

LIVESTOCK SECTOR REPORT

THAILAND

A REVIEW OF THE THAILAND POULTRY SECTOR

Achilles Costales

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Livestock Information, Sector Analysis and Policy Branch (AGAL)
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Introduction

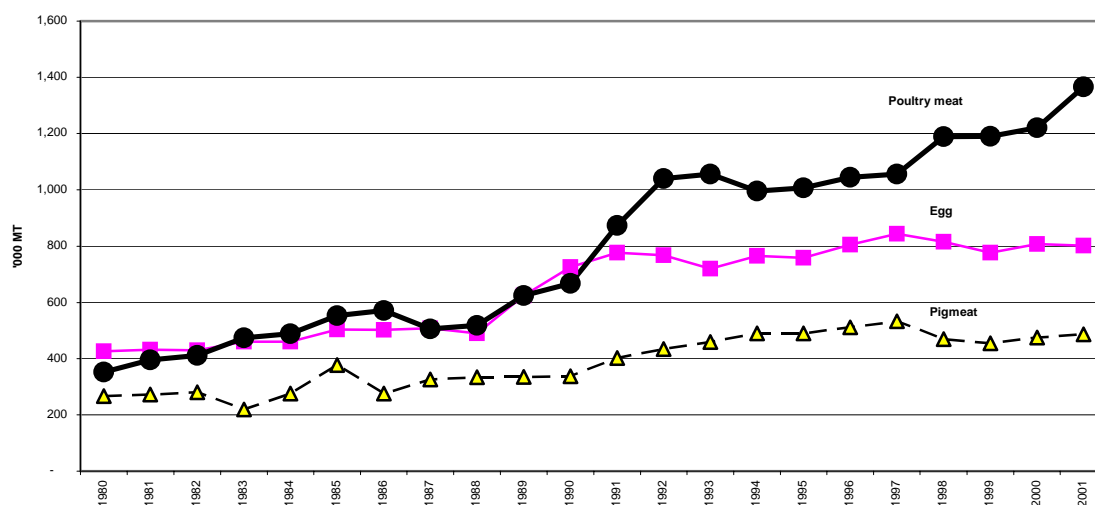
The poultry industry has often been called the ‘star’ of the livestock sector of Thailand. This is not without reason. The development of the Thai poultry industry within the span of just two decades is remarkable. From rural backyard production of chickens catering to the domestic market prior to the 1980’s, the sector has transformed itself into quite advanced industrial production under controlled evaporative (EVAP) housing systems, gaining a foothold in the highly competitive international market for chicken meat.

The succeeding sections discuss the growth and contributions of the major livestock industries in the livestock economy of Thailand, and the drivers of demand growth. The main aspects of the technological advances in the poultry sector, the industrial organization to capture the returns to private investments in technology, and the policy actions in support of the private sector initiatives are then discussed. The recent trends in the international and domestic market for chicken meat are pointed out and the changes in product distribution in response to these changes are highlighted. The review concludes with an assessment of the implications of policy measures to protect the interests of major stakeholders in the broiler export sector against the background of the regional concentration and size distribution of farms within the Thai poultry structure in its totality.

Contribution to the Livestock Economy and Demand Drivers of Industry Growth

The growth of the Thai poultry sector is largely attributed to the successes achieved in the broiler industry. The other sectors that also exhibited high growth performances were the swine and egg industries. Growth in output of the three sectors from 1980-2001 is shown in Figure 1. While output in both pork and eggs almost doubled in two decades, that of poultry meat almost quadrupled over the same period. It could also be noted that while growth in output in pork and eggs appear to have been stalled by the Asian financial crisis of 1997-98, this was not the case for poultry meat.

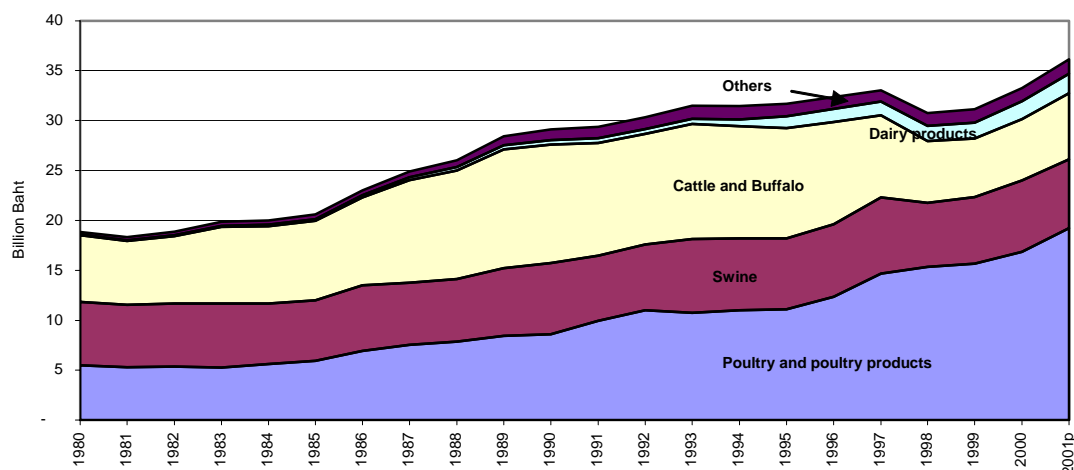
Fig. 1. Growth of output in poultry meat, pork, and eggs, Thailand, 1980-2001 (In '000 MT)



Sources: FAOSTAT, 2004; Poapongsakorn, 2003

The development of the Thai poultry industry is likewise reflected in the growing importance of the contribution of the sector in the livestock economy. Figure 2 shows the growth in gross value-added (GVA) in the livestock sector, in Billion Baht at 1988 constant prices, and the contributions of the component industries over two decades. Except for a brief period of decline during the Asian financial crisis (1997/98), growth in the livestock sector GDP was consistently positive, almost doubling from Bt19 billion in 1980 to about Bt36 billion by 2001. At current prices, the terminal value amounts to US\$1.37 billion (at the average official exchange rate of 44.22 Baht to the US dollar in 2001).

Fig. 2. Growth in value-added (GVA) in the livestock sector and contributions of component industries to livestock GDP, Thailand, 1980-2001. (In Billion Baht at 1988 constant prices)

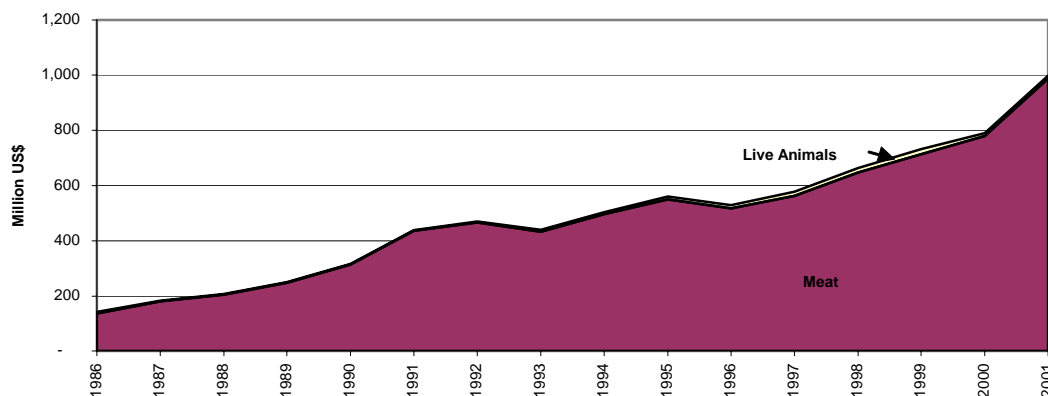


Source of basic data: National Economic and Social Development Board, 2004.

The composition of value-added in livestock, however, has shifted in favor of poultry and poultry products (meat and eggs) sector. The share of poultry in livestock GDP steadily rose from 30 percent in 1980 to more than half (53%) by 2001. The share of the cattle and buffalo and that of swine industries both declined. Evidently, growth in the livestock sector was driven by the poultry industry.

The increasing importance of the poultry economy can be attributed to a large part to the expansion in the exports of Thai chicken meat. This crucial link was missing in the swine industry and the egg industries. Figure 3 shows the growth in the value of total livestock sector exports over the years 1986-2002, in million US dollars, at current prices. Over the short span of 15 years, the value of livestock exports increased seven-fold, from about US\$140 million in 1986 to US\$997 million by 2001. At current prices and at the average official exchange rate in 2001, livestock export value was about 73 percent of livestock sector GDP. It could be noted that almost all (98%) of the value of total exports were in the form of meat. Most of these were poultry meat (94%), almost all in the form of broiler meat, both processed and non-processed.

Fig. 3. Value of exports in the livestock sector and components, Thailand, 1986-2001. (f.o.b. in Million US dollars, current prices)



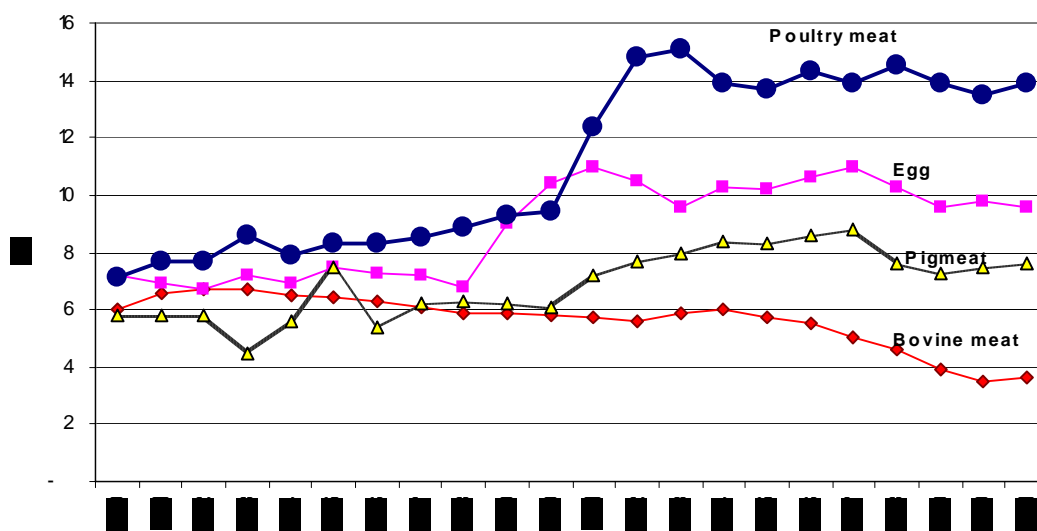
Source: FAOSTAT, 2004

On the demand side, the export market was not the only driver of the Thai broiler industry. In the domestic front, the economic boom in the second half of the 1980s through the first half of the 1990s resulted in sustained increase in per capita incomes and household purchasing power, boosting the demand for high-value commodities such as meat. Historically, aside from freshwater fish, the demand for meat was about evenly covered by the consumption of pork, bovine meat, and poultry meat. Over time, however, the relative price of chicken meat over that of pig and bovine meat has fallen, due to the more rapid advances in cost efficiency in broiler production. Over the same period, consciousness of the health-related attributes of poultry meat as compared to red meat increased. Both forces were at work in inducing gradual shifts in consumer preferences, causing the composition of Thai meat consumption to change in favor of chicken meat.

Figure 4 shows the movements in per capita availability (consumption) of various meat and eggs in kilograms per year from 1980 to 2001, based on FAOSTAT estimates. It can be observed that for Thailand, there was a faster growth in per capita consumption of poultry meat than in all other meat products. While consumption of meat of poultry, pigs and bovines started at similar levels (6-7 kg in 1980), bovine meat consumption declined, while that of poultry and pig meat increased over the period of rapid economic growth, up to the early 1990s. The rate of increase in poultry meat consumption, however, has been faster than that for pork, such that by 2001, the per capita consumption of poultry meat (14 kg) was almost

double that of pork (7.6 kg). The consumption of eggs also followed the same pattern of growth as those of poultry and pig meat, hovering at about 10 kg over the second half of the 1990s.

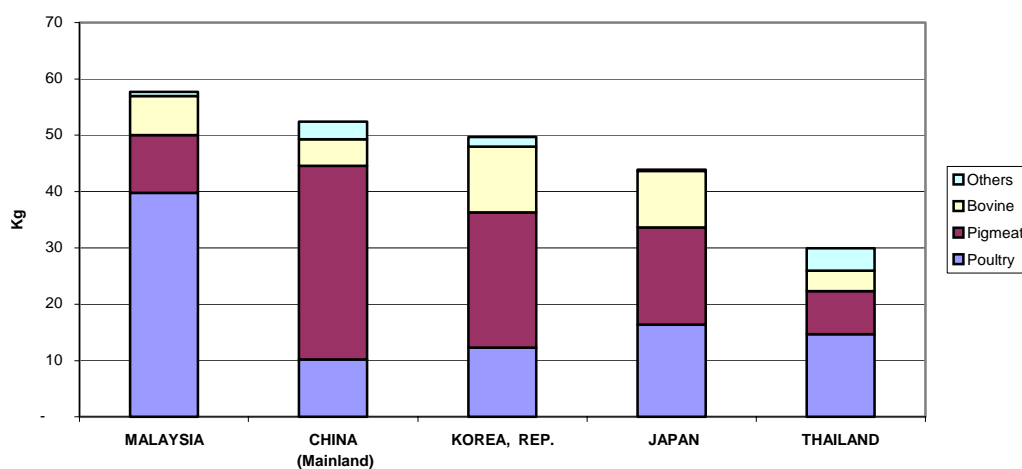
Fig. 4. Growth in per capita consumption of meat and eggs, Thailand, 1980-2001 (In kilograms per year)



Source: FAOSTAT, 2004

It is not clear whether the apparent stabilization of per capita consumption of poultry and pig meat over the second half of the 1990s constitutes the reaching of their respective saturation points, such that further increases in per capita incomes will no longer induce higher consumption of poultry and pig meat or whether it reflects just a temporary plateau following the period of economic recession after the 1997-98 financial crisis. A comparison of meat consumption levels and patterns with the higher-income countries in East and Southeast Asia (Japan, South Korea and Malaysia) with Thailand is provided in Figure 5. (Mainland China is also included, being one of the most rapidly growing economies in the world today)

Fig. 5. Comparison of levels and patterns in per capita consumption of meat between Thailand and selected East and Southeast Asian countries, 2003



Source: FAOSTAT, 2004

The level of meat consumption in Thailand, estimated at about 30 kg per capita, is still way below those of the other countries above. The patterns of consumption also reveal that apart from Malaysia (with a predominantly Muslim population), the pattern for Thailand shows that poultry is dominant. As long as all meat types in Thailand remain income-responsive, there is not much basis to expect that meat consumption has reached saturation levels. There is still room for growth for domestic consumption of meat of various types, although there appears to be stronger bias toward poultry meat.

Thus, in both the domestic and export markets, the poultry industry is much better placed compared to the two other major sectors of the Thai livestock economy. Overall, the absence of a base in the export market provides less room for future growth in the swine and egg sectors. The Thai egg sector is deemed not to be cost-competitive in the world market. Furthermore, even if the cost efficiency targets are achieved in the near future, there is still a need for the Thai egg industry to transcend the food safety concerns in locally produced eggs. In the swine industry, the problems associated with animal diseases (e.g. foot-and-mouth disease, classical swine fever) need still to be solved.

Technological Advances, Industrial Organization, and Strategic Policy Support

Although the phenomenal growth of the Thai poultry industry was largely demand driven, there were important supply-side factors that made possible the meeting of both the export and domestic demand for chicken meat. The first category of supply shifters refers to private sector initiatives towards technological change, the second to industrial reorganization related to the capturing of returns to technical change, and the third to the strategic government policy support to private sector initiatives to gain foothold in the lucrative export markets.

The pioneer of the poultry revolution in Thailand was the dominant feedmilling and agribusiness firm Charoen Pokphand Company, or more popularly known as C.P. (now C.P. Intertrade Co., Ltd.) (Poapongsakorn, 2003). The early stages of technological change involved the introduction of superior genetic material for the grand parent (GP) and parent stocks (PS) imported from the leading poultry breeders in the world market in the late 1970s by C.P. The new production technology also involved the control of nutrition by high precision in feed formula and quality at the feedmilling level, and the control of poultry diseases through the use of biologics and pharmaceuticals and monitoring by company veterinarians. An evolution in the industrial organization took place when C.P. introduced contract production with broiler raisers in the late 1970's (FAO-RAP and APHCA Study, 2002). Contract growing was adopted as a mode of production and marketing organization, designed to capture the returns to technological change, as well as to spread the production and market risks between the major investor and broiler raisers. Other feedmilling firms followed the lead of C.P. and crafted their own contract terms to compete for broiler raisers. Over time, the number of large broiler integrators increased from 6 to 13, competing for both the domestic and international markets. The intensity of competition has also led to the development of the market for contracts, a market which has now given rise to quite sophisticated forms of contracts in the Thai broiler industry.

Access to the international markets by the integrated broiler companies, however, would not have been possible without the strategic tax incentives and government approval of the broiler integrators' lobby for the establishment of state-of-the-art privately-owned poultry dressing plants for chicken meat exports. This turned out to be a crucial move. The

prevailing institutional mechanism at the time was that the slaughtering of all livestock had to be undertaken at designated local public slaughterhouses, as stipulated by laws and regulations. These slaughterhouses were controlled by traders, slaughterhouse operators and local governments (Poapongsakorn, 2003). With the grant of specialized dressing plants by the integrators specifically for broiler meat that was to be shipped directly to export destinations, the clash of interests with the local traders and slaughterhouse operators was avoided.

The second-generation of technological change came with the introduction of a modified form of the evaporative (EVAP) housing system for broilers (and eventually also for layers). The EVAP technology allowed the growing of broilers under a closed and strictly controlled environment, with temperature maintained at an optimal 25 to 27 degrees Celsius, comfortable enough for imported birds of exotic breeds whose productivity deteriorates under the unfamiliar conditions of tropical heat and humidity. With raising now undertaken in a closed environment under this new system, the average raising period for standard weights of broilers were significantly shortened from 45 to 40 days, average mortalities decreased to about three percent, and the incidence of avian diseases reduced to a minimum. (In the layer or egg production sector, the productivity increases realized by the use of the EVAP system were seen in the increase in the number of eggs produced to more than 300 per layer per year, in contrast to less than 260 eggs per layer per year in the less advanced open systems – Poapongsakorn et al., 2003). With the improved housing conditions, the animal welfare concerns raised by major export markets were also being addressed.

Huge investments in new technology, however, meant that commercial and industrial operations in the broiler sector had to be significantly scaled up to allow the capture of economies-of-scale in the new technology. In the layer sector, the EVAP housing system has allowed the holding of up to 1 million birds per farm at any point in time by commercial producers (Poapongsakorn et al., 2003).

The attempt to capture a large portion of the returns to technological change (from breeding, precision feeding, animal health control, broiler growing, food safety-certified poultry dressing and processing, packaging for distribution of differentiated products) provided a strong motivation for the large companies involved in the broiler business to vertically integrate. The structure of the broiler industry clearly shows that this, indeed, has happened. There are now 13 large vertically integrated firms, privately operating about 22

poultry dressing plants. These integrators account for about three-fourths of the Thai broiler production. There are also about 31 large exporters of chicken meat and meat products. To ensure that final products bear the characteristics demanded by the international market, vertical coordination of activities must be carried out from the choice of raw materials to the packaging of the final product.

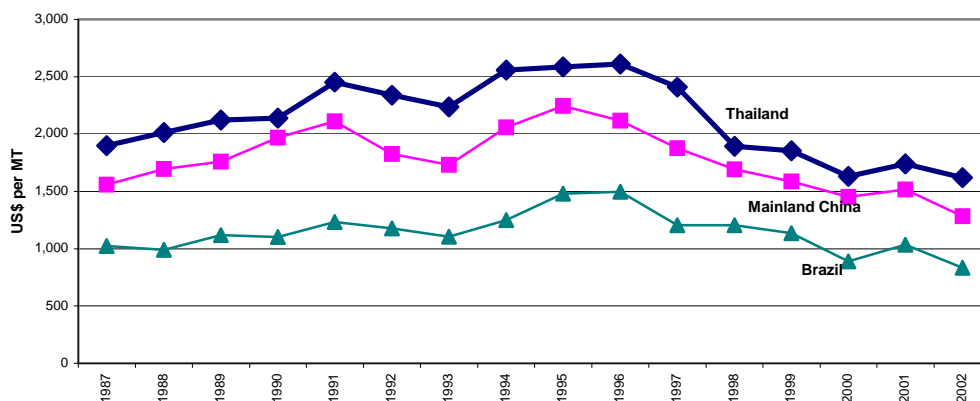
The egg (layer) sector, however, did not evolve to become as concentrated as the broiler industry. The large independent farms have banded together and formed their own egg production and marketing cooperative and have stood up quite well with the large integrators in terms of market share. The technology in egg production had less exclusive characteristics as compared to the broiler production system.

New Adjustments in Response to Changes in International and Domestic Markets

While cost competitiveness remains as a prerequisite to engage in the export of livestock products, the demands for food quality and food safety have become increasingly prominent. Thus, the concerns on SPS and TBTs had been prominently taken up as parallel issues under the WTO Negotiations in the 1990s.

Thailand specializes in the export of frozen cuts and offal of chicken packaged ready-to-cook, rather than in frozen whole chicken or fresh, chilled whole chicken (UN Comtrade Database, 2004). Such product forms are of higher value than whole chicken or poultry. The specialization in higher-end products is reflected in the higher unit values of fresh, chilled, or frozen chicken meat exports of Thailand than those of competing exporting developing countries such as Brazil and Mainland China ([Figure 6](#)). Although unit values of exports in all three countries follow a similar pattern reflecting the general movement in world prices, the Thai exports consistently obtained higher unit values throughout the period. The price differentials, however, have been narrowing, suggesting that the two other countries are also moving into the higher-value exports of chicken meat.

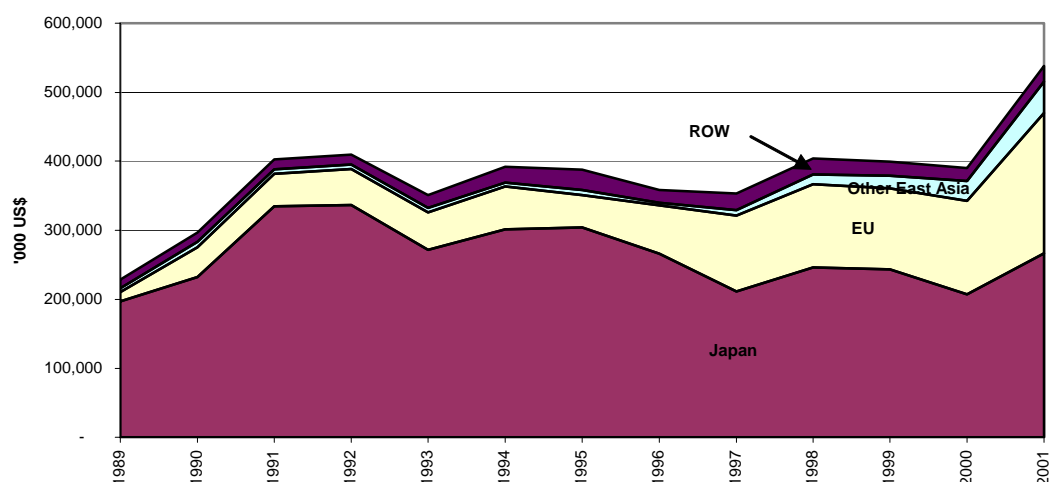
Fig. 6. Comparison of unit values of Thai exports of fresh, chilled and frozen chicken meat with Brazil and Mainland China, 1988-2001. (F.o.b. in US dollars per MT)



Source: FAOSTAT, 2004

Japan has traditionally been the main destination of Thai broiler meat exports. The EU has also begun to be one of the major export destination of Thai chicken meat. To gain entry into the EU export market, strict food safety, animal health, animal welfare, and environmental standards have to be met. As of 1998, certification from the EU of having met the standards had been issued to 22 poultry dressing plants and 29 meat processing plants in Thailand. (Certification includes those for HACCP, ISO 2000, and Good Agricultural Practices, among others). [Figure 7](#) displays the value of exports of frozen cuts and offal of chicken, Thailand, 1989-2001.

Fig. 7. Value of exports of frozen cuts and offals of chicken by major destination, Thailand, 1989-2001. (F.o.b. in '000 US dollars, in current prices.)

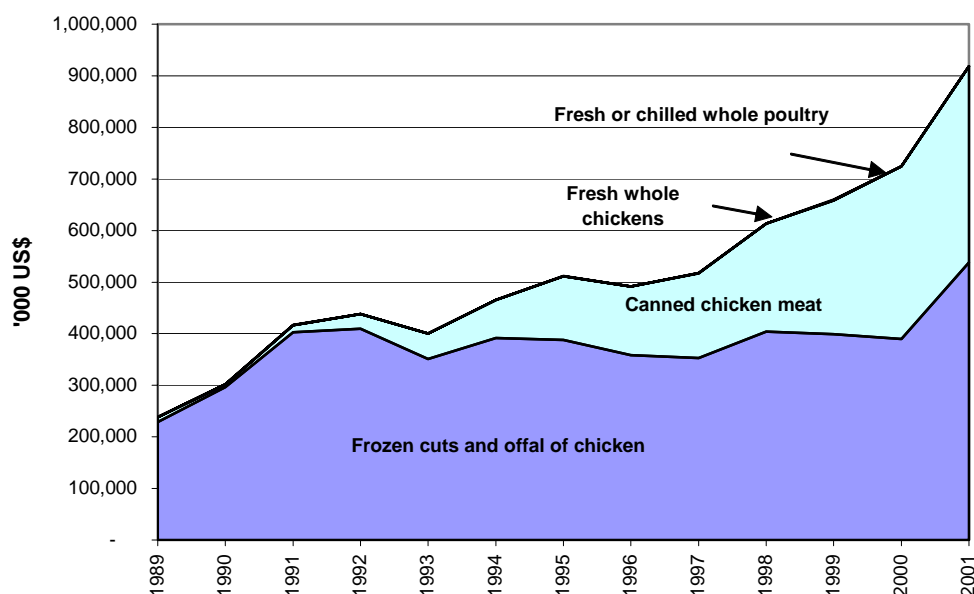


Source: UN Comtrade Database, 2004

Japan remains the main destination for Thai chicken meat exports. In recent years, however, the EU has become a market of increasing importance for Thai chicken meat. The significance of the EU as expanding export market is that now a greater proportion of Thai poultry products must meet the EU certification standards on food quality, food safety, animal health, animal welfare, and environmental quality. The other regional grouping that had significant quantities of imports were the other countries in East Asia outside Japan. All the rest were minor trading partners.

The other significant trend in the export of Thai chicken meat is the changing composition of product form. Figure 8 shows the value of exports of chilled and frozen chicken meat and canned chicken meat, in thousand US dollars, from 1989 to 2001. While an increasing trend in exports of frozen cuts and offal of chicken, particularly in the latter years is still discernible, the export of chicken meat in its canned form exhibited the more rapid growth in the 1990s. By the year 2001, the share of exports of canned meat had already risen to about 40 percent of total chicken meat export value.

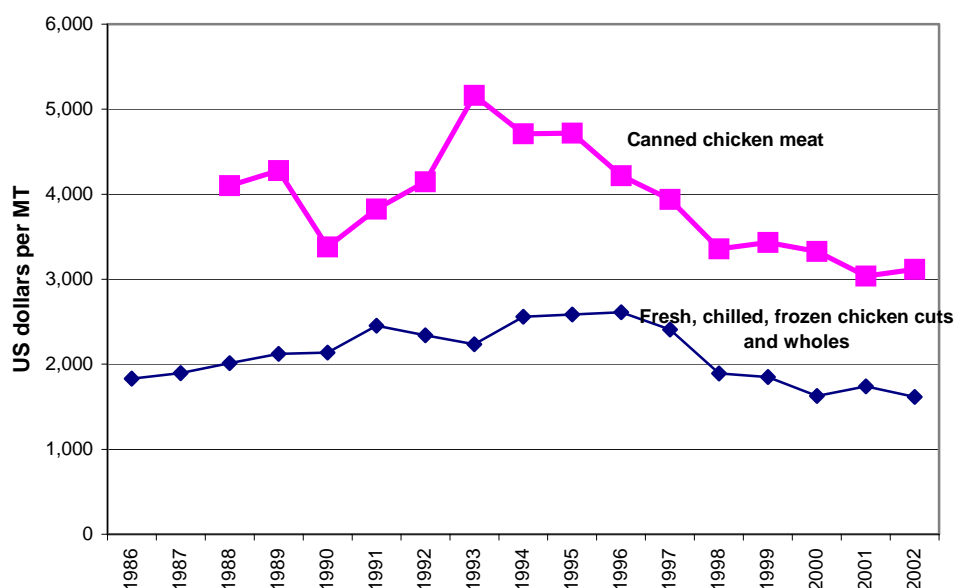
Fig. 8. Value of exports of fresh, chilled, frozen and canned chicken meat, Thailand, 1989-2001.



Source: UN Comtrade Database, 2004 , and FAOSTAT, 2004

Conventionally, canned chicken meat would be classified among the lower-end products, with non-choice parts being further processed and canned. The movement towards exports of canned chicken meat is not readily explainable. An investigation into the unit values of Thai exports of canned chicken meat and frozen cuts and offal, however, show that unit values of canned chicken were consistently higher (close to 85% on average) than those of its frozen counterparts (Figure 9). For Thailand, therefore, the entry into exports of canned chicken constituted a movement toward a higher-value product form, at least in unit-value terms. For the earlier years, 1988 - 1997, the bulk of canned meat exports went to Japan (87.7% of item export value). In recent years, exports to the EU rapidly expanded such that for the years 1998 – 2002, the share of the EU had risen to 44 percent (with Japan still taking 48%). The main EU importers of canned meat were the UK and The Netherlands, the combined imports of which amounted to 81 percent of the total value of EU imports (FAOSTAT, 2004).

Fig. 9. Comparison of unit values of exports of canned chicken and frozen cuts and offal, Thailand, 1989-2001. (F.o.b., in US\$ per MT)



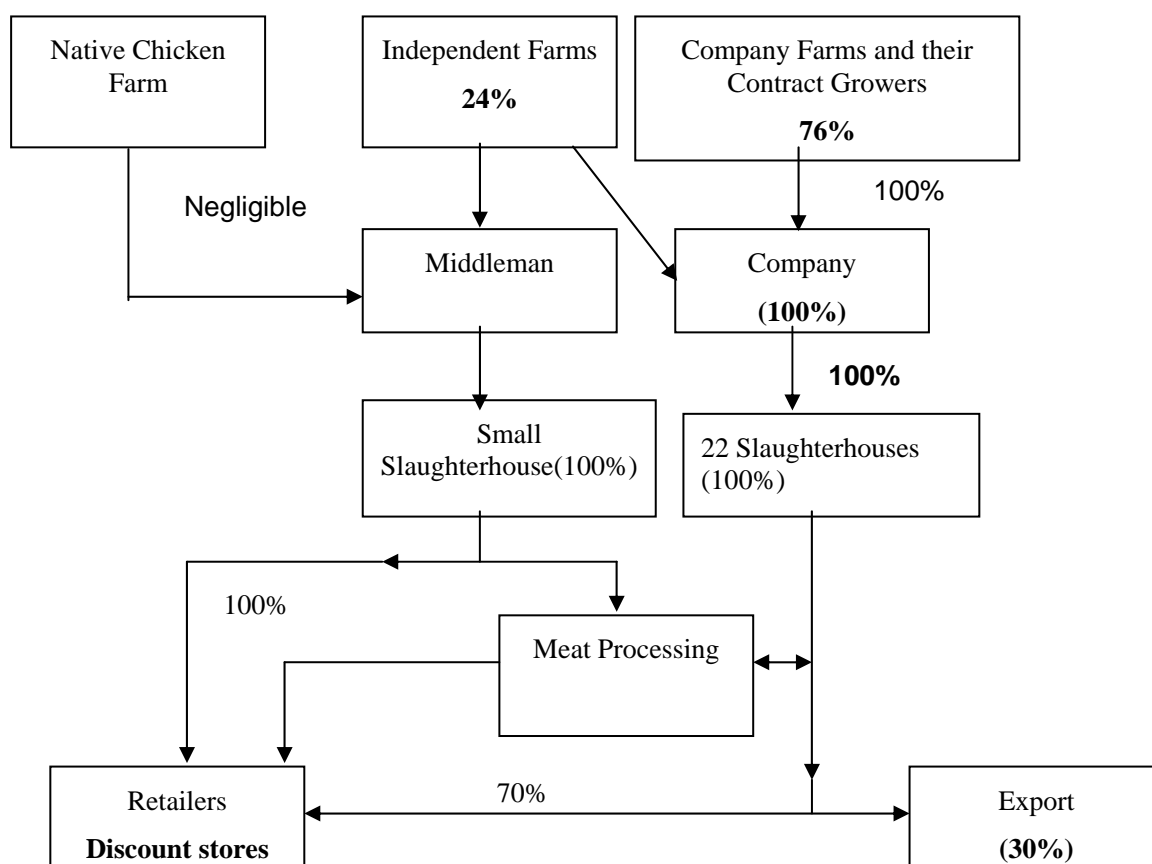
Source: FAOSTAT, 2004

The increasing significance of exports of canned (highly processed) chicken also implies that a greater proportion of chicken meat output must also pass the standards for certification of meat processing plants for products destined for the export market.

Not all meat passing through the certified-for-export poultry dressing and processing plants, however, does end up in the export market. The Japanese and EU markets demand only certain parts of the chicken (e.g., boneless breast; skinless breast). The parts not exported (e.g., legs, wings, ribs, internal organs) are packaged or further processed into locally demanded products (e.g., chicken balls, hams, sausages) for distribution in the domestic supermarkets and convenience stores in the Bangkok metropolitan area and major urban centers (Poapongsakorn, 2003). Thus, the former segmentation between the local and export markets has been broken. The state-of-the-art poultry dressing and meat processing plants of the integrator companies no longer function just for the export market but the domestic markets as well. This means that the product standards for dressing and processing meat through which export-destined products pass are, by and large, the same which components destined for the domestic market pass through. The interface of the export and domestic markets for broiler meat has meant a reorganization of the market chain in such a way that the market shares of the local traders and small local public slaughterhouses were

gradually being reduced. Thus, an increasingly larger portion of total broiler output was being channeled through the modern dressing plants of the large integrator companies. Figure 10 shows a simplification of the flow of broiler output from large companies, contract growers, and independent farms. Most of the sector output is now channeled through the integrators' dressing plants. This may lead to the marginalization of broiler products passing through smaller slaughterhouses that do not enjoy the benefit of any certification in terms of certain product standards. The above movement has the implication that the broiler produced from independent broiler farms would now also have to satisfy certain product attributes (e.g., animal health, feed additives used, pharmaceuticals administered) before being accepted for further processing. For companies whose final (often branded) products need to be traceable to their origin for increasingly demanding clients, it is important to be assured that the raw material (live broilers) they accept from their various suppliers are tightly screened for food safety and product quality.

Fig. 10. Flow of products in the broiler marketing chain, Thailand, 2002



Source: Thai Broiler Processing Export Association; Poapongsakorn, et al., 2003.

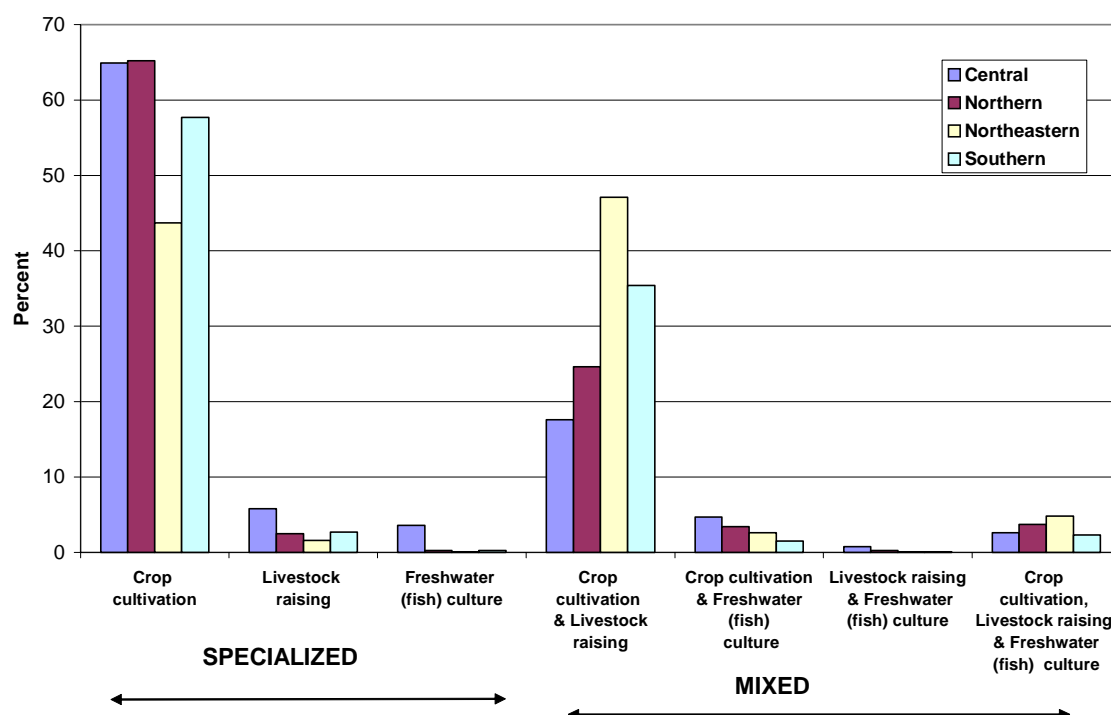
Implications of the Modernization of the Broiler Industry for the Thai Poultry Sector

The Thai poultry sector is normally identified with the modern and successful export-oriented broiler industry. While the large integrators and their network of contract growers control the larger part of the chicken meat market, the Thai poultry industry as a whole is a more complex composition of other major activities and of farms of various sizes. The events that affect the broiler industry cannot be taken apart from the events that impact on other units and economic activities in the entire poultry sector. The recent bout with the H5N1 avian influenza has revealed that poultry farms coexisting in the same localities and regions are jointly affected by the crisis, directly through infection and culling, or indirectly through the crash in farmgate prices of all kinds of poultry and poultry products. The next sections try to present the other facets of the Thai poultry sector.

Livestock as an Activity in Thai Farms

Livestock as an activity among the various types of agricultural farms is undertaken either as specialized farms or as mixed with cropping activities. Thailand is divided into four main regions – the Central region which includes the Bangkok area, the Northern , the Northeastern and the Southern regions. Each region varies in terms of the level of livestock activities. [Figure 11](#) shows the distribution of the landholdings across the regions of Thailand by type of activity or mix of activities in the farms.

Fig. 11. Relative Distribution of landholdings by type of activity in farms, by region, Thailand, 1998. (In percent of farms)



Source: NSO, Thailand, 2004.

Most farms in Thailand are either specialized in crop cultivation or are mixed crop-livestock farms. The Northeast is one region where the predominant landholding type is the mixed crop-livestock farm. Most livestock farms in Thailand are therefore of the mixed type, with those specializing in pure livestock activity constituting a minority. Noteworthy is that while the Central region is where the percentage of mixed crop-livestock farms is least, it is also the region where the highest percentage of pure livestock farms is located. This feature will be examined in the succeeding sections.

The Composition of the Poultry Population and the Distribution of Farms

As of 1 January 2000, the total population of the major activities in the Thai poultry sector was estimated to be about 217 million birds, raised in around 31,000 poultry farms. The composition of the poultry inventory and the number of farms are shown on [Table 1](#). It is clear that although the broiler sector indeed comprises a large proportion of the poultry population (42%), the relative importance of the other activities remain significant. In particular, the local ('native') chicken sector, at 73 million birds, accounts for a full third

(34%) of the entire poultry inventory. Yet in many discussions about the Thai poultry industry prior to the January 2004 avian influenza crisis, this sub-sector has largely been ignored. Not much has been discussed about the households who raise native chickens, nor about the markets that the outputs from these farms cater to. It has been largely asserted that local chickens were slaughtered at the farms for home consumption by the same households that raised them. It could also be seen that the population of ducks (egg and meat types) is even slightly higher than the number of chicken layers in the egg industry. The accounting of the bird populations in activities other than broiler shows that the Thai poultry sector is not as homogeneous as conventionally conceived.

Table 1. Distribution of poultry inventory and farms, by type of activity, Thailand, 1 January 2000.

Type of Poultry	Number (Million birds)	Percent of Population (%)	Number of Farms	Percent of Farms (%)
Broiler	91.57	42.2	10,476	33.7
Native chicken	72.97	33.6	8,369	26.9
Layer	24.80	11.4	7,459	24.0
Duck (all types)	27.88	12.8	4,768	15.3
Total	217.23	100	31,072	100

Source: Statistics Branch, Planning Division, DLD, MAOC, 2001

The definition of poultry farms by the Statistics Branch, Planning Division of the Department of Livestock Development (DLD), refers only to farms holding at least a minimum number of birds for each type of activity. For broiler, native chicken and duck farms, the minimum holding was set at 500 birds. For layer farms, the minimum holding was put at 100 birds. Farms holding less than the minimum number of birds set were apparently not classified as being mainly poultry farms, and were excluded from the statistics on the distribution of farms according to size and location.

In terms of the distribution of the number of farms according to the major poultry activities, a third (34%) of the farms were engaged in broiler, while native chicken and layer farms occupied almost the same proportion (roughly 25%). Duck farms accounted for 15 percent. What the distribution of the number of farms by type of activity suggests is that a full two-thirds of all poultry farms in Thailand are not broiler farms.

Regional Concentrations and Size Distribution of Poultry Farms

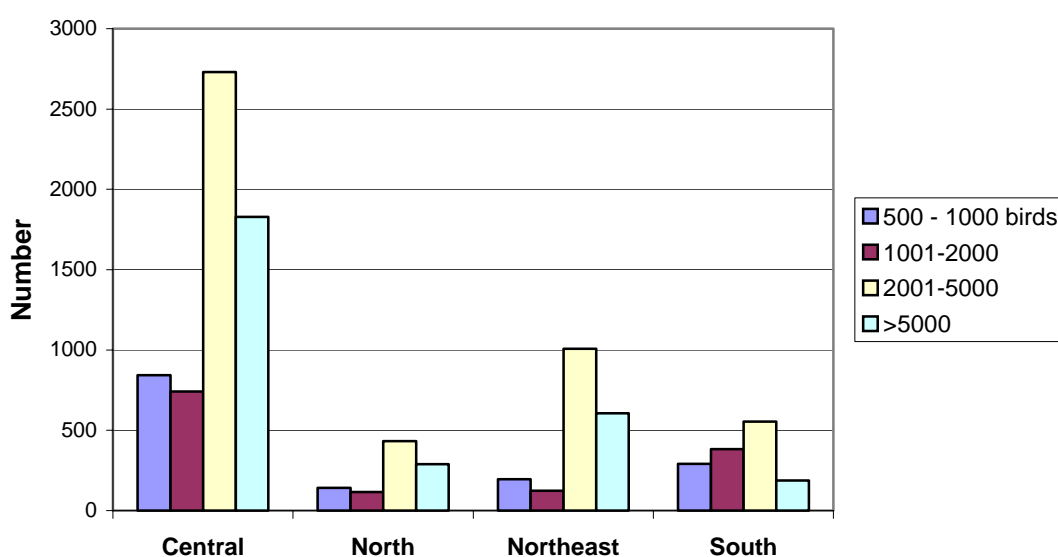
The main regional locations of poultry activities are the following: a) Central Region, b) North, c) Northeast, and d) South. The location and size distribution characteristics of the various types of poultry farms demonstrate the following:

- that poultry activities are concentrated in certain regions for some farm types, while others are widely dispersed across regions;
- some activities consist mainly of large-sized farms, while other consist of a wide mix of small, medium and large farms; and
- the various activities largely mix alongside each other within the same regional locations.

The regional concentrations and size distribution of farms are presented individually, by type of poultry activity in Figures 12 to 18.

In the broiler sector, the regional and size distribution of farms is given in [Figure 12](#). Clearly, broiler farms are concentrated in the Central region of Thailand. Secondly, the broiler sector is dominated by farms of relatively larger scales of operation (more than 2,000 birds). The size of most of the broiler farms, however, falls within the 2001 to 5,000-bird range, and not in the largest-size category (more than 5,000 birds).

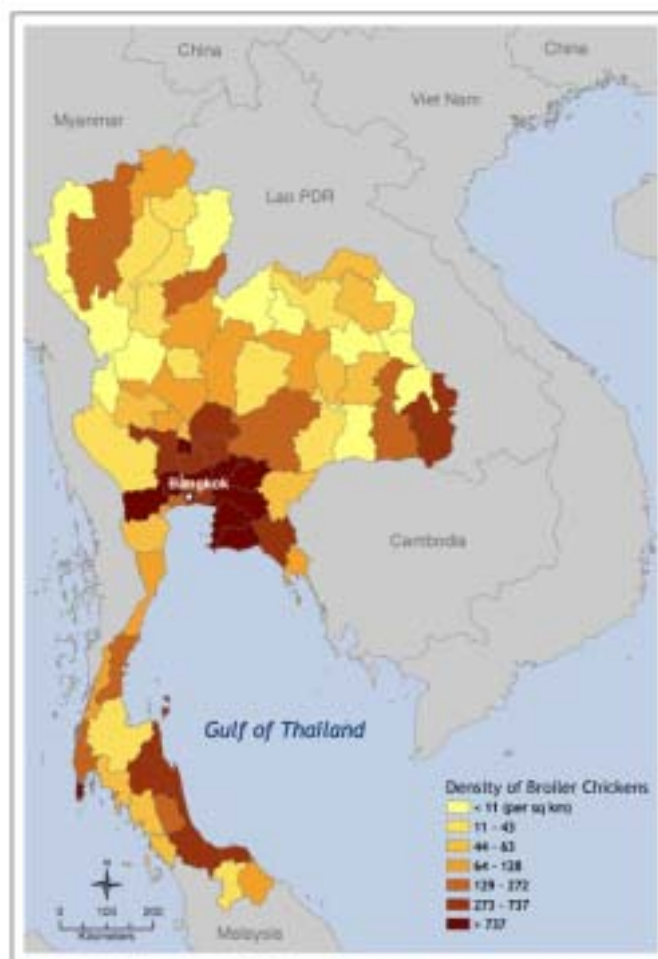
Fig. 12. Regional concentration and size distribution of broiler farms in Thailand, 2000.



Source: Statistics Branch, Planning Division, DLD, MAOC, 2001

The Central region of Thailand includes the provinces closest to the Bangkok, the largest meat market. Recent expansion areas in broiler production have been towards the Northeast. Figure 13 presents the density of broilers in the various provinces of Thailand. Density is highest in the Central region, particularly in the provinces east and west of Bangkok. Next come the provinces just north of the capital.

Fig. 13. Map of the density of broiler chickens in Thailand, by province.

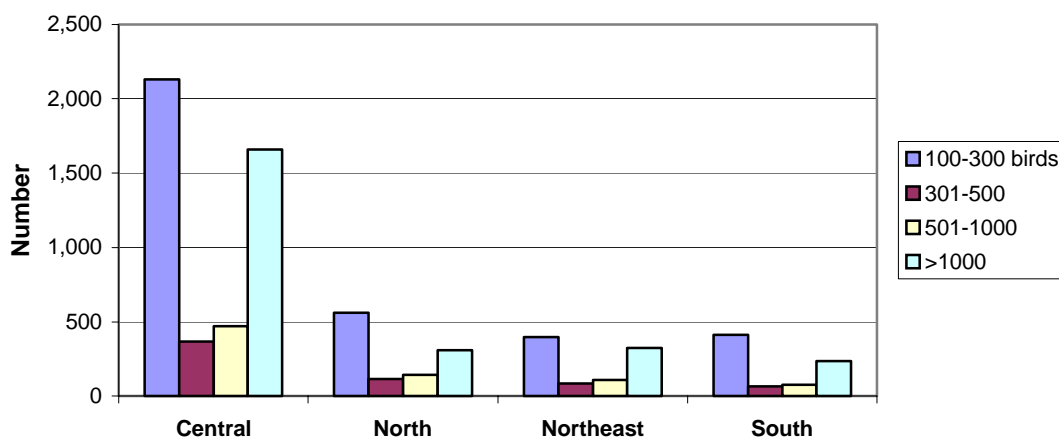


Source: (See Tim Robinson)

In egg production, a concentration of farms is also found in the Central region. This is shown in Figure 14. In contrast to the broiler sector, however, the size distribution is bi-modal, and this is reflected in all regions. Most of the farms are either of the smallest size category (100 to 300 birds), or the largest category (more than 1000 birds). This indicates that in egg production, the smallest layer farms operate side-by-side with the largest farms in

the same region of concentration and are located in the same region where most of the broiler farms are located.

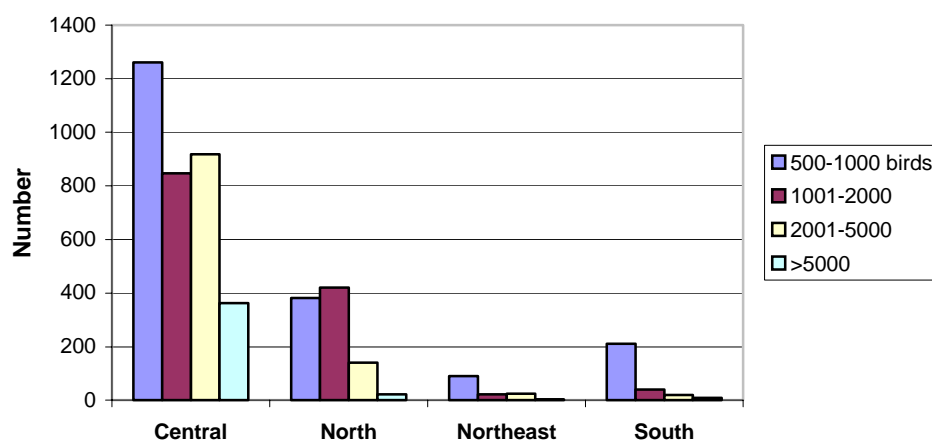
Fig. 14. Regional concentration and size distribution of chicken layer farms in Thailand, 2000.



Source: Statistics Branch, Planning Division, DLD, MAOC, 2001

Duck (meat and egg) production is also concentrated in the Central region of Thailand, as observed in Figure 15. In contrast to broiler operations, duck farms are of the smaller size categories. Again, small-sized duck farms are located in the same regions where large broiler farms are concentrated.

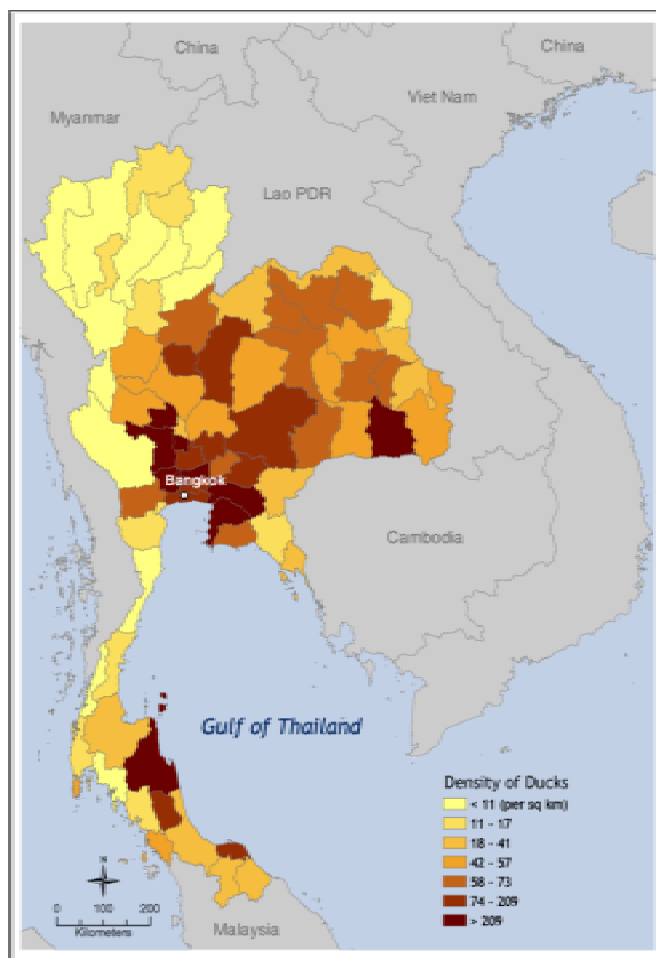
Fig. 15. Regional concentration and size distribution of duck farms in Thailand, 2000.



Source: Statistics Branch, Planning Division, DLD, MAOC, 2001

Figure 16 shows the distribution of the density of duck populations among the provinces of Thailand. The highest densities are also found in the Central region, particularly in the provinces to the southeast and northwest of Bangkok, followed by the provinces to the northeast of the capital.

Fig. 16. Map of density of duck populations in Thailand, by province.

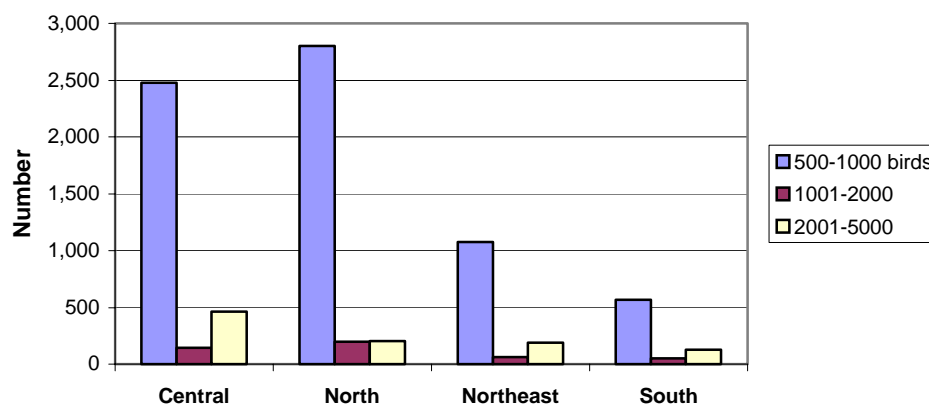


Source: (See Tim Robinson)

Finally, in native chicken production, although the main concentration of farms is in the North, the number of farms in the Central region is not far behind. As seen in Figure 17, native chicken production is predominantly undertaken in relatively small farms. The scale of activity in the smallest-size operations, however, is still not insignificant with the holding of 500 to 1,000 birds at any one time. One should note that these are not the number of birds produced per year but just the starting inventory at the beginning of the year. Given the average per capita consumption of chicken meat (14 kg per person, per year) for Thailand, it

is definitely the case that the greater number of the native chickens raised in even the smallest size category of farms are sold as marketed surplus.

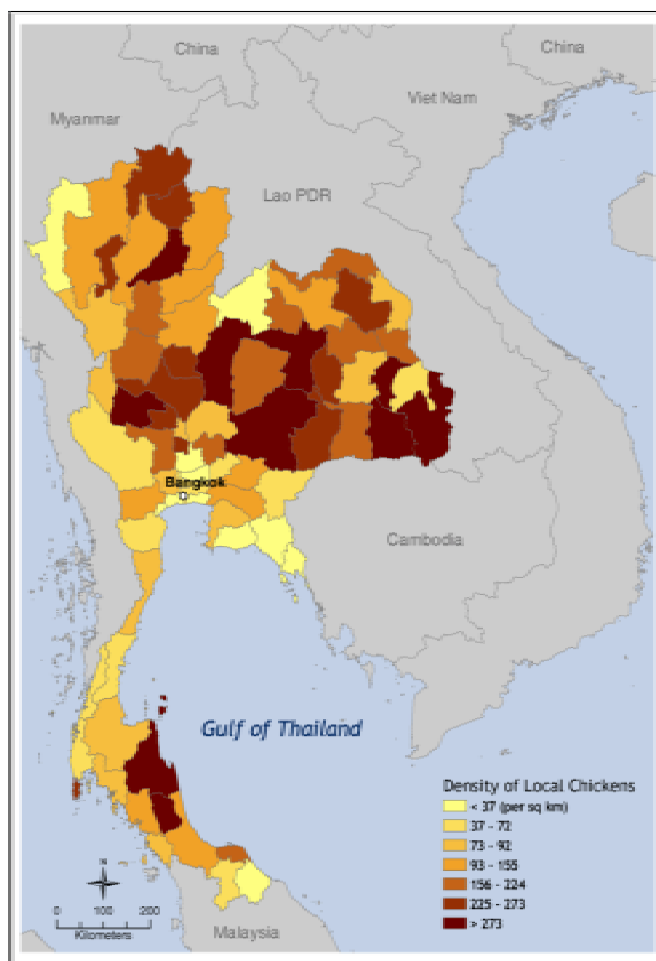
Fig. 17. Regional concentration and size distribution of native chicken farms in Thailand, 2000.



Source: Statistics Branch, Planning Division, DLD, MAOC, 2001

Figure 18 shows the distribution of the density of local chickens among the provinces of Thailand. Although the Central region is still prominent in the location of high concentrations, the provinces of highest densities are more dispersed than in broiler, layer and duck populations. Notable are the provinces farther to the northeast of Bangkok, and provinces in the Northeast region and pockets in the Northern region.

Fig. 18. Map of density of local chicken populations in Thailand, by province.



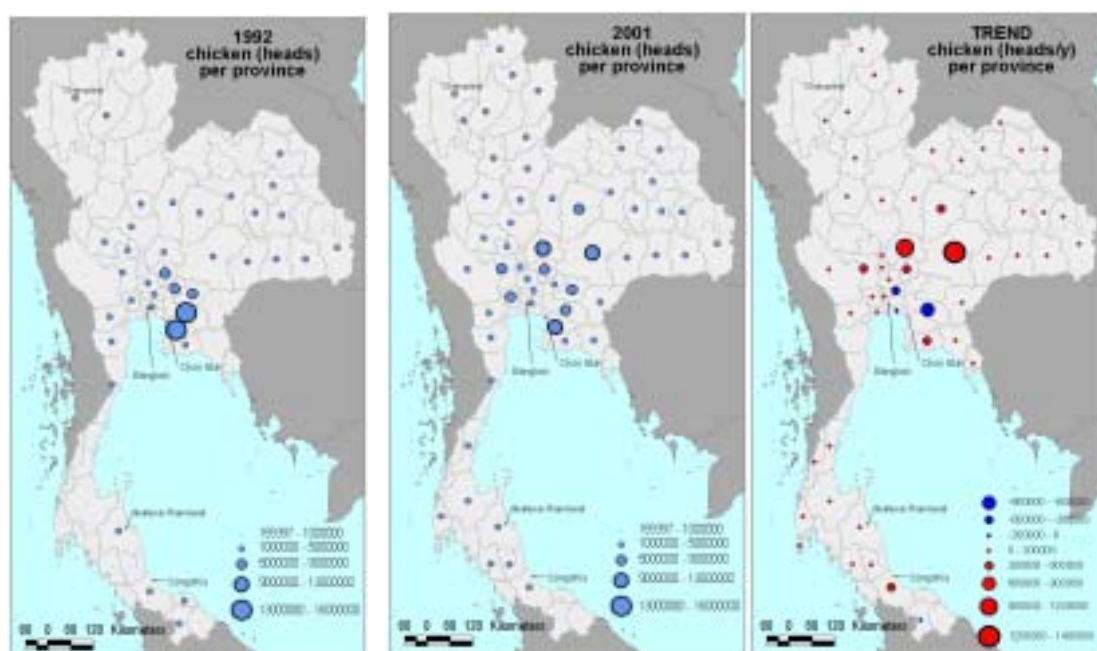
Source: (See Tim Robinson)

The spatial distribution of the poultry population is expected to undergo geographic shifts in response to changes in economic and market opportunities. The shifts are expected to be more pronounced in the more commercially-oriented side of the sector, the most highly commercialized of which are the chicken broiler and layer industries. While the major demand center will still be the Bangkok metropolitan area, the significant expansion in the road infrastructure and highway network across Thailand and the corresponding reduction in unit transport costs will allow the location of commercial operations farther away from the capital. This will also facilitate the access by these commercial operations to the feed-grain centers in the provinces farther out of the capital.

Figure 19 presents the changes in the geographical distribution of chicken farms over the 1992-2001 period. The traditional poultry raising provinces are located in the Central region. These include the provinces of Choburi and Chacherngsao to the east of Bangkok,

Nakorn Pathom to the west, Ayuhaya in the central region, and Nakorn Ratchasima to the northeast of Bangkok. Recent expansion areas were observed to be towards the east of Bangkok in the provinces of Saraburi, Nakorn Nayok and Prachinburi, towards Supanburin in the west, and Lopburi in the Central region. It is observed that the large integrators are choosing new locations farther away from the traditional areas of concentration, towards the provinces which are also at the same time the major regions producing maize and soya beans, both of which grains are the major ingredients in standard feed formulas. It is also noted that the provinces to the Northeast where new chicken farms are being established are the same or very close to provinces where the highest densities of local chickens are located. This increases the likelihood of large commercial farms operating side by side with relatively small farms of local chicken.

Fig. 19. Changes in the geographical distribution of chicken populations over the 1992-2001 period, Thailand.



Source: FAO, AGAL-LEAD, 2004

Conclusion

In general, it can be stated that the poultry sector of Thailand, although more well known for its modern broiler industry dominated by large farms of the broiler integrators, is a composite of four major classes of activities, with many relatively small farms in the layer,

duck and native chicken industries operating alongside the large-scale farms of the integrators in almost the same major regions of concentration. With the recent trends in expansion areas of poultry activity, it is foreseen that the mix of small and large farms, and of broiler, layer, duck and native chicken farms in the same areas will remain to be so, unless the integrators continue their movement away from the current regions of concentration.

The proximity of small farms to large farms, of native chicken farms to modern broiler and layer farms, is expected to generate realignments in industrial organization for farms that deem it advantageous to segregate and seal their operations into self-contained units, insulated from the concerns about animal and public health that are generated by open systems of poultry production, whatever species these may involve. The incentive to do so may have been heightened by the havoc that the spread of the avian influenza had brought on the Thai broiler industry in general, and to the export market for Thai chicken meat in particular. To recapture the market and save the billion-dollar Thai broiler export industry, there may be moves by the state to regulate the activities of open-system small-scale poultry producers. The predominance of small farms in layer, duck and native chicken production activities in the same provinces where the large broiler integrated operations are located, however, brings to the fore the imperative for public policy to be sensitive to the other facets of the poultry sector, even as they attempt to design regulatory measure to protect the broiler industry. Policy makers must come to terms with the social consequences of limiting the economic activities of households making a living out of smaller-sized farms in the same provinces where large industrial farms operate.

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