

Thailand's Processed Food Industry

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Lecture 15

From Sea to Can: Thailand Canned Tuna Ranking

What's
inside the
can?



Outline

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

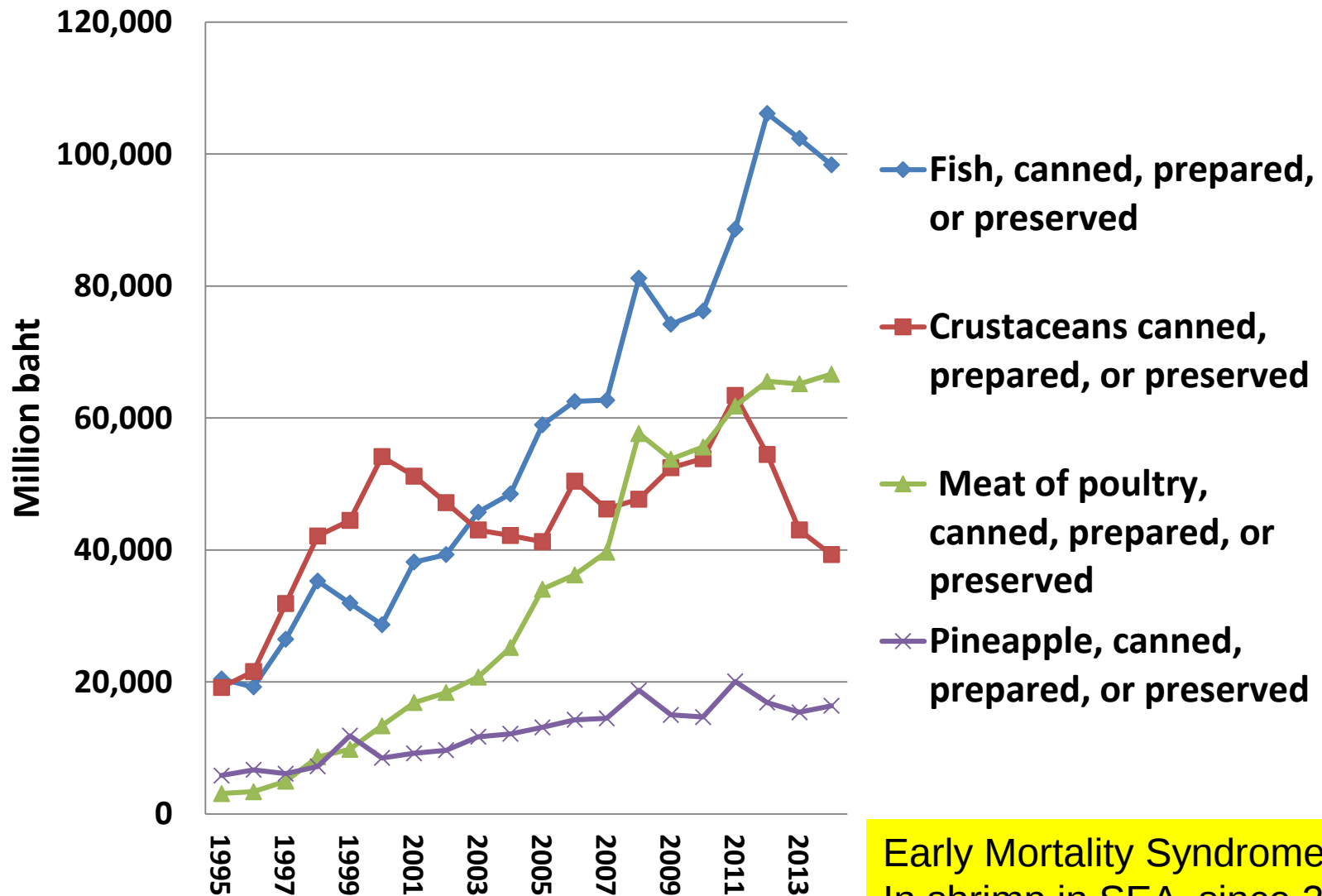
Trade Performance HS : Exports of Thailand - 16 Meat, fish and seafood food preparations

(2013, in USD thousands)

Major importing countries from Thailand

<u>Leading partners</u>	<u>Exports in value</u>	<u>Exports as a share of total exports (%)</u>	<u>Exports as a share of world exports (%)</u>	<u>Growth of exports in value (% p.a.)</u>	<u>Growth of exports in volume (% p.a.)</u>	<u>Number of exported products</u>	<u>Share of top 3 exported products (%)</u>
World	7,117,995	3.11	14.56	7	1	26	83.5
Japan	1,997,238	28.06	4.09	10	6	24	80.7
USA	1,180,159	16.58	2.41	-2	-9	15	92
UK	756,520	10.63	1.55	6	-2	13	92.8
Australia	330,767	4.65	0.68	12	4	18	89.2
Canada	257,288	3.61	0.53	5	-2	14	91.8

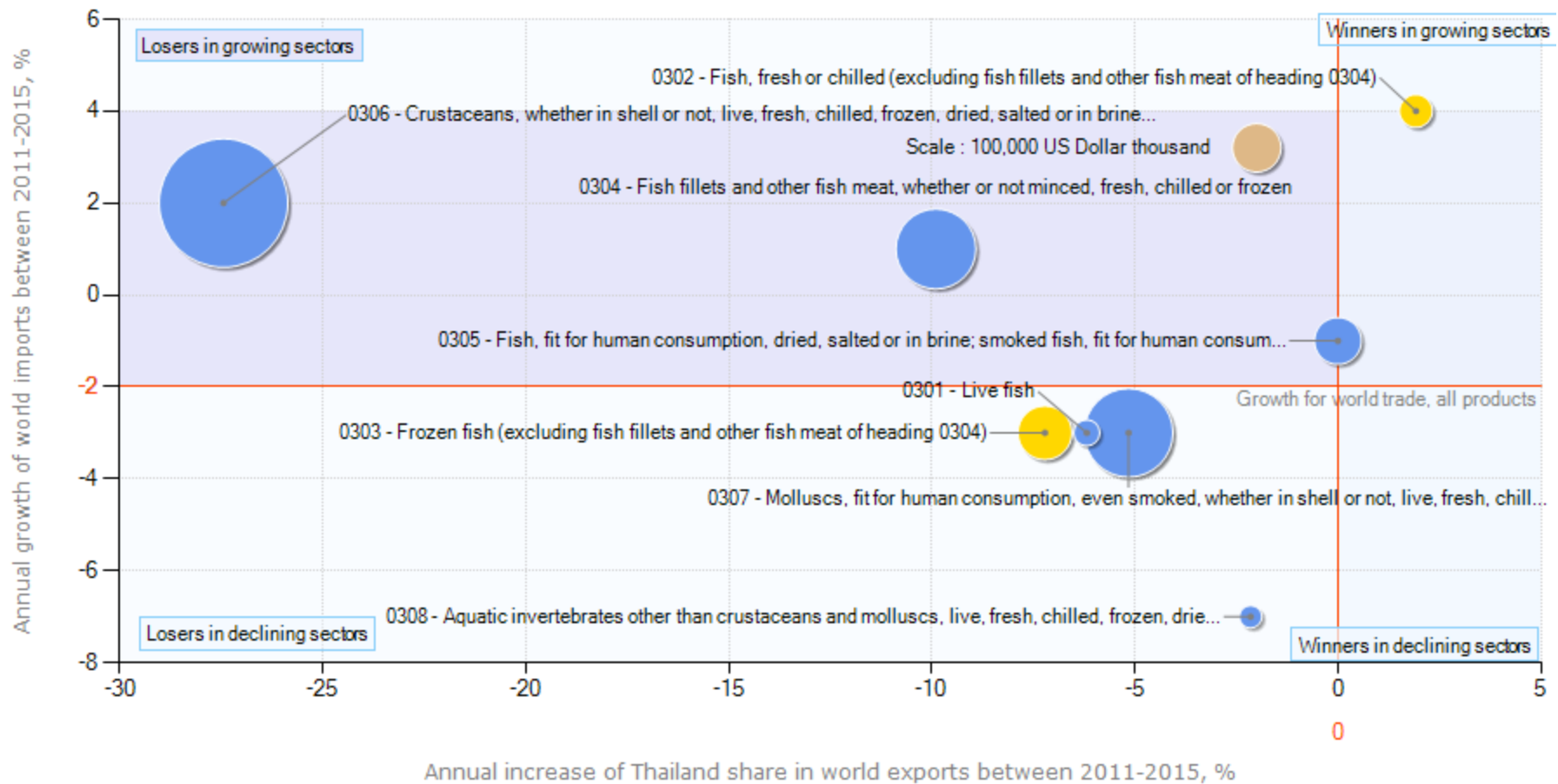
Thailand's major processed food exports 1995-2014



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

Product 13: Fish, crustaceans, mollusks, aquatic invertebrates

Growth of national supply and international demand for products exported by Thailand in 2015



Thailand is a net importer for this product

Thailand is a net exporter for this product

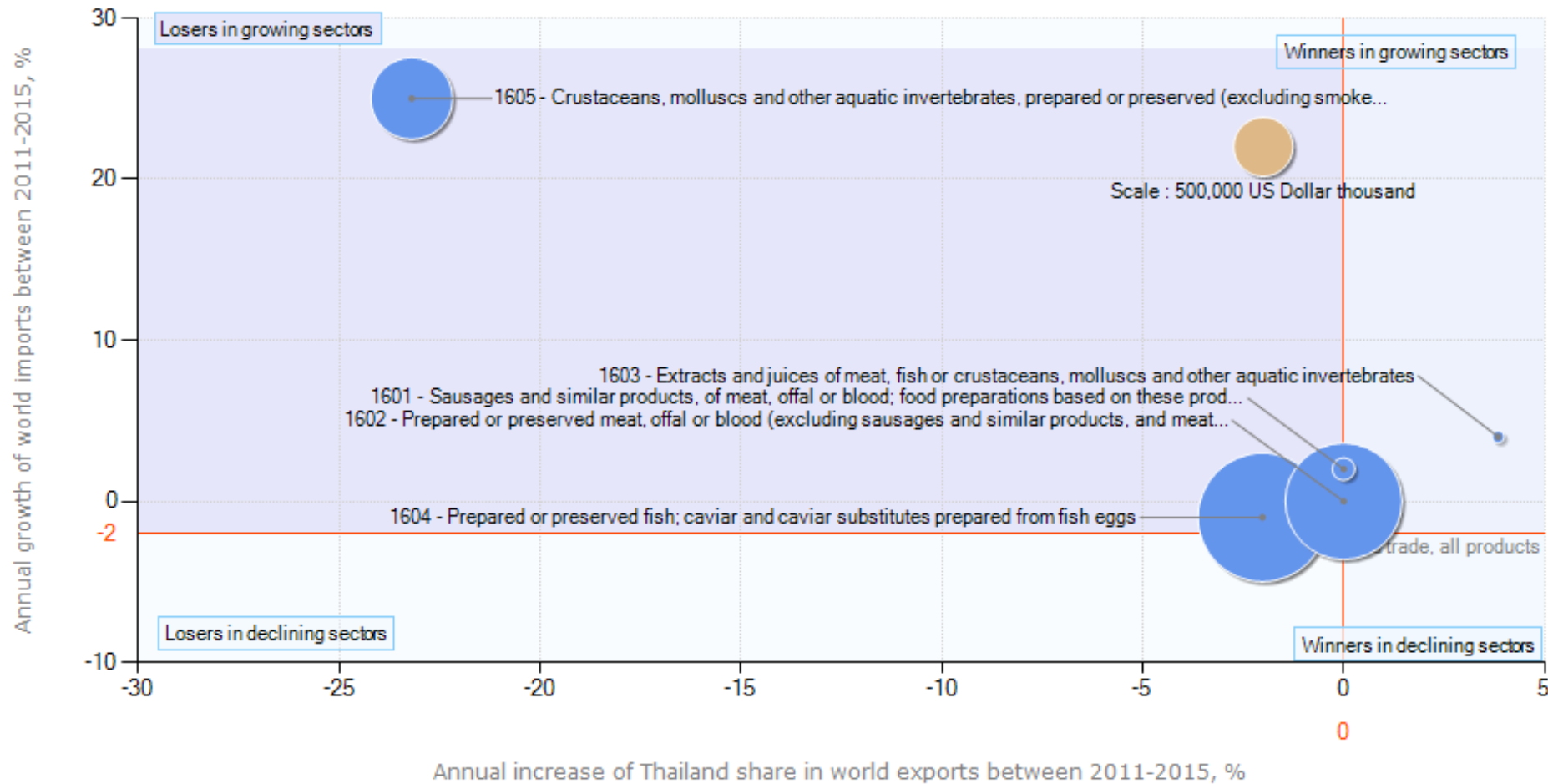
Reference bubble

The bubble size is proportional to export value



Product 16: preparations of product 3 (meat, fish, crustaceans, ..)

Growth of national supply and international demand
for products exported by Thailand in 2015



● Thailand is a net exporter
for this product

● Reference bubble

The bubble size is proportional
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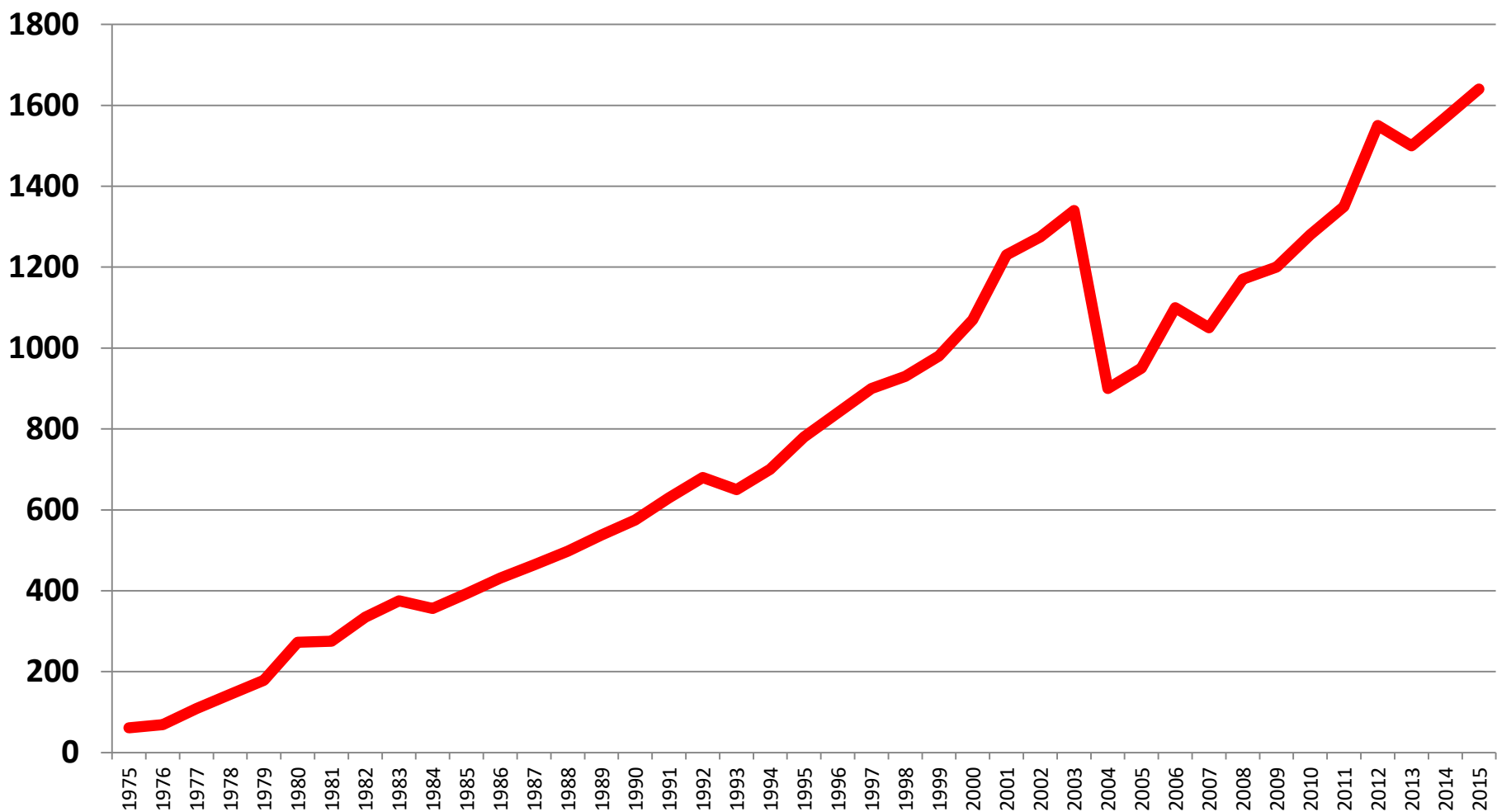


Trade Performance Index for Thailand's processed food exports: 2015

Indicator's Description	Processed food (Value)	Processed food (Rank)
Number of exporting countries for the ranking in the sector	167	
Value of exports (in thousand US\$)	19,370,723	
Export growth in value, p.a. (%)	-2%	101
Share in national exports (%)	9%	
Share in national imports (%)	3%	
Relative trade balance (%)	47%	
Relative unit value (world average = 1)	1.3	
Net exports (in thousand US\$)	12,490,897	5
Per capita exports US\$/inhabitant)	285.0	47
Share in world market (%)	2.67%	13
Product diversification (N° of equivalent products)	23	31
Product concentration (Spread)		30
Market diversification (N° of equivalent markets)	16	17
Market concentration (Spread)		18

Source: <http://tradecompetitivenessmap.intracen.org/TPIC.aspx>

Thailand's Broiler Production (1,000 MT)



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

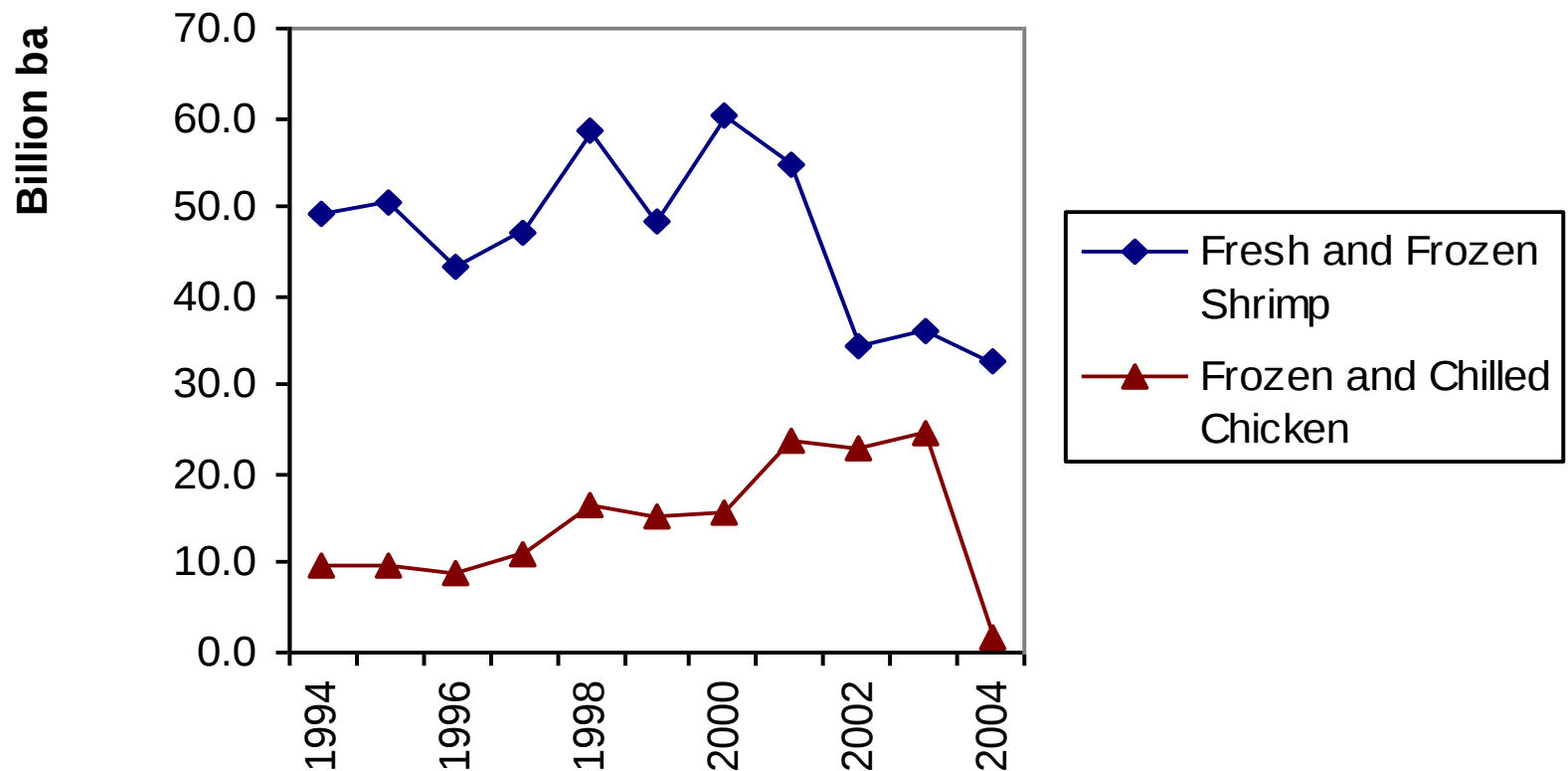
- Processed seafood: canned tuna, fresh and frozen shrimp
- Processed meat: chicken, pork
- Processed vegetable and fruit: canned pineapple

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**.

Chilled and frozen shrimp and chicken

**Figure 15: Impacts of GSP Withdrawals (1999)
Nitrofurans (2002) and Avian Influenza (2004)**

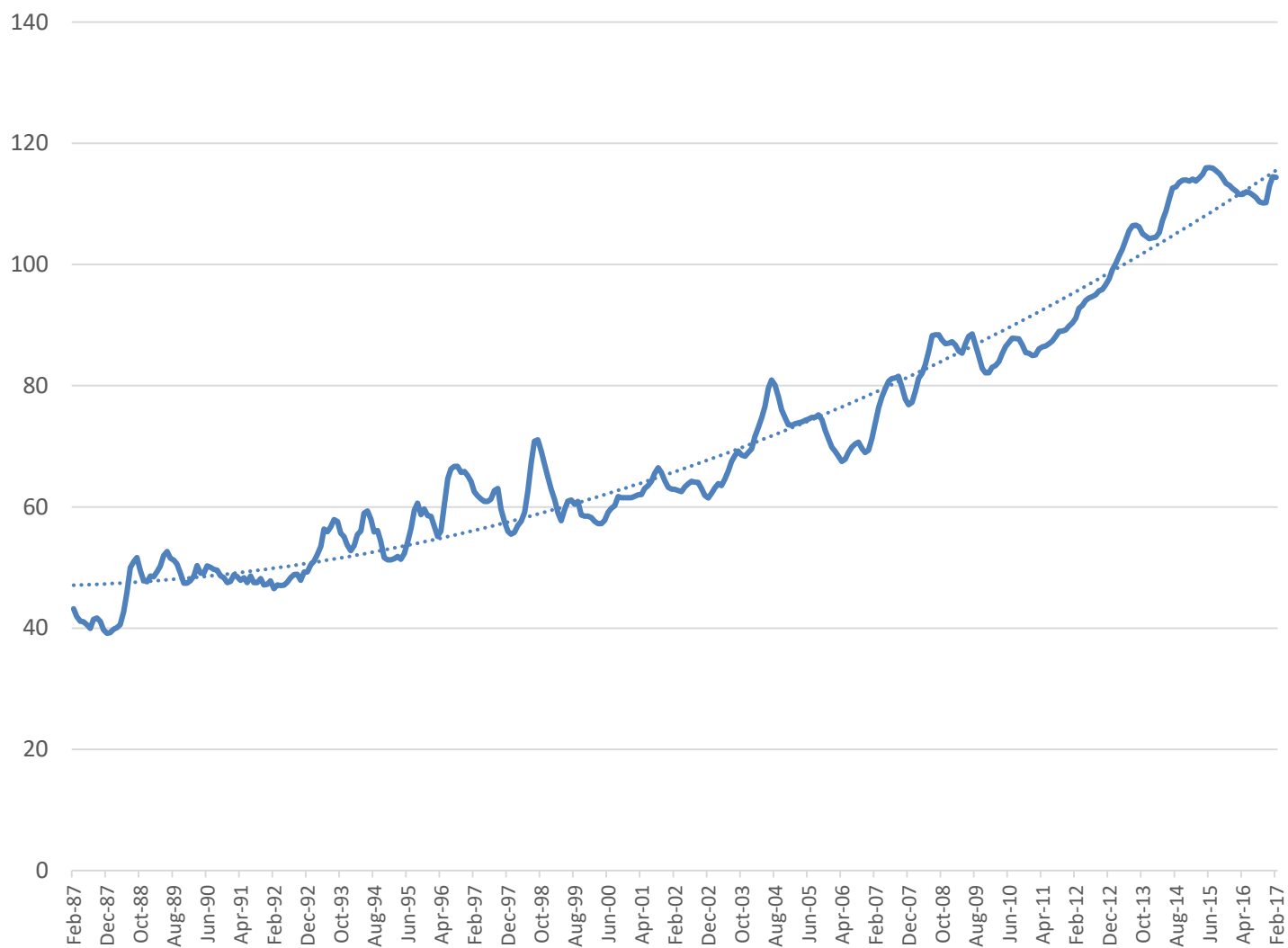


Source: Office of Agricultural Economics
Department of Fisheries

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.

Poultry (chicken) Price (US cents per Pound)



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.
- 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?
- Labeling requirements: nutritious values

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 are 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.

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.

Exports of veggies from Thailand: meet stringent inspection

- 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 (egg plants)* and chilies

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.

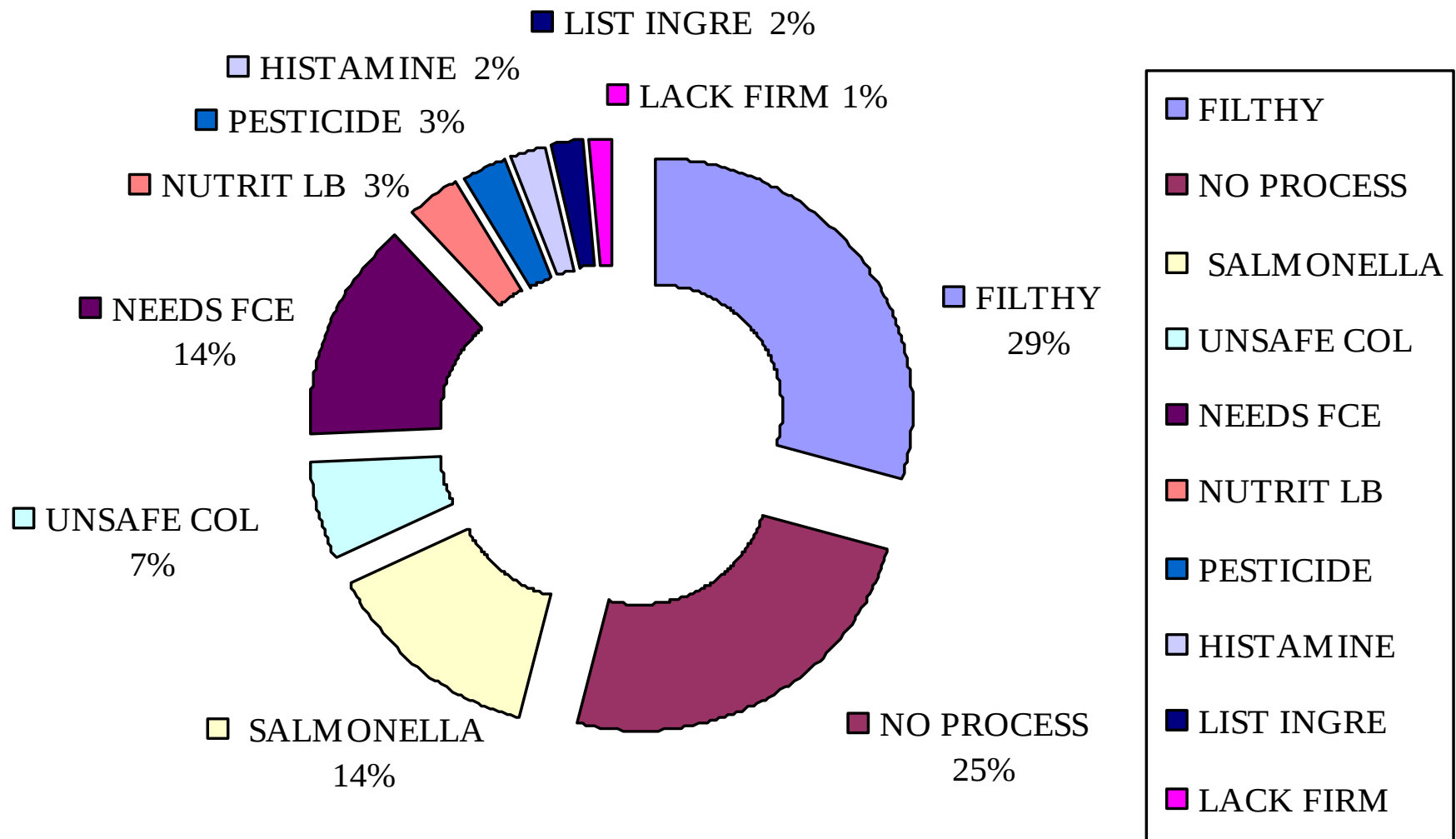
Food safety in the early 1990s

- 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.

Quality improvement

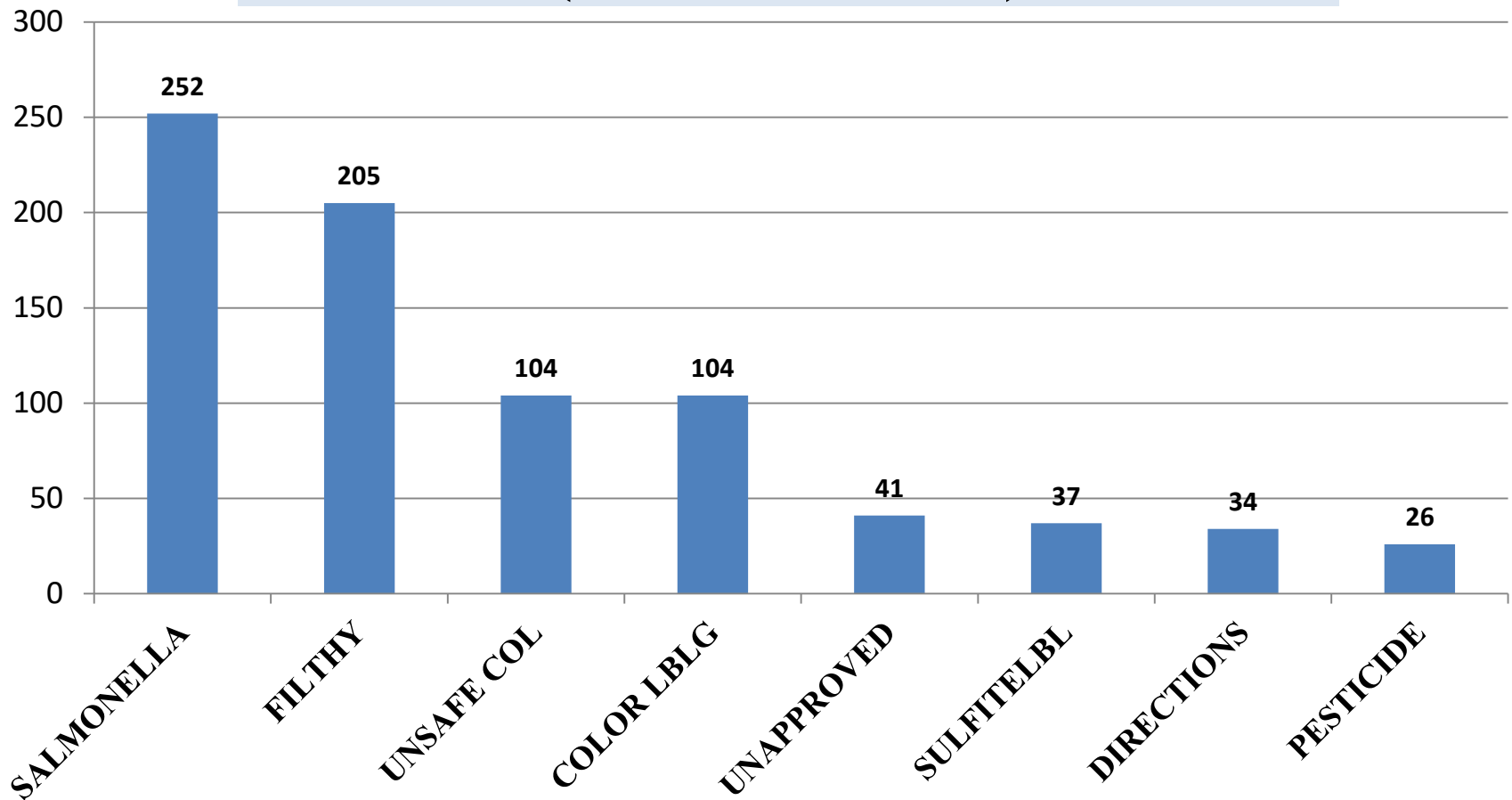
- Major causes of Thailand's exports detention by USFDA are related to quality and safety of the products: unsafe coloring, filthy, salmonella.
- Some are not difficult to deal with: nutrition labeling, specification of production process, listing of ingredients, factory certificates.

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

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 dairy 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.

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

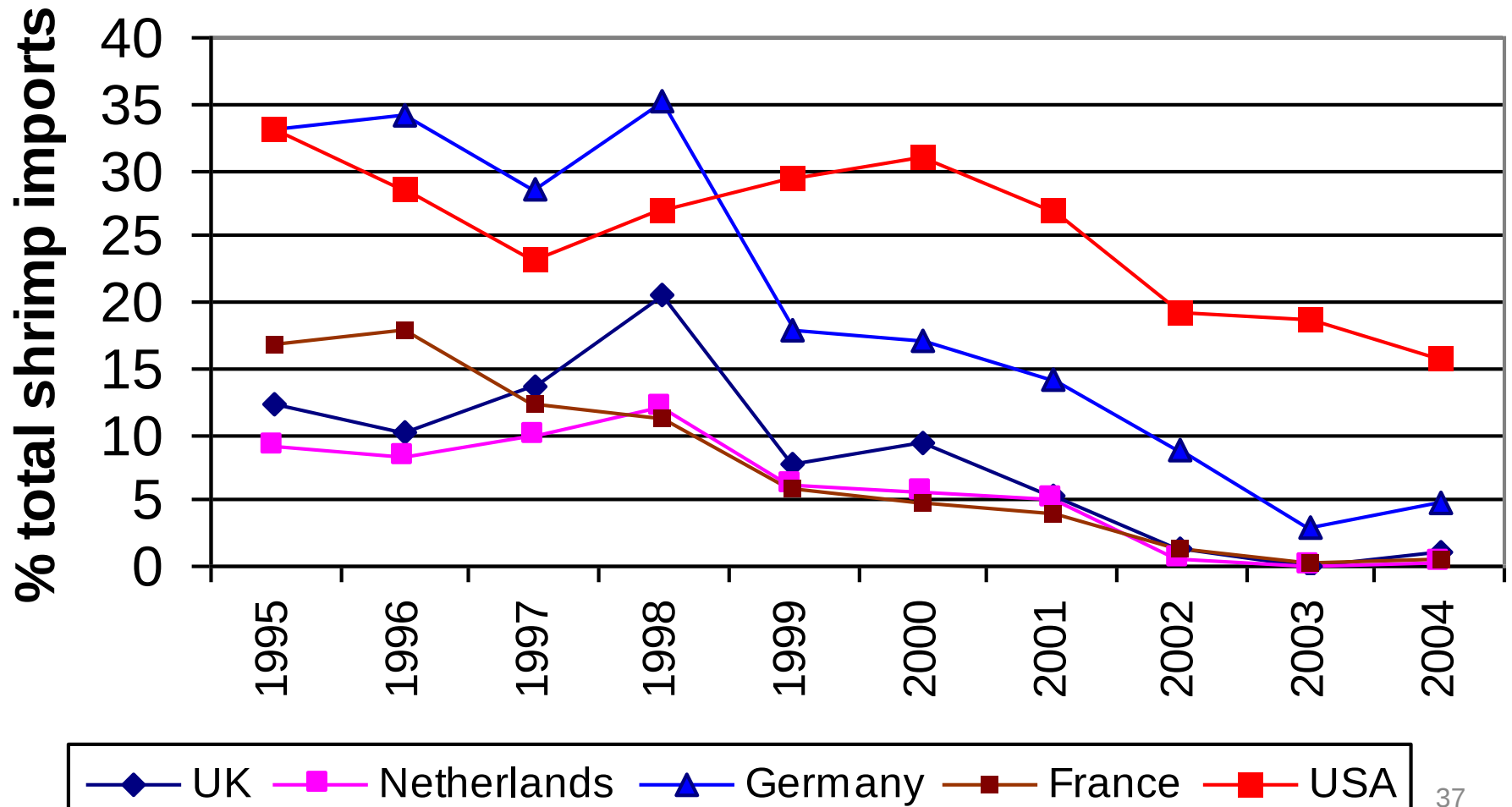
- **Nitrofurantoin** is a veterinary drug used in food-producing industries, but it is banned in many countries because of a link to **cancer** in humans.
- The EU first employed costly **new laboratory equipment--LCMS/MS--**in March 2002.
- The machine found nitrofurantoin residues in both Brazilian and Thai chickens and black tigers shrimps

Thai shrimp exporters and 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.

Declining Thailand's market shares of shrimp in world market 1995-2004

Figure 3.7: Thai shrimp's import penetration



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

- To satisfy customers' requirements
- To maintain market access
- To access **new** markets
- To 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)

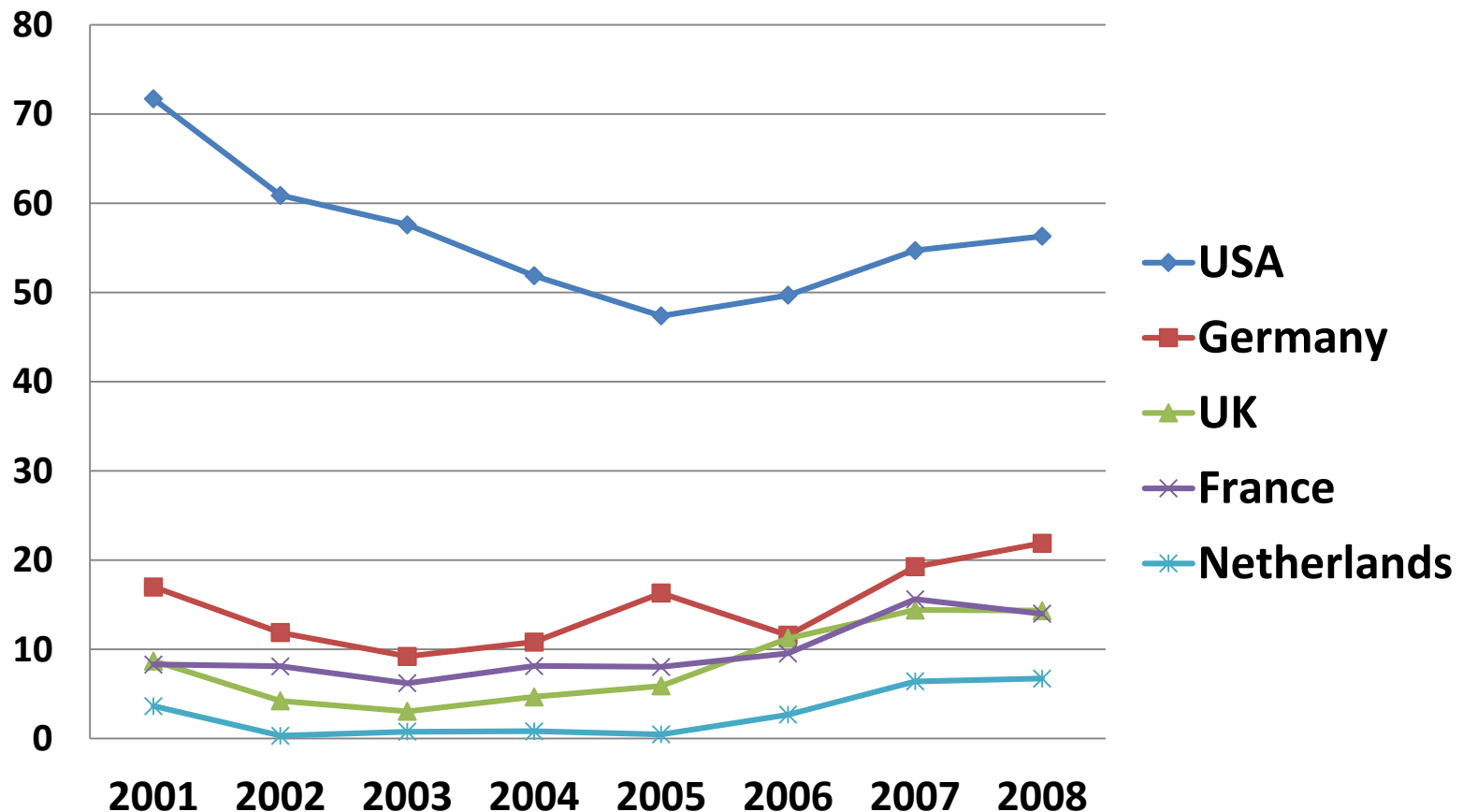
Dynamic responses

- 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

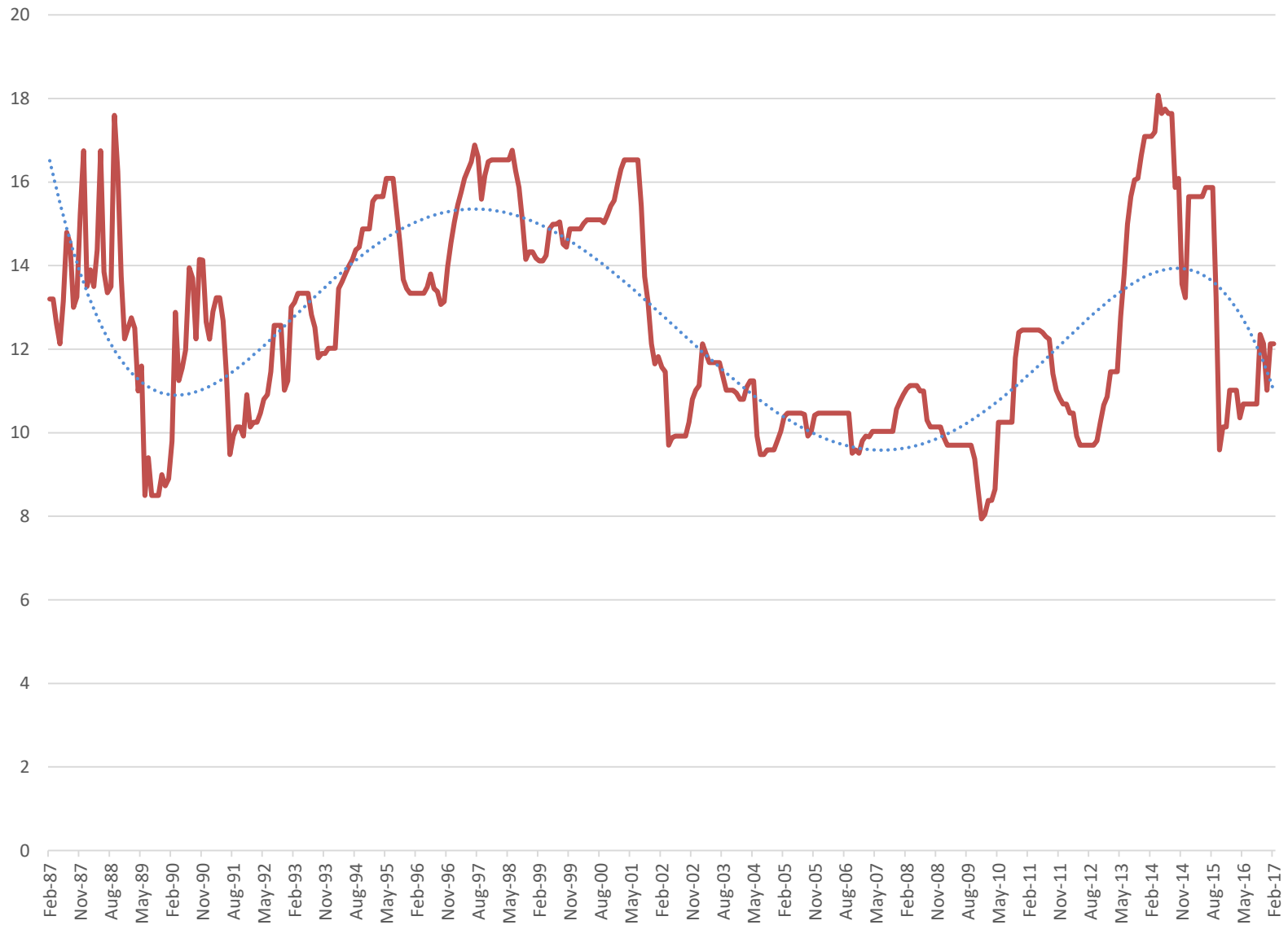
Market penetration of Thai shrimp exports:

A rebound after upgrading food safety standards

% of total imports in each market



Thirty Years of Shrimp Price (US cents per pound)



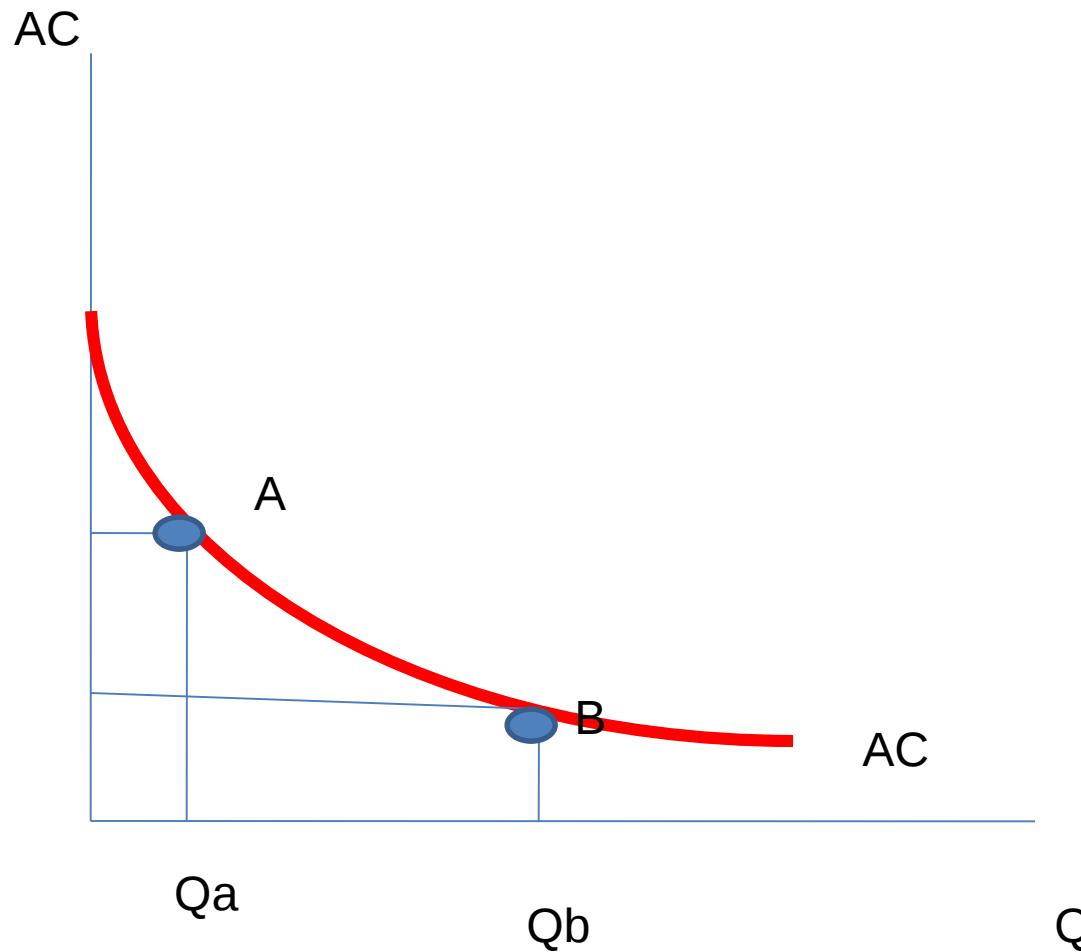
Anti-Dumping Duty (ADD) and Non-Tariff Barriers (NTB)

- 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 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 improvement in quality and safety

- 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.

Product differentiation

- 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.

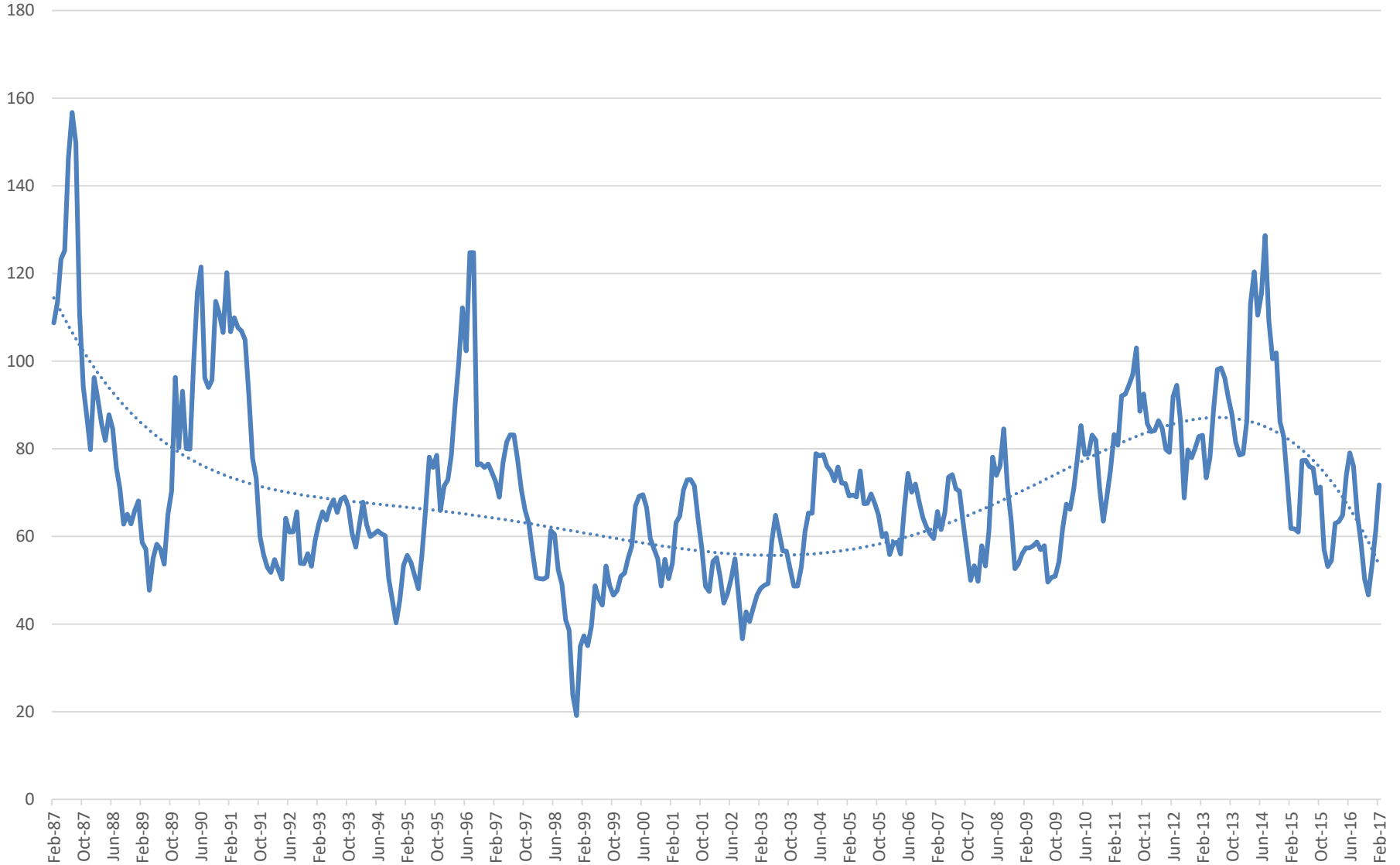
Compliance cost as investment expenditure

- 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

- 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.



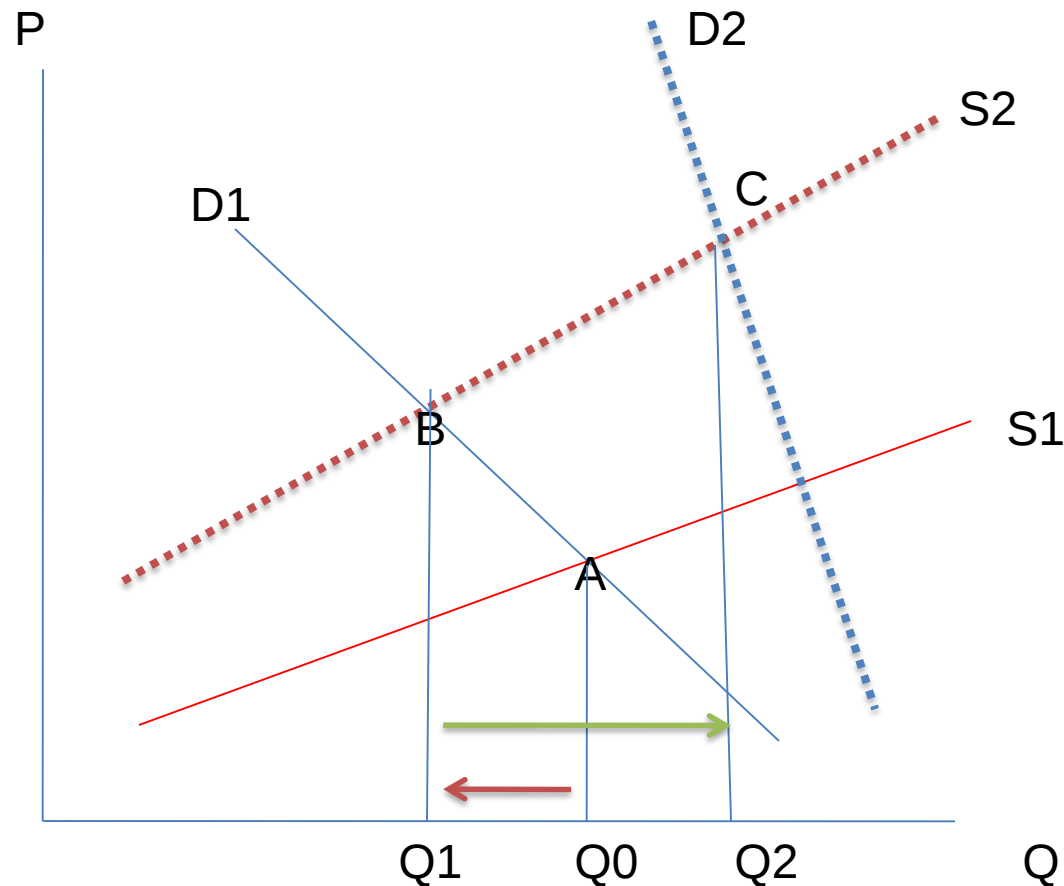
Functions of Exporters Associations

- To prevent negative externality, export firms must be a member of an exporter association.
- Providing vital information to government and exporters to reduce information cost.
- Screening and monitoring 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.

Conclusion

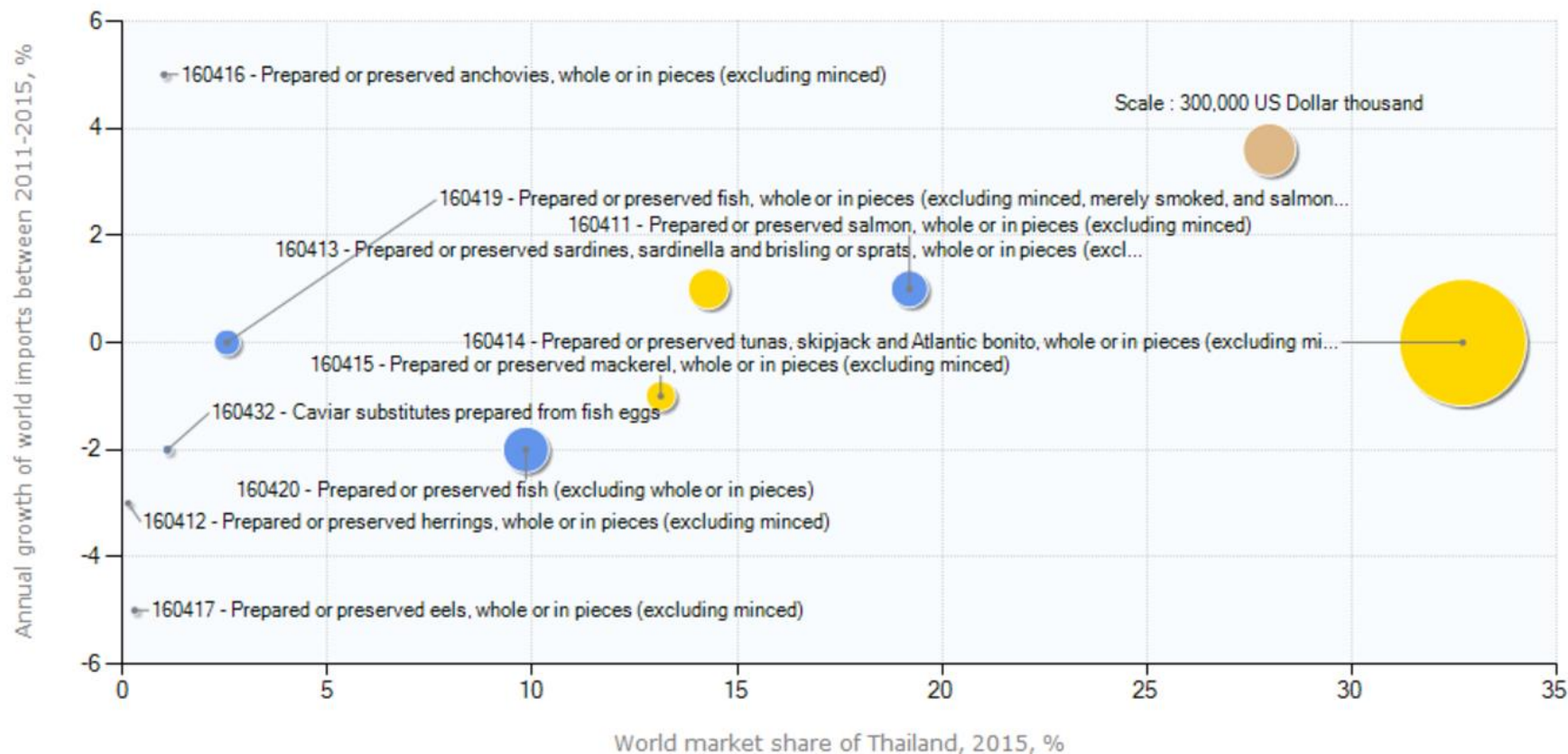
- The concern for food safety increases with rising per capita income.
- *The higher the level of market penetration in importing countries, the higher the technical barriers.*

Challenges in 2017

- Falling prices may squeeze the profitability and cash flows of export companies in 2017.
- Meanwhile, the shrimp 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 more production in many exporting countries.

Thailand's Exports of Canned Tuna

Size of national supply and growth of international demand
for products exported by Thailand in 2015



● Thailand has lost world market share for this product

● Thailand has increased world market share for this product

● Reference bubble
Some bubbles may not be displayed due to lack of growth rate indicators

The bubble size is proportional to export value



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 Apr 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.

TED= Turtle Excluding Device



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)

This is unsustainable and unacceptable

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"This is unsustainable and unacceptable and we are intent on dismantling every single one we can find."

He said that Thai Union supplied one-fifth of the world's canned tuna and owned major brands around the world.

"If Thai Union doesn't want to stop this dirty tuna coming onto our shelves, then we as a movement are going to do it for them, by taking action from sea to shelf," Mr Chartier said.

New US law bans
'slave-produced'
seafood

State catch
certification system
ready for
installation

Rights groups want
EU fishing 'yellow
card' extended



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)

300,000 sea turtles
and at least 160,000
seabirds and
millions of sharks
die annually in
longline fisheries.¹



Only 16% of
bigeye tuna
remains in the
Western Central
Pacific Ocean ²

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.