

CHAPTER 4

SPS and Thailand's Exports of Processed Food

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INTRODUCTION

The sanitary and phytosanitary (SPS) measures are not a new issue in international trade in food products. There is a growing concern among the developing economies that SPS measures might be used for domestic protection by the emerged economies. This led to the negotiation of a specific agreement on the application of SPS measures at the Uruguay Round. The SPS measures should be applied to both domestic and imported products to protect humans and animals from diseases associated with trade in agricultural products.

Until recently public awareness about the importance of the SPS measures was minimal in Thailand. The threat of losing revenues from shrimp and chicken exports to the EU during 2002 forced both public and private sector players to maintain higher level of quality and safety standards.

This paper examines the processed food industry in Thailand by focusing on the SPS-related issues on five key commodities – chicken, shrimps, canned tuna, pork, and canned pineapple. The five processed food industries will serve as a basis for formulating hypotheses relating to the issues of SPS compliance and the competitiveness of the Thai food export industry. The chapter surveys the current issues in the above-mentioned industries followed by discussion on institutional arrangements from private and public sectors in dealing with the SPS measures imposed by Thailand's trading partners. The maintained hypotheses are presented in a subsequent section. These hypotheses are specified explicitly so that they can be investigated in future research.

AN OVERVIEW OF THAILAND'S PROCESSED FOOD EXPORT INDUSTRY

Thai food exports had been rising (Figure 1) until the year 2002. Similar was the case in regard to, exports of processed food. Of late, the export structure of the developing countries has been altering with the gradual changes in the principal output component from agriculture to manufacturing products. As a result, the relative importance of food and processed food in total exports has also been declining (Figure 2). Manufacturing output has been

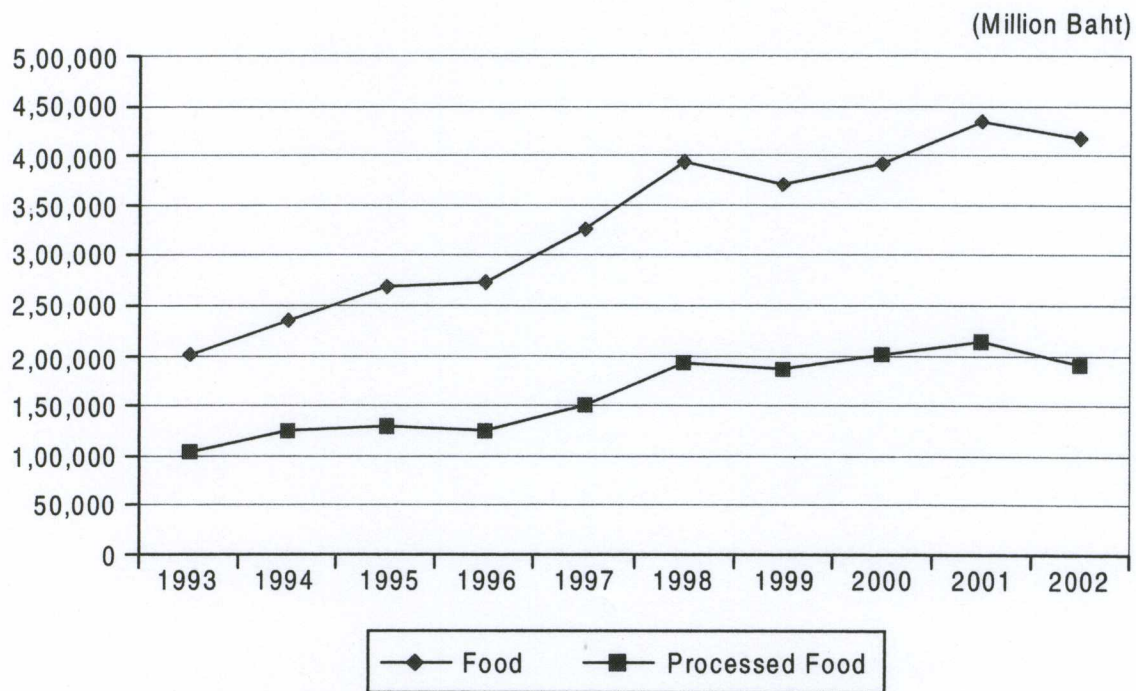


Figure 1: Food and Processed Food Exports

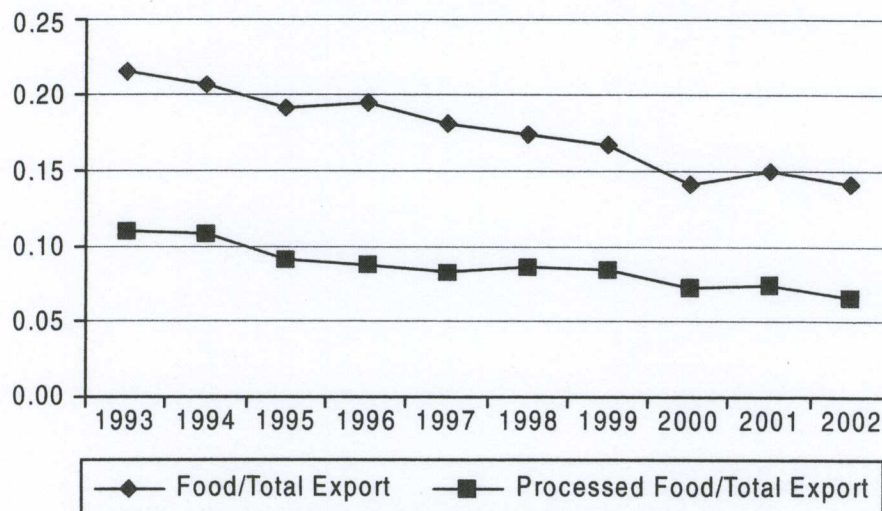


Figure 2: Shares of Food Exports and Processed Food Exports (percentage in terms of export values in baht)

increasing more rapidly than the food production. This changing pattern of output is consistent with the consumption pattern predicted by the Engel's Law, which says that the percentage of income spent on food decreases as income increases. It is not surprising to see that processed food exports decline as a percentage of total exports when manufactured goods exports increase faster rapidly than the former. Nevertheless, processed food exports may become more important than traditional non-processed food exports due to their value-added nature and also their ability to circumvent technical barriers to trade. According to Wilson (2000), the share of food exports in high-income countries declined consistently from 1981 to 1990 and became stationary during the early 1990s. Middle- and low-income countries also experienced a trend similar to the one observed in high-income countries. And Thailand is no exception to this.

A rapid growth in the processed food industry can create a smooth transformation of a rural agrarian economy into an urban industrial economy. With a lower capital-labour ratio than the manufacturing sector, the processed food industry generates higher employment because of its labour-intensive nature. In addition, unlike the electronics industry, it does not depend so much on imported raw materials. The value-addition created within the processed food industry has greater backward linkages to the rural economy than other high-tech industries. Figure 3 shows the trend of major processed food exports from Thailand. Export values of processed pork are not included since the export value is relatively lower compared with the other four items shown in Figure 3. Exports of frozen chicken did not suffer as much as frozen and processed shrimps, which took a severe blow during 2002.

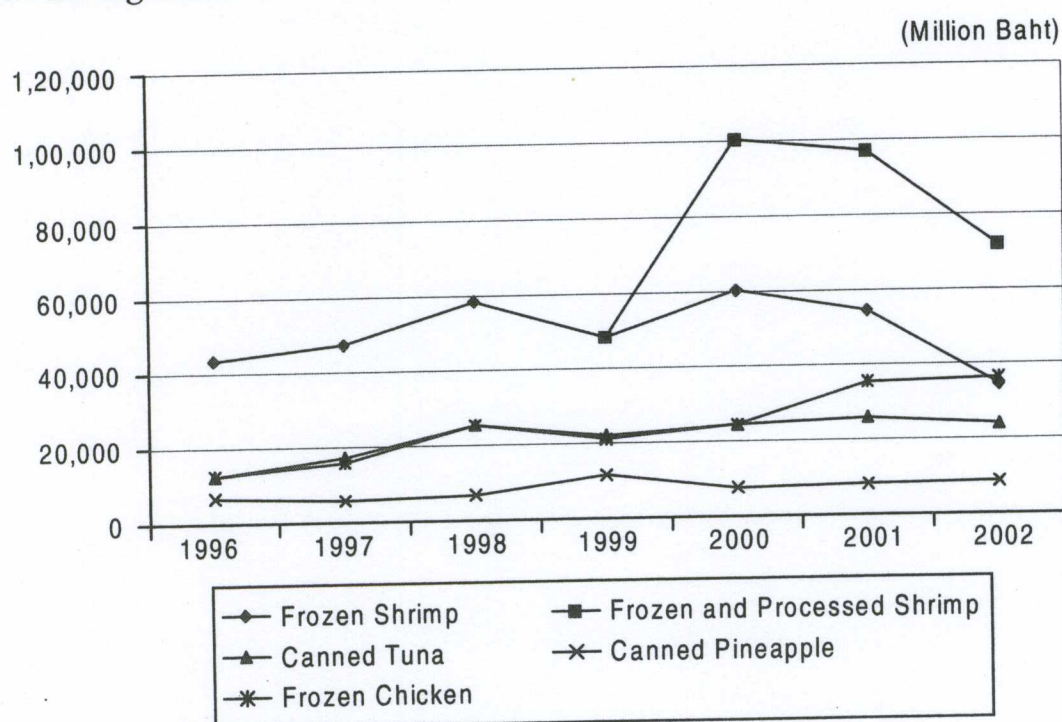


Figure 3: Thailand's Major Agro-Food Exports

Thailand ranked 14th among the top 15 world food exporters during 2000, with an export value of \$2.4 billion (Figure 4). The top nine food exporters were all developed countries, followed by China which ranked 10th during the period. Australia ranked 12th exporting \$2.8 billion worth of food products during 2000. The developed countries indeed dominate the world market of food products. Thailand's world market share in 2000 was only 0.5 per cent. Its inability to influence the world market prices implies that Thai exporters must comply with market demand if they want to succeed. Since the developed nations dominate the world food products market, their agricultural and trade policies have profound effects on the livelihood of agricultural labourers in the emerging economies.

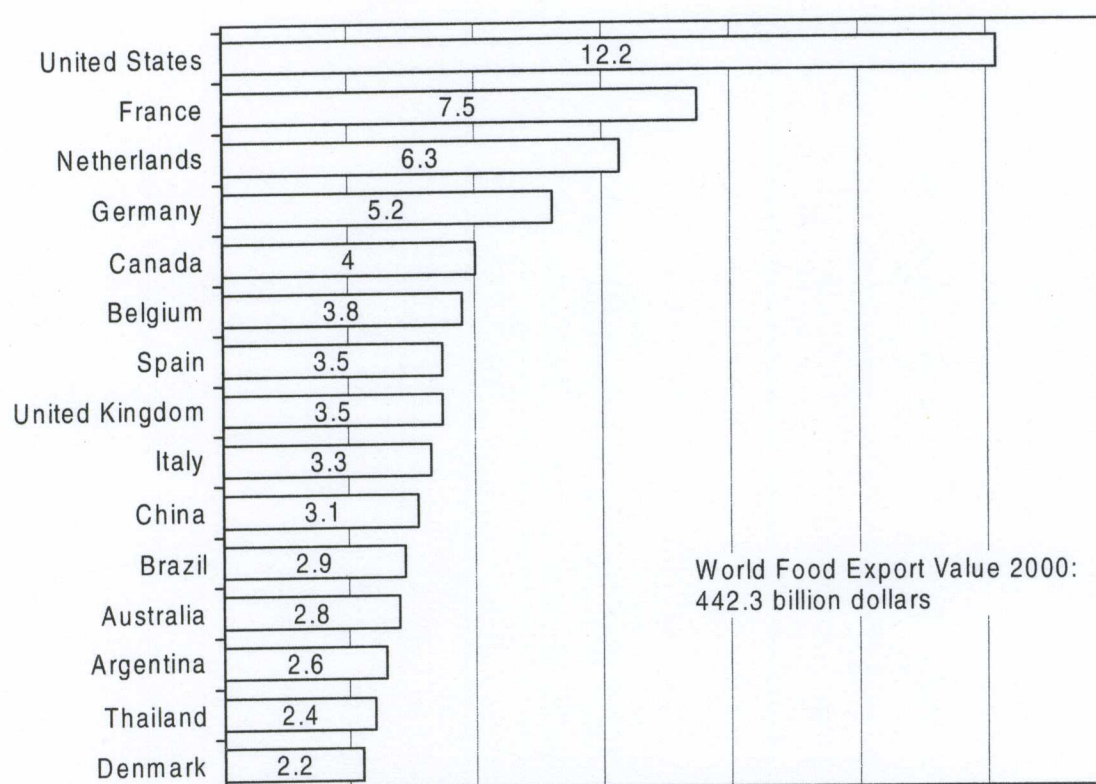


Figure 4: Market Share 2000: World's Top 15 Leading Food Exporters

In terms of the market distribution, 22 per cent of Thai food exports were to Japan during 2001, 19.1 per cent were to the US, 12.5 per cent went to the EU, and 3.9 per cent was lapped up by China (Figure 5). But in terms of total exports, the share of Japan was much lower at 14.5 per cent with the US topping the list with 19.8 per cent, followed by the EU with 14.7 per cent during the same period. Roughly speaking, Thailand has a comparative *advantage* in food production with Japan, and a comparative *disadvantage* when compared to the US and the EU. Nevertheless, the conclusion can be misleading since the ability to reveal its comparative advantage also depends on tariff, non-tariff barriers, and agricultural production subsidies in the EU and the US. In other words, the revealed

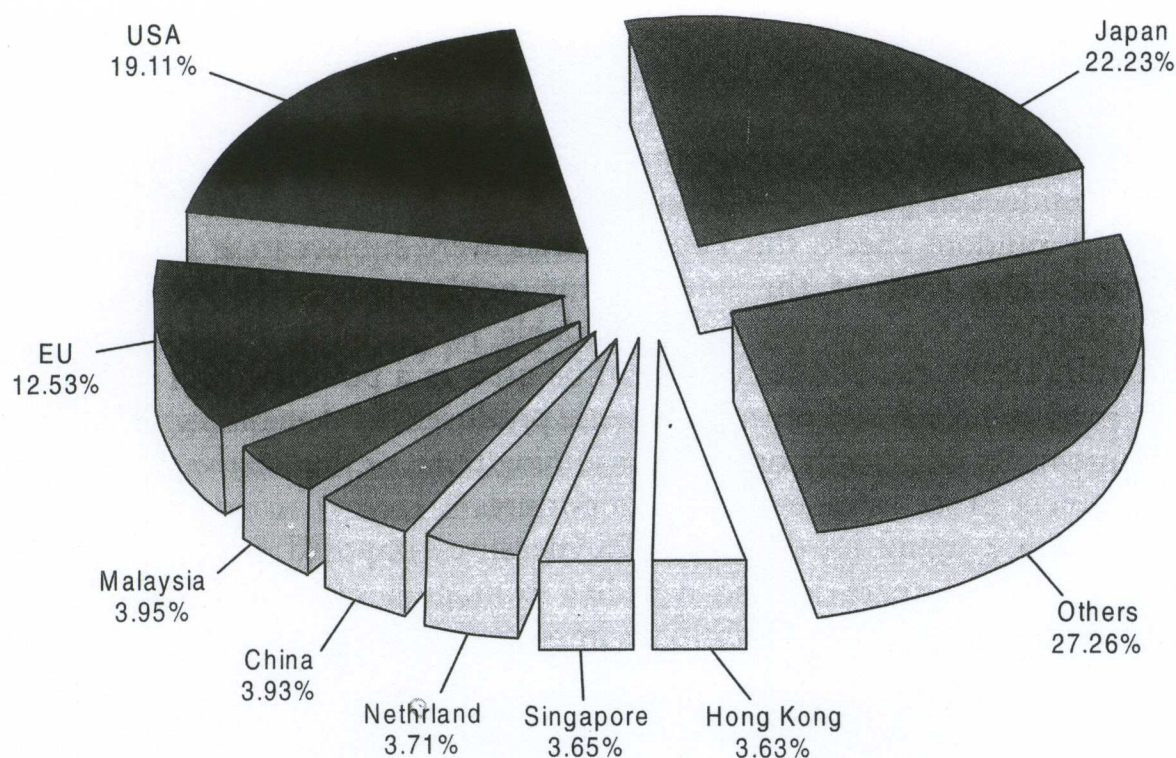


Figure 5: Thai Food Exports: Major Markets 2001

comparative advantage index is impaired by the fact that Thai products are not permitted to demonstrate their efficiency through price competitiveness, since there are both quantitative and qualitative restrictions on free trade.

CHICKEN: A MAJOR SLUMP IN EUROPE IN 2002

The domestic chicken industry has become very efficient in terms of the unit cost of production. It had been enjoying the benefits of high safety standards for the past 20 years until the early 2004 when Thailand succumbed to the avian flue crisis. Tables 4 and 5 show the export quantity of frozen and processed chicken. Processed chicken was only 30 per cent of frozen chicken. There has been a gradual increase in the share of value-added chicken exports. Notice the jump in the market share of processed chicken during 2001. With the outbreak of the FMD and the BSE scares in Europe, the EU imported 14,800 tonnes chicken from Thailand. Thirty-seven per cent of these exports were cooked meat. Breast meat prices went up from \$2,000 per tonne during 2000 to \$3,000 the next year. This rapid growth was due to the change in consumer taste as well as the dynamic supply response from the Thai broilers. With 1.2 per cent of added salt, Thai chickens were subject to a lower tariff rate of 15.4 per cent instead of the 70 per cent duty imposed on raw meat. The ability to gain market share in Europe led to complaints from French and Danish growers, who put pressure on the EU Commission to eliminate salt added imports of Thai chicken.

Nitrofurans is a veterinary drug used in food-producing industries, but it

is banned in many countries because of a link to cancer in humans. The EU first employed costly new laboratory equipment – LCMS/MS – in March 2002. The machine found nitrofurans residues in both Brazilian and Thai chicken and shrimps. This new instrument is so accurate that it can detect drug residues at parts per trillion. While the Brazilian exports were subject to only random check, the Thai products were subject to a 100 per cent testing. The cost of the new testing equipment is 15 million Baht (\$3,50,000), thus making it unaffordable for small firms. As noted by Zarrilli (1999), the SPS standard can be used as a powerful tool to impede international trade and protect domestic producers by demanding unjustified requirements like, costly or time consuming tests, or duplicative conformity assessment procedures, etc., from importers.

There are many incidents of SPS measures imposed on Thai chicken products. And there is also a policy contagion effect of the EU high standards. The Czech Republic bans imported chicken from Thailand on the basis of antibiotic residues. Taiwanese chicken importers must obtain permission and safety clearance.

The Australian food safety regulations are exemplified in the case of chicken products. Chicken meat imported into Australia must be heated at 70°C for 143 minutes to kill various diseases. As a result, neither Thailand nor any other country has ever penetrated the Australian chicken market. This became a thorny issue between the Thai industry association and Australian Government during their talks on free trade agreement. The Thai firms argued that they would lose a lot due to the still existing aberrations in the Australian food safety standards even after the removal of all tariff barriers. Some Thai companies suggested that Bangkok retaliate by demanding the same heat treatment for Australian wines and chocolates. The basic argument is that food products, when subject to heat treatment, would not remain the same.

South Korea fully abandoned import quotas on chicken since 2001. With a tariff rate of 30 per cent that declines 1–1.5 per cent annually, the South Korean Government maintains that all factories that process chicken for exports to South Korea must pass its safety inspection. So far, only 33 Thai factories could get such permission. But Thai exports of processed chicken (e.g. New Orleans wings) to Korea have significantly increased in recent past. The Korean incident indicates that when technical barriers are even partially removed, trade can take place smoothly as they will then be dictated by comparative advantage.

The SPS measures indeed can sound a death knell to an industry or provide a great opportunity to expand the market share. Producers must be aware of the existing and future SPS measures that are likely to be imposed. What is required is the time for adjustment. Exporters have no intention to avoid the SPS regulations. In many cases, there has been no method of detecting such residues. It is impossible to comply instantaneously with new

regulations being imposed by importing countries. In the medium term, after altering their production method, companies can resume exports. Nevertheless, producers in the developed countries can buy time through citing unproven scientific researches conducted in different climate and enjoy a temporary break from having to compete with more efficient producers in the developing countries.

SHRIMPS: A CASE OF ABUSE OF FOOD SAFETY STANDARDS

Frozen shrimps generate export revenues of more than 1.5 billion Baht per year, ranking among the top 10 of Thailand's exports. Thailand is also the leading exporter of farmed shrimps with a market share of 27 per cent in the world markets. The outbreak of the white spot virus in Ecuador in 2000 provided an opportunity for Thai exporters. However, increasing competitiveness of India, Indonesia, the Philippines and Vietnam hampers Thailand's processed shrimps industry. Because the demand for shrimps is highly elastic with respect to income, a slowdown in the world economy implies a reduction in the world demand for shrimps and thereby depressing export prices. The EU, the US, and Japan are the major importing countries with their share being 33, 29, and 22 per cent respectively. When the EU removed the privileges given by the generalised system of preferences (GSP) in 1999, it imposed a 12 per cent tariff on Thai shrimps. It has since then undermined Thailand's competitiveness against other Asian exporters. While Thailand can still maintain its market share of frozen shrimps in the US and Japan due to the prevailing GSP, it has been experiencing a continued fall in the EU market share.

Large companies dominate the processing industry with 90 per cent of their production geared towards exports. The processing plants obtain raw materials from farm auctions at the Maha Chai Market Centre. There are about 20,000 shrimp farms along Thailand's southern and eastern coastlines. Shrimps farmers obtain shrimp feed (fish meal, soy meal, and wheat flour) from domestic shrimp feed industry dominated by large producers such as CP and Grobest. The cost share of shrimp feed is around 50 per cent. Both processing companies as well as shrimps-feed producers can be seen as firms operating in a monopolistic competition market. They are efficient and flexible in the sense that they can upgrade themselves to international standards in food safety. As the market structure is competitive, their profit margins tend to be low. As the market for frozen shrimps began to shrink they went in for new products with high value-addition such as shrimp sushi, shrimp tempura, cocktail shrimps, and shrimp spring rolls in order to differentiate themselves from competitors.

Thai exporters are aware of the uncertainties relating to arbitrary food safety standards measures imposed by major importing countries. They are also apprehensive about the issues of GMO, environment, and product

labelling. As pointed out by Victor (2000), the EU took a favourable stance on international trade by requiring segregation of GM foods from non-GM ones and to labelling of GM goods rather than slapping a complete ban.

Thai exporters thought that the only way to overcome such technical barriers was to establish a code of conduct for the industry. The conduct was drafted in 1999 by five organisations – the department of fisheries, Thai marine shrimp farmers association, Thai frozen foods association, Thai food processors' association, and aqua-culture business club. The signed document outlines all operating procedures such as data collection, training, site selection, shrimp health management, waste management, and application of drugs and chemicals. However, implementation of the code of conduct is voluntary. This agreement confirms the awareness and the importance that exporters give to the SPS standards. In order to differentiate their products from their low-cost competitors, they must establish the image of providing high quality and safe food products.

Although exports of shrimps to the US are not subject to tariffs, they must comply with the US's HACCP. In case of Japan, exporters are subject to the pre-certification system, food sanitation law, standardisation and labelling law of Japanese agricultural standards. Exports to the EU are also subject to HACCP, the European Commission rules, green dot, and ISO 9000 specifications. Narong Seafood Company, established in 1985, is a case in point. The company employed about 3,000 workers in Maha Chai and Hat Yai plants with storage capacity of 1,800 tonnes. It received the certificate from HACCP from the department of fisheries as well as the ISO 9001 in March 2002. The company plans to achieve ISO 14001 in the near future to improve its environmental standards. Narong Seafood is an example of a large firm, trying its best to upgrade the quality and safety standards.

In September 1996, the EU Council directive stated that the content of benzoic acid for preservatives in imported cooked shrimps must be less than 0.2 per cent (2,000 milligram per litre). This was a reduction from the initial level of 0.8 per cent applied earlier, while the frozen shrimps from the Union were allowed to contain up to 0.6 per cent. The EU Commission argued that shrimps caught in the North Sea and the Mediterranean were smaller than imported shrimps, hence they had less surface contact exposure to the benzoic acid than imports from Thailand. The Thai authorities maintained that the 0.6 per cent concentration of the acid was internationally acceptable standard that would cause no harm to human beings. Moreover, the 0.2 per cent concentration of benzoic acid was not strong enough to preserve the Thai cooked shrimps.

Applying different preservative content standards to shrimps at various sizes seems arbitrary and discriminatory in nature. The measure itself has reduced the attractiveness of Thai shrimps in terms of its freshness quality and timely delivery. Competition on the basis of prices and quality has been hampered by the discriminatory safety standard.

Under article 5 of the SPS agreement, countries must follow four important rules when they impose SPS measures that deviate from international standards.

1. the country must obtain a risk assessment,
2. the imposed measures must be based on that risk assessment,
3. these measures must not discriminate or create disguised trade barriers by requiring different levels of SPS protection in comparable situations, and
4. These measures must not be more restrictive to trade than necessary to reach the level of SPS protection.

The EU might argue that according to the third rule, since shrimps are caught in different situations, the North Sea shrimps should be subject to lower content of benzoic preservatives than shrimps caught in Asia. On the fourth rule, it would be difficult to prove that the measure is too restrictive than necessary. This is one of the many examples indicating that the SPS standards can be used to abuse and allow domestic producers to be protected by technical standards of food safety norms.

Table 1 indicates that the share of Thailand's exports in the EU had been declining from 11.8 per cent during 1990 to 2.9 per cent during 1999. It

Table 1: Exports of Fresh Shrimps, Prawns, Lobster – Chilled or Frozen

Year	Total (Million Tonnes)	US (%)	Japan (%)	EC (%)	Singapore (%)
1990	84.7	17.6	51.2	11.8	7.9
1991	121.2	25.6	46.3	10.2	5.9
1992	140.1	26.5	43.6	8.7	6.5
1993	148.8	30.9	36.2	9.2	6.7
1994	187.1	28.5	35.3	4.3	6.3
1995	175.1	25.3	29.0	5.5	7.9
1996	161.4	25.9	22.0	5.6	9.0
1997	137.1	27.6	20.3	4.9	9.9
1998	156.2	33.6	17.9	4.6	9.7
1999	138.1	38.2	15.8	2.9	9.3
2000	144.3	45.2	15.9	4.6	9.2
2001	144.6	46.4	17.2	4.9	6.5
2002	102.8	41.2	25.7	1.8	6.5

Source: Thailand Foreign Agricultural Trade Statistics, 1999, www.oae.go.th/statistic, www.thai-frozen.or.th

was due to the removal of GSP, combined with other factors impeding exports from Thailand. We will discuss the reaction of Thai exporters to SPS measures later in the chapter.

CANNED TUNA: LABOUR COST ADVANTAGE INDUSTRY

Canned tuna exports accounted for 77 per cent of total canned seafood exports from Thailand during 2001. Exports of tuna products include canned tuna and tuna loins. During 2001, the 3,00,000-metric tonne tuna exports generated \$670 million. Unlike other processed food exports from Thailand, canned tuna exports depend heavily on imported raw materials, as domestic sources meet only about 10 per cent of demand, and the remaining 90 per cent are imported mainly from Japan, Taiwan, and South Korea. On the other hand, domestic consumption of canned tuna is only 10 per cent of total production. The canned tuna industry is therefore export-oriented. Because of matching foreign currency between import of raw materials and export of finished product, the industry does not expose itself very to currency risk, at the same time, it is subject to fluctuation in demand and trade barriers. The successful rapid expansion in a certain market also invites trade barriers of every genre. Table 2 indicates the rapid increase in export quantity between 1994 and 1999.

Table 2: Canned Tuna Exports

Year	Total (Million Tonnes)	US (%)	Japan (%)	EC		Canada (%)	Australia (%)
				All Members	UK (%)		
1994	284.1	26.1	10.4	21.8	11.4	5.9	3.3
1995	221.2	24.1	6.2	23.3	13.5	8.0	4.7
1996	188.4	22.8	5.7	18.0	11.7	8.8	5.9
1997	203.7	25.7	5.1	15.1	10.5	9.6	5.3
1998	227.3	29.5	3.6	13.2	9.2	7.2	4.5
1999	259.1	34.3	4.7	11.1	7.2	9.6	7.0
2000	244.7	25.6	5.8	11.3	5.3	9.7	7.6
2001	269.6	22.6	5.1	13.9	6.0	8.9	6.5
2002	268.3	22.3	6.0	12.7	5.3	8.9	7.8

Source: Thailand Foreign Agricultural Trade Statistics, 1999; Economic and Financial Statistics, BOT, various issues, www.nfi.or.th

Furthermore, the fluctuation in the prices of skipjack and yellowfin lead to unstable export revenues. The high price of tuna in 1998 led to over-exploitation of the marine resources in the subsequent years, thanks to the new fishing technology. As a result, the price of tuna dropped to a 30 years low of \$400 a tonne during 2000 from the average range of \$600–\$1,300. However, the agreement from Asian fishermen to reduce tuna catch by 35 per cent has already raised the prices of skipjack and yellowfin to \$750 and \$1,000 a tonne, respectively.

High-income, health-conscious customers in the developing countries are the major consumers of tuna. Demand for canned tuna is therefore income-

elastic. Therefore a slowdown in the world economy can have some impact on exports, as domestic consumption is quite low. According to the Thai Fisheries Institute, the per capita consumption is only 0.04 kg, compared with the 1.6-kg in the US. Although rich in protein and low in cholesterol, canned tuna is considered luxurious due to high prices and the availability of low price substitutes of fresh meat products. Nevertheless, several Thai companies such as Pattaya Food Industry (Nautilus brand) and Thai Union Manufacturing (Sealect brand) have already established their brand names as exporters of premium quality products. Their original product range has been widened by adding value to original canned tuna (tuna in spring water, brine, and oil). The value-added tuna product includes products in the form of curry tuna, spicy tuna, and mayonnaise tuna spread. Product differentiation is a means to price products higher than the ordinary ones.

Thailand is the second largest producer of canned tuna and the largest exporter of canned tuna in the world. From 1992 to 2001, its exports increased 90 per cent from 13.4 to 25.5 billion Baht. Of this 27 per cent were to the US during 2001, 10 per cent to Canada, and around seven per cent each to Egypt, Australia, and Japan. Spain is the world's third largest producer with an annual capacity of 2,00,000 metric tonnes, followed by Italy with 85,000 metric tonnes. The EU's capacity seems much lower compared to the 1.2 million tonnes of capacity of the Thai tuna processing industry.

Thai canned tuna has a substantial market share of 60 per cent in the US. The ability to compete effectively in the US market implies not only the efficient production but also the high quality standards of the Thai tuna industry. These exports are subject to a quota tariff of six per cent *ad valorem* and 12 per cent when imports rise above the quota set at 20 per cent of the preceding three years of the US canned tuna production, thereby retrained by the growth of American producers. In Japan, Thai exports are subject to a tariff rate of 6.4 per cent.

The EU market accounted for 24 per cent of the total exports. As the Andean and ACP (African, the Caribbean and Pacific) countries enjoy zero tariff under the European GSP, unless Thai firms become more cost effective by 24 per cent they would not be able to compete with the Andean countries. Similarly, other Asian exporters like the Philippines may not also be able to maintain their current market shares in the EU.

By 2003, the fish inspection and quality control division had asked 34 fish-processing companies to enhance food quality assurance for consumers. It was probably due to increasing trend in food safety standards in many countries. In 2000, Egypt had banned Thai canned tuna, as the product was packed in genetically-modified soybean oil. Thanks to the flexibility of Thai processing companies, they were able to substitute sunflower oil for soybean oil to avoid the GMO problem. Most exporting companies have to observe the food safety regulations so that they can continue to export to the

developed countries and countries in the West Asia. Egypt accounted for 7.5 per cent of Thailand's tuna exports during 2001.

In a survey on Thai seafood processing industry, Kaewta and Sakun (2001) found that 94 per cent of the 120 companies that returned the questionnaires obtained at least one quality standard – either ISO 9000 (30 per cent), HACCP (69 per cent), or both ISO 9000 and HACCP (28 per cent). As pointed out by Unnevehr (2000), one of the advantages of HACCP was its focus on the most critical control points, which could minimise resources used and improve safety. Kaewta and Sakun (2001) also found that to achieve the ISO 9000 certification, Thai processors would have to shell out \$10,000. About 77 per cent of the firms obtained the quality standards within the first three years. This evidence points out the increasing awareness of seafood processing companies to comply with the SPS norms. Large firms should have more incentives to obtain the certificate because of the lower cost of compliance per unit of output.

The attempt to establish the brand name of hygienic product of high food safety standards has become the industry norm now. The tuna-processing companies have realised that by attaining high quality standards, they can differentiate their products from their competitors and consequently overcome their cost disadvantage arising from high tariff barriers. Consumers are willing to pay higher prices for higher quality products. This is also true for canned tuna and tuna-related products.

PROCESSED PORK: UPGRADING SAFETY STANDARDS

Pork is chosen in this study because of its unique position in Thailand's processed food exports. The export revenue from pig meat was around 12 per cent of the export value of canned pineapple during 2001. The value of exports, though gradually increasing over the years was only around one billion Baht during 2001. The main export markets are Hong Kong and Japan. The share of export quantity in total production is only one per cent. The main obstacle is the perennial hoof and mouth disease in the country.

The industry itself is heavily protected by ban on imports. Total production of around 9.6 million pigs annually is almost absorbed by the domestic market. The per capita consumption is around 10 kg, compared to the 55 kg in Hong Kong. The quality of pig meat for exports is far superior to those for local consumption, because of the strict licensing norms put in place by importing countries. During 2002 the WTO agreements allowed imports of pig meat into Thailand with a tariff rate of 30 per cent. It implies that the industry can no longer enjoy the previous protection against imports. The threat of superior quality imports lead to increased awareness amongst both private and public sector players to enhance quality.

Coming to the problems facing this sector, it can be noted that this

industry is beset by the FMD and substandard chain of production starting from animal feed, farm production, slaughter houses, transportation to wholesale and retail businesses. The government is extending incentives to upgrade slaughterhouses by establishing pilot projects. Without strict regulations, the process of improving food safety would be a slow process. The government also realises that pushing up higher safety standards would result in consumers being forced to share the burden with producers. But the benefit of trade liberalisation is clearly demonstrated in the case of the domestic pork industry as a major driving force to improve quality standards. Also, unlike other processed meat products, the pork industry has not received foreign direct investment that could transfer technology to the local industry. Another problem is the low level of awareness about hygiene standards on the part of consumers, as they mostly prefer poor quality products at cheaper prices than premium products at higher prices. Because of FMD, exporters view that only processed pork can avoid trade barriers imposed by sanitary standards.

Nonetheless, this industry has huge potential because of price competitiveness and the availability of cheap animal feed such as tapioca, which can be used to replace more expensive ingredients like corn. Also, unlike some Western countries, joint products from pig meat can be sold in the local market, leading to lower cost of production. There are six major exporters of processed pig meat in the country. The industry is rather sceptical about the benefit of the free trade agreement with Australia. Because joint products from pig meat which are not considered worth consuming in Australia, can be dumped into the Thai market. Firms may not be able to sell pig meats at low prices as they are used to compensating incomes from selling their joint products.

The only way to increase exports is to raise the quality by controlling antibiotics, chemical residues, and eradicating the FMD. With the current state of the technical capability, it would be difficult, if not impossible, for Thailand to further penetrate the largest markets – Japan, Russia and the US.

CANNED PINEAPPLE: FDI AND SPS COMPLIANCE

Thailand is a leading exporter of canned pineapple, with as much as 1.3 million tonnes being exported annually from the total production is 1.6 million tonnes. Even the remaining 3,00,000 tonnes are alleged to be dumped into overseas markets. The total value of canned pineapple was 8.3 billion Baht during 2001, which was 6.2 per cent more than the previous year's exports. While the US is the largest market by lapping up 21.7 per cent of total canned pineapple exports, the EU also bought roughly the same amount during 2001. However, it has to be noted that the share of EU has been declining since 1994 (Table 3). The Japanese market accounted for 9.7 per cent of total exports during the same period. Total

Table 3: Canned Pineapple Exports

Year	Total (Million Tonnes)	US (%)	Japan (%)	EC	
				All Members	Germany (%)
1990	398.3	35.2	7.6	34.4	6.3
1991	417.7	34.4	8.1	34.2	5.1
1992	491.3	37.5	6.0	31.4	10.5
1993	502.8	34.9	8.3	30.0	11.8
1994	707.3	49.5	7.8	18.3	8.3
1995	383.9	25.1	9.8	32.2	14.0
1996	346.9	19.1	7.5	37.4	17.5
1997	279.5	14.6	7.5	35.0	13.7
1998	226.3	11.0	7.6	44.1	20.4
1999	475.4	22.9	5.8	33.3	14.1
2000	427.7	18.9	6.9	31.4	13.6
2001	394.9	19.1	7.7	30.9	14.5
2002	358.7	21.9	7.1	26.1	12.4

Source: Thailand Foreign Agricultural Trade Statistics, 1999; Economic and Financial Statistics, BOT, various issues.

value of export of concentrated juice was 2.9 billion Bath during 2001, which saw a 2.6 per cent increase from the previous year.

Pineapple growers are affected by the two to three years' cycles of low and high prices. Exports of canned pineapple often attract allegation of dumping by producers in the importing countries. Furthermore, the competition is very keen because some African and Caribbean exporters are given special free/preferential tariffs treatment from major importers.

Dole Thailand Ltd., a leading player in the pineapple industry, is an interesting case study of major exporters. The firm has met international customer requirements on various quality standards such as the HACCP, ISO 9002, ISO 14001, and GMP. The company tries to minimise the use of pesticides through integrated pest management. Dole Thailand is an affiliate

Table 4: Fresh/Frozen Chicken Exports

Year	Total (Million Tonnes)	Japan (%)	S. Korea (%)	Singa- pore (%)	EC		
					All Members	Germany (%)	The Nether- lands (%)
1997	150.8	63.4	1.3	4.2	23.8	10.8	10.3
1998	212.5	60.6	1.2	3.6	24.6	12.1	8.5
1999	211.7	61.3	2.2	3.7	24.1	12.4	6.3
2000	246.0	55.0	4.3	4.1	28.0	13.4	8.8
2001	309.4	50.4	7.3	2.6	28.0	15.4	7.0
2002	330.2	55.2	8.7	2.00	23.8	12.6	6.2

Table 5: Exports of Further Processed Chickens

Year	Total (Million Tonnes)	Japan (%)	S. Korea (%)	Singa- pore (%)	EC		
					All Members	Of which: England (%)	Of which: The Nether- lands (%)
1997	41.6	75.1	0.4	0.0	23.5	7.0	13.0
1998	62.3	56.0	0.3	2.8	38.7	12.0	20.0
1999	61.9	54.6	0.4	7.1	38.5	15.4	19.9
2000	86.8	50.0	0.7	7.4	38.1	17.0	17.7
2001	89.1	28.9	2.0	4.5	58.8	27.2	27.9
2002	103.2	35.9	0.8	2.9	53.3	32.2	16.1

of Dole Foods Company, which has extensive worldwide operations. With 25 years of experience, it is operating through vertical integration combining plantation, processing, canning, shipping and marketing operations. The technology transfer from Dole Foods helps its subsidiary to achieve high quality standards with wide range of value-added products. It has the capacity to produce 30,000 litres of pineapple juice concentrate per hour. The learning curve effect and economies of scale have also helped the company to achieve high safety standards with low compliance cost.

The year 2002 witnessed a decline in food exports from Thailand. The low growth in poultry (1.8 per cent and negative growth in frozen shrimps (-37.5 per cent) contributed to this slump (Table 6). If we focus on the six important products – frozen and processed shrimps, canned tuna, frozen and processed chicken, and canned pineapples, the year-on-year drop in

Table 6: Percentage Changes in Thai Agro-food Exports

Year	Canned Fish	Canned Crustaceans	Canned Pineapple	Shrimps – Fresh and Frozen	Poultry Cuts, Fresh, Chilled or Frozen
1992	-13.3	21.2	13.7	18.7	2.8
1993	1.8	10.7	-13.3	19.2	-13.7
1994	19.3	36.0	-8.3	29.9	5.4
1995	-5.1	20.0	-12.1	2.4	-1.9
1996	-6.9	13.4	12.1	-13.7	-5.9
1997	36.0	46.0	-9.2	8.8	20.6
1998	35.7	32.5	16.9	23.5	58.5
1999	-8.4	4.9	65.2	-17.2	-16.1
2000	-9.5	22.0	-30.7	24.8	15.3
2001	29.5	-5.7	6.3	-9.3	45.1
2002	-2.6	-8.4	4.1	-37.5	1.8

Source: Poultry related data from www.oae.go.th/statistic and for the rest, Economic and Financial Statistics, BOT, various issues, www.thai-frozen.or.th

Table 7: Thailand's Agro-Food Exports

Products	Jan. – Dec. 2001		Jan. – Dec. 2002		Percent- age Change in Baht Value (2002/ 2001)
	Value (Million Baht)	Percentage in Total Food Export	Value (Million Baht)	Percentage in Total Food Export	
Processed Shrimps (not in airtight container)	42,251.3	9.50	33,272.6	7.80	-11.8
Chilled/Frozen Shrimp	53,216.9	11.97	33,258.4	7.80	-37.5
Canned Tuna	25,710.6	5.78	24,089.2	5.65	-6.3
Fresh/Chilled Chicken	23,919.9	5.38	22,952.6	5.38	-4.0
Processed Chicken	11,546.6	2.60	13,152.9	3.08	13.9
Canned Pineapples	8,364.9	1.88	8,707.8	2.04	4.1
Total (six products)	1,65,010.2	37.11	1,35,433.5	31.74	-41.6
Total Thai Food Exports	4,44,706.0	100.00	4,26,662.3	100.00	-4.1

Source: Department of Customs.

Summarised by: Information Services Department, National Food Institute.

exports was a steep 41.6 per cent during 2002 (Table 7). Although there are several factors explaining this sharp decline, one cannot rule out the negative impact of the SPS standards.

INSTITUTIONAL FACTORS AND SPS MEASURES

The US was the first nation to prohibit the use of nitrofurans group in food producing animals in 1991. Since then, the US, the EU, and Japan, have been adding a longer list of unauthorised substances in food producing animals (Table 8). By 2001, the list covered more than 20 substances, and by 2006, the EU will phase out antibiotics growth promoters. Table 9 illustrates Thailand's legislation relating to food safety standards. Some standards are voluntary and not compulsory measures, giving more time to domestic producers to adjust to a new food safety standard.

The livestock development department has continuously been promoting hygienic farms and slaughterhouses. The CPF, the food-processing firm of the Charoen Pokphand Group, has a plan to export processed pork to Japan. To be able to take the advantage of the finding of the mad-cow disease in Japan, Thai exporters must be dynamic and quick to respond to changing demand patterns. To gain market share, market access and grasp the opportunity: export; firms must have achieved the high level of food safety standards. Supporting role of the government is called for when positive externality exists.

The European Commission in early 2002 banned Chinese shrimps after

Table 8: Unauthorised Substances in Food Producing Animals

<i>Year</i>	<i>Country</i>	<i>Unauthorised Substances</i>
1991	US	Nitrofurans group
1993	EU	Nitrofurazone
1994	EU	Chloramphenicol
1995	EU	Nitrofurans group
1996	EU	Avoparcin
1997	Japan	Avoparcin
		Zinc bacitracin, virginiamycin, Tylosin phosphate,
	EU	Spiramycin
1999	EU	Dimetridazole, Ronidazole
		Olaquinox, Carbadox
2001	US	Sarafloxacin
2001	EU	Meticlopidol, Amprolium, Dimetridazole
		Meticlopidol/Methylbenzoquate,
		Amprolium/Ethopabate, Nicarbazin
2004-06	EU	Phase out antibiotics growth promoter

Table 9: Thailand's Legislation

<i>Legislation</i>
• Legislation for control of importation of chemicals according Annex N of 2377/90 of the EU and list of drug prohibit extra label use in food producing animals of the USA (16 items) by Import and Export Act B.E. 2522 (1979) • Develop DLD regulation to control use of veterinary drugs and propose to improve Drug Act B.E. 2510 (1967) • Develop legislation and regulation to control importation and use of animal feed and premix containing prohibited vet drugs including nitrofurans and chloramphenicol under the Feed Quality Control Act B.E. 2522 (1979) • Prohibit use of banned substances in feed, e.g, nitrofurans, nitroimidazole, chloramphenicol, carbadox, olaquinox • Develop regulation to control standard of farms by promoting good animal health and husbandry practices (GAHP) by DLD • Implement international code of practice for control the use of veterinary drugs by veterinarians in standard farm accredited by DLD • Develop legislation to regulate veterinarian to practice with morality including suspension of veterinary licence if prohibited drug are prescribed by any veterinarians. • Develop regulation to facilitate safe production of food producing animals by inspection product during slaughtering process and taking samples for laboratory test.

finding traces of a banned antibiotic, chloramphenicol, which can cause anaemia in humans. The Chinese experience served as a warning sign for Thailand. As shown in Table 1, the share of EC exports of shrimps was reduced from 4.9 per cent during 2001 to only 1.8 per cent because of EU's

stringent inspection on Thai shrimps. The shrimp farmers' association began lobbying with the government to retaliate on the EU by imposing a tariff rate of 20 per cent on the Airbus ordered by the Thai international airline. The competing Boeing aircraft should not be subject to such a tariff. Some shrimp exporters urged the government to trace the GMO substance in imported infant formula powdered milk from the EU region. We would not want to see the food safety standards generate a trade war between nations.

Exports of Thai shrimps during 2002 declined from 144.6 to 102.8 tonnes. Because of so much at stake, traders and shrimp farmers pooled resources to pay for the 5,00,000 Baht worth of chemical-residue testing equipment. The Elisa devices, made in the Netherlands, were installed with the supervision of the fisheries department at the Maha Chai market in Samut Sakhon and Pak Phanang market at Nakhon Si Thammarat. The Samut Sakorn shrimp marketers' association and Thai shrimp buyers' association would test all shrimps on sale at both markets by the Elisa equipment. The implication of this agreement is that not only foreign consumers but also domestic consumers would benefit from the improved quality of shrimps. The swift response of the private sector in sharing resources to upgrade production standards implies the flexibility and high cooperation among them. The public sector can be criticised for not acting in time, while Vietnam and Pakistan have already been removed from the blacklist of the EU.

Rapid budget appropriation is vital if the government can alter a disaster into a golden opportunity for the entire food processing industry. The nitrofurans incidence occurred in February 2002 and since then there had been 85 cases that import of chicken and shrimps from Thailand were contaminated with this residue. This was the reason why the EU Commission required 100 per cent inspection rather than the usual random sampling procedure.

As discussed earlier, the detecting procedure has put great burden on exporters and importers. James and Anderson (1998) observed that quarantine affected both the level and stability of the domestic prices. In the case of Thailand during the first half of 2002, the prices of live chicken declined from 31 to 25 Baht per kilogram as a result of the excess supply of exports that were available to local markets.

The fiscal reaction of the Thai Government delayed until September 2002 when the cabinet approved a special budget to fisheries and livestock departments by 169 and 118 million Baht respectively. The inspection teams increased searching activity and confiscated 45,000 tonnes of the banned chemical substances. The food and drug administration had already banned the use of 16 chemicals, including chloramphenicol and nitrofurans, in animals for two years. Nevertheless, there are 26 importers of nitrofurans for human use. The livestock department instructed that all chicken and shrimp farms to comply with the standard farming practices, using only the

approved drugs by the FDA. Production and export permits would be revoked if firms violated the regulation.

As shown in Figure 6, different countries impose different standards as far as nitrofurant residual is concerned. The Japanese standard, which has already been considered very high, only requires the maximum level of nitrofurant at 30 parts per billion (ppb). The German standard goes as high as 0.3 ppb – the most stringent standard among the developed countries. Since the LCMS can trace the residues in part per billion of the metabolised tissue, there is no device with the capability of the LCMS available in the developing countries, let alone in developed countries until its invention in the Netherlands and Germany. Thai exporters jokingly asserted that perhaps the developed countries would love to export the 15 million Baht worth of the equipment.

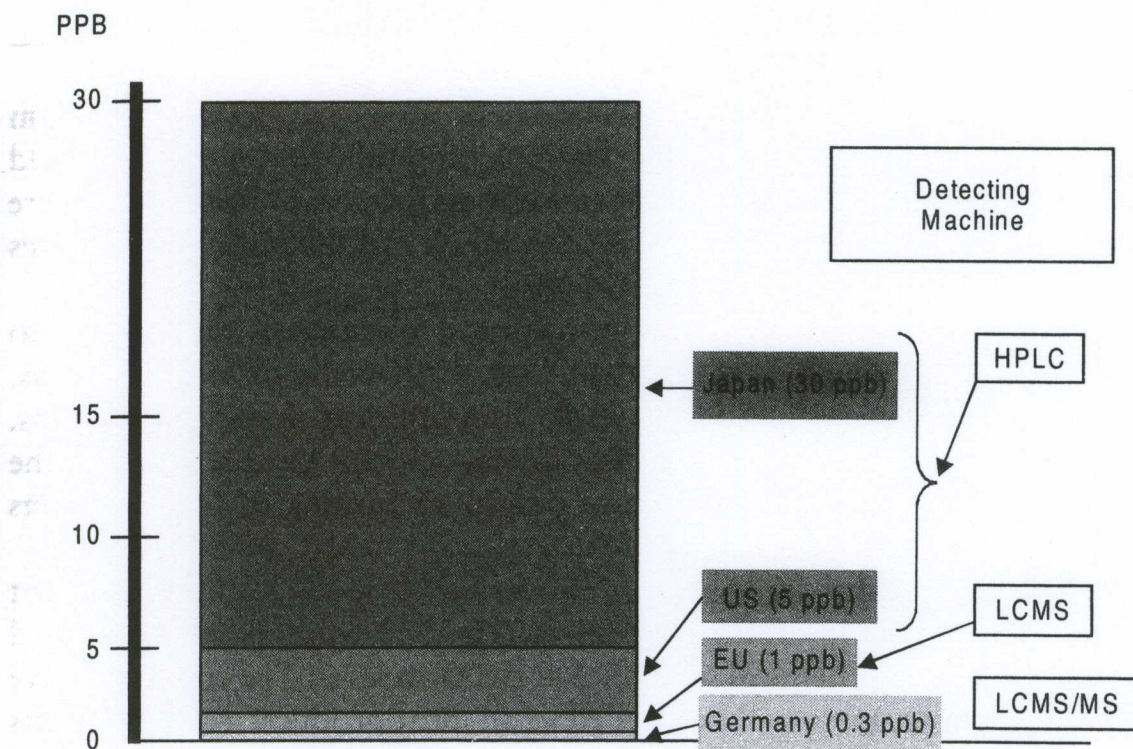


Figure 6: Different Safety Standards: Nitrofurant

Table 10 lists the inspection and testing procedures of the Thai Government's inspection carried out to detect signs of drugs that are not permitted to imports except for use in human drug manufacturing process. The inspection goes deeper into animal feed premix at farm level for suspicious containment of chloramphenicol and nitrofurans. The less costly machine Elisa, at around 5,00,000 Baht, is used to detect chloramphenicol through colour tests. Using a more expansive and more sophisticated LCMS and HPLC, importing countries in the EU require the confirmation test for nitrofurans in animal feed, drug, and water. The most sophisticated and most expensive LCMS/MS machine is employed to trace metabolite of

Table 10: Thailand's Inspection and Testing Strategies

<i>Inspection</i>	• Inspection of all importation of prohibited drugs for use in food producing animals that have to be distributed to factories for human drug manufacturing only and have control stock report system • Perform inspection of all animal feed premixes and drug at farm level and conduct screening tests to detect any batch of product suspected of containing nitrofurans and chloramphenicol and collect samples for laboratory confirmation
<i>Testing</i>	• Screening test for nitrofurans in feed and drug by colour test for: parent drug at 10 ppm • Confirmation – by LCMS/MS for metabolite of nitrofurans in tissues – by LCMS and HPLC for nitrofurans in feed and drug and water

nitrofurans in tissues. Only this machine can be used to detect the maximum residue level required by Germany. There is no doubt that no firms would dare to export to the EU, because, in addition to the cost of inspection, there is also a question of the reliability and the validity of the test, which creates risk and uncertainties for Thai exporters.

The unrealistically high level of nitrofurans tolerance is tantamount to total import ban, which is worse than high tariff walls or export quotas. Different maximum residue levels imply non-uniform import restrictions. Many Thai exporters have realised that they would not be able to satisfy the European standards. They have more option by turning to other markets with more realistic safety standards.

The finance ministry approved the budget for chemical testing equipment for 30,000 farm centres and cooperatives. The \$23 equipment can be used to detect the banned chemical substance at the farm level. The comprehensive food-testing programme will be applied to all meat products as well as fruits bound for the EU. The government hopes that the EU Commission would accept the comprehensive plan. The immediate request would be to switch the EU inspection from 100 per cent to a random sampling check. As argued by James and Anderson (1998), it may be unnecessary to carry out expensive quarantine risk analysis if consumer gained from freer trade that would outweigh the maximum possible loss to producers and others from importation of the good associated with disease. In addition, costs of alternative ways of reducing the health risks from importation need to be considered.

The national bureau of agricultural commodity and food standards (ACFS) was established in 2002. The timing is perfect since the organisation has to supervise and control food standards throughout the food chains from farms to final consumers. As shown in Figure 7, the ACFS is

commissioned to consolidate works in various government offices to establish a focal point on WTO's SPS agreement, WTO's technical barriers to trade, the joint FAO/WHO food standards programme (Codex), the office international des epizooties (OIE), and the international plant protection convention (IPPC). The ACFS also cooperates and negotiates on the issues of foreign trade relating to the international standard-setting organisation. Both human and financial resources constraints limit the effectiveness of ACFS. More attractive wages in the private sector make keeping technically qualified personnel within ACFS a difficult task. As a consequence, inspection, certification, and accreditation of food products are not efficient as it should be. Consequently, a long delay in waiting time put great burden on exporters to the EU markets.

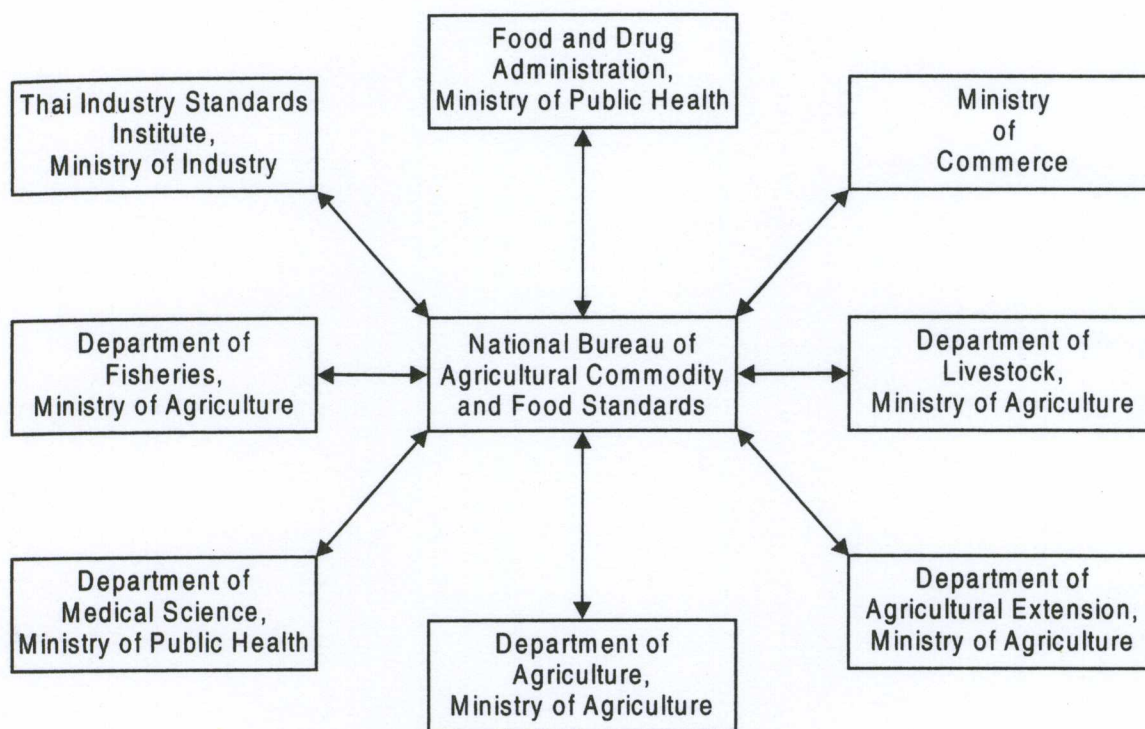


Figure 7: AFCS: A National Focal Point

Nevertheless, the ACFS has achieved a remarkable success in establishing national standards for swine, poultry and dairy farms. The Bill for agricultural standard has been drafted, awaiting the parliamentary approval. Figure 8 illustrates how the ACFS inspection activity is conducted from hatchery to final markets at home and abroad.

The good agricultural practice (GAP) involves the upstream activities at hatchery and farm levels. The good manufacturing practice (GMP) and HACCP are issued to qualified firms at the harvesting and processing plants.

The ACFS has 30 permanent staff and 100 temporary staffers. For this reason, the inspection capacity of processed food exports is inadequate with backlog of one month, let alone the capacity to inspect food imports. The

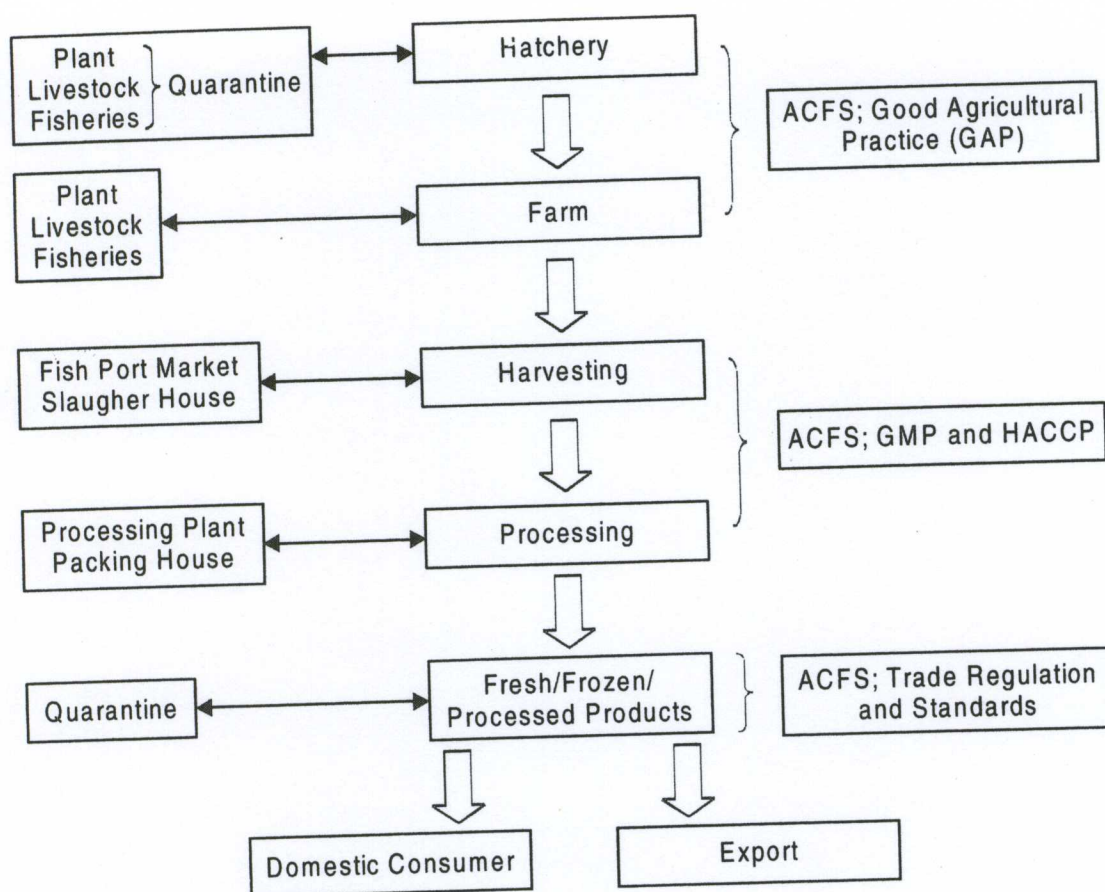


Figure 8: Inspection along Supply Chain

total number of LCMS machine in the country is eight, out of which two are donated by the private sector. The machines are located at the department of fishers, and department of livestock development. Priority is given to firms that contribute to the purchase of this \$15 million Baht machinery. Small firms with no financial resources would have to bear the time value cost of inspection in Thailand. Furthermore, there would be more inspections at the port of importing countries. *The conclusion is that SPS compliance is very costly. Highly unrealistic standard can hamper trade and lead to trade diversion effect.*

MAINTAINED HYPOTHESES

We have discussed Thailand's processed food industry by selecting export products with various differences in terms of safety standards, the size of export revenues, competitiveness, and export potential. Exports of shrimps, chicken, canned tuna, pork, and canned pineapples are chosen for comparison with different factors affecting adoption of SPS standards. The research aims at providing evidence to support or refute the following hypotheses:

1. When compared with small firms, large firms with high productivity would encounter a lower unit cost of compliance to SPS measures. *In*

the long run, the SPS measures would have an indirect impact on the structure of food export industry. Only efficient and large export firms would survive through the SPS screening test. The impact of the SPS measures on the changing structure of the industry should not be ignored.

2. The stringent measures imposed by SPS standards would encourage firms to engage in vertical integration to control the quality of input along the line of value chains of production. In other words, *large firms that have integrated vertically will be more successful than firms with no control over input quality of the upstream chain of production.*

3. *The sooner firms achieve the HACCP status, the greater their ability to compete in international markets.* During 2001, only 40 Thai food-processing firms had the ability to employ HACCP standards. It should be noted that having the HACCP certificate does not always guarantee market access to some importing countries whose SPS measures are above the *norm* of international standards.

When firms thrive for excellence, they would not be satisfied only with the HACCP norms; they would continue to upgrade their standards in anticipation of future non-tariff barriers. Forward-looking firms would push forward in preparation for the measures on environmental standards, animal welfare, and anti-bio-terrorist measures.

4. *Abuses of SPS standards are more frequent in those markets where there are substantial domestic subsidies.* The common agricultural policy of the EU is a case in point as under this European farmers are subsidised by \$39 billion annually. When the EU admits 10 new members, the subsidy would require extra \$20 billion. If this hypothesis was correct, developing countries would have to be prepared for new discriminatory and unexpected SPS standards. Exports of chicken from Thailand to the EU increased from 78 thousand tonnes during 1998 to 148 thousand tonnes by 2001. Similarly, for the same corresponding period, Brazil's exports rose from 70 thousands tonnes to 240 thousand tonnes. The two countries that previously enjoyed its export expansion in the EU must brace for the consequences of this. It is expected that SPS standards could be raised once other discriminating tax devices fail to protect domestic industry in importing countries. If the removal of the generalised system of preferences in the EU and the US fail to stop growing share of Thailand's exports, technical barriers would be called upon. It should be noted that the revision of the graduation list in the EU, the GSP rate is based on whether the market share in the EU of a certain product rises above 25 per cent. The EU applies different GSP margins to different products, ranging from one per cent to a double-digit gap.

5. *SPS standards imposed by importing countries will reduce domestic price levels of the affected products and their related products.* Since chicken and pork meat can be substitutes, excess supply of food exports rejected by high standards of importing countries will lower domestic prices of the products. The impact is felt all the way through production chains, including animal feed and hatchery industries. For example, the domestic prices of pork meat and live pigs had been reduced by more than 25 per cent due to lower prices of chickens and shrimps caused by their excess supply. A comprehensive risk analysis of SPS impacts on complementary and competing industries is required. For example, the calculation of risk analysis of tightening SPS measures on chickens must consider the impact on pig farmers. Incomplete risk analysis based only on the specific industry will understate the cost of imposing SPS measures because there is a need to analyse the impact of related markets. We can also even probe further the effects of farm bankruptcies on banks' balance sheets.
6. *Export market share depends partly on firms' accumulated investment to comply with food safety standard norms.* A loss in one country's market share due to SPS-related trade barriers would be a good opportunity for other countries to gain market share. When the avian flu virus contagion occurred in China in 2001, Thai exporters had received a windfall gain from the ban imposed by Japan and South Korea. Similarly, when the avian flu broke out in Thailand in early 2004, Brazilian exporters probably gained from the loss of Thai exporters. Nevertheless, export penetration also depends on other factors such as exchange rates and cost of production. If food safety standards are discriminatory, export shares can be reduced when the SPS measures are favourable to competing countries. The case of 100 per cent sampling test of exports of Thai shrimps and chicken during 2002 vis-à-vis the only 10 per cent sampling test for Brazilian and Vietnamese exports made Thai products less attractive. The long delay of a month or so at European ports raised the cost of productions, created uncertainty, thereby imposing higher storage costs. As a result, some Thai exporters' who could not adjust were not willing to supply to the EU markets.
7. *Firms' initial investment to comply with SPS measures would pay off in the long run.* In the short run, flexible firms can be worse off by SPS measures because they are no longer supplying to their traditional markets. After improving production qualities, firms can enjoy their ability to differentiate their high quality products from the rest. This is true in both firm level and on the aggregate level because their products can be differentiated from other firms or other countries, which have not upgraded their food safety standards. In other words, *investment in food safety standards is related to export performance*

- of the firms, of the specific industry, and of the country that is aware of the food safety standards.*
8. *Indirect subsidies through public spending on raising food safety standards by governments can reduce short-run adjustment costs; thereby, justifying the intervention on the basis of the existence of positive externalities in upgrading food safety standards.* If the government intervenes by providing assistance during the adjustment period to the new higher level of food safety standards, the private sector's burden of adjustment can be mitigated and the speed of adjustment to these standard can be quickened. Some advanced testing equipment to detect nitrofurans is only economical for large-scale operations. Only large firms engage in research and development to enhance their food safety standards. The technical innovation can be both endogenous and exogenous with low spillover effects. The role of governments is important when it comes to enhancing food safety standard norms; and in the case of Thailand through banning imports of forbidden preservatives and antibiotic it can attain this goal. Furthermore, public spending on promoting food safety standards has the same characteristics of those semi-public goods. In the long run, if production process of processed food is the same for both goods supply to domestic and foreign markets, local consumers would benefit from high quality of food safety standards just like the way foreign importers get from the products that pass the quality tests.
 9. *The role of exporters' associations is crucial for successful implementation of food safety standards.* Associations of producers and exporters perform screening and monitoring duties in order to prevent unscrupulous exporters from damaging the reputation of the whole industry. Because, their export revenues will be reduced if importers with limited information cannot distinguish between bad and good exporters. When information cost to importers is high, importers can trust only exporting firms that belong to well-established associations with good records of performance and governance. In addition, exporters and producers' associations cooperate closely with government organisations through supplying vital information of the industry to governments. This kind of information is important when governments engage in policy formulation and in international trade negotiations, which have direct consequences on the survival and success of the private sector.

CONCLUDING REMARKS

Market access can be seriously hampered by strict and discriminatory SPS standards, but their impact can adversely affect some food exporters in the short run. Given sufficient time for adjustment, resilient exporters with

flexibility and adequate support from the government can overcome the adverse consequences of high compliance cost. In the long run, any firms that successfully achieve higher quality and food safety standards imposed by the developed countries can thrive in the new form of non-tariff barriers. Investments in upgrading all stages of the production process would handsomely pay off. This is true for both private sector as well as the public sector investments. The European nitrofurans incidence serves as a wakeup call for improving safety standards for processed food industries. As long as Thai exporters have no market power, they have to comply with any sort of newly invented, disguised forms of technical barriers. Nevertheless, the heavy compliance cost would be outweighed by the benefits, provided the SPS measures are non-discriminatory in nature. As the domestic food safety standard norms are raised nearer to international standards, Thai consumers would also receive the benefit from improved safety standards from the ban of imported chemicals in food producing industry. In the near future, new scientific research findings and innovation of new technologies to inspect chemical residues can be employed intermittently to deny market access into the developed markets. The future of the processed food industry depends considerably on the ability and flexibility of the private sector, not the public sector, to produce high quality food with high safety standards at competitive prices.

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