only slightly (table 30). The average CIF price of beef from the U.S. was ¥781 per kg in 1977, about twice as high as that from Australia but the gap has been somewhat narrowed since then. In 1981 it was ¥937, about 45 percent higher than that from Australia. New Zealand, which accounts for about 4-5 percent of the total beef imports, comes about half way between the U.S. and Australia, pricewise (table 31).

It may be worthy to note that imported beef in general does not seem to be a very close substitute to domestic beef. According to Prof. I. Takahashi,

the correlation between wholesale-market auction prices of imported chuck and blade (frozen) and wholesale prices of (domestic) dairy steers (Common grade) is only 0.49 and that between dealers' prices of imported chilled beef, full set, and wholesale prices of dairy steers (Medium grade) is 0.63 (table 32). This may be due partly to the difference in form, frozen and chilled, and mainly to the alleged differences in quality. This may imply that it is not very easy for the LIPC to manipulate domestic beef prices by regulating the sales of imported beef to the domestic market. However, as Japanese consumers become more accustomed to imported beef and meat wholesalers and retailers improve handling techniques, especially the handling of frozen beef, beef imports will affect the domestic beef market more strongly.

Possible Impacts of Beef Import Liberalization on Different Interest Groups

There are very wide gaps between the costs of production of beef in Japan for both Wagyu and dairy cattle, and world beef prices. The Japanese have sufficient amounts of foreign currencies to spend, but the world beef market has been rather tight since 1979 and it may take some years to build up a greater supply capability. Considering these facts, it is not difficult to imagine that if the Japanese government eliminated the import quota all at one time it might cause devastating effects upon Japan's beef production and to a lesser degree on other livestock sectors, such as dairy, pork and chicken production and might throw world beef markets into a somewhat chaotic condition, at least, for a short period. A gradual removal of restrictions on beef imports would give both the Japanese and overseas markets time to adjust. One option available would be to eliminate the import quota and raise tariffs on beef imports instead. This option is not very attractive since it would not be easy to raise the import tariff on beef by a meaningful magnitude, say from the present 25 percent to 75 percent. A more realistic way to approach this problem would be to gradually liberalize the import control

by increasing the import quota by a greater amount each year.

There is little doubt that Japanese consumers will benefit from lower beef prices. If Japanese consumers are allowed greater options to buy the quality of beef they desire from the world markets as compared to the present government allotment system, their satisfaction will be greater, although whether they will buy more from the U.S., New Zealand or Australia remains to be seen. Overseas beef producers as a whole will benefit from an appreciably expanded export market.

The domestic demand for pork and chicken might be adversely affected by an expanded import quota and final trade liberalization several years hence. As the prices of pork and chicken and their costs of production in Japan are already close to the international prices, it is not perceivable that their prices will decline appreciably in the long run or that Japanese producers of pork or chicken will suffer from a drastic fall in their prices. Instead, they will face a relatively smaller market for their products than otherwise, although it is not easy to ascertain to what extent cheaper beef will replace the demand for pork and chicken. As the price of high quality beef will remain a bit higher than those of pork or chicken, it is not likely that the demand for pork or chicken will be curtailed in absolute amount.

Decontrol of beef imports, even if the process is gradual, will have some adverse effects on dairy operations which supply male calves to be fed and cull cows for slaughter. If the deflated price of dairy steers falls by 30 percent, the price of male calves, a week old after birth, may decline from about ¥70,000 to ¥10-20,000 per head. This would mean about a ¥600,000 - ¥800,000 reduction in total revenue for those dairy farms which are earning about ¥18,000,000 of gross revenue and may be netting ¥6,000,000 of income per year from an operation with 30 head of milking cows. If the price of cull cows falls to the level of imported Australian beef or slightly below that, it may further reduce their income by ¥300,000 - ¥400,000 per year. The government will have to raise the guaranteed price for milk to some extent to compensate for the possible loss indirectly incurred from the beef

import liberalization.

The government foresees about a 35 percent increase in domestic beef production over the next ten year period, to maintain the self-sufficiency rate near the present level of 72 percent. Technologically, there is much room left for the production cost of beef to be reduced but the possibility that the domestic production will be expanded that much does not seem to be very likely under the assumption of gradual trade liberalization, partly because of the limited natural resources, especially land for grazing and pastures and partly because of the weaker price incentives for cattle raising. It may be safer to anticipate that the domestic production of beef will remain about the same, and that most of the increase in beef consumption will be met by imports from overseas.

According to the government's outlook, the demand for beef is projected to increase by about 230,000 mt., (carcass weight) or 35 percent from 647,000 mt. in 1981 to 880,000 mt. in 1990. As the prices of beef would be much cheaper if imports of beef were liberalized, the increase in the demand would be much greater than under the assumption of continued import regulation. If beef prices fall, a 400,000 mt. increase would be a conservative estimate. The total demand of meat over the next 10 years will increase by more than one million mt. from the present 3.8 million mt., according to the government's long-term projections. The beef import requirement is likely to increase by about 0.4–0.5 million mt. since the domestic production of beef will not increase appreciably. Australia and the U.S. will continue to be the two major sources of Japanese beef imports but how much of the possible increase the U.S. will share remains to be seen, depending upon such factors as type of beef Japanese consumers will prefer, grain fed or grass fed, well marbled or lean meat, and export capability of both countries.

If the increase in the demand for beef would remain within the limit of one half million mt., then the demand for pork and chicken should increase at least by one half million mt. over the 10 year period from 1981. Import

requirements for feed grains such as corn, sorghum and soybeans, all of which are imported mainly from the U.S., will increase accordingly, but not as rapidly as they would under continued import restrictions on beef. The demand for feed concentrates from the domestic beef production sector would diminish somewhat as the total production would not increase appreciably and feeding performance will have to be greatly enhanced to meet the competition from overseas.

Farmers' groups have been expressing their grave concern over the alleged "devastating effects" of beef import decontrol on not only beef production alone but also other sectors of livestock production. The government has been taking a very firm attitude against the demand for lifting up the import restrictions on beef and will continue to do so for some time to come. Some people proposed the introduction of a deficiency payment to domestic producers to alleviate the possible damages on beef prices, similar to those used in E.C., with variable import levies on beef as a major source of payment. Officials in the M.A.F.F., however, are afraid that it may be virtually impossible to implement such schemes for the following reasons: 1) distribution channels for domestic beef are very complex; 2) Japanese domestic beef varies very widely in quality; and 3) beef is imported in a wide variety of cuts.

Most of these discussions of import liberalization are based upon rather qualitative analysis and sometimes embrace emotional tones. Professor Y. Yuize of Chiba University, recently discovered the probable effects of beef (and oranges) trade liberalization on prices and production of different breeds of beef cattle (oranges), imports of beef and so forth by means of his "meat demand-supply model" with 46 equations (in case of oranges, 54 equations). His approach is gradual in nature, as suggested earlier, i.e. to increase the import quota year after year toward the final goal of liberalization within six and nine years. Some of his findings are: (deflated) wholesale prices of domestic beef will fall by about 20 percent, domestic production of beef will decrease slightly by about 5 percent, while the import of beef (origin of imports not specified) will increase by 150 percent or so from 190,000 mt. in

carcass weight in 1981 to 470–500,000 mt. by the end of the 1980's, and domestic production of both pork and chicken will also increase at a lesser rate (tables 33–34).

One of the assumptions Professor Yuize used in his simulation model which may be subject to criticism, is that imported beef, on the average, is equivalent to domestic dairy cull cows in quality and hence the prices of dairy culls will not fall below average CIF prices (plus 25 percent of tariff) of imported beef after liberalization. One could argue that even Australian grass fed beef which are exported to Japan are superior to ordinary dairy culls and probably the average price of dairy steers will come close to the average CIF price of imported beef. If so, the fall in the wholesale price of domestic beef will be much greater than Professor Yuize has ascertained, about 20 percent, and as a result there will be serious cutbacks in domestic production of beef and much larger increases in beef imports than Yuize indicated. However, the government could charge extra levies on imported beef in addition to the present 25 percent tariff, as in the case of sugar, or beef in E.C. to prevent the domestic price decline.

Other Considerations Pertinent to Japan's Beef Consumption, Production and Imports

So far, there have been no studies which estimated, on a statistically reliable bases, marketing margins in Japan for domestically produced beef, even for a selected short period of time. Based on some small sample investigations, Professor H. Miyazaki, Nippon University, has concluded that price spreads between consumers and producers of beef were not as exorbitantly high as some newspaper articles have claimed and attributed as the main cause of high beef prices in Japan. He also indicated that the percentage spread between Japanese producers and consumers might be somewhat smaller than in the U.S. When the ratio of retail cuts over liveweight of 49 percent is applied, then the entire marketing margins over the retail value would be approximately 30 percent for the period 1979-1981 and 35 percent for 1969-1971. If we add retail values of hide, head and entrails to the retail prices of beef then we may be able to estimate that beef farmers in Japan have been receiving, on the average, 60 to 65 percent of the final retail values of their products for the past 10 years or so. One point which should be mentioned is that the retail meat price data are not based on the averages of all cuts but rather, they are based on a very few specified cuts and so they should not be used in direct comparison with wholesale carcass prices or live animal prices without some reservations (table 35).

The Japanese beef market has been placing a great deal of emphasis on marbling in meat. They classify beef carcasses into two basic categories, Wagyu and dairy cattle and subdivide them into six classes, Tokussen (Supreme), Gokujo (Superior), Jo (Excellent—about 20-25 percent of all Wagyu and 1 percent of dairy steers), Chu (Medium—about 45 percent and 52 percent), Nami (Common—about 20 percent and 43 percent) and Togai (Utility). These classes are based mainly on the degree of marbling. Japan has no Yield Grade as in the U.S.

In pricing beef carcasses, slight differences in marbling cause large differences in prices, much greater than in the U.S. where U.S.D.A. Prime beef is only moderately more expensive than Choice beef (Prime: \$84.00/cwt.; Choice: \$81.70/cwt. in 1975). Price differentials between higher grades and lower grades seems to have widened recently. "Excellent" Wagyu beef averaged ¥746 per kg, 24 percent higher than ¥600 per kg for "Common" grade in 1970. In 1975, on the average, Excellent grade beef cost ¥1,642 per kg, 32 percent higher than the Common grade. The difference in terms of wholesale price between Wagyu and dairy steers has become wider over the past two decades (tables 36-37).

According to Dr. S. Kai, of Kushu University, it is more profitable to feed Wagyu steers longer, even past the age of 24 months when the gains in liveweight tend to be much slower, because of higher unit prices due to greater carcass weight and better marbling (figure 4). It is estimated that the average age of Wagyu steers marketed was 24.8 months in 1974 and in 1981 it was 28.5 months. During this same period the average liveweight for slaughter increased from 560.1 kg to 630.0 kg (for more and somewhat different data, see table 38). According to Dr. Kai and some technical experts in the Bureau of Livestock, the Ministry of Agriculture, most of the weight gained after the animal reached 550-570 kg is of fat which is trimmed off either at the meat-wholesaler's or retailer's shop. There is little doubt that these practices result in higher retail prices for beef in Japan. The recent tendency toward a longer period of feeding for greater marbling may reflect to some extent Japanese consumers' special preferences for beef. Some people believe that Japanese consumers will prefer leaner beef in the long run as they eat more beef and become better informed about quality judgment and nutritional value of beef.

For the past several years, domestic beef production has steadily increased in Japan from 353,000 mt. (in carcass weight) in 1975 to 471,000 mt. in 1981 with the exception of a cut back in production in 1976. In the U.S. and Australia beef production declined from a peak of 12,166,000 mt.

in 1976 to 9,967,000 mt. in 1981 for the U.S. and from a peak of 2,149,000 mt. in 1977 to 1,434,000 mt. in 1981 for Australia. The prices of domestic beef have been fairly stable in Japan, gradually increasing at an average annual rate of 4.7 percent (wholesale carcass prices) while those in exporting countries, especially in Australia, fluctuated very drastically during the same period. The highest price occurred in August 1980 when the price of beef was \$1.64 per kg, 6.7 times as high as the bottom price of 24.4¢/kg in January 1975 at Sydney wholesale market (tables 39–40 and figure 5).

As stated earlier, the government has been trying to stabilize domestic beef prices within certain price zones through the purchase and sale of imported beef by the LIPC, a semi-government agency. Stabilization prices are set by the government at the beginning of each fiscal year, mainly reflecting changes in the cost of production over the base years. They are not subject to changes in demand and supply situations of domestic beef markets or changes in world beef prices (table 41). Even when import prices of beef from overseas fall substantially, the government may limit the amount of beef imported or build up the stock of frozen beef on hand of the LIPC so that domestic beef prices are kept above the pre-set floor prices. In the wake of great fluctuations in world beef prices, the government could appeal to such schemes as variable tariffs on imported beef and/or deficiency payments to protect domestic beef producers from a wide variation in prices, even if the beef trade were liberalized, as in the case of sugar, for example.

¹ The term calorie is used throughout this paper although kilocalorie is the correct scientific term.

² One metric ton is equivalent to 1.1 U.S. tons.

³ Soybean meal (2.7 million mt. in 1981) from imported soybean is a very important material for feed concentrates.

⁴ Wheat bran (0.8 million mt. in 1981) from imported wheat is also an important feedstuff.

⁵ One hectare is equivalent to 2.47 acres.

⁶ With non-farm income exceeding farm income.

⁷ See page 20 for an explanation of the Japanese grading system.

⁸ Rent overseas embodied in imported feed prices not included.

⁹ The import restriction on pork was removed in 1971.

¹⁰ Plus carryover from the previous year.

¹¹ Since 1975.

¹² There are two price zones set by the Japanese government, one for Wagyu steers and another for other breeds of steer.

¹³ 16,800 mt. for 1978 to be expanded to 30,800 mt. by 1983.

¹⁴ Full-set denotes the way chilled beef is purchased from Australia, e.g. primal cuts must be purchased in proportion to their amounts on the whole carcass.

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DAILY PER CAPITA SUPPLY OF CALORIES BY MAJOR FOOD ITEMS
1951 - 1980 & 1990 (Projected)

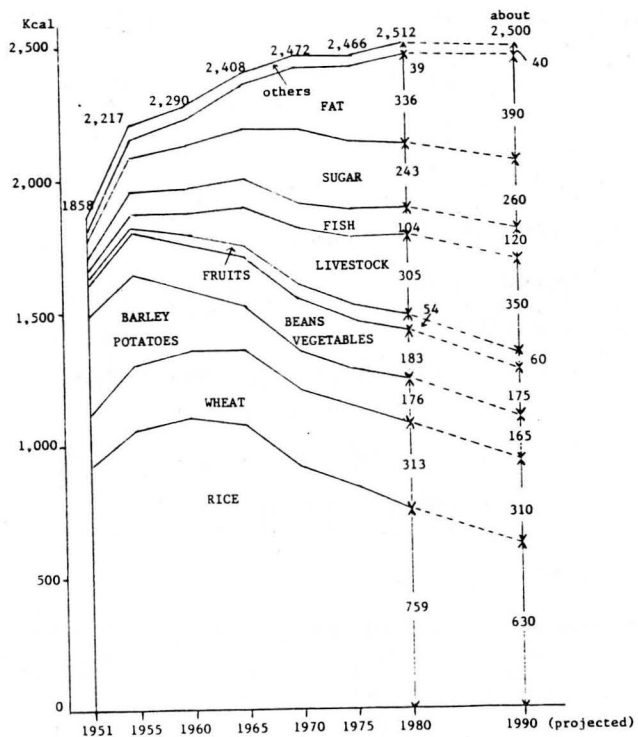


Figure 1

Source: Reference No. (1), P 30

PER CAPITA NATIONAL INCOME AND DAILY PER CAPITA FOOD CALORIE INTAKE
BY MAJOR COUNTRIES

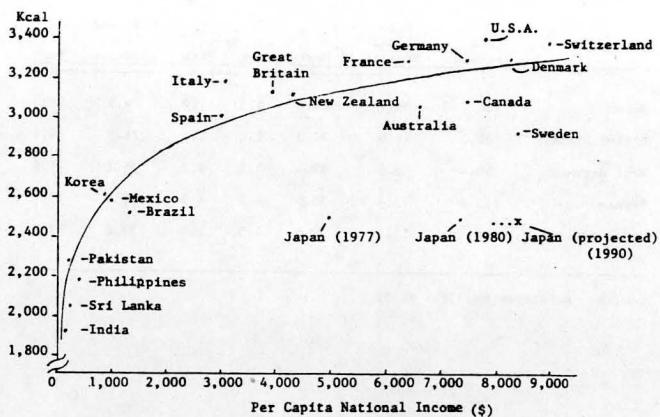


Figure 2

Source: Reference No. (1), P 31

Table 1. Supply of net foods¹ per capita per day

	Year	Grains	Potatoes	Beans	Vegetables	Meat	Fish
France	1978	216	232	12	326	295	48
Great Britain	1978	205	274	10	202	206	20
United States	1978	182	122	19	260	320	21
Japan	1980	312	79	28	308	61	95

¹Net food is the food available for human consumption after processing.

Source: Reference No. (2), p. 31

Table 2. International comparisons of protein intake (per capita per day)

	Total Protein	From Animal Protein	grams			Milk and Dairy Protein	Year
			Meat	Eggs	Fish		
Japan	80.7	39.1	11.4	5.1	17.7	4.9	1980
United States	106.3	74.6	42.3	5.0	2.6	24.7	1978
West Germany	98.4	66.9	32.2	5.2	2.8	26.7	1978
France	111.8	75.6	38.5	4.3	4.6	28.2	1978
Great Britain	88.7	55.2	26.0	4.5	2.0	22.6	1978

Source: Reference No. (2), p. 31

Table 3. International comparisons of meat consumption by beef, pork and poultry, 1980 - per capita per year

	Beef		Pork		Poultry		Total	
	(kg)	(%)	(kg)	(%)	(kg)	(%)	(kg)	(%)
United States	48.2	43	34.4	31	28.9	26	112.1	100
Australia	48.6	45	15.1	14	21.5	20	107.1	100
E.C.	26.6	34	34.3	44	13.7	17	78.7	100
U.S.S.R.	26.3	45	18.8	32	9.0	15	58.2	100
Taiwan	1.5	3	28.2	55	21.4	42	51.3	100
Japan	5.1	16	14.3	44	10.6	32	32.8	100

Source: Reference No. (2), p. 33

Table 4. Output of major agricultural products and total value of agricultural production for Japan: 1955 to 1980 (1,000 metric tons and billion yen)

Item	1955	1960	1965	1970	1975	1980
Rice	12,385	12,858	12,409	12,689	13,165	9,751 ³
All other cereal grains (wheat, barley, oats, etc.)	4,445	3,994	2,659	1,108	490	968 ²
Soybeans	566	418	230	126	126	174
Vegetables						
Cabbage	443	686	1,157	1,437	1,423	1,545
Cucumber	401	462	773	965	1,023	1,018
Fruits						
Mandarin Oranges	461	894	1,331	2,552	3,665	2,892
Apples	390	876	1,132	1,021	898	960
Meat						
Beef	138	142	214	280	354	431
Pork	82	147	407	734	1,039	1,475
Chicken	N.A.	N.A.	106	380	610	1,113
Dairy Products						
Milk	1,000	1,887	3,221	4,761	4,963	6,504
Butter	7	12	24	43	42	65
Total value of all agricultural output (in 1980 Yen) ¹	7,354	7,881	9,657	11,026	12,416	10,196 ³

¹Adjusted for inflation by the Consumer Price Index.

²Increase due to success of paddy diversification program.

³Poor rice harvest due to adverse weather.

Source: References No. (5), table 2

Table 5. Imports of major agricultural products to Japan: 1955 to 1980 (1,000 metric tons and million U.S. dollars)

Item	1955	1960	1965	1970	1975	1980
Wheat	2,827	2,678	3,645	4,685	5,654	5,683
Soybeans	808	1,128	1,847	3,244	3,334	4,401
Feed grain (corn and grain sorghum)	99	1,306	4,864	9,804	11,264	17,048
Sugar	1,070	1,264	1,664	2,580	2,463	2,260
Meat and Meat products	2	38	83	204	365	430
Raw Wool	93	191	249	322	241	188
Total value of all agricultural imports ¹	875.9	883.5	1,886.0	3,156.4	9,226.5	14,212.7

¹Not adjusted for inflation.

Source: Reference No. (5), table 3

Table 6. Changes in the level of Japanese food self-sufficiency: 1955 to 1990

Item	1955	1960	1965	1970	1975	1979	Policy Target for 1990
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
All food (measured in final calories)	93	90	81	76	74	74	71
All food (measured in original calories)	84	76	60	50	46	44 ¹	N/A
All grains (both food and feedstuffs)	N/A	85	61	48	43	35	30
Individual products							
Rice	109 ²	102	95	106	110	107	100
Wheat	41	39	28	9	4	9	19
Soybeans	41	28	11	4	4	4	8
Milk and dairy products	90	89	86	89	82	87	88
Beef	99	96	95	90	81	68	N/A
All meat	100	93	90	89	77	80	83
Sugar	11	18	30	23	16	24	31
Animal feedstuffs	N/A	63	55	38	34	28	35

¹This is the estimate for 1977. No estimate is available for 1979.

²There was an exceptionally good harvest of rice in 1955. During the mid 1950's the ratio for rice was usually in the 90% to 95% range.

Sources: Reference No. (5), table 9

Table 7. Changes in supply of feedstuffs, 1965-1980 and 1990

	1965	1970	1975	1979	1980	Projected 1990
	1,000 metric tons					
Total Supply	13,359	18,394	19,867	25,529	25,107	32,730
Domestic Supply						
Roughage	4,519	4,656	4,793	5,175	5,118	9,410
Concentrates	2,771	2,297	2,060	1,888	1,965	1,960
Imports	6,068	11,442	13,014	13,466	18,024	21,360
Total Feed Concentrates	8,839	13,739	15,074	20,354	19,989	23,320
percent						
Net Self Sufficiency of Feedstuffs	54.6	37.8	34.5	27.7	28.2	34.7

Source: Reference No. (1), p. 47

Table 8. Production and imports of meat¹ and eggs, 1965 to 1981

	Beef	Pork	Horse- meat	Mutton & Lamb	Chicken	Total	Eggs
1965							
Production	216,261	407,238	19,896	2,018	204,340	849,753	-
Exports	73	16	-	-	2	21	-
Imports	15,449	100	18,629	107,716	6,135	148,029	-
Total	231,637	407,322	38,525	109,734	210,473	994,691	-
1970							
Production	282,072	778,636	10,722	936	496,451	1,568,817	1,765,529
Exports	20	24	0	4	755	807	370
Imports	37,566	23,826	54,789	191,926	11,903	320,010	28,703
Total	319,618	802,438	65,511	192,858	507,599	1,888,024	1,793,862
1971							
Production	301,545	848,756	10,048	681	564,241	1,725,271	1,800,392
Exports	23	17	8	0	217	265	234
Imports	71,287	40,646	67,209	298,190	30,127	507,459	32,418
Total	372,809	889,385	77,249	298,871	594,151	2,232,465	1,832,576
1975							
Production	335,448	1,023,496	5,577	237	758,923	2,123,681	1,806,632
Exports	9	3	-	-	3,204	3,216	14
Imports	91,160	208,379	77,712	291,066	27,943	696,260	32,015
Total	426,599	1,231,872	83,289	291,303	783,662	2,816,725	1,838,633
1976							
Production	309,028	1,095,747	6,211	147	839,623	2,250,756	1,861,416
Exports	14	1	-	-	2,446	2,461	147
Imports	133,611	186,723	81,671	278,208	39,642	719,855	28,322
Total	442,625	1,282,469	87,882	278,355	876,819	2,968,150	1,889,591
1980							
Production	431,324	1,429,564	3,707	120	1,121,861	2,986,576	1,992,112
Exports	15	0	0	0	3,933	3,948	9
Imports	171,735	206,708	85,995	157,886	79,895	702,219	24,155
Total	603,044	1,636,272	89,702	158,006	1,197,823	3,684,847	2,016,258
1981							
Production	475,772	1,408,931	4,034	116	1,139,797	3,028,650	2,017,127
Exports	24	0	0	0	2,808	2,832	13
Imports	165,734	231,790	74,917	177,092	103,617	753,150	24,624
Total	641,482	1,640,721	78,951	177,208	1,240,606	3,778,968	2,041,738

¹ Carcass weight.

Source: Reference No. (3), pp. 26-29 and Reference No. (6), p. 10

Table 9. Production of feed concentrates for different animals, 1965 to 1981

	Poultry		Hog	Dairy Cattle	Beef Cattle	Others	Total
	Broiler	Total					
1,000 metric tons							
1965	455	5,312	1,774	804	77	183	8,150
1970	1,506	8,450	3,932	1,741	876	77	15,076
1975	2,315	8,838	4,538	1,833	1,544	65	16,818
1976	2,579	9,383	5,197	1,960	2,004	74	18,618
1977	2,925	9,930	5,597	2,115	2,154	81	19,878
1978	3,107	10,245	6,262	2,268	2,197	95	21,067
1979	3,302	10,532	6,911	2,350	2,536	109	22,438
1980	3,345	10,692	6,399	2,323	2,724	116	22,252
1981	3,358	10,837	6,257	2,295	2,653	117	22,159

Source: Reference No. (3), pp. 126-127

Table 10. Changes in imports of animal feedstuffs, by countries of origin, 1970 to 1981

	United States	Thailand	Argentina	Canada	Australia	Total
	1,000 metric tons					
Corn						
1970	2,745	661	426	-	5	4,020
1975	4,766	859	-	-	11	5,813
1976	5,614	771	-	-	5	6,517
1979	8,302	313	13	-	30	8,659
1980	10,103	2	-	-	-	10,117
1981	9,831	185	0.3	-	23	10,157
Sorghum						
1970	2,428	14	1,337	-	264	4,090
1975	1,950	19	642	-	660	3,409
1976	2,412	2	1,150	-	803	4,384
1979	2,339	-	2,138	-	565	5,112
1980	3,257	-	-	-	211	3,478
1981	2,855	-	24	-	395	3,274
Barley						
1970	-	-	-	609	168	866
1975	-	-	-	1,000	307	1,307
1976	103	-	-	833	457	1,393
1979	46	-	-	822	554	1,422
1980	145	-	-	725	524	1,394
1981	341	-	-	939	223	1,503

Source: Reference No. (3), pp. 130-131

Table 11. Japan's beef imports¹, by countries of origin, 1970 to 1982

Year	Total ²	United States	Australia	New Zealand	Values
	(metric tons)		percent		(million yen)
1970	26,296	445	22,982	2,649	9,168
1971	49,901	429	45,335	3,976	19,742
1972	61,298	747	55,443	4,634	27,287
1973	136,182	14,663	111,400	9,009	92,808
1974	27,664	2,143	22,507	2,409	18,986
1975	63,812	6,943	51,541	4,402	34,000
1976	93,528	10,127	77,822	4,904	46,080
1977	92,550	8,611	44,835	4,665	40,690
1978	102,423	17,049	76,375	6,620	49,473
1979	132,189	23,801	103,010	2,363	101,489
1980	120,219	24,460	89,780	4,628	93,914
1981	116,012	26,816	80,448	5,462	84,008
1982 (Apr. 82 - Feb. 83)	112,634	28,723	79,991	3,464	90,161

¹Chilled and frozen

²Wholesale cut meat weight

Source: Reference No. (3), p. 30

Table 12. Japan's imports of beef¹, by grain-fed versus grass-fed, 1976 to 1981

	1976		1977		1978		1979		1980		1981	
	(tons)	(%)	(tons)	(%)	(tons)	(%)	(tons)	(%)	(tons)	(%)	(tons)	(%)
Total	94,234	100	84,545	100	100,863	100	131,792	100	123,953	100	123,646	100
Grain-fed	12,230	13	7,614	9	13,326	13	25,491	19	25,253	20	29,502	24
United States	11,863		7,330		13,026		24,672		23,674		27,543	
Canada	367		284		299		819		1,579		1,959	
Grass-fed	82,004	87	76,931	91	87,538	87	106,301	81	98,700	80	94,144	76
Australia	77,026		72,055		78,181		101,268		93,614		87,071	
New Zealand	4,636		3,847		7,800		3,510		3,991		6,148	

¹Wholesale cut meat weight; metric tons

Source: Reference No. (2), p. 17

Table 13. International comparisons of average size (has.) of farms, and Land Price, 1960 to 1977

	Average Size				Average Land Price
	1960	1970	1975	1977	1975
	has.				(¥1,000/0.1ha)
United States	120.2	151.3	157.6	160.6	27
France	17.0	21.0	24.5	25.4	100
West Germany	9.4	11.7	13.8	14.4	231
Italy	6.8	7.7	7.7	-	59
Japan	1.1	1.1	1.15	1.15	2,653
Great Britain	32.0	56.8	64.3	65.6	-

Source: Reference No. (7), p. 194

Table 14. Number of farms raising livestock and number of animals, 1955 to 1982

	Dairy Cattle			Beef Cattle			Hogs			Chickens					
	Farms	Number of	Per	Farms	Number of	Per	Farms	Number of	Per	Chickens for Eggs		Broilers			
	(1,000)	(1,000)	Farm	(1,000)	(1,000)	Farm	(1,000)	(1,000)	Farm	Farms	Number of	Farms	Number of	Per	
										(1,000)	(1,000)	(1,000)	(1,000)	Farm	
1955	254	421	1.7	2,280	2,636	1.2	528	825	1.6	4,508	45,715	-	-	-	
1960	410	824	2.0	2,031	2,340	1.2	799	1,918	2.4	3,839	54,627	-	-	-	
1965	382	1,289	3.4	1,435	1,886	1.3	702	3,976	3.7	3,227	114,222	20.5	18,279	892	
1970	308	1,804	5.9	902	1,789	2.0	445	6,335	14.3	1,696	160,760	17.6	53,742	3,049	
1971	279	1,856	6.6	797	1,759	2.2	398	6,904	17.3	1,368	162,711	17.7	63,114	3,558	
1975	160	1,787	11.2	474	1,857	3.9	223	7,684	34.4	507	145,743	11.5	87,659	7,596	
1981	106	2,104	19.8	353	2,281	6.5	127	10,065	79.4	187	155,032	8.3	131,252	15,800	
1982	99	2,103	21.3	340	2,382	7.0	112	10,040	89.8	160	159,340	7.7	130,585	16,900	

Source: Reference No. (3), pp. 64-65

Table 15. Number of farms raising livestock and head of animals, by size of farms, 1965 to 1981

	A. Number of Farms										B. Head of Cattle									
	Scale of Farms (head per farm)					Scale of Farms (head per farm)					Calves					Scale of Farms (head per farm)				
	Total	1-4	5-9	10-19	20-29	30-	Total	1-4	5-9	10-19	20-29	30-	Calves Only	Total	1-4	5-9	10-19	20-29	30-	
1965	382	299 (100.0)	253 (84.6)	37 (12.5)	7 (2.3)	1 (0.2)	1,281	101	1,180 (100.0)	695 (58.9)	184 (26.8)	112 (9.5)	26 (2.2)	32 (2.7)	1,707 (100.0)	464 (27.2)	513 (30.0)	485 (28.4)	154 (9.0)	91 (5.4)
1970	308	242 (100.0)	149 (61.4)	58 (24.1)	28 (11.7)	2 (0.7)	1,804	97	1,764 (100.0)	412 (23.4)	489 (27.7)	555 (31.5)	207 (11.7)	101 (5.7)	1,743 (100.0)	179 (10.2)	297 (17.1)	556 (31.9)	371 (21.3)	340 (19.5)
1971	279	221 (100.0)	127 (57.4)	55 (24.8)	31 (14.0)	3 (0.8)	1,856	93	1,764 (100.0)	412 (23.4)	489 (27.7)	555 (31.5)	207 (11.7)	101 (5.7)	2,104 (100.0)	87 (4.2)	196 (9.5)	432 (20.9)	445 (21.5)	905 (43.8)
1975	160	139 (100.0)	57 (40.8)	34 (24.7)	31 (22.1)	6 (4.2)	1,787	41	1,743 (100.0)	179 (10.2)	297 (17.1)	556 (31.9)	371 (21.3)	340 (19.5)	2,104 (100.0)	87 (4.2)	196 (9.5)	432 (20.9)	445 (21.5)	905 (43.8)
1980	106	96 (100.0)	23 (24.4)	21 (21.9)	23 (23.3)	15 (15.6)	2,103	35	2,067 (100.0)	73 (3.5)	171 (8.3)	419 (20.3)	447 (21.6)	958 (46.3)	2,103 (100.0)	73 (3.5)	171 (8.3)	419 (20.3)	447 (21.6)	958 (46.3)
1981	99	90 (100.0)	20 (21.6)	19 (20.5)	23 (25.2)	16 (17.6)	2,103	35	2,067 (100.0)	73 (3.5)	171 (8.3)	419 (20.3)	447 (21.6)	958 (46.3)	2,103 (100.0)	73 (3.5)	171 (8.3)	419 (20.3)	447 (21.6)	958 (46.3)

Source: Reference No. (3), pp. 66-67

table 15 (cont'd)

	A. Number of Farms					B. Head of Cattle						
	Scale of Farms (head per farm)					Scale of Farms (head per farm)						
	1-4	5-9	10-19	20-29	30-	1-4	5-9	10-19	20-29	30-		
	Total					Total						
						1,000					(percent)	
1971	797 (100.0)	748 (92.7)	44 (5.5)	10 (1.2)	2 (0.3)	3 (0.3)	1,759 (100.0)	1,170 (66.5)	264 (15.0)	118 (6.7)	52 (3.0)	155 (88)
1975	474 (100.0)	401 (84.8)	44 (9.4)	15 (3.1)	6 (1.2)	7 (1.5)	1,857 (100.0)	725 (39.0)	295 (15.9)	199 (10.7)	136 (7.3)	503 (27.1)
1980	353 (100.0)	264 (74.8)	52 (14.7)	18 (5.2)	7 (1.9)	12 (3.5)	2,281 (100.0)	537 (23.5)	324 (14.2)	241 (10.6)	155 (6.8)	1,024 (44.9)
1981	340 (100.0)	248 (72.8)	54 (15.8)	19 (5.6)	7 (2.0)	13 (3.7)	2,382 (100.0)	514 (21.6)	357 (15.0)	263 (11.1)	159 (6.7)	1,090 (45.7)

Source: Reference No. (3), pp. 68-69

Table 16. Changes in percentage distribution of farms and animals, by size of farms, 1971 to 1982 [farms feeding dairy steers]

	1 - 49		50 or more	
	Head of Animals	Farms (percent)	Head of Animals	Farms (percent)
1971	85	99	15	1
1974	65	97	35	3
1975	61	96	39	4
1976	58	96	42	4
1977	51	95	49	5
1978	47	94	53	6
1979	43	93	57	7
1981	38	91	62	9
1982	35	90	65	10

Source: Reference No. (3), p. 72

CHANGES IN AVERAGE SIZE OF DAIRY AND BEEF FARMS BY DIFFERENT OPERATIONS
1965 to 1982

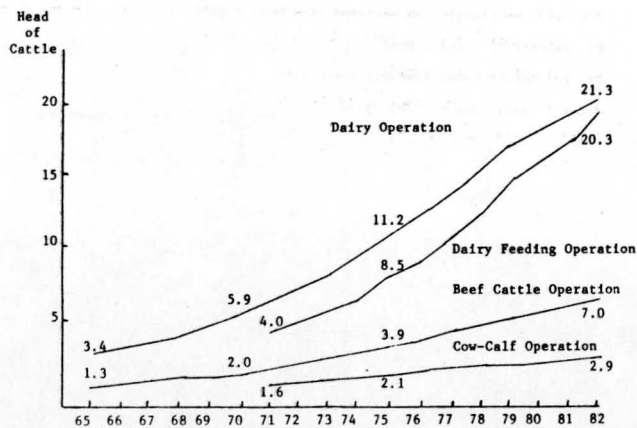


Figure 3

Source: Reference No. (3), P 70

Table 17. Changes in supply of beef,¹ by domestic production and imports

	1960	1965	1970	1975	1976	1977	1978	1979	1980
	1,000 metric tons								
Total Supply	103	145	221	291	315	348	389	409	418
Domestic Production	99	137	197	235	216	260	284	280	302
Imports	4	8	23	64	94	92	102	132	120

¹Wholesale cut meat weight: roughly 70% of carcass weight.

Source: Reference No. (8), p. 1

Table 18. Changes in demand-supply of beef, by different breed and imports, 1970-1980

	1970			1975			1979			1980		
	A	B	C	A	B	C	A	B	C	A	B	C
Domestic Beef Production	197	90	100	235	79	100	280	68	100	302	71	100
Beef Cattle	108	49	55	91	31	39	102	25	36	93	22	31
Dairy Cattle	84	38	43	141	47	60	177	43	63	209	50	69
Steers	24	11	12	68	23	29	89	22	32	106	25	35
Imported Beef	23	10		64	21		132	32		120	29	
Total	221	100		298	100		412	100		422	100	

A: 1,000 metric tons in wholesale cut meat weight .

B: Percent of total supply

C: Percent of total domestic production

Source: Reference No. (8), p. 1

Table 19. Number of cattle and calves slaughtered, and carcass production by type, age and sex classes, 1965 to 1981

	Total Cattle		Beef Cattle		Dairy Cattle						Calves	
	(number)	(wt)	(number)	(wt)	Total		Steers		Females		(number)	(wt)
					(number)	(wt)	(number)	(wt)	(number)	(wt)		
1965	915,893	208,634	687,569	158,403	228,324	50,231	-	-	228,324	50,231	252,517	7,627
	655,309	149,547	459,675	106,508	195,634	43,039	-	-	195,634	43,039	157,658	4,659
	602,273	153,794	373,035	99,992	229,238	53,802	36,337	6,541	192,901	47,261	150,396	4,914
	628,480	170,550	350,093	98,766	278,387	71,784	98,000	24,876	180,387	46,908	177,402	5,221
	830,253	226,733	454,416	128,081	375,837	98,652	153,677	41,459	222,160	57,193	323,324	9,656
1970	986,015	269,492	540,212	150,947	445,803	118,545	130,686	37,730	315,117	80,815	312,516	8,519
	1,029,829	289,748	544,490	158,881	485,339	130,867	107,122	31,116	378,217	99,751	224,162	6,424
	1,086,840	313,442	524,951	158,360	561,889	155,081	182,535	53,588	379,354	101,493	123,775	4,003
	805,901	244,194	318,167	101,354	487,734	142,839	188,681	58,334	299,053	84,505	35,632	1,575
	983,300	315,449	320,395	108,389	662,905	207,061	307,844	101,092	355,061	105,969	171,084	5,621
1975	1,143,089	348,821	406,121	130,361	736,968	218,460	341,475	107,327	395,493	111,132	127,121	3,843
	947,203	295,380	400,598	129,142	546,605	166,238	230,459	74,594	316,146	91,644	76,383	2,501
	1,106,578	357,838	349,863	148,187	666,715	209,651	318,358	106,255	348,357	103,396	91,334	2,337
	1,198,134	400,756	491,930	169,187	706,204	231,569	353,076	121,198	353,128	110,371	64,997	2,584
	1,185,934	399,601	432,519	150,012	753,415	249,589	361,390	125,325	392,025	124,264	42,713	2,064
1980	1,187,039	415,837	374,147	134,044	812,892	281,794	395,946	143,705	416,946	138,088	44,244	2,224
1981	1,321,912	468,348	368,916	134,426	952,996	333,921	466,686	172,201	486,310	161,721	43,999	2,386

Source: Reference No. (6), pp. 16-17 and pp. 20-21

Table 20. Comparisons of cost of production by major components - Japan and United States, 1980 (yen per kg of liveweight)

	Japan				U.S.A.		Ratio	
	Wagyu Steer		Dairy Steer		Steer		A/C	B/C
	(Yen) (A)	(%) (Z)	(Yen) (B)	(%) (Z)	(Yen) (C)	(%) (Z)		
Feeder-steer	492.2	50.0	297.6	42.8	230.1	66.2	2.1	1.3
Feeds	378.4	38.4	332.3	47.8	88.1	25.8	4.3	3.8
Purchased feed	336.0	34.1	311.6	44.8	44.4	19.1	5.1	4.7
Labor	112.0	11.4	52.2	7.5	5.9	1.7	19.0	8.8
Machines and Buildings	28.6	2.9	24.6	3.5	9.5	2.7	3.0	2.6
Vet medicine	6.5	0.7	5.7	0.8	2.0	0.6	3.3	2.9
Others	7.0	0.7	4.8	0.7	12.0	3.5	0.6	0.4
Total	1,024.7	104.1	717.2	103.1	347.6	100.0	2.9	2.1
Less value of by-products	440.3	4.1	421.5	3.1	-	-	-	-
Production cost	984.4	100.1	695.7	100.0	347.6	100.0	2.8	2.0

Source: Reference No. (4), p. 16

Table 21. Production cost of Slaughter Steers and feeder steers(Wagyu),by major components,1979 to 1981

	Slaughter Steers				Feeder Steers			
	1979	1980	1981		1979	1980	1981	
	Yen per head			(%)	Yen per head			(%)
Total Cost	583,050	626,787	726,815	-	389,834	420,067	459,715	-
Interest on Capital	18,397	20,038	22,689	-	34,920	36,788	41,056	-
Land Rent	3,016	3,219	4,599	-	13,653	16,264	19,501	-
Primary Cost	561,637	603,531	699,527	-	341,261	367,015	399,158	-
Less Value of By-product	23,627	24,675	28,364	-	45,726	47,674	48,140	-
Operating Cost	585,264	628,206	727,891	100.0	386,987	414,689	447,298	100.0
Art. Insemination	-	-	-	-	7,099	7,695	7,918	1.8
Feeder Steer	294,790	301,756	358,975	49.4	-	-	-	-
Feed	193,612	222,040	255,507	35.0	174,940	188,503	206,585	46.2
Bedding	9,078	9,956	11,099	1.5	18,345	19,441	18,452	4.1
Power, Water, etc.	2,850	3,266	3,824	0.5	2,346	2,758	3,246	0.7
Vet. Medicine	3,166	3,972	4,061	0.6	5,246	6,249	6,733	1.5
Leasing Fee	900	997	1,197	0.2	4,309	5,108	4,621	1.0
Cow Depreciation	-	-	-	-	34,427	37,455	38,322	8.6
Building	8,612	9,247	10,389	1.5	13,613	15,140	17,108	3.8
Machinery	7,499	8,306	10,358	1.4	4,438	4,970	5,575	1.3
Labor	64,757	68,666	72,481	10.0	122,224	127,370	138,738	31.0

Source: Reference No. (9), p. 278

Table 22. Changes in total supply, production, and imports of beef, pork and chicken, 1964-66 to 1978-80

	1964-1966 (1) (1,000mt)	1978-1980 (2) (1,000mt)	Ratio (2)/(1)
Beef			
Supply	206	578	2.81
Production	196	408	2.08
Imports	10	170	17.00
Price (deflated yen)	538	1,064	1.98
Pork			
Supply	390	1,561	4.00
Production	389	1,397	3.59
Imports	1	164	-
Price (deflated yen)	395	359	0.91
Chicken			
Supply	213	1,138	5.34
Production	216	1,072	4.96
Imports	7	69	-
Price (deflated yen)	268	162	0.60

Source: Reference No. (10), p. 252

Table 23. Elasticities of demand for beef, pork and chicken, 1970 to 1976

	Price Elasticity			Income Elasticity		
	Beef	Pork	Broiler	Beef	Pork	Broiler
1970	-3.7	-1.0	-2.7	1.1	0.2	0.7
1971	-3.6	-0.9	-2.4	1.1	0.2	0.6
1972	-3.4	-0.9	-1.9	1.0	0.2	0.5
1973	-4.4	-0.8	-1.8	1.1	0.2	0.5
1974	-3.0	-0.6	-1.5	1.1	0.2	0.5
1975	-3.3	-0.8	-1.4	1.0	0.2	0.5
1976	-3.4	-0.8	-1.2	1.1	0.2	0.4

Source: Reference No. (11), p. 226

Table 24. Comparison between wholesale price of domestically produced meat and CIF price of imported meat (average price for 1978 to 1980)

	Domestic Meat (1)	Imported CIF Price (2) yen/kg	Ratio (1)/(2)
Beef	1,124 ¹	466	2.41
Pork	580	590	0.98
Chicken	262	333	0.79

¹Price for domestic beef is that of a Common Grade dairy steer.

Source: Reference No. (10), p. 253

Table 25. International comparisons of wholesale prices of carcass beef, 1978 to 1980 (Japan Price = 100)

	United States		Australia		E.C.		Japan	
	(yen/kg)	(%)	(yen/kg)	(%)	(yen/kg)	(%)	(yen/kg)	(%)
1978	376	32.5	177	15.3	563	48.6	1.158	100
1979	494	37.2	367	27.7	774	58.3	1.327	100
1980	528	43.9	397	33.0	846	70.4	1.202	100

¹ Average of dairy steers (Medium grade) and dairy culls (Common grade).

Source: Reference No. (2), p. 27

Table 26. International comparisons of wholesale prices of various meats, [international price = 100] 1980

	Japan	W. Germany	France	Great Britain	United States
Beef	198	141	145	121	86
Pork	119	119	121	136	93
Chicken	82	92	99	112	64

Source: Reference No. (4), p. 14

Table 27. Retail prices of beef in major world cities, 1977 to 1980

	New York	Paris	London	Hamburg	Sydney	Tokyo
	yen/100g (Price Index: Tokyo = 100)					
1977	107 (34.0)	157 (49.8)	140 (44.4)	183 (58.1)	- (-)	315 (100)
1978	106 (34.3)	166 (53.7)	142 (46.0)	166 (53.7)	- (-)	309 (100)
1979	131 (41.6)	222 (70.5)	218 (69.2)	244 (77.5)	- (-)	315 (100)
1980	144 (42.5)	283 (83.5)	306 (90.3)	289 (85.3)	128 (37.8)	399 (100)

Source: Reference No. (4), p. 14

Table 28. Retail prices of pork in major world cities, 1977 to 1980

	New York	Paris	London	Hamburg	Toronto	Sydney	Tokyo
	yen/100g (Price Index: Tokyo = 100)						
1977	111 (70)	121 (76)	86 (54)	169 (106)	- (-)	- (-)	159 (100)
1978	92 (59)	112 (71)	83 (53)	154 (98)	- (-)	- (-)	157 (100)
1979	100 (67)	150 (100)	114 (76)	183 (122)	- (-)	- (-)	150 (100)
1980	91 (63)	156 (108)	182 (126)	212 (147)	73 (51)	88 (61)	144 (100)

Source: Reference No. (4), p. 15

Table 29. Retail prices of eggs and chicken in Japan and the United States

	Japan (a) (yen/kg)	United States (b) (yen/kg)	b/a (%)
Eggs	382	266	69.5
Chicken	1,130	755	66.8

Source: Reference No. (4), p. 15

Table 30. Import Quota (I.Q.) and actual amount of imports of beef, 1976 to 1982

	1976	1977	1978	1979	1980	1981	(First Half) 1982
	tons						
Import Quota							
General	80,000	80,000	95,000	116,500	119,000	111,000	62,000
Special	14,000	15,000	17,000	18,000	15,800	15,800	8,000
Total (mt) ¹	94,000	95,000	112,000	134,500	134,800	126,800	70,000
Actual Imports							
U.S.A. (mt) ¹	10,127	8,611	17,049	23,801	24,460	26,818	N/A
(%)	10.8	9.3	16.6	18.0	20.3	23.1	N/A
Australia (mt) ¹	77,822	77,835	76,375	103,010	89,780	80,448	N/A
(%)	83.2	84.1	74.6	77.9	74.7	69.8	N/A
Total	93,528	92,550	102,423	132,189	120,219	116,014	N/A
Percent	100	100	100	100	100	100	N/A

¹Wholesale cut meat weight

Source: Reference No. (2), p. 9

Table 31. Changes in CIF prices¹ of imported beef, by major countries of origin, 1977 to 1981

	1977	1978	1979	1980	1981
	yen/kg				
Average	440	483	768	781	724
Australia	394	424	710	712	647
United States	781	749	1,000	1,001	937
New Zealand	539	526	977	906	821

¹Yen per kg of wholesale cut

Source: Reference No. (2), p. 29

Table 32. Correlations between wholesale prices¹ of domestic beef and imported beef

	Imported Beef	
	Market-Auction Prices of Chuck and Blade	Dealer's Prices of Chilled Beef, Full-set ²
Wholesale prices of dairy steers (Common grade)	0.4870	0.6156
Wholesale prices of dairy steers (Medium grade)	-	0.6304
Dealer's prices of chuck and blade, imported	0.8634	-

¹ Mostly average prices.

² Full-set denotes the way chilled beef is purchased from Australia, that is, primal and sub-primal cuts must be purchased in proportion to their amounts on the wholesale carcass.

Source: Reference No. (10), p. 259

Table 33. Selected results from the simulation of gradual beef import liberalization, to be completed in 1987

		1981	1982	1983	1984	1985	1986	1987
		yen/kg						
Wholesale price, ³ carcass								
Wagyu	A ¹	1,799	1,807	1,862	1,911	1,947	1,972	1,994
	B ¹	1,799	1,807	1,797	1,760	1,698	1,608	1,491
Dairy Steer	A	1,445	1,452	1,496	1,533	1,561	1,580	1,597
	B	1,445	1,452	1,440	1,409	1,360	1,290	1,197
Dairy Culls	A	944	932	966	990	1,007	1,018	1,028
	B	944	932	922	904	875	832	776
Imports of Beef		1,000mt						
	A	188	188	188	188	188	188	188
	B	188	222	263	310	366	432	509
Production, Carcass Weight		1,000						
	A	481	466	448	440	442	452	463
	B	481	466	448	440	436	438	443
Head of Beef Cattle		1,000						
	A	2,161	2,101	2,063	2,055	2,066	2,077	2,078
	B	2,161	2,101	2,063	2,051	2,070	2,110	2,158
Head of Dairy Cattle		1,000						
	A	2,099	2,065	2,052	2,060	2,084	2,119	2,160
	B	2,099	2,065	2,052	2,060	2,085	2,126	2,177

¹ No increase in beef imports

² Gradual import decontrol to be completed in 1987.

³ 1980 constant price

Source: Reference No. (12), p. 15

Table 34. Simulation results of beef import liberalization, to be completed in 1990

	1980	1986	1990
	yen/kg		
Wholesale Price, ¹ Carcass			
Wagyu	1,799	1,788	1,549
Dairy Steer	1,445	1,433	1,245
Dairy Culls	944	924	811
Imports of Beef	188	1,000 ^{mt}	445
Production, Carcass Weight	481	445	469
Head of Beef Cattle	2,161	1,000	2,226
Head of Dairy Cattle	2,099	2,124	2,305

¹1980 constant price

Source: Reference No. (13), p. 28

Table 35. Average Live cattle, wholesale carcass and retail beef prices, 1965 to 1981

	Average Live-Cattle Price	Average Wholesale Carcass Price	Average Retail Beef Price ¹
	yen/kg		
1965	279	510	854
1966	339	605	1,050
1969	393	813	1,350
1970	433	843	1,370
1971	466	860	1,470
1975	866	1,640	2,710
1976	963	1,986	3,160
1979	1,150	2,056	3,150
1980	1,143	2,161	3,390
1981	1,097	2,142	3,360

¹This is based on the averages of a very few specified cuts.

Source: Reference No. (6), p. 48

Table 36. Changes in wholesale carcass prices of Wagyu from Kagoshima Prefecture, by grade, 1970 to 1975

	Excellent	Medium	Common
	-yen/kg-		
1970	746	683	600
1971	790	723	665
1972	853	785	732
1973	1,330	1,219	1,077
1974	1,429	1,113	872
1975	1,642	1,412	1,245

Source: Reference No. (7), p. 60

Table 37. Changes in wholesale carcass prices of Wagyu steer and dairy steer, weighted averages of Tokyo and Osaka markets, 1970 to 1982

	Wagyu (Medium) (A)	Dairy (Medium) (B)	A/B
	-yen/kg-		
1970	739	635	1.16
1971	769	655	1.17
1972	923	773	1.19
1973	1,287	993	1.30
1974	1,147	896	1.28
1975	1,537	1,332	1.15
1976	1,693	1,328	1.23
1977	1,575	1,252	1.26
1978	1,628	1,306	1.25
1979	1,822	1,454	1.25
1980	1,801	1,277	1.41
1981	1,771	1,265	1.40
1982	1,809	1,306	1.39

Source: Reference No. (3), p.45

Table 38. Changes in average length of feeding period, and liveweight and carcass weight when shipped for slaughter

	1970	1976	1977	1978	1979	1980
Wagyu Steer						
Feeding Period (mos.)	14.3	15.7	17.0	18.0	17.5	18.1
Weight When Shipped (kg)	516	564	582	597	606	613
Weight of Carcass (kg)	300	346	363	368	371	380
Dairy Steer						
Feeding Period (mos.)	-	11.3	12.3	12.4	12.3	13.0
Weight When Shipped (kg)	-	574	594	624	632	644
Weight of Carcass (kg)	289	328	335	344	350	366

Source: Reference No. (4), p. 23

AGE WHEN MARKETED AND PROFITABILITY

WAGYU STEERS, 1979

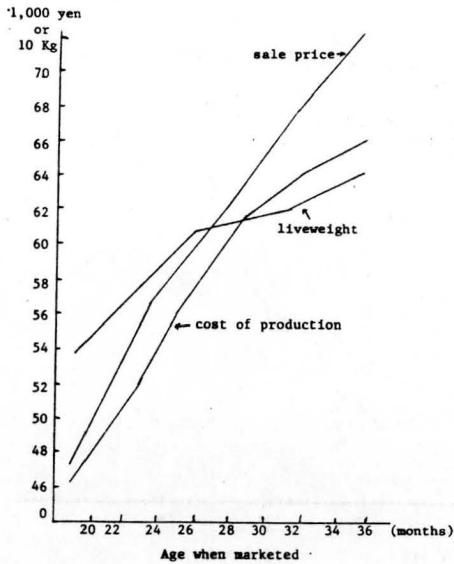


Figure 4

Source: Reference No. (14), P 119

Table 39. Changes in beef production, United States and Australia, 1976 to 1981

	United States	Australia
	1,000mt	
1975	11,271	1,699
1976	12,166	1,870
1977	11,845	2,149
1978	11,283	2,134
1979	9,925	1,768
1980	10,002	1,524
1981	9,967	1,434

Source: Reference No. (8), p. 12

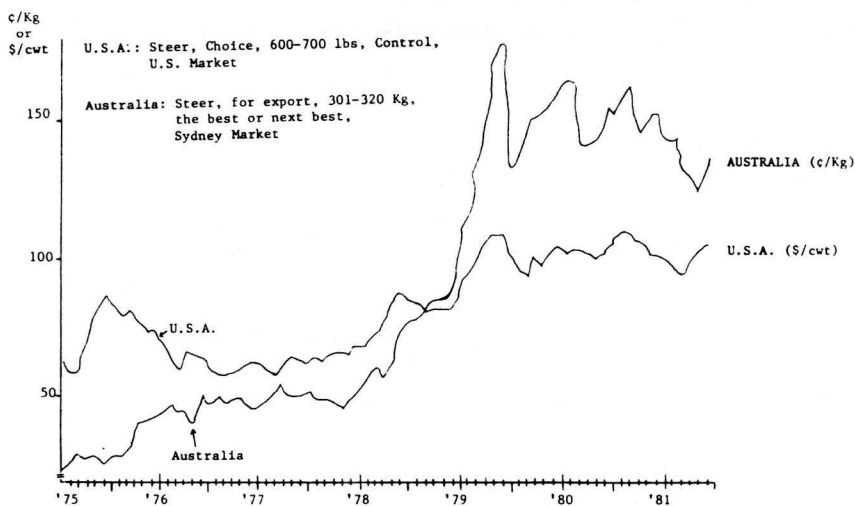
Table 40. Changes in beef Carcass Wholesale prices since 1975, Australia, United States, Canada and Japan

	Lowest Price (A)		Highest Price (B)		(B)/(A)
	Date	Price	Date	Price	
Australia	Jan. '75	24.4c/kg	Aug. '80	163.0c/kg	= 6.7
United States	Aug. '76	57.05\$/100lbs	Aug. '80	111.96\$/100lbs	= 2.0
Canada	Mar. '75	39.94\$/100lbs	Mar. '79	83.97\$/100lbs	= 2.1
Japan	Jan. '75	979¥/kg	Dec. '79	1.528¥/kg	= 1.6

Source: Reference No. (8), p. 12

CHANGES IN CARCASS WHOLESALE PRICES OF BEEF, U.S.A. AND AUSTRALIA

Jan. 1975 to July 1981



Source: Reference No. (8), P 12

Figure 5

Table 41. Stabilization price¹ zones for Wagyu steer and other steers, 1975 to 1982

	Wagyu Steer		Other Steers	
	Floor Price	Ceiling Price	Floor Price	Ceiling Price
	---yen/kg---			
1975	1,143	1,518	930	1,236
1976	1,240	1,647	1,009	1,341
1977	1,303	1,730	1,061	1,408
1978	1,303	1,730	1,061	1,408
1979	1,303	1,730	1,061	1,408
1980	1,357	1,763	1,105	1,435
1981	1,399	1,817	1,118	1,452
1982	1,400	1,820	1,120	1,455

¹Wholesale carcass price

Source: Reference No. (3), p. 47

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