EE460: Thailand's Processed Food Industry

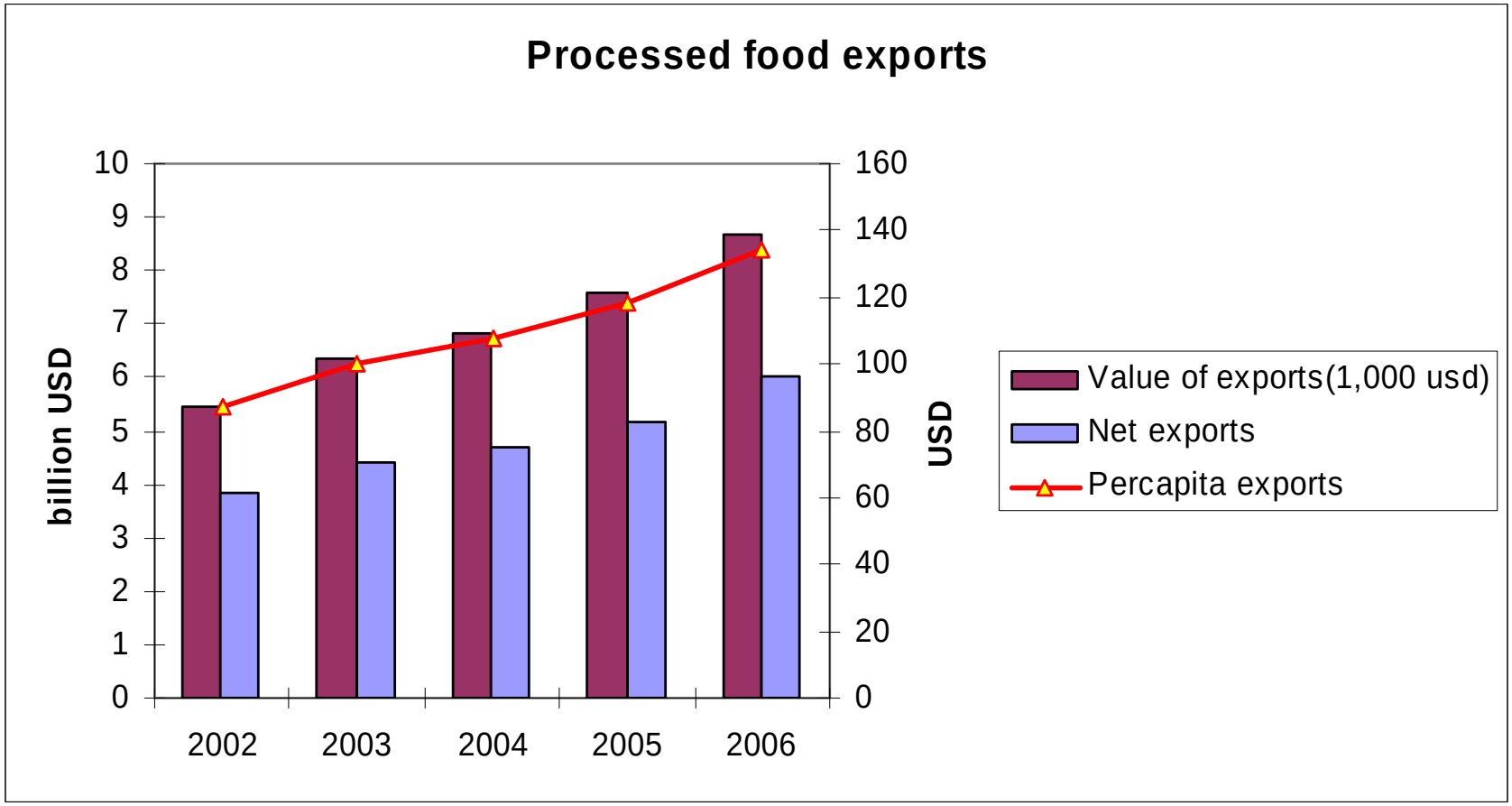
Mr. Bhanupong

Lecture 17

Outline

- Importance of the industry
- Trade Performance
- Canned pineapple
- Export competitiveness
- Processed chicken
- Frozen shrimp
- SPS measures and impacts
- Response to NTBs

Net exports amounted to 70% of gross exports



Source: UNCTAD/intracen.org

Herfindahl-Hirschman Index

$$HHI = \sum_{i}^{N} s_i^2$$

- Source: Department of Justice

- where s_i is the market share of firm *i* in the market, and *N* is the number of firms. Thus, in a market with two firms that each have 50 percent market share, the Herfindahl index equals $0.50^2+0.50^2 = 1/2$.

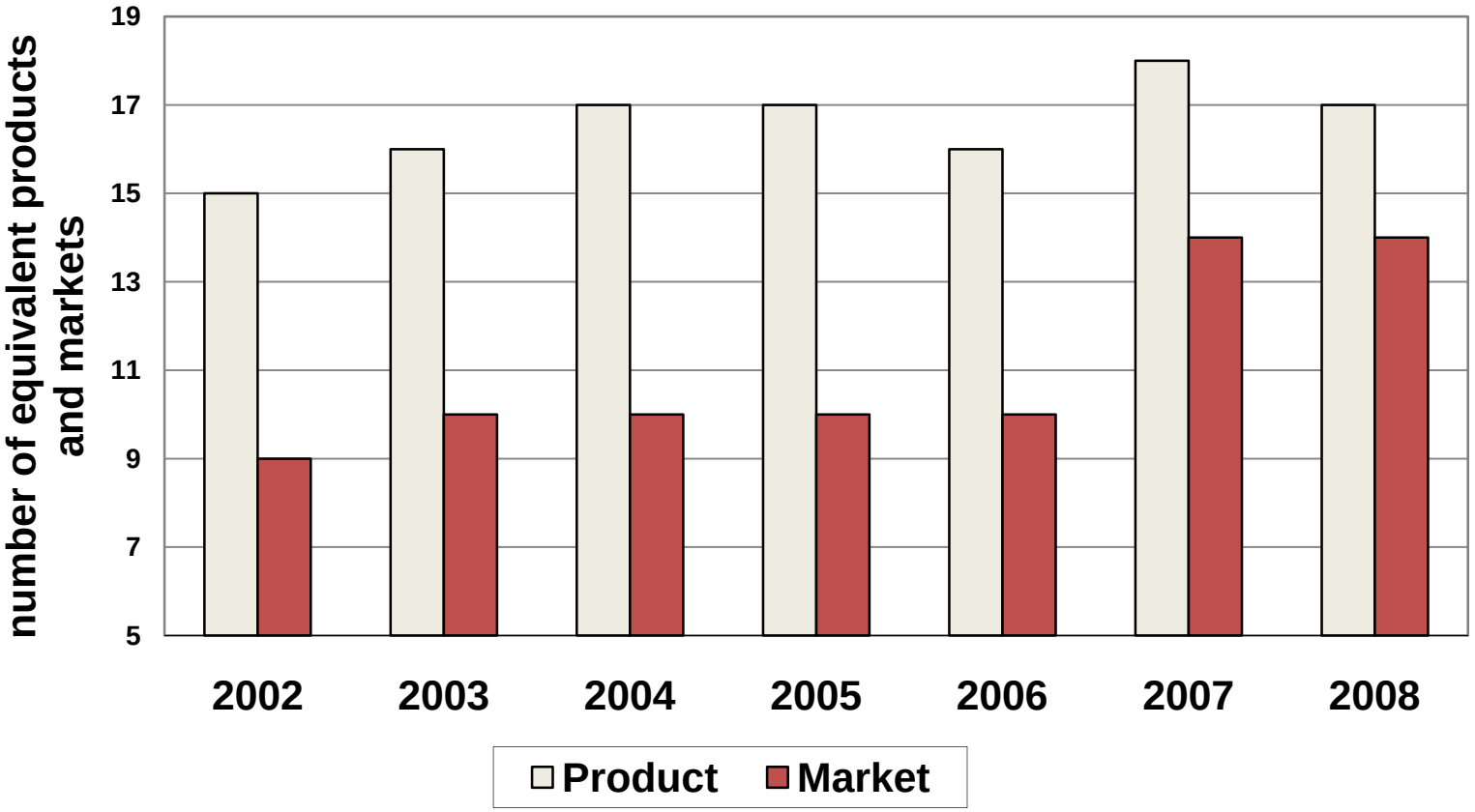
- The term "HHI" means the Herfindahl–Hirschman Index, a commonly accepted measure of market concentration. The HHI is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers.
- For example, for a market consisting of four firms with shares of 30, 30, 20, and 20 percent, the HHI is 2,600 ($30^2 + 30^2 + 20^2 + 20^2 = 2,600$).

- The Herfindahl Index (*HII*) ranges from 1/*N* to one, where *N* is the number of firms in the market. Equivalently, if percents are used as whole numbers, as in 75 instead of 0.75, the index can range up to 100^2, or 10,000.

- A HHI index below 0.01 (or 100) indicates a highly competitive index.
  A HHI index below 0.15 (or 1,500) indicates an unconcentrated index.

Export diversification of processed food: product and market diversification

A diversity index (an ***inverse*** of Herfindahl-Hirschman Index, which captures degree of market concentration)



Source: UNCTAD/intracen.org

Thailand's Trade Performance Index in 2011 Indicator's Description	Processed food (Value)	Processed food (Rank)
Number of exporting countries for the ranking in the sector	171	
Value of exports (in thousand US$) 2011	19,002,589	
Export growth in value, p.a. (%)	16%	37
Share in national exports (%)	8%	
Share in national imports (%)	2%	
Relative trade balance (%)	53%	
Relative unit value (world average = 1)	1.2	

Source: UNCTAD/intracen.org

	Value	Rank (total 171 countries)
Net exports (in thousand US$)	13,255,147	6
Per capita exports US$/inhabitant)	296.6	43
Share in world market (%)	2.67%	14
Product diversification (N° of equivalent products)	16	42
Product concentration (Spread)		42
Market diversification (N° of equivalent markets)	15	20
Market concentration (Spread)		20
Relative change of world market share p.a (%)	5.80%	

Source: UNCTAD/intracen.org

Benefits from processed food industry

- Less reliance on imported raw materials: high value added.
- Low capital intensity: creating more jobs
- Close links with the agricultural sector
- Output and exports reflect changing comparative advantage.
- Wider scope for ***product differentiation*** than traditional agricultural commodities.

Trade Performance HS : Exports of meat, fish and seafood food preparations (2011, in USD thousands)

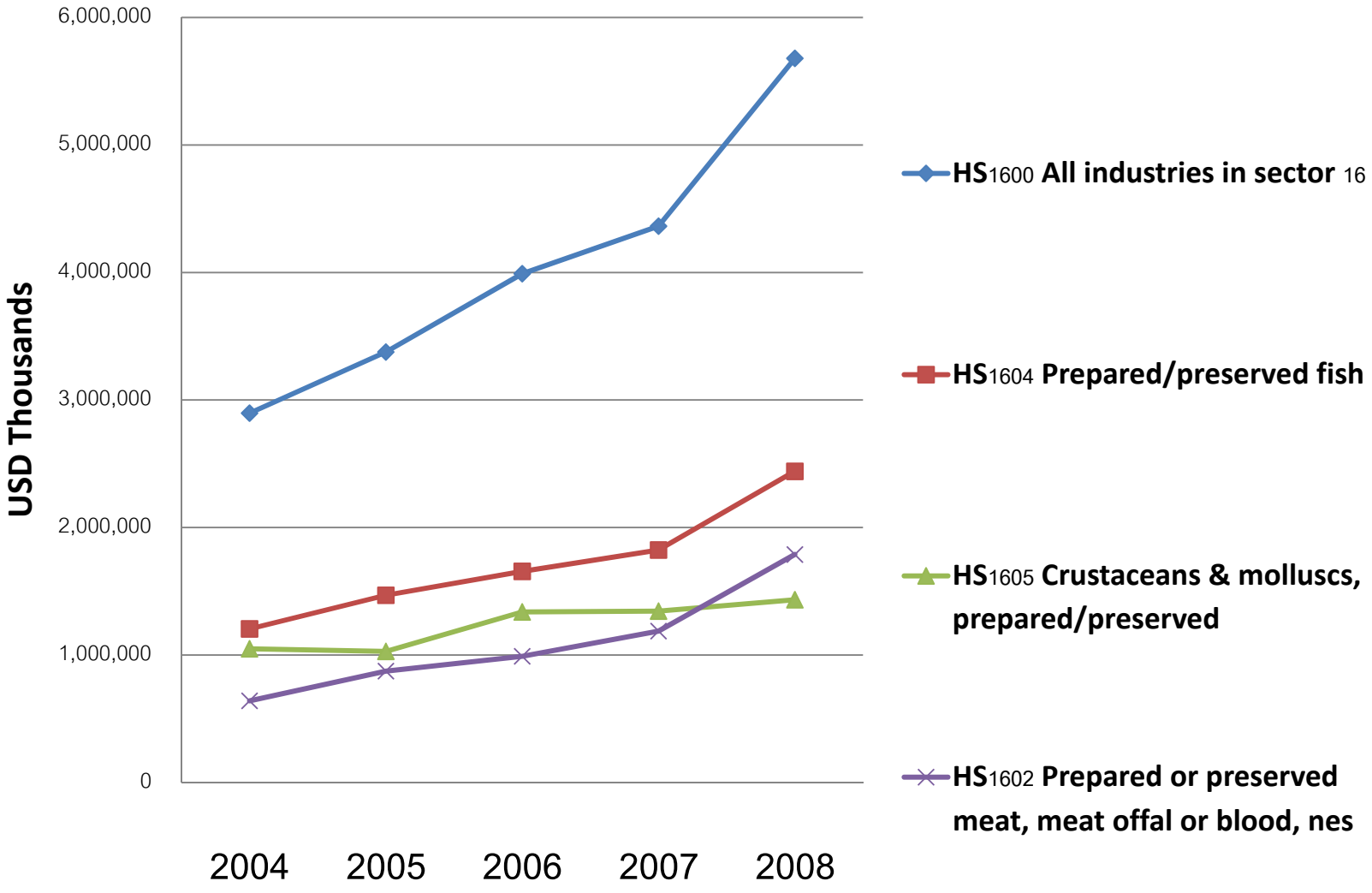
Rank	Country	Exports as a share of total exports (%)	Exports as a share of world exports (%)	Growth of exports in value (% p.a.)	Growth of exports in volume (% p.a.)	Growth of share in world exports (% p.a.)	Number of exported products	Share of top 3 exported products (%)	Number of export markets	Share of top 3 export markets (%)	Specialisation (Balassa Index / RCA Index)
0	**World**	100	0.24	8	1	1	26	40.2	219	34.6	
1	**China**	0.41	17.67	8		0	25	53.4	150	66.4	1.7
2	**Thailand**	3.16	16.26	13	5	6	25	84.4	171	60.6	13.2
3	**Germany**	0.22	7.37	7	5	-1	26	56.4	119	39.7	0.9
4	**USA**	0.13	4.17	9	6	2	26	54.8	124	62.7	0.5
5	**Brazil**	0.66	3.81	3	-3	-5	16	85.2	139	53.9	2.8

Country rank (6) Netherlands
(7) Denmark, (8) Spain (9) Belgium (10) France (11) Vietnam (12) Poland (13) Italy

Major processed food exports

- Processed seafood: caned tuna, fresh and frozen shrimp
- Processed meat: chicken, pork
- Processed vegetable and fruit: canned pineapple

Thaland exports of processed meat, fish and seafood

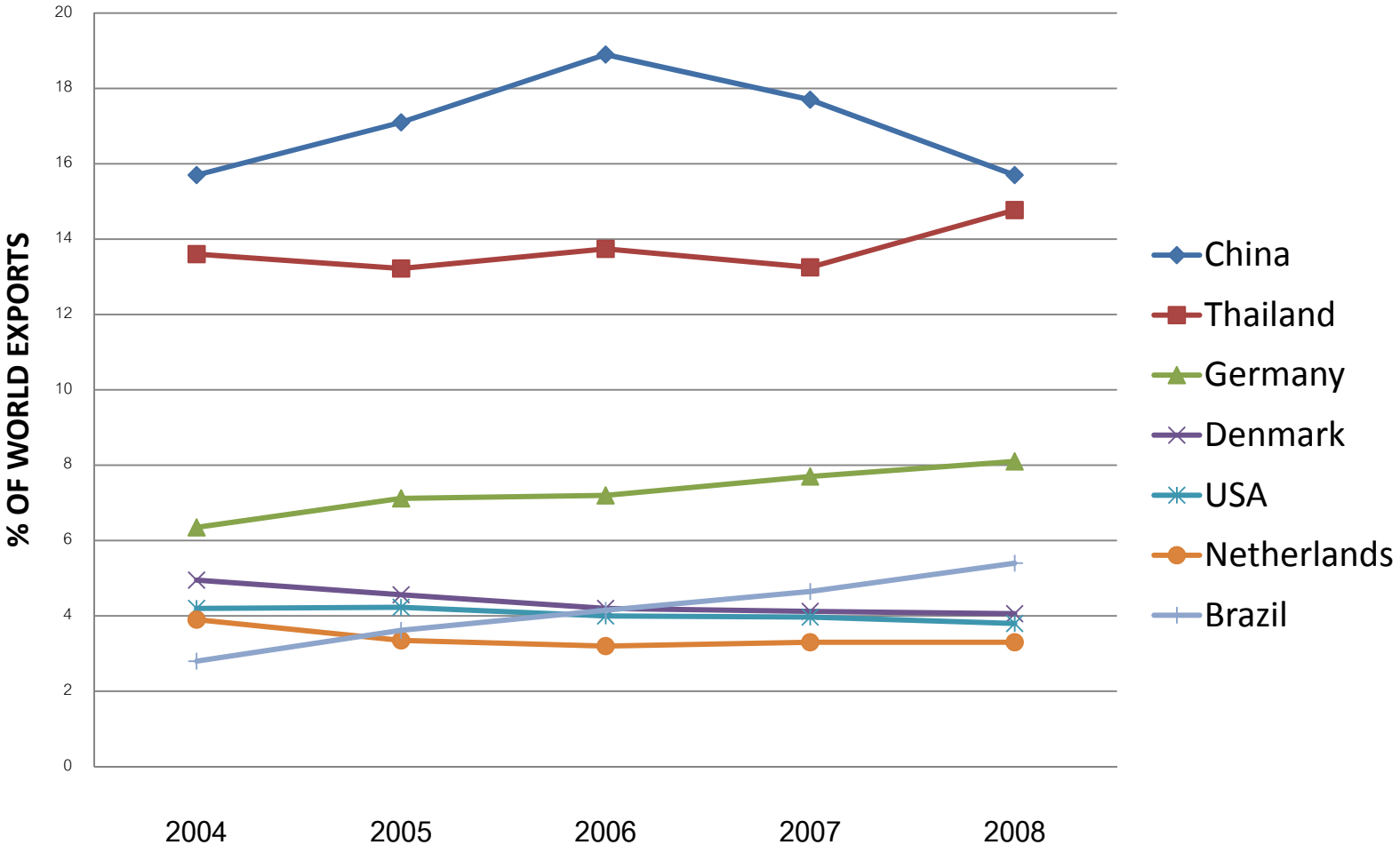


Source: UNCTAD/intracen.org

Window of opportunities

World market share of major food exporters

meat, fish, and seafood preparations (HS 16)



Source: UNCTAD/intracen.org

The case of canned pineapple

- Output of processed food industry is driven by demand for its exports.
- The decline in the production of canned pineapple industry from 1995 to 1998 can be attributed to unfavorable external demand.
- Because the industry has very low profit margin, changes in the cost of raw materials, exchange rates, GSP, and anti-dumping duties adversely affect the industry.

Market structure of canned pineapple

- Demand conditions can become unfavorable to the industry because of changes in consumer preference.
- Canned pineapple exports fluctuates widely over the year, more than canned tuna and other canned fruit.
- Thai pineapple has a unique business operation based upon price competition and relatively free entry and exit.

More challenges

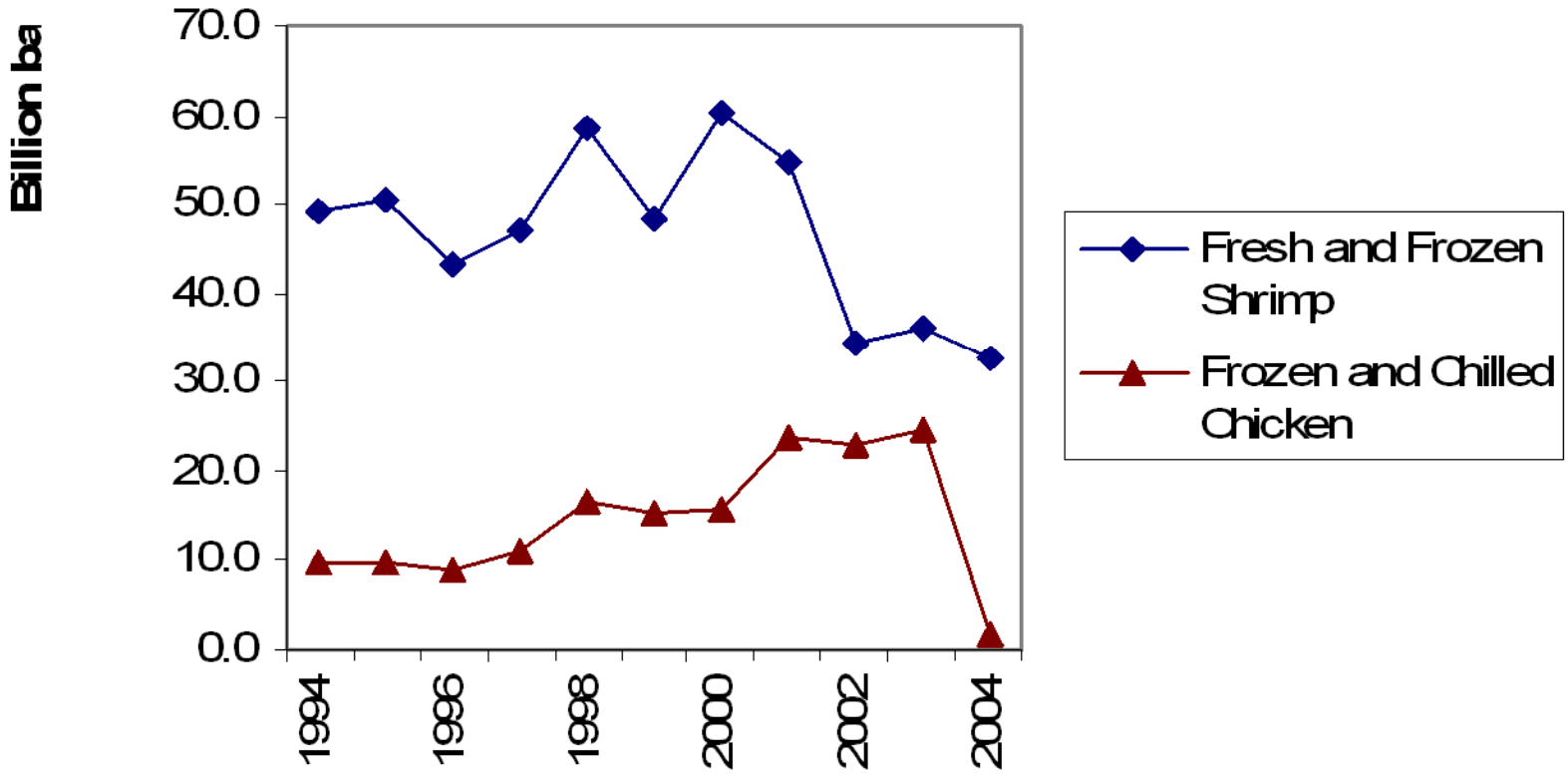
- There are problems with labor shortage as other industries also compete for labor.
- Coping with rising wages, energy prices, and currency appreciation would be a challenge to these mature food processing industries in Thailand.

A leading indicator

- The year 2001 witnessed the gain in Thailand's market share of chicken exports to the EU, reaching above **35** percent in the total imports in the EU, at the expense of the US.
- The ***rising market share*** is an early warning that the chicken industry will be subject to new barriers.
- Nitrofuran detection was responsible for the decline of the Thai market share in **2002.**
- The Avian Influenza that triggered the ban on Thai chicken further depressed the share of Thai chicken in **2004.**

Chilled and frozen products

Figure 15: Impacts of GSP Withdrawls (1999) Nitrofurans (2002) and Avian Infulenza (2004)



Source: Office of Agricultural Economics
Department of Fisheries

Further processed chicken

- There was a sharp fall in exports of chilled and frozen chicken because of the ban on Thai chicken after the outbreak of Avian Influenza in 2004
- Since it is safe to consume cooked chicken, Thai exporters began exporting boiled chicken and further processed chicken meat to compensate the fall in exports of frozen chicken.
- In 2004, Thailand exported heat-treated chicken worth 20 billion baht, half of which went to Japan, followed by the EU.

Responses to non-tariff barriers

- **Thai food processing firms have to adjust in the new technical trade barriers:**
- **Move from chilled and frozen to cooked chicken and further chicken**
- **Adopt a closed farming system**
- **Invest directly in importing countries (CP Chilled chicken plants in UK)**
- **Kaew Kung (59 baht per cup) produced in a billion-baht factory close to shrimp farms near Trad**

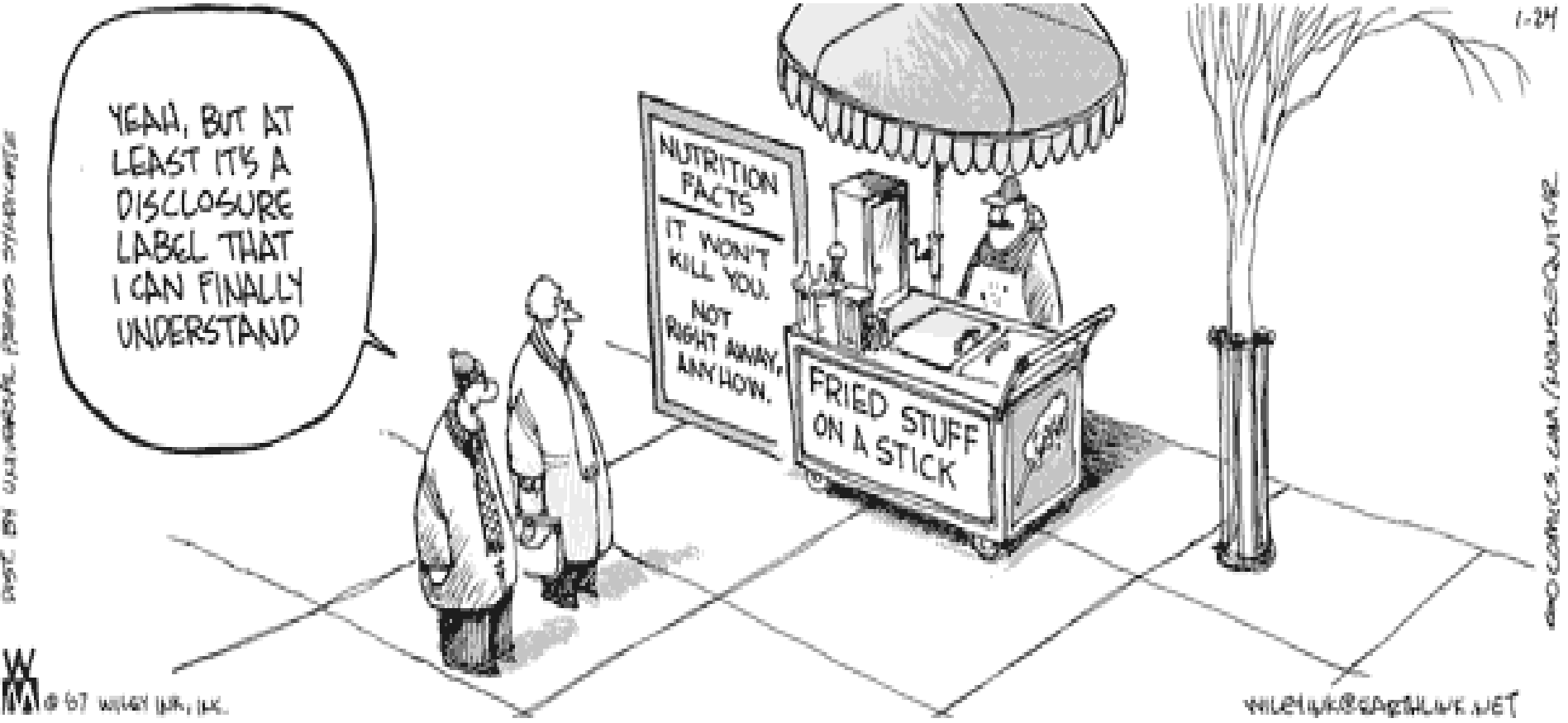
Sanitary and Phytosanitary Standard (SPS)

SPS can be used as powerful tools to impede international trade and *protect* domestic producers through unjustified different requirements in different markets, unnecessary costly or time consuming tests, or duplicative conformity assessment procedures.

The case of the EU

- The European Commission has set clear guidelines for producers and exporters to improve the healthiness of food for EU consumers.
- Among the measures is voluntary "traffic labeling", which deems products either green, yellow or red, depending on the risk of causing obesity.

Read the label first



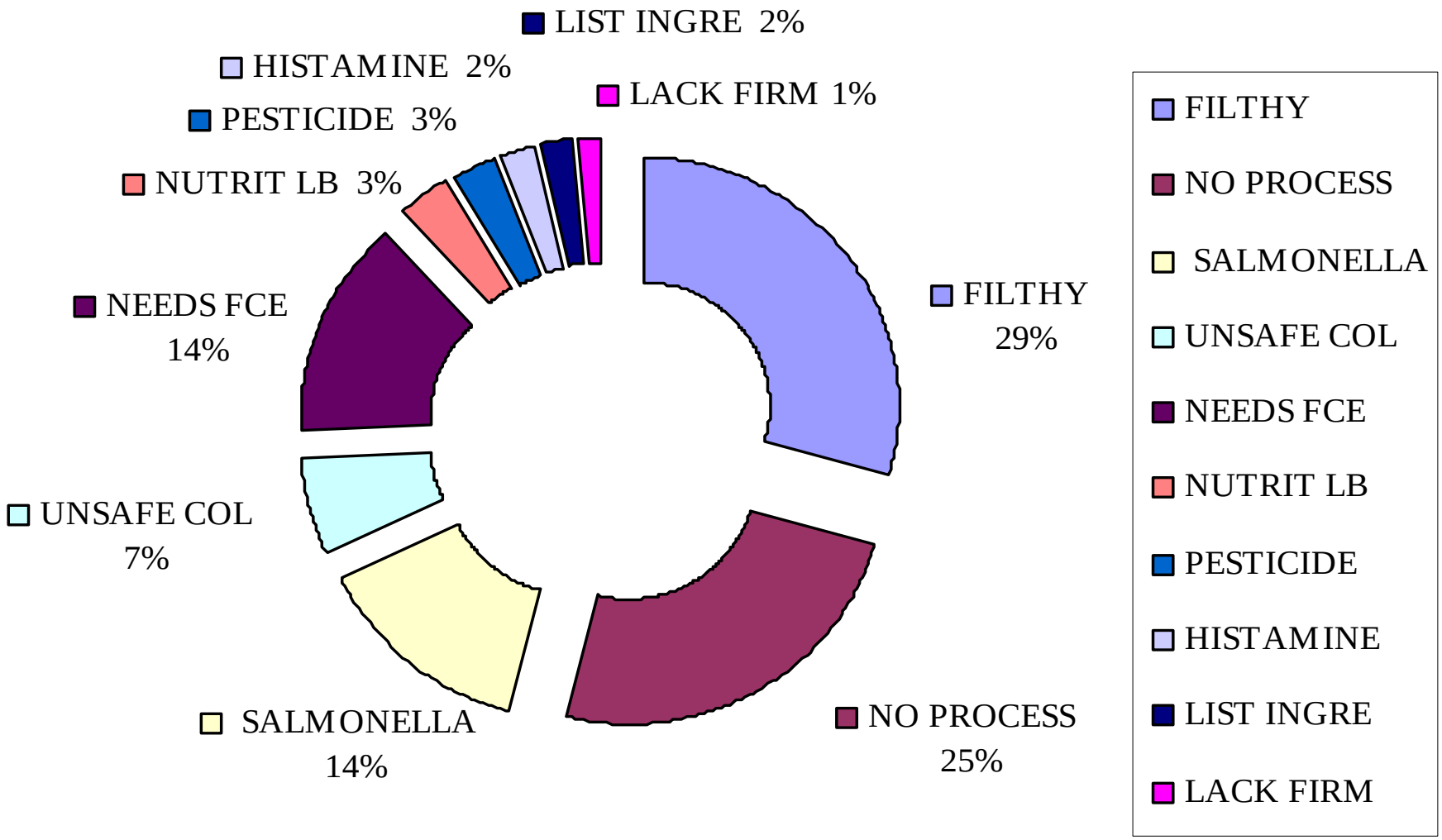
Pathogenic substance

- The EU also has strengthened its food-safety measures dealing with pathogenic micro-organisms that could harm consumers.
- The list of chemical residues from **pesticides** would be revised with tougher inspections to head off diseases.
- Stringent checks on imported meat, fruit and vegetables are carried as a part of risk assessment procedure.
- Is it safe to eat horse meat?

Traceability

- Most Thai exporters had co-operated well with previous EU requirements, including a 2005 traceability system for feed and food.
- “The EU have found the Thai record was not too bad but not perfect,“
- Based on 2006's statistics, there were 86 cases of Thai food imports with problems including nitrofurans in freshwater shrimp and pesticides in fresh vegetables.

USFDA Detention of Thai food products in 2004



On pesticides

- The sharp increase in pesticide use by Thai farmers has alarmed international markets.
- Department of Agriculture: We needed to impose a complete ban on four hazardous chemicals still used in Thailand but not in any developed country.
- The country's record of pesticide use was worrying.
- Thailand imported 42,089 tonnes of pesticides in 1997 but that figure had risen to 137,594 tonnes in 2009.

Thais love chemicals

- Food and Agriculture Organization figures for 2007 show Thailand had 27,126 agricultural chemical brands registered for use - more than China (20,000), Vietnam (1,743), Indonesia (1,158), Malaysia (917), Burma (818) and Laos (100) combined.
- Thailand is consuming a massive amount of chemicals,
- Thai farmers still use agricultural chemicals that have been banned in many countries: carbofuran, dicrotophos, methyl and EPN

Imported veggies from Thailand

- The EU recently found prohibited chemicals in imported vegetables including basil, chili, Chinese bitter cucumber and bean. Fears of a possible EU ban on Thai vegetables has prompted the government to order a temporary suspension of shipments.
- We were warned about chemical-contaminated vegetables 26 times in 2009 and up to 55 times in 2010.
- The Agriculture Ministry planed to suspend the export of 16 vegetables to the EU, including basil, aubergines and chilies

Food-borne diseases

- Two food-borne zoonoses, salmonella and campylobacter, which are a major concern in the UK and worldwide.
- Zoonosis is defined as a disease that we get from animals.
- About 60% of all infections are zoonoses - Sars, avian flu, campylobacter, salmonella; we catch them all from animals, either directly or indirectly from food.

Beware of Salmonella

- People infected with salmonella and campylobacter may suffer from abdominal pain and diarrhea.
- Salmonella is found in both chicken meat and eggs while campylobacter is found in chickens.

Food safety

- In Thailand, there are no complete statistics on the epidemiology of the diseases, but studies between 1990 and 1993 found a continuing increase in the number of patients infected with salmonella, rising from 1.33% to 16.98% within a four-year period.
- During the same period, the presence of salmonella bacteria in raw chicken meat was found to have increased dramatically from 1.4% in 1990 to 16.75% in 1993.

Need quality improvement

- Major causes of the detention are related to quality and safety of the products: unsafe coloring, salmonella.
- Some are not difficult to deal with: nutrition labeling, specification of production process, listing of ingredients, factory certificates.

A wake-up call: Rising Awareness of Food Safety Standards

2002: Falling chicken and shrimp exports to the EU

2004: (1) Outbreak of Avian Influenza

(2) Massive culling of chickens in 2004

(3) Reduction in domestic consumption of chicken

Thailand's responses

- National Bureau of Agricultural Commodity and Food Standards (ACFS) was established in 2002 to supervise and control food chain from farms to consumers.
- ACFS established **national standards** for swine, poultry and daily farms.
- ACFS inspection activity is conducted from hatchery to final markets at home and aboard.
- Good agricultural Practice (GAP) involves the upstream activities at hatchery and farm levels.
- The Good Manufacturing Practice (GMP) and HACCP (Hazard Analysis at Critical Control Points) are issued to qualified firms at the harvesting and processing plants.

Technical trade barriers

- The Australian food safety regulations exemplify in trade-impeding effects of technical barriers.
- Chicken meat imported into Australia must be heated at **70 Celsius for 143** minutes to assure disease-free meat.
- Neither Thailand nor any other country has ever penetrated the Australian chicken market.

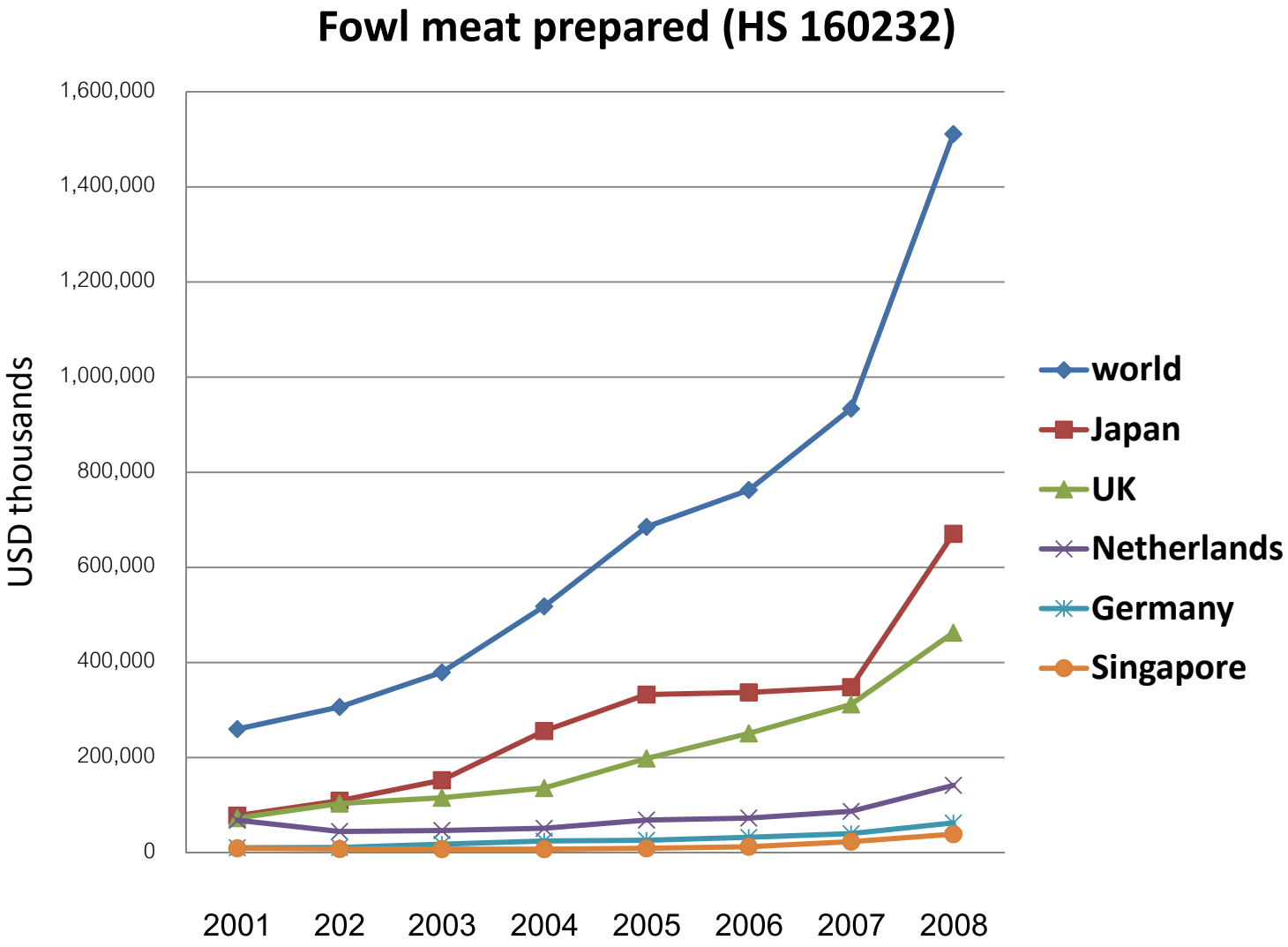
At the Downunder

- Some Thai companies jokingly suggested the Thai government retaliate by requiring the same kind of heat treatment (**70 Celsius)** on imported wine and chocolates from Australia.
- The basic argument is that food products that are subjected to heat treatment would change their nature and appearance after meeting the most stringent food safety regulations.
- Thus unnecessarily high food safety standards can lead to no trade at all.

Technical trade barriers

- Food safety standard became a thorny issue during the negotiation of free trade agreement between Thailand and Australia.
- The Thai firms argued that they had a lot to lose because the aberration of food safety standards was still maintained after the removal of tariff barriers.

Resilient Thai exporters



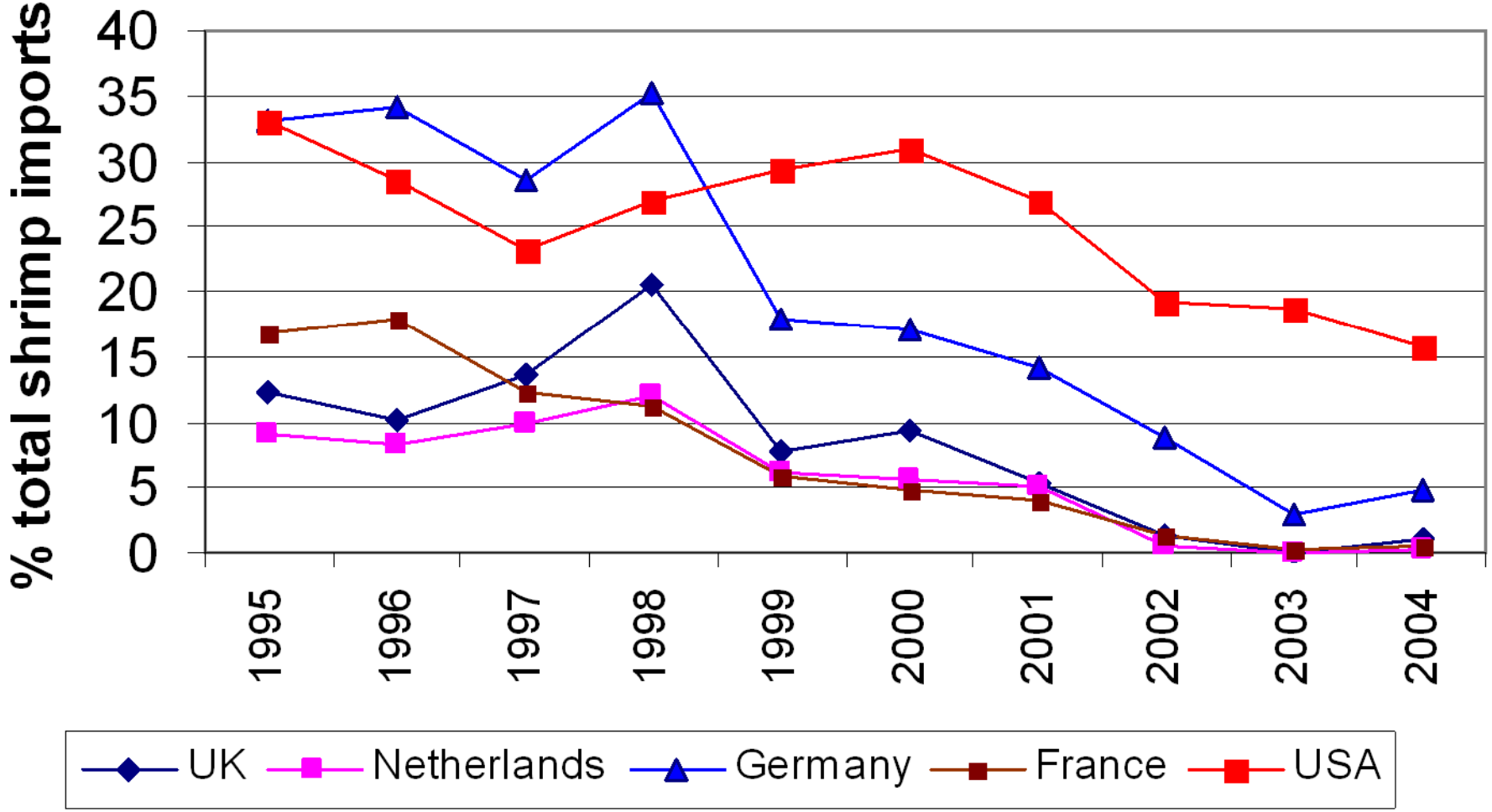
Thai shrimp exports

- Nitrofuran 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 nitrofuran residues in both Brazilian and Thai chickens and shrimps.
- Black tiger shrimp

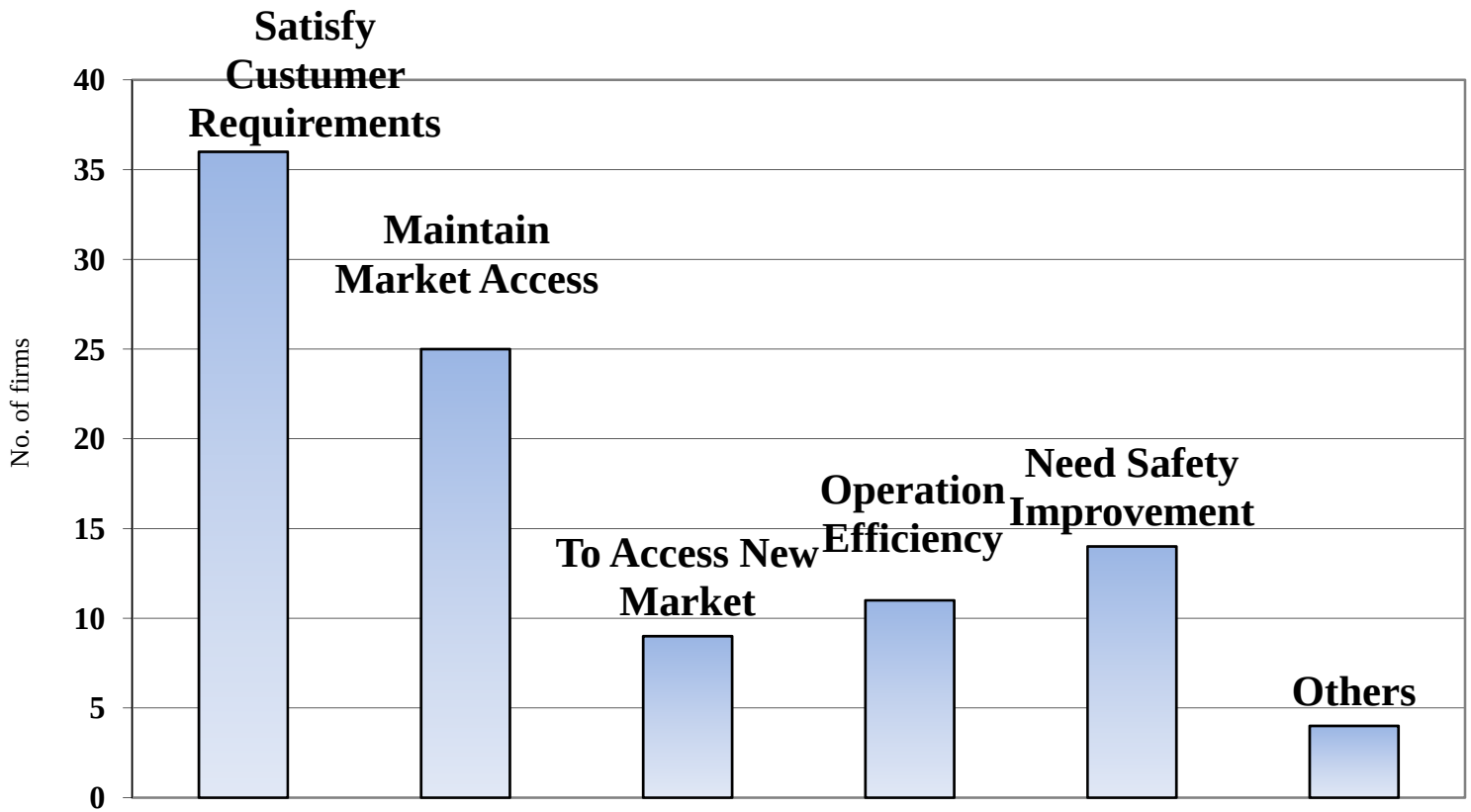
Thai shrimp exports

- The new LCSMS/MS instrument is so accurate that it can detect drug residues at ***parts per trillion***.
- While Brazilian exports were subject to only random check, Thai products were subject to a 100 percent testing.
- The cost of the new testing equipment is 15 million baht ($350,000).
- Small firms would not be able to afford this costly imported equipment.

Figure 3.7: Thai shrimp's import penetration



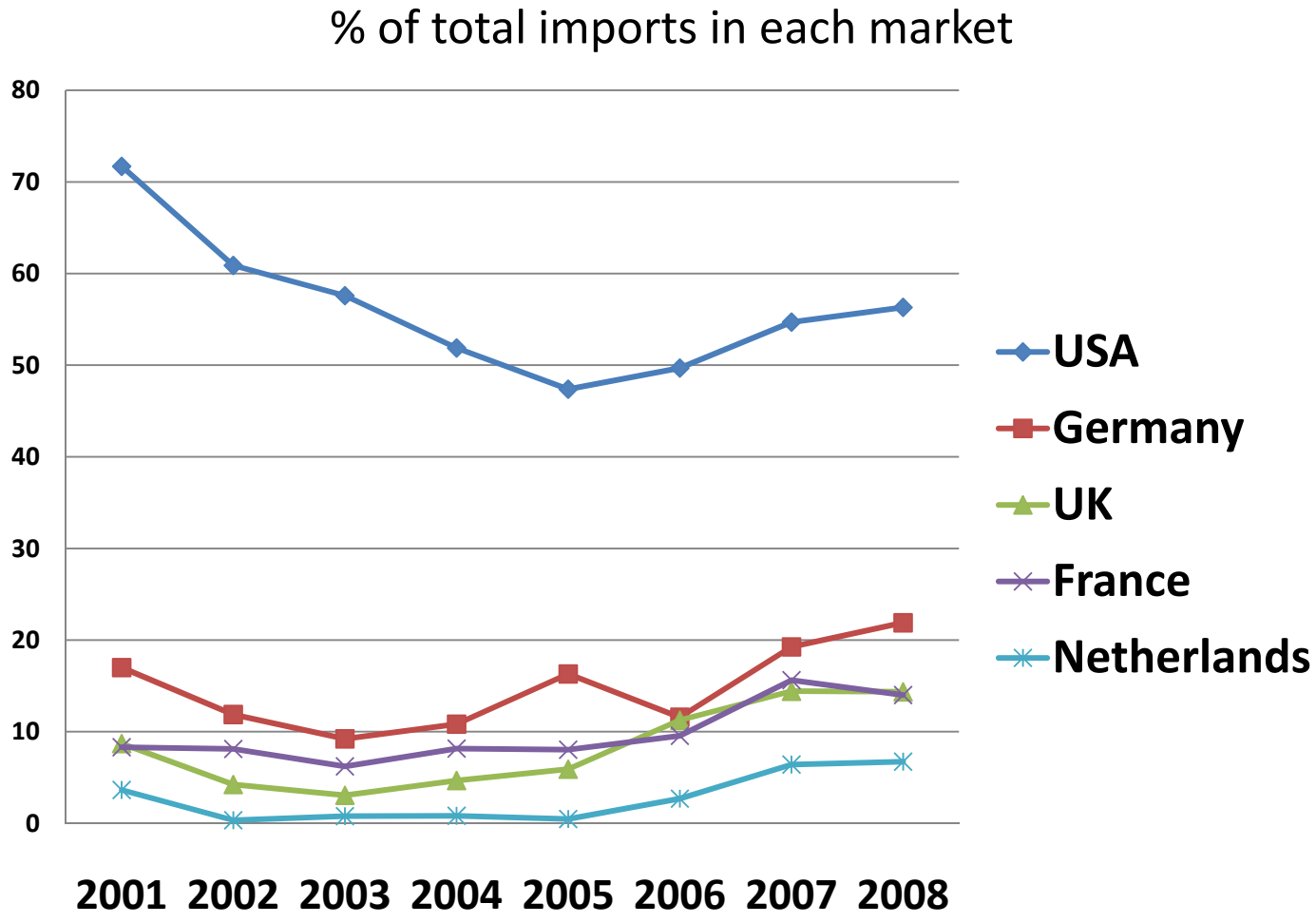
Reasons for complying with Food Safety Standards



Friendly shrimp farming

- **Switched from black tigers to white shrimp**
- **Employed pro-biotic farming to create friendly environment for shrimp**
- **Applied no anti-biotic to improve shrimps' digestion system,**
- **Reduced stress and increased virus resistance of baby shrimps**
- **These measures incur higher cost**
- **But it is proactive investment, anticipating more stringent food safety standard.**

Market penetration of Thai shrimp exports



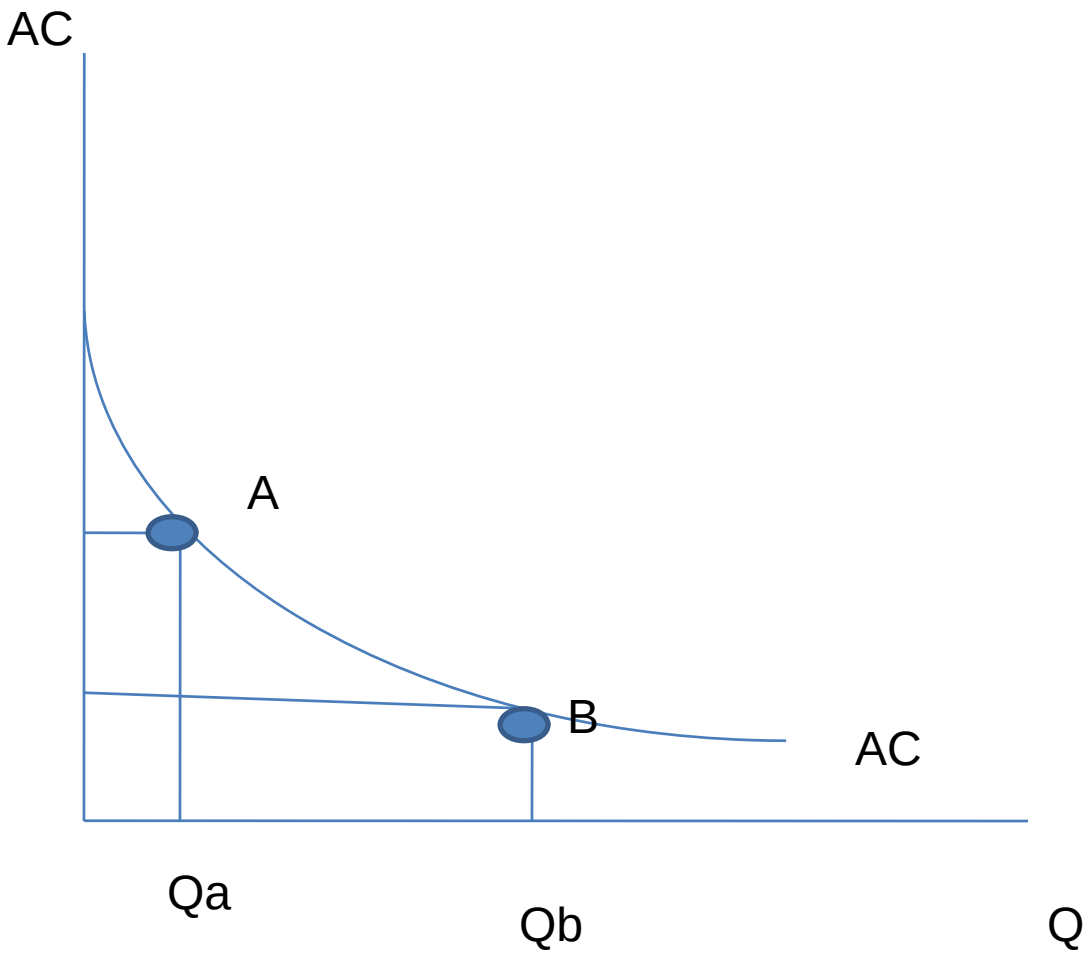
Anti-Dumping Duty

- Rising market shares can be thought of as an early warning of incoming trade barriers, either in the form of anti-dumping duties (USA, 2004) or non-tariff barriers (the case of EU).
- There were other countries that are subjected to these anti-dumping duties: Vietnam, India, Indonesia, and China

Size matters

- **Large firms take advantage over smaller firms in the ability to comply with international food safety standards, because of lower average compliance cost.**
- **Large firms have their own brands.**
- **More likely to form strategic partners.**
- **More chances to be a member of exporters' associations**

Size matters in SPS compliance



Disadvantages of small firms

- **Incur higher adjustment cost.**
- **Require government assistance in providing information of food safety standards**
- **Need subsidies on lab tests.**
- **Difficult to establish strategic partners.**

  A joint venture with importers is crucial if exporting firms want to gain access to developed countries, whose governments require plant inspection as a necessary condition for market access.

Structural changes

- Large firms integrate vertically from feed to processed products: pork and chicken
- Some industry such as canned pineapple and shrimp depend on outsourcing of raw materials.
- Shrimp industry faces higher cost of screening input.

Don’t delay the adjustment

- The sooner firms achieve stringent food safety standards, the greater their ability to compete in the world market.
- Abuses of SPS standards are more frequent in those markets where there are substantial domestic subsidies.
- SPS standards imposed by importing countries would reduce domestic price level of the affected products.
- Export market shares depend partly on firms’ accumulated investment to comply with food safety standard norms.

Compliance cost as investment expenditure

- Firm's initial investment to comply with SPS measures would pay off in the long run.
- Investment in upgrading food safety standard is related to **export performance** of the firms, specific industry, and the country that is aware of food safety standards.
- **Indirect subsidies** through public spending on raising food safety concerns by government can reduce short-term adjustment costs.

Examples of industry responses to SPS measures

- Substituted soybean (GMO) by sunflower oil in canned tuna production
- Established strategic partnerships in importing countries (CP and Queensland in case of fruit).
- Integrated vertically (pig meat industry) and SPF (specific pathogen-free) pork.

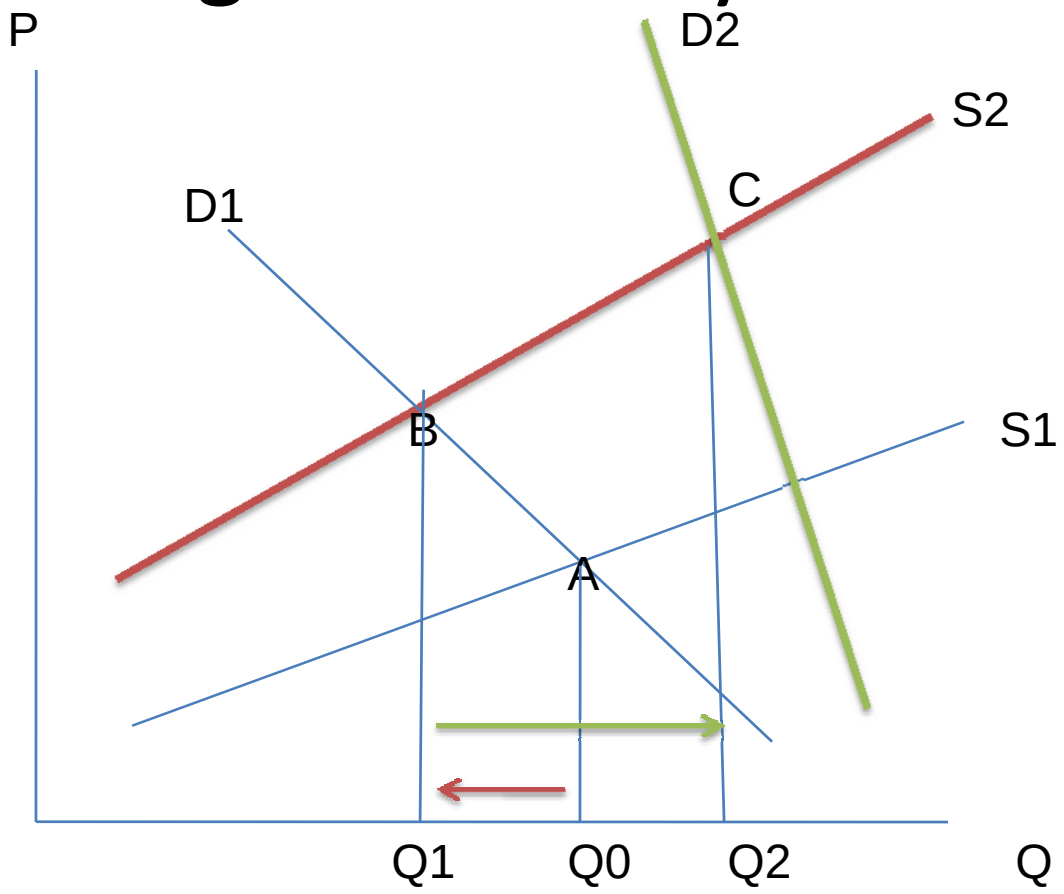
Roles of Exporters Associations

- **To prevent negative externality, export firms must be a member of an exporter association.**
- **Providing vital information to government and exporters to reduce information cost.**
- **Screening and monitoring moral hazard among members.**
- **Resource pooling and cost sharing in dealing with food safety standard issues to reduce compliance cost.**

The way forward

- The processed food industry is subject to a constant shock syndrome.
- Tariff and non-tariff barriers are substituted by importing countries.
- Structural change: more concentration of the industry, because size matters for market access and competitiveness.

Impact of long-term investment in upgrading food safety standard



Conclusion

- The concern for food safety increases with rising per capita income.
- *The higher the level of market penetration in importing countries, the higher the technical barriers*.

Conclusion

- Dynamism of the processed food industry is required to maintain the market share.
- The sector must continuously invest in upgrading both safety and quality standards.