

**TAIWANESE LIVESTOCK  
AND FEEDGRAIN  
INDUSTRIES**

Reyfong Tsai and Gary W. Williams\*

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\* Reyfong Tsai is a TAMRC Graduate Research Assistant and Gary W. Williams is Professor of Agricultural Economics and TAMRC Coordinator, Texas Agricultural Market Research Center, Department of Agricultural Economics, Texas A&M University.

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**ABSTRACT:** Rapid economic growth over the last decade has made Taiwan a target market by U.S. livestock, meat, and feedgrain producers, processors, and exporters. This report describes the economic structure of and government policy intervention in the Taiwanese livestock, meat, and feedgrain industries. The information should be useful background for any firms or groups considering entrance into the Taiwanese market directly through investment or joint ventures or indirectly through exporting. A brief geographic overview of Taiwan is first provided followed by a detailed discussion of the hog and pork, cattle and beef, chicken, and feedgrain industries in Taiwan.

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# TAIWANESE LIVESTOCK AND FEEDGRAIN INDUSTRIES

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## EXECUTIVE SUMMARY

Taiwan is a small island, that lies less than 93.2 miles to the southeast of mainland China. Taiwan is only about 5% of the size of Texas but is more densely populated. Rapid economic growth over the last decade has made Taiwan a target market by U.S. livestock, meat, and feedgrain producers, processors, and exporters. This report provides useful background information on the Taiwanese cattle and beef, hog and pork, chicken, and feedgrain industries for any firms or groups considering entrance into the Taiwanese market directly through investment or joint ventures or indirectly through exporting.

### The Hog and Pork Industry of Taiwan

Before 1970, hog raising was primarily a sideline business for most Taiwanese farmers. They generally raised only 3 to 5 hogs in their backyards and used hog manure as crop fertilizer. They periodically sold one or two hogs to improve family income. Since the mid 1970s, capital investments and the adoption of modern raising and management techniques have transformed the rural swine industry into a thriving commercial enterprise.

Most hogs in Taiwan are produced in the central-south region. Most consumption occurs, however, in the northern part of the island which is the most populated. Pork accounts for nearly 60% of meat consumption in Taiwan. Per capita pork consumption in Taiwan has increased from 21 kg in 1968 to 37 kg in 1991, an average annual growth rate of about 2.5%. Nevertheless, the pork share of total per capita meat consumption dropped from 76% in 1968 to 59% in 1991.

Per capita consumption of pork in Taiwan was 37.5 kg in 1991, much above the 19.4 kg and 2.4 kg per capita consumption of chicken and beef, respectively. Frozen pork exports, primarily to Japan, have grown rapidly since 1983, accounting for 20% of total pork output in 1991. The United States once dominated the Japanese pork import market but has seen its market share drop to only 10% by 1991.

Reflecting the importance of pork in Taiwanese diets, the Taiwanese government is concerned about pork retail price levels, especially in the greater Taipei metropolitan area. Also, the commercialization of hog production and the increasing volatility of hog prices has led to government programs to support the incomes of small hog farmers and to stabilize pork and hog prices.

### The Cattle and Beef Industry of Taiwan

Most cattle are also raised in the central-south region of Taiwan and are of three types: (1) buffalo cattle, (2) yellow and hybrid cattle, and (3) dairy cattle. Most buffalo cattle are still used for draft purposes although increasing farm mechanization and a growing demand for beef have encouraged many farmers to sell their buffalo cattle for slaughter. Many yellow and hybrid cattle are used for both beef and draft purposes although draft use is declining rapidly. Yellow and hybrid cattle inventories have dropped dramatically since 1976 as draft use has dropped and beef imports from Australia have grown. A growing Taiwanese demand for milk has led to steadily growing inventories of dairy cattle.

The cattle and beef marketing system in Taiwan is much simpler than that of pork. Butchers are the primary retailers and control most of the beef marketing in Taiwan. They buy cattle directly from farmers, slaughter them, and then sell beef to consumers. Imported beef is sold in wholesale markets to retailers who then sell beef to consumers.

Before 1972, almost all beef consumed in Taiwan was supplied by domestic production. A rapid increase in demand for beef, however, prompted the Taiwanese government to ease beef import restrictions beginning in 1972. Imports have subsequently risen steadily reducing the beef self-sufficiency rate to only 10%. Taiwan imports beef mainly from Australia (77%), New Zealand (8%), and the United States (6%). U.S. and New Zealand beef is generally considered to be superior in quality to Australian beef.

Until the early 1970s, Buddhist beliefs presented a barrier to beef consumption in Taiwan. Because most cattle usually toil for farmers during most of their life time, eating beef is considered to be ungrateful by Buddhists. Over time, however, rapid economic growth has pushed per capita beef consumption in Taiwan from .65 kg in 1968 to 2.43 kg in 1991, an annual average increase of about 6%. Along with increasing per capita consumption, rapid population growth has boosted total beef consumption from 8,901 mt in 1968 to 49,809 mt in 1991, a 7.8% average annual rate of growth.

The Taiwanese government intervenes less in the domestic cattle and beef industry in Taiwan than is the case in neighboring countries such as Japan and South Korea. In reaction to a surge of beef imports from Australia in the 1970s, however, the Taiwanese government instituted a number of policy actions designed to support cattle producer incomes and stimulate the development of the cattle industry.

### The Chicken and Chicken Meat Industry of Taiwan

The Taiwanese chicken industry has grown rapidly since the mid-1960s, particularly since the mid-1970s. Chicken production has changed from a sideline activity into a large-scale, modernized, and specialized commercial enterprise. Besides government policy, other factors have promoted the rapid increase in chicken production, including: (1) rapid economic growth in Taiwan which has stimulated an increase demand for chicken meat; (2) the lower land and capital investment requirements to raise chickens compared to either cattle or hogs; (3) the global transferability of chicken production technology; and 4) a low and declining price of feed.

The chicken marketing system in Taiwan is poorly organized. Although some farmers sell chickens directly to local consumers, most chickens move through chicken dealers to retail stores. Rapid economic growth and rapidly expanding production have facilitated an 8% average annual growth in per capita poultry consumption in Taiwan from 4.1 kg in 1966 to 23.3 kg in 1991. The chicken industry is relatively free of government control. Nevertheless, the Taiwanese government has adopted a series of actions to encourage the development of the chicken industry. Chicken imports have also been restricted at times.

### The Feedgrain Industry of Taiwan

The rapid increase in Taiwanese demand for livestock products has stimulated a similarly rapid increase in the demand for feedgrains in Taiwan, particularly for corn and soybeans. Despite much concern and great internal debate about dependence upon the United States as a supplier of soybeans following the U.S. soybean embargo in 1972, Taiwan is almost completely dependent on imports for soybean use with over 99% of those imports coming from the United States. About 94% of domestic supplies of corn are also imported, with most also coming from the United States. To

meet the growing needs of the domestic livestock industry, the Taiwanese government lifted feedgrain import restrictions in 1967. At that time, however, the government imposed a 9% and 11% tariff on imports of corn and soybeans, respectively, to continue providing some measure of protection to the domestic feedgrain industry. The corn import tariff of corn was reduced to 7% in 1984 but the soybean tariff remains at 11%.

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# TAIWANESE LIVESTOCK AND FEEDGRAIN INDUSTRIES

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## **TAIWANESE LIVESTOCK AND FEEDGRAIN INDUSTRIES**

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This report describes the economic structure of and government policy intervention in the Taiwanese livestock, meat, and feedgrain industries<sup>1</sup>. Rapid economic growth over the last decade has made Taiwan a target market by U.S. livestock, meat, and feedgrain producers, processors, and exporters. This report provides useful background information for any firms or groups considering entrance into the Taiwanese market directly through investment or joint ventures or indirectly through exporting. Following a brief geographic overview of Taiwan, the hog and pork, cattle and beef, chicken, and feedgrain industries of Taiwan are discussed in turn.

### **A GEOGRAPHIC OVERVIEW OF TAIWAN**

Taiwan, is a small island, that lies less than 93.2 miles (150 kilometers (km)) to the southeast of mainland China. Taiwan is only about 5% of the size of Texas (14,000 sq. miles or 36,006 km<sup>2</sup>) but is more densely populated. In 1991, Taiwan had a population of 20.6 million with about 1,470 inhabitants per sq. mile compared to Texas with a population of 20.0 million and only 55 inhabitants per sq. mile. Over 50% of the Taiwanese population is concentrated in the northern region of Taiwan around the capital Taipei and other six big cities located on the western coast.

The island is about three times as long (north to south) as it is wide and two-thirds is mountainous. Almost all of the arable land (about 25-30% of the total area) is cultivated or urbanized. Only 884,000 hectares (2,184,364 acres) were cultivated in 1991 with an average cultivated area per farm household of only about 1.07 hectares (2.64 acres). The livestock and crop production area is concentrated in the central-south region of the island.

The contribution of agriculture to the Taiwanese GDP has declined steadily over time from 36% in 1952 to 3.7% in 1991. Nevertheless, the contribution of the livestock sector to the total value of agricultural production increased from 16% to 28% over the same period. Rice, once the main agricultural product of Taiwan, has been replaced by hogs. The value of hog production surpassed that of rice in 1986. Chicken output and consumption, however, has been growing more rapidly than that of either pork or beef.

### **THE HOG AND PORK INDUSTRY OF TAIWAN**

The contribution of hogs to the total value of agricultural output in Taiwan has risen from 14% in 1952 to 24% in 1991. Per capita consumption of pork in Taiwan was 37.5 kg in 1991, much

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<sup>1</sup>Much of this paper relies on an excellent description of the Taiwanese livestock sector by Gong and Williams which is basically updated and extended here.

above the 19.4 kg and 2.4 kg per capita consumption of chicken and beef, respectively. Taiwan also exported 20% of total pork output in 1991 (228,470 metric tons (mt)). Stabilizing domestic farm and retail prices of pork, ensuring adequate pork supply for domestic consumption, promoting pork exports, and raising hog producer income are important objectives of government policies in the hog and pork sector (Liu, 1980 and Council of Agriculture).

## **Hog Production**

The successful control of hog diseases, research for the development of superior hog breeds, the import of cheap feedgrains, improvements in hog production management, and some government programs such as integrated swine production, artificial insemination, feed inspection, and the strengthening of the whole production and marketing systems were main factors contributing to the rapid increase of hog production in Taiwan from 3,284,200 head in 1966 to 16,133,500 head in 1991 (Table 2.1).

Feed is now the major component of hog production costs in Taiwan with a rapid increase in the use of formula feeding. Feed currently accounts for about 63% of hog production costs, piglets about 15%, and labor about 16% (Table 2.2). Because feed accounts for such a large proportion of total hog production costs and because the largest percentage of feeds in Taiwan are imported, changes in world feedgrain markets and prices have a major influence on hog production in Taiwan.

Before 1970, hog raising was primarily a sideline business for most Taiwanese farmers. They generally raised only 3 to 5 hogs in their backyards and used hog manure as crop fertilizer. They periodically sold one or two hogs to improve family income. Since the mid 1970s, capital investments and the adoption of modern raising and management techniques have transformed the rural swine industry into a thriving commercial enterprise. Most backyard producers have had difficulty competing and have been driven out of business. In 1966, there were 679,553 farms raising 3,110,066 hogs in Taiwan for an average of 4.6 hogs per farm. By 1991, the number of hog farms had declined to only 39,662 units with total inventories of 10,089,137 head for an average of 254.4 head per production unit (Table 2.3).

## **Hog Marketing and Slaughter**

Most hogs in Taiwan are produced in the central-south region. Most consumption occurs, however, in the northern part of the island which is the most populated. Taiwanese hog marketing channels can be divided into three main flows: 1) indirect flow from producer through livestock wholesale market to end user; 2) direct flow from producer to retailer (butcher); and 3) direct flow to meat processor to end user. In the past, because most hog farms were small and because livestock wholesale markets were few, the hog marketing business was controlled by a large number of small butchers. They bought hogs directly from farmers and dominated the pork retail business. There was no standard grading system before the mid-1970s so that hog prices were not uniform. Although Taiwanese farmer associations had attempted cooperative marketing efforts to lower hog marketing costs since at least 1950, the marketing of hogs was still dominated by retailers. Producers had more confidence in personally negotiating hog prices with retailers rather than leaving the negotiating to a cooperative (Wang).



In 1972, the government introduced a hog carcass transaction system in which the grades of hogs were determined according to certain specific factors such as conformation, backfat thickness, and weight. This first attempt at standardization of grades encouraged greater cooperative marketing of hogs in Taiwan. The share of hogs marketed through cooperatives increased from 13% in 1968 to over 55% in 1991. The flow of hogs directly from farmers to retailers has declined gradually to about 10% of total hog marketings in Taiwan.

A reduction in feed prices in Taiwan since 1981 has contributed importantly to falling hog prices at the farm level and increasing competition in hog raising (Table 2.4). Pork prices, however, have dropped more slowly so that the farm-to-retail price margin has increased significantly. In turn, the increase in the price margin has stimulated an increase in hog slaughter from about 3.0 million head in 1966 to about 13.5 million head in 1991 (Table 2.5). The average carcass weight also increased from 74 kg to 83 kg over the same time period.

### **Demand for Pork**

Rapid economic growth in Taiwan has stimulated equally rapid growth in Taiwanese per capita meat consumption from 27 kg in 1968 to 64 kg in 1991, an average annual growth rate of about 3.8% (Table 2.6). Pork accounts for nearly 60% of meat consumption in Taiwan. Per capita pork consumption in Taiwan has increased from 21 kg in 1968 to 37 kg in 1991, an average annual growth rate of about 2.5%. Despite the relative magnitude of Taiwanese pork consumption, the per capita consumption of both chicken and beef have been growing more rapidly with average annual growth rates between 1968 and 1991 of 8% and 6%, respectively. Consequently, the pork share of total per capita meat consumption dropped from 76% in 1968 to 59% in 1991.

### **Pork Exports**

Taiwan began exporting frozen pork and live hogs in about 1955. Frozen pork is exported to Japan while live hogs are exported to Hong Kong. From 1972 to 1982, frozen pork exported to Japan fluctuated around 20,000 MT with little significant growth (Table 2.7). Since 1982, however, frozen pork exports have grown rapidly, increasing from 33,238 MT in 1983 to 228,470 MT in 1991.

Taiwan competes with Denmark, the United States, and Canada in exporting frozen pork to Japan. At one time, the United States dominated the Japanese pork import market. In recent years, however, the United States market share has dropped continuously from 70% in 1969 to only 10% in 1991.

Taiwan competes primarily with Mainland China in exporting live hogs to Hong Kong. Mainland China has been much more aggressive in this market in recent years so that Taiwanese exports of live hogs have disappeared.

### **Hog and Pork Policy**

Taiwanese consumers spend about 70% to 85% of their meat expenditures on pork. The Taiwanese government, therefore, is concerned about pork retail price levels, especially in the greater Taipei metropolitan area. In addition, the commercialization of hog production and the

increasing volatility of hog prices, the Taiwanese government is also concerned about the incomes of small hog farmers and the stabilization of pork and hog prices.

Since 1966, the Taiwanese government has provided "Cooperative Funds" to subsidize hog producers (Chen). The subsidy amounts to essentially the difference between the government guaranteed price and the market price of hogs. When the price of pork jumped rapidly between 1972 and 1975 primarily as the result of a production shortfall, the government established a pork export quota in 1972 and banned pork exports completely from August 1974 to September 1975.

A rapid expansion of hog production in Taiwan between 1976 and 1979 led to a decline in farm prices, from NT \$48.95/kg in 1975 to NT \$39.84/kg in 1979. In order to stabilize the farm price, the government: 1) provided NT \$3,000 million for Taiwan Provincial Farm Association to purchase hogs in the market; 2) prohibited the Taiwan Sugar Cooperation and other large-scale hog farms (raising more than 5,000 head) to sell hogs in the domestic market; 3) lifted an existing restriction on pork exports to Hong Kong; and 4) negotiated with major hog feed mills to lower feed prices by NT \$.02/kg. These actions help hog farm prices to recover from NT \$39.84/kg in 1979 to NT \$57.62 kg in 1981.

In 1980, the government adopted a hog production and marketing adjustment program (Council of Agriculture, 1985). The government announced that domestic pork production should be mainly supplied for domestic consumption because most feed used in Taiwan is imported and the pork export market is small and unstable. The government divided hog farms into four categories: 1) sideline hog farms (less than 100 head), 2) modernized hog farms (100-999 head), 3) large-scale farms (1,000-4,999 head), and 4) enterprising hog farms (over 5,000 head). The adjustment program call for the government to provide assistance first to the sideline and modernized hog farms and to purchase their hogs first whenever the government intervened in the market to purchase hogs and support the farm price of hogs. These two categories of hog farms were also given priority to sell their hogs in the domestic market. The third and fourth categories of hog farms are subject to government control and are asked to adjust their output during periods of surplus production.

From 1981 to 1985, hog feed prices dropped from NT \$11.70/kg to NT \$10.15/kg providing an impetus to a further expansion of Taiwanese hog production from 7.2 million head to 11.0 million head and a decline of hog prices from NT \$57.62/kg in 1981 to NT \$39.40/kg in 1985. As a result, the Taiwanese government undertook a series of actions, similar to the measures adopted in 1979, and instituted a new pork export subsidy to assist hog producers.

The Taiwanese government also provides some funding for the improvement of slaughter, cold storage, and packing facilities to lower production and marketing costs for producers as well as to improve product sanitary conditions.

## **THE CATTLE AND BEEF INDUSTRY OF TAIWAN**

As is the case for hogs, most cattle are raised in the central-south region of Taiwan. Three major types of cattle are raised in Taiwan: 1) buffalo cattle, 2) yellow and hybrid cattle, and 3) dairy cattle.

### **Cattle Supply**

Most buffalo cattle are still used for draft purposes. In 1966, buffalo cattle numbered 261,600 head, accounting for about 71% of the total cattle inventories (Table 2.8). Increasing farm mechanization and a growing demand for beef, however, have encouraged many farmers to sell their buffalo cattle to processors. By 1991, buffalo cattle inventories had dropped to just 18,600 head, only 12% of total cattle numbers.

Many yellow and hybrid cattle are used for both beef and draft purposes although draft use is declining rapidly. In 1976, the number of yellow and hybrid cattle peaked at 109,968 head, about 43% of the total cattle numbers. Yellow and hybrid cattle inventories has dropped dramatically since 1976 to only 33,699 head as draft use has dropped and beef imports from Australia have grown. Yellow and hybrid cattle currently account for only about 22% of the total numbers.

Beef cattle in Taiwan numbered only 144 head in 1961. To improve beef quality and quantity, the government imported ten Santa Gertrudis bulls from the United States in 1962 to cross with native yellow cows. By 1976, beef cattle numbers had risen rapidly to 61,539 head. Beef cattle have declined precipitously since 1977 to about 25,000 head in 1991 as a result of growing beef imports from Australia.

A growing Taiwanese demand for milk has led to steadily growing inventories of dairy cattle (Table 2.8). The number of dairy cattle has increased consistently each year except for a small decline between 1977 through 1979 following a surge of beef imports from Australia. Dairy cattle numbers have increased at an average annual rate of about 12% a year, from 5,723 head (2% of the total cattle numbers in Taiwan) in 1966 to 100,539 head (66% of the total) in 1991.

In the mid-to-late 1960s, milk was quite expensive in Taiwan because of short supplies in the face of growing demand. To encourage milk production, the government began providing subsidized loans for farmers to purchase dairy cows during the early 1960s. The government also imported superior Holstein bulls from the United States to cross with native cows in an effort to improve milk quality. The government has devised a series of programs to support the dairy cattle industry over the years, including a school milk supply program, the "sloping-land" dairy farm program, and a milk plant construction program.

The dairy support programs were so successful that by the mid-1970s the government faced a milk oversupply problem. In consequence, the government banned the importation of dairy cattle and temporarily suspended the dairy farm program. The government also helped distribute more milk to school children and subsidized milk procession plants for purchasing milk to make condensed and powdered milk. Milk oversupply continues to be a problem, especially during the winter months when milk consumption levels tend to decline. Nevertheless, government intervention in the dairy industry has also declined.

### **Cattle Production Costs**

As is the case for hogs, feed is the major component of cattle production costs in Taiwan (see Table 2.2). Feed accounts for about 65% of total production costs for beef cattle and 38% for dairy cattle. Labor costs account for about 18% and 45% of total production costs for beef cattle and dairy cattle, respectively.

An increasing shortage of forage has required that most cattle in Taiwan are grain fed, raising cattle production costs. Raising cattle also requires relatively more land than alternative enterprises.

Because land is extremely expensive on the small island, most cattle are raised on small, inefficient farms.

### **Cattle Marketing and Slaughter**

The cattle and beef marketing system in Taiwan is much simpler than that of pork. Butchers are the primary retailers and control most of the beef marketing in Taiwan. Butchers buy cattle directly from farmers, slaughter them, and then sell beef to consumers. Beef is imported and sold in wholesale markets to beef retailers who then sell beef to consumers.

Cattle slaughter increased steadily from 30,561 head in 1966 to 54,093 head in 1970 and then declined to 21,408 head in 1975 as the result of growing beef imports (Table 2.9). In consequence, the government began to subsidize cattle slaughterers in 1975 as explained in a later section. Cattle slaughter then bounced back to its highest level of 87,579 head in 1977. Continued pressure from Australian beef imports, however, forced a slow decline in slaughter to 27,229 head in 1991.

The farm-to-retail price ratio of beef from yellow cattle declined from 73% in 1968 to 42% in 1977 but rose once again to 57% in 1991 (Table 2.10). The widening of the beef marketing margin in the mid-1970s corresponded to the influx of Australian beef during that period.

Before 1972, almost all beef consumed in Taiwan was supplied by domestic production. A rapid increase in demand for beef, however, prompted the Taiwanese government to ease beef import restrictions beginning in 1972. Imports have subsequently risen steadily from 1,104 MT in 1972 to 44,909 MT in 1991. As a result, the beef self-sufficiency rate in Taiwan has declined from 80% to 10% (Table 2.9).

Taiwan imports beef mainly from Australia, New Zealand, and the United States. Australia accounts for over 77% of the market. New Zealand and the United States account for about 8% and 6%, respectively (Table 2.11) Beef imported from the United States and New Zealand is considered to be superior in quality to Australian beef and sell at a premium to Australian beef.

### **Demand for Beef**

Until the early 1970s, Buddhist beliefs presented a barrier to beef consumption in Taiwan. Because most cattle usually toil for farmers during most of their life time, eating beef is considered to be ungrateful by Buddhists. Over time, however, rapid economic growth has pushed per capita beef consumption in Taiwan from .65 kg in 1968 to 2.43 kg in 1991, an annual average increase of about 6%. Along with increasing per capita consumption, rapid population growth has boosted total beef consumption from 8,901 mt in 1968 to 49,809 mt in 1991, a 7.8% average annual rate of growth (see Table 2.9).

### **Cattle and Beef Policy**

The Taiwanese government intervenes less in the domestic cattle and beef industry in Taiwan than is the case in neighboring countries such as Japan and South Korea. In reaction to a surge of

beef imports from Australia in the 1970s, however, the Taiwanese government instituted a number of policy actions, including the following:

1. A NT \$4.00 surcharge on each pound of imported beef on top of the already existing import tariff;
2. A NT \$5,000 subsidies to farmers for each cow slaughtered or for each Holstein Friesian bull calf over 350 kg slaughtered;
3. A NT \$2,000 subsidy paid to farmers for each breeding bull retained and an additional NT \$3,000 when it is slaughtered;
4. Extension of the short- and long-term loan repayment periods for cattle farmers with any additional interest paid by the government.

The government also instituted a number of additional programs to stimulate the development of the cattle industry over time such as the sloping land development program, the dual purpose for draft and beef cattle program, and the specialized beef and cattle village program.

Although beef import restrictions were eased in 1972, the government still controls the volume of beef imports. Also, an import tariff remains in effect. The tariff was reduced from 30% to 20% in 1973. Currently, there are two different import tariffs imposed by the government. The first is a NT \$20.00/kg levy imposed on "high quality" beef. The other is a NT \$30.0/kg levy imposed on "other quality" beef mainly from Australia.

To respond to the needs of both consumers and producers, the Taiwanese government launched the "Five Year Program for the Development of the Taiwan Cattle Industry" in 1986 (Council of Agriculture, 1986). First, to meet the growing demand for fresh milk, a domestic milk production target of 13% annual growth was set. To meet domestic demand for fresh beef, a 7.5% annual domestic production growth rate was also established.

To attain domestic milk production goal, the government provided NT \$837 million to support the domestic dairy cattle industry. About 60% of those funds was used to construct a disease inspection station. Another 26% was used to promote dairy production with the remainder going to improve milk quality and assist farmers in production management. The government also provided low interest loans totalling NT \$1.25 billion to help new farmers enter into dairy farming, to import dairy cows for improving the genetic stock, and to expand production. After four years of the program, the production of raw milk had surpassed the government target levels.

To reach the domestic beef production goal, the government provided low interest loans to help farmers purchase improved breeding stock. The government also provided NT \$257 million to support the beef cattle industry. About 93% of those funds were used for direct subsidies to farmers to increase beef production. Similar to what was done for the dairy cattle industry, the government also provided low interest loans to beef producers totalling NT \$900 million. Unlike the dairy program, however, the beef program has had relatively little impact on domestic beef production. After four years of the program, the beef self-sufficiency rate in Taiwan was still only 9%.

## **THE CHICKEN AND CHICKEN MEAT INDUSTRY OF TAIWAN**

The Taiwanese chicken industry has grown rapidly since the mid-1960s. The increase in chicken production since the mid-1970s has been particularly dramatic (Ko). In 1966, chickens

numbered about 10.9 million head in Taiwan, accounting for about 59% of the total number of poultry. By 1991, the number of chicken has increased to 79.1 million head, 86% of the total number of poultry. The annual growth rate in chicken production has been about 8.3%.

### **Chicken Production**

In the 1960s and 1970s, the Taiwanese government provided assistance to the chicken industry through research to cultivate superior breeds and investments in improved slaughter, cold storage, and packing facilities. The government also operated a number of other programs, such as the specialized chicken village program, a poultry-raising demonstration program, and the chicken production program.

The subsequent growth in Taiwanese chicken inventories has been dramatic (Table 2.12). Chicken production in Taiwan has changed from a sideline activity into a large-scale, modernized, and specialized commercial enterprise. Besides government policy, other factors have promoted the rapid increase in chicken production, including: (1) rapid economic growth in Taiwan which has stimulated an increase demand for chicken meat; (2) the lower land and capital investment requirements to raise chickens compared to either cattle or hogs; (3) the global transferability of chicken production technology; and 4) a low and declining price of feed.

Currently, feed and chicks account for about 74% of total production costs for broilers and 79% for native chickens in Taiwan (see Table 2.2). Feed alone accounts for 62% of total costs for broilers and 67% of total costs for native chickens.

### **Chicken Slaughter and Marketing**

The number of chickens slaughtered in Taiwan increased about 9% per year from 44.7 million head in 1972 to 234.0 million head in 1991, boosting chicken meat production by the same annual percentage from 70,257 mt to 395,322 mt over the same period (Table 2.13). One factor contributing to the increase in chicken meat production in Taiwan has been a steady widening of the chicken marketing margin (Table 2.14). Strong growth in demand coupled with rapid adoption of modern feeding technology and growth in the number and size of chicken producers has led to a gradual decline in the farm-to-retail price ratio from about 90% in 1966 to about 50% in 1991.

The chicken marketing system in Taiwan is poorly organized. Although some farmers sell chickens directly to local consumers, most chickens move through chicken dealers to retail stores. Small chicken dealers may purchase chickens from farmers and sell them to larger dealers in urban areas for sale to retail stores. In large urban areas, large food retailers usually purchase chickens from chicken retailers for sale to final consumers.

### **Demand for Chicken Meat**

Rapid economic growth and rapidly expanding production have facilitated an 8% average annual growth in per capita poultry consumption in Taiwan from 4.1 kg in 1966 to 23.3 kg in 1991 (see Table 2.5). Chicken accounts for over 80% (19.4 kg) of the per capita poultry consumption in Taiwan. Taiwan exports and imports little chicken so that consumption is roughly equal to domestic

production. Chicken consumption has increased about 9% per year from 70,257 MT in 1972 to 395,322 MT in 1991 (see Table 2.13).

### **Chicken Policy**

The chicken industry is relatively free of government control. Nevertheless, the Taiwanese government has adopted a series of actions to encourage the development of the chicken industry. The government also provides low interest loans for farmers to meet their financial needs. Chicken imports have also been restricted.

The recent movement toward liberalization in international markets and demands by the U.S. Government led Taiwan to lift import restrictions on ducks and turkeys in 1990. Pressure from the U.S. to lift chicken import restrictions has encouraged the Taiwanese government to adopt a number of measures designed to reduce the impacts of international markets on the domestic chicken industry (Council of Agriculture, 1989):

1. Assistance in organizing chicken marketing cooperatives to encourage more collective action by farmers in marketing their chickens;
2. Assistance in improving slaughter, cold storage, and packing facilities to lower production and marketing costs as well as to improve product sanitary conditions;
3. Assistance in constructing wholesale marketing centers in urban consumption regions to expand the market areas;
4. Government collection, analysis, and distribution of poultry supply and demand information to support farmer decision-making; and
5. Purchases of chickens by the quasi-governmental Taiwan Poultry Foundation (TPF) to support market prices if chicken farm prices drop below 80% of direct production costs.

### **THE FEEDGRAIN INDUSTRY OF TAIWAN**

The rapid increase in Taiwanese demand for livestock products has stimulated a similarly rapid increase in the demand for feedgrains in Taiwan, particularly for corn and soybeans. Taiwanese demand for corn and soybeans increased about 12.2% and 6.5%, respectively per year between 1968 and 1991 (Tables 2.15 and 2.16). Domestic production of corn increased about 9.0% per year over the same period and currently accounts for only about 6% of total corn supply. Domestic production of soybeans, however, has dropped from 72,905 MT to only 8,273 MT during the same time period and accounts for less than 0.5% of total soybean supply. Shortages in the domestic production of corn and soybeans are filled with imports. Over 99% of Taiwanese corn and soybean imports comes from the United States.

### **Corn and Soybean Supply**

The area planted to corn in Taiwan was less than 25,000 ha before 1972 (Table 2.15). A government corn price support program begun in 1972, however, boosted corn area to 49,717 ha by 1975. Increasing production costs then slowly eroded corn acreage to 43,691 ha by 1983. In 1984, the government launched an incentive program to encourage farmers to shift out of rice into other commodities. The government pays a cash subsidy to farmers equal to the value of one metric ton of rice or NT \$14,000 per hectare shifted from rice to other products like corn and soybeans. The government also significantly boosted the farm support price for corn in the early 1980s (Table 2.16). As a consequence, the corn area in Taiwan increased to 82,083 ha by 1988. The continued drop in the price of imported corn and a fixed nominal (and declining real) support price for corn since 1983 combined to pull back acreage somewhat to 74,718 ha by 1991.

The quantity of corn imported from Taiwan increased about 12.5% annually between 1968 and 1991, from 360,784 mt to 5,470,369 mt (Table 2.15). Nearly all of the corn comes from the United States.

Small farm units, increasing labor costs, and low soybean yields have combined to gradually reduce domestic Taiwanese soybean production from 72,905 mt in 1968 to 8,273 mt in 1991 despite a significant increase in government soybean price support in the early 1980s and the provision of more government incentives for farmers to shift out of rice into soybeans and other crops since 1984. Consequently, soybean imports have increased at an average annual rate of about 7.3% from 384,921 MT in 1968 to 1,958,639 MT in 1991. The soybean self-sufficiency ratio has consequently declined from about 16% in 1968 to 0.4% in 1991.

### **Corn and Soybean Demand**

A decline in the import price of corn (Table 2.16) and a rapid increase in the demand for livestock products in Taiwan has stimulated a rapid increase in the demand for corn for livestock feeding. Corn demand in Taiwan increased at an annual average rate of about 12% from 412,269 mt in 1968 to over 5.8 million mt in 1991 (Table 2.15)

Despite the drop in domestic production of soybeans, domestic soybean use has increased rapidly in Taiwan at an annual average rate of about 6.5% between 1968 and 1991. As for corn, the rapid increase in soybean demand derives from the increased demand for livestock products in Taiwan as economic growth has boosted per capita incomes. Despite much concern and great internal debate about dependence upon the United States as a supplier of soybeans following the U.S. soybean embargo in 1972, Taiwan is almost completely dependent on imports for soybean use and over 99% of those imports come from the United States.

### **Feedgrain Policy**

To meet the growing needs of the domestic livestock industry, the Taiwanese government lifted feedgrain import restrictions in 1967. At that time, however, the government imposed a 9% and 11% tariff on imports of corn and soybeans, respectively, to continue providing some measure of protection to the domestic feedgrain industry (Liu, 1990). The corn import tariff of corn was reduced to 7% in 1984 but the soybean tariff remains at 11%.



The Taiwanese government has supported the farm prices of corn and soybeans since 1972 and 1973, respectively (see Table 2.16). In an effort to boost domestic production following the U.S. soybean embargo of the early 1970s, support prices for both soybeans and corn were increased rapidly until the early 1980s. Neither support price has been raised since 1983 resulting in declining real price support for farmers over the last decade. The entire domestic production of feedgrains is purchased by the government at the government support price and then resold to feedgrain users at a level comparable to imported feedgrains. As discussed earlier, the government has also provided incentives for farmers to shift out of rice into crops like soybeans since 1984.

## **SUMMARY AND CONCLUSIONS**

This report examined the economic structure and policy environment of the Taiwanese livestock industry. In the Taiwanese hog industry, retail pork and hog farm prices have fluctuated widely mainly in response to changes in world feedgrain markets and uncertainty in pork export demand as well as changes in the market structure of the industry. Stabilizing domestic retail and farm prices is the primary concern of government policy for the Taiwanese hog and pork industry.

In the Taiwanese cattle industry, inventories of domestic beef cattle have declined continuously despite government efforts to increase the rate of domestic self-sufficiency in beef. Dairy cattle inventories, however, have steadily increased since the early 1960s.

In the Taiwanese chicken industry, improvement in production technology, the ease of entering the chicken business, and rapidly increasing per capita incomes have dramatically boosted chicken output at a rate of about 9% per year, surpassing that of pork at only 6% per year.

In the Taiwanese feedgrain industry, corn production has increased steadily especially after 1984 as the result of a government support program. Despite government support policies, however, soybean production has gradually dropped to only 8,273 mt in 1991. The self-sufficiency rate for soybeans in Taiwan has declined to 0.4%.

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