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A Constant Market Share Analysis of Indonesia's Fishery Export

Candra Aryudiawan* & Suadi Suadi
Department of Fisheries, Faculty of Agriculture, Universitas Gadjah Mada, Sleman Regency, Special Region of Yogyakarta, Indonesia
*Corresponding author, email: candradiawan@ugm.ac.id

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ABSTRACT Despite its importance in global fishery production as the world's second-largest producer, Indonesia is not one of the top ten fish exporting countries. This study uses constant market share analysis to examine Indonesia's fishery export performance. The data was collected from the United Nations International Trade Statistics Database and covered Indonesia's fishery exports from 1999 to 2019. Indonesian fishery products are classified using four-digit Harmonized System codes ranging from 0301 to 0308. Export growth is decomposed into four components: the global market, commodity compositions, market distributions, and competitiveness effects. The results indicate that the significant growth of the global fishery trade was the primary driver of Indonesia's fishery exports during the period. Indonesia is directing a significant portion of its exports to the most dynamic destination markets, such as China and ASEAN countries. The commodity composition and competitiveness effects were negative and significant throughout the period. Indonesia's integration into the global economy through structural adjustment programs, a liberalization strategy, WTO accession, and participation in several trade agreements, but these policies have had little impact on competitiveness. Indonesia's share of the global fish trade has declined from 4.11 percent in 1999 to 2.75 percent in 2019. Over the last 20 years, Indonesia's market share has gone down, which shows its lack of competitiveness.

Keywords: Constant market share; competitiveness; export performance; Indonesia's fishery products

INTRODUCTION

Fish production has increased to over 35 million tons in the last decade. Approximately 178.5 million tons of fish were produced in 2018, with marine capture contributing 96.4 million tons and 82.1 million from aquaculture (FAO, 2020). China dominates fish production from marine capture (15 %), Peru and Indonesia (8 percent), Russia (6 percent), and the United States (4 percent). Aquaculture production is concentrated in Asia, with China, India, Indonesia, Vietnam, and Bangladesh being the most prominent producers. There has been an increase in total fish production due to a growth in aquaculture. Among the fastest-growing contributors to global food production is aquaculture, which has seen its share rise from 38.2 percent in 2008 to 45.99 percent in 2018. Aquaculture will continue to play a significant role in fish production in the future, as capture fishery production typically declines due to IUU fishing, environmental degradation, and climate change (Davies *et al*., 2019; Sunoko & Huang, 2014). Increases in fish consumption are primarily connected to an increase in production. Fish consumption has increased by 1.5 percent per year since 1961, while meat consumption has increased by only 1.1 percent per year. Fish consumption has gone up worldwide because of many things, such as improvements in product processing technology, cold chain systems, shipping and distribution, and the rise in people's incomes around the world (FAO, 2020).

Globally, the amount of fish produced and consumed has increased due to globalization and liberalization policies in recent decades. Fish and other aquatic products are among the most widely traded agricultural commodities globally (Bellmann *et al*., 2016; Davies *et al*., 2019; Smith *et al*., 2010). The industry produces a wide range of goods. In 2018, more than 220 countries and territories exported fishery products worth USD.

164 billion. This trade value accounts for 11 percent of total agricultural production value worldwide. (FAO, 2020). China exports the most (14 percent), followed by Norway (7 percent), Vietnam and Chile (5 percent), the United States and India (4 percent), and the Netherlands and Canada (3 percent). International trade in fish products is primarily from developing to developed countries due to the lower labour costs (Anderson & Martnez-Garmendia, 2003). Despite increased export contributions, developing countries face barriers to entry into global markets due to various factors, including internal structural issues. In addition to technical challenges and technological advancements, many developing countries lack adequate infrastructure and services. When the product's quality deteriorates, there are losses due to market access barriers. Furthermore, there are insufficient rules and institutions to manage fisheries sustainably (FAO, 2014).

Despite its significant role in global fishery production, Indonesia is not one of the top ten fish exporters. Fishery products could be a significant source of revenue for the country, with a sea area of 6.4 million square kilometres and a coastline of 108.000 kilometres. Marine fisheries are expected to produce 12.54 million tons per year. Indonesian waters are home to more than a third of the world's fish species, including tuna, shrimp, lobster, and reef fish. Aquaculture is estimated to occupy 17.91 million hectares, with a harvesting rate of only 2.7 percent (MMAF, 2020). Existing resource potential is underutilized because most fishing fleets and aquaculture operations are small and traditional.

The Indonesian government recognizes fisheries as having strategic value in terms of economic development and national sovereignty. The fishing industry creates jobs and produces high-quality goods, ensuring the nation's food supply and security. The Indonesian government launched three major fishery projects in the 2020-2024 National Mid-Term Development Plan. This includes IDR25 trillion for shrimp and milkfish centre pond revitalization, IDR30 trillion for internationalizing fishing ports and fish markets, and IDR35 trillion for bolstered business guarantees for 350 farmer-fisherman cooperatives (IDR226.4 trillion). In Indonesia, there are three main goals for increasing fishery production: increasing output, increasing export value, and promoting GDP growth. Since fishing is done in a way that doesn't hurt the environment, about 80 percent of the caught fish are well within biologically safe limits.

The Ministry of Marine Affairs and Fisheries has various funding opportunities. It facilitates fishing communities by providing a shipping fleet, aquaculture facilities for fish farmers, insurance guarantees, assistance to improve the quality of export products, and research to boost productivity. The government collaborates with the banking sector and provides low-interest loans to fishers known as "People's Business Credit." Governments also use a strategy to demonstrate that they have improved a country's economy, even though it is unlikely to benefit the government's status and political power. From Susilo Bambang Yudhoyono's presidency to Joko Widodo's, they attempted to boost national competitiveness through various programs to turn the country into a magnet for foreign investment. Yudhoyono's administration, for example, launched *Minapolitan* to boost aquaculture production and distributed 1,000 *Inkamina* ships to fishers. Despite continued previous fleet distribution, Widodo's government put out ministerial rules to protect resources by banning transhipment, foreign fishing fleets, and unfriendly fishing gear.

Generally, a country's declining global export market share indicates poor export performance. This decline, however, does not always imply that the country is losing competitiveness on the global stage. Competitiveness is determined by various factors, including the commodity's composition, the market destination, and, most importantly, the overall state of international trade. Thus, a country cannot be declared uncompetitive on a global scale because its economy is resource-constrained and closed or because its exports face stagnant global demand or stagnant markets (Klasra & Fidan, 2005). Aisya *et al*. (2005) conducted a previous study using the same method with four fishery commodities based on the available literature. Suwarno *et al*. (2012), Hidayati *et al*. (2015), and Suhana *et al*. (2016), on the other hand, concentrated on tuna, which motivated this study to gain a better understanding of the current export performance of various fishery commodities. The primary objective of this paper is to examine Indonesia's fishery export performance. This objective is accomplished using constant market share analysis, which decomposes the export growth into four components. This result of the study may contribute to a better understanding of the structural factors affecting this performance and more effective policy decisions that direct exports toward the world's most dynamic markets and products. Due to data availability, the study will concentrate on the period from establishing the Ministry of Marine Affairs and Fisheries in 1999 to the end of Widodo's first term as president in 2019. Research methods, results and discussions, and conclusions and recommendations are detailed.

METHODS

The primary data for this study was collected from the United Nations International Trade Statistics Database (UN Comtrade). The study's data spans two decades, from 1999 to 2019. This period was chosen to assess the various governments' export performance. It covers from the start of the reformation (1999) to the end of President Joko Widodo's first term (2019). The countries are selected in two stages. First, Indonesia's sample period's exports to all countries are calculated (1999-2019). Thirty countries have been identified as potential markets for Indonesian fishery products. The top importers of global fishery products were the United States, Japan, the European Union, and China.

On the other hand, ASEAN was chosen because Indonesia is an ASEAN member, and intra-ASEAN trade is growing in

Table 1. Fishery products description.

4-digit HS Code	Description
0301	fish; live
0302	fish, fresh or chilled, excluding fish fillets and other fish meat of heading 0300302
0303	fish; frozen, excluding fish fillets and other fish meat of heading 0304
0304	fish fillets and other fish meat (whether or not minced); fresh, chilled or frozen
0305	fish, dried, salted or in brine; smoked fish, whether or not cooked before or during the smoking process; flours, meals and pellets of fish, fit for human consumption
0306	crustaceans; in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; smoked, cooked or not before or during smoking; in shell, steamed or boiled, whether or not chilled, frozen, dried, salted or in brine; edible flours, meals, pellets
0307	molluscs; whether in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; smoked molluscs, whether in shell or not, cooked or not before or during the smoking process; flours, meals and pellets of molluscs, fit for human consumption
0308	aquatic invertebrates, other than crustaceans and molluscs; live, fresh, chilled, frozen, dried, salted or in brine, smoked, whether or not cooked before or during the smoking process; flours, meals, and pellets, fit for human consumption

Source: DESA/UNSD, Unites Nations Comtrade Database, 2020.

value due to the ASEAN Free Trade Agreement (AFTA). While additional countries such as Australia, South Korea, and Hong Kong were included in the regions sampled, so were India (South Asia), the United Arab Emirates (Middle East), Turkey, the United Kingdom, and the Russian Federation (Europe), Canada (North America), Brazil (South America), and South Africa (Africa). The fishery products of Indonesia are classified using four-digit Harmonized System (HS) codes ranging from 0301 to 0308 (Table 1). This study looks at Table 1 fishery products.

Constant market share analysis, a popular technique for analyzing export performance, is a statistical technique that allows for the ex-post examination of changes in a country's total exports or aggregate market share (Klasra & Fidan, 2005). Traditionally, export growth has been divided into four components: global growth, commodity composition, market distribution, and competitive effects. The world growth effect equals the increase in exports if a country maintains its share of total world exports. The commodity (market) effect accounts for any additional growth due to a country's export structure being dominated by commodities (importing region) with rapidly increasing demand. The growth associated with shifting export shares is due to the competitive effect (the residual) (Leamer & Stern, 1970). Table 2 provides descriptive statistics on Indonesian fishery exports over the period, including the mean and coefficients of variation. In terms of value, the export of molluscs (0307) showed more variability, followed by fish fillets and other fish meat (0304), frozen fish (0303), and live fish (0301). This indicates that those products' exports fluctuated more than others'.

The following is CMS accounting by Leamer & Stern (1970), with the notation definitions adapted for this study. Fishery products in the international market are divided into eight groups of commodities so that the notation i in this study represent eight groups of commodities under HS (i = 1 ... 8), and there are thirty-one export destinations: Japan, China,.... and the rest of the world (j = 1 ... 31).

$V_{i.}$ = value of Indonesia's exports of commodity i in period 1;
$V'_{i.}$ = value of Indonesia's exports of commodity i in period 2;
$V_{.j}$ = value of Indonesia's exports to country j in period 1;
$V'_{.j}$ = value of Indonesia's exports to country j in period 2;
V_{ij} = value of Indonesia's exports of commodity i to country j in period 1;
R = percentage increase in total world's fishery exports from period 1 to period 2;
r_i = percentage increase of the world's fishery exports of commodity i from period 1 to period 2;
r_{ij} = percentage increase of the world's fishery exports of commodity i to country j from period 1 to period 2.

$$\left(\sum_{i=1}^{8}\sum_{j=1}^{31} V'_{ij}\right)-\left(\sum_{i=1}^{8}\sum_{j=1}^{31} V_{ij}\right)$$

$$=\left(\sum_{i=1}^{8} rV_{i.}\right)+\left(\sum_{i=1}^{8} r_iV_{i.}-\sum_{i=1}^{8} rV_{i.}\right)+\left(\sum_{i=1}^{8}\sum_{j=1}^{31} r_{ij}V_{ij}-\sum_{i=1}^{8} rV_{i.}\right)$$

$$+\left(\sum_{i=1}^{8}\sum_{j=1}^{31} V'_{ij}-\sum_{i=1}^{8}\sum_{j=1}^{31} V_{ij}-\sum_{i=1}^{8}\sum_{j=1}^{31} r_{ij}V_{ij}\right)$$

Change in export value:

$$\left(\sum_{i=1}^{8}\sum_{j=1}^{31} V'_{ij}\right)-\left(\sum_{i=1}^{8}\sum_{j=1}^{31} V_{ij}\right)$$

Growth of the world exports::

$$\left(\sum_{i=1}^{8} rV_{i.}\right)$$

Commodity composition effect:

$$\left(\sum_{i=1}^{8} r_iV_{i.}-\sum_{i=1}^{8} rV_{i.}\right)$$

Market distribution effect:

$$\left(\sum_{i=1}^{8}\sum_{j=1}^{31} r_{ij}V_{ij}-\sum_{i=1}^{8} rV_{i.}\right)$$

Residual or competitive effect:

$$\left(\sum_{i=1}^{8}\sum_{j=1}^{31} V'_{ij}-\sum_{i=1}^{8}\sum_{j=1}^{31} V_{ij}-\sum_{i=1}^{8}\sum_{j=1}^{31} r_{ij}V_{ij}\right)$$

The left side of the equation denotes the change in Indonesia's exports of fishery products. On the right side of the equation, the first term refers to the growth of global exports, which is considered the norm. The second term refers to the effect of commodity composition. Positive values indicate that Indonesia has a greater concentration of exports in high-growth commodities. In contrast, negative values indicate that Indonesia has a greater concentration of exports in low-growth commodities. The third term expresses the effect of market distribution. Positive values indicate that Indonesia has concentrated its exports more on fast-growing markets, while negative values indicate that Indonesia has concentrated its exports on slow-growing markets. The residuals of the equation are used to calculate the competitiveness effect. The sign of differential residual components, whether positive or negative, indicates an increase or decrease in export competitiveness (Leamer & Stern, 1970; Klasra & Fidan, 2005).

Table 2. Descriptive statistics on Indonesia's export value of fishery products in 1999-2019.

Products	Mean	St. dev.	CV (percent)	Min	Max
0301	45,048,064	19,561,221	43.42	19,390,744	74,991,450
0302	159,113,505	45,723,004	28.74	79,679,155	233,619,875
0303	278,953,839	143,063,115	51.29	90,352,403	519,856,248
0304	260,843,969	164,716,752	63.15	48,239,629	540,179,918
0305	71,008,973	18,056,978	25.43	45,822,293	126,372,067
0306	1,180,316,534	290,110,358	24.58	845,222,717	1,815,229,830
0307	169,212,004	166,515,161	98.41	24,028,170	561,494,383
0308	18,394,591	4,949,003	26.90	12,820,408	26,214,764

RESULTS AND DISCUSSION

Fish production in Indonesia

Indonesia's fishery production increased year after year between 1999 and 2019. While capture fisheries production tends to stagnate, aquaculture production continues to grow, reaching more than double the level of capture fisheries production in 2019. Capture fisheries dominated fish production at first. However, since 2010, aquaculture production has been the primary driver of Indonesian fishery production growth, fueled by seaweed commodities. Figure 1 shows the total production and share of Indonesian fisheries production from capture fisheries and aquaculture. Overall, Indonesian fishery production increased by 8.12 percent per year on average, while aquaculture production increased by 16.06 percent per year, while capture fisheries increased by only 2.98 percent. In 1999, Indonesian fishery production was only 4.89 million tons, but it more than doubled to 22.47 million tons in 2019. Marine aquaculture is the most significant contributor to aquaculture production, followed by brackish water and freshwater ponds.

Additionally, when compared to inland capture, marine capture continues to be the most significant contributor to capture fisheries. Indonesia's fisheries production is expected to increase in the future, in line with the target set by the Ministry of Marine Affairs and Fisheries. In 2024, fish production is expected to total 26.46 million tons, with 15.47 million tons of fish and 10.99 million tons of seaweed (MMAF, 2020). In 2024, fish production is expected to total 26.46 million tons, with 15.47 million tons of fish and 10.99 million tons of seaweed (MMAF, 2020). Given the underutilization of fishery resources and the numerous potential barriers, the main objective is likely to be met. Numerous challenges for increasing fishery products have been incorporated into the Strategic Plan for Years 2020-2024 of the Ministry of Marine Affairs and Fisheries. These difficulties include the following: 1). The fishing fleet's productivity is not yet optimal due to its structure being dominated by small and traditional scales; 2). Aquaculture businesses are dominated by small-scale farmers, traditional technology, low productivity, decreased carrying capacity of water and the environment, climate change impacts, low added value, suboptimal land use, and high production costs. 3). Raw material availability is too volatile to support marine and fisheries industrialization. 4). Access to capital for business expansion is limited. 5). Regional infrastructure, such as fishing ports, seed centres, and salt ponds, is deficient, and 6). Ecosystem degradation, climate change, and extreme weather.

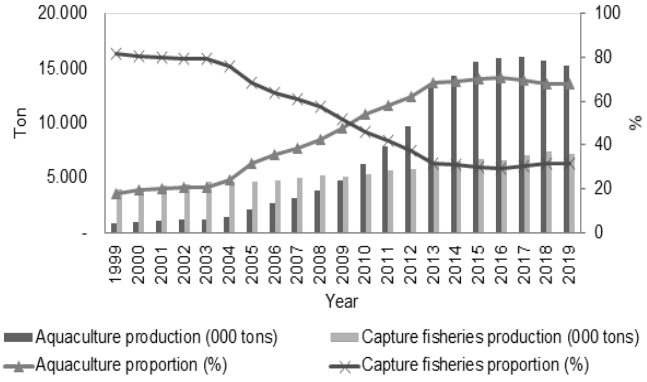

Figure 1. The total production and share of production from capture fisheries and aquaculture, 1999-2019 (Statistics Indonesia, 2021).

Production of marine capture is concentrated in a few provinces. North Sumatra had the highest production in 2019, with 1.20 million tons, followed by Maluku, East Java, South Sulawesi, Riau Islands, North Maluku, Central Java, North Sulawesi, and Southeast Sulawesi. These provinces produce over 200.000 tons per year, accounting for 54.63% of total output. Port facilities such as the Oceanic Fishing Port, Archipelagic Fishery Port, and Coastal Fishing Port foster production from these provinces. The high proportion of fishing vessels more prominent than 100 GT also impacts. Five provinces produced more than one million tons of aquaculture in 2019. South Sulawesi, East Nusa Tenggara, and West Java are the primary producers, accounting for more than 58 percent of national production. Shrimp, milkfish, catfish, tilapia, carp, snapper, and grouper were among the fish produced. Fish consumption per capita has steadily increased nationally and globally over the last two decades as fish production has increased. The main drivers of rising consumption are population and income growth.

Indonesia's fishery export

An increase has not matched the increase in fish production over the last two decades in exports. Compared to other ASEAN countries, such as Vietnam and Thailand, whose export values have risen to become among the top ten fish exporters globally, Indonesia's exports of fishery products are more

Figure 2. Indonesia's fishery export pattern, 1999 (DESA/UNSD, Unites Nations Comtrade Database, 2020).

volatile. In 1999, Indonesia's fishery products were worth USD1.43 billion; by 2019, that figure had risen to USD3.07 billion. In terms of export commodity structure, shrimp (0306) remains the most significant contributor. However, its share of total exports has fallen from around 65 percent to around 44 percent. Fish fillets (0304) were the next most significant contributor, followed by molluscs (0307) and frozen fish products (0303). Table 3 shows the export value of each commodity from 1999 to 2019. Exports of fish fillets and molluscs increased significantly. Over a two-decade period, fish fillets increased from USD48.23 million to USD540.04 million, while molluscs increased from USD24.03 million to USD457.63 million.

While there has been an increase in value, Indonesia's share of the global fish trade has decreased from 4.11 percent in 1999 to only 2.75 percent (2019). Shrimp has experienced the most significant share decline, falling from 9.56 percent to 5.26 percent. Fresh fish, frozen fish, and dried fish all witnessed declines. On the other hand, the market share of molluscs increased significantly from 0.69 percent to 4.34 percent. The global fish trade has grown a lot over the last two decades. It has increased by more than 200 percent, reaching USD111.83 billion. The most traded commodities were shrimp, fish fillets, and frozen fish, valued at USD25.46 billion, USD23.87 billion, and USD22.75 billion.

Table 3. Indonesia's fishery export by commodities, 1999-2019.

Year	Products Code							
	0301	0302	0303	0304	0305	0306	0307	0308
1999	19,390,744	179,540,197	173,468,884	48,239,629	52,907,236	932,207,062	24,028,170	
2000	24,415,187	166,938,890	90,888,994	58,998,179	54,064,824	1,056,601,976	28,598,746	
2001	28,763,157	140,389,474	90,352,403	76,826,910	55,085,346	1,008,268,131	31,398,413	
2002	27,218,218	136,304,833	105,545,779	101,219,522	73,150,420	920,077,804	28,750,746	
2003	23,876,536	137,026,362	148,849,701	114,783,384	45,822,293	933,434,524	33,624,374	
2004	26,153,319	169,733,969	153,098,282	115,185,713	50,547,255	905,760,333	39,947,345	
2005	24,215,929	175,527,813	140,295,200	131,799,761	63,375,085	935,331,018	51,974,535	
2006	27,535,227	157,003,740	150,402,418	121,178,914	61,616,304	1,067,782,393	57,400,120	
2007	33,068,576	194,941,671	186,057,852	154,889,462	69,559,981	992,859,613	91,644,735	
2008	36,756,852	216,526,570	250,596,268	206,083,181	76,920,342	1,070,920,596	108,497,054	
2009	34,744,523	225,524,938	228,072,250	207,295,178	76,022,381	845,222,717	92,656,538	
2010	61,721,069	233,619,875	326,224,030	256,235,412	72,182,348	939,851,677	125,761,268	
2011	48,311,686	217,546,643	421,822,538	302,133,211	92,156,875	1,161,656,823	195,902,186	
2012	60,555,064	206,280,000	519,856,248	423,212,909	126,372,067	1,206,543,778	210,251,815	12,820,408
2013	63,412,799	179,171,899	466,889,422	384,057,906	80,799,682	1,481,284,313	200,739,235	26,214,764
2014	59,723,479	149,971,796	407,527,968	413,554,841	77,807,780	1,815,229,830	188,110,332	14,505,535
2015	60,333,323	171,823,727	329,170,046	430,697,168	60,793,551	1,356,322,507	249,497,854	17,380,608
2016	70,128,267	129,358,690	388,913,000	427,299,344	62,188,346	1,464,398,675	358,317,328	15,371,254
2017	69,956,358	109,598,846	471,379,782	445,778,740	68,152,207	1,476,064,227	319,544,128	16,016,527
2018	74,991,450	104,852,873	381,244,788	518,074,076	78,729,063	1,574,129,485	417,479,480	19,612,784
2019	67,903,190	125,104,592	427,326,919	540,041,336	92,387,805	1,339,065,226	457,632,454	25,101,985

Source: DESA/UNSD (Unites Nations Comtrade Database), 2020.

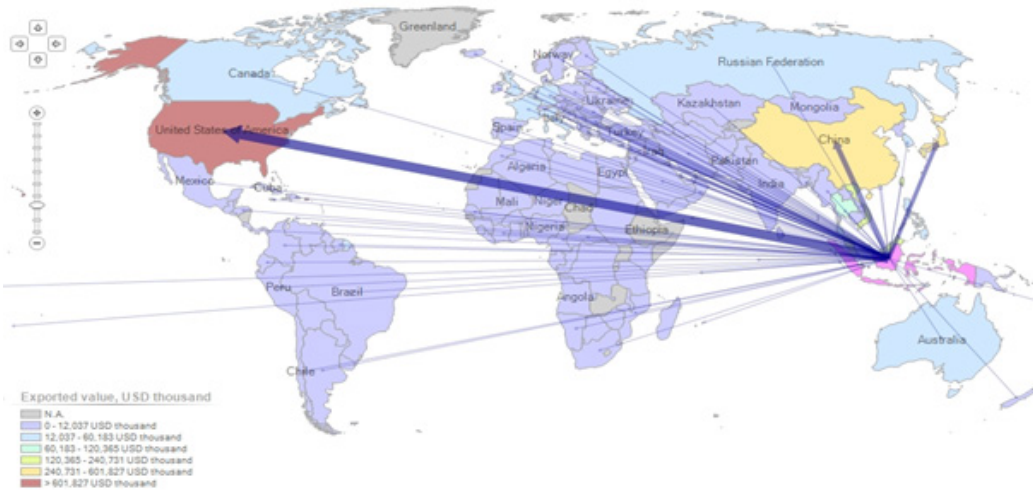

Figure 3. Indonesia's fishery export pattern, 2019 (DESA/UNSD, Unites Nations Comtrade Database, 2020).

Over the last decade, the global export market for fishery products has shifted dramatically. Initially, the primary destinations for global fisheries exports were Japan and the United States. Nonetheless, in 2018, China surpassed Japan to become the world's second-largest importer after the United States and the world's largest exporter in terms of value. Along with these three markets, the European Union is the primary export destination for global fishery products. Figures 2 and 3 compare the countries to which Indonesian fishery products were exported between 1999 and 2019, and there are changes in export destination countries. In 1999, Japan was the most critical market for Indonesian fishery products. However, by 2019, The United States and China had surpassed Japan as Indonesia's most important trading partners for fishery products. The decline in exports to Japan was caused by the stagnation of the Japanese market and increased competition from neighbouring ASEAN countries such as Vietnam and Thailand, which were pursuing Japan as a primary destination.

Constant market share analysis

The comparison between Indonesia and world export performance during the entire period are summed in Table 4. Each sub-period of time is analyzed every two years (1999-2001,... 2017-2019). The analysis also covered the entire period (1999-2019). Global fishery export growth from 1999 to 2019 was 221.15%, while Indonesia's export growth was slightly less than the global average of 115.04 percent. According to sub-period data, global exports fell between 2013 and 2015. Indonesia experienced two periods of negative growth: 2007-2009 and 2013-2015, during which exports fell by 0.78 percent and 7.17 percent, respectively. Due to the global financial crisis in the central export destination countries in 2008, which resulted in a decline in global demand, Indonesia's exports decreased between the 2007-2009 period. Meanwhile, President Joko Widodo's new government implemented several policies in 2015, including the prohibition of cantrang (trawl) and foreign fishing vessels operating in Indonesian waters and a ban on transhipment, all of which harmed marine capture production. Processing industries in various regions, such as Central Java, East Java, and North Sulawesi, ceased operations due to lacking raw materials.

The results of the CMS analysis for the entire period and the selected sub-period are summed up in Table 5. Based on the CMS analysis, world trade growth was the primary factor driving Indonesia's fishery export growth throughout

Table 4. Indonesia's fishery export performance from 1999 to 2019 compared to the world export performance.

No.	Period	World			Indonesia				
		Export value (initial year)	Export value (final year)	Growth in export value	Export value (initial year)	Export value (final year)	Growth in export value	Export value's share (initial year)	Export value's share (final year)
1.	1999-2001	34,820,058,809	40,091,453,893	5,271,395,084	1,429,781,922	1,431,083,834	1,301,912	4.11	3.57
2.	2001-2003	40,091,453,893	46,294,666,528	6,203,212,635	1,431,083,834	1,437,417,174	6,333,340	3.57	3.10
3.	2003-2005	46,294,666,528	56,234,151,567	9,939,485,039	1,437,417,174	1,522,519,341	85,102,167	3.10	2.71
4.	2005-2007	56,234,151,567	65,917,214,196	9,683,062,629	1,522,519,341	1,723,021,890	200,502,549	2.71	2.61
5.	2007-2009	65,917,214,196	68,490,294,488	2,573,080,292	1,723,021,890	1,709,538,525	(13,483,365)	2.61	2.50
6.	2009-2011	68,490,294,488	94,649,565,316	26,159,270,828	1,709,538,525	2,439,529,962	729,991,437	2.50	2.58
7.	2011-2013	94,649,565,316	101,272,031,664	6,622,466,348	2,439,529,962	2,882,570,020	443,040,058	2.58	2.85
8.	2013-2015	101,272,031,664	98,546,439,019	(2,725,592,645)	2,882,570,020	2,676,018,784	(206,551,236)	2.85	2.72
9.	2015-2017	98,546,439,019	110,081,880,128	11,535,441,109	2,676,018,784	2,976,490,815	300,472,031	2.72	2.70
10.	2017-2019	110,081,880,128	111,825,758,681	1,743,878,553	2,976,490,815	3,074,563,507	98,072,692	2.70	2.75
11.	1999-2019	34,820,058,809	111,825,758,681	77,005,699,872	1,429,781,922	3,074,563,507	1,644,781,585	4.11	2.75

Table 5. The result of cms analysis of Indonesia's fishery export.

Period	Change in export (USD)	Increase in world trade	Commodity composition	Market distribution	increased competitiveness
1999-2001	1,301,912	16,625.86	553.18	(3,711.87)	(13,367.17)
2001-2003	6,333,340	3,496.21	(370.31)	(2,239.47)	(786.43)
2003-2005	85,102,167	362.64	(152.08)	(57.90)	(52.66)
2005-2007	200,502,549	130.75	(19.37)	(66.93)	55.55
2007-2009	(13,483,365)	498.82	(261.92)	391.66	(728.56)
2009-2011	729,991,437	89.45	(4.10)	19.69	(5.03)
2011-2013	443,040,058	38.53	10.26	(5.46)	56.67
2013-2015	(206,551,236)	(37.56)	31.21	(11.54)	(82.12)
2015-2017	300,472,031	104.25	(0.86)	4.91	(8.31)
2017-2019	98,072,692	48.08	(65.53)	24.42	93.03
1999-2019	1,644,781,585	192.24	(26.75)	20.48	(85,97)

the observation period. The effect was significant, accounting for approximately 192.24 percent of the total. As previously stated, global fishery product exports have increased by more than 200 percent. The other positive contribution comes from market distribution, which is much less than the global trade effect of 20.48 percent. The commodity composition and competitiveness effects were negative and significant throughout the period, particularly the competitiveness effect, at around -85.97 percent. To demonstrate the utility of CMS analysis in analyzing export performance, Indonesia's proper competitive performance was computed and compared to the change in its aggregate market share during the period. The findings of this study confirm that world trade factors primarily determined the change in Indonesia's fishery export market and that Indonesia lacks competitiveness, as evidenced by its declining market share.

Increased world trade effects contributed positively to the growth of Indonesia's fishery exports in every subperiod except 2013-2015. During the sub-periods 1999-2001, 2001-2013, 2007-2009, and 2003-2005, when the amplitude of the effect was generally more prominent, the influence had the most significant impact. For example, subperiod 1999-2001 ranked first with 16.625.86 percent, subperiod 2001-2003 ranked second with 3.496.21 percent, subperiod 2007-2009 ranked third with 498.82 subperiod 2003-2005 ranked fourth with 362.64 percent. The commodity composition impact quantifies the degree to which variations in the product composition of the destination market's demand influence the market share behaviour of a country. The majority of commodity composition's effects on all subperiods of observation are negative. During the 1999-2001 subperiod, a 553.18 percent increase in positive effects was seen. In addition, the commodity composition effect was positive for the sub-periods 2011-2013 and 2013-2015. These results indicate that shrimp (0306) will continue to dominate exports of Indonesian fisheries goods. The government has sought to diversify its exports away from shrimp, as indicated by the diminishing share of shrimp exports.

In contrast, the export increase of other items was negligible, resulting in a market share fall. Besides shrimp, other high-value fish products are fresh fish, frozen fish, and fish fillets. Compared to other commodities, the trade value of these three has increased the most rapidly. Neighbouring nations such as Vietnam and Thailand purchase raw materials from other nations, such as Indonesia, to assist their processing industries in achieving a balanced export commodity mix.

The market distribution effect is negative in the first to fourth sub-periods (1999-2007), in sub-period 6 (2011-2013), and sub-period 7 (2013-2015). The 2007-2009 sub-period had the highest positive effect, at 391.66 percent, followed by the 2017-2019 sub-period at 224.42 percent, and the 2009-2011 sub-period at 19.69 percent. Indonesia shifted its exports from traditional markets such as Japan and the European Union to China, South Korea, and ASEAN during the last two subperiods of observation, resulting in a significant positive effect. Japan's share of global import demand has declined, which has diminished the positive impact of other nations, primarily because this market accounts for a significant portion of Indonesia's fishery exports. Over the past two decades, trade-in fishery products between ASEAN nations has increased significantly. China, South Korea, Hong Kong, Thailand, and Vietnam are the most dynamic markets. The pattern of specialization observed in Asian nations is strongly influenced by geographical proximity and other factors. In addition, the trade agreement between Indonesia and these nations has facilitated preferential trade relations. Enhanced global economic integration and the emergence of new economic powers in Asia, combined with sluggish or even stagnant growth in many developed nations, led to a realignment of economic activities and the rise of South-South trade (Fayaz & Ahmed, 2020). This indicates that Indonesia has focused a significant portion of its exports on the most dynamic markets.

The residual competitiveness effects are influenced by supply and demand. Consequently, these effects result from interactions between domestic forces that emerge due to increased global trade and Indonesia's trade policy. Consequently, these results may differ across sub-periods, and the sign and magnitude of competitive effects on export performance may also appear to vary in some instances. The competitiveness effect had a positive sign in the fourth, seventh, and final subperiods but a negative in the other subperiods. The overall competitiveness effect was negative and relatively large, reflecting Indonesia's declining market share. In the most recent subperiod observation, the shift in export structure increased market share from 2.70 percent to 2.75 percent. During the subperiod 2017-2019, the competitiveness effect peaked at around 93.03 percent, contributing to the increase in market share. Compared to the performance of each government since the reform era, it is evident that the export competitiveness of Indonesia's fisheries has not changed significantly. This suggests that the various fisheries development programs implemented have not been successful. Early in the reform era, the competitiveness effect was negative, indicating a decline in market share. During the ten years of Yudhoyono's presidency, Indonesia's competitiveness was not sustained, as evidenced by the positive competitiveness effect occurring in only two subperiods: 2005-2007 and 2011-2013. As indicated by its growing market share over the most recent subperiod of observation, Indonesia was competitive at the end of the first term of Widodo's administration. This fluctuation in competitiveness suggests the government shift exports to dynamic markets, explore non-traditional markets, actively participate in bilateral, regional, and multilateral trade agreements, reduce exports of low-value products (raw materials), promote better service licenses; strengthen the fish logistics system, maximize productive capacity, and protect marine resources.

CONCLUSION AND RECOMMENDATION

Conclusion

Indonesia's share of the global fish trade decreased from 4.11% in 1999 to 2.75% in 2019. According to the analysis, the increase in international fishery trade was the primary factor behind the growth of Indonesia's fishery exports during the observation period. The impact was significant, accounting for roughly 192.24% of the total. The commodity composition and competitiveness effects were negative and significant throughout the period, especially the competitiveness effect, approximately -85.97%. This study confirms that the rise of global trade was a significant factor in the change in Indonesia's fishery exports. For commodity composition, there is no

significant change because the shrimp commodity remains the most important export component. The analysis at market distribution level suggested that Indonesia has focused a significant portion of its exports on the most dynamic markets. The performance of each government since the reform era reveals that export competitiveness has not changed substantially. Decreases in Indonesia's market share over the past two decades indicate that the country still lacks competitiveness.

Recommendation

To increase export value following the government's 2024 goal, the government should shift and expand export markets in countries where demand increases. Relevant ministries, such as the Ministry of Marine Affairs and Fisheries, the Ministry of Trade, and the Ministry of Foreign Affairs, must work closely together on trade policy, diplomacy, and promotion. According to Kagawa & Bailey (2006), the informal collaboration between the Thai and Vietnamese shrimp industries and Japanese importers benefited Thailand and Vietnam's exports to Japan. This is one of the significant reasons Indonesia's losing its comparative advantage in the Japanese market. The partnership enables the country to improve the quality of its shrimp products through the transfer of technology and market requirements information from its Japanese business partners. The government can enforce rules governing product safety, processing, environmental standards, and traceability, among other things, to increase the competitiveness of Indonesia's fishery products. Indonesia's fishery products can meet the standards set by importing countries regarding product quality and ecosystem sustainability. In addition, the government must cooperate with the processing industry by providing sufficient information, identifying trends and changes, the impact of technical regulations in destination countries, and standards and global market requirements. According to IFC (2006), the government should boost competitiveness by reducing tariffs, non-tariff barriers, and domestic taxes that increase operational costs. Other alternative programs include enhancing productivity, enhancing and enforcing product quality standards for the fishery industry, and enhancing the branding and image of Indonesian fishery products on international markets. Given the potential for a variety of marine resources with high economic value and the expectation that demand will continue to rise, the development of export commodities other than shrimp is also essential. This study was conducted before the pre-pandemic era; therefore, additional research is necessary to take into account the impact of the COVID-19 pandemic on current export performance and competitiveness and to develop a strategy for dealing with sluggish demand and disruptions to the international supply chain.

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