FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

The Impact of the COVID-19 Pandemic on Thailand's Agricultural Export Flows

Research Paper 4[1]
November 2021

Authors: Pasakorn Thammachote, Jirapa Inthisang Trochim

[1] The paper is an outcome of the STAAARS+ fellowship of the Food Security Policy Research, Capacity and Influences (PRCI) program of the USAID Feed the future initiative administered by Michigan State University, Cornell University and the International Food Policy Research Institute. This research is supported by the PRCI.

USAID FROM THE AMERICAN PEOPLE
INNOVATION LAB FOR FOOD SECURITY POLICY RESEARCH, CAPACITY, AND INFLUENCE (PRCI)
MICHIGAN STATE UNIVERSITY
INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI
Cornell University
ReNAPRI
UNIVERSITY OF GHANA
ISSER knowledge for Development
KU
RIS Research and Information System for Developing Countries
विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

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

This Research Paper series is designed to disseminate timely research and policy analytical outputs generated by the USAID-funded Feed the Future Innovation Lab for Food Security Policy Research, Capacity, and Influence (PRCI) and its Associate Awards and Buy-ins. The PRCI project is managed by the Food Security Group (FSG) of the Department of Agricultural, Food, and Resource Economics (AFRE) at Michigan State University (MSU) and implemented by a consortium of three major partners: the International Food Policy Research Institute (IFPRI), Cornell University, the Regional Network of African Policy Research Institutes (ReNAPRI), and the Institute for Statistical, Social, and Economic Research (ISSER) at the University of Ghana. The MSU consortium works with governments, researchers, and private sector stakeholders in Feed the Future focus countries in Africa and Asia to co-create a global program of research and institutional capacity development that will enhance the ability of local policy research organizations to conduct high-quality food security policy research and to influence food security policy more effectively while becoming increasingly self-reliant.

The papers are aimed at researchers, policy makers, donor agencies, educators, and international development practitioners. Selected papers will be translated into other languages.
Copies of all PRCI Research Papers and Policy Briefs are freely downloadable in pdf format from this link. Copies of all PRCI papers and briefs are also submitted to the USAID Development Experience Clearing House (DEC) at this link and to AgEcon Search.

STATEMENT OF SUPPORT

This research is made possible by the generous support of the American people through the United States Agency for International Development (USAID) through funding to the Feed the Future Innovation Lab for Food Security Policy Research, Capacity, and Influence (PRCI) under grant 7200AA19LE000001. The contents are the responsibility of the study authors and do not necessarily reflect the views of USAID or the United States Government. Published by the Department of Agricultural, Food, and Resource Economics, Michigan State University, Justin S. Morrill Hall of Agriculture, 446 West Circle Dr., Room 202, East Lansing, Michigan 48824, USA.

AUTHORS

Pasakorn Thammachote, Kasetsart University, Thailand
Jirapa Inthisang Trochim, Chiang Mai University, Thailand

Contact Author:
Pasakorn Thammachote,
Email: fecopot@ku.ac.th

AUTHORS' ACKNOWLEDGMENTS

The authors acknowledge support from the Feed the Future Innovation Lab for Food Security Policy Research, Capacity, and Influence (PRCI) supported by Michigan State University and the United States Agency of International Development (USAID). We would also like to thank Dr Suresh Babu, Xinshen Diao, and Adam Kennedy from International Food Policy Research Institute (IFPRI) for reviewing the draft and providing insightful comments that improved both its organization and content. Lastly, we wish to thank Thana Sumransart for his excellent research assistance

EXECUTIVE SUMMARY

The spread of COVID-19 has caused uncertainty in Thailand agricultural trade flows. This study makes a preliminary analysis to explore the impact of COVID-19 on Thailand's agri-food export flows.

- Over the past few decades, Thailand's exports have been shifting away from agricultural to manufacturing products. However, the agricultural and food product exports remain vital to Thailand's economy, and Thailand continues to be a net exporter of agri-food products.
- Approximately 40 percent of Thailand's agri-food products were exported to the country's major trading partners including China, Japan, and the United States of America. Agri-food exports to intra-Association of Southeast Asian Nation (ASEAN) countries' have also grown rapidly, while agricultural exports to other developed countries have been relatively stagnant in recent years.
- The composition of Thailand's top ten agri-food exports has barely changed in the past two decades. Most of the top ten agri-food products exported in the period of 1998-2008 are also among top ten products between 2009-2018. While Thailand increasingly exports many high-value processed agri-food products, natural rubber and rice continue to play a dominant role, and account for one-third of total agri-food exports in value.
- COVID-19 caused a disruption of the supply chain in the rubber industry in 2020. The lockdown measures in many countries led to a decline in world demand for natural rubber and both the value and volume of natural rubber exports from Thailand fell. Exports started to recover by the end of 2020 partly due to a surge in demand for medical gloves and relaxation of lockdown measures.
- COVID-19 temporarily boosted the world demand for Thai rice exports in the early stages of the outbreak, as Thailand briefly benefited from the temporally export restrictions imposed by other exporting countries. However, overall, Thai rice exports declined in 2020 mainly due to a strong Baht and high production costs that weakened Thailand's competitiveness in the world market.
- A drought in 2020 lowered sugar yields causing production to fall significantly while COVID-19 reduced demand because of the lockdown measures. Combined the supply and demand shocks led to the decline in Thailand sugar exports, from a modest growth of 2 percent in 2019 to the decline of 19 percent in 2020.
- The spread of COVID-19 caused a surge in demand for canned tuna, providing increased export opportunities for Thailand, which is an important exporter. However, this surge in the world market was caused by panic buying and it did not last long.
- Thailand is also an important exporter of processed chicken. Exports of processed chicken were negatively affected by COVID-19 due to the disruption of transport and logistic systems resulting in higher cost for trade.
- The contraction of crustaceans' exports can be attributed both to the lockdown and strong competition in world markets. In 2020, processed crustacean exports performed better than exports of fresh and frozen crustacean due to consumer preferences. However, crustacean

industries were badly affected overall due to the detection of a COVID-19 cluster in the fish market which led to strict regulation and closure of the market and distribution centers.

- Overall, processed fruit and vegetables export values increased in 2020 but export volume dropped with all major trading partners. People bought large quantities of shelf stable products such as rice and canned fish but reduced the purchase of processed fruit and vegetables.
- In conclusion, the impacts of COVID-19 on most important Thai agri-food export flows seem to be temporary as many factors leading to the surge or fall are short-lived. However, there is the possibility of increases in COVID-19-related non-tariff barriers (NTB) that originated because of food safety concerns and production standards. Small and medium exporters are likely to be most affected due to limited resources. Food safety concerns and production standards also affect upstream suppliers, small farmers, and fishers. Such NTBs can have longer term impacts on the prospects of post-COVID Thailand agri-food exports.
- The changing world demand for agri-food products and potential new TBs could possibly have profound impact on Thai agri-food export flows in the future. Exporters, governments, and international organization need to work together to keep a balance between public health concerns and business operation efficiency. Promoting trade facilitation while ensuring food safety measures to safeguard public health would help Thailand gain more from exports.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AFRE	Department of Agricultural, Food, and Resource Economics
ATIGA	ASEAN Trade in Goods Agreement
ASEAN	Association of Southeast Asian Nation
FAO	Food and Agriculture Organization
FSG	Food Security Group
ISSER	Institute for Statistical, Social, and Economic Research, University of Ghana
IFPRI	International Food Policy Research Institute
MSU	Michigan State University
NESDC	National Economic and Social Development Council, Thailand
PRCI	Policy Research, Capacity, and Influence
ReNAPRI	Regional Network of African Policy Research Institutes
TSR	Technically Specified Rubber
WTO	World Trade Organization
AFRE	Department of Agricultural, Food, and Resource Economics
ATIGA	ASEAN Trade in Goods Agreement
ASEAN	Association of Southeast Asian Nation
FAO	Food and Agriculture Organization
FSG	Food Security Group
ISSER	Institute for Statistical, Social, and Economic Research, University of Ghana
IFPRI	International Food Policy Research Institute
MSU	Michigan State University
NESDC	National Economic and Social Development Council, Thailand
PRCI	Policy Research, Capacity, and Influence

INTRODUCTION AND MOTIVATION

The COVID-19 pandemic has caused countries to lockdown in order to contain the spread of the virus and save lives, but it has also caused a global economic slowdown. The World Bank estimates that global GDP in 2020 reduced by 5.2%.

There are a wide range of sectors that experienced disruption in trade and investment. Maliszewska, Mattoo, and Mensbrugghea (2020) estimated that COVID-19 caused GDP to decrease by approximately 2.5 percent for developing countries and 1.8 percent for industrial countries. As of October 6, 2020, The World Trade Organization (WTO) estimated that the volume of merchandise trade would decline by 9.2 percent in 2020 due to COVID-19 (WTO, 2020). Agriculture products would be greatly affected with fresh and high-value perishable products transported by air impacted the most.

The Asian Development Bank (ADB) estimated that the COVID-19 outbreak decreased economic growth of developing Asia by 0.7 percent and Southeast Asia by 3.8 percent (September update). This is the first time that this region experienced economic contraction since the 1997 Asian Financial Crisis. Thailand is one of the countries hit hardest by COVID-19 with the Thai economy expected to contract by 8.0 percent in 2020 (ADB 2020).

The spread of COVID-19 has caused global trade to plunge (ADB, 2020). The office of the National Economic and Social Development Council (NESDC) estimated that COVID-19 and its lockdown caused Thailand's GDP to drop sharply in 2020 by 6.2%. Exports of goods and services declined by 17.6% in US dollar terms due to weak demand from major trading partners and disrupted global supply chains. This paper employs the BACI dataset and Thailand's Ministry of Commerce trade data to explore the impact of COVID-19 on Thailand agriculture exports by identifying what are the major agricultural export products that expanded or contracted during the spread of COVID-19.

LITERATURE REVIEW

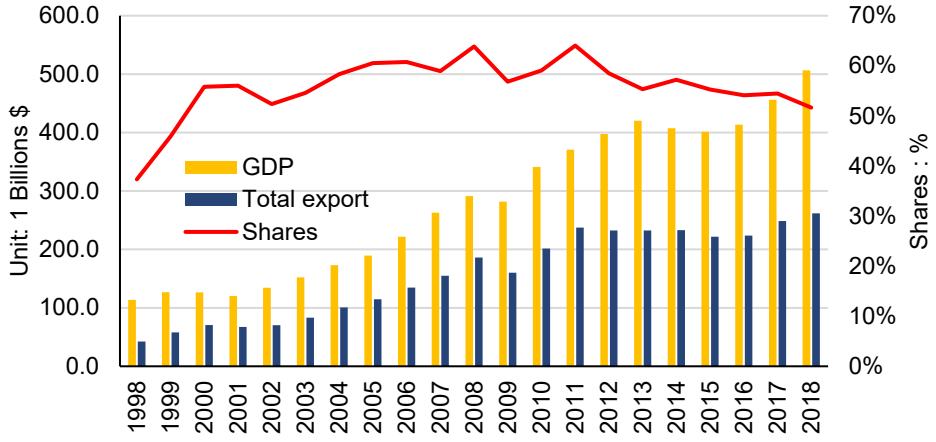
Many countries depend on agriculture for much of their export earnings, but this high degree of dependency exposes them to external shocks. The Food and Agriculture Organization (FAO) study of food security in Asia-Pacific during COVID-19 found that the lockdown measures had led to logistic problems in transporting goods overseas and, in some cases, policy responses such as export restrictions (FAO, 2020). However, there is no study examining the impacts of COVID-19 on Thailand's agricultural exports flows. Only a few studies explore qualitatively the challenges Thailand's agriculture exports have faced during the COVID-19 pandemic and the impact of COVID-19 on agricultural trade is uncertain. Much depends on how long the economic downturn will be and how quickly Thailand can recover.

Cao, Li and Wang (2020) attempt to provide preliminary analysis on the impact of the COVID-19 on China's agricultural trade finding that China's agricultural exports have been negatively affected only in the short term due to the disruption of the supply chain. Xi and Zhang (2020) investigated the impact of COVID-19 on agricultural export companies in China and found that on average agricultural businesses as had experienced a decline in exports. Exports of staple food remain unaffected while fungus and horticultural products sharply decreased. Lastly, Australia's Department of Agriculture, Water, and the Environment (2020) found that Australia's agricultural trade has by and large continued unhindered by the COVID-19 pandemic. Only a few sectors which are closely related to food services and reliant on-air freight experience some significant disruption. COVID-19 can still have an impact on agriculture exports since the world demand remains weak.

OVERVIEW OF THAILAND's AGRI-FOOD EXPORTS

Thailand has transformed from an agricultural economy to an industrialized one. A policy shift from import substitution to export orientation made exports a key driver of economic growth that now accounts for more than 50% of GDP. The average GDP share from exports rose from an average of 55% between 1998-2008 to an average of 57% between 2009-2018 (Figure 1). Thailand's increasing dependence on exports was more pronounced after the 1997 Asian Financial Crisis. Due to the depreciation of the local currency during 2002-2008, Thailand experienced a prolonged episode of export expansion. During the 2009 global financial crisis, exports dropped briefly before bouncing back as a result of the rapid growth of China's economy that lasted until 2019.

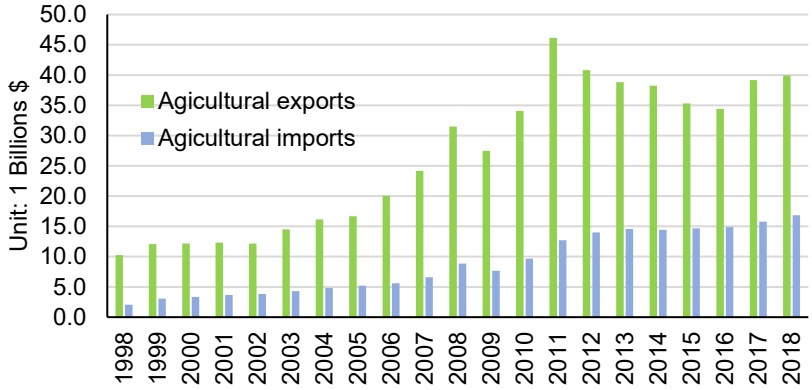
Figure 1 Thailand's GDP and total exports, 1998 to 2018, current billions USD



Source: Authors' calculation shares of total export from BACI (2018); GDP from World Bank (2021)

Thailand has remained a net exporter of agriculture products since 1998 (Figure 2). Since 1998, both agricultural export and imports have increased, but at different rates. From 2000 until 2010 the rate of growth of exports was far greater than that of imports. Since 2011, the value of exports has decreased slightly, though overall remained relatively steady. During this same period, agricultural imports increased gradually.

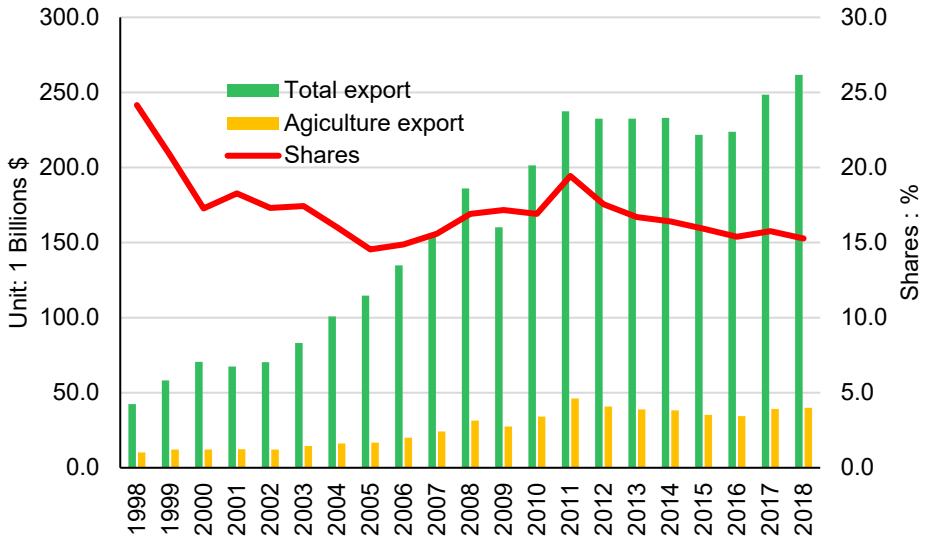
Figure 2 Thailand's agri-food exports and imports, 1998 to 2018



Source: Authors' calculation from BACI (2018)

Thailand's exports have increasingly shifted away from agricultural products toward manufacturing products over the past few decades (Figure 3). Thailand's agricultural exports increased between 1998 and 2018 but the growth rate of other exports has been faster. The share of agriculture exports in total exports fell from 24% in 1998 to 15% in 2018.

Figure 3 Thailand's percentage share of Agri-food exports to total export, 1998 to 2018



Source: Authors' calculation from BACI (2018)

Thailand's agricultural products are exported all over the world. Approximately 40 percent of Thailand's agricultural products were exported to major trading partners such as China, Japan, and the United States of America (Table 1). Between 2009-2018, Japan was the largest export destination for agriculture products. However, since 2019, China has become the largest agricultural export

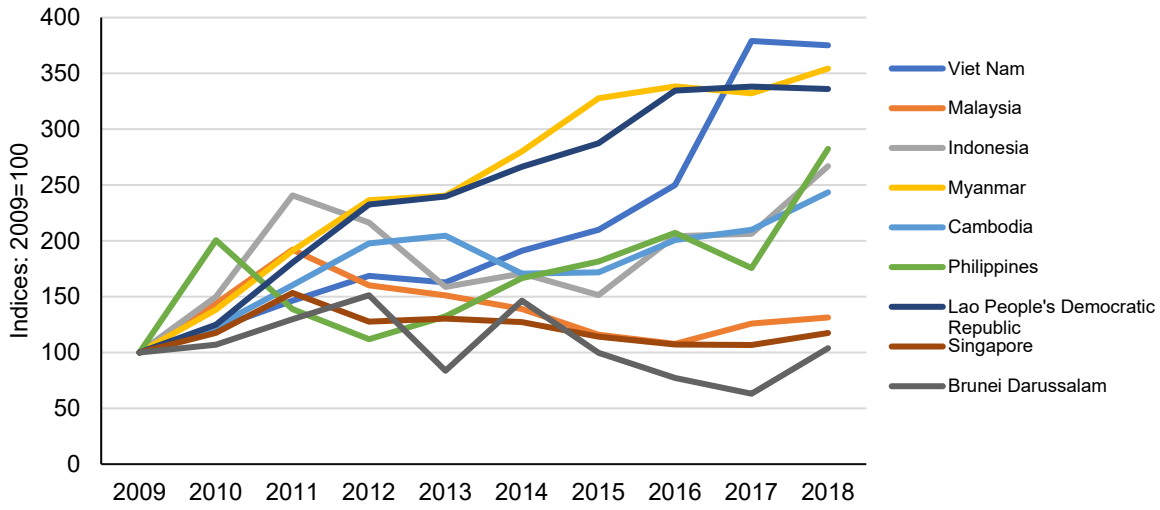
market. During 2009-2018, Thailand exported approximately 15 percent of its agriculture products to China while the figure was only 7 percent a decade earlier. In contrast, Thailand's agricultural export to Japan and the US had fallen from 18 to 13 percent and from 16 to 11 percent, respectively. However, US and Japan remain key trading partners.

Table 1 The major partner importing Thailand's agri-food export, 1998 to 2008 and 2009 to 2018

	Average Agri-food export (1 Million USD)		Share in total agri-food exports (%)	
	1998-2008	**2009-2018**	**1998-2008**	**2009-2018**
ASEAN	2,702.9	8,126.0	16%	22%
- Malaysia	1,002.0	1,929.1	6%	5%
- Viet Nam	203.3	1,257.9	1%	3%
- Indonesia	463.5	1,201.7	3%	3%
- Myanmar	140.6	936.2	1%	3%
- Cambodia	187.5	890.0	1%	2%
China	1,211.2	5,602.6	7%	15%
Japan	2,920.6	4,862.8	18%	13%
United States of America	2,606.9	3,966.8	16%	11%
United Kingdom	486.9	1,092.4	3%	3%
Korea, Rep. of Korea	448.2	1,032.1	3%	3%

Source: Authors' calculation from BACI (2018)

Figure 4 Agri-food export partners within ASEAN between 2009-2018

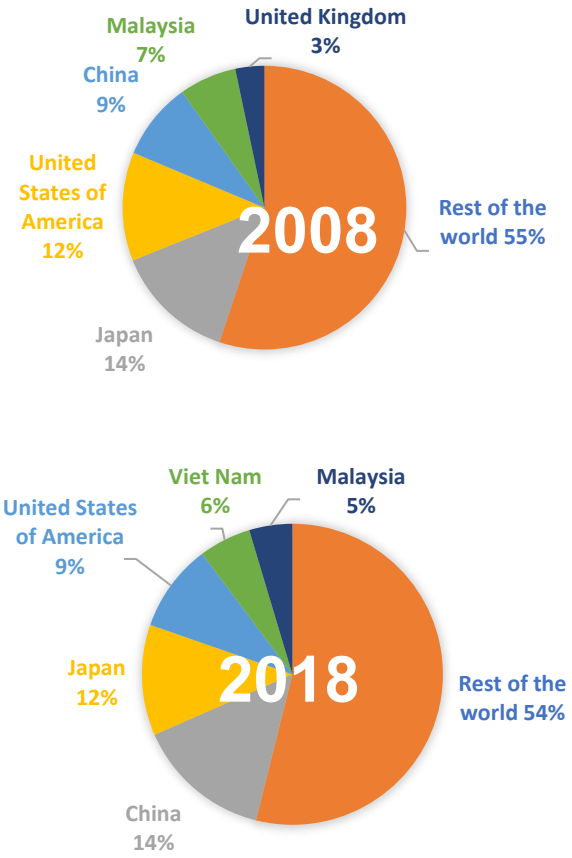


Source: Authors' calculation from BACI (2018)

Agricultural exports to ASEAN countries have grown the fastest. Between 1998 – 2008 the share of agricultural exports to ASEAN countries was 16%. Between 2009-2018 this share increased to 22%. Within ASEAN, Malaysia, Vietnam and Indonesia are the primary export destinations. However, trade with Malaysia has not grown much and instead, Vietnam, Myanmar and Laos have increased as export destinations (Figure 4).

Figure 5 compares the agricultural export destination in 2008 and 2018. In 2008, Japan was the primary destination for agricultural exports from Thailand, followed by United States and China. In 2018, China was ranked number one in Thailand's agricultural export destination, followed by Japan and US. In recent years, Vietnam has become a key agricultural trading partner of Thailand.

Figure 5 Thailand's major agri-food trading partners in 2008 and 2018



Source: Authors' calculation from BACI (2018)

The top ten Thai agri-food exports are shown in Table 2. This includes natural rubber, rice, sugar, prepared and preserved meat, fish, and seafood, root and tubes, and prepared and preserved fruit. Over the past two decades, the composition of the top ten has changed slightly, though it has been dominated by natural rubber and rice. Their combined export shares accounted for about one-third of total agri-food exports (32%).

Thailand has a number of processed agri-food products in the top 10 list. Prepared and preserved foods accounts for one-fifth of Thailand's agri-food exports (Table 2). The development of these industries dates back to the 1960s when Thailand drafted its first National Economic and Social Development Plan. Within this strategy, the government emphasized the food industry as a means to increase the value of cheap and abundant agricultural goods while taking advantage of relatively cheap labor wages.

Table 2 Thailand's top ten agri-food export commodity between 1998 to 2008 and 2009 to 2018

Commodity (HS4 code)	Rank		Average export (1 Million USD)		Share in total Agri-food exports (%)	
	1998-2008	2009-2018	1998-2008	2009-2018	1998-2008	2009-2018
Natural rubber	1	1	2,985.9	6,912.1	18%	18%
Rice	2	2	2,558.6	5,192.0	15%	14%
Cane or beet sugar	6	3	836.3	2,894.6	5%	8%
Prepared or preserved fish	3	4	1,263.3	2,851.6	8%	8%
Prepared or preserved meat	7	5	684.3	2,245.2	4%	6%
Prepared or preserved crustacean	5	6	1,123.5	1,407.2	7%	4%
Fresh chilled crustacean	4	7	1,241.9	1,258.4	8%	3%
Animal feed	9	8	402.3	1,152.3	2%	3%
Manioc, arrowroot etc.	11	9	364.8	1,135.4	2%	3%
Prepared or preserved fruit	8	10	568.1	1,025.7	3%	3%
Total (Top ten)			12,029.0	26,074.5	72%	70%

Source: Authors' calculation from BACI (2018)

Most of Thailand's top-10 agri-food exports had declined in both value and volume in recent years, even before the COVID-19. This is due in part to the worldwide economic slowdown2 and the trade tension between China and the United States.Also, between 2016 and 2018, the baht appreciated by about 10%, reducing the comparative price advantage that Thailand maintained in agricultural exports. In 2018, the value of natural rubber, manioc and arrow root, crustaceans, and fruit exports decreased between 9% and 24% while their volume decreased between 4% and 38% (Table 3 and Table 4).

After the outbreak of COVID-19, animal feed, root and tubers, and prepared and preserved tunas and fruit experienced positive growth. On the other hand, some commodities such as sugar and preserved meat experienced negative growth though their growth had been positive the year prior. For other commodities such as rubber, rice and fish and shrimp, the pattern of negative growth was only worsened by COVID-19.

[2] The growth rate of world GDP dropped from the average of 3.29 percent to 2.57 percent between 1998 – 2008 and 2009-2018, respectively. Low economic growth in the latter was partly due to the 2009 global financial crisis.

Table 3 Thailand's growth of top ten agri-food export by value between 2018, 2019 and 2020

Commodity	2018		2019		2020	
	Value (1 million USD)	% Growth	Value (1 million USD)	% Growth	Value (1 million USD)	% Growth
Natural rubber	4,602.118	-24%	4,142.444	-10%	3,525.076	-15%
Rice	5,675.646	9%	4,207.420	-26%	3,727.231	-11%
Sugar	3,056.206	11%	3,112.109	2%	1,789.165	-43%
Prepared or preserved tunas	2,274.669	9%	2,185.374	-4%	2,373.063	9%
Prepared or preserved meat	2,431.221	8%	2,594.227	7%	2,435.040	-6%
Prepared or preserved crustacean	909.281	-14%	826.011	-9%	796.349	-4%
Fresh chilled crustacean	1,061.540	-9%	994.937	-6%	780.439	-22%
Animal feed	1,601.681	15%	1,670.169	4%	1,982.074	19%
Manioc, arrowroot etc..	902.591	-17%	531.133	-41%	701.189	32%
Prepared or preserved fruit	898.593	-10%	902.766	0%	918.254	2%

Source: Authors' calculation from Thailand's Ministry of Commerce (2021)

Table 4 Thailand's growth of top ten agri-food export by volume between 2018, 2019 and 2020

Commodity	2018		2019		2020	
	Volume (tonnes)	% Growth	Volume (tonnes)	% Growth	Volume (tonnes)	% Growth
Natural rubber	3,525,639	-4%	3,149,453	-11%	2,663,738	-15%
Rice	11,232,176	-4%	7,583,662	-32%	5,724,660	-25%
Sugar	9,253,023	57%	9,951,551	8%	5,493,497	-45%
Prepared or preserved tunas	514,525	5%	532,880	4%	582,690	9%
Prepared or preserved chicken	560,432	5%	589,967	5%	546,192	-7%
Prepared or preserved crustacean	85,806	-14%	80,943	-6%	76,045	-6%
Fresh chilled crustacean	121,127	-10%	116,718	-4%	94,246	-19%
Animal feed	733,090	3%	754,579	3%	849,365	13%
Manioc, arrowroot etc.	4,014,373	-38%	2,426,357	-40%	3,086,004	27%
Prepared or preserved fruit	679,527	-7%	597,760	-12%	503,048	-16%

Source: Authors' calculation from Thailand's Ministry of Commerce (2021)

IMPACT OF COVID-19 ON THE SELECTED BY AGRICULTURAL COMMODITIES

Natural rubber

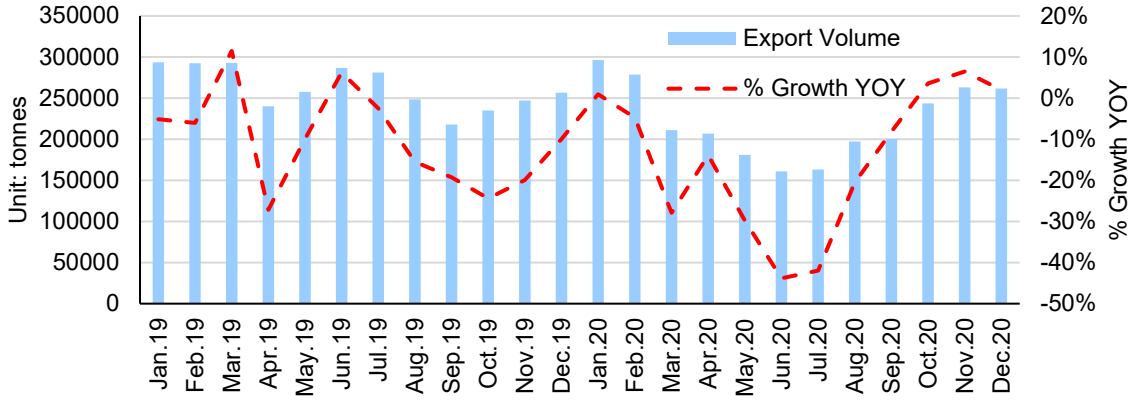
Thailand is the world largest producer of natural rubber (HS 4001). In 2020, total dried rubber annual production was 4.68 million tons which accounted for more than one-third of world production. Recently, the production of natural rubber has been affected by several factors such as leaf fall disease, floods, and unfavorable weather resulting in yield losses. COVID-19 has made this situation worse by causing a shortage of harvesting labor, though overall production increased due to harvested area expansion. COVID-19 has also impacted the rubber industry by reducing the demand globally for natural rubber as automobile factories shut down lowering the demand for tires.

Export volume of natural rubber fell from 296,348 tonnes in January 2020 to 278,625 tonnes in February 2020 and continued to fall to 160,932 tonnes in June 2020 (Figure 6). The average price of natural rubber Ribbed Smoked Sheet No.3 (RSS3) dropped from 160.3 U.S. dollar per 100 kilogram in January 2020 to 136.2 U.S. dollar per 100 kilogram in April 2020 before starting to rise until the end of 2020. The price of Technically Specified Rubber (TSR) and latex followed the same trend. The fall in rubber price in the first quarter of 2020 was consistent with the fall in world crude oil price as a result of concerns over weak demand after the spread of COVID-19 (Figure 7).

More than 80 percent of natural rubber production in Thailand is exported to the world market. China (21%), Malaysia (11%), USA (4%), Japan (4%) and South Korea (2%) are among the top five major trading partners (Figure 8). In 2020, natural rubber exports declined in most countries with the volume of exports to China, Japan, and USA, declining by 20%, 22%, and 25% respectively (Figure 9). Exports of natural rubber to China rose in January and February and began to fall from March to September 2020. The most significant drop was 74% in June 2020. In July, it was still very high at 66% before starting to recover and turn positive in the last quarter of 2020. Natural rubber exports from Thailand to the USA fell in volume every month in 2020 with the most significant drops occurring in April and August 2020 (Figure 9).

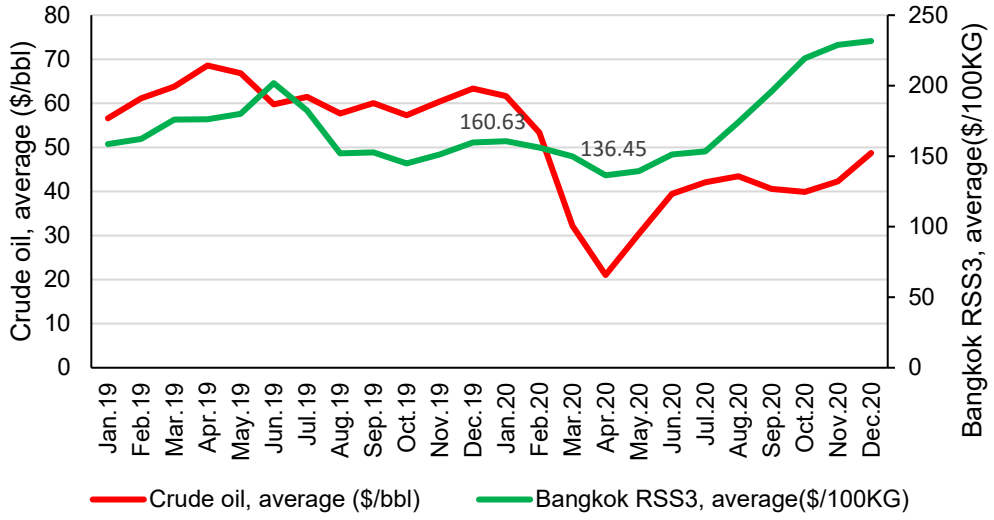
COVID-19 has led to a decline of Thai natural rubber exports both in value and volume. The decline of exports started at the beginning of 2020 and continued until the third quarter. The export of natural rubber started to recover in the last quarter of 2020 partly due to the surge in demand for high quality latex used in medical glove and the relaxation of the lockdown measures. With this, the recovery of rubber exports in 2021 is expected.

Figure 6 Percentage growth of natural rubber's export volume



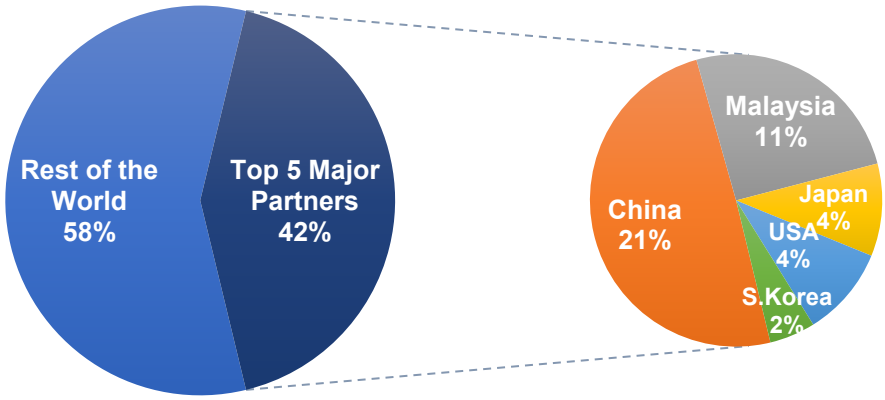
Source: Ministry of Commerce (2021)

Figure 7 Price of natural rubber (RSS3) and price of crude oil



Source: Ministry of Commerce (2021)

Figure 8 Import partner shares of major natural rubber from Thailand in 2020, by volume



Source: Ministry of Commerce (2021)

Figure 9 Percentage growth of natural rubber's export volume by major partner countries

Export Partner	% Growth in	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20	% Growth in
China	-18%	56%	-7%	-43%	-4%	-35%	-74%	-60%	-22%	-15%	11%	7%	7%	-20%
Malaysia	-10%	-12%	14%	-8%	-9%	-14%	27%	6%	14%	26%	22%	5%	-10%	4%
Japan	-7%	-10%	-21%	-33%	-3%	-24%	-35%	-70%	-52%	-41%	-26%	80%	27%	-22%
USA	13%	-31%	-26%	7%	-56%	-16%	2%	-48%	-59%	-42%	-15%	2%	-6%	-25%
South Korea	-9%	-26%	-2%	-40%	12%	-27%	-11%	-13%	-4%	-22%	-14%	-19%	0%	-15%
Total Export	2,354,573	232,793	205,803	147,847	155,002	140,855	124,755	122,814	150,301	145,568	181,973	209,439	200,720	2,017,870
World Total Export	3,149,453	296,348	278,625	211,136	206,737	180,889	160,932	163,131	197,358	200,173	243,551	263,119	261,737	2,663,738

Source: Ministry of Commerce (2021)

Rice

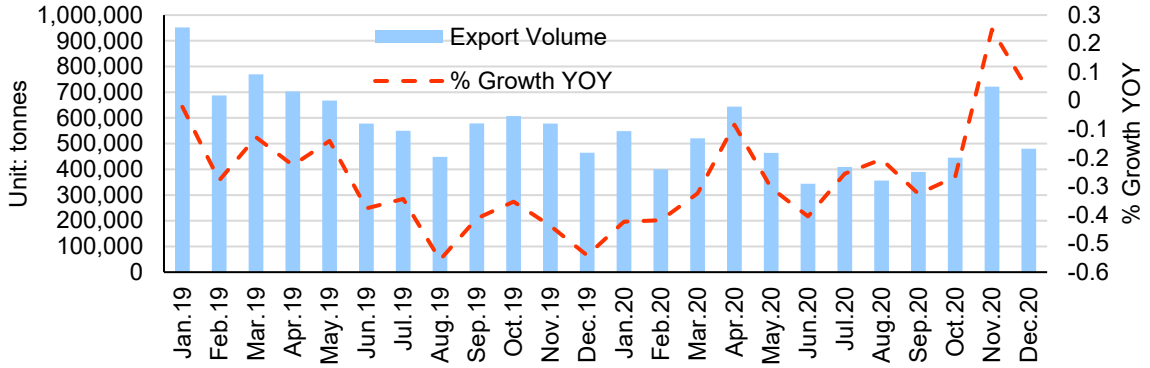
The spread of COVID-19 added an additional level of uncertainty in the global rice market making it more volatile. Importing countries sought more rice to build their reserve as they were unsure how the pandemic would impact supply. On the other hand, exporting countries also limited exports in an effort to protect their own citizens should the need arise.

Thailand is the world's third largest rice exporter. In 2020, Thai rice exports experienced their lowest export volumes in two decades due to Baht appreciation and increased costs of production that reduced Thailand's competitiveness in the world market. In response to the excess supply of rice in the domestic market that drove the price down, the government implemented price guarantee scheme in October 2019. The price scheme helped to ensure remunerative prices to farmers, but also increased the domestic price of rice well above world prices. In 2020, Thailand exported a total of 5.5 million tonnes of rice (HS 1006), down 14.9% from the year before.

At the beginning of the outbreak amid concerns over COVID-19, Thailand rice exports increased briefly as many countries, including rice exporting countries such as Vietnam, Myanmar, and Cambodia, imposed export restrictions and increased their rice reserves. Vietnam requested that exporters maintain 5% minimum circulation reserve. Myanmar requested exporters to reserve 10% of rice export for emergencies. Cambodia also banned rice exports temporary. Because of these, exports of Thai rice increased from 548,957 tonnes in January 2020 to 643,877 tonnes in April 2020 (Figure 10).

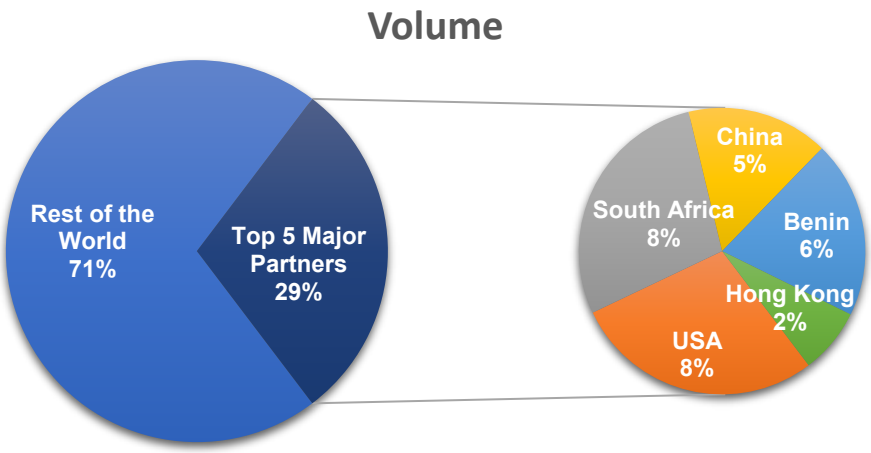
Thailand's major trading partners for rice are USA (8%), South Africa (8%), Benin (6%), China (5%), and Hong Kong (2%) (Figure 11). COVID-19 temporarily boosted demand for Thai rice in the second quarter of 2020 but, overall, the surge in rice demand in 2020 was short lived as exporting countries eventually relaxed their export restrictions and importing countries stopped hoarding rice stocks. Another short-lived surge in exports of Thai rice in November 2020 was due mainly to the rice demand for New Year holidays. Compared with 2019, rice export volumes fell by 23% (Figure 12). The overall decline is due to exports to Benin (which are destined for Nigeria) and China. While Thai rice is competitive in US and Chinese markets, in African market, it has to compete with exports from Vietnam and China, which are lower quality and thus have a price advantage.

Figure 10 Percentage growth of the rice's export volume



Source: Ministry of Commerce (2021)

Figure 11 Shares of major rice import partner from Thailand in 2020, by volume



Source: Ministry of Commerce (2021)

Figure 12 Percentage growth of rice's export volume by major partner countries

Export Partner	% Growth in 2019	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20	% Growth in 2020
USA	11%	-10%	2%	63%	101%	57%	15%	-9%	7%	-1%	-19%	19%	20%	20%
South Africa	-7%	-18%	-31%	19%	-1%	-20%	-30%	-20%	20%	-21%	-16%	39%	42%	-7%
China	-53%	-62%	-44%	-48%	-16%	-34%	-73%	-40%	-31%	-26%	-1%	15%	38%	-19%
Benin	-37%	-94%	-97%	-95%	-83%	-92%	-89%	-37%	136%	46%	12%	2516%	2188%	-55%
Hong kong	-10%	-17%	60%	-18%	99%	4%	-15%	-41%	-26%	-10%	10%	0%	3%	3%
Total Export	2,994,368	128,736	140,689	171,480	236,373	163,541	123,993	174,223	173,500	193,615	235,020	381,158	255,873	2,378,201
World Total Export	7,583,662	550,318	400,184	520,501	643,878	463,780	344,083	409,451	364,558	390,258	445,144	721,779	480,104	5,734,038

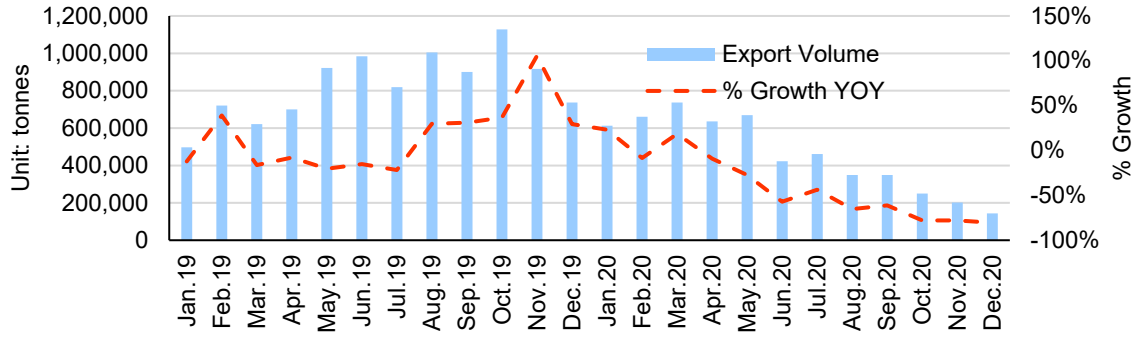
Source: Ministry of Commerce (2021)

Sugar

Thailand is the second largest sugar exporting country after Brazil. Thai Sugar exports declined in 2020 (HS 1701) mainly caused by drought resulting in a decline in production (Figure 13). Thailand's sugar exports decreased from 9.72 million tonnes to 5.90 million tonnes in 2020 (a 39.3% decline) compared to the previous year. The impact of COVID-19 temporarily lowered the demand for sugar due to lockdowns and travel bans though in the long run, factors such as the world economic recovery, weather conditions, and oil prices are more relevant to determine the outlook of Thai sugar exports.

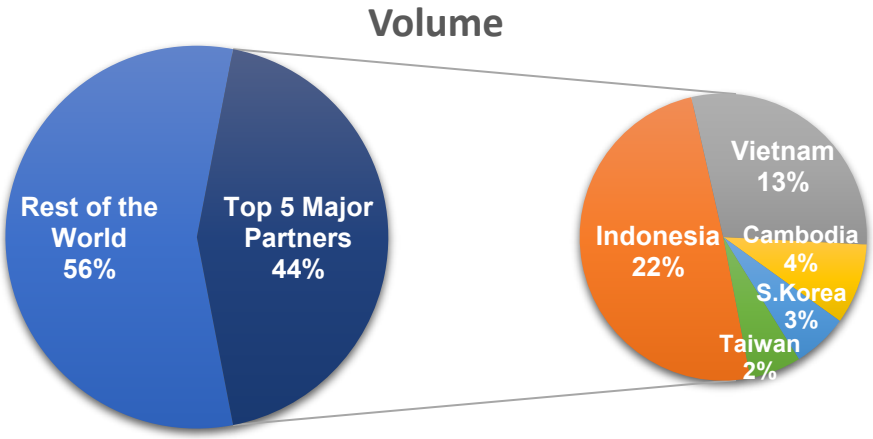
The major trading partners for Thai sugar were Indonesia (22%), Vietnam (13%), Cambodia (4%), South Korea (3%), and Taiwan (2%) in 2020 (Figure 14). In most countries export volumes declined by 40-68% except for Vietnam which greatly expanded its imports (Figure 15). In January 2020, Vietnam adopted the ASEAN Trade in Goods Agreement (ATIGA) for sugar resulting a lower tariff rate to 5%. Since then, Thai sugar exporters had benefited from competitive price advantage, which led to a surge in Thai sugar export to Vietnam.

Figure 12 Percentage growth of sugar's export volume



Source: Ministry of Commerce (2021)

Figure 13 Shares of major sugar import partner from Thailand in 2020, by volume.



Source: Ministry of Commerce (2021)

Figure 14 Percentage growth of sugar's export volume by major partner countries

Export Partner	% Growth in 2019	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20	% Growth in 2020
Indonesia	2%	56%	-17%	3%	7%	-13%	-41%	-14%	-71%	-51%	-99%	-87%	-98%	-39%
Vietnam	51%	58%	2049%	1094%	1807%	457%	244%	504%	103%	388%	335%	79%	86%	335%
Cambodia	11%	108%	58%	73%	-76%	-58%	-60%	-54%	-39%	-57%	-63%	-73%	-75%	-45%
South Korea	38%	15%	-39%	-10%	-90%	-83%	-92%	-90%	-86%	-85%	-93%	-62%	-79%	-68%
Taiwan	-24%	218%	77%	-40%	-48%	-77%	-86%	-10%	-33%	-73%	-87%	-31%	-73%	-50%
Total Export	5,828,335	462,056	554,270	567,751	519,466	595,371	328,136	365,908	245,725	261,592	183,762	133,950	86,503	4,304,491
World Total Export	9,951,551	613,137	661,979	736,650	641,904	669,683	422,679	470,053	348,858	349,200	249,811	204,210	143,827	5,511,993

Source: Ministry of Commerce (2021)

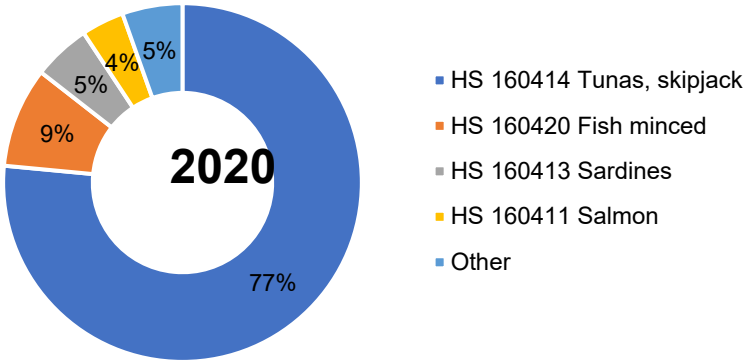
Prepared or preserved tuna

Thailand is one of the world's major exporters of canned tuna despite not having large fishing fleets to catch tuna which is a deep ocean water fish. Locational advantage and long establishment of business networking allow Thai entrepreneurs to access high quality raw material from various sources such Japan and Myanmar and even farther sources from Spain and Mexico, showcasing Thailand's ability to diversify its agri-food exports beyond primary agricultural products.

In 2020, Thailand exported 582,690 tonnes of prepared and preserved tuna totalling 2,373 million USD, an increase of about 9% from the year prior (Table 4). This contributes approximately 77% of prepared and preserved fish exports (Figure 16). The COVID-19 outbreak caused a surge in demand for canned tuna (HS 160414) as consumers avoided dinning out and increased panic buying of foods with a long shelf life. There were fluctuations in year-on-year growth of Thailand's tuna exports in 2019 and 2020 (Figure 17). The highest decline was in May 2020 at 10%.

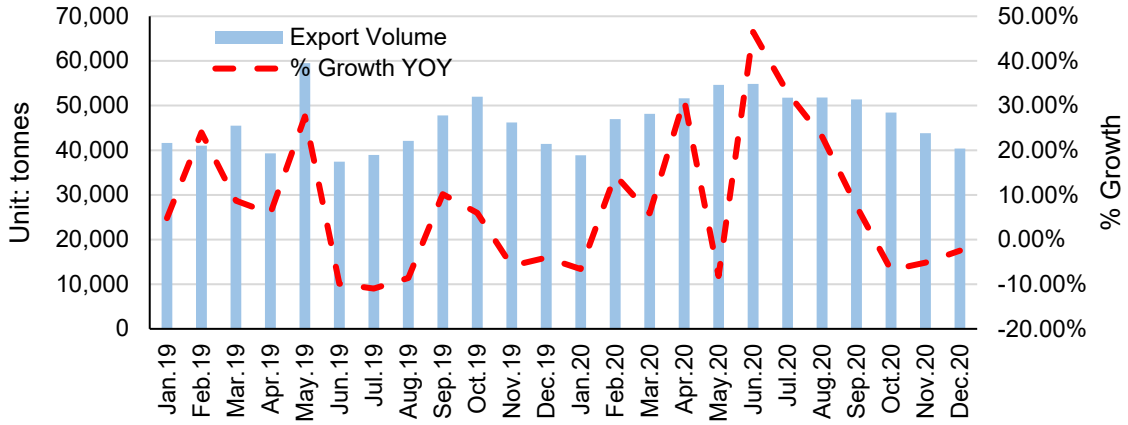
Thailand increased its exports of canned tuna to major trading partners including the USA (16%), Egypt (6%), Japan (5%), Australia (4%), and Saudi Arabia (4%) (Figure 18). Thailand's export of canned tuna to USA markets increased by 62% in volume--between January and July 2020, Thailand's tuna export growth reached its peak point in July where the total export were 14,032 tonnes increasing by 62% (Figure 19). As the pandemic wore on, the surge in the demand for canned tuna settled down.

Figure 16 Shares of prepared or preserved fish exports



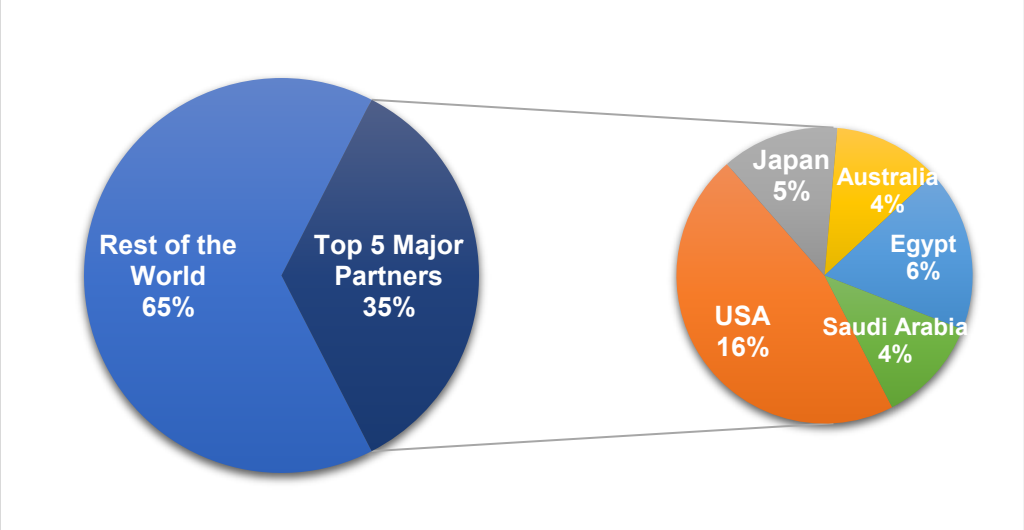
Source: Ministry of Commerce (2021)

Figure 17 Percentage growth of prepared or preserved tuna's export volume



Source: Ministry of Commerce (2021)

Figure 15 Partners' shares of prepared or preserved tuna imports from Thailand in 2020, by volume



Source: Ministry of Commerce (2021)

Figure 16 Percentage growth of prepared or preserved tuna's export volume by major partner

Export Partner	% Growth in 2019	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20	% Growth in 2020
USA	6%	29%	60%	35%	59%	54%	44%	62%	51%	32%	17%	5%	19%	37%
Japan	-10%	20%	26%	6%	24%	6%	37%	28%	-2%	-8%	-2%	-2%	30%	12%
Australia	-9%	-9%	0%	-14%	37%	49%	16%	-8%	-11%	-36%	-41%	-10%	13%	-3%
Egypt	-8%	-12%	3%	39%	63%	47%	89%	41%	16%	-11%	-27%	56%	24%	20%
Saudi Arabia	13%	-48%	1%	20%	-5%	-23%	34%	57%	145%	92%	-21%	212%	2%	17%
Total Export	255,381	20,783	24,525	25,053	27,263	28,358	28,371	27,136	26,686	27,349	26,116	26,524	24,375	312,540
World Total Export	532,880	38,884	46,956	48,158	51,640	54,652	54,863	51,774	51,799	51,379	48,444	43,809	40,388	582,745

Source: Ministry of Commerce (2021)

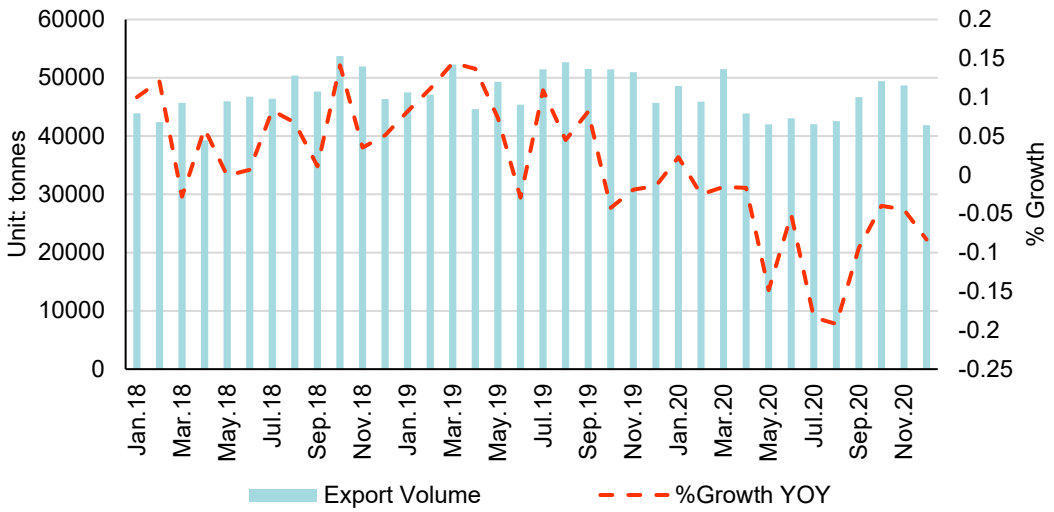
Prepared or preserved chicken

Thailand is among the top ten broiler producers in the world. About 65% of broilers produced are consumed domestically while the remaining portion is used as raw materials in the processed and frozen chicken industries. In the past, Thailand's export of chicken products was concentrated on frozen chicken, but the bird flu outbreak in 2002 caused food safety concerns worldwide ultimately leading Thai exporters to shift towards processed chicken. In 2020, about 61% of chicken exports is processed (HS 160232).

The spread of COVID-19 led to the closure of Thai processed chicken factories. It also disrupted transport and logistic systems resulting in higher costs and the shortage of shipping containers and increased freight fees negatively impacted the export of Thai processed chicken. In 2020, the export of processed chicken decreased by 6%. There were fluctuations in year-on-year growth of Thailand's chicken exports in the period 2018-2020 (Figure 20).

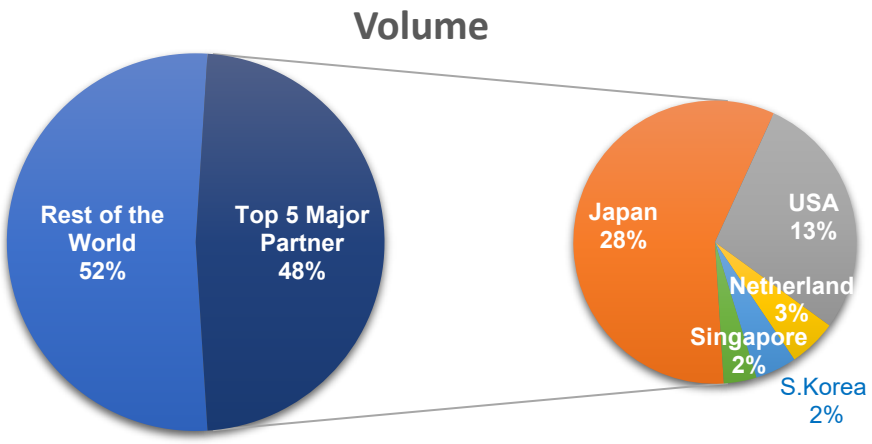
The major trading partners for processed chicken exports are Japan (28%), USA (13%), Netherlands (3%), South Korea (2%), and Singapore (2%) (Figure 21). In 2020, export volumes to the Netherlands fell by 22% and to South Korea by 21% compared to 2019. Exporters were hit the hardest between May and August 2020. The impact on exports to Japan, the largest market for Thai chicken, were modest (Figure 22). The return of export opportunities for processed chicken are anticipated because of Thailand's reputation for safe and sanitary chicken.

Figure 17 Percentage growth of prepared or preserved chicken's export volume



Source: Ministry of Commerce (2021)

Figure 18 Shares of prepared or preserved chicken exports from Thailand in 2020, by volume



Source: Ministry of Commerce (2021)

Figure 19 Percentage growth of prepared or preserved chicken's export volume by major partner

Export Partner	% Growth in 2019	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20	% Growth in 2020
Japan	5%	7%	4%	1%	19%	2%	5%	-11%	-21%	-9%	-3%	-1%	2%	-1%
USA	4%	na	na	na	na	na	na	na	na	na	na	na	na	-14%
Netherland	4%	-12%	-6%	-15%	-19%	-49%	-52%	-48%	-33%	-20%	-7%	5%	-2%	-22%
South Korea	22%	-14%	-7%	-26%	-25%	-37%	-17%	-17%	-35%	-14%	-20%	-28%	-2%	-21%
Singapore	2%	24%	-5%	10%	42%	5%	33%	5%	26%	15%	-29%	20%	-26%	9%
Total Export	377,710	31,857	29,153	34,245	30,769	29,520	28,674	27,779	27,033	29,952	32,592	32,943	27,576	362,093
World Total Export	589,967	48,593	45,915	51,489	43,883	42,005	43,057	42,036	42,550	46,684	49,429	48,686	41,900	546,225

Source: Ministry of Commerce (2021)

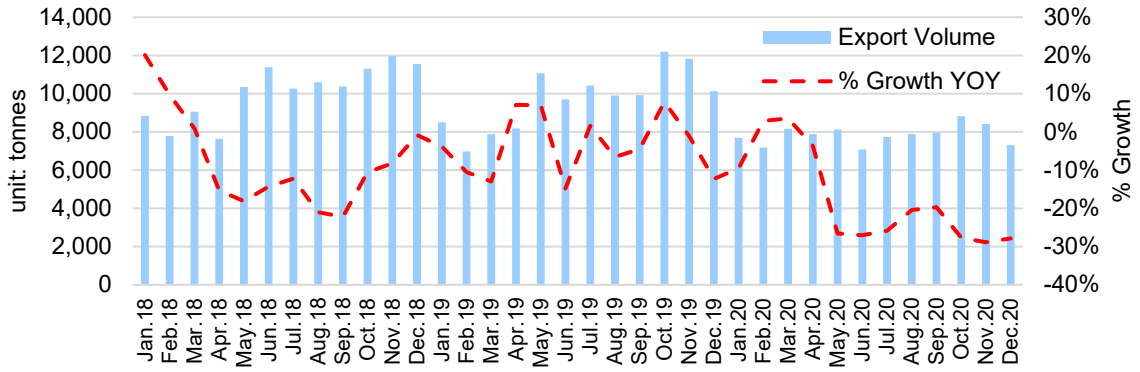
Fresh chilled and prepared crustacean

Thailand is the world third largest exporter of crustacean products (HS 0306 and 1605) mainly to China, USA, and Japan (Figure 24). However, in the past few years, Thailand has experienced a reduction in fresh chilled crustacean exports because of declines in catching, rising labor costs, and an early mortality syndrome in shrimp (Figure 23). Except with Taiwan, there was a decline in export volume growth with all major export partners in 2020 (Figure 25). The export volume of fresh, chilled, and frozen crustaceans declined by 19 percent in 2020 compared to 2018, driven mainly by these factors.

Still, the COVID-19 pandemic caused additional damage to the fisheries sectors due to the large number of COVID-19 cases found in one of the key fish markets in Thailand in Samut Prakarn province. The emergence of the COVID-19 outbreak within the seafood market sparked theories that COVID-19 was somehow linked to seafood consumption. Laos banned imports of crustacean products from Thailand due to a fear of contamination and exports slowed to major markets such as China and Hong Kong.

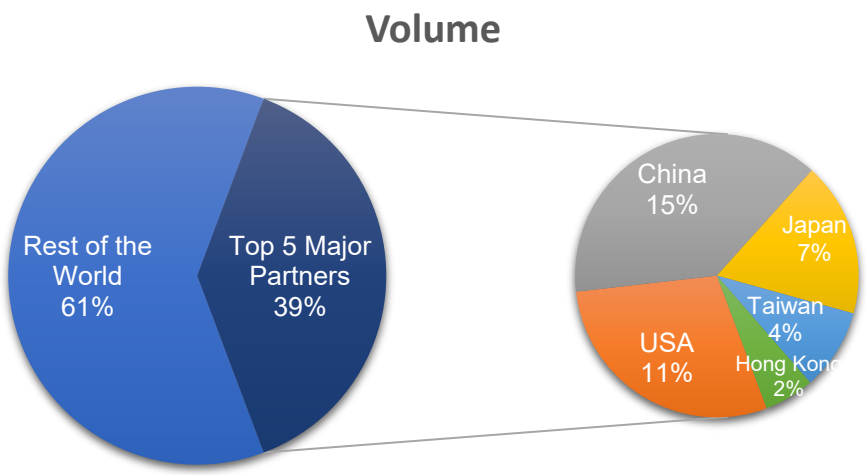
In contrast, export volumes of processed crustaceans declined only modestly by 6 percent. Processed crustacean exports have shown better prospects when compared with fresh, chilled, and frozen crustaceans due to changes in consumer behavior toward ready to eat products. While the recovery of fresh, chilled, and frozen crustaceans has been slow following the trend described above, processed crustaceans showed some recovery following the peak of COVID-19 and posted positive growth by the end of the year (Figure 26). Thailand mainly exports prepared crustacean to USA, Japan, and South Korea (Figure 27). In 2020, there was an increase in export volume growth with USA and South Korea (Figure 28).

Figure 20 Percentage growth of fresh chilled crustacean export volume



Source: Ministry of Commerce (2021)

Figure 21 Shares of major fresh chilled crustacean import partner from Thailand in 2020



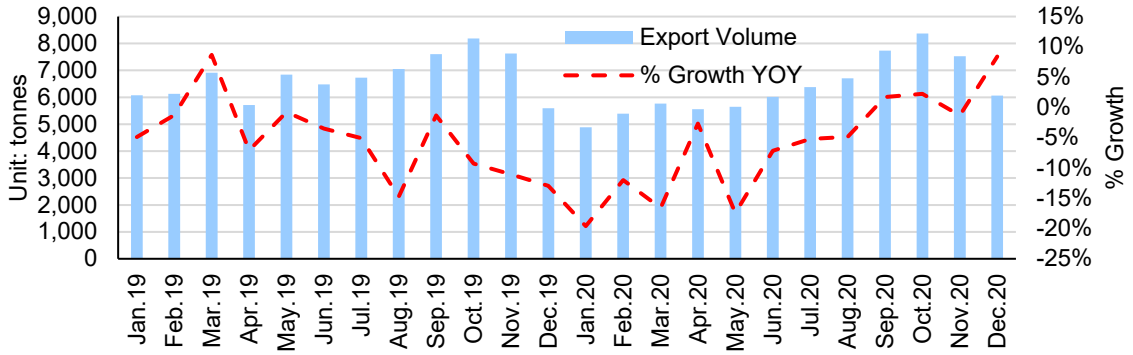
Source: Ministry of Commerce (2021)

Figure 22 Percentage growth of fresh chilled crustacean's export volume by major partner

Export Partner	% Growth in 2019	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20	% Growth in 2020
USA	-17%	-41%	-1%	6%	11%	-28%	33%	10%	-14%	-8%	-19%	-1%	13%	-5%
China	51%	-17%	-52%	-27%	-14%	-13%	-33%	-57%	-56%	-61%	-56%	-64%	-61%	-44%
Japan	-15%	-5%	-15%	-2%	-10%	-48%	-52%	-40%	-31%	-3%	-20%	-10%	22%	-21%
Taiwan	-25%	-43%	-12%	12%	95%	8%	9%	17%	-21%	23%	16%	9%	15%	10%
Hong Kong	-7%	-18%	-41%	-50%	-60%	-59%	-52%	-67%	-72%	-62%	-33%	-46%	-65%	-52%
Total Export	83,969	4,597	3,447	4,637	4,977	5,693	5,622	5,224	4,471	4,642	5,851	5,430	4,555	59,145
World Total Export	116,718	7,681	7,181	8,163	7,884	8,123	7,077	7,741	7,883	7,961	8,823	8,415	7,304	94,236

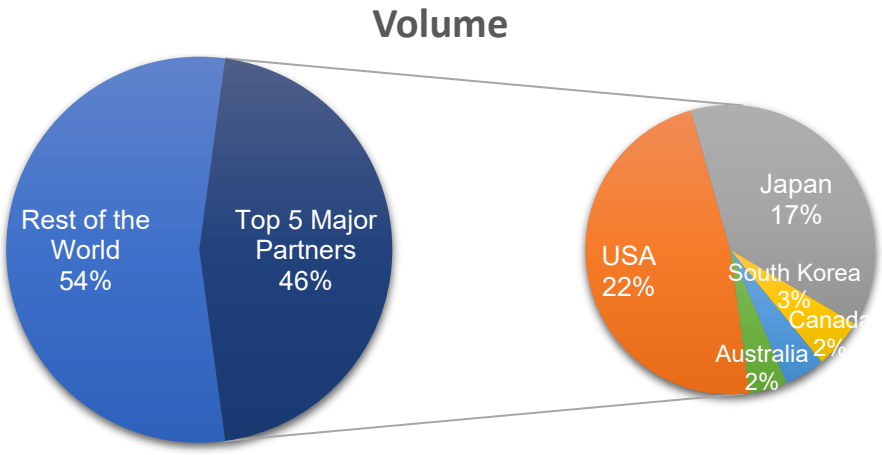
Source: Ministry of Commerce (2021)

Figure 23 Percentage growth of prepared crustacean's export volume



Source: Ministry of Commerce (2021)

Figure 24 Shares of major prepared crustacean import partner from Thailand in 2020



Source: Ministry of Commerce (2021)

Figure 25 Percentage growth of prepared crustacean's export volume by major partner

Export Partner	% Growth in 2019	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20	% Growth in 2020
USA	-12%	-22%	-16%	-3%	-4%	4%	24%	16%	14%	15%	12%	19%	19%	7%
Japan	-1%	-20%	-2%	-15%	9%	-32%	-16%	-15%	-25%	-8%	-12%	-18%	4%	-14%
South Korea	-5%	-33%	-1%	-11%	32%	26%	30%	5%	13%	12%	-10%	9%	32%	7%
Canada	19%	-18%	-30%	-23%	15%	-40%	-21%	-9%	-1%	4%	68%	-22%	75%	-4%
Australia	-16%	25%	8%	-4%	-40%	-47%	-26%	-5%	11%	-21%	11%	-27%	3%	-10%
Total Export	65,945	4,052	4,452	4,919	4,748	4,595	5,057	5,346	5,566	6,652	7,200	6,356	5,072	64,014
World Total Export	80,943	4,887	5,392	5,767	5,560	5,649	6,013	6,380	6,707	7,734	8,368	7,524	6,062	76,044

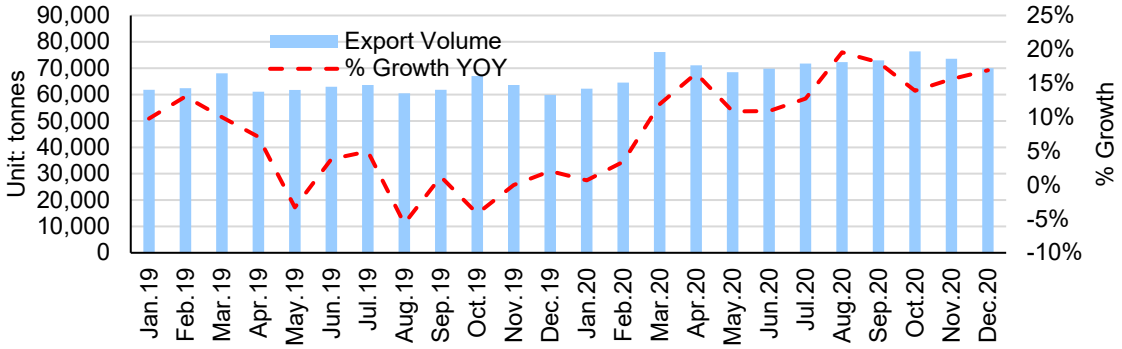
Source: Ministry of Commerce (2021)

Animal feed and pet food

Increasing pet adoption during the COVID-19 pandemic caused a strong surge in the demand for pet food. Thailand is the world's fourth-largest pet food (HS 2309) exporter. In 2020, the value of pet food exports increased by 19% while export volumes increased by 13% (Figure 29). Thai pet food exports have also benefited from tariff exemptions following the development of trade agreements.

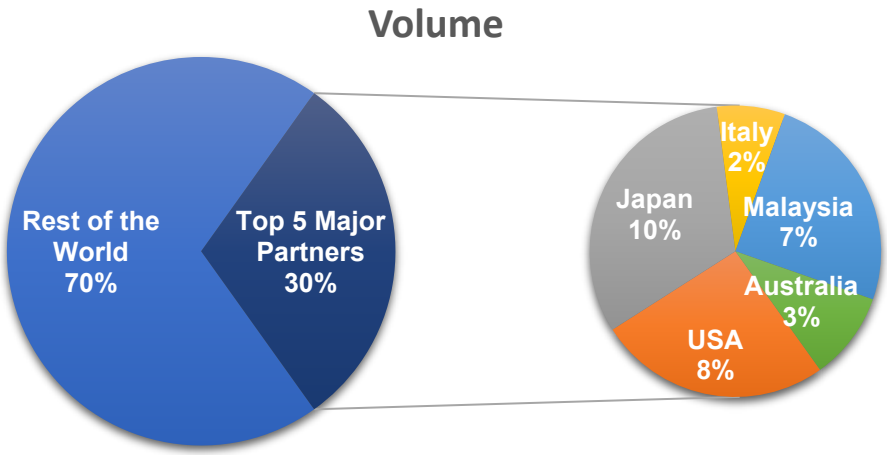
Thailand's major pet food trading partners are USA (10%), Japan (8%), Italy (7%), Malaysia (3%), and Australia (2%). Japan was the main trading partner in 2020 (Figure 30) though export volumes increased in all major partners (Figure 31). However, the impact of COVID-19 on pet food exports may not be long lived. As lower income countries continue to develop and countries urbanize, it is expected that there will be a longer-term increase in the number of pet owners thus improving the prospects of continued growth of the industry.

Figure 26 Percentage growth of animal feed and pet food export volume



Source: Ministry of Commerce (2021)

Figure 27 Shares of Thailand's major animal feed and pet food import partner in 2020



Source: Ministry of Commerce (2021)

Figure 28 Percentage growth of animal feed and pet food export value by major partner countries

Export Partner	% Growth in 2019	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20	% Growth in 2020
USA	-4%	2%	6%	17%	49%	32%	48%	22%	37%	14%	28%	26%	51%	27%
Japan	-6%	-12%	-8%	-7%	56%	2%	-2%	31%	4%	17%	-1%	-3%	9%	5%
Italy	6%	7%	-30%	-10%	32%	13%	24%	5%	25%	-4%	15%	98%	46%	15%
Malaysia	-3%	-10%	12%	-11%	31%	-3%	-12%	11%	0%	22%	9%	14%	15%	6%
Australia	17%	0%	-2%	27%	6%	-4%	-10%	-20%	20%	9%	15%	18%	27%	6%
Total Export	331,940	27,602	27,890	29,433	32,869	30,033	30,969	31,535	31,008	31,420	32,225	33,062	30,317	368,363
World Total Export	754,579	62,246	64,532	76,146	71,120	68,466	69,851	71,765	72,318	73,010	76,374	73,568	69,982	849,377

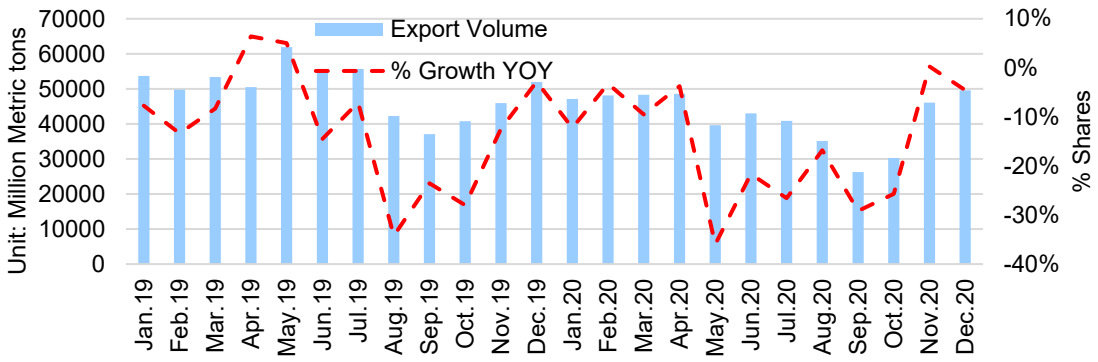
Source: Ministry of Commerce (2021)

Prepared or preserved fruits and vegetables

The global COVID-19 outbreak caused the volume of Thailand's export of processed fruits and vegetables to decrease by 15.8% (HS 2008) with the biggest decline coming between May and October. However, export volumes started to pick up at the end of the year (Figure 32).

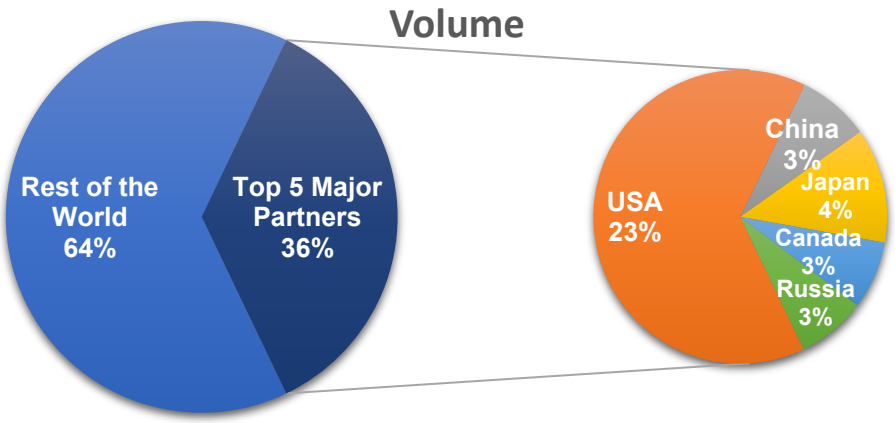
The major trading partners of processed fruits and vegetables are USA (23%), Japan (4%), China (3%), Canada (3%), and Russia (3%) (Figure 33). During the COVID-19 pandemic, export volume dropped in every market, though especially to Russia, China, and USA (Figure 34). The pattern of trade among individual countries was varied, but the overall trade pattern was driven by the dynamics of exports to the US market which makes up around 23% of the total volume in 2020.

Figure 29 Percentage growth of prepared or preserved fruit export volumes



Source: Ministry of Commerce (2021)

Figure 30 Shares of major prepared or preserved fruit import partner from Thailand in 2020



Source: Ministry of Commerce (2021)

Figure 31 Percentage growth of prepared or preserved fruit export volume by major partner

Export Partner	% Growth in 2019	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20	% Growth in 2020
USA	-3%	-4%	3%	-2%	11%	-40%	-30%	-17%	-19%	-20%	-27%	1%	14%	-12%
China	14%	8%	-69%	-8%	19%	-32%	-31%	3%	111%	-13%	-39%	-4%	-17%	-13%
Japan	-3%	-15%	23%	16%	2%	-10%	-19%	-17%	-23%	-9%	-37%	6%	-4%	-8%
Canada	-8%	-16%	-15%	-6%	-2%	-45%	0%	-12%	5%	45%	-11%	1%	33%	-6%
Russia	-26%	-65%	-58%	-5%	-5%	-46%	21%	-27%	63%	-58%	53%	117%	-39%	-22%
Total Export	319,308	25,118	24,805	25,054	28,304	22,101	24,616	25,244	22,054	14,485	16,336	25,744	26,433	280,295
World Total Export	597,760	47,173	48,135	48,312	48,606	39,654	43,008	40,879	35,150	26,249	30,294	46,054	49,595	503,107

Source: Ministry of Commerce (2021)

In conclusion, the main factors of COVID-19 impacts on the Thailand's key agricultural commodity exports is as follows:

MAIN FACTORS OF COVID-19 IMPACT ON THE THAILAND'S KEY AGRICULTURAL COMMODITY EXPORTS

Commodity	Impact of COVID-19
Natural Rubber	• Raw materials supply disruption due to COVID related labor shortage. • Decline in world demand for natural rubber. • Recover by the end of the year due to a surge in demand for medical gloves and relaxation of lockdown measures. •
Rice	• Panic buying at the beginning of the outbreak increased exports of rice temporarily • Decline in rice exports in 2020 was mainly due to Thailand's low • competitiveness, not COVID-19.
Sugar	• Decline in sugar exports were a result of shock both from demand and supply sides. The lockdown caused major drop in sugar consumption in many countries. • The 2020 drought in Thailand also responsible for a decline in sugar production and export

Prepared or preserved tuna	• COVID-19 caused a surge in demand for canned tuna because of its long shelf life. • Thailand's canned tuna exports increased significantly at the beginning of the spread of COVID-19 as a result of panic buying. • Canned tuna exports slowed as panic buying eased.
Prepared or preserved chicken	• Shortage of containers and increase in freight fees negatively impacted the export of Thailand's processed chicken. • The lockdown disrupted export of processed chicken.
Fresh chilled and prepared crustaceans	• The contraction of crustacean exports can be attributed to the lockdown and the strong baht that weakened the currency causing a loss in competitiveness.
Prepared or preserved fruits	• Export volume dropped as it was considered less important during lockdown.
Animal feeding	• Thai pet food exports temporarily increased between January- April 2020 as people became new pet owners during lockdown.

CONCLUSION AND POLICY IMPLICATIONS

In the past two decades Thailand's agricultural exports have increased. Although agricultural exports' share of total exports has been declining, they remain important to the country as more than 50 percent of the population rely on employment in the agricultural supply chain. Thailand continues to be a major exporter in many agricultural commodities to many countries. The key agricultural trading partners include USA, Japan, and ASEAN countries while China has emerged as a major trading partner in the last two decades. Agricultural exports to ASEAN countries have risen with impressive growth while agricultural exports to developed countries have been relatively stable. Most the top ten agricultural export commodities between 1998 and 2008 were still among the top ten in the recent period of 2009-2018.

This study provides a preliminary analysis on the impact of COVID-19 on Thailand's agricultural export flows using BACI dataset and Thailand's Ministry of Commerce trade flow dataset. The study finds that the impact of COVID-19 varies across different agricultural export commodities. There were temporarily surges in exports of many commodities at the very beginning of the outbreak of COVID-19 such as rice and canned tuna mainly due to panic buying. On the other hand, there were declines in exports of some other commodities due to disruption of supply chains and lower demand for commodities caused by lockdown measures in countries that are Thailand's major agricultural export trading partners. The impact of COVID-19 on Thailand's agricultural export flows was short-lived but nevertheless highlighted the risk of market concentration. Diversification of exports could help mitigate such risk.

COVID -19 revealed some of the structural problems in exporting sectors that are reliant on foreign workers. Some workers are illegal, and consequently do not have access to the public health services. During the outbreak, illegal border crossing activities had increased. As a result, the government had to step up surveillance and control at the borders. Strict cross-border controls, such as limiting the amount of cross border trucks per day, were retaliated by neighbouring countries. COVID-19 response measures certainly increased costs to businesses, but the COVID response measures' effect is uneven. Some firms may be able to adjust better than others, but it has become more apparent that firms have begun to change their factories' operations to be more automated. If the COVID-19 outbreak lasts for a long time, some workers may not be able to go back to work after the pandemic since the factories may need different skill sets. COVID-19 has long term effects in the sense that it changes the way of doing business in the exporting sectors. Distribution of gain from exports would also shift from labourers and farmers to capital owners. It also restricts trade participation and market access to only firms that can adapt.

The preliminary analysis of the impact of COVID-19 on Thai agricultural export flows has several policy implications. Thailand will be challenged to maintain its reputation as a reliable supplier of agricultural products during the recent COVID-19 surge while coping with lockdown restrictions that impact supply chains and trade. In the short run, there is also the possibility of an increase in non-tariff barriers (NTB) related to food safety and production standards which are expected to have long term impacts on Thailand agricultural export flows. Promoting trade facilitation while

ensuring safety measure to safeguard public health would help maintain well-functioning agricultural trade.

REFERENCES

Asian Development Bank. 2020. The Impact of COVID-19 on Developing Asia: The Pandemic Extends into 2021. ADB BRIEFS No. 159.

Cao, L., Li, T., Wang, R. and Zhu, J. 2020. "Impact of COVID-19 on China's agricultural trade." **China Agricultural Economic Review** 13(1): 1-21.

Greenville, J., McGilvray, H., and Black, S. 2020. **Australian agricultural trade and the COVID-19 pandemic.** Department of Agriculture, Water and the Environment ABARES, ABARES Insights, Issue 5.

International Bank for Reconstruction and Development. 2020. **Global Economic Prospects.** A World Bank Group Flagship Report. Washington, DC.

Lin, B., Zhang, Y, Y. 2020. "Impact of the COVID-19 pandemic on agricultural exports." **Journal of Integrative Agriculture** 19(12): 2937-2945.

Maliszewska, M., Mattoo, A., and Van Der Mensbrugghe, D. 2020. **The Potential Impact of COVID-19 on GDP and Tradea Preliminary Assessment.** Policy Research Working Paper, No. 9211 World Bank Group.

Ministry of Commerce. (2021). **Export of Thailand Classified by Commodity 2019-2020 database.** Accessed November 20, 2020. http://tradereport.moc.go.th/TradeEng.aspx.

Schmidhuber, J., Pound, J., and Qiao, B. 2020. **COVID-19: Channels of transmission to food and agriculture.** Rome, FAO.

Susantono, Bambang. 2020. How to Leverage Trade to Fight Against and Recover from COVID-19. Retrieved 22 February 2020, from https://www.adb.org/news/speeches/how-leverage-trade-fight-against-and-recover-covid-19-bambang-susantono.

World Trade Organization. 2020. **Trade shows signs of rebound from COVID-19, recovery still Uncertain.** PRESS RELEASE 6 October 2020.