MARKET OVERVIEW OF INDONESIA COPPER EXPORT COMMODITY (CASE OF INDONESIA, THAILAND, AND JAPAN COPPER EXPORTING COUNTRIES IN 2004-2018)

Greatly Claudia[1*]
Iman Murtono Soenhadji[2]
[1,2]Gunadarma University, Jakarta, Indonesia
e-mail: greattyclaudia@gmail.com[1], imanms@staff.gunadarma.ac.id[2]
*Correspondence: greattyclaudia@gmail.com

Abstract. The purpose of this study is to analyze developments, measure the level of trade specialization, and explore the story of competitiveness of Indonesia, Thailand, and Japan copper commodity exports in the world market. The analytical methods used are TSI (Trade Specialization Index), RCA (Revealed Comparative Advantage), RCTA (Revealed Comparative Trade Advantage), and AR (Acceleration Ratio). The results showed that Indonesia's copper exports and Indonesian specialization level towards Thailand were at the Maturity stage because the average obtained was 0.910. But for Indonesia, Japan for -0,462 and Thailand for Japan, -0,385 are in the Import Substitution stage, and for Indonesia, itself is in the Growth stage with an average of 0.792. As for the RCA results, Indonesia is the most superior because it has an RCA value of> 1 as much as 15, followed by Thailand with an RCA> 1 as much as three, which means that Indonesia has a comparative advantage over the world market and Thailand also has good competitiveness, but for Japan, it does not have an RCA> 1 which means it has no comparative advantage to the world market. The RCTA results show that Indonesia has high competitiveness against the world market because it has had a positive index result for 15 years. AR results show that Indonesia and Japan can seize the copper export market to the world market, while for Thailand for the past three years, namely in 2016-2018.

Keywords: acceleration ratio; descriptive analysis; revealed comparative advantage; revealed comparative trade advantage; trade specialization index.

INTRODUCTION

In the last few decades, globalization has caused a variety of fundamental changes in the world economic order, both in the financial and trade sectors (Ahmed et al., 2021). At present, no single country is in a state of autarchy or an isolated state without economic relations with other countries (Abdurakhmanova & Rustamov, 2020). International trade is one of the activities aimed at improving people's welfare in the era of globalization and digitalization (Yeganeh, 2021). Indonesia, which has abundant natural resources, has various natural resources that can support Indonesia's economic sector. One of Indonesia's natural wealth results is the copper commodity (Magno & Guzman, 2021). The copper commodity is one of the mining commodities that plays a vital role in making a positive contribution to the value of Indonesia's exports, so it is essential to analyze the competitiveness and development of Indonesia's copper exports abroad.

International Trade Theory

International trade theories try to understand why a country (economy) wants to conduct trade cooperation with other countries. International trade plays a vital role in the process of economic development in various countries.

Export Market

Exports occur mainly because the needs for goods and services are fulfilled domestically or because the production of goods and services can be competitive both in price and quality of similar products on the international market (Lim et al., 2021).

Competitiveness Analysis

Competitiveness is the ability of a company, subsector, or country to offer goods and services that meet the quality standards of the domestic and world markets at competitive prices and provide adequate income for the resources used to produce them (Halimi, 2020).

Indonesian Prime Commodities

Indonesia is known as one of the countries rich in superior commodities in the world. Leading commodities are commodities that have strategic value based on physical considerations (land and climate conditions) (Guslan et al., 2020), as well as socio-economic and institutional (mastery of technology, human resource capabilities, infrastructure, socio-cultural constraints) to be developed in an area Sitorus et al. 2014 in (Selfia, 2020). Indonesian marine and agricultural products are very numerous and diverse, making this country have its natural wealth. One of the results of Indonesia's natural wealth is the copper commodity (Rochwulaningsih, 2021). Indonesia has the Grasberg Mine located in the province of Papua. This is the second-largest copper mine and the largest gold mine in the world. In Indonesia, there are 2 of the most significant mining locations, namely Grasberg (Papua) and Batu Hijau (West Nusa Tenggara).

Opportunities and Challenges

Indonesia's main comparative advantage is in commodities related to

natural resources, such as agricultural, mining, and plantation products. In copper mining, Indonesia has more than enough natural resources for raw copper industry materials. Sufficient copper processing technology is available adequate and supported by foreign investors who help strengthen Indonesian technology in steel processing. At the same time, the challenge is the copper concentrate production capacity of PT. Freeport Indonesia reaches 1-1.2 million tons per year where the domestic industry has not fully absorbed the production.

Formulation of the Problem

1. How are Indonesia, Thailand, and Japan copper commodity exports to the world market?
2. What is the level of specialization of Indonesia, Thailand, and Japan copper commodity exports?
3. What is the position of the competitiveness of Indonesia, Thailand, and Japan copper commodity exports to the world market?

METHODS

Object of Research

The research object taken in this study is the collection of Indonesian, Thai and Japanese copper exports with the code HS 7408 (Copper Wire), which is Copper Wire.

Data Types and Sources

This type of research is a quantitative descriptive study (Sugiyono, 2016). The descriptive-analytical research method is a research method by discussing a question by discussing, describing, analyzing, and

interpreting things written with a compiled and systematic discussion states by Arifin in (Wulandari, n.d.). Trade Specialization Index (TSI) is used to analyze the position or stage of development. (Prabowo et al., n.d.). Mathematically, TSI can be formulated as follows:

$$TSI = \frac{(Xia-Mia)}{(Xia+Mia)} \quad (1)$$

Where X and M are exports and imports, and I and a are goods of type I and country a, respectively. Implicitly, this index considers the demand side and the supply side, where exports are identical to domestic supply and imports are domestic demand. TSI index can also be used to identify the growth rate of a commodity in trade which is divided into five stages as follows:

1) Introduction Stage

When an industry (forerunner) in a country (call A) exports new products, a latecomer industry in country B imports those products. In this stage, the TSI index value of the latecomer industry is -1.00 to -0.50.

2) Import Substitution Phase

The TSI index value rises between -0.51 to 0.00. At this stage, industry in country B shows very low competitiveness because production is not high enough to reach economies of scale. The industry exports products of poor quality, and domestic production is still smaller than domestic demand. In other words, for this commodity, at this stage, Country B imports more than exports.

3) Growth Stage

The TSI index value rises between 0.01 and 0.80, and industries in country

B produce large-scale production and begin to increase exports. In the domestic market, the supply for these commodities is more significant than demand.

4) Maturity Stage

The index value is in the range of 0.81 to 1.00. At this stage, the product concerned is already at the standardization stage concerning the technology it contains. At this stage country, B is a net exporter country.

5) Re-import phase

The TSI index value has declined again between 1.00 and 0.00. At this stage, industries in country B cannot compete in their domestic markets with industries from country A, and domestic production is less than domestic demand.

RCA (Revealed Comparative Advantage)

This method measures the export performance from a country by evaluating the role of certain commodity exports in a country's total exports compared to the share of these commodities in world trade (Prayitno & Widyawati, 2021). The general formulation of the RCA is as follows:

$$C = \frac{(xij/(x.j)}{(xiw/(x.w))} \quad (2)$$

Where: C = RCA Figures, Xij = Export value of commodity i country j, X.j = Total export value of country j, Xiw = Value of export of commodity i world, and X.w = Value of total world export. An index smaller than one indicates a decrease in RCA. The performance of commodity exports from country j experienced a relative setback compared to the world average export performance. Conversely, an index greater than one indicates that the export of commodities / from the country; increased relative to the world average, so that its share in the world market is increasing (Rahmansyah et al., 2021).

RCTA (Revealed Comparative Trade Advantage)

RCTA sees the relative performance of exports compared to imports. The RCTA formula is as follows:

$RCTA = RXA\_ia - RMP\_ia$

$RXA\_ia = (X\_ia / X\_i(w-a))/[〚X(k-i)〛\_a/ 〚X(k-i)〛\_((w-a))] \quad (3)$

$RMP\_ia= (M\_ia / M\_i(w-a))/[〚M(k-i)〛\_a/ 〚M(k-i)〛\_((w-a))]$

The critical index of RCTA is RXA = Revealed Export Competitiveness which measures export competitiveness, and RMP = Revealed Import Penetration which measures the amount of import penetration. A = country a, k = all types of goods including I, w = world, X_ia, and M_ia = exports and imports of goods I from the government a, X_i(w-a) and M_i(w-a) = exports and total imports of goods I from non-countries a. 〚X(k-i)〛_a and 〚M(k-i)〛_a = total exports and imports of other goods, not I from countries a, 〚X(k-i)〛_((w-a)) and 〚M(k-i)〛_((w-a)) = total exports and imports of other non-I goods from countries, not a. The provision of RCTA is that the value of the RCTA index can be smaller or more significant than 0. If the RCTA index value is positive, it means the country has high competitiveness. Otherwise, if the RCTA index value is negative, the government has no competitiveness (disadvantage) towards the product.

AR (Acceleration Ratio)

AR is used to see the trend of commodity exports in exporting countries, whether higher or lower than the average trend in the export of these commodities in the world (Veno et al., 2020), whether a government can seize the export market (in the sense that it can beat its competitors), or its position is getting weaker in the export market or the domestic market. AR values are obtained using the following formula:

$$AR = \frac{(\llbracket Trend\ X \rrbracket_{iJ} + 100)}{(Trend\ M_{ij} + 100)} \qquad (4)$$

Where: X_{ij} is a trend or change in the export of certain commodities of a country (in%) in a certain period, and M_{ij} is a trend or change in the import of certain things (in%) in a certain period. If the AR value is less than one, it shows that the growth of an item in a country is lower than the growth of the same commodity at the world level. An article has a comparative advantage if the AR is more significant than one (AR> 1).

RESULTS AND DISCUSSION

Table 1. Descriptive Analysis
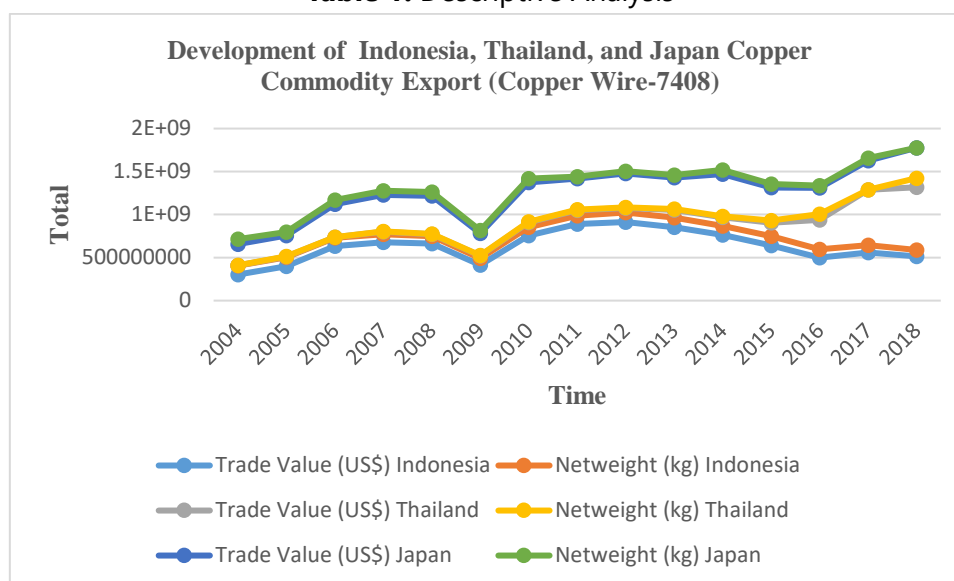
Source: UN Comtrade and Trade Map (2019)

The research results conducted by (Malau, n.d.) show that Indonesian copper is competitive in destination countries.

The research results conducted by (Ustriaji, 2016) showed that Indonesia's leading commodities from these commodities experienced a significant increase in growth. The biggest contributor to these leading commodities is palm oil, ranked first with total export value in 2010-2014. RCA calculations show that the oil palm, forest products, footwear, cocoa, coffee, rubber, and textile industries in 2010-2014 have competitiveness above the world average.

The research results conducted by (Bustami & Hidayat, 2013) showed ten superior products of North Sumatra province with different competitiveness. Although some excellent products are not competitive or have a weak competitive position, the northern part of Sumatra province still exports superior products.

Based on 15 years of observation, namely in 2004-2018 for copper export commodities (Copper Wire-7408), it can be seen that the development of Indonesia's copper commodity exports to the world, for the highest Trade Value was in 2012 with a value of 913,382,070 US $ and the lowest in 2004 with a value of 302,600,030 US $. While for the average value obtained is 632,164,436.6 US $. For Net weight, the largest volume was in 2013 with 111,965,046 kg and the lowest volume in 2009 with 74,692,508 kg. The average volume obtained was 96,459,641.6 kg. It can also be seen that the development of Thailand copper commodity exports to the world, for the highest Trade Value was in 2018 with a value of 726,687,125 US $ and the lowest in 2004 with a value of 3,239,465 US $. As for the average value obtained at 154,902,845.1 US $. For Net weight, the largest volume was in 2018 with 106,208,281 kg and the lowest volume in 2004 with a total of 724,768 kg. The average volume obtained was

18,546,100.64 kg. In addition, for the development of Japan copper commodity exports to the world, the highest Trade Value was in 2014 with a value of 490,284,828 US $ and the lowest in 2005 with a value of 239,623,632 US $. Whereas the average value obtained was 363,398,216 US $. For Net weight, the largest volume was in 2004 with 57,777,262 kg and the lowest volume in 2018 with a total of 0 kg. Whereas the average volume obtained was 36,277,133 kg.

Table 2. Summary of Research Results

| Time | Indonesia Copper Export Market | | | |
	TSI	RCA	RCTA	AR
2004	0,872	4,293	3,10	14,727
2005	0,876	4,276	3,59	15,526
2006	0,908	3,682	5,05	20,822
2007	0,834	3,742	4,47	11,113
2008	0,661	3,502	3,32	4,914
2009	0,739	3,521	2,87	6,687
2010	0,754	3,632	4,31	7,135
2011	0,795	3,313	4,36	8,786
2012	0,739	4,152	4,22	6,686
2013	0,804	4,111	4,03	9,226
2014	0,799	3,871	3,56	8,963
2015	0,785	4,348	3,40	8,314
2016	0,769	3,841	2,71	7,660
2017	0,800	3,309	2,81	9,039
2018	0,743	2,902	2,29	6,782
Avarage	0,792	3,766	3,606	9,741

Source: Data Processed, 2019.

Based on table 2, it can be concluded that Indonesia has export potential for copper (Copper Wire-7408) for 15 years of monitoring, namely in 2004-2018. For average results, Indonesian Copper TSI to the world amounted to 0.792 (0.01 <0.792≤

0.8), which is by copper industry standards in Indonesia, which produce large-scale production and begin to increase its exports. For the results of RCA, Indonesia has an effect> 1 for 15 years in a row, which means that Indonesia has a comparative advantage, and its share in the world market has increased in copper exports (Copper Wire-7408). The RCTA results show that Indonesia has positive index results based on observations in 2004-2018, which means that Indonesia has high competitiveness (profit) against exports of copper commodities (Copper Wire-7408). Successfully exporting Indonesian copper has AR> 1 results for 15 years in a row. It can be interpreted that Indonesia can seize the copper export market to the world market, have high competitiveness, and defeat competitive countries.

CONCLUSIONS

Indonesia had the highest copper export value in 2012, is at a growth stage, has a comparative advantage, increased competitiveness, and has the opportunity to seize the copper export market to the world.

REFERENCES

Abdurakhmanova, G., & Rustamov, D. (2020). Theoretical Principles Of Attracting Foreign Investment To The Country's Economy. *Архив Научных Исследований*, *24*.

Ahmed, Z., Zhang, B., & Cary, M. (2021). Linking economic globalization, economic growth, financial development, and ecological footprint:

Evidence from symmetric and asymmetric ARDL. *Ecological Indicators*, *121*, 107060. https://doi.org/10.1016/j.ecolind.2020.107060

Bustami, B. R., & Hidayat, P. (2013). Analysis of the competitiveness of export products of North Sumatra province. *Jurnal Ekonomi Dan Keuangan*, *1*(2), 14876.

Malau, D. B. (n.d.). *Performance Analysis of Indonesian Copper Exports to Export Destination Countries.*

Guslan, D., Rubbiah, S. S., & Sanggala, E. (2020). Analysis Of The Selection Of Leading Commodities Of Corn And Soybean To Support Food Security In The Regency Or City Of West Java Province Using Location Questions (Lq) And Shift Share Analysis (Ssa) Methods. *Pro-Mark*, *10*(2).

Halimi, K. (2020). Export Competitiveness of Food Industry in Kosovo. *Economic Alternatives*, *4*, 648–665. https://doi.org/10.37075/EA.2020.4.09

Lim, D., Valencia, J., & Caroline, W. (2021). The Effect of Export Activities in the Covid-19 Era on Gross Domestic Product in 2020*Jurnal Sosial Sains*, *1*(6), 521–527. https://doi.org/10.36418/sosains.v1i6.133

Magno, C. D., & Guzman, R. R. S. (2021). Energy and the viability of downstream integration: Cross-country evidence from the copper industry. *The Extractive Industries and Society*, *8*(3), 100947. https://doi.org/10.1016/j.exis.2021.100947

Prabowo, B. M. F., Hardyastuti, S., &

Darwanto, D. H. (n.d.). The Performance of Indonesian Crude Palm Oil Export. *Journal of Agribusiness Management and Development*, *1*(1), 159–167.

Prayitno, B., & Widyawati, R. F. (2021). Competitiveness Analysis Of Indonesian Palm Oil. *Media Mahardhika*, *20*(1), 96–105. https://doi.org/10.29062/mahardika.v20i1.326

Rahmansyah, R., Nuraini, C., Rofatin, B., & Mutolib, A. (2021). Study of Export Competitiveness of Indonesian Processed Tuna Products in the European Market. *JSHP: Jurnal Sosial Humaniora Dan Pendidikan*, *5*(2), 180–189. https://doi.org/10.32487/jshp.v5i2.1154

Rochwulaningsih, Y. (2021). Tracing Maritime Glory and the Formation of the Cosmopolitan Society of South Kalimantan. *Prosiding Lintasan Sejarah Maritim Kalimantan Selatan*, 21–34.

Selfia, Y. (2020). Strategy For Development Of The Regency Of Kendal Region Based On Leading Commodities Agricultural Food Crops. *Jurnal Planologi Dan SipiL (JPS)*, *2*(2), 115–125.

Sugiyono. (2016). *Quantitative, Qualitative, and R&D Research Methods*. PT Alfabet.

Ustriaji, F. (2016). Analysis of the Competitiveness of Indonesia's Leading Export Commodities in International Markets. *Jurnal Ekonomi Pembangunan*, *14*(2), 149–159. https://doi.org/10.22219/jep.v14i2.3851

Veno, A., Safitri, L. A., & Prijanto, T. (2020). Analysis of Indonesia's Crude Oil Export

Competitiveness Compared to Member Countries OPEC. *Jurnal Ilmiah Ekonomi Dan Bisnis Triangle*, *1*(1), 16–29.

Wulandari, R. (n.d.). Demand For Soybean Of Tofu Small Scale And Home Industries And Their Feasibility In The District Of Semarang. *Journal of Agribusiness Management and Development*, *2*(1), 47–54.

Yeganeh, H. (2021). Emerging social and business trends associated with the Covid-19 pandemic. *Critical Perspectives on International Business*. https://doi.org/10.1108/cpoib-05-2020-0066