

EE460: Thailand's Processed Food Industry

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Lecture 17

Outline

- Market diversification and performance
- Processed chicken and frozen shrimp
- SPS measures and impacts
- Response to NTBs
- Compliance cost and investment in food safety standard
- Source of data: trademap.org

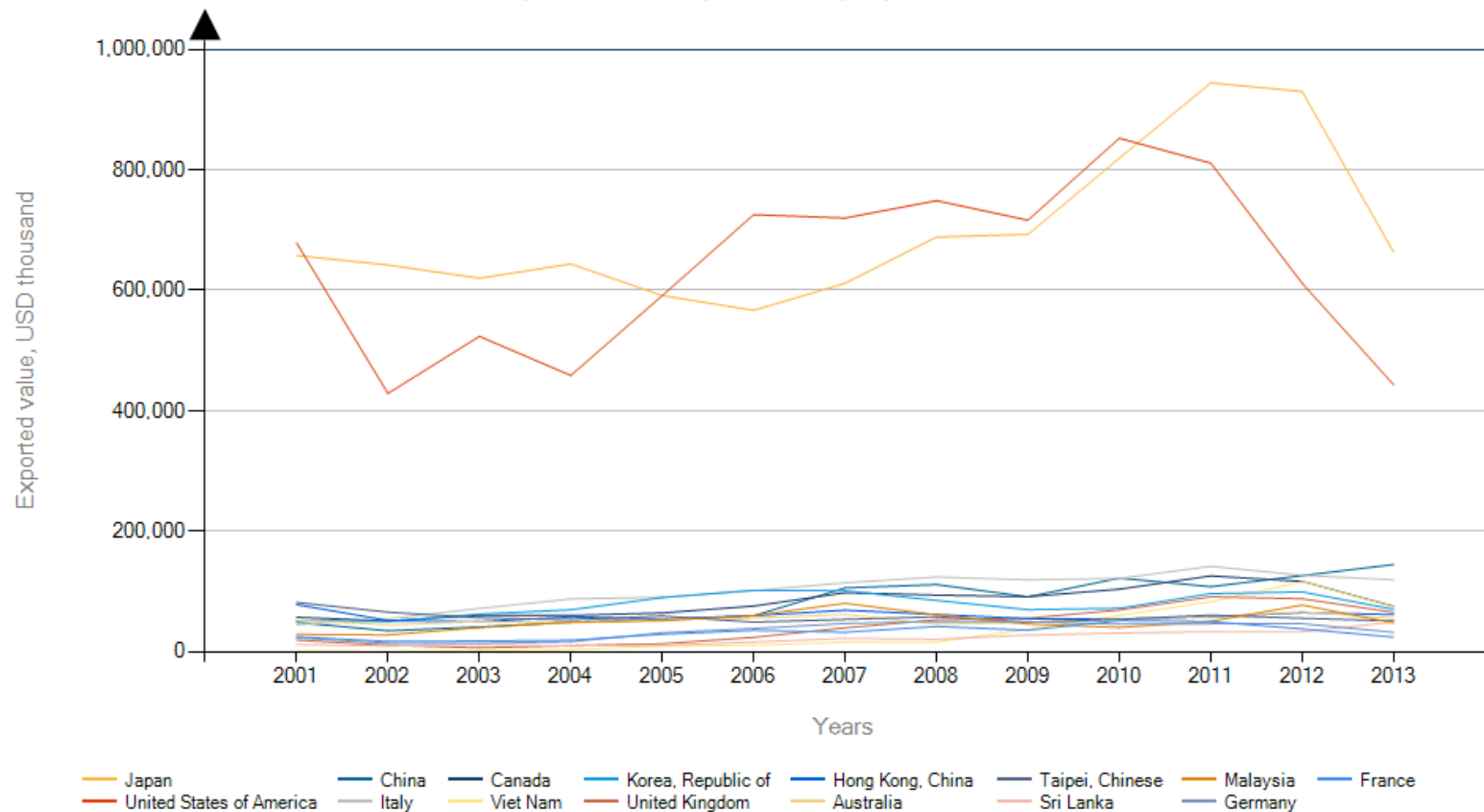
Benefits from processed food industry

- 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 and more valued added*** than traditional agricultural commodities.

Exports of product 03

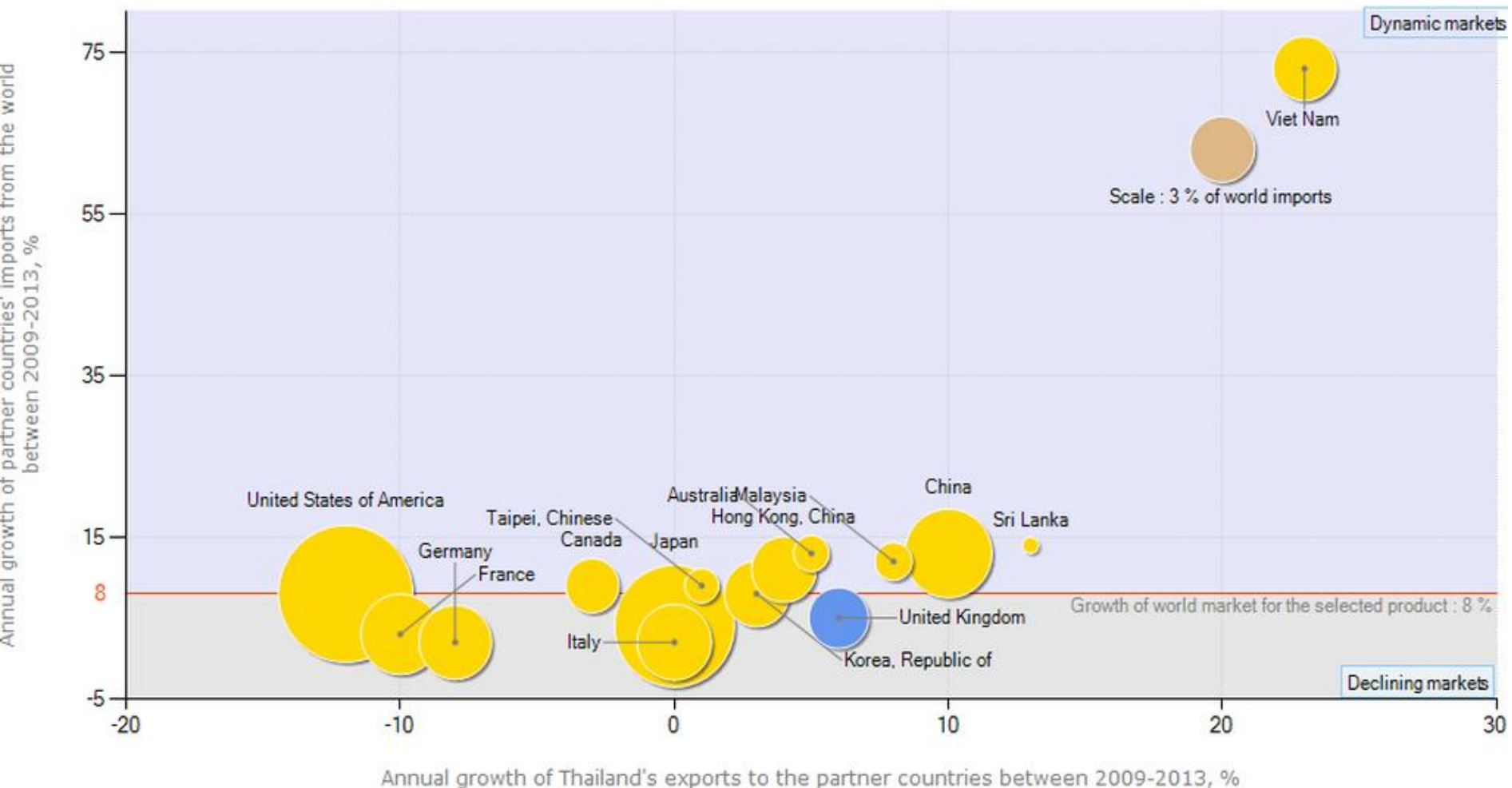
Fish, crustaceans, mollusk, aquatic invertebrates

List of importing markets for a product exported by Thailand
Product: 03 Fish, crustaceans, molluscs, aquatic invertebrates nes



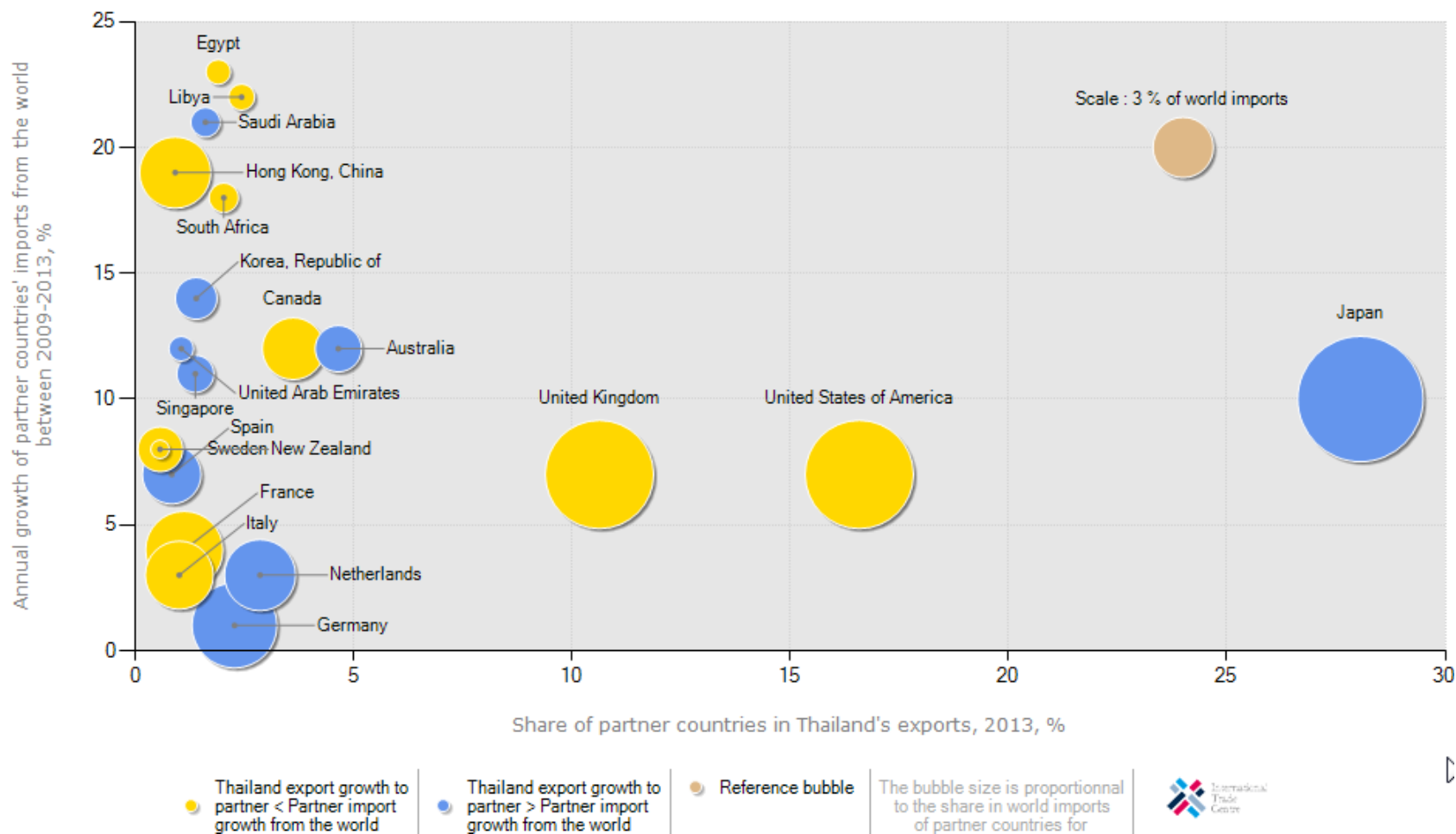
Thailand's exports of fresh and frozen product 03: Declining markets

Growth in demand for the selected export product from Thailand in 2013
Product : 03 Fish, crustaceans, molluscs, aquatic invertebrates nes



Diversification of Thailand's exports of meat, fish, and sea food (product 16) Blue=gaining market share (in 2013) Yellow= losing market share

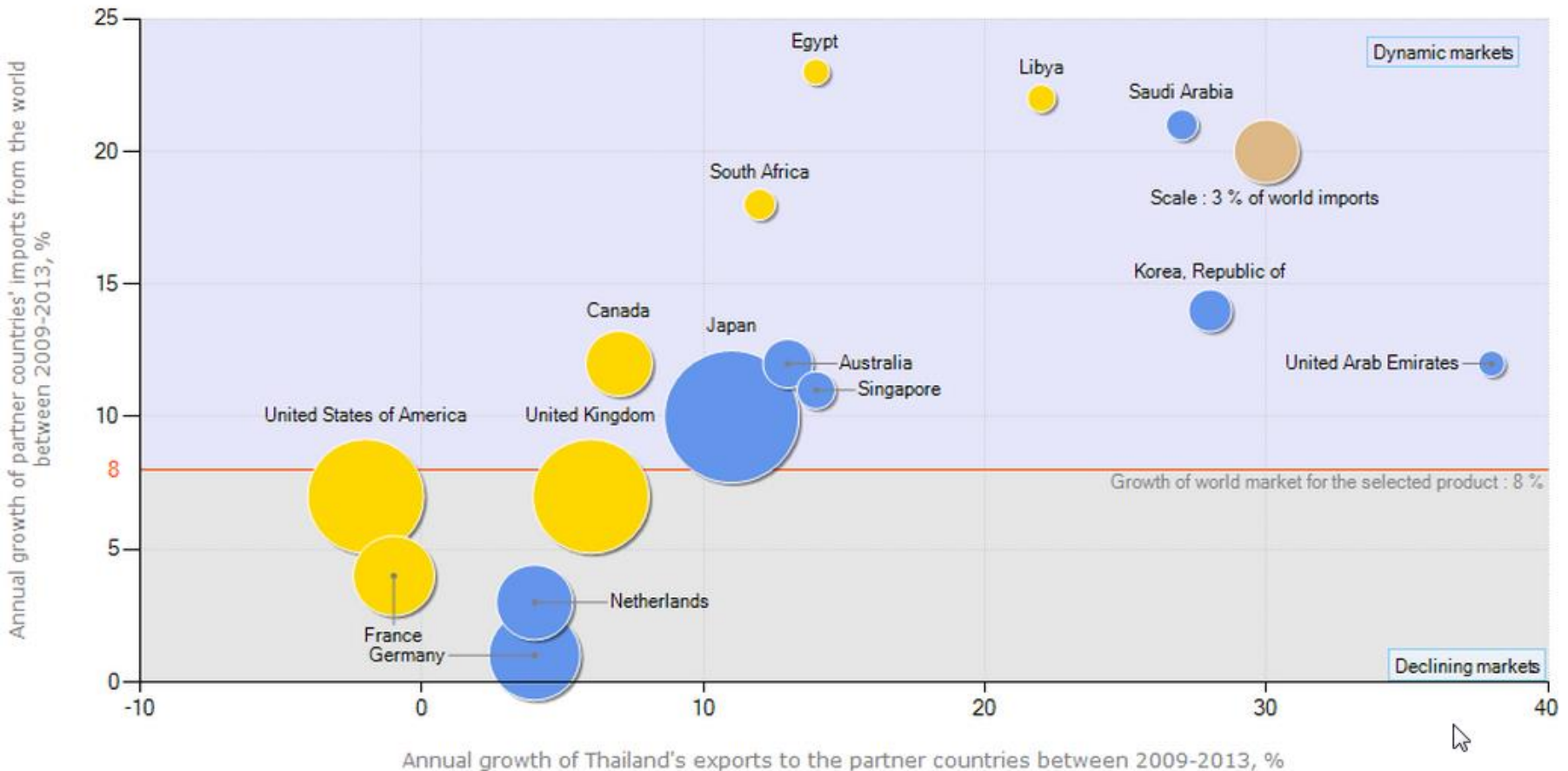
Prospects for market diversification for a product exported by Thailand in 2013
Product : 16 Meat, fish and seafood food preparations nes



Dynamic and declining markets:

Processed export product: 16

Growth in demand for the selected export product from Thailand in 2013
Product : 16 Meat, fish and seafood food preparations nes



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

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

Reference bubble

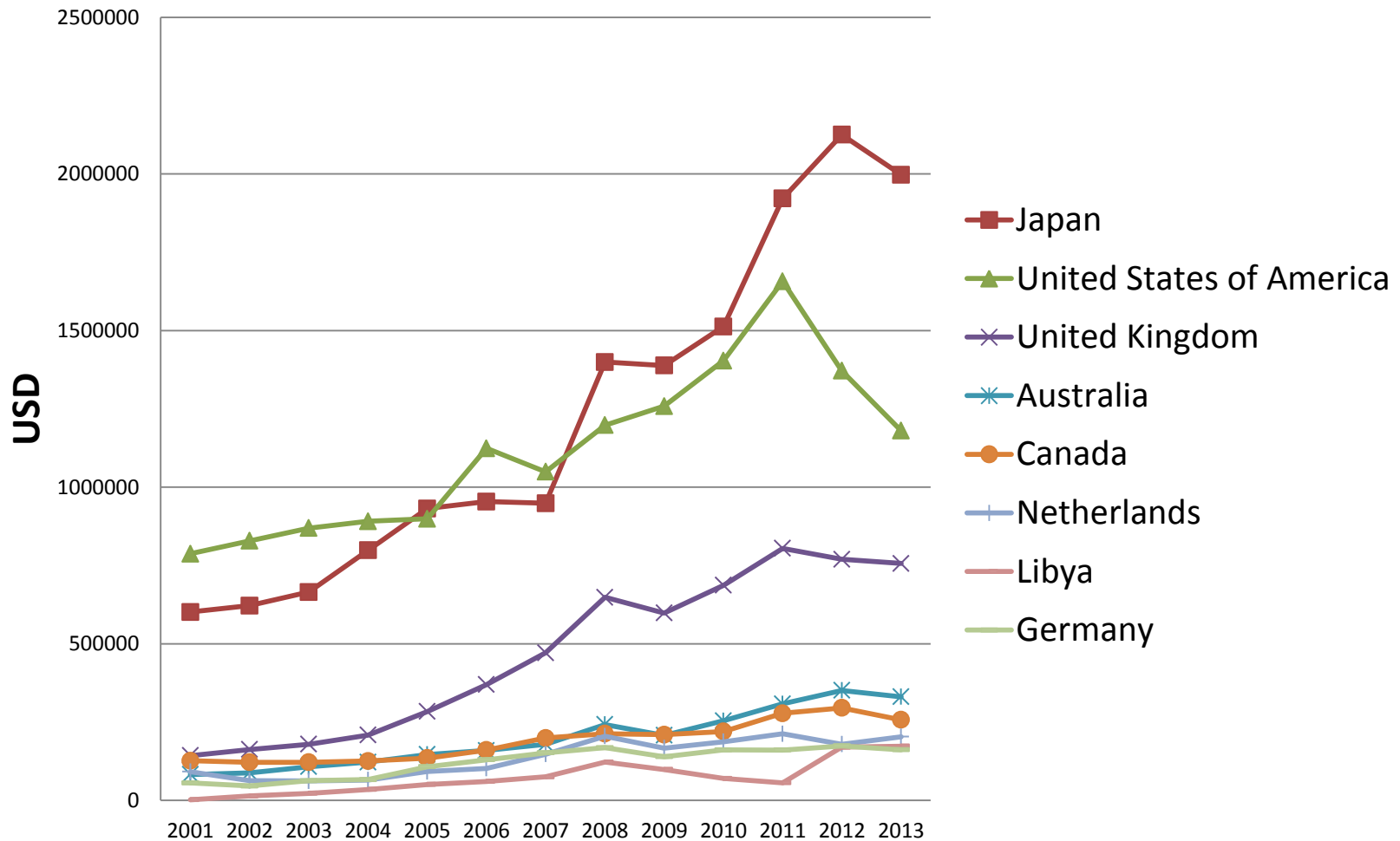
The bubble size is proportional to the share in world imports of partner countries for



Major processed food exports

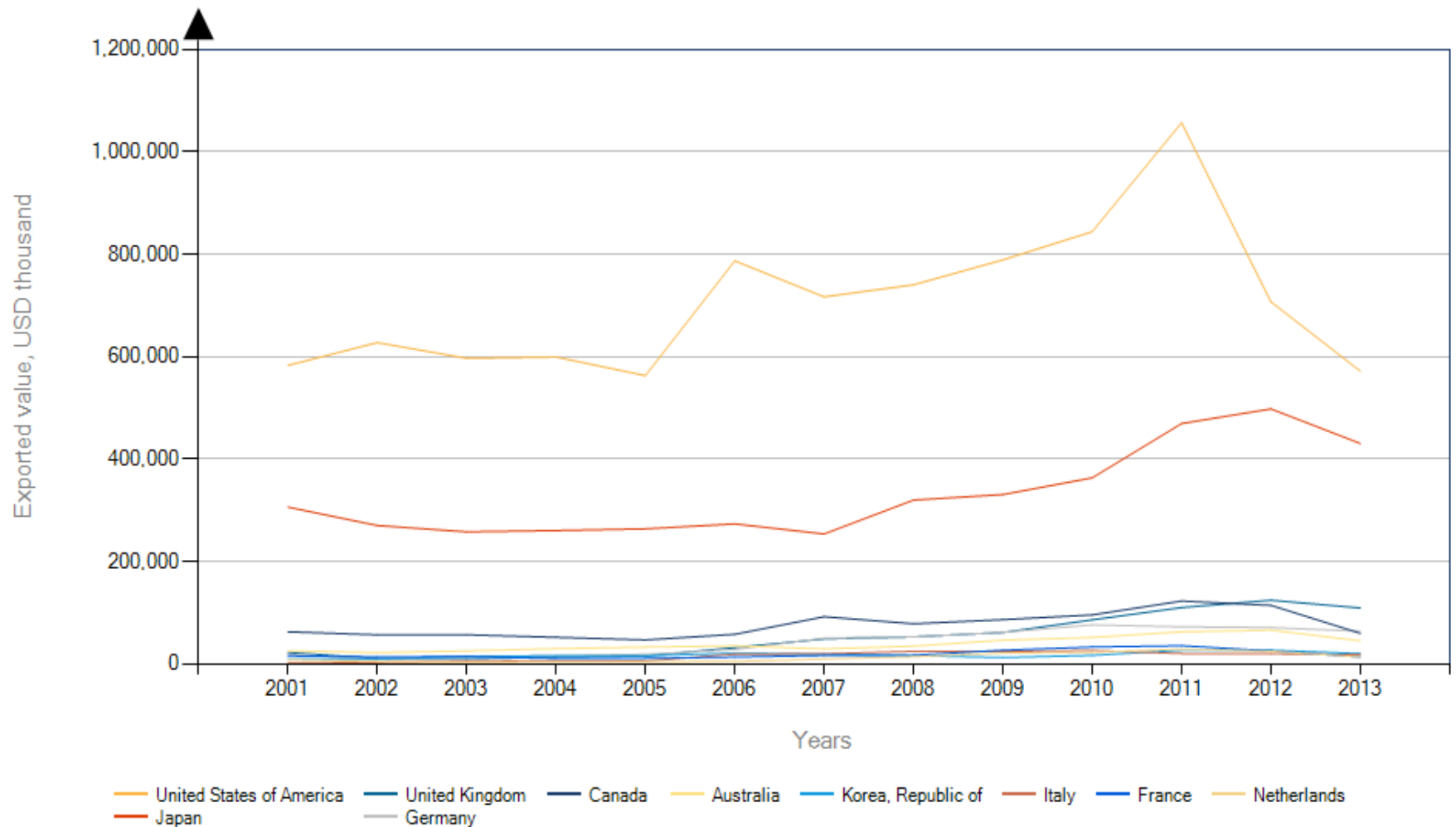
- Canned tuna, fresh and frozen shrimp
- Chicken and further chicken
- Processed vegetable and fruit:
canned pineapple

Thailand's exports of meat, fish, and seafood: Product 16



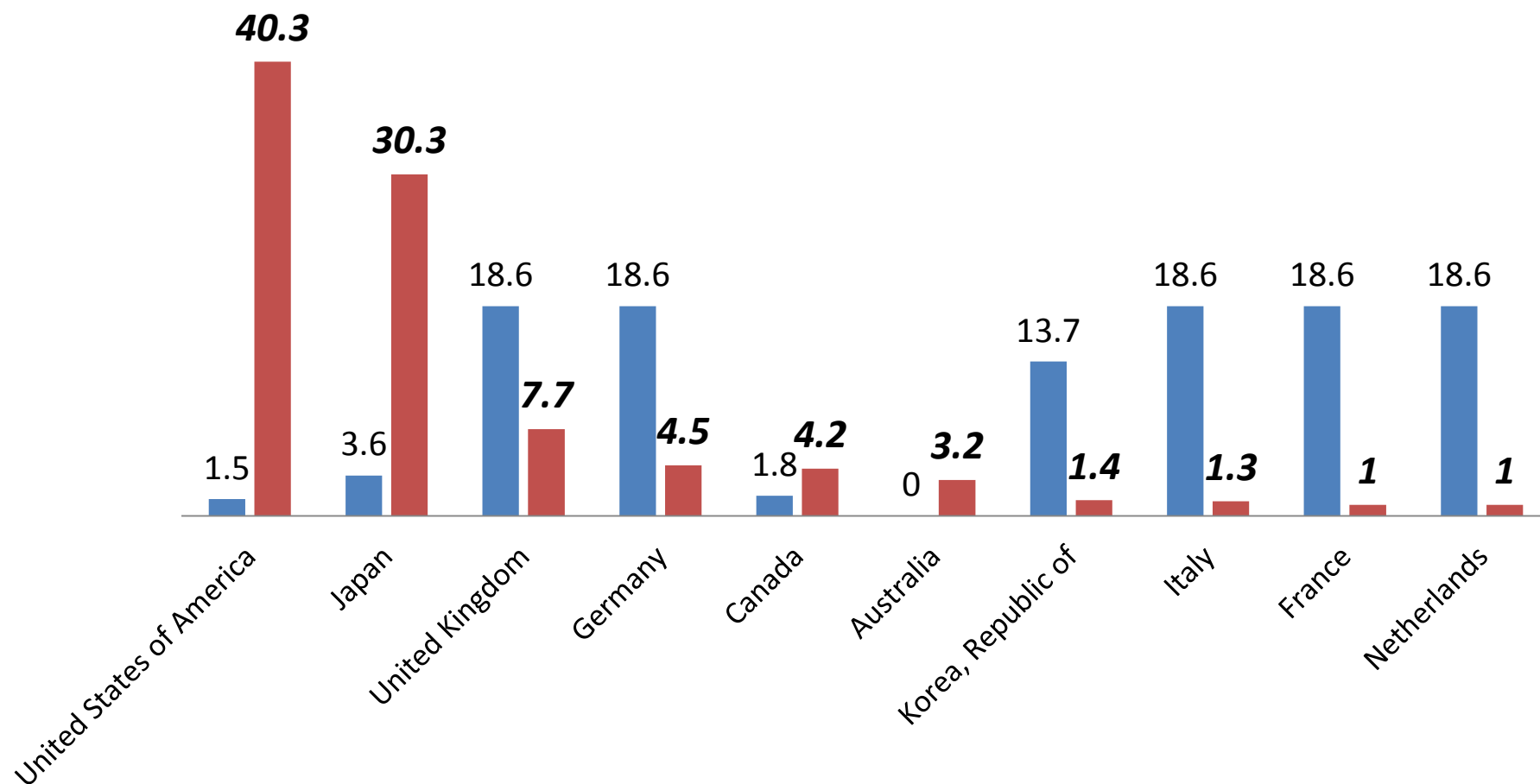
Analyze this

List of importing markets for a product exported by Thailand
Product: 1605 Crustaceans & molluscs, prepared/preserved



Thailand's exports of shrimps in 2013

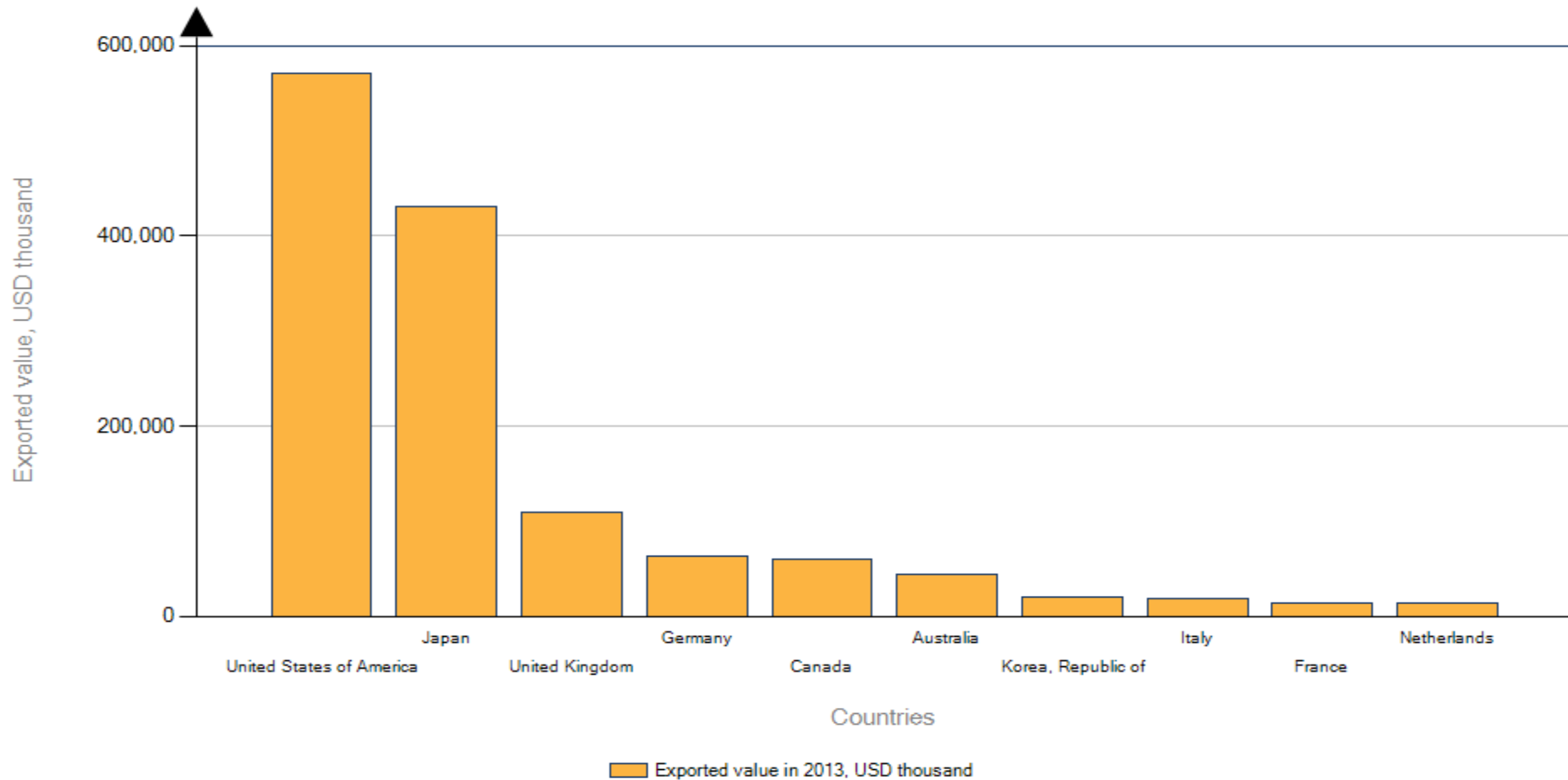
■ Tariff (estimated) faced by Thailand (%) ■ Share in Thailand's exports (%)



Major importers of Thailand's product 16

USA, Japan, and UK (2013)

List of importing markets for a product exported by Thailand
Product: 1605 Crustaceans & molluscs, prepared/preserved

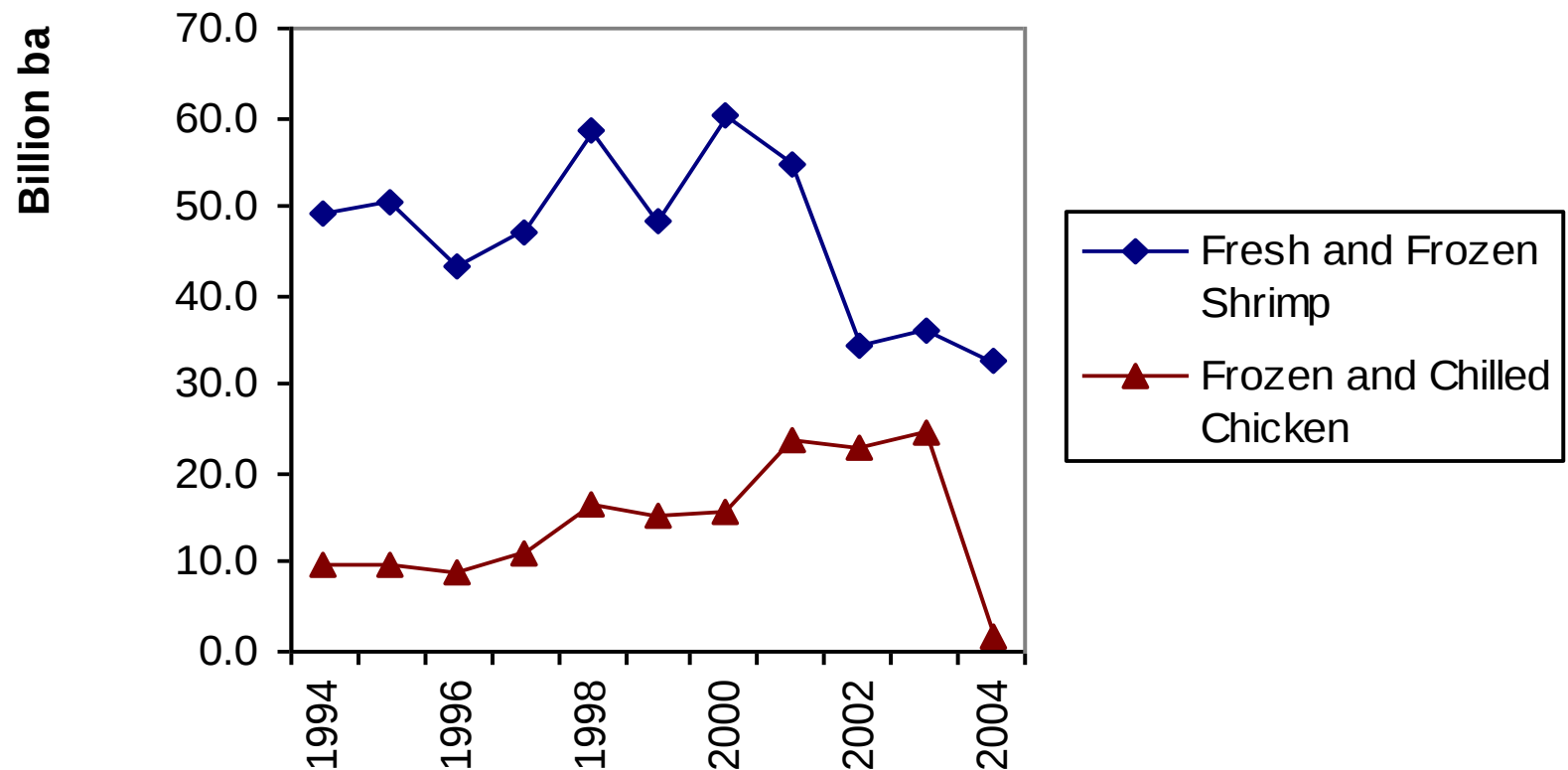


A leading indicator

- 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.
- Nitrofurant 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

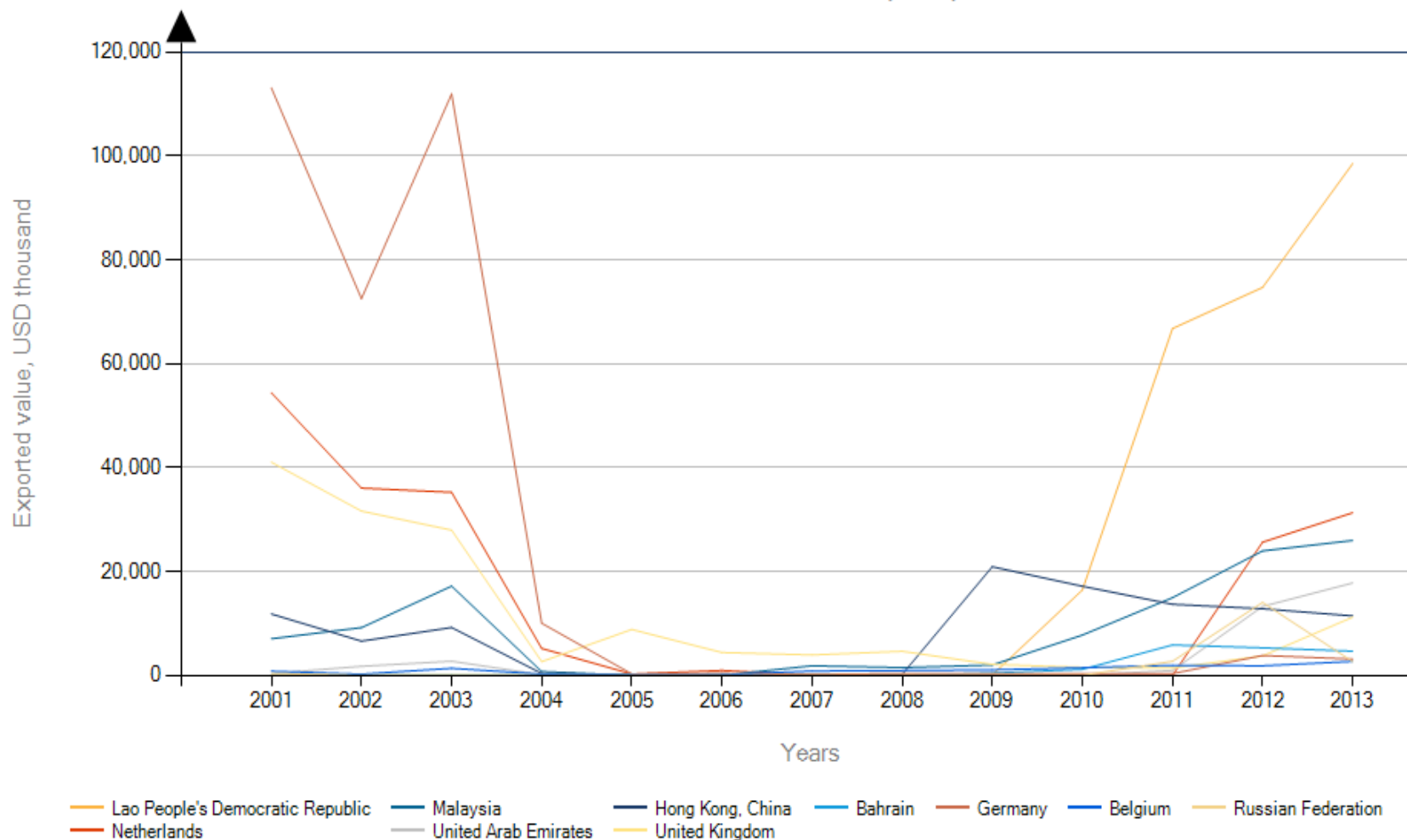
**Figure 15: Impacts of GSP Withdrawals (1999)
Nitrofurans (2002) and Avian Influenza (2004)**



Source: Office of Agricultural Economics
Department of Fisheries

Imports of Thailand's product 0207: poultry meat

List of importing markets for a product exported by Thailand
Product: 0207 Meat&edible offal of poltry meat

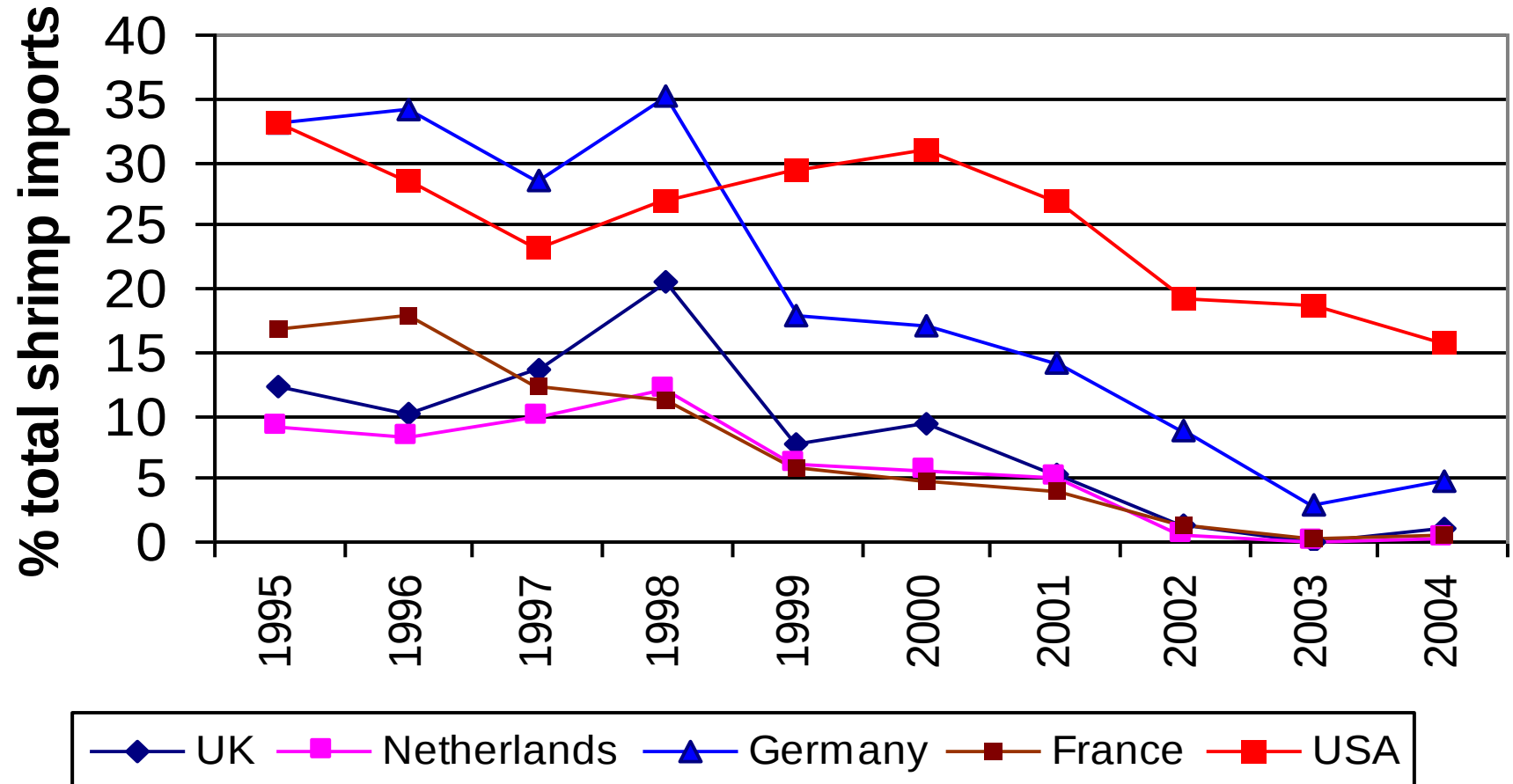


A wake-up call: Rising Awareness of Food Safety Standards

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

Figure 3.7: Thai shrimp's import penetration



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 CP billion-baht factory close to shrimp farms in 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.
- You are what you eat (read)

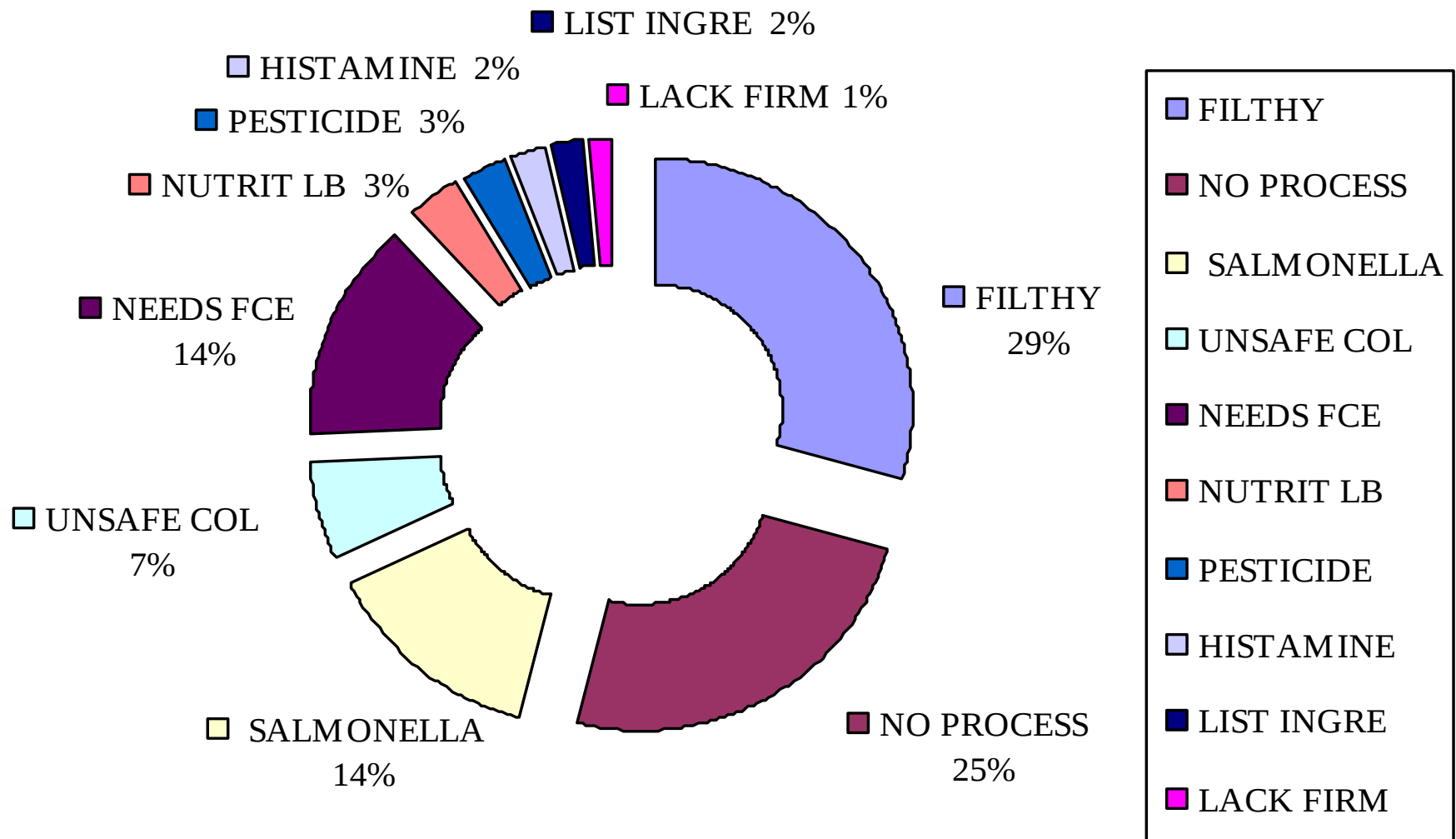
Pathogenic substance

- 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

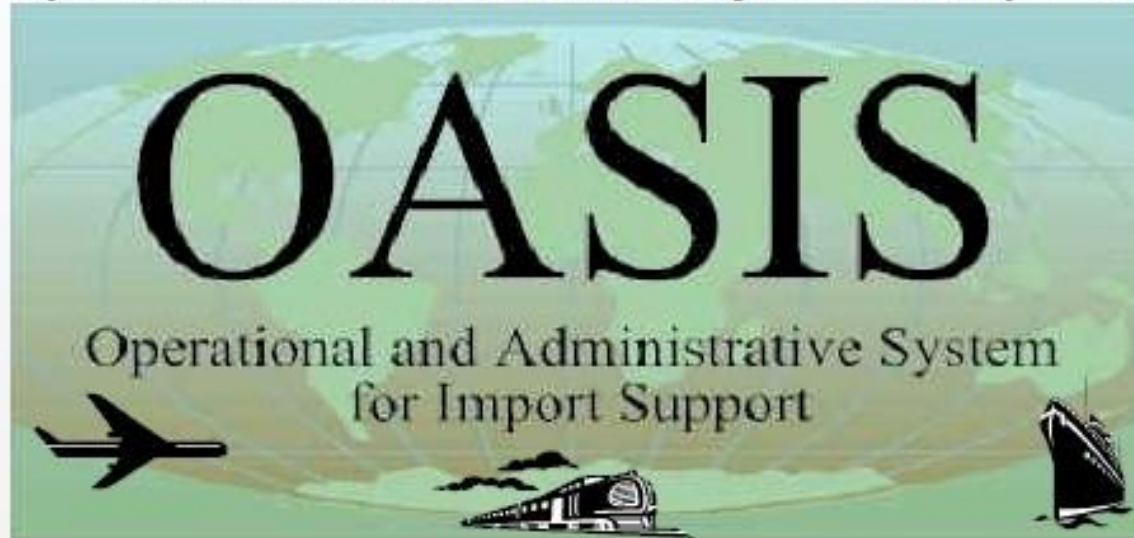


Why detentions?

- 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.

USFDA

Operational and Administrative System for Import Support



OASIS is an automated FDA system for processing and making admissibility determinations for shipments of foreign-origin FDA-regulated products seeking to enter domestic commerce.

Import Alert: Canned shrimp

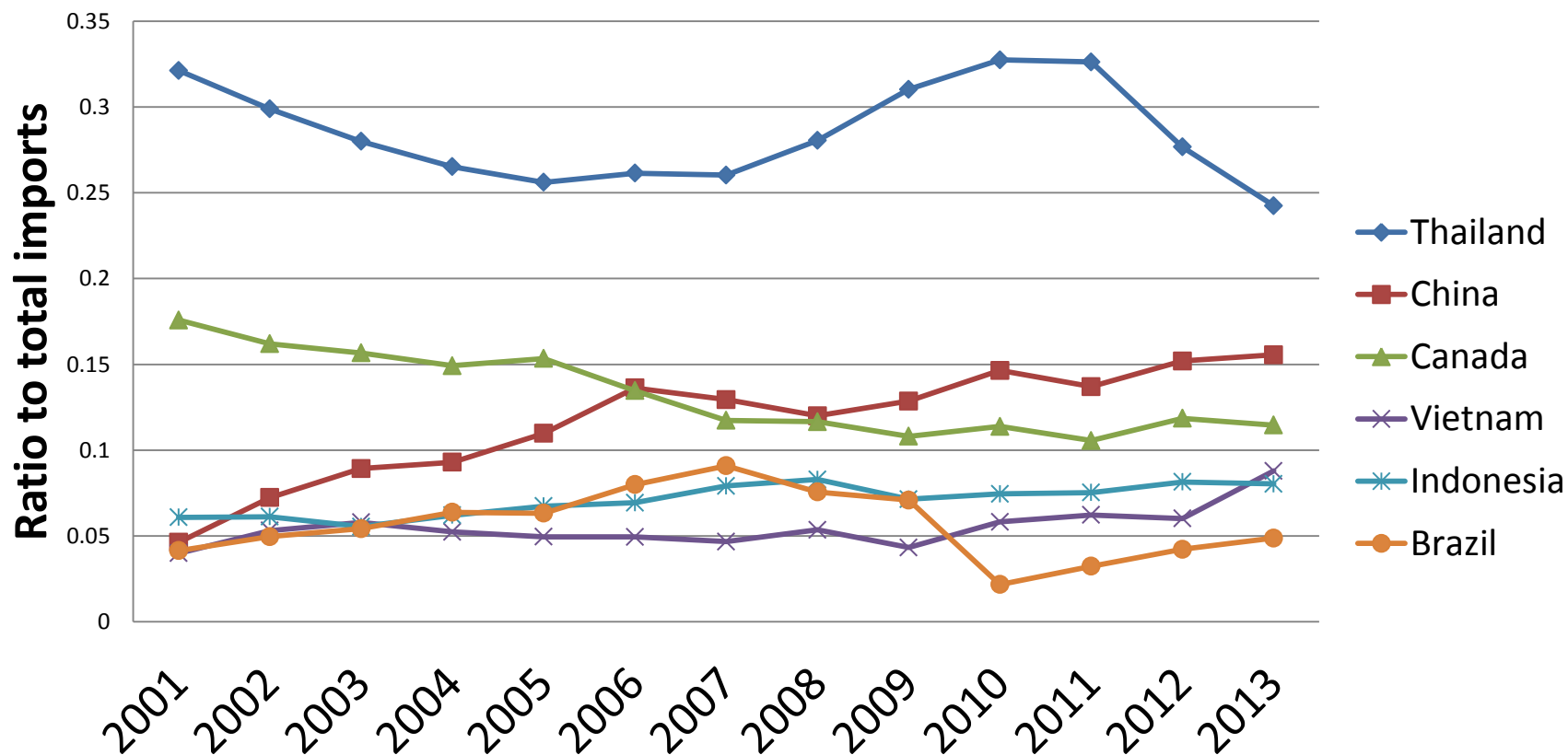
- **Import Alert #** 16-22
- **Published Date:** 01/04/2012
- **Type:** DWPE
- **Import Alert Name:**
- **"Detention Without Physical Examination** of Canned Shrimp from Thailand for Decomposition"
- **Reason for Alert:**
- Revision of this Import Alert dated 5/20/2010 updates the guidance section to indicate DWPE does not apply to canned shrimp products manufactured from dried shrimps/prawns

This import alert issued in 1981 based on an 85% detention rate due to decomposition. Review of the detention data for FY91-92 indicated decomposition in canned shrimp continues to be a problem. Of 21 detentions made in FY91, 6 resulted in refusals (29%) due to decomposition. Of 8 detentions made in FY92, 4 (50%) resulted in refusals due to decomposition.

- **Charge:** "The article is subject to refusal of admission pursuant to Section 801(a)(3) in that it appears to consist in whole or in part of a filthy, putrid, or decomposed substance, or is otherwise unfit for food in that it appears to be decomposed [Adulteration, Section 402(a)(3)]."

OASIS charge code – FILTHY

Imports penetration of product 16 in the US market



DWPE: Detention Without Physical Examination

- **Import Alert # 16-18**
- **Published Date:** 10/15/2014
- **Type:** DWPE
- **Import Alert Name:**
- "Detention Without Physical Examination of Shrimp"
-
- **Reason for Alert:**
- During FY 1979, an extensive problem of Salmonella, decomposition, and filth in imported shrimp was identified. As a result, it became necessary to detain without physical examination imported shrimp from **six countries** (Bangladesh, Hong Kong, India, Indonesia, Taiwan, and Thailand).

Detention without physical examination of raw and cooked shrimp from India has subsequently been converted to Import Alert #16-35, "Detention Without Physical Examination of Fresh (Raw), **Fresh Frozen, and Cooked Shrimp from India.**"

If samples of shrimp from other countries are found violative for Salmonella, districts should recommend firms for detention without physical examination under Import Alert #16-81, "Detention Without Physical Examination of Seafood Products Due to the Presence of Salmonella."

- ***Cost of detention?***

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

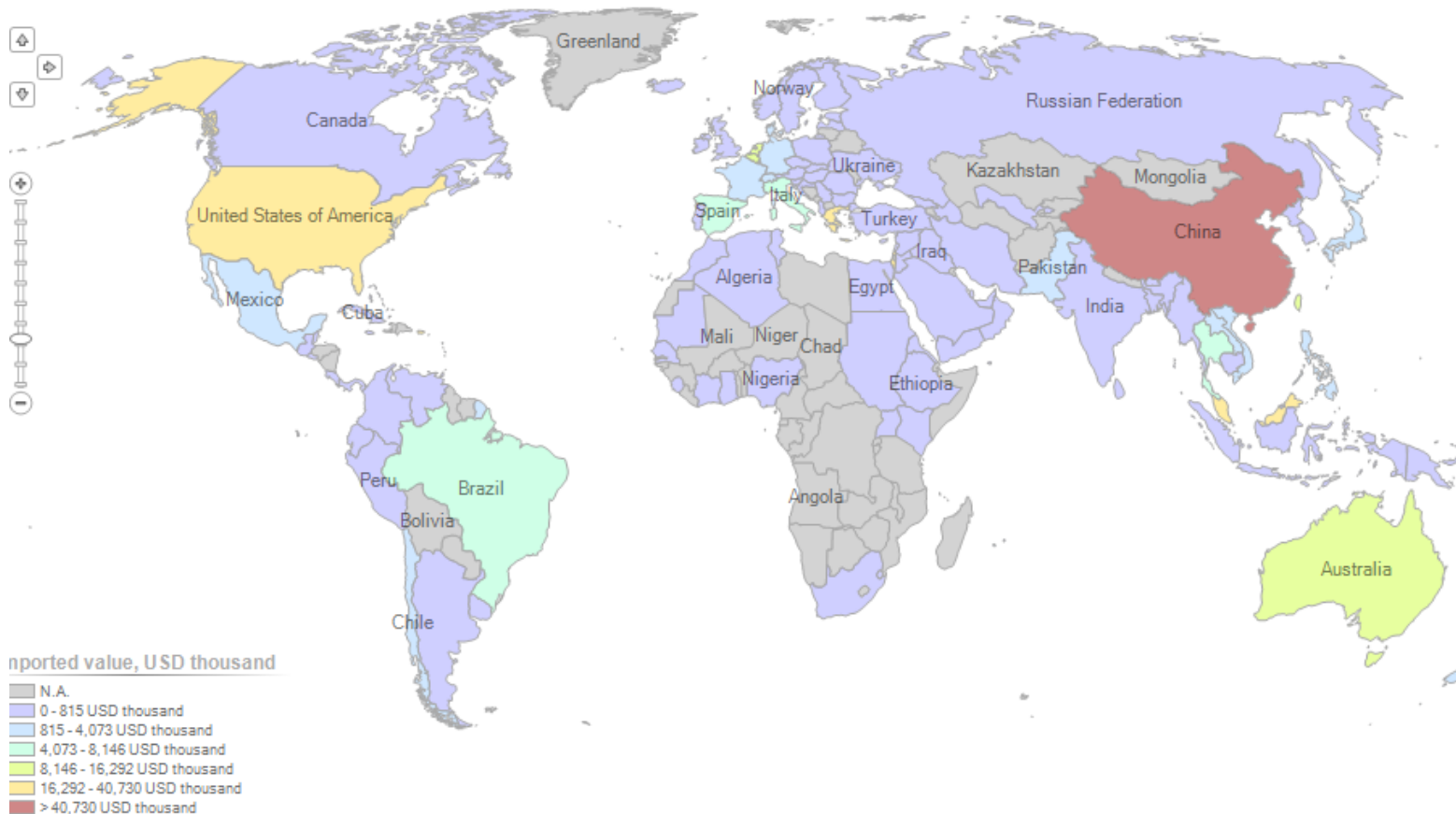
Imported veggies from Thailand

- 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.

Thailand's imports of product 20: Vegetable, and fruit

List of supplying markets for a product imported by Thailand in 2013

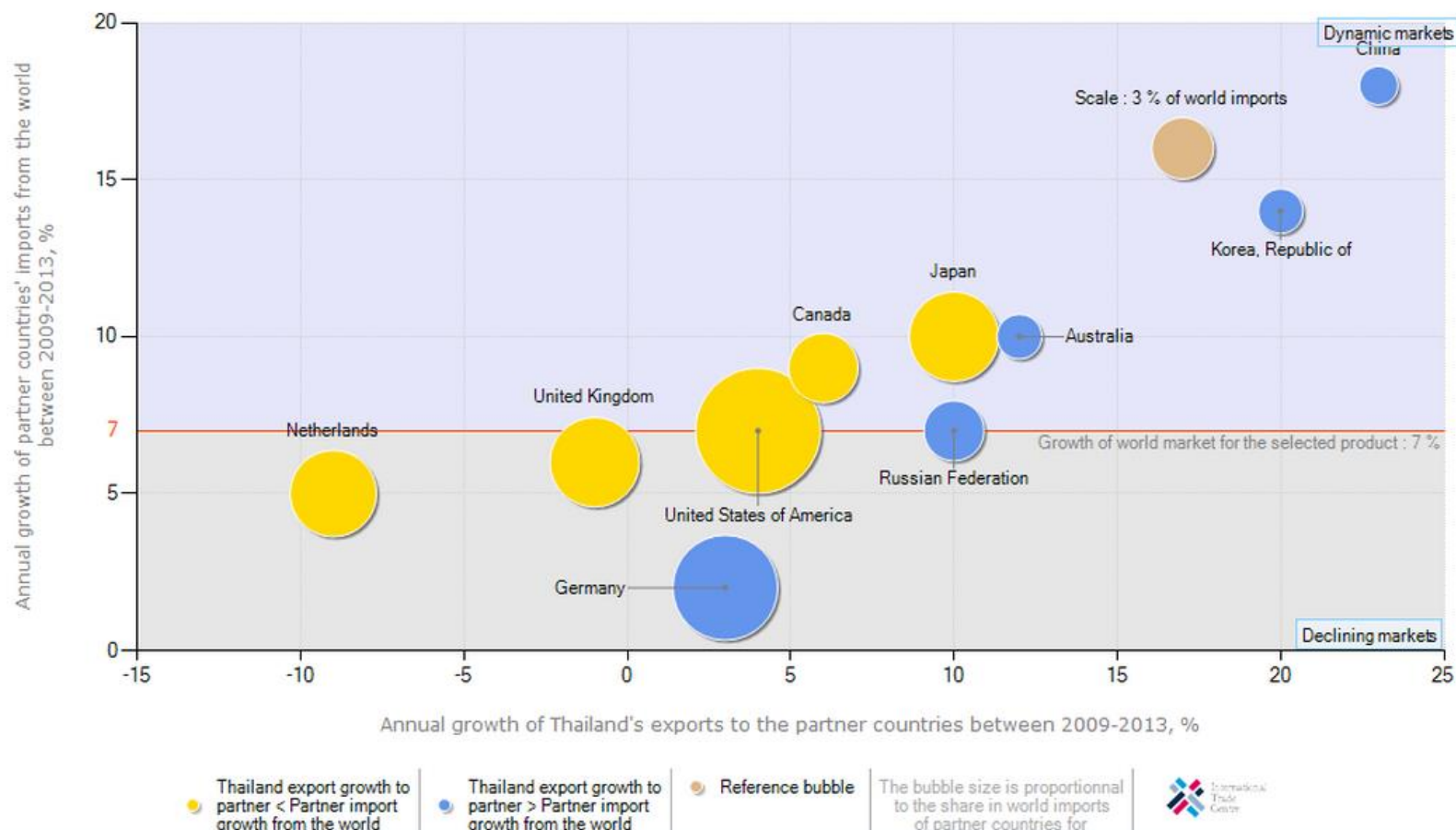
Product : 20 Vegetable, fruit, nut, etc food preparations



Thailand's exports of processed vegetable and fruit: product 20

Thailand export growth vs. partner import growth

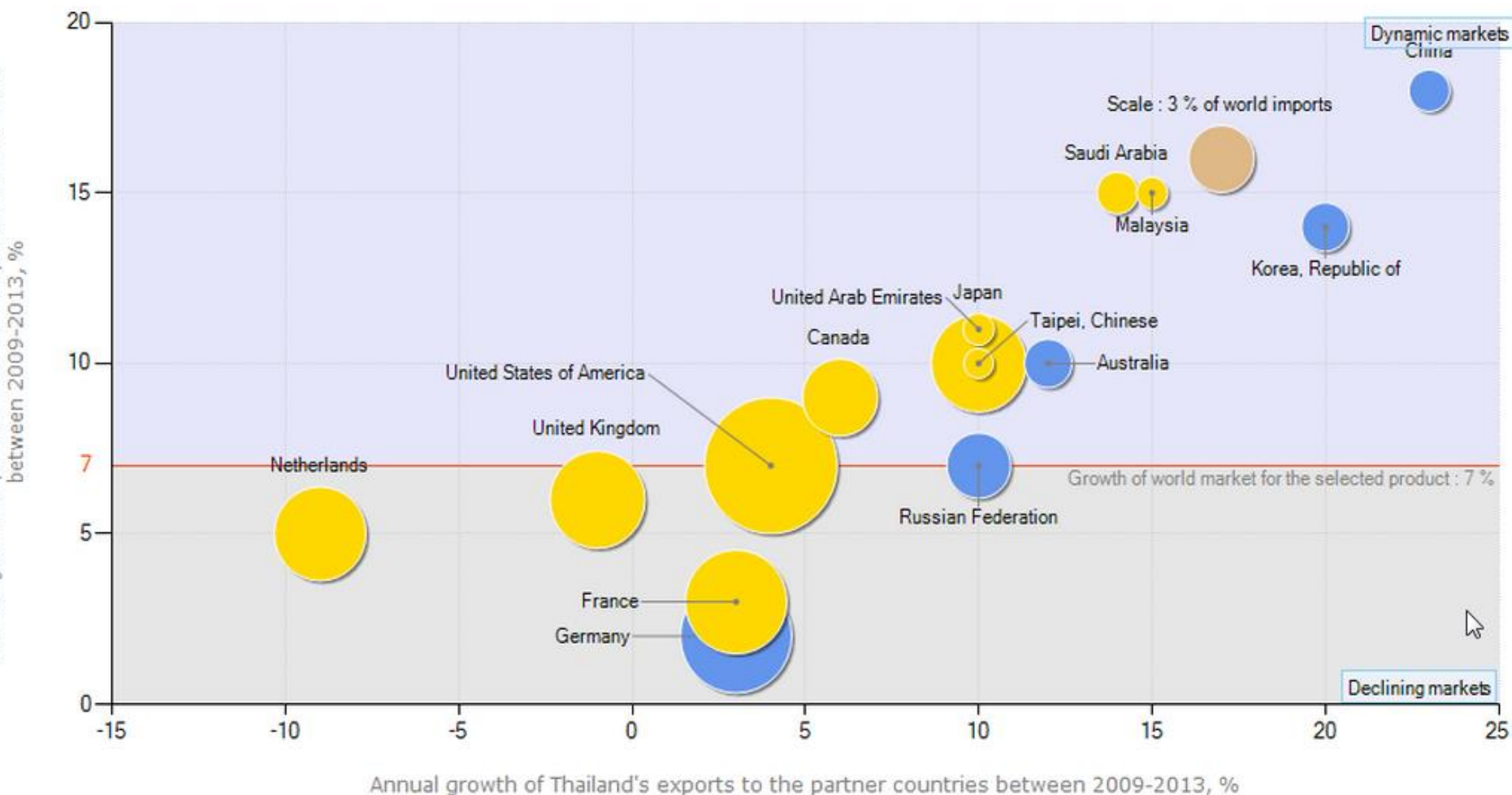
Growth in demand for the selected export product from Thailand in 2013
Product : 20 Vegetable, fruit, nut, etc food preparations



Thailand export growth vs. partner import growth

Growth in demand for the selected export product from Thailand in 2013

Product : 20 Vegetable, fruit, nut, etc food preparations



Thailand export growth to partner < Partner import

Thailand export growth to partner > Partner import

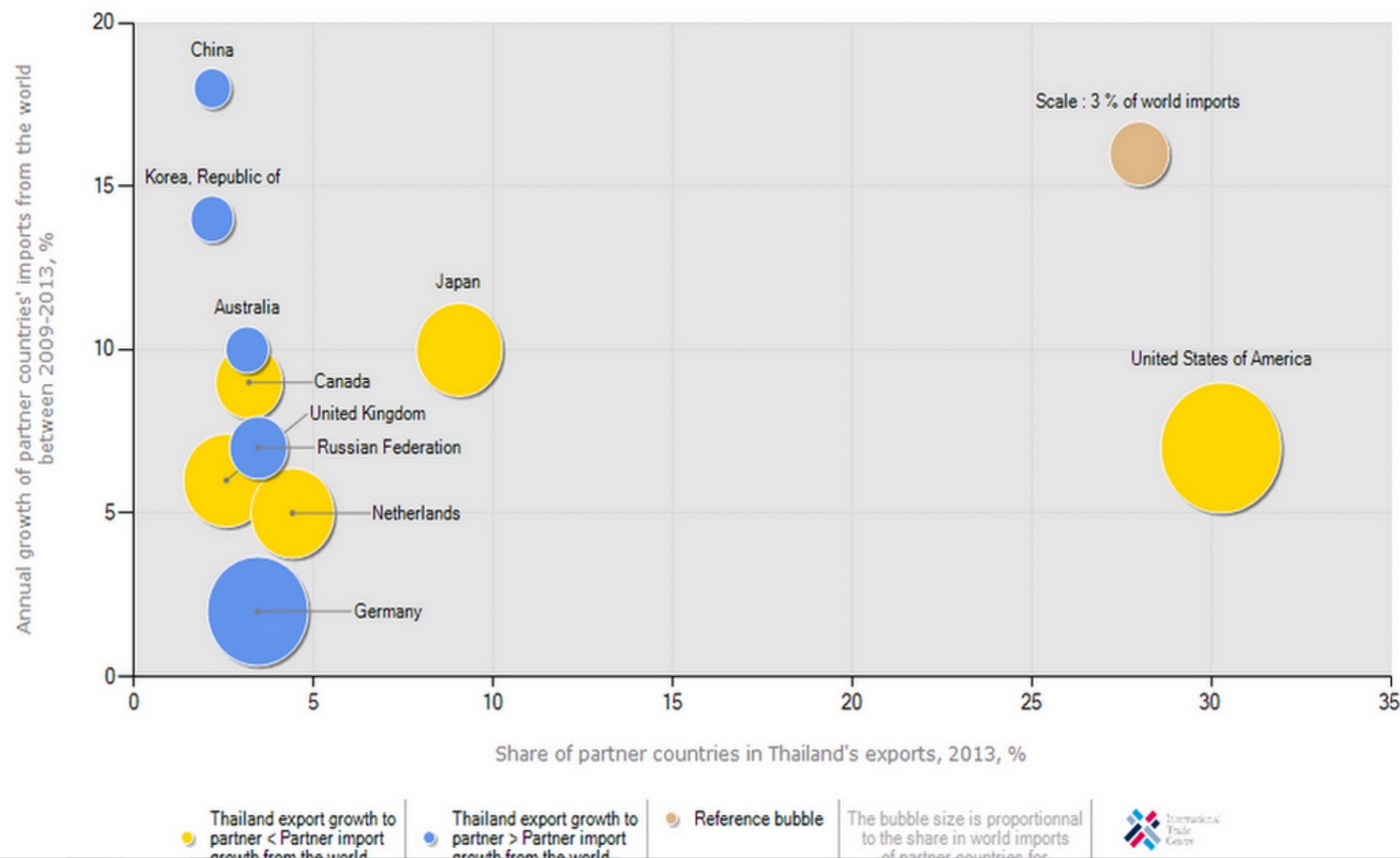
Reference bubble

The bubble size is proportionnal to the share in world imports



Prospects for market diversification: vegetable and fruit, food preparations

Prospects for market diversification for a product exported by Thailand in 2013
Product : 20 Vegetable, fruit, nut, etc food preparations



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.

Countries facing OASIS charge code - SALMONELLA

- **THAILAND**
- *(16 J - - 05)* Shrimp & Prawns
- *(16 X - - 21)* Shrimp and prawns, Aquaculture
Harvested Fishery/Seafood Products
- **BANGLADESH**
- **HONG KONG**
- **INDONESIA**
- **TAIWAN**

Fresh/frozen/raw shrimp

- **Product Description:**
- **Charge:**
- "The article is subject to refusal of admission, pursuant to Section 801(a)(3), in that it appears to contain filth (rodent, cat, insect, other animal) or to be decomposed [Adulteration, Section 402(a)(3)]."

OASIS charge code - FILTHY

"The article is subject to refusal of admission pursuant to Section 801(a)(3) in that it appears to contain Salmonella, a poisonous or deleterious substance, which may render it injurious to health [Adulteration, Section 402(a)(1)]."

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.

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 dairy farms.
- ACFS inspection activity is conducted from hatchery to final markets at home and abroad.
- 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

- 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.

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.

Imported Australian wine and chocolate

- 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.
- Unnecessarily high food safety standards can lead to no trade at all.

Thai shrimp exports

- 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 shrimps.
- Black tiger shrimp

Thai shrimp exports

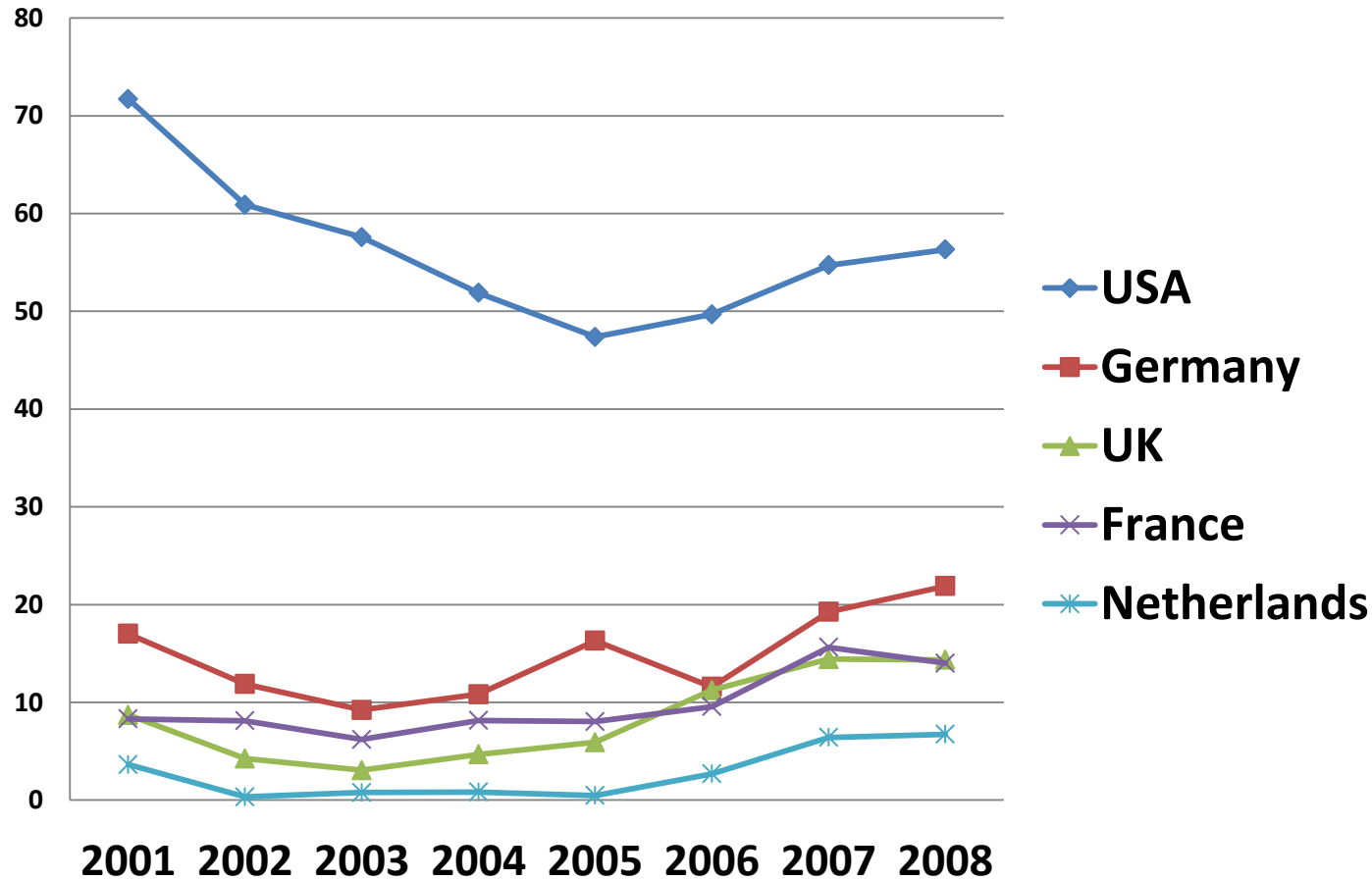
- The new LCSMS/MS instrument is so accurate that it can detect drug residues at ***parts per trillion***.
- While Brazilian exports were subject to only **random check**, Thai products were subject to a 100 percent testing.
- The cost of the new testing equipment is 15 million baht (\$350,000).
- Small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

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 by Thailand's shrimp exports

% of total imports in each market



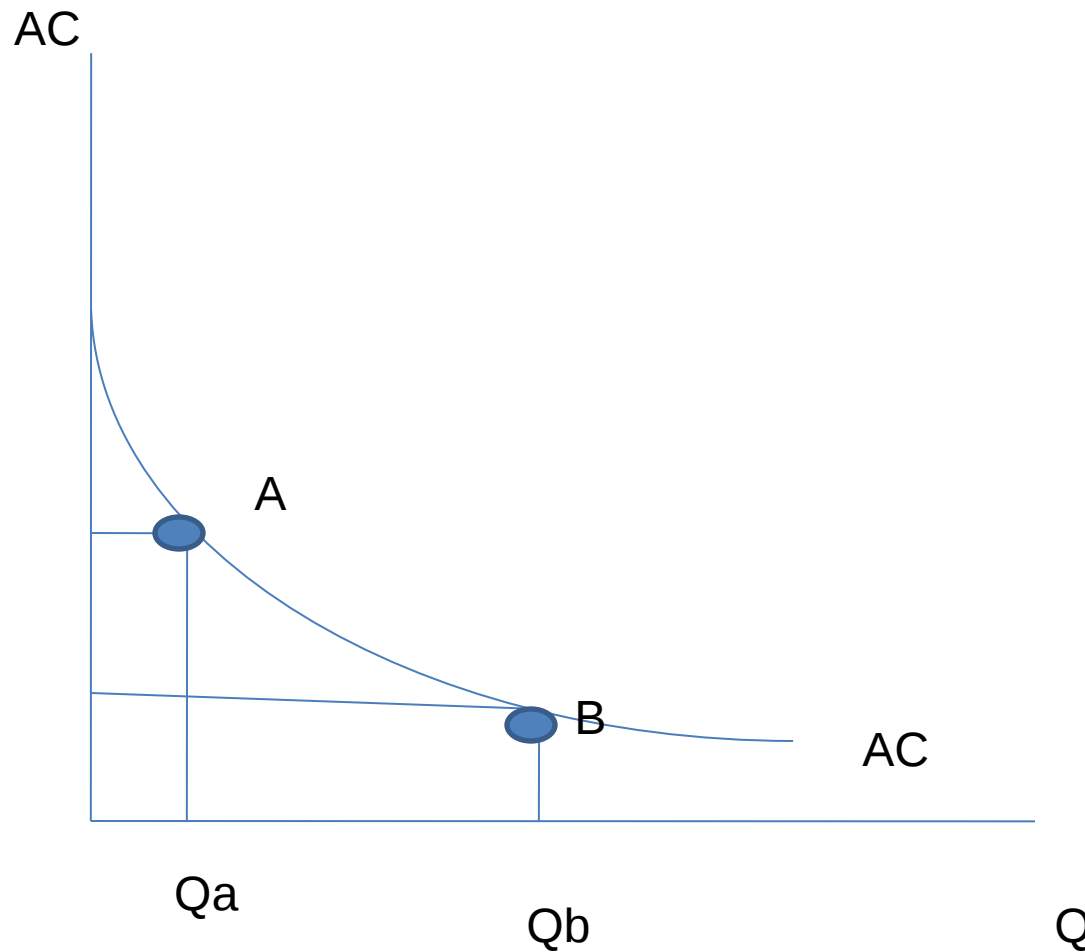
Anti-Dumping Duty

- 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: capital 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.

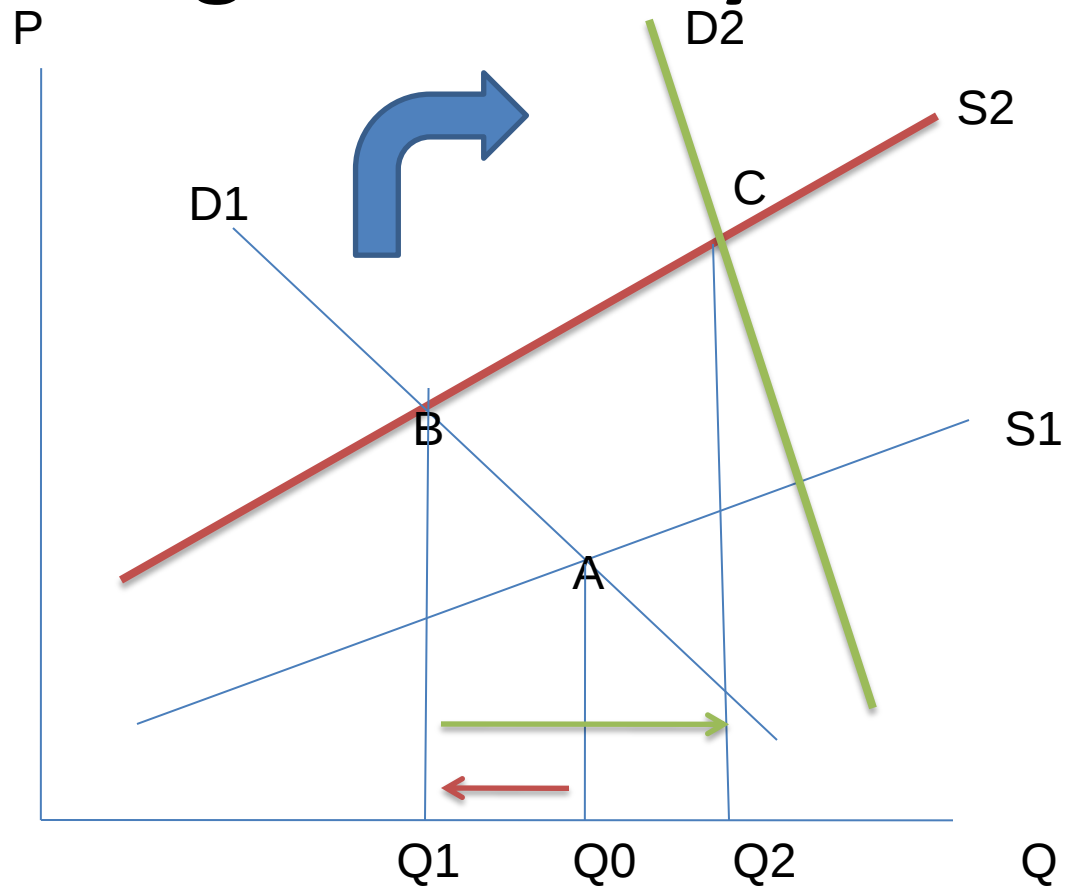
Examples of industry responses to SPS measures

- 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.

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.*
- Continued improvement in quality and safety in the processed food industry is required to maintain market shares.
- In the long run, Thai industry can acquire premium products if it can differentiate from other competitors.