

Processed Food Industry

Mr. Bhanupong

Lecture 15

Course Syllabus

lecture 15

- **The rise and fall of Thailand's export-oriented industries**
- We explore processed food industry.
- While facing non-tariff barriers imposed by developed countries, the industry is still a rising stars exports.
- Does the success of these industries bode well for the resilience and dynamism of the Thai manufacturing sector?

Outline

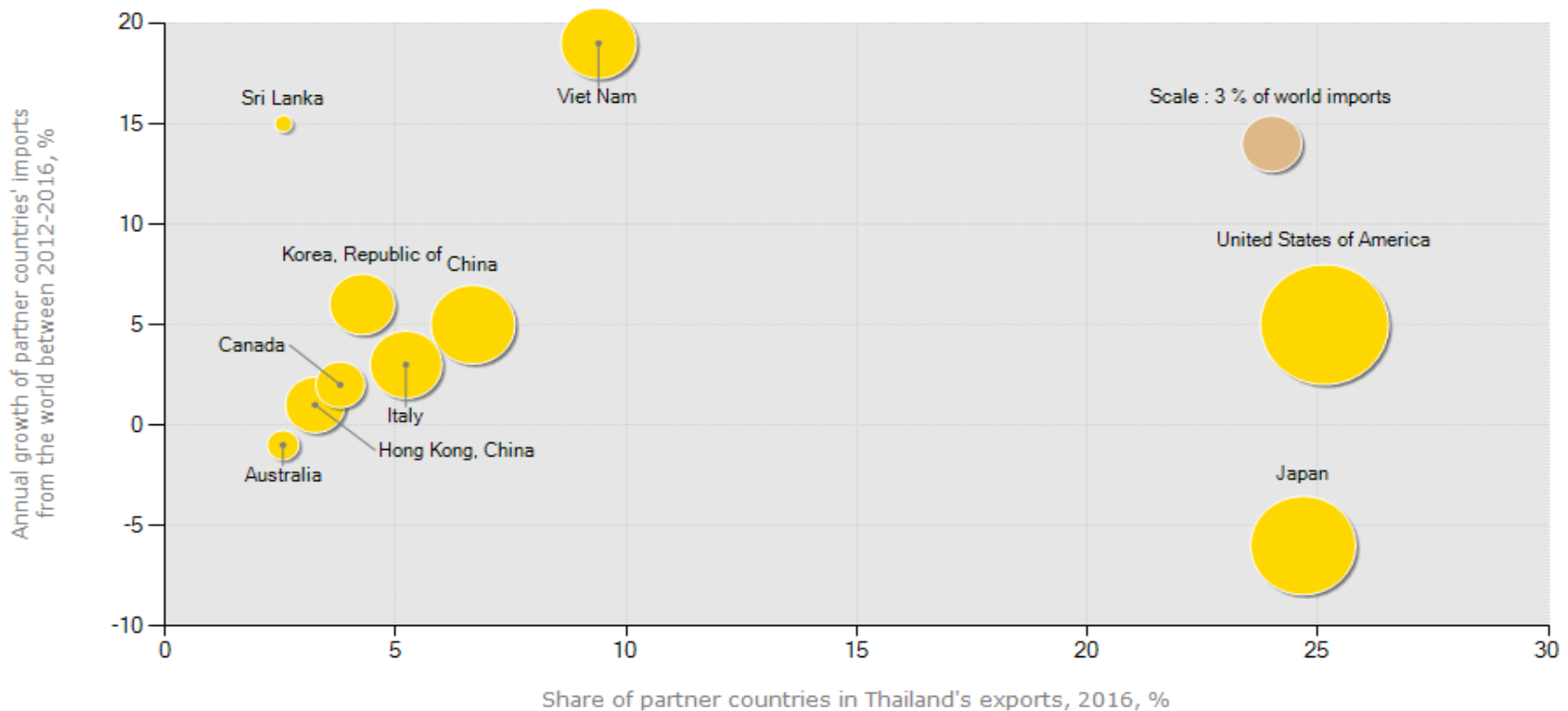
- Exports Performance
- Export competitiveness
- Processed chicken
- Frozen shrimp
- SPS measures and impacts
- Responses to NTBs

Market Diversification

Product 03: Fish, Crustaceans, mollusks

All bubbles are yellow

Prospects for market diversification for a product exported by Thailand in 2016
 Product : 03 Fish and crustaceans, molluscs and other aquatic invertebrates



● Thailand export growth to partner < Partner import growth from the world

● Reference bubble

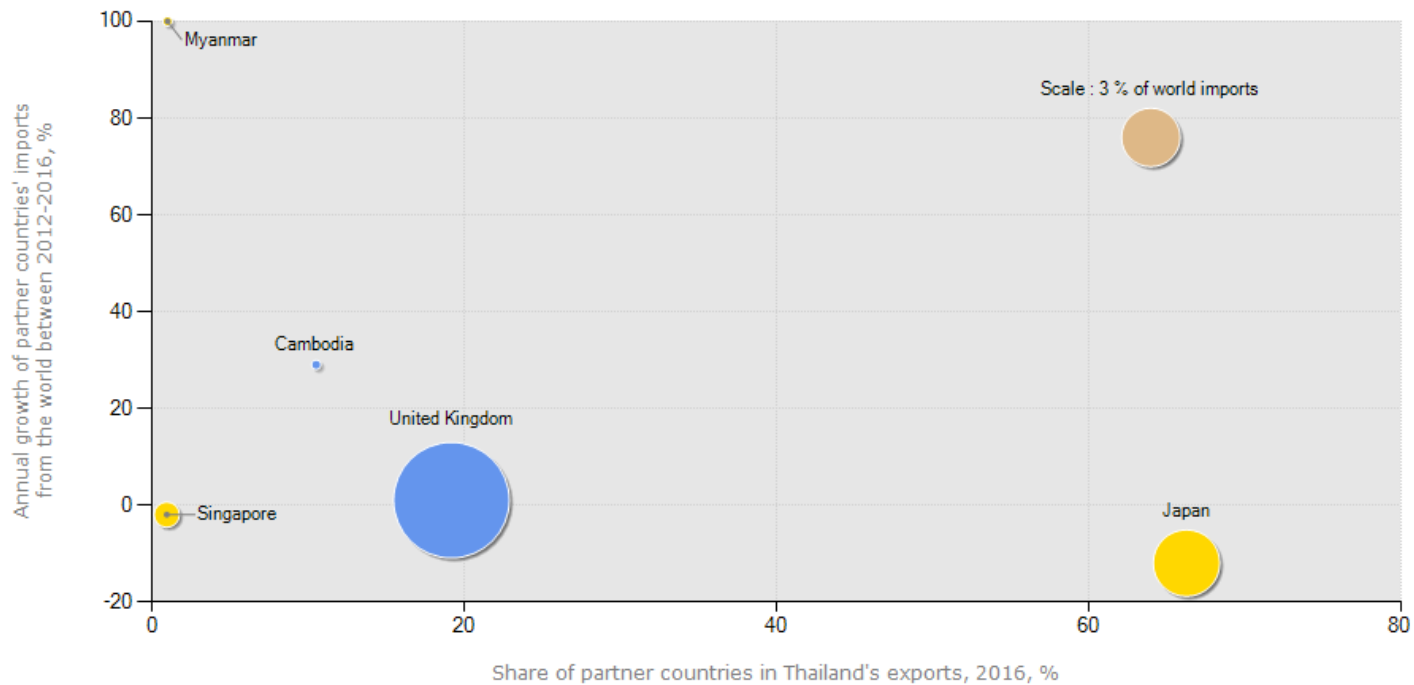
The bubble size is proportional to the share in world imports of partner countries for the selected product



Market Diversification

Sausages: Product 1601

Prospects for market diversification for a product exported by Thailand in 2016
 Product : 1601 Sausages and similar products, of meat, offal or blood; food preparations based on these products



● Thailand export growth to partner < Partner import growth from the world

● Thailand export growth to partner > Partner import growth from the world

● Reference bubble

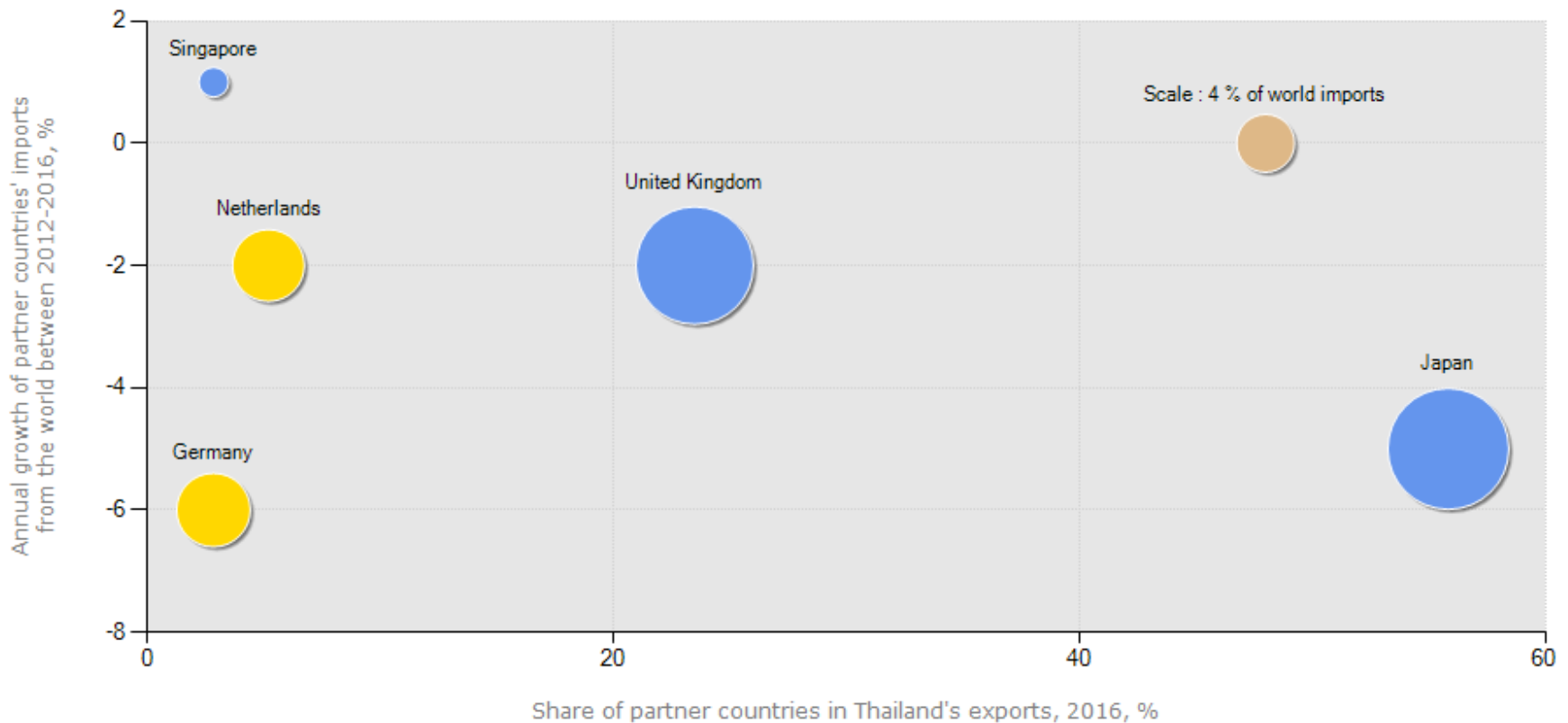
The bubble size is proportional to the share in world imports of partner countries for the selected product



Market Diversification

Prepared or preserved meat (Chicken) Product 1602

Prospects for market diversification for a product exported by Thailand in 2016
 Product : 1602 Prepared or preserved meat, offal or blood (excluding sausages and similar products, and meat extracts and juices)



● Thailand export growth to partner < Partner import growth from the world

● Thailand export growth to partner > Partner import growth from the world

● Reference bubble

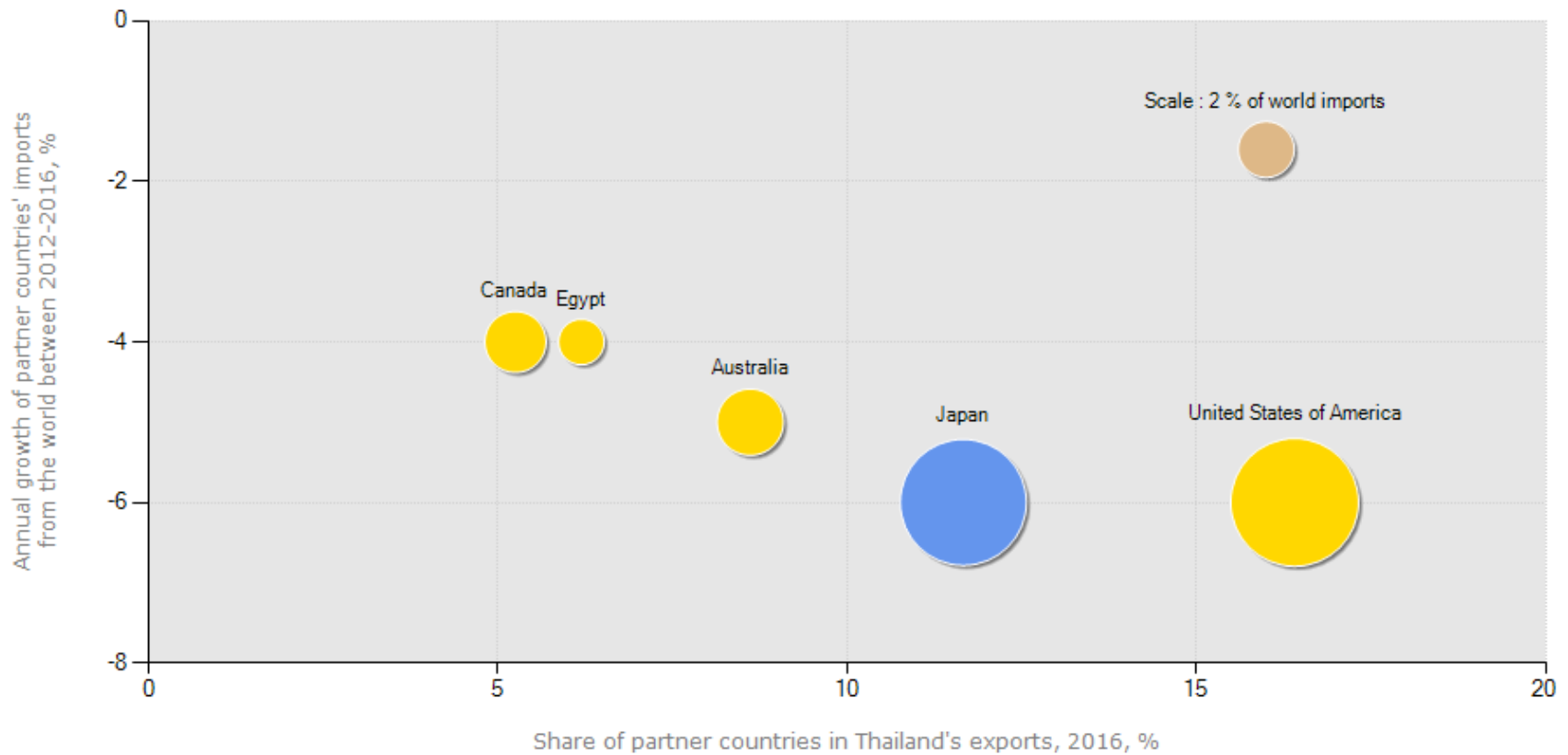
The bubble size is proportional to the share in world imports of partner countries for the selected product



Market Diversification

Prepared or preserved fish: Product 1604

Prospects for market diversification for a product exported by Thailand in 2016
 Product : 1604 Prepared or preserved fish; caviar and caviar substitutes prepared from fish eggs



● Thailand export growth to partner < Partner import growth from the world

● Thailand export growth to partner > Partner import growth from the world

● Reference bubble

The bubble size is proportional to the share in world imports of partner countries for the selected product

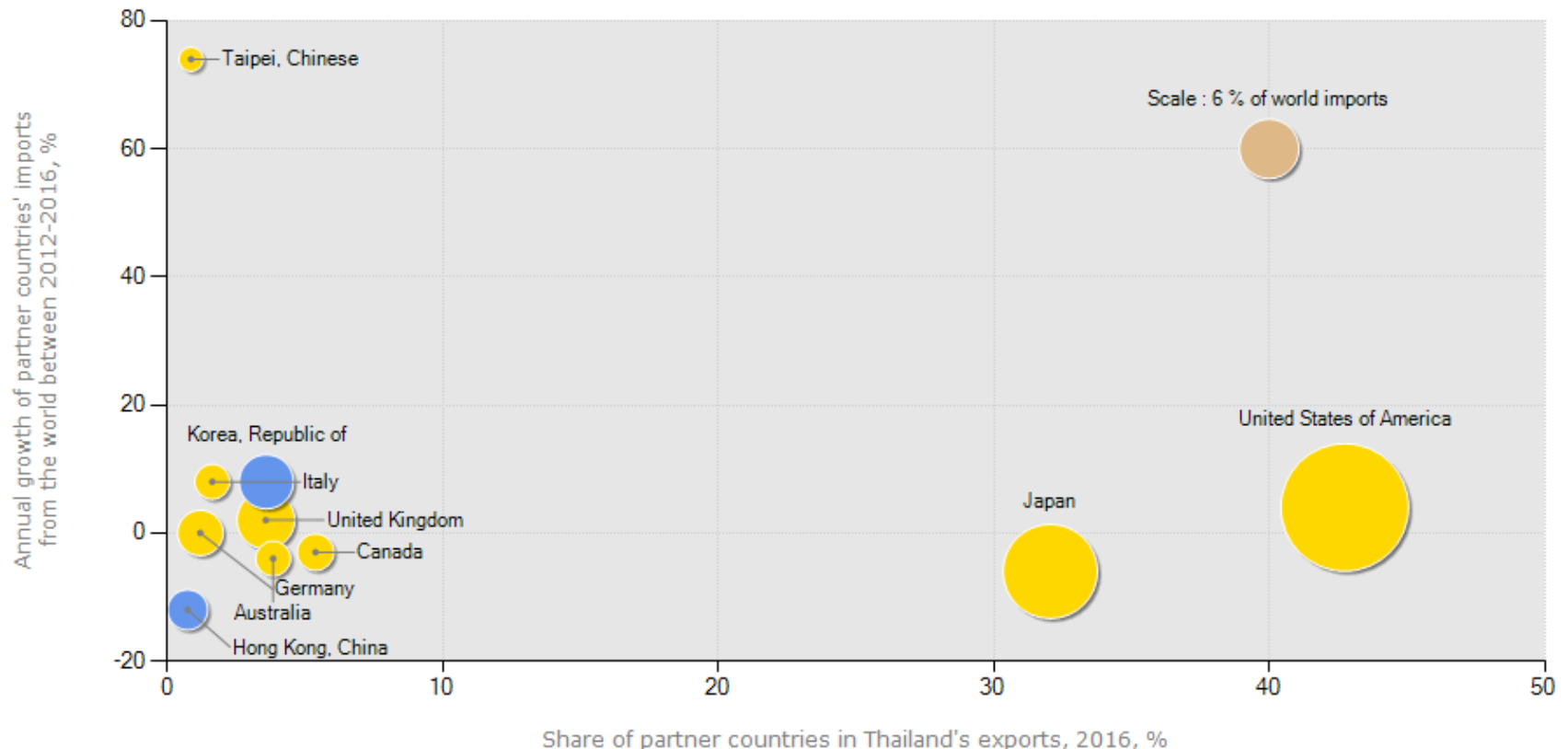


Market Diversification

Crustaceans: Product 1605

Prospects for market diversification for a product exported by Thailand in 2016

Product : 1605 Crustaceans, molluscs and other aquatic invertebrates, prepared or preserved (excluding smoked)



● Thailand export growth to partner < Partner import growth from the world

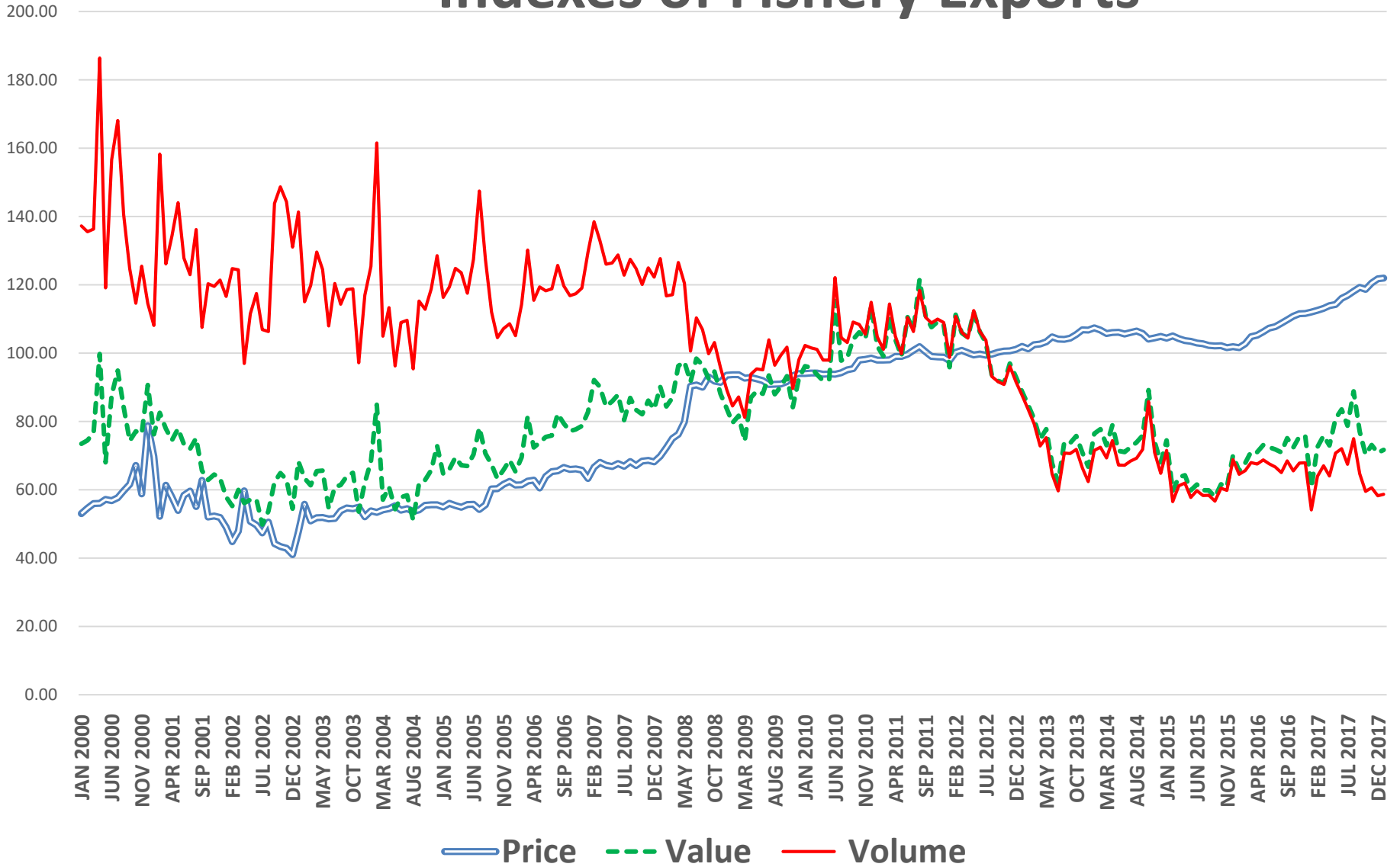
● Thailand export growth to partner > Partner import growth from the world

● Reference bubble

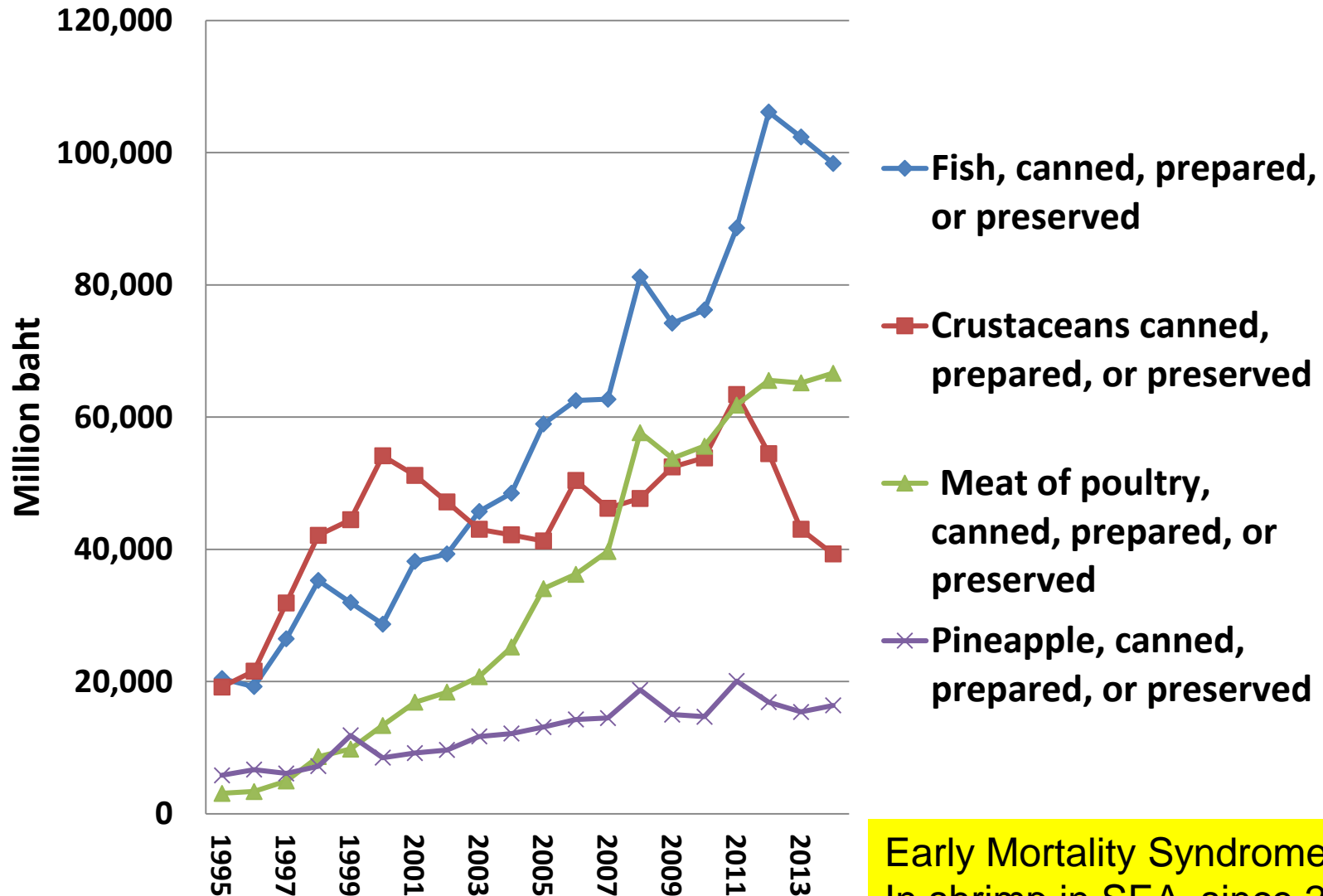
The bubble size is proportional to the share in world imports of partner countries for the selected product



Indexes of Fishery Exports



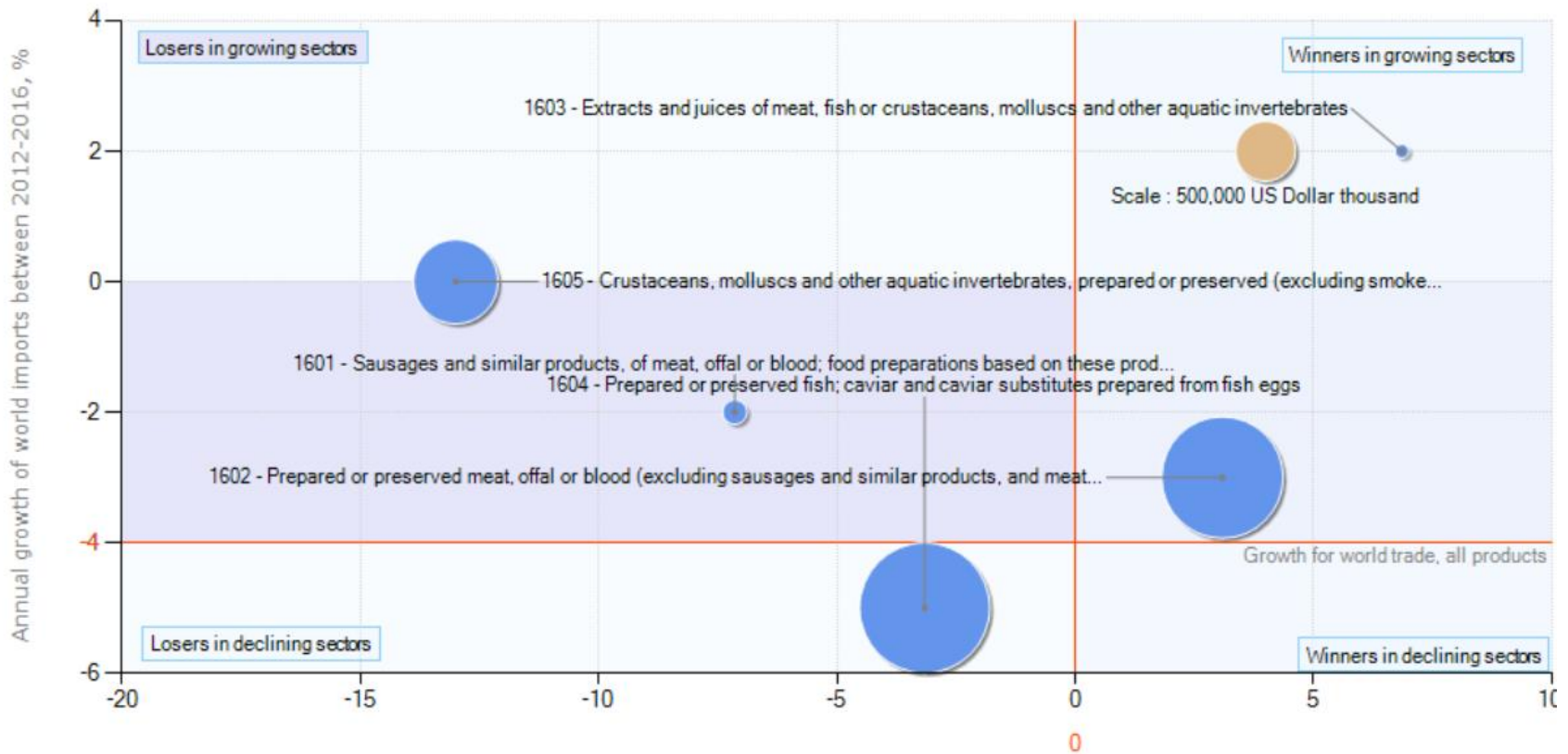
Thailand's major processed food exports 1995-2014



Early Mortality Syndrome (EMS)
In shrimp in SEA since 2012

BCG Framework: Product 16xx

Growth of national supply and international demand for products exported by Thailand in 2016



● Thailand is a net exporter for this product

● Reference bubble

The bubble size is proportional to export value



Trade Performance Index

Processed food exports (2016)

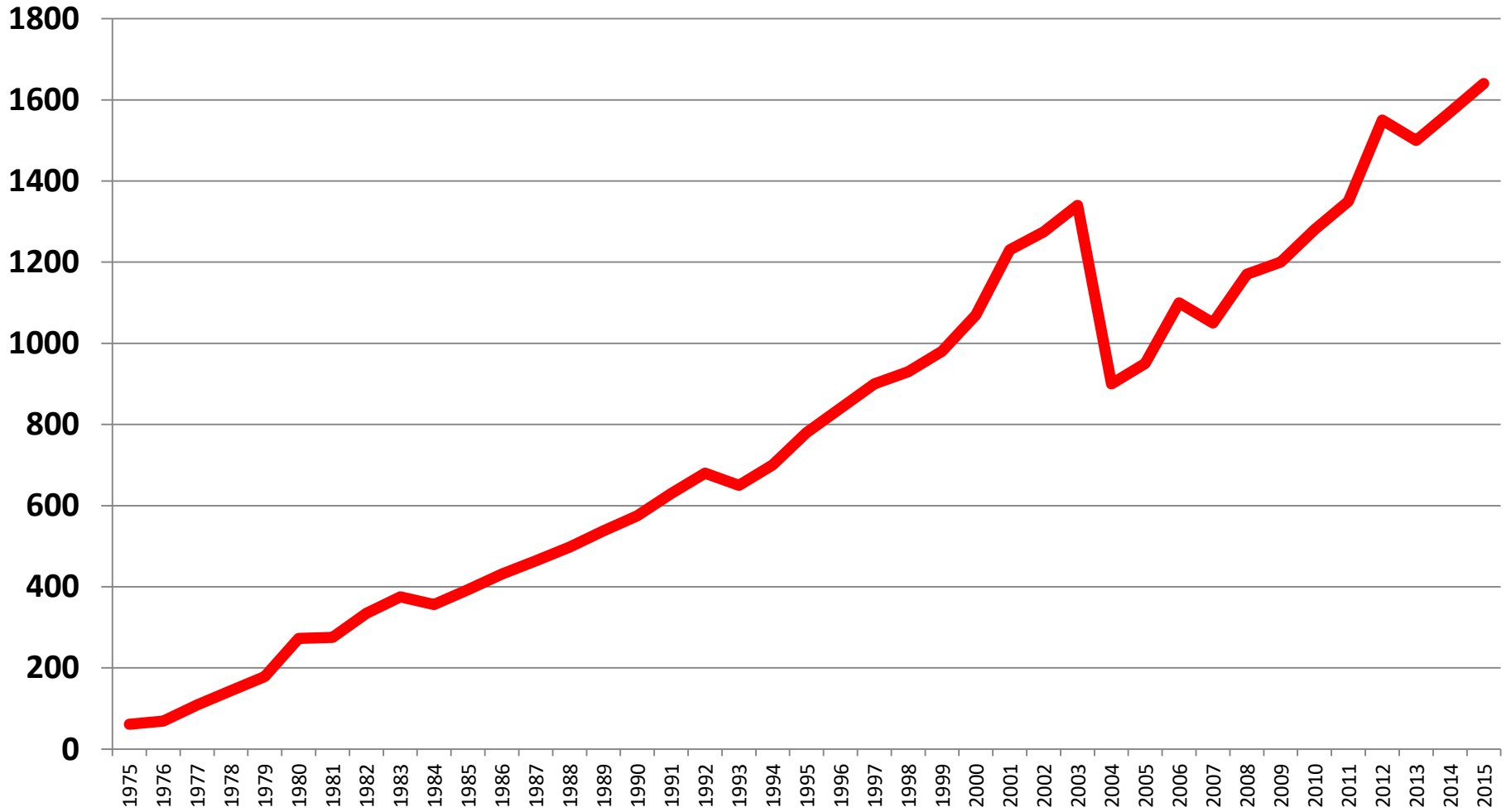
	Value	Rank
Number of exporting countries	169	
Value of exports (in thousand US\$)	19,753,610	
Export growth in value, p.a. (%)	-2%	111
Share in national exports (%)	9%	
Share in national imports (%)	3%	
Relative trade balance (%)	47%	
Relative unit value (world average = 1)	1	

Trade Performance Index

Processed food exports (2016)

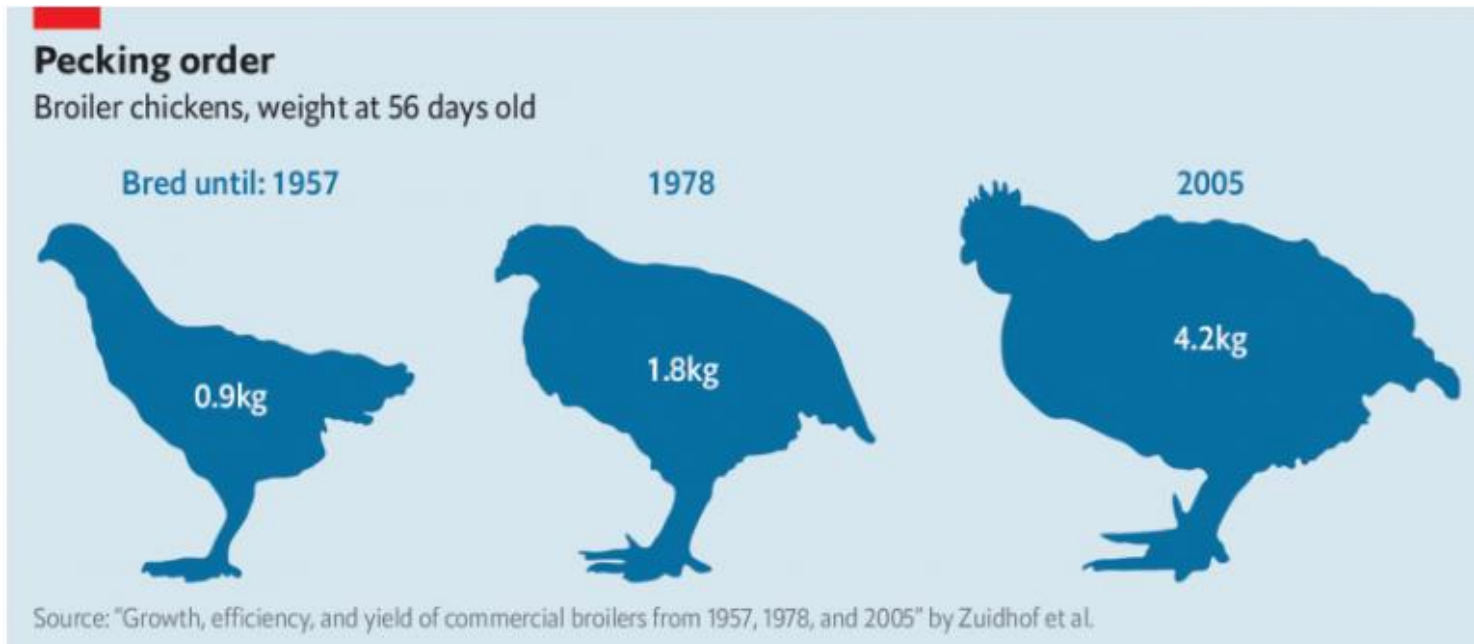
	Value	Rank
		169 countries
Net exports (in thousand US\$)	12,809,011	5
Per capita exports US\$/inhabitant)	286.9	45
Share in world market (%)	2.67%	14
Product diversification (N° of equivalent products)	23	30
Market diversification (N° of equivalent markets)	15	21

Thailand's Broiler Production (1,000 MT)

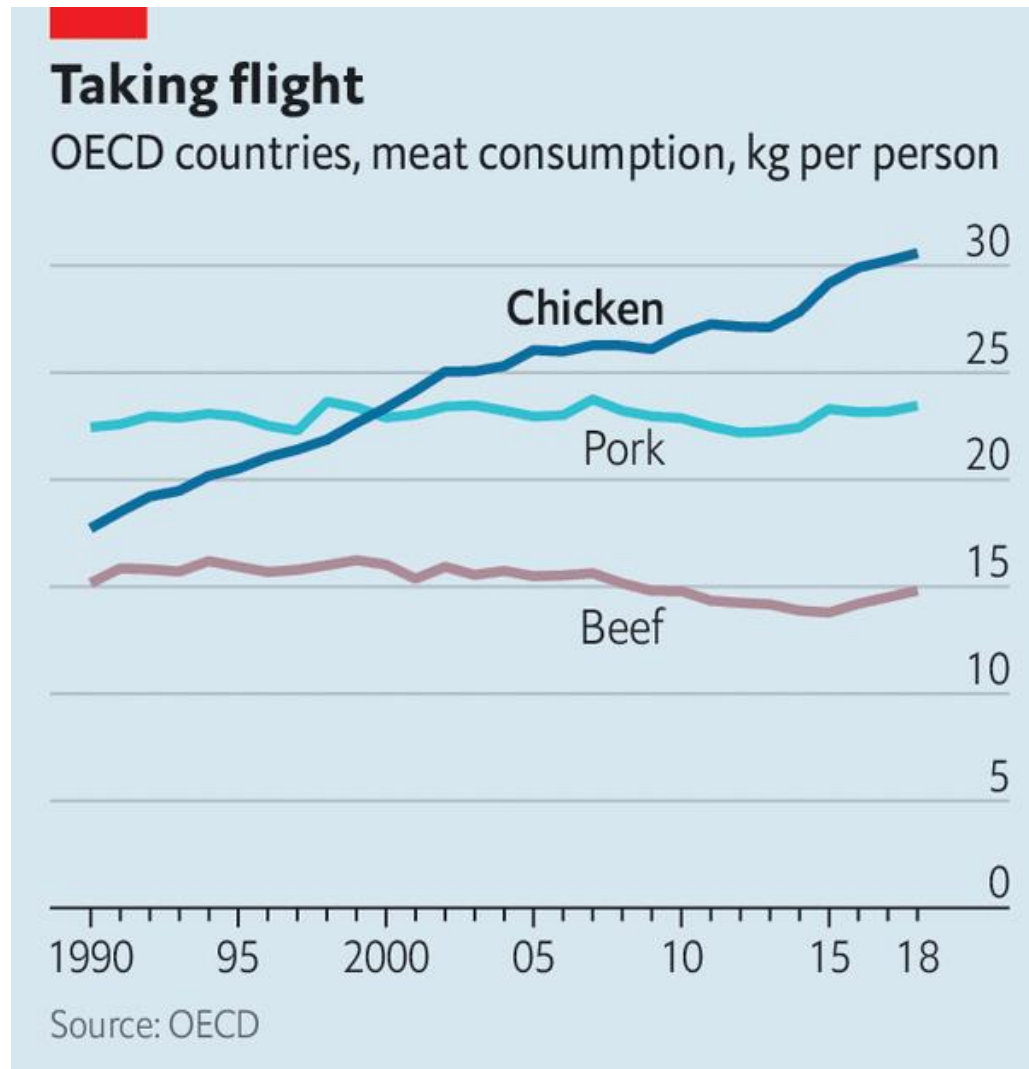


Bigger birds over the years

Comparing chickens that were selectively bred in 1957, 1978 and 2005, at 56 days old the three birds had average weights of 0.9kg, 1.8kg and 4.2kg (see chart). As raising a single big bird is more efficient than raising two smaller ones, it now takes farmers just 1.3kg of grain to produce 1kg of chicken, down from 2.5kg of grain in 1985.



Chickens have become the rich world's most popular meat
The birds now count for 23bn of the 30bn land animals living on farms



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.

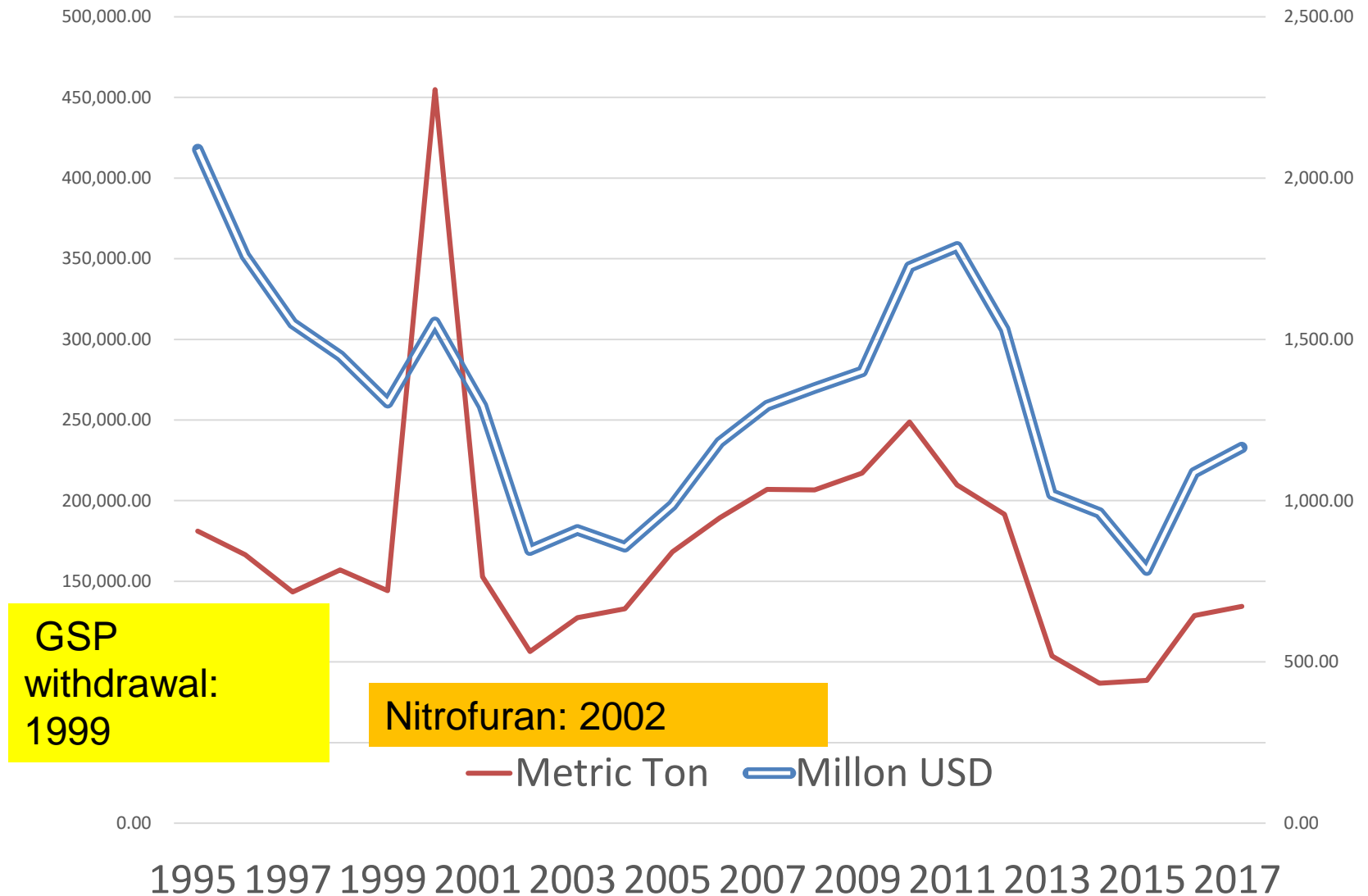
Major processed food exports

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

An early warning 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.
- *Nitrofurans* 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**.

Exports of Crustaceans



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 exports.
- Adopt a closed farming system (as opposed to free-range farming)
- Invest directly in importing countries (CP Chilled chicken plants in UK)
- Canned tuna green curry
- Tuna spread
- Kaew Kung (frozen shrimp soup), 59 baht per cup, are produced in a billion-baht factory close to shrimp farms near Trad province.

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.
- Labeling requirements: nutritious values
- Among the measures is voluntary "traffic labeling", which deems products either green, yellow or red, depending on the risk of causing obesity.
- **What causes obesity? Does it run in the family?**

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 (dog) meat?
- *Red-meat stimulus substance was found in Nakorn Prathom pig farms.*

Traceability (From Farms to Forks)

- 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 statistics, there were 86 cases of Thai food imports with problems including *nitrofurans* in freshwater shrimp and *pesticides* in fresh vegetables.

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.

The 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.

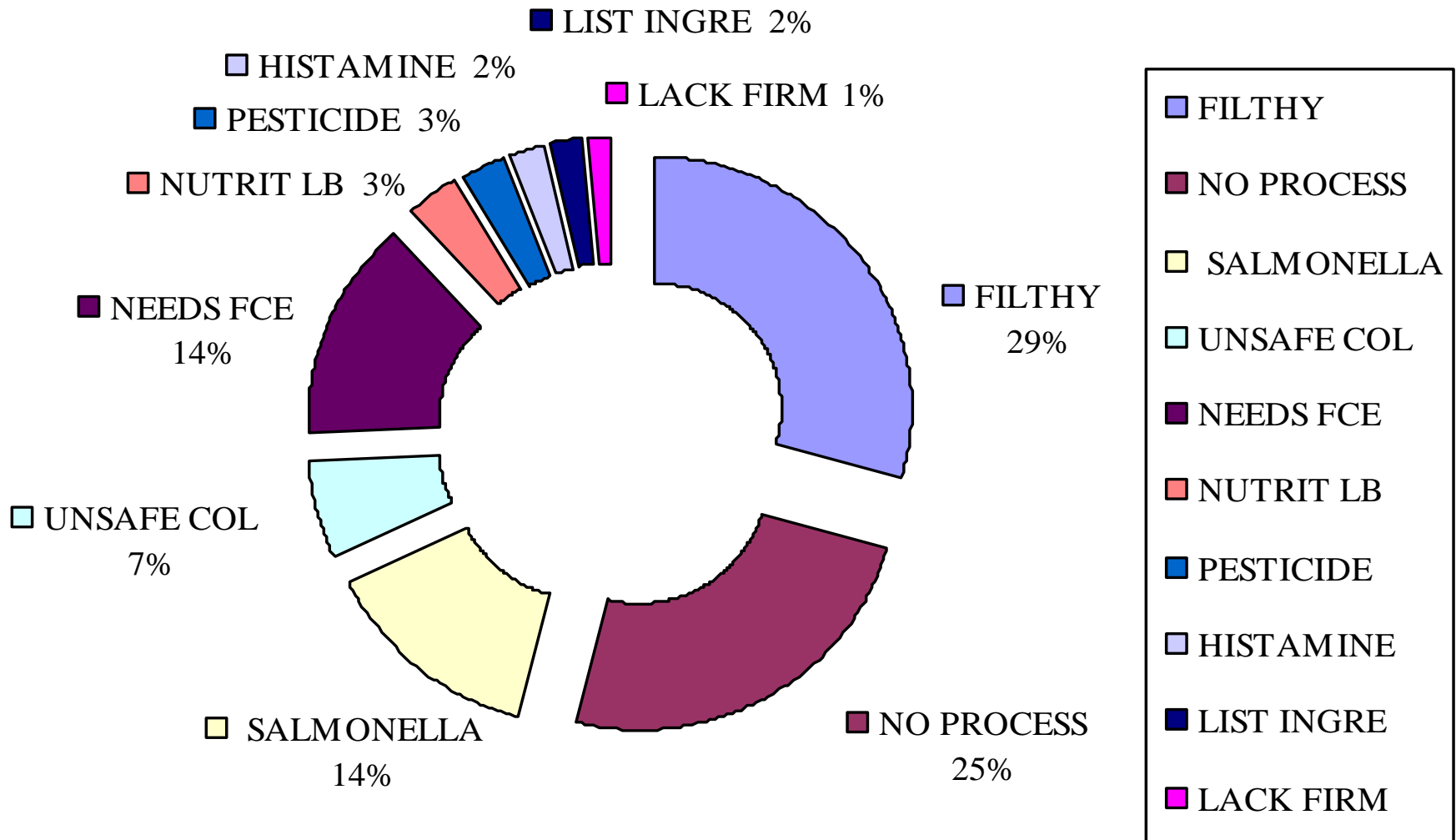
Beware of Salmonella

- 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.

Quality improvement

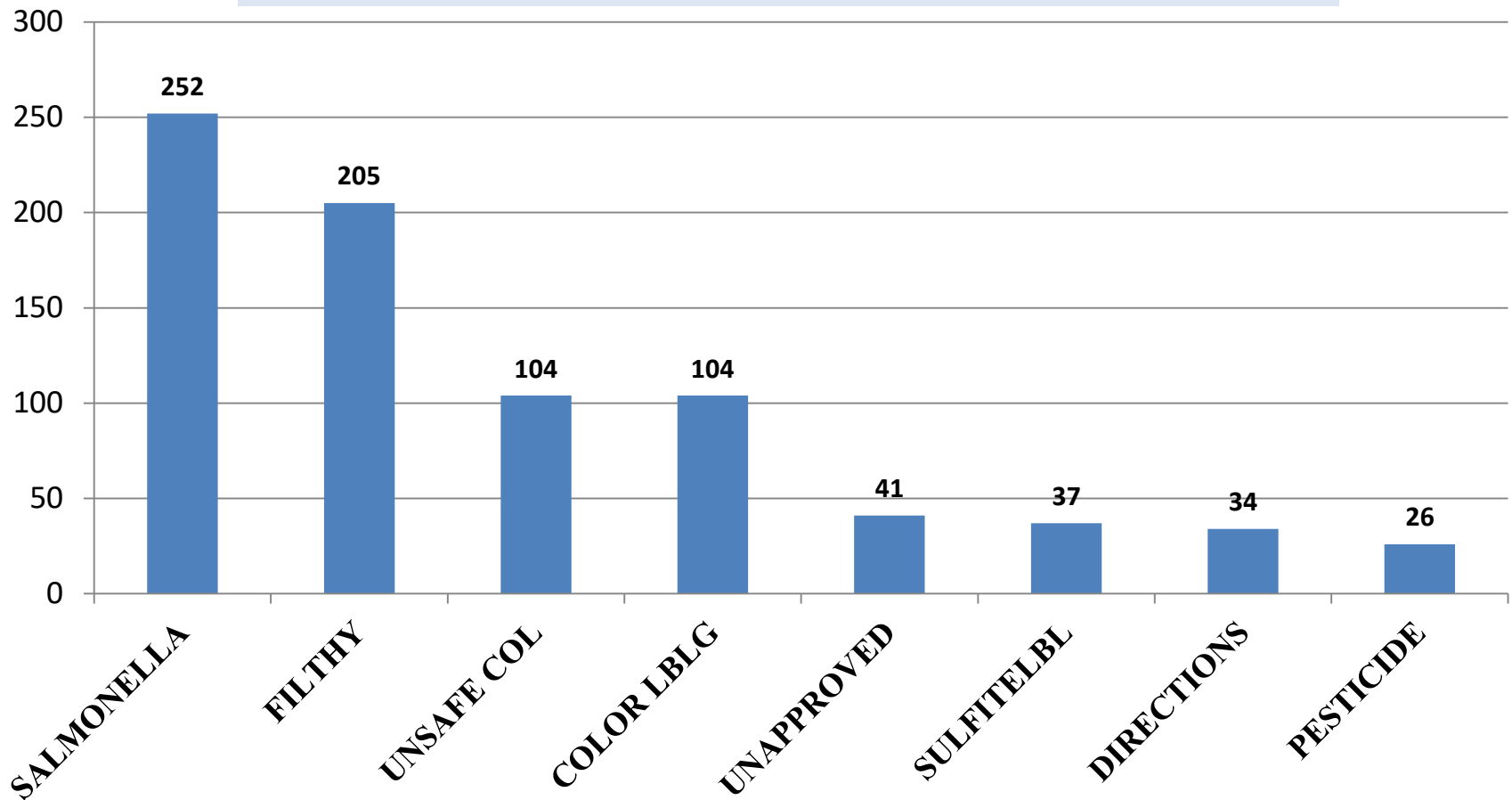
- Major causes of Thailand's exports detention by USFDA are related to quality and safety of the products: unsafe coloring, filthy, salmonella.
- Some are not difficult to deal with: nutrition labeling, specification of production process, listing of ingredients, factory certificates.

USFDA Detention of Thai food products in 2004



That was a decade ago. Has the pattern of detention changed since then?

Reasons of USFDA's Detention of Thai processed food exports in 2014 (number of cases)



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

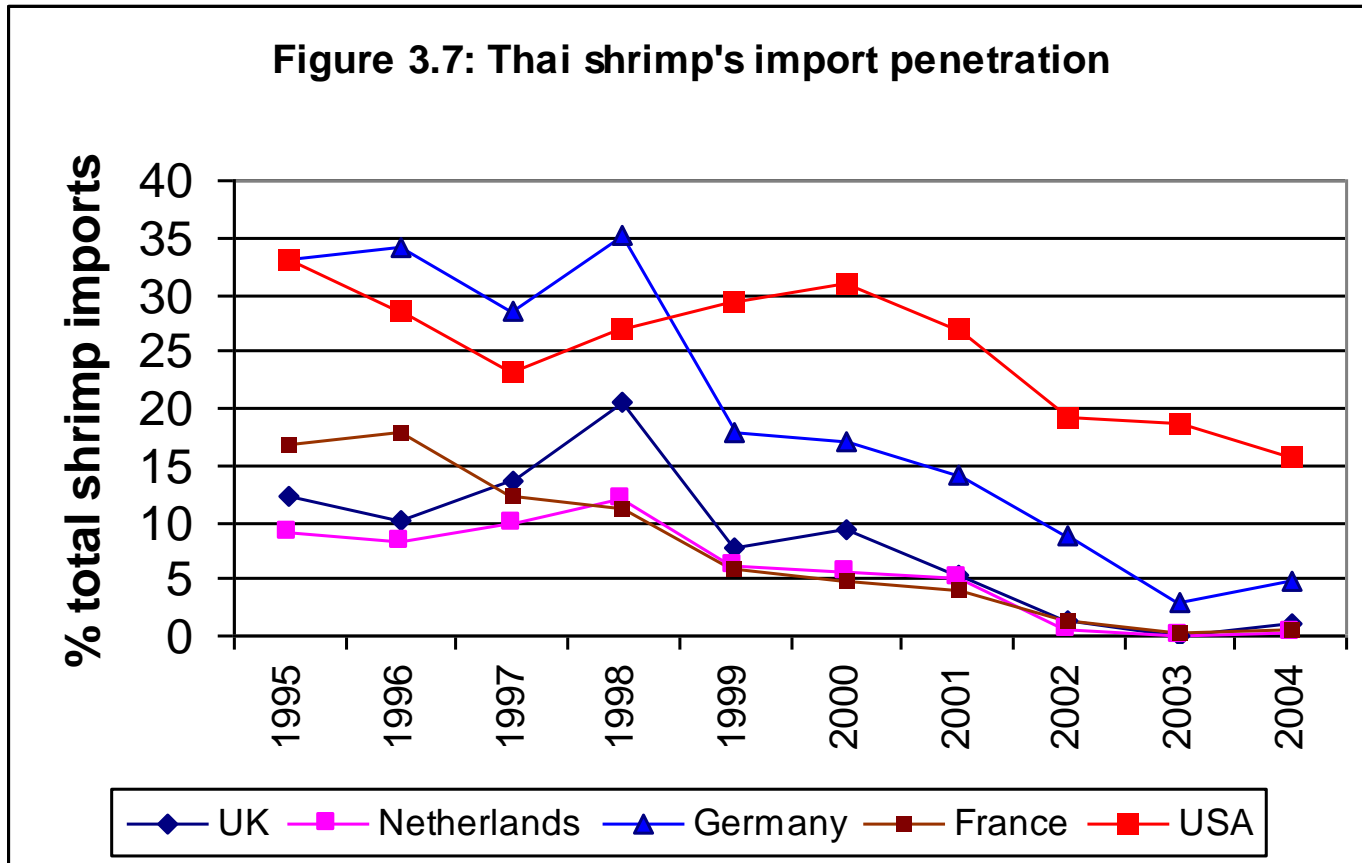
2002: Declining exports of chicken and shrimp to the EU

2004: (1) Outbreak of Avian Influenza

(2) Massive culling of chickens

(3) Reduction in domestic consumption of chicken

Impact of the import bans



Thailand's responses to shocks

- 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: Thailand's food inspector

- 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 from the down under

- 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.

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.

How to retaliate the Aussie

- 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 zero volume of exports.

Nitrofurantoin and Thailand's Exports of shrimp in 2002

- **Nitrofurantoin** 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 nitrofurantoin residues in both Brazilian and Thai chickens and black tigers shrimps

Expensive instrument for detecting drug residues

- 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.

Firms comply with Food Safety Standards imposed by importing countries, because they want to...

- satisfy customers' requirements
- maintain market access
- access **new** markets
- increase operation efficiency

The way to respond to stringent food safety standards: Friendly shrimp farming

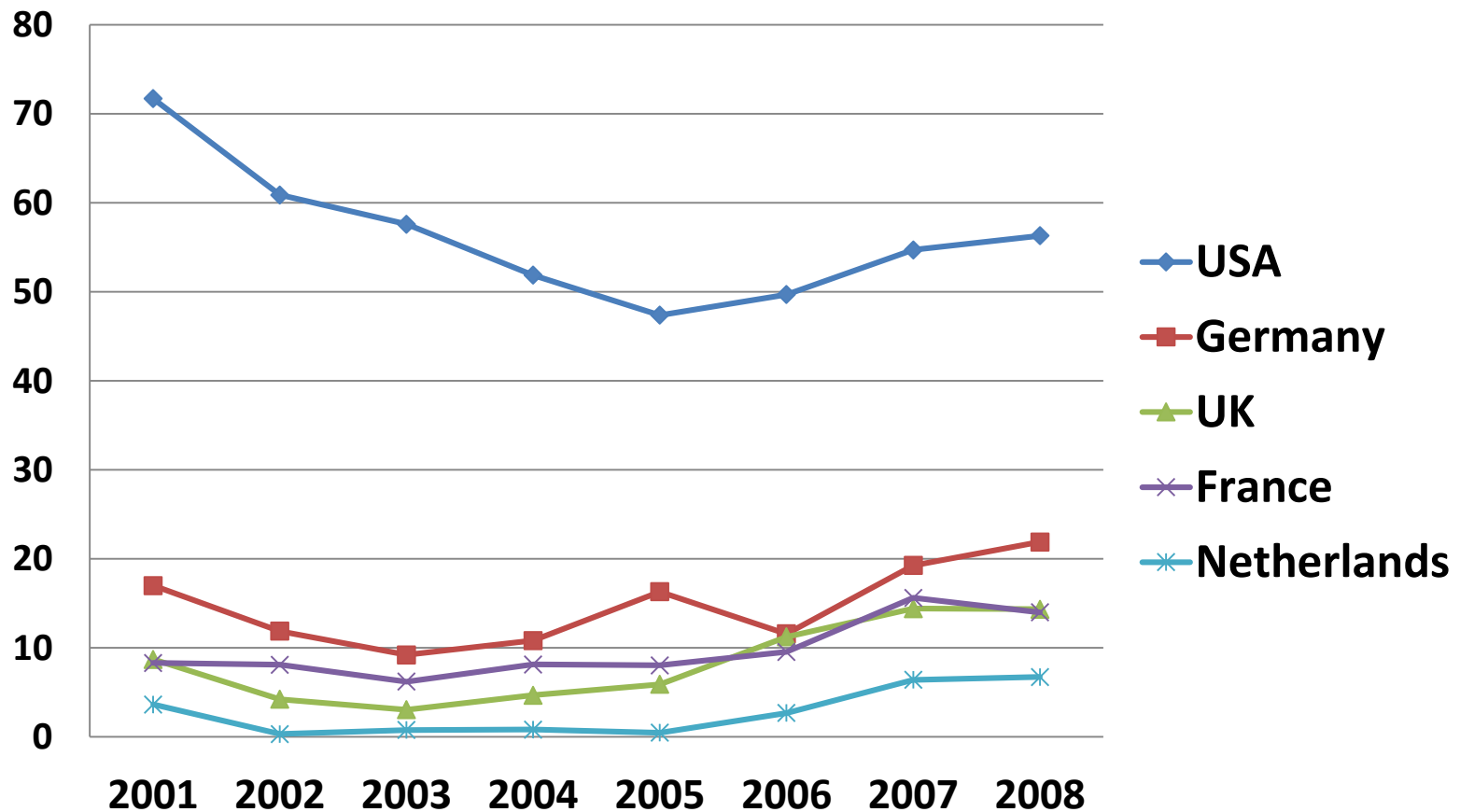
- Switched from **black tigers** to ***white shrimp***
- Employed pro-biotic farming to create friendly environment for shrimp
- Applied **no** anti-biotic to improve shrimps' digestion system,
- Reduced stress and increased virus resistance of baby shrimps (less crowded ponds)

Dynamic responses

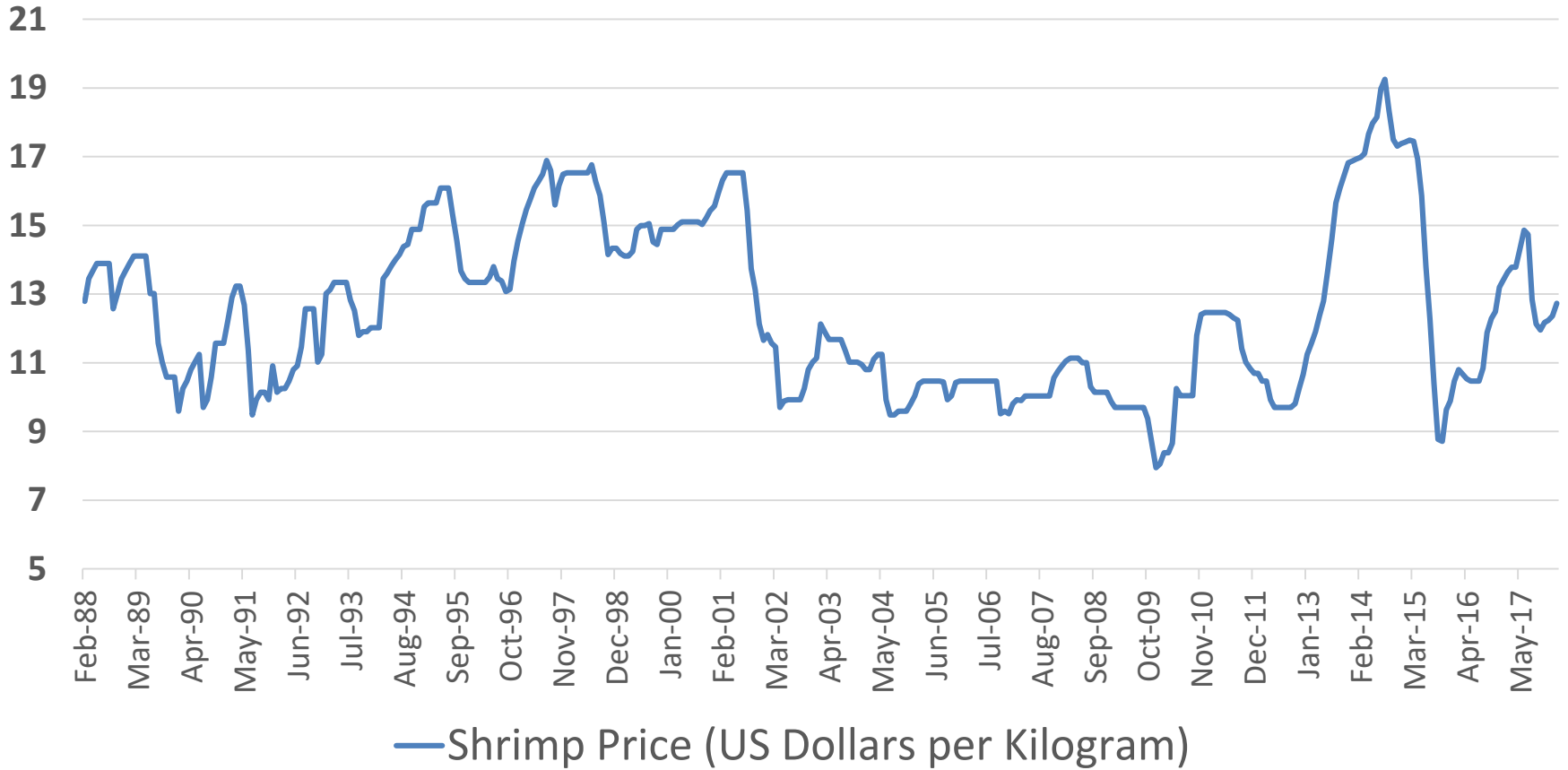
- But these measures also incur higher cost to producers
- Must do proactive investment, anticipating more stringent food safety standards.
- Upgrading laboratory standards
- It boils down to whether MC exceeds MB.
- The long-run benefit can be seen from rising market shares

Market penetration of Thai shrimp exports: *A rebound after upgrading food safety standards*

% of total imports in each market



Shrimp Price (US Dollars per Kilogram)



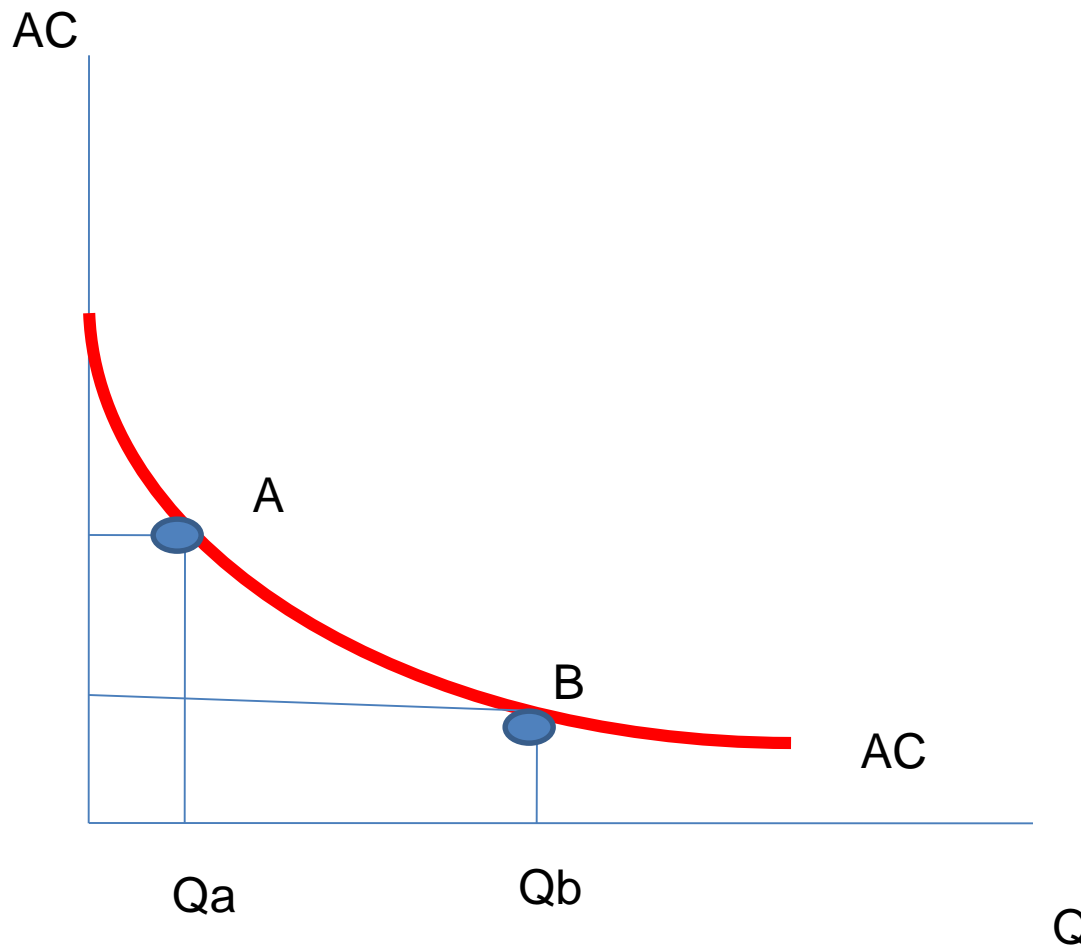
Anti-Dumping Duty (ADD) and Non-Tariff Barriers (NTB)

- Rising market shares can be thought of as an early warning indicator of incoming trade barriers, either in the form of ADD (USA) or NTB (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, which they must protect their reputation.
- Large firms are more likely to form strategic partners.
- More chances to be a member of exporters' associations

Size matters in SPS compliance: Average cost declines as production increases



Disadvantages of small firms

- **Incur higher unit cost of upgrading safety standards**
- **Require government assistance in providing information of food safety standards**
- **Need subsidies on laboratories**
- **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.

Don't delay improvement in quality and safety standard

- The sooner firms achieve stringent food safety standards, the greater their ability to compete in the world market.
- Export market shares depend partly on firms' accumulated investment to comply with food safety standard norms.
- Abuses of SPS standards are more frequent in those markets where there are substantial domestic subsidies.

Product differentiation through raising food safety standards

- SPS standards imposed by importing countries may increase domestic price level of the affected products, as there are lower level of imports.
- Stringent SPS measures can be used to protect domestic industry by fending off the supply of imported product—at the cost of higher prices for domestic consumers

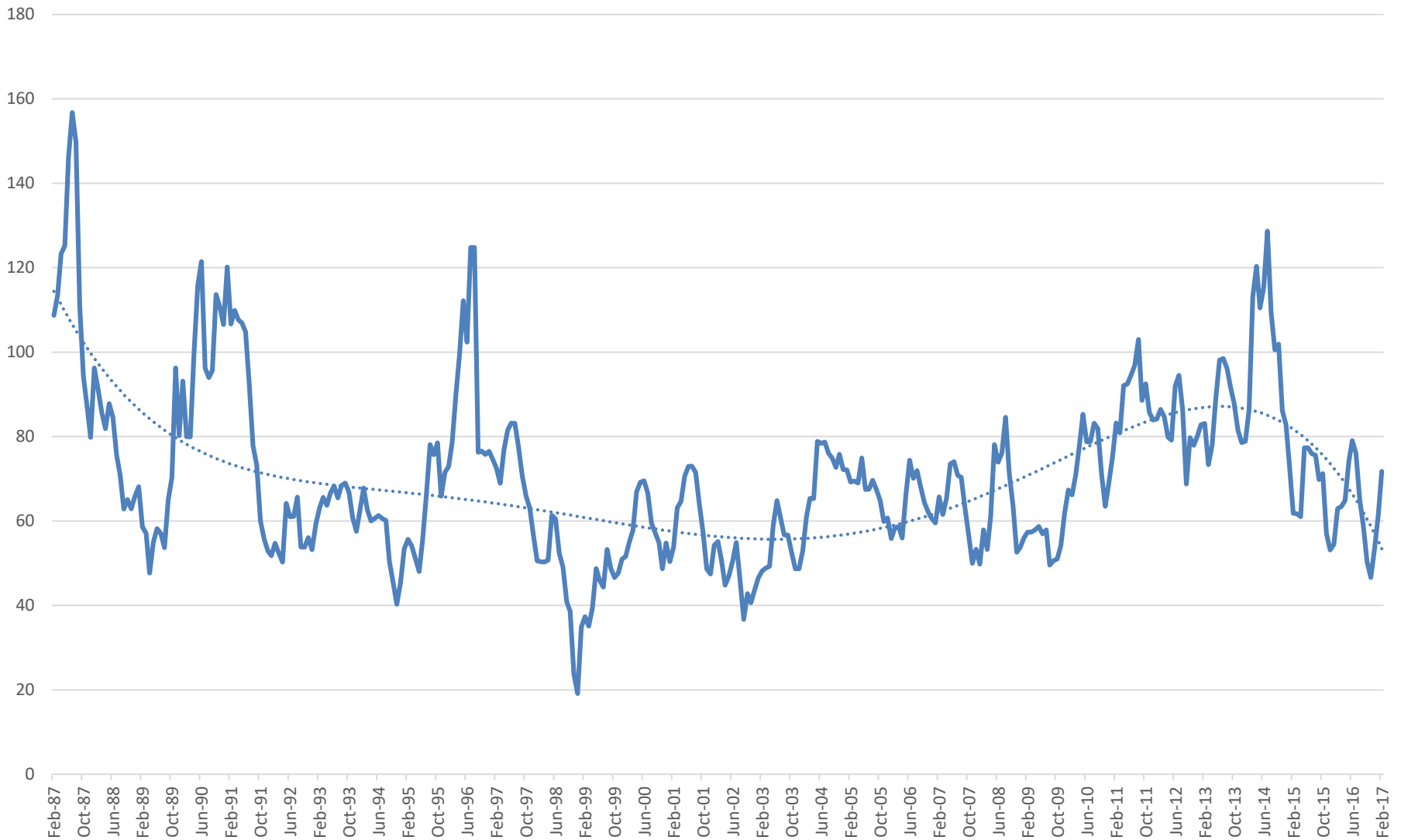
SPS compliance cost is in fact investment expenditure

- 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

- Substitution of soybean (GMO) by sunflower oil in canned tuna production
- Established strategic partnerships in importing countries (CP and Queensland in fruit exports, Betrago and Sumitomo in exports of pork to Japan).
- Integrated vertically (pig meat industry) and SPF (Specific Pathogen-Free) pork.

Swine (pork)Description: Swine (pork), 51-52% lean Hogs, U.S. price, US cents per Pound.



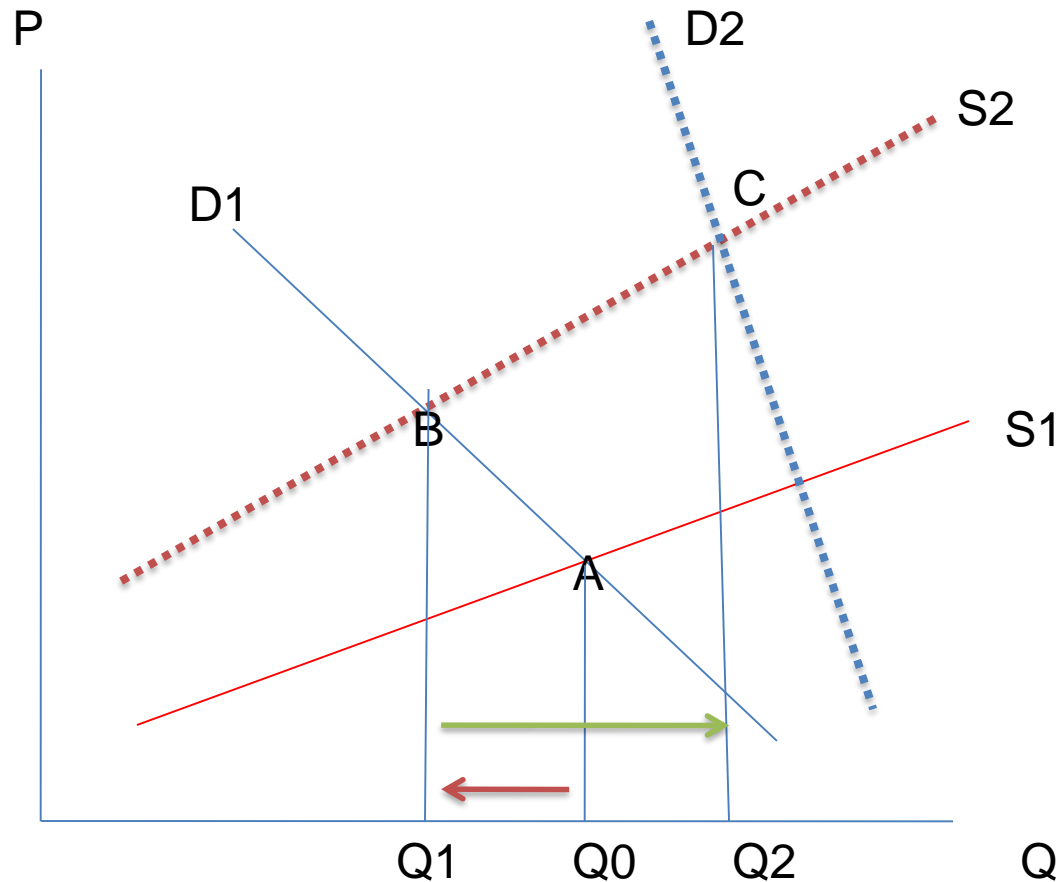
Functions of Exporters Associations

- To prevent negative externality, export firms must be a member of an exporter association.
- The association provides vital information to government and exporter members, reducing information cost.
- Screening and monitoring activity prevents moral hazard among members to maintain the sector's reputation of high product quality and food safety.
- Resource pooling and cost sharing in dealing with food safety standard issues can reduce compliance cost to SPS standards.

The way forward

- The processed food industry is subject to a constant shock syndrome.
- Tariff and non-tariff barriers can be **substituted** in importing countries.
- When tariff barriers fall (due to FTAs) NTB rises (substitution of trade barriers).
- Structural change: more concentration of the food industry, because size matters for international market access and competitiveness.

Impact of long-term investment in upgrading food safety standard



Product differentiation through high SPS standard reduces the price elasticity and increases the demand for the product in the long run.

Thailand's multibillion-dollar seafood industry plagued by pirates and slaves on high seas

- Overfishing and the use of *illegal and undocumented* trawlers has ravaged Thailand's marine ecosystems and even encouraged the use of **slave labor** from neighboring countries.
- Thai fishing boats are now catching about **85 percent less** than what they brought in **50** years ago, making it one of the most overfished regions on the planet.

Migrant workers: Slave workers?

- Depleted fisheries in the Gulf of Thailand and Andaman Sea have, in turn, pushed Thai fishing boats farther and farther from home (Indonesia).
- Fewer Thais are willing to take on the dangerous, low-level work, so fishing operations use brokers and agents to enlist ***migrant workers*** from impoverished neighboring countries such as Myanmar and Cambodia, often through trickery and kidnapping.

Greenpeace targets Thai Union suppliers' fishing gear 20 April 2016

Environment conservation organisation Greenpeace has deployed its largest and fastest ship to locate and remove "destructive" fishing gear used by suppliers of Thai Union, the world's biggest exporter of canned tuna.

Greenpeace stated on Wednesday that its largest and fastest vessel, The Esperanza, had begun the first operation of its kind, an expedition in the Indian Ocean to find and remove destructive fishing gear, including fish aggregating devices (FADs), belonging to boats supplying Thai Union.

FAD

"We've seen these marine snares, or fish aggregating devices, up close and even though they are meant to attract tuna they are teeming with other marine life, which gets caught in industrial nets and there it dies and is thrown back into the water as so-called bycatch," said Francois Chartier, oceans campaigner at Greenpeace France.

Fish Aggregating Devices (FADs)



A FAD (fish aggregating device) in use at night. Greenpeace is in the Indian Ocean to document and peacefully oppose destructive fishing practices. (Photo by Will Rose/Greenpeace)

Thai Union vs. Greenpeace



The Esperanza departs from the port of Diego Suarez on April 15 entering the Indian Ocean on a new campaign targeting users of 'destructive' fish aggregating gear used by boats supplying tuna canner Thai Union. (Photo by Will Rose/Greenpeace)

Bhanupong: EE460 Thai Economy

Challenges to Thailand's seafood Industry

2012	EMS (Emergency Mortality Syndrome)	
2014	Tier 3 Watch List on Human Trafficking (lowest)	GSP withdrawal by the EU on processed shrimp
2015	Yellow card by the EU for illegal fishing	GSP withdrawal on frozen and chilled shrimp
June 2016	Upgraded to Tier 2	

Recent challenges

Illegal, Unreported, and Unregulated (IUU)

- Meanwhile, the fishing industry is now facing investigation by the European Union for illegal, unregulated fishing, higher tariffs for exports to the EU, and low prices resulting from higher supply from many exporting countries.
- *USA measures in 2014: To comprehensively combat **illegal, unreported, and unregulated (IUU)** fishing and seafood fraud from entering the U.S. market place.*

IUU Fishing Inspection by the EU

October 2018



Legal, reported, and regulated fishing activities *labor and environmental standards*



โดยเฉพาะในส่วนของข้อมูลเชิงลึกของเรือที่จะเทียบท่าเข้ามา ต้องทำการตรวจเวลาการแจ้งเข้าเวลาการแจ้งออกของเรือ จำนวนลูกเรือประมงแรงงานในเรือประมงให้มีความถูกต้อง และ ตรวจสอบค่าจ้างที่แรงงานจะได้รับ โดยนำระเบียบทางกฎหมายมาใช้ในการดำเนินการ ให้การทำประมงของประเทศไทยถูกกฎหมายควบคู่กับการดูแลสิ่งแวดล้อม คือการร่วมกันฟื้นฟูทรัพยากรประมงทะเลให้ฟื้นกลับคืนมาสมบูรณ์ เพื่อให้อาชีพประมงและการทำประมงไทยมีความยั่งยืน

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.
- There will always be new challenges for processed food industries, which are constantly faced by new barriers.

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.*