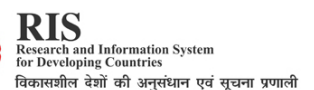


Thailand Seafood Trade Flow and Its Challenges

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FOOD SECURITY POLICY RESEARCH, CAPACITY, AND INFLUENCE (PRCI) RESEARCH PAPERS

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ABSTRACT

Thailand is currently facing many challenges in seafood trade including shortages of domestic raw material, disease outbreak (in shrimp), and trade barriers from importing countries. This study provides background on the Thailand seafood industry and discusses impact of Tier 3 and yellow card policies on Thailand seafood trade flow for key seafood products including seafood market access through Free Trade Agreements. The study finds that the revealed comparative advantage of the fish and the crustaceans have been declined. The strength of Thailand's fish and crustaceans' exports remains high. We also found that during the episode of Tier 3, export market was diversified. The Tier 3 placement coincides with the decline in fishery exports to the US. The yellow card seemed to have more effect on fishery governance than anything else. When the yellow card was issued, fishery exports to the EU had already gone down after Thailand lost GSP from EU. Lastly, FTAs helps expand market for Thailand seafood exports to some extent.

Key words: Trade flow, Seafood, Thailand, Tier 3, IUU fishing, FTA

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Acronym	Definition
AFRE	Department of Agricultural, Food, and Resource Economics
ASEAN	Association of Southeast Asian Nation
EEZ	Exclusive Economic Zone
EMS	Early Mortality Syndrome
EU	European Union
FAO	Food and Agriculture Organization under the United Nations
FSG	Food Security Group
FTAs	Free Trade Agreements
GSP	Generalized System of Preferences
HH	Herfindahl-Hirschman
IFPRI	International Food Policy Research Institute
IPOA-IUU	International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated
ISIC	International Standard Industrial Classification
ISSER	Institute for Statistical, Social, and Economic Research
IUU	Illegal, Unreported, and Unregulated Fishing
MFN	Most Favored Nations
MSU	Michigan State University
NEER	Nominal Effective Exchange Rate
PIPO	Port-In/Port-Out
PRCI	Policy Research, Capacity and Influences
RCA	Revealed Comparative Advantage
REER	Real Effective Exchange Rate
ReNAPRI	Regional Network of African Policy Research Institutes
TIP	Trafficking in Persons
TVPA	Trafficking Victim Protection Act
UNCTAD	United Nations Conference on Trade and Development
USAID	United States Agency of International Development
VMS	Vessel Monitoring System

INTRODUCTION

Seafood is one of the world's most traded goods. In 2019, the world's total fishery production was 177.8 million tons, and about 66.6 million tons, or 37.4 percent, of this was traded. Salmon, trout, shrimp, prawns, ground fish, and tuna were among the most traded commodities (FAO, 2021). Developed countries produced 15.7 percent of the world's production, of which 92.7 percent were exported. Fishery trade in developed countries was characterized by a high proportion of intraregional trade, especially within North America and the European Union. Developing countries produced 84.3 percent of the world's fishery production. Most of this production was consumed domestically and about 27 percent was exported, which accounted for 22.7 percent of the world's fishery. Major exporting countries were in Asia. Of the top five; China, Vietnam, and India are among the top fishery exporting countries. Altogether in terms of value, these three countries accounted for 22 percent of the world's fishery export.

Thailand ranks sixth in the world's fishery exporters. Its share value of the world fishery export is approximately 3 percent. In 2020, Thailand's fishery export was 1.2 million tons, and valued at USD 5,465 million. Amid the COVID-19 pandemic, the demand for fresh fish dropped sharply while the demand for canned fish skyrocketed. In 2020, overall fishery export growth was 3.4 percent in terms of quantity, but (-)2.6 percent in terms of value. Export of fish products accounted for 28.6 percent of fishery exports. The main fish products exported were fresh, chilled, and frozen – crustaceans (49.8%), fish (21.7%), and mollusks (18.2%). Export of fishery products accounted for 71.4 percent. Main fishery products were canned tuna (57.6%) and prepared or preserved crustacean (20.4%). The United States, European Union (EU), Japan, Australia, and China are the main destinations of Thailand's overall fish and fishery products.

During the past ten years, Thailand's fishery exports have been declining. Between 2000 and 2010, fishery exports grew at the average annual growth of 5.24 percent, from USD 4,355 million to USD 6,986.5 million. Thailand's fishery exports reached its peak at USD 8,096.8 million in 2011. That same year, the country faced a devastating flood, and later the outbreak of Early Mortality Syndrome (EMS) in shrimp farms, causing a plummet in shrimp production. Exports of crustaceans declined drastically from USD 1,786.4 million in 2011 to USD 1,531.2 and USD 1,019.7 million in 2012 and 2013, respectively. The EMS spread all over Asia, which began in China then spread to Vietnam, Malaysia, Thailand, and the Philippines (FAO, 2016). In 2014, shrimp production started to recover, but Thailand was downgraded by the United States Department of State regarding human trafficking issues from Tier 2 Watch List to Tier 3, the lowest grade. The fishery industry was identified as one of the sectors where human trafficking proliferated and was inadequately regulated by the government. Although there was no trade sanction, Tier 3 status severely damaged the image of the Thai shrimp industry; framed by the press as using “modern slavery” practices. In 2015, the Thai fishery industry was further hit by receiving the EU's yellow card for illegal, unreported, and unregulated (IUU) fishing practices. Even though the yellow card is just a warning for countries to take actions and not a trade

ban, it still caused concern for most fishery exporters. This is because the card could turn from yellow to red if the Thai government did not handle the issues properly. The Tier 3 status was upgraded in 2016; and the yellow card was removed in 2019. However, by that time Thai exporters had already lost their market share to other countries. With the outbreak of COVID-19, the recovery of fishery exports has been very slow. In 2020, Thailand's fishery export was USD 5,465.7 million. This is about a 32.5 percent reduction from 2011, or an average decline of 2.06 percent per year over the last decade.

Thailand remains one of the key players in the international market for some products. The country continues to rank number one in exporting canned tuna. Its market share in 2019 was about 30%. Canned tuna is highly relied on the international market; about 96% of domestic production was exported, and most of the raw tuna was imported from abroad. Thailand is also one of the top exporters of frozen shrimp. About 74% of frozen shrimp was exported. Unlike tuna, most shrimp was cultured in the coastal areas of Thailand, but the production process highly relies on foreign workers. Another important product for the domestic economy is canned sardines. Approximately 40% of canned sardine production was exported. Raw materials for canned sardines were about 50% caught by Thai fishing vessels and about 50% imported from abroad. Production and export of canned sardines is less vibrant than tuna and shrimp, and this seems to be steady over the past three decades.

Fishery sectors around the world have been facing multiple challenges. Challenges come from the supply side such as natural resource depletion due to overfishing and environmental degradation due to ocean garbage as well as climate change which has reduced fishery productivity and increased the cost of production. Thailand is no exception. Challenges from the demand side may vary from country to country. The Tier 3 list and the yellow card are some of a few examples of unilateral measures imposed by trading partners. It is interesting to examine how these measures affect the flow of fishery export. In the past decades, the Thai government has engaged several bilateral agreements to promote market access and reduce trade barriers. It is also intriguing to explore whether those bilateral agreements such as the free trade agreement (FTA) help to promote trade, and whether there is a diversion of trade to FTA partners. This paper will compare three industries including canned tuna, canned sardines, and frozen shrimp. These three industries are influenced by international trade at different stages of production and at different scales.

THAILAND'S SEAFOOD INDUSTRY

Fishery is an important sector for the Thai economy. It provides food, employment, and livelihood for fishermen and fish farmers. On average, Thai people consume approximately 31-39 kilograms of fish per person per year (Department of Fisheries, 2019). Fish consumption accounts for 38.7 percent of Thai's intake of animal protein, and 16.6 percent of all sources of protein consumed (FAO, 2019). There are approximately one million workers in this sector contributing to 2 percent of employment. In 2020, export revenue from fish and fishery products was USD 5,465.7 million. Fishing and aquaculture sectors contributed approximately 0.8 percent of Thailand's gross domestic products (GDP).

Thailand's fishing industry comprises many small-scale fishers and fish farmers. In 2019, there were 195 thousand fishers, 521.4 thousand fish farmers, 236.4 thousand fishery workers, and 11 thousand registered traders (Department of Fisheries, 2019). The country has 2,600 km length of coastal line and 316 thousand km² of fishing waters within an Exclusive Economic Zone (EEZ) covering the Gulf of Thailand and the Andaman Sea. Fishing fleets are relatively small compared to other countries in the region. There were 11 thousand commercial vessels and 21.4 thousand artisanal vessels.

Fishery products that reach the international market were mostly from marine captured and coastal cultured sources. Total fisheries production in 2019 was 2.4 million tons, 61.3 percent was from captured and 38.7 percent was from cultured. Marine captured and coastal cultured contribute to about 77.1 percent of the total production; another 21.9 percent was inland captured and freshwater cultures (Department of Fisheries, 2019). Most freshwater fish were consumed fresh. For marine fish, about one-half is consumed fresh, one-fifth is chilled and frozen, another one-fifth is processed as fishmeal and animal foodstuff, about 3 percent was canned, and the rest were fermented for fish sauce, or cured in various forms. Currently, there are 167 frozen factories, 66 canning factories, and more than a hundred fish sauce and fishmeal factories.

The production of prepared, preserved, and processed seafoods in the past were mostly for exports. Figure 1 (a) shows that more than 95 percent of key seafood produced in Thailand, except canned sardines, was sold on the international market. Figure 1 (b) shows that between 2000 and 2006, the production of seafood increased continuously. Between 2007 and 2009, the production had declined. This may be driven by the reduced demand due to the Hamburger crisis in 2008. However, it recovered in a short period between 2010 and 2011. After 2012, the production declined continuously due to the outbreak of EMS in shrimp farms, and the aftermaths of a big flood. The production of frozen shrimp, for example, was reduced from 114 thousand tons in 2012 to 63 thousand tons in 2013.

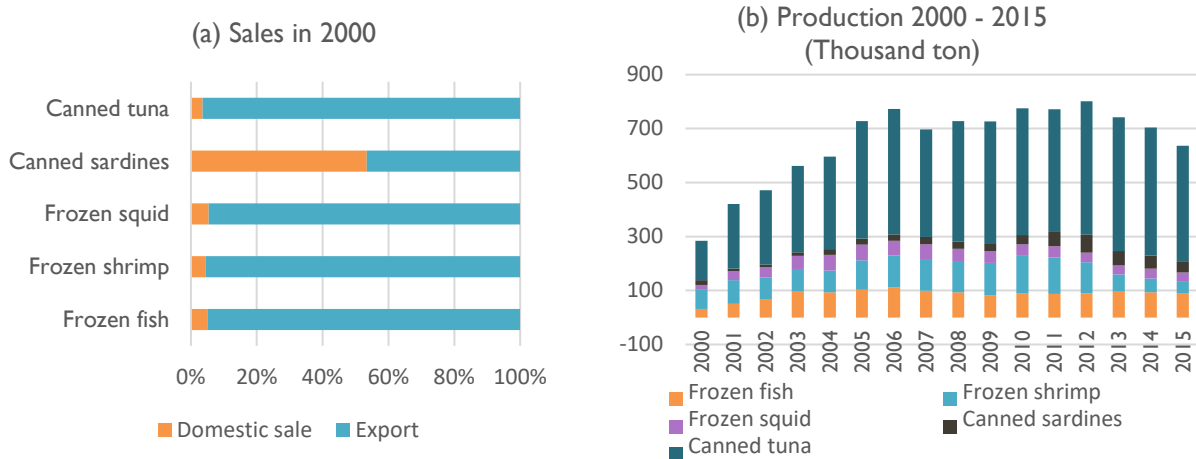


Figure 1 Production and sales of fishery products 2000 – 2015

The production and sales data in Thailand were reported by the Office of Industrial Economics. In 2016, there was a revision of industrial classification from ISIC rev.3 to ISIC rev.4. Some seafood data such as frozen shrimp show a discontinuity of data between 2015 and 2016. Figure 2 shows the production of key seafood between 2016 and 2021. The composition of seafood production has not changed much after 2016, though frozen shrimp production has never been back to the level before 2011. In contrast, production of canned sardines had increased almost ten times over 20 years. For marketing of seafood, domestic sales have increased for all products, especially frozen products. The increase in domestic sales happened even before the outbreak of COVID-19 that disrupted global trade. In 2018, domestic sales for frozen fish, shrimp, and squid were 15, 21, and 38 percent of their respective total sales. In 2021, the share of domestic sales increased further to 22, 34, and 52 percent, respectively. This increase in the share of domestic sales of frozen seafoods can be attributed to improvements in cold storage facilities, expansion of franchised supermarkets, changes in lifestyle and consumer preferences, and an increase in income.

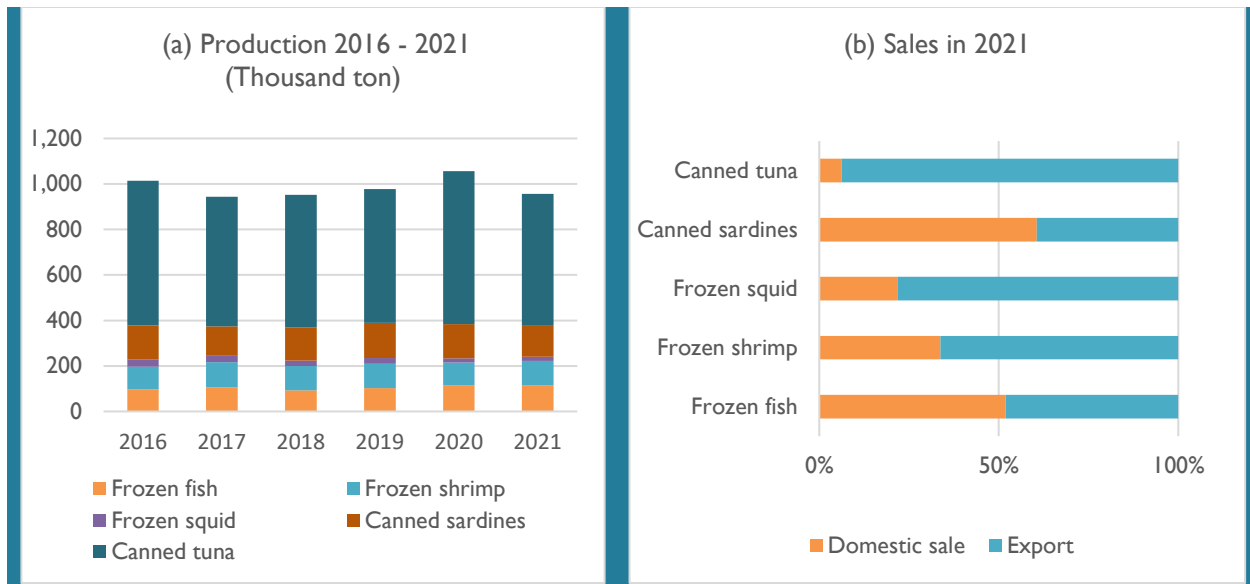


Figure 2 Production and sales of fishery products 2016 – 2020

IMPACT OF TIER 3 AND THE YELLOW CARD ON THAI SEAFOOD TRADEFLOW

Thai Seafood Trade Flow

Figure 3 shows that Thailand remains a net exporter of fish and fishery products, though the gap between export and import is small. In 2000, the export value was almost six times as large as import value, but in 2020, it reduced to one and one-half times. Note that the increasing trend in export between 2000 – 2008 was partly due to the comparative price advantage after the baht depreciated as a result of the Asian financial crisis. Shown in Figure 4, the both Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER) dropped significantly after 1997 and remain low for several years. After 2013, value of baht relative to trading partners started to rise.

Over the years, seafood industry in Thailand was able to move up on the supply chain and export more processed seafood. Figure 5 shows that the export of fishery products became much larger than fish exports. Figure 6 shows the size of the three products examined in this paper-canned tuna, frozen shrimp, and canned sardines. Altogether, these accounted for about 60 percent of fishery exports.

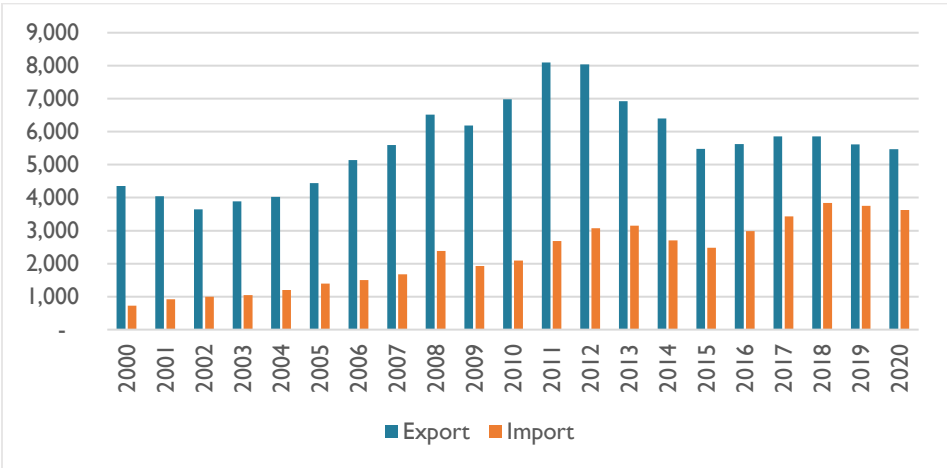


Figure 3. Fishery Export and Import 2000 - 2019

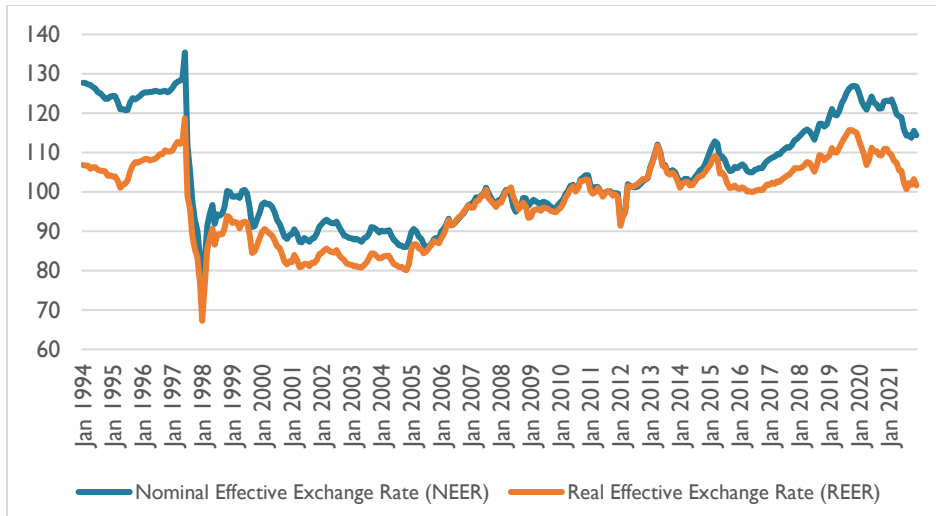


Figure 4. Nominal and Real Effective Exchange Rate

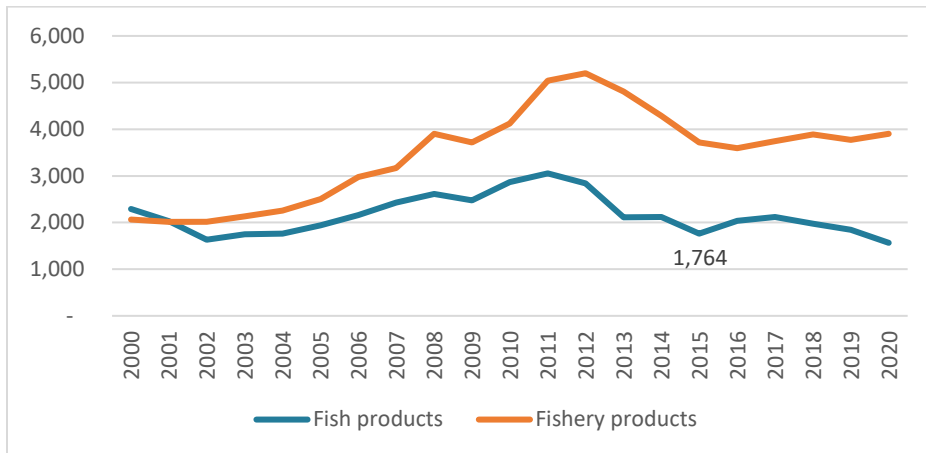


Figure 5. Export value of fish and fishery products

Fishery Export in 2020

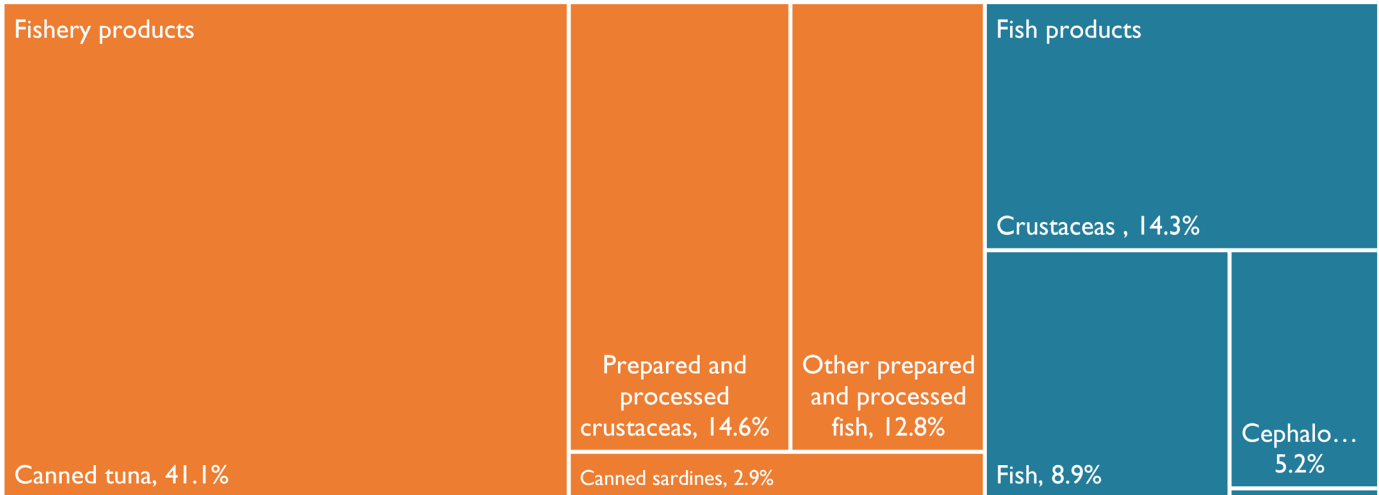


Figure 6 Composition of Fishery Export in 2020

The strength of exported fishery products has been on a decline. Figure 7 shows the Revealed Comparative Advantage (RCA) calculated by the United Nations Conference on Trade and Development (UNCTAD) using SITC revision 3 product groups. This shows that between 2000 and 2020, the RCA for crustaceans, mollusks, and invertebrates reduced from 10 to 2. The RCA for prepared and preserved fish reduced from 20 to 8. Between 2004 and 2011, the RCA fluctuated within a small range. After the EMS outbreak in 2011, the RCA for both product groups drastically declined. In 2015, when Thailand was downgraded to Tier 3 by the United States, and received a yellow card from the EU, RCA for fish products dropped further while that for crustaceans became relatively stable.

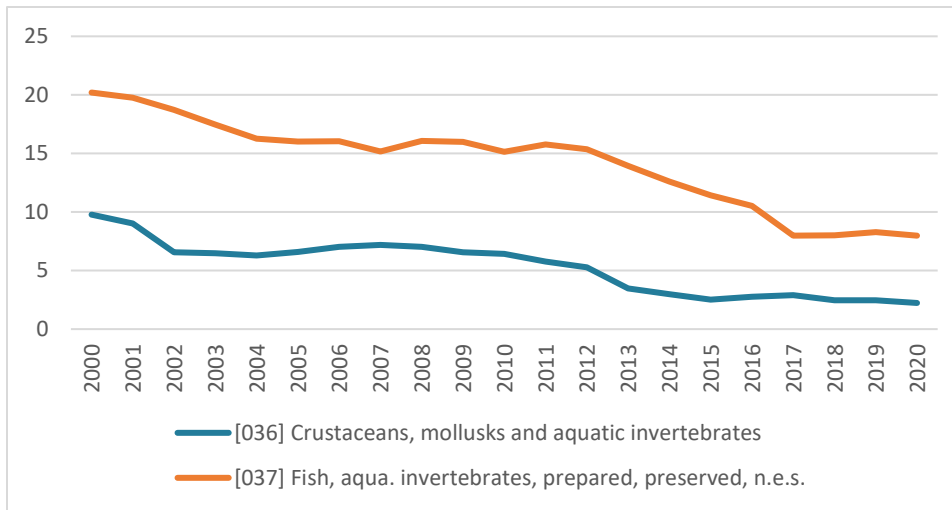


Figure 7 Revealed Comparative Advantage of Thai fish and fishery products

Tier 3 in TIP Report and the Yellow Card

Since 2004, the U.S. Department of State has been publishing an annual report called the Trafficking in Persons Report (TIP) report. This report provides information on the human trafficking situation and governmental actions taken to combat trafficking around the world. In the report, each country is placed in one of four tiers mandated by the Trafficking Victim Protection Act (TVPA). The placement is based on the size of the problem in the country and the extent of a government's effort to eliminate human trafficking. A Tier 1 placement indicates that a government has made efforts to address the problem that meets the TVPA's minimum standards. If a government does not fully meet the minimum standards but is making significant efforts, the country will be placed on a Tier 2. If a country has a large number of victims or severe forms of trafficking, but does not take proportional concrete actions, or fails to provide evidence of increasing effort, a country would be placed in a Tier 2 Watch List. The worst possible tier is Tier 3, and this happens when a government does not fully meet the TVPA's minimum standards, and does not make significant efforts to do so. TVPA allows the U.S. government to impose sanctions on countries designated as Tier 3. Such sanctions can withhold or withdraw non-humanitarian aid, non-trade-related foreign assistance, funding in educational and cultural exchange programs, and/or vote against or deny the uses of funds in multilateral development banks as well as the International Monetary Fund to Tier 3 countries (Department of State, 2021).

In the 2014 TIP report, Thailand was downgraded from Tier 2 Watch List to Tier 3. Stated in the report, "Thailand is a source, destination, and transit country for men, women, and children subjected to forced labor and sex trafficking." It was estimated that there were two to three million migrant workers from neighboring countries working in Thailand, and tens of thousands were forced, coerced, or defrauded into labor and/or in sex trade. Commercial fishing, fishing-related industries, low-end garment production, factories, and domestic work were all identified as industries in which labor trafficking victims were significantly exploited. Furthermore, the overall anti-trafficking law enforcement efforts were insufficient compared with the size of the problem and corruption at all levels hampered the success of these efforts (Department of State, 2014). The Tier 3 status lasted for two years. Thailand amended several anti-trafficking laws, increased penalties on traffickers, allowed closure of businesses involved in forced labor, and also increased the number of investigations, prosecutions, and convictions (Department of State, 2016). In 2016, the tier placement was moved back to Tier 2 Watch List and moved to Tier 2 in 2018 until 2020. In 2021, Thailand was once again downgraded to Tier 2 Watch List. Partly, this was because there were fewer trafficking investigations, fewer suspect prosecutions, and fewer trafficker convictions in 2020 than in 2019 (Department of State, 2021).

While the tier placement by the United States focuses on human rights and law enforcement issues, the Yellow Card by EU focuses more on environmental sustainability and international fishing governance. Illegal, Unreported and Unregulated Fishing (IUU fishing) was first recognized at international fora as a high priority in 1999, when the twenty-third meeting of Committee on Fisheries by Food and Agriculture Organization under the United Nations (FAO) agreed to develop an

International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) as an international framework to combat with IUU fishing. In 2001, IPOA-IUU was adopted and FAO encouraged its member states to develop their own national POA. The EU developed and adopted its IUU Regulation, EC reg no.1005/2008, in September 2008, and it has been in effect since 2010.

The EU IUU regulation requires flagged countries to certify the origin and legality of fish. With this regulation, only marine fisheries products validated as legal by the competent flagged country can be exported to the EU. The EU setup a third country carding process to warn non-EU countries pre-identified by the EU as non-cooperating countries in the fight against IUU fishing. The carding system follows a similar traffic light system: a yellow card is a formal warning, a red card is a trade ban to the EU market, and a green card is normal status. When the EU gives a country a yellow card, it starts a formal dialogue with that country and provides assistance to tackle shortcomings that have been identified. If sufficient action is not taken, a country may be further carded as red, in which fish caught by the carded country's vessels will be excluded from the EU market and EU vessels are prevented from operating in that carded country's waters.

The EU gave Thailand a yellow card on April 2015, on the basis of IUU fishing. Labor conditions on fishing boats also brought criticism and labor rights violations in the fishing industry after Thailand was downgraded to Tier 3 in a TIP report. Several EU-Thai dialogues were setup, both at technical levels and political levels. As a result of the yellow card and the TIP report, the Thai government has implemented extensive reforms in fishery governance. These reforms include the amendment of fisheries laws, specifically the Royal Ordinance on Fisheries B.E. 2558 (2015), which addresses not only the deterrence and prevention of IUU fishing but also marine resource conservation and management. Furthermore, the government has ratified several international agreements, such as the Agreement on Port State Measures (2016), the UN Fish Stocks Agreement (2017), the Forced Labor Convention (1930), and the Work in Fishing Convention (2007). Additionally, there has been an improvement in the vessel-monitoring system (VMS) and the establishment of Port-In/Port-Out (PIPO) centers. These centers inspect vessels and their crews on fishing boats, including monitoring the employment status and working conditions of fishermen (Alin Kadfak and Sebastian Linke, 2021). The EU removed the yellow card for Thailand in January, 2019.

Canned Tuna

Thailand exports canned tuna to more than 150 countries. Value of its canned tuna export in 2020 was USD 2.4 billion. Figure 8 shows the top five tuna export markets for Thailand were USA, Japan, Australia, Egypt, and Saudi Arabia. Total export to these five countries accounted for 60 percent. Export to Association of Southeast Asian Nations (ASEAN) accounted for 2 percent. USA and EU accounted for 28 percent and 4 percent, respectively.

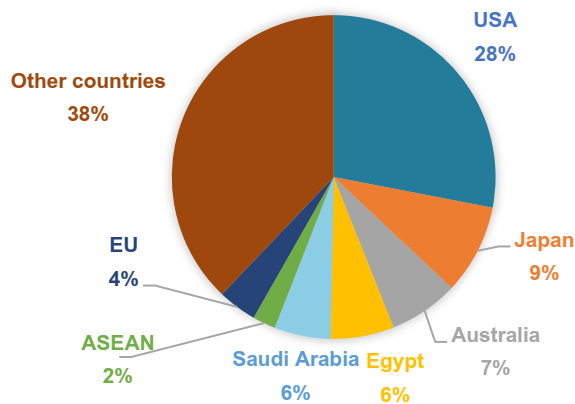


Figure 8 Export market for Thai Tuna in 2020

Figure 9 shows that tuna exported to the U.S. dropped sharply after Thailand was downgraded to Tier 3 in June, 2014. The value of Thailand's tuna export to the U.S. dropped 10.3% in 2014, and dropped a further 18.2% in 2015. The TIP report in June, 2016, upgraded Thailand's human trafficking status to Tier 2, and this caused a positive growth of exported canned tuna in 2016 which grew from 7.2% in 2017 to 9.5% in 2018. In 2019, export growth slightly dropped, followed by an increase of 13.5% in 2020. The movement of canned tuna exported in 2019 and 2020 seemed to be mostly affected by the COVID-19 response measures and consumer panic buying of long shelf-life products.

Since 2013, Thai tuna exports to the EU have continued to go down significantly. EU used to be a major market for Thai tuna. In 2010, Thai fisheries exported about 10% of tuna to the EU. In 2014, tuna exports to the EU market had dropped sharply, by 40%, and continued to drop a further 10% every year until 2020. The yellow card to Thailand was removed in 2019. The growth of tuna exports from Thailand to the EU in 2020 remained negative but had been reduced by 8%. To some extent, non-trade measures have influenced trade flow.

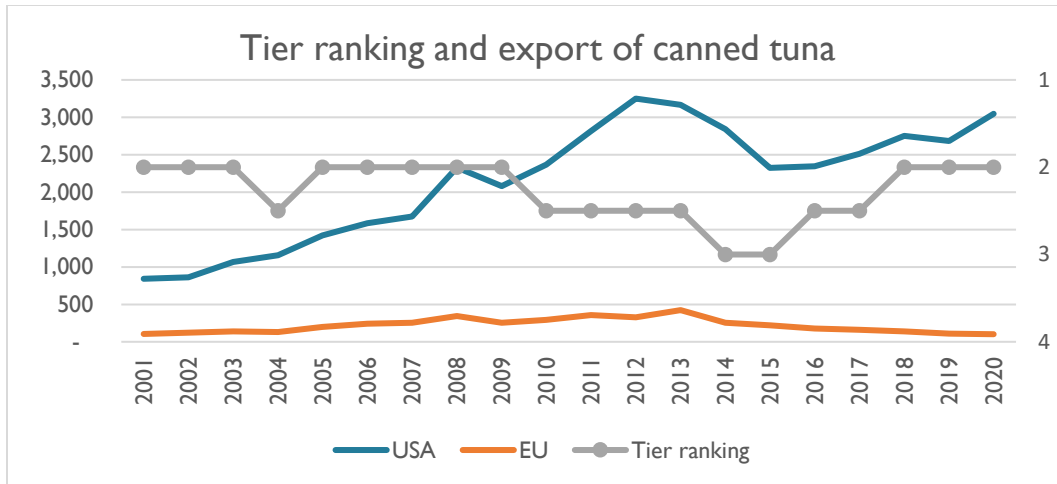


Figure 9 Tier ranking and export of tuna to USA and EU

Figure 10 shows the Herfindahl-Hirschman index (HH index) and the total value of canned tuna exports from Thailand. HH index is calculated from the sum square of the share of Thai canned tuna export destinations. It measures the concentration of the export market. A country with trade (export and/or import) that is concentrated in a very few markets will have an index value close to 1. In contrast, a country with a perfectly diversified trade portfolio will have an index close to zero. From figure 10, the HH index for tuna export market is relatively low; over the past ten years the HH index is below 0.11, meaning the export market for Thai tuna is relatively diverse, although, the top 5 export markets accounted for 60 percent. During the episode of Tier 3 status (2014 – 2015) and yellow card (2015 – 2018), the tuna export markets were more diversified.

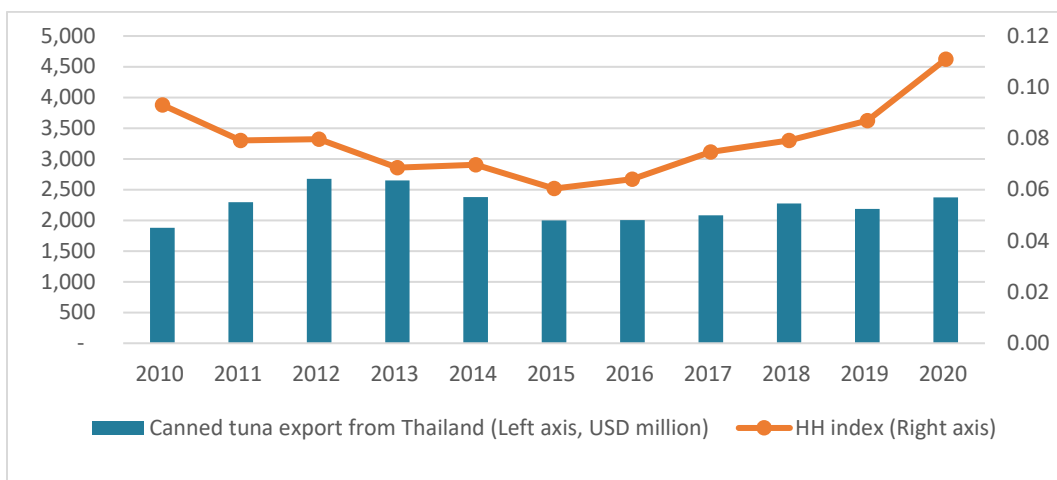


Figure 10 Concentration of export destination of Thai tuna

It is worth noting that the Thai tuna industry has relied heavily on raw materials from abroad, of which accounted for about 50 percent of the export value of final products. Frozen tunas such as albacore, yellowfin, and skipjack were imported from more than 60 countries around the world, especially from Asia and Oceania. China, Micronesia, Indonesia, Japan, and the Republic of Korea are the main suppliers. Imports from these countries account for 41.7 percent. ASEAN countries have become important suppliers of frozen tuna; imports from ASEAN accounted for 11.5 percent. In recent years, China became a key player in the tuna trade. In 2020, its tuna exports to the world were USD 1 billion, which was about five times more than ten years ago. Exports were both in the form of frozen tuna (45%), which is used as raw materials, and canned tuna (55%). Approximately 55 percent of their frozen tunas were exported to Thailand. Canned tuna trade between Thailand and China is a significant two-way trade.

Canned Sardines

In 2020, Thailand exported canned sardines to 82 different countries. The value of this canned sardine export was USD 160.3 million. Figure 11 shows the top 5 export markets for Thailand's canned sardines were South Africa, Japan, USA, Cambodia, and Namibia. Total exports to these five countries accounted for 55 percent. Exports to ASEAN, including Cambodia, accounted for 18 percent. USA and EU accounted for 9 percent and 1 percent, respectively.

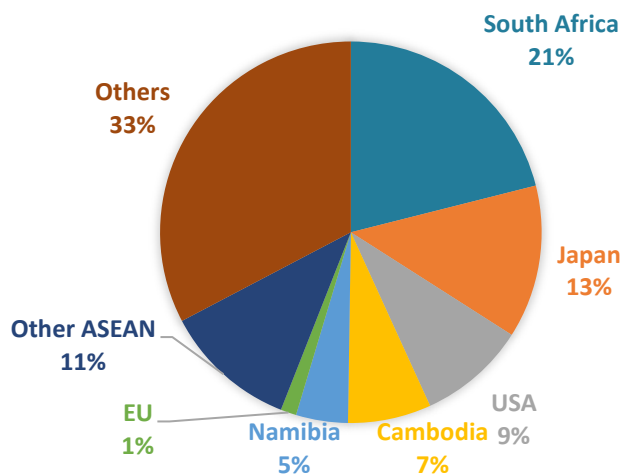


Figure 11 Export market for Thai canned sardines in 2020

Figure 12 shows that canned sardines exported to the U.S. from 2001 to 2012 had increased significantly. However, the exports started to decline in 2012, and between 2013 and 2014, the export level was back to the 2008 – 2010 values. After Thailand was downgraded to Tier 3 in June 2014, the value of Thailand's canned sardines exported to the US dropped 26 percent in 2015, and continued

to drop further until 2018. In 2019 and 2020, exports of canned sardines were to recover and grew at 55 percent per year. Like canned tuna, the growth of canned sardines exported in 2019 and 2020 is partly because of COVID-19 induced buying of long shelf-life products.

Thailand used to export about one fourth of its canned sardines to the EU. While export of canned sardines in Thailand had grown impressively over the past 20 years, and was able to maintain its rank at the second most exporters after Morocco, the export to the EU has been decreasing since 2008. Export of Thailand’s canned sardines in the EU market maintain at about USD 10 million between 2009 – 2014, then dropped from USD 10.8 million in 2014 to only about USD 2 million in 2016 and thereafter. Even though the yellow card to Thailand was removed in 2019, exports of canned sardines remained low. Note that EU is a large importer and exporter of canned sardines. About 30 percent of world’s canned sardines export was sent to EU and EU members such as Portugal and Poland are among the top 5 world’s exporters.

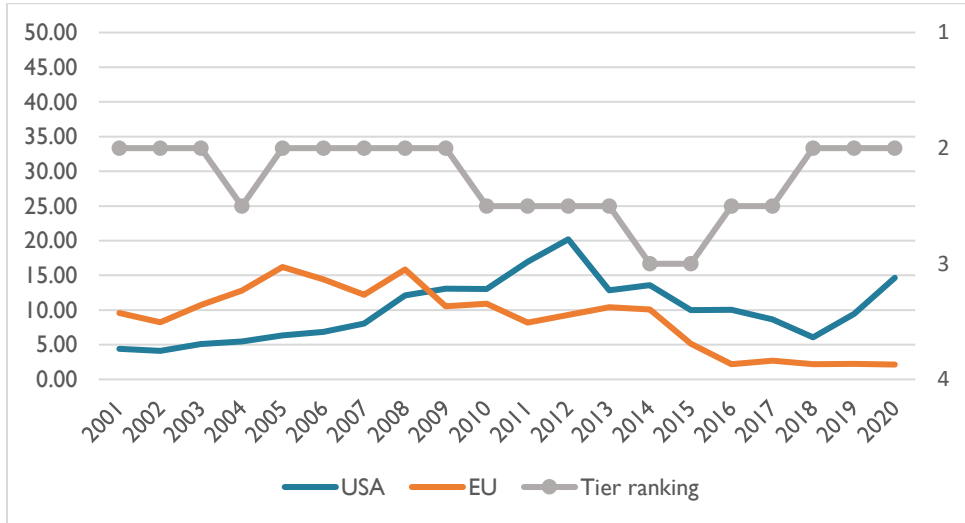


Figure 12 Tier ranking and export of canned sardines to USA and EU

Figure 13 shows the HH index and the total value of canned sardines exported from Thailand. The HH index for canned sardines export market is below 0.20, except in 2009 when it went up to 0.24. This indicates that the export market for Thai canned sardines is relatively diverse but more concentrated than canned tuna. While canned tuna from Thailand is exported to 150 countries, canned sardines is exported to anywhere from 82 to 121 countries. During the episode of Tier 3 status (2014 – 2015) and yellow card (2015 – 2018), the canned sardines export market was relatively more diversified. The HH index in 2016 fell to 0.09. However, the number of export partners was reduced from 115 countries in 2015 to 99 countries in 2016, and then to 82 countries in 2020.

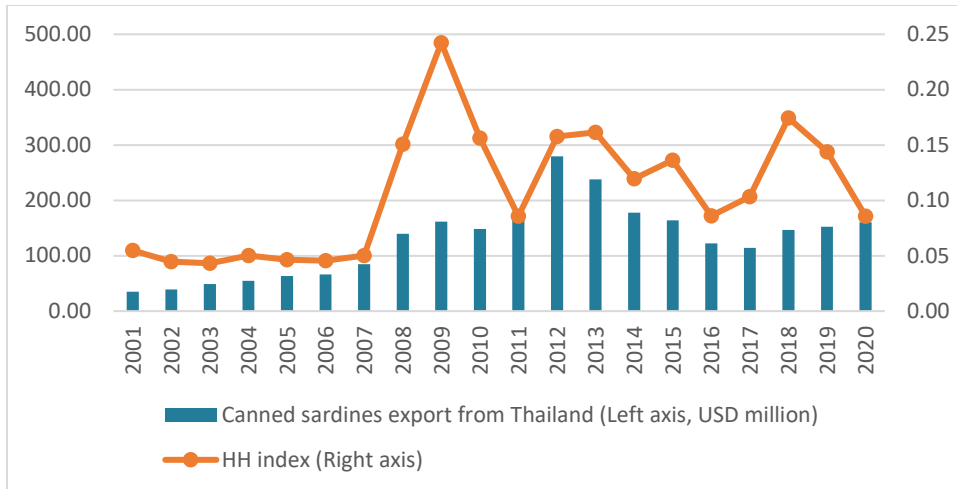


Figure 13 Concentration of export destination of Thai canned sardines

While the export market is quite diversified, the import market for raw sardines (fresh, chilled, and frozen) is quite concentrated. Thailand imports sardines from 19 different countries. The top 5 suppliers include Japan, the Russian Federation, Oman, Morocco, and Myanmar. Altogether, these five accounted for 82.5 percent of the import, and the value of raw sardine imports is quite significant as well. In 2020, while the export of canned sardines was USD 160 million, the import of raw sardines was USD 107.6 million. Thailand’s net trade surplus in sardines was only USD 53 million.

Frozen Shrimp

In 2020, Thailand exported frozen shrimp to 82 different countries. The value of its frozen shrimp exports was USD 781.1 million. Figure 14 shows that the top 5 export markets of Thai frozen shrimp were the USA, China, Japan, Hong Kong, and Australia. Total exports to these five countries accounted for 77 percent. The market for the USA and China together accounted for more than 50 percent. Exports to ASEAN accounted for 8 percent. Exports to the EU accounted for 1 percent.

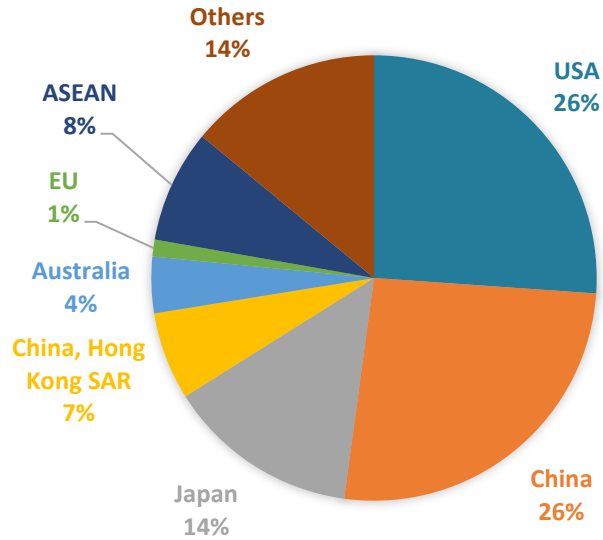


Figure 14 Export market for Thai frozen shrimp in 2020

Figure 15 shows that frozen shrimp exported to the U.S. dropped sharply since 2012 due to the EMS outbreak that caused a decline in production. This was a supply side drop driven as evident by the domestic price. For example, the wholesale price of shrimp (sized by 60 shrimp per kilogram) increased from 110 baht per kilogram to 280 baht per kilogram in May 2012. When Thailand was downgraded to Tier 3 in June 2014, the export of Thai frozen shrimp to the U.S. went down further, but this time the decline of exports was driven by the decrease in demand from the international market. The excess supply of shrimp was absorbed by the domestic market and caused the price of shrimp to go down to about 200 baht per kilogram. The export to the U.S. market had recovered somewhat after 2016, but the export decline in 2019 and 2020 is partly because of trade disruption due to COVID-19.

Thailand used to export about 15 percent of its frozen shrimp to the EU; now it has declined to about 1 percent in recent times. Before Thailand received the yellow card from the EU in April 2015, the EU already discontinued Generalized System of Preferences (GSP) that was previously given to Thailand. Thai shrimp exporters faced an EU Most Favored Nations rate (MFN rate), which is 3 percent higher tariff rate than the GSP rate. The EU removed the GSP from Thailand on the grounds that the country's income per capita increase to upper middle income (classified by the World Bank) for three consecutive years. Exports of frozen shrimp to the EU plummeted from USD 63.7 million in 2014 to USD 12.2 million in 2015, which is an 80 percent drop. Shares of Thai frozen shrimp exports to EU markets in the past five years fell to about 1 percent.

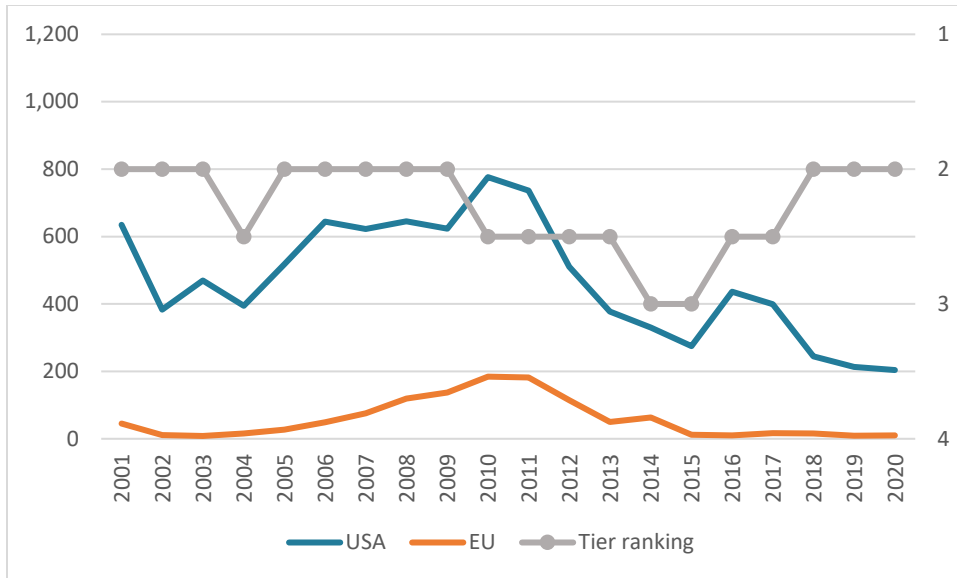


Figure 15 Tier ranking and export of frozen shrimp to USA and EU

Figure 16 shows the HH index, and the total value of frozen shrimp exported from Thailand. The HH index in the past was more than 0.3. However, over the past two decades, the HH index continued to decrease, which indicates that the export market for Thai frozen shrimp became more diversified. However, China and the US markets continued to account for more than 50 percent for this export. In the world market, the US and China are the first and second largest frozen shrimp importers. The other 3 countries in the top 5 world's importers are Japan, Spain, and South Korea. The recent top 5 world exporters are India, Ecuador, Canada, Vietnam, and Russia. Altogether, they contributed 56.8 percent of world's frozen shrimp exports. Also, India, Ecuador, and Vietnam became key players in recent years. In 2020, Thailand was in the top 10 but shared only 3 percent of the world's frozen shrimp market.

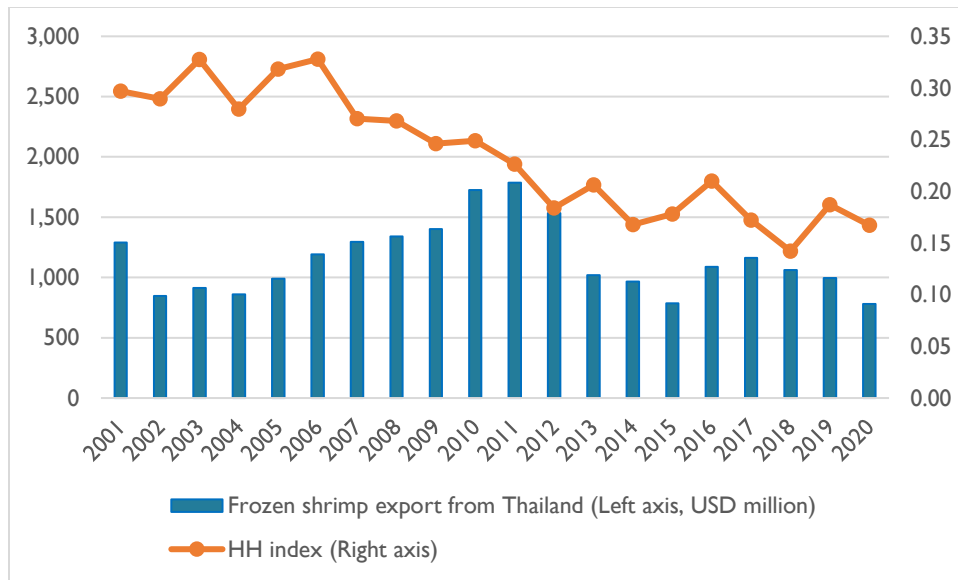


Figure 16 Concentration of export destination of Thai frozen shrimp

Seafood Market Access through Free Trade Agreements

Over these past years, the world economy has faced many challenges such as the COVID-19 pandemic, Russian invasion of Ukraine, and inflationary risks. These challenges have had a broad-based impact on Thailand exports to the world market. Strengthening partnerships with major trading partners through FTAs is one key policy for Thailand to help expand market share for Thai exports in the world market and alleviate the negative impacts on Thai exports.

Thailand currently has 14 FTAs with 18 trading partners which are ASEAN (9), China, Japan, Korea, Australia, New Zealand, and India, including the Regional Comprehensive Economic Partnership. The Thai government has promoted Thai exports by capitalizing on effective FTAs. Thai exports to world markets are expected to benefit from FTAs including fishery and processed fishery products. Most tariff barriers for fishery and processed fishery products have been eliminated for exports from Thailand to FTA partners.

In the past, FTAs were considered as an important trade policy for Thailand to help boost exports in fishery and processed fishery products. According to the Ministry of Commerce (2015) yearly report on fishery and processed fishery exports, most of the fishery and processed fishery exports benefited from FTAs which helped boost fishery and processed fishery products exports. In 2015, total export of value of fishery and processed fishery products to Thailand’s FTA trading partners worth 2.7 million USD, increased by 4.5 percent from the previous year and 170 percent from 1992 which is the start year of the first FTA between Thailand and ASEAN.

Thailand downgraded from Tier 2 Watch List to Tier 3 in 2014 (lifted from Tier 3 to Tier 2 Watch List in 2016) and a yellow card on April 2015 on the basis of IUU fishing (Thailand was delisted from

yellow card status in 2019) , which overall generated a negative effect on Thai fishery and processed fishery products to the US and EU markets. Table 1 shows the value of exports of fishery products to major trading FTA partners in various years compared with pre-FTAs period. Export growth of fishery products to FTA partners is diverse compared with the pre-FTA period. In 2021, exports of fishery products to ASEAN increased by 61 percent in comparison to 1992 (where ASEAN FTA was signed).

Table 1 Table 1 Export value of Fishery Products to FTA partners

Country	Fishery products (Value 1000 USD)						
	Before FTA	2019	% Change	2020	% Change	2021	% Change
Japan	566,837.7	447,622.7	-21%	365,796.2	-35%	375,122.7	-34%
Asean	117,790.7	178,024.3	51%	164,928.3	40%	189,547.4	61%
Australia	47,813.3	46,994.7	-2%	41,735.7	-13%	41,236.3	-14%
China	48,961.4	391,383.5	699%	307,704.4	528%	313,930.4	541%
Korea, Rep.	69,696.0	86,812.8	25%	96,506.6	38%	116,901.3	68%
Chile	0.4	363.0	98283%	312.0	84453%	861.9	233464%
Peru	73.2	87.6	20%	26.1	-64%	35.2	-52%
New Zealand	5,548.3	2,683.2	-52%	2,519.3	-55%	2,725.1	-51%
India	698.2	1,253.9	80%	1,341.3	92%	1,047.7	50%
Total		1,155,225.7		980,869.9		1,041,407.9	
World	1,920,627.9	1,849,250.0	-4%	1,567,656.1	-18%	1,705,286.7	-11%

Source: UN Comtrade

Table 2 shows the export value of processed fishery products to FTA trading partners compared with pre-FTA period. Overall exports of processed fishery products to FTA trading partners showed strong growth compared with the pre-signed FTA period for each FTA trading partner. Total export of processed fishery products to Japan increased by 58 percent in the year 2019 and 38 percent in the year of 2021 when compared with 2006, the pre FTA period. Export of processed fishery products to Australia increased by 85 percent in the year 2020 compared with the pre FTA year of 2004.

Table 2 Export Value of Processed fishery products to FTA partners

Country	Canned and processed seafood product (Value 1000 USD)						
	Before FTA	2019	% Change	2020	% Change	2021	% Change
Japan	452,221.6	712,876.3	58%	624,244.4	38%	626,290.7	38%
Asean	19,669.9	136,703.4	595%	174,918.6	789%	177,384.4	802%
Australia	122,059.0	261,404.9	114%	244,607.4	100%	225,789.3	85%
China	2,319.7	50,339.7	2070%	57,876.8	2395%	59,681.6	2473%
Korea, Rep.	15,650.2	54,398.1	248%	55,827.2	257%	74,387.2	375%
Chile	41,601.6	52,813.9	27%	58,240.1	40%	30,597.7	-26%
Peru	1,434.8	11,008.1	667%	16,824.9	1073%	43,350.7	2921%
New Zealand	18,226.2	36,144.4	98%	37,121.4	104%	38,826.2	113%
India	533.5	900.5	69%	1,632.8	206%	950.0	78%
Total		1,316,589.3		1,271,293.6		1,277,257.8	
World	1,150,728.1	3,768,685.9	228%	3,899,829.0	239%	3,483,739.4	203%

Source: UN Comtrade

Table 3 shows the total fishery product and processed product exports to FTA partners. Overall, export of fishery product and processed product to FTA partners increased significantly compared with the pre-signed FTA period. Promoting FTA helped expand market value for export of fishery and processed fishery products in major trading partners. The total value of export of fishery and processed fishery products to ASEAN increased by 167 percent in 2021 when compared with the year 1992, a period before the FTA was signed. Export of fishery and processed fishery products to China increased by 629 percent when compared with the value in 2004 which the pre FTA period.

Table 3 Export Value of Fishery and processed fishery products to FTA partners

Country	Total fishery, and processed fishery product (Value 1000 USD)						
	Before FTA	2019	% Change	2020	% Change	2021	% Change
Japan	1,019,059.4	1,160,499.0	14%	990,040.6	-3%	1,001,413.4	-2%
Asean	137,460.6	314,727.7	129%	339,846.9	147%	366,931.8	167%
Australia	169,872.3	308,399.6	82%	286,343.2	69%	267,025.5	57%
China	51,281.1	441,723.2	761%	365,581.2	613%	373,612.0	629%
Korea, Rep.	85,346.3	141,211.0	65%	152,333.7	78%	191,288.5	124%
Chile	41,601.9	53,177.0	28%	58,552.1	41%	31,459.6	-24%
Peru	1,508.0	11,095.6	636%	16,851.0	1017%	43,385.9	2777%
New Zealand	23,774.5	38,827.5	63%	39,640.6	67%	41,551.2	75%
India	1,231.7	2,154.4	75%	2,974.1	141%	1,997.7	62%
Total	0.0	2,471,815.0		2,252,163.5		2,318,665.6	
World	3,071,356.0	5,617,935.8	83%	5,467,485.1	78%	5,189,026.1	69%

Source: UN Comtrade

Table 4 illustrates fishery and processed fishery products list which exports to the world market including their major trading partners under FTA agreements. Japan and China were one of the major markets for fish, crustacean, mollusks, and canned tuna in the period January – April 2022. The export of fish, crustacean, mollusks, and canned tuna to these markets in the recent years fluctuated due to several negative factors such as COVID-19 and Russian invasion in Ukraine which dampened export growth in certain products in 2021.

Table 4 Fishery and Processed Fishery Products Exports to the World Market

Products	Export to World (1000 USD)			FTA partners	Top Three Export Value (Growth)		
	2020	2021	2022 (Jan-Apr)		2020	2021	2022 (Jan-Apr)
Fish HS:0301-0305	488,342.9	488,755.3	168,491.8	Japan	174,995.5	180,354.7	61,193.2
	-4.5%	0.1%	12.6%	Malaysia	40,713.6	55,292.2	19,148.4
				China	70,834.9	26,861.4	5,447.1
					68.7%	-62.1%	-56.0%

Products	Export to World (1000 USD)			FTA partners	Top Three Export Value		
					(Growth)		
Crustacean (HS:0306)	781,150.9	903,755.7	234,443.6	China	203,301.2	276,232.6	70,312.2
	-21.5%	15.7%	0.6%		-38.9%	35.9%	-1.1%
				Japan	108,943.1	121,742.5	39,041.6
					-22.3%	11.7%	6.9%
				Korea	29,458.7	40,023.0	5,940.4
					24.0%	35.9%	-40.8%
Molluscs (HS:0307)	284,887.3	291,257.7	114,993.3	Japan	75,308.5	62,921.6	18,772.1
	-10.9%	2.2%	25.1%		-19.6%	-16.4%	-17.3%
				Korea	52,331.2	58,975.1	19,580.6
					13.5%	12.7%	-8.3%
				China	32,332.3	10,337.1	3,881.2
					133.4%	-68.0%	32.7%
Canned Tuna HS:1604.14	2372962.5	1917813.1	700303.5	Japan	211,459.2	206,749.2	60,999.4
	8.6%	-19.2%	5.8%		10.6%	-2.2%	-1.1%
				Australia	167,506.0	153,706.1	62,270.6
					-8.8%	-8.2%	13.4%
				Peru	74,228.6	43,350.7	5,010.0
					16.3%	-41.6%	-68.4%

Source: UN Comtrade

Overall, fishery and processed fishery products benefited from FTAs between Thailand and its trading partners by increasing market share, export value, and export growth of fishery and processed fishery products from Thailand to the FTA trading partners. However, the impact of FTAs on fishery and processed fishery products is diverse and the impact depends on products and markets. In addition, over the past few years the benefit from FTAs was dampened due to the COVID-19 pandemic, Russia invasion in Ukraine, and slowdown of the world economy.

Conclusion and Discussion

Seafood is a traded good in the world's marketplace and is largely affected by changes in global supply and demand. Between 2000 and 2008, Thailand's fishery exports were able to expand due to a combination of reasons: 1) China becoming a member of the World Trade Organization in 2001 and engaged in more international trade, 2) the average growth of more than 2 percent of the world's

economy that led to a stronger global demand for seafood, and 3) the aftermath of Asian crisis that caused the baht to depreciate and helped the export sector to gain a comparative price advantage. The Hamburger crisis in 2008 was just the beginning of a decline in export demand, followed by the decline driven by supply factors – Thailand’s disrupting flood in 2011, and the EMS outbreak. When fishery production started to recover in 2012, the sector once again faced challenges that caused adjustments in the sector both in terms of fishery governance and the export market.

Fishery trade is beyond economic issues. Natural resources and environmental sustainability issues have brought international concerns for a long period of time. The EU IUU regulations, for example, tackled this by imposing unilateral measures. The EU yellow card given to Thailand was not just a warning card, it hurt Thailand’s fishery exports, though at the same time it helped to improve local fishery governance, as well as bring awareness to conserve and promote sustainable use of natural resources. Fishery trade also has an impact on social development. While the Thai fishery sector offers jobs and income opportunities to migrants from neighbouring countries who seek a better quality of life, insufficient regulations and law enforcement, as well as corruption have turned migrant workers into victims of human trafficking. Forced labor and informal hiring led to poor working conditions. This violation of human rights gained attention from the international media, and the U.S. government took up this issue by downgrading Thailand’s status of human rights to Tier 3. This Tier 3 status together with the yellow card from the EU had expedited Thailand to amend local regulation and adopt several international agreements related to fishery and labor standards.

Global concerns for natural resource sustainability and social development implications of the fishery sector certainly have affected the demand for fishery exports from Thailand. This paper examines the effect on exports on some of the key seafood products, and the overall adjustment of the export market. We find that revealed comparative advantage of fish and crustaceans sectors has gone down. The strength of Thailand’s fish exports and crustaceans exports remains high. We also found that the Tier 3 placement coincides with the decline in fishery exports to the US, and the Herfindahl-Hirschman index also declined. The yellow card seemed to have more effect on fishery governance than anything else. When the yellow card was issued, fishery exports to the EU had already gone down after Thailand lost GSP from EU. However, it might be too early to assess the impact of an improved fishery management in Thailand on the EU market because the yellow card was removed in 2019, which was followed by COVID-19 that disrupted overall global trade everywhere.

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