

Indonesian Market Concentration on The Non-Oil and Gas Commodity Before and During Covid-19 Pandemic

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Abstract

The economic growth of a country is inseparable from the balance of trade, mainly the export and import activity. Globalization urges a country to actively socialize and provide infrastructure and facilities to support productivity and improve competitiveness in the international market. Increasing commodity export value affects the balance of trade to reach surplus, and increasing import value causes the balance of trade deficit. This study aims to analyze Indonesia's non-oil and gas commodity market concentration. Trade Specialization Ratio (TSR) result shows a tendency for Indonesia's non-oil and gas commodities to be both exporters and importers before and during the COVID-19 pandemic. The strategic plan to increase the product competitiveness in the international market can be in the form of increased productivity and quality; cooperating with several parties such as central and regional government, private parties, and also the general public in the planning for differentiating products and export destination, compliance with international product certification standard, tariff policy, and strengthening the economic institutions within the trade activity. Those efforts are taken to achieve national economic growth and decrease regional economic disparities.

Keywords:

export; import; non oil and gas; trade specialization ratio

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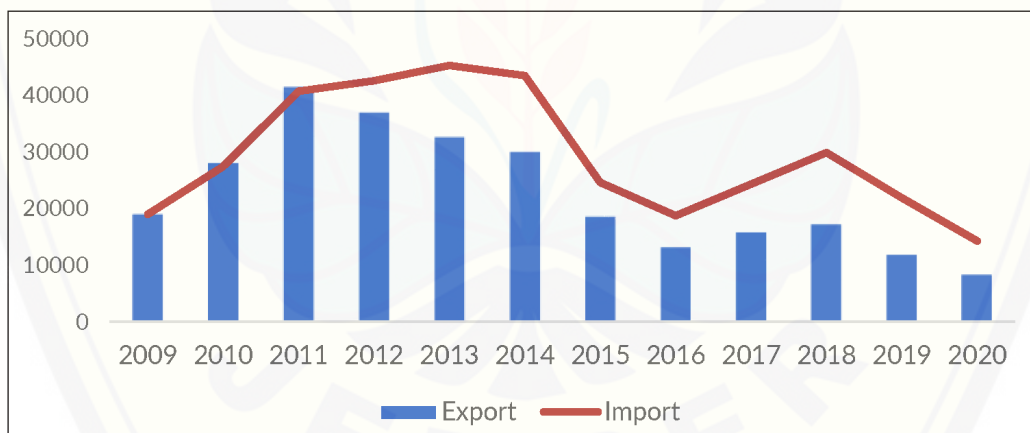
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INTRODUCTION

International trade bridges the good or service exporter and importer. Products in the international market have undergone several certifications to prove their liability to compete. Economic transactions in the international market involve various parties with applicable provisions and regulations. Numerous excellent commodities are being traded in the market by involving parties going through several trading processes such as trade agreements, price deals, and regulation fulfillment in the respective exporter or importer country (Liang et al., 2020; Ren et al., 2014). Commodities traded in the international market are selected products with the best quality and high bargaining power, directly influencing the country's economic growth (Ariyani et al., 2018).

Indonesia's export activities consist of oil and gas and non-oil and gas commodities, and the trade activities can conduct product excellence specialization and maintenance based on the product specification (Ardiyanti, 2015; Salsabila, 2021). The non-oil and gas export growth also supports Indonesia's economic growth rate. Non-oil and gas commodities include agriculture, forestry, fishery, manufacturing, and mining. Indonesia is still dominated by the manufacturing industry, such as palm oil, iron/steel, textile, and vehicle. Thus, the government continuously improves its efforts to increase the competitiveness of non-oil and gas product export, especially in agriculture. The growth of Indonesia's imports and export is as follows.

Figure 1. The Growth of Indonesia's Non-Oil and Gas Import and Export (Million US\$)



(Source: Central Bureau of Statistics Indonesia, 2022)

The value of Indonesia's non-oil and gas exports and imports in the last decade fluctuated. Higher export value than the import shows that there was a surplus in the trade. However, if the import value is higher than the export, it means the opposite. Non-oil and gas trade balance tends to show the stability of the non-oil and gas commodities market from 2009 until 2011 when the export and import value had the relatively same growth. However, after 2011, Indonesia's balance of trade, especially for the non-oil and gas commodities, tended to show a deficit that was proved by the smaller export value than the import. One of the factors that caused this condition was the slow growth of non-oil and gas commodities, such as manufacturing industries and agriculture.

The global economic uncertain condition has become one of the biggest challenges for Indonesia since it will influence trade activities, economics, and politics. COVID-19 is one of the global phenomena which significantly affects the global economy and creates an immense shock to economic stability. Indonesia's economy declined until touching the negative value (-2,07%) starting from the second quarter until the fourth quarter of 2020. This condition was caused by the decreasing performance of the whole business sector as the fundamental element of GDP. Hence, anticipative and productive strategies are needed in managing national economics. One of the objectives is to seek a balance of trade and sustainable surplus. Besides, each commodity's performance shall be controlled eventually to determine product competitiveness in the international market or by observing the export product's market concentration.

Market concentration assessment aims to determine the market specialization – whether the destination country specializes as an importer or exporter. Several of Indonesia's commodities have been used to determine the market concentration, such as by Radityo et al. (2014), who studied rubber commodities. The study showed that Indonesia's natural rubber remained stable as the world's natural rubber exporter, with a value of 1.0. The analysis result was supported by the productivity and the harvest area width, while the international factor was caused by other countries' market share, such as Malaysia and Vietnam. Meanwhile, Lindung & Jamil (2018) found that the world's rubber market structure tends to aim at the oligopoly market and showed that Indonesia's natural rubber has comparative and competitive excellence. Safitri (2011) studied the tobacco commodity, and the result showed that during the research period (2000-2009), the tobacco export development value was close to one based on the TSR result. This result indicated that Indonesia's tobacco was still in the export development process. While for the nickel commodity, the study of Haryadi & Yuniarto (2017) mentioned that the international trade of Indonesian nickel had not yet significantly impacted the national and regional economics. Another study by Nursodik et al. (2021) explained that Indonesia's tea commodity had powerful comparative competitiveness and a tendency to be the tea exporter for the international market.

An empirical study in association with the non-oil and gas commodity analyzed by Khairina & Syahputra (2021) found that the coal commodity export was not quite spread and concentrated only in a single country. Indonesian coffee commodity in 2009-2018 was also not concentrated and specialized only in a specific region, as explained in the study of Kusmiati & Windiarti (2011). The sea products commodities also showed the specialization value close to one point that it tends to be the exporter, as mentioned in the study of Riniwati et al. (2017). Multazam (2018) explained that Indonesia's non-oil and gas export strength was supported by the size of export volume and the utilization of Bonded Logistics Center to support either export or import cost efficiency. Meanwhile, one of the weaknesses of Indonesia's export is the low competitiveness and inadequate infrastructure, especially in several regions, as well as the export sector that is still dominated by large industries rather than small and medium enterprises (SMEs).

Indonesia will experience growth in the export sector if they increase productivity, product quality, and product diversification. Modern international trade theory eased many classical assumptions concerning perfect competition by proposing the concept of monopolistic

competition and product differentiation (Dowling, 2008). Besides product differentiation, the modern trade theory emphasizes the importance of economic scale and technology as the additional factor in determining the international trade pattern. This result is in line with the globalization development and has become one of a country's determining factors in competing in the global market (Dowling, 2008; Meinen & Raff, 2018). The international trade activity also discusses the comparative advantage theory proposed by David Ricardo. The comparative advantage determines the international trade specialization; a commodity with a comparative advantage will have economic efficiency (Saleh & Widodo, 2010). Based on the previous studies and the supporting theory, this study aims to observe Indonesia's non-oil and gas market concentration. The novelty of this study is that the research object focused on the 63 non-oil and gas commodities in Indonesia by involving the COVID-19 pandemic phenomena that have become one of the factors of global economic uncertainty.

RESEARCH METHOD

This research is descriptive and quantitative study by involves Indonesia's non-oil and gas commodity export value and non-oil and gas commodity import value as variables. 63 non-oil and gas commodities become the focus of this study (Table 1, Table 2, and Table 3). This study took the period before and during the COVID-19 pandemic (2018 until the second quarter of 2021). This study used secondary data from time series taken from the Central Bureau of Statistics Indonesia.

The approach used to see the market concentration index is by calculating the Trade Specialization Ratio (TSR). It was used to determine the relative condition of certain commodity competitiveness in the global market to identify its existence and performance. The TSR method was initially used by Kaneko & Yanagi (1988) to calculate the competitiveness of commodity X with the product life cycle, which later concluded the competitiveness of a commodity in the global market. Trade Specialization Ratio (TSR) is an analysis tool for comparative competitiveness which shows if a country acts more as an exporter or importer (Nursodik et al., 2021). If the TSR value is positive, the country tends to act as an exporter, and the commodity has strong competitiveness. On other hand, if the TSR value is negative or around, the country tends to act as an importer.

The following is the formula for calculating the TSR of a commodity:

$$TSR_i = \frac{E(i) - M(i)}{E(i) + M(i)}$$

Where it is explained as:

E(i) is the export value of commodity i in US\$

M(i) is the import value of commodity i in US\$

RESULTS AND DISCUSSION

Indonesia's international trade performance fluctuated yearly, especially the oil and gas and non-oil and gas commodities. The decreasing export performance was due to the government's lateness in diversifying export destination countries and the lack of export product diversification. Based on the analysis using Trade Specialization Ratio (TSR)

calculation, the result showed that several non-oil and gas commodities exported to the international market varied in terms of global market concentration from the pre-pandemic until the pandemic during 2018 until the second quarter of 2021.

Table 1. Results of TSR Analysis (0 < TSR 1)

No	Commodity	2018	2019	2020	Q2 2021
1.	Shrimp	0.9001	0.8807	0.9258	0.8839
2.	Coffee beans	0.7045	0.8833	0.9577	0.9206
3.	Fish and others	0.7452	0.7556	0.7708	0.7705
4.	Herbs and spices	0.5837	0.7422	0.8285	0.6830
5.	Tea	0.6253	0.5538	0.6524	0.6492
6.	Vegetable ingredients	0.9588	0.9581	0.9394	0.9348
7.	Resin and resin	0.9611	0.9661	0.9837	0.9476
8.	Palm oil	0.9999	0.9938	0.9999	1.0000
9.	Textiles and textile products	0.2139	0.2187	0.2500	0.2273
10.	Processed rubber	0.5882	0.6132	0.6746	0.6426
11.	Paper and paper goods	0.3405	0.3302	0.3833	0.2537
12.	Processed food	0.0724	0.1912	0.2892	0.1051
13.	Processed wood products	0.8294	0.7602	0.8295	0.8138
14.	Footwear	0.7433	0.6686	0.7765	0.7942
15.	furniture	0.5423	0.5408	0.5884	0.5685
16.	paper material	0.3521	0.4368	0.5186	0.4934
17.	Fatty acid	0.8412	0.8651	0.9610	0.9672
18.	Bath and washing soap	0.4456	0.4456	0.4769	0.4586
19.	Sports equipment	0.0895	0.1127	0.1869	0.1750
20.	Margarine and other fats	0.9230	0.9160	0.9567	0.9535
21.	Items of precious metal	0.9663	0.9649	0.9811	0.9699
22.	Cement	0.9863	0.9803	0.9901	0.9817
23.	2 and 3 wheel motor vehicles	0.8582	0.9067	0.9269	0.9010
24.	Wickerwork	0.8942	0.8809	0.9751	0.9835
25.	Processed rattan	0.9985	0.9981	0.9421	0.6721
26.	Glycerol and alkaline solution	0.9982	0.9858	0.9982	0.9991
27.	Mining results	0.8453	0.8085	0.7510	0.7423
28.	Coal	0.9276	0.9075	0.8814	0.8994
29.	Copper ore	0.9997	0.9989	0.9998	0.9995
30.	Bauxite	0.9830	0.9941	0.9610	0.9946

Source: Results of TSR Calculation (2021)

The analysis results in Table 1 showed a positive TSR value ($0 < \text{TSR} \leq 1$) in the period before and during the COVID-19 pandemic until the second quarter of 2021. The TSR positive value showed that the country tends to act as the exporter of the commodity and has powerful competitiveness in the international market. Those commodities that have positive TSR value shows in Table 1. Nursodik et al. (2021) supported this study result mentioned that tea, as one of the non-oil and gas commodities, had a strong comparative competitiveness and tend to be the exporter country to the international market on the stage of expanding export. Furthermore, previous research has revealed that coal commodities

(Khairina & Syahputra, 2021) and furniture commodities (Elysi et al., 2018) also have strong comparative competitiveness in the international market. The TSR calculation result of Riniwati et al.(2017) , also explained that fish and others commodities have TSR value close to 1. Another study by Kusmiati & Windiarti (2011) showed that the plantation business in Indonesia were not concentrated and specialized only to one region.

Table 2. Results of TSR Analysis (-1 TSR < 0)

No	Commodity	2018	2019	2020	Q2 2021
1.	Agricultural product	-0.2559	-0.2592	-0.1138	-0.2887
2.	Cacao bean	-0.7540	-0.7545	-0.6273	-0.8297
3.	Fruits	-0.5452	-0.5827	-0.6752	-0.4949
4.	Vegetables	-0.7937	-0.7666	-0.5734	-0.8410
5.	Natural rubber	-0.4725	-0.4661	-0.5484	-0.7226
6.	Other agricultural products	-0.8278	-0.8329	-0.7433	-0.8128
7.	Electrical, measuring and optical equipment	-0.4165	-0.3860	-0.3464	-0.3453
8.	Chemical material	-0.3490	-0.3071	-0.2566	-0.2093
9.	Artificial resin, plastic material	-0.5516	-0.5526	-0.4415	-0.5471
10.	Ships and the like	-0.7923	-0.5594	-0.7122	-0.7138
11.	Machine parts	-0.5514	-0.5448	-0.4917	-0.4268
12.	Computers and parts	-0.3608	-0.3660	-0.2399	-0.2394
13.	Essential oil and more	-0.2957	-0.2646	-0.1918	-0.1901
14.	Glass and glassware	-0.1379	-0.1923	-0.0020	-0.1384
15.	Fertilizer	-0.6485	-0.4428	-0.3332	-0.3418
16.	Ceramic products	-0.3009	-0.2811	-0.2535	-0.3309
17.	Cattle fodder	-0.5851	-0.5342	-0.4532	-0.4900
18.	Pharmaceutical products	-0.2316	-0.2028	-0.2622	-0.7274
19.	Leather and leather goods	-0.4366	-0.4442	-0.4929	-0.4787
20.	Germicidal preparations	-0.2818	-0.3226	-0.3378	-0.3362
21.	Aircraft and its parts	-0.7809	-0.6477	-0.8082	-0.7520
22.	Synthetic organic dyes	-0.5028	-0.4307	-0.4674	-0.4755
23.	Container	-0.9521	-0.8567	-0.8113	-0.8648
24.	Other industrial products	-0.4413	-0.4739	-0.3988	-0.3600
25.	Granite	-1.00000	-0.9969	-1.00000	-1.0000
26.	Other mining products	-0.7078	-0.5957	-0.8804	-0.7693

Source: Results of TSR Calculation (2021)

The negative TSR result of Indonesia's non-oil and gas commodities were shown at Table 2. The calculation result in this study also showed several commodities which had weak competitiveness and tend to act as importer as confirmed by the negative value until close to 0. Those commodities which acted as importer and had low competitiveness during 2018 until the second quarter of 2021 shows in Table 2. This study showed different result compared to the study of Lindung & Jamil (2018) that showed during the 1996-2016 period, natural rubber commodity would have a more concentrated market structure and be able to increase its competitiveness.

Several non-oil and gas commodities also had positive export value in a certain year while gaining negative value in other certain year (Table 3). For example, tobacco had

positive value close to 0 up to 1 in 2018, 2020, and the second quarter of 2021 which confirmed that in those years tobacco had strong competitiveness in the international market and tended to act as exporter. Meanwhile, in 2019, tobacco was considered as having weak competitiveness and tended to act as importer, where this result was in line with the study of Safitri (2011). Beside tobacco, industrial products commodity and the basic metal commodity also acted as exporter with strong competitiveness in 2020 and the second quarter of 2021 supported by the TSR positive result. There was also the 2 and 3-wheel motor vehicles commodity that had positive TSR value between 0-1 in 2019, 2020 and the second quarter of 2021. It confirmed that the commodity had strong competitiveness in the international market and acted as exporter. Nickel ore and other traded goods also became the strong competitive commodities and acted as exporter in the international market in 2018 and 2019 which was confirmed by the positive TSR value between 0-1. The framework convention on tobacco control makes a number of recommendations aimed at restricting the marketing of tobacco products (Savell et al., 2014). Lee et al. (2016) conclude that this expanded and interdisciplinary research agenda provides the potential for fuller understanding of the dual and dynamic relationship between the tobacco industry and globalization.

Table 3 Results of TSR Analysis (Fluctuative)

No	Commodity	2018	2019	2020	Q2 2021
1.	Motorized vehicles with 4 wheels and more	-0.0298	0.1879	0.5437	0.2499
2.	Tobacco	0.0142	-0.1704	0.0981	0.0048
3.	Industrial output	-0.0716	-0.0531	0.0808	0.0673
4.	Base metal products	-0.2405	-0.1862	0.1513	0.1524
5.	nickel ore	1.0000	0.9921	-1.00000	-0.9920
6.	Other merchandise	0.0412	0.1311	-0.9193	-0.1327
7.	Vehicle parts	-0.2399	-0.2651	0.0036	-0.1317

Source: Results of TSR Calculation, 2021

The industrial products and basic metal products commodities also acted as importer in 2018 and 2019 with negative TSR value between -1 up to 0 as well as having the weak competitiveness. Other commodities such as 2 and 3-wheel motor vehicles were having weak competitiveness in 2018 with negative TSR value. Besides, nickel ore and other traded goods also acted as importer with weak competitiveness in 2020 and the second quarter of 2021 that confirmed by the negative TSR value between -1 up to 0. Study from Haryadi & Yuniyanto (2017), also explained that Indonesia's non-oil and gas commodities such as nickel has not yet given an optimum impact to the country's economic in which one of the factors is the low competitiveness in the international market.

Resources owned by Indonesia would possibly crate an opportunity for development and cultivation by keep on maintaining the quality as proven by the trade specialization index value. The analysis result concluded that most of the commodities such as plantation, fishery, chemical products, furniture, mining products, etc. were able to fulfill the market demands. The market concentration index for those commodities before pandemic tended

to act as exporter. The conditions are still same although the pandemic hit and only slightly decrease as the result of shock caused by the global economic uncertainty.

Companies and industries in Indonesia rely on the human resource quality in terms of productivity as the country is highly populated. However, the globalization era requires effective and efficient production acceleration that many industries adopt technology incorporated with the human labor that later increases the import of technology. In an international trade, each country faces a condition where they have commodities with large and small or low market share. Indonesia has a low market share caused by several factors such as (1) inadequate information system; (2) lack of international certificate and compliance on the export products and industrial process; (3) lack of technology license utilization; (4) unstable electricity (Ridhwan et al., 2015). Indonesia was very competitive in terms of lower technology manufacturing industries such as food and beverages, manufacture, tobacco and textile.

International trade activities (export-import) shall include agreement such as the Free Trade Agreement (FTA) in which the implementation is not only considered from how big the trade size or volume is, but also the trading pattern (Alhayat, 2012; Cali et al., 2019; Athukorala & Kohpaiboon, 2011). Okabe (2015) explained that a more complementary offer and demand among countries means higher trade rate. Besides, it gave positive impacts on the bilateral export and affected the intra-industrial trade especially in amongst the ASEAN member countries. Empirical study showed that Indonesia's export was more liked bilateral than global. Indonesia's gross export was generally stable and quite immense domestically and even more than 80% of the Indonesia's export value total gained from the domestic production factor (Asian Development Bank & Islamic Development Bank, 2019). Hence, government and related parties shall synergize their efforts to increase product competitiveness, for example by considering the suggestion from the Indonesia's Ministry Coordinator of Economic Field such as maintaining the product continuity, quality, and volume; pushing the production to comply the export standard; integrated infrastructure development; and increasing the number of cold storage and packing house as the refrigeration chain transit facilities of the export products.

Besides, in association with the agriculture sub-sector, monitoring and controlling are needed concerning the width of farm area used for planting the main commodity that mostly has been turned into industrial area. Factors that influenced export performance; especially in the food sector are logistic cost and the non-tariff barriers. Thus, it requires field management and agricultural production development that could create food security.

CONCLUSION

This study aims to observe Indonesia's non-oil and gas commodity market concentration before and during the COVID-19 pandemic. Based on the result of market concentration index analysis through TSR calculation. There are 30 commodities have strong competitiveness and a tendency to act as exporters before and during the COVID-19 pandemic. Meanwhile, several commodities had weak competitiveness and a tendency to act as importers before and during the COVID-19 pandemic.

The study result also showed that there are 26 commodities had strong competitiveness and a tendency to act as an exporter in a specific year while having weak competitiveness and a tendency to act as importers in another specific year before and during the COVID-19 pandemic. They were 4 or more wheel motor vehicles, tobacco, industrial products, primary metal products, nickel ore, other traded goods, and vehicle spare parts. Therefore, based on the analysis result and discussion, the government and other parties related to the trading activities shall strengthen their integration to create a healthy trading environment and push the national economic growth. Those activities could also create an opportunity for Indonesia to strengthen its trading activity through, for example, increasing innovation for solid competitive products, good product standardization, a strategic promotion system, and a trading policy that benefits all parties.

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