

## Indonesia's Automotive Industry Competitiveness In The Global Market

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**ABSTRACT:** The automotive industry sector from year to year experienced a growing technological development. With increasing volume of vehicles provide business opportunities in the field of production of spare parts or spare parts and Also provide business opportunities in the field of automotive commodity production. This research aims to find out more about Indonesia's automotive industry the opportunity to enter the global market. The calculation techniques used are RCA and RSCA, ISP and IIT Index. Based on the results of the calculation, with RCA and RSCA acquired Indonesia has a weak competitiveness or has no competitiveness. With the calculations of ISP, Indonesia tends to be an export from 2014 to 2018, and IIT Index shows the two-way trade of the Indonesian automotive industry from 2010 to 2018 shows roommates trade lightweight integration. Indonesia was able to enter the Global Value Chain from 2014 to 2018.

**Keywords:** Automotive, international trade, competitiveness, specialization, global value chain.

### I. INTRODUCTION AND LITERATURE REVIEW

Table 1 Value of Products Import Automotive Parts Country Indonesia by Origin Year 2012-2018 (in thousands of US \$)

Exporters	2012	2013	2014	2015	2016	2017	2018
world	2,982,31	3,218,27	2,908,46	2,456,67	2,593,54	3,165,04	3,775,89
japan	1,181,39	1,333,27	1,191,96	1,032,07	1,189,92	1,440,10	1,847,49
Thailand	1,021,07	1,111,22	974.632	802.199	722.818	901.587	944.598
China	122.781	118.382	123.310	129.734	147.449	189.045	282.770
Viet Nam	12.281	13.847	22.888	57.035	74.168	77.089	83.524
United States of	55.731	43.915	46.589	38.772	49.738	63.491	83.455
India	29.472	75.043	109.134	79.728	85.690	78.769	83.282
Philippine	71.636	89.675	105.324	51.156	81.206	87.028	78.076

Source: UN COMTRADE, 2014

Free trade has an impact on a country's economic, social and political conditions (Mugiono, 2012: 72). Free trade allows people from various countries to get better goods at lower prices. Commodities traded can be in the form of goods and services. At this time in conducting free-trade activities, a country will need access or tools to expand its reach. One of them is a means of transportation. However, not all countries can produce this transportation. So in its development, if a country wants to expand its trade outreach it must-have tools that can support it.

Global imports of automotive component products in the motor vehicle components and accessories group continued to increase with an average of 12.67% in the 2009-2013 period. The total import value of these products increased by 5.60% from US \$ 338.10 billion (2012) to US \$ 357.05 billion. (Ministry of Trade, 2014). Indonesia carried out the biggest import of spare parts in the 2009-2013 period with Japan. After that, the second place was occupied by Thailand.

Can be seen in table 1.1, the two countries of origin for imports of automotive parts, namely Japan and Thailand, experienced an increase in import values from 2012 to 2013 with a high enough import value. In 2013, it showed a large import value of automotive parts to Japan and Thailand, namely Japan at US \$ 1.333 billion and Thailand at US \$ 1.111 billion. However, until 2018, Indonesia imported more to Japan in the amount of US \$ 1,847 and Thailand, it decreased to US \$ 944.

But in 2018, there will be a change in the number of Indonesian exports. The destination country for Indonesia's automotive product export is the Philippines of US \$ 1.125 billion. And the second destination

country is Saudi Arabia with US \$ 373 million. This shows a significant change in the needs of a country to import this automotive commodity that can be used as a necessity.

Table 2 Value of Indonesian Automotive Product Exports by Destination Country Year 2012 to 2018 (in thousands of US\$)

Importers	2012	2013	2014	2015	2016	2017	2018
world	2,264,34	2,116,00	2,641,59	2,430,59	2,565,83	3,096,48	3,276,97
Philippines	335.238	349.692	558.596	503.857	1,071,193	1,203,000	1,125,672
Saudi Arabia	528.622	528.629	684.153	873.467	447.870	494.133	373.446
Viet Nam	5.106	8.692	8.469	17.756	45.712	241.473	273.236
Thailand	475.254	391.344	344.004	122.745	174.255	176.919	226.248
Oman	75.506	63.052	91.065	44.577	36.455	92.110	149.681
japan	156.914	137.966	128.370	116.934	115.824	134.860	143.783
United Arab Emirates	120.957	162.312	189.052	204.912	69.710	126.039	137.857

Source: UN COMTRADE, 2014

Seen from Tables 1.1 and 1.2 when connected, Indonesia is quite a lot in the activities of importing auto parts, but in automotive exports, it can still be said to be lacking. When connected, one example can be taken, namely Thailand. Where in 2012, Indonesia imported automotive parts from Thailand amounting to US \$ 1.021 billion. However, in fact, on the other hand, Indonesia only exported Automotive to Thailand in 2012 which amounted to US \$ 475 Million. However, things are different in the Philippines in 2018. Indonesia imported fewer US \$ 78 million in spare parts, and exported more by US \$ 1.125 billion. This cannot be underestimated, although Indonesia's automotive export activities are still categorized as small, there needs to be a view that the domestic industry can already produce automotive products but it still needs a significant increase.

In line with the government's goal to realize Indonesia as a resilient industrial country by 2025, and refer to the three main national industrial missions, namely 1) economic growth above 7%, 2) increasing investment attractiveness and national competitiveness, and 3) creating fields employment and poverty reduction than 10 industrial clusters that will be developed according to their role. The automotive industry and automotive components are among the leading industrial clusters whose role is to boost economic growth above 7% (Indonesian Chamber of Commerce and Industry, 2010).

The development of the automotive industry is very strategic (Ministry of Industry, 2010) because of several things including having extensive links with other economic sectors, absorbing a significant amount of labour, being able to be the driving force for developing small and medium industries, and using simple technology to high technology.

The base of the development of the automotive industry in Indonesia in the future is quite good (Ministry of Industry, 2010), due to several things, namely the potential of the domestic market which is quite large, already has an export base to several countries in the world, and experience in the production process is quite long, namely for more from 30 years. The development of the domestic vehicle industry is still not fully supported by the component industry. This is evident from the still high import components, especially from each technology owner or principal country.

Due to the needs of the Indonesian people for transportation is very important to support daily activities. With the level of community income that is increasing demand for vehicles will continue to increase. Indonesia, which is a country that has a very wide area. As a developing country, infrastructure development is increasing rapidly. One of them is the road infrastructure connecting one region to another. With increasing population growth, transportation is needed so that the community's economy can be stable.

The problem formulation of this research is as follows: What is the competitiveness of the Indonesian automotive industry in the global market?, What is the specialization of the Indonesian automotive industry ?, and is the Indonesian automotive industry integrated in the Global Value Chain?

The objectives to be achieved in this study are as follows: To determine the export competitiveness of the Indonesian automotive industry in the global market. To find out the specialization of the Indonesian automotive industry. To find out the Indonesian automotive industry integrated in the Global Value Chain.

Imports are the reverse flow of exports, namely foreign goods and services that enter a country. When exports can increase national income, imports act the opposite. Import is the purchase and import of goods from abroad into a country's economy. The flow of imported goods can cause an outflow or leakage from the flow of expenditure in the household sector to the company sector, which in turn reduces national income that might be achieved (Sukirno, 2001: 2003).

A country's exports occur because of the benefits derived from foreign trade transactions. Trade can also enlarge the consumption capacity of a country and help various businesses to carry out development and increase the role of sectors that have a comparative advantage due to efficiency in production factors. Nopirin states that exports originating from a domestic production are sold by foreign residents, so exports are injected into the income stream as well as investment. One component in international trade, namely exports, is often referred to as the main development component (export-led-development) meaning that exports play a major and significant role in the development process of a nation (IbnuSyehFajar, 2013).

Comparative advantage can be measured by comparing the market share of a country's particular commodity exports in the world market using the Revealed Comparative Advantage (RCA). The measurement framework is the export performance of a product from a country measured by calculating the share of the export value of a product to the total exports of a country compared to the share of product value by the unit of US \$ in world trade (Ministry of Trade, 2017). The Trade Specialization Index (ISP) is an index used to calculate a country's trade specialization. The ISP analyzes the position or stage of development of a commodity by describing whether, for a commodity, Indonesia's position tends to be an exporter or importer. The Trade Specialization Index (ISP) is used to analyze the position or stage of development of a product (Wulandari, 2013: 4).

Value chain (Value chain) can be interpreted as a series of processes or activities carried out by companies and workers in creating a product from beginning to end with all the processes involved behind it. This activity can run in one company or country, and can also be carried out across countries and companies. In a global context, this process can also be carried out by one company on a multi-national scale.

For developing countries, participating in the GVC globally becomes important because that way they can take advantage in terms of national economic development, capacity building, and create more jobs so that it can reduce unemployment and poverty. Global, which can be a tendency to increase deep linkages among countries, companies and individuals, largely due to economic development throughout the world and the opening of domestic markets to foreign companies (Eisenhardt, 2002).

Several indicators for measuring GVC according to Fazio et al. (2010) are Intra Industry Trade, Intra Firm Trade, Intermediate Trade and Trade Unit Values. This research uses Intra Industry Trade (IIT) analysis. Intra-industry trade index (IIT Index) is an index of trade between countries that shows the activities of exporting as well as importing goods or services classified in the same sector simultaneously. Intra-industry trade can be seen from the value of the Intra Industry Trade Index (Grubel Llyod Index). IIT is used to analyze the level of integration in a particular region. High integration shows the closeness of trade between countries in the region.

In the relationship of GVC to competitiveness and specialization, GVC or intra-industry trade can be interpreted as trade within the same industry. Intra-industrial trade theory is included in the new trade theory (new trade theory). One economic figure who was a pioneer of this theory was Paul Krugman (Koo, 2005).

A country can be faster to participate in GVC because it specializes in a certain production process based on the factors of production. Neoclassical trade theory which states that the cause of trade is specialization based on differences in the availability of factors of production and technology (comparative advantage), intra-industrial trade theory states that trade continues to occur between countries that have relatively similar comparative advantages. Intra-industrial trade is based more on product differentiation and economies of scale and includes two-way trade within the same industry.

In determining the competitiveness of the GVC is a relative amount between the share of exports of goods in the total exports of a country to the share of exports for these goods in the world. For example for automotive products, if the share of automotive exports in Indonesia's total exports is greater than the share of automotive exports in world trade (the total of all countries that export automotive products), then Indonesia is said to have a comparative advantage in automotive products.

## II. METHODS

This research was conducted in Indonesia with data on exports and imports of automotive Indonesia and the world obtained from UN COMTRADE from 2010 to 2018. The data in this study are quantitative. Quantitative data used in this study is the Indonesian Automotive Export and Import Value in 2010-2018. The data source used in this study is secondary data obtained from the International Trade Center (Trademap.org) or UN COMTRADE, using data on the export value and import value of Indonesian automotive commodities in 2010-2018, with code HS 8703 (cars, motorcycles and other motor vehicles are in principle designed for the transportation of people, including station wagons and race cars). The variable used is data on the export and import value of Indonesian and world automotive commodities in 2010 - 2018.

The data collection method in this study is a non-participant observation method, which is an observation made without involving oneself and only as an independent observer. Data collected through non-participant

observation by observing and recording data from reports and archives from several sources such as the Indonesian Ministry of Trade, Trade Map, internet, and other sources related to the data needed.

The competitiveness index shows a comparison of the share of commodity exports in a country with the same commodity export share from around the world. This index shows the comparative advantage or competitiveness of a particular country with the assumption (*ceteris paribus*) that other factors affecting export growth remain unchanged (Bustami and Hidayat, 2013: 58) which can be formulated as follows:

$$RCA = (X_{ik}) / (X_{im})(X_{wk}) / (X_{wm})$$

Keterangan:

- X<sub>ik</sub> : The value of exports of automotive commodities in Indonesia
- X<sub>im</sub> : Indonesia's total export value
- X<sub>wk</sub> : World automotive commodity export value
- X<sub>wm</sub> : Total world export value

If the RCA index value > 1 shows that Indonesia for automotive commodities is said to have a comparative advantage or strong competitiveness.

If the RCA index value < 1 indicates that Indonesia for automotive commodities is said to have comparative advantages stated as low or weakly competitive.

From the explanation of the RCA formula, the RCA formula is still needed for development, so it is developed in the Revealed Symmetric Comparative Advantage (RSCA) formula, as follows:

$$RSCA = ((RCA - 1)) / ((RCA + 1)) \quad (2.2)$$

The concept of the RSCA is almost the same as the RCA formula but the RSCA formula makes changes in the assessment of competitiveness, where the RSCA value is limited between -1 to 1. A product is said to have competitiveness if it has a value above zero, and is said to have no competitiveness if the value is below zero.

The Trade Specialization Index (ISP) is an index used to calculate a country's trade specialization and also analyzes the position or stage of development of a commodity by describing for a commodity, Indonesia's position tends to be an exporter or importer country. Systematically ISP can be formulated as follows (Tambunan, 2004):

$$ISP = (X_{ia} - M_{ia}) / (X_{ia} + M_{ia}) \quad (3.4)$$

Keterangan:

- X : Commodity Exports i
- M : Commodity Imports i
- i : Type of Automotive Commodity
- a : Indonesia

If the value is positive (above 0 to 1), the said commodity is said to have strong competitiveness or the country/region concerned tends to be an exporter of the commodity (domestic supply is greater than domestic demand). Conversely, if competitiveness is low or tends to be an importer (domestic supply is smaller than domestic demand) if the value is negative (below 0 to -1). If the index rises, it means that competitiveness is increasing, and vice versa.

The IIT used to measure country participation in international production networks or the global value chain (Global Value Chain) has become a conventional international trade statistics, in terms of goods, offering the advantage of timely availability of goods in large quantities in several countries, with high disaggregation rates (in the case of products and trading partners), and with a high level of international comparability. The indicator formulation used to analyze the Sectoral Intra Industry Trade adopted the UN ESCAP ( United Nations Economic and Social Commission for Asia and The Pacific ) (2009) with the formula:

$$IIT_{i,jk} = 1 - \frac{|X_{i,jk} - M_{i,jk}|}{X_{i,jk} + M_{i,jk}} \times 100$$

where:

- X<sub>i, jk</sub> = the value of commodity exports of automotive Indonesia
- M<sub>i, jk</sub> = value of commodity imports automotive Indonesia

Table 3 Classification of IIT (Intra Industry Trade) Index

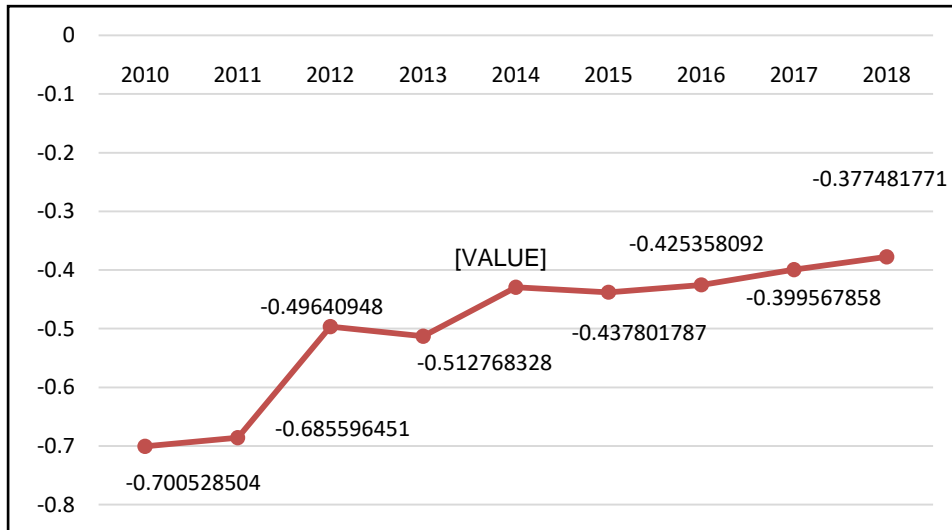
IIT ( <i>Intra Industry Trade</i> ) Index	Classification
0.00	<i>No integration (one-way trade)</i>
>0.00 – 24.99	<i>weak integration</i>
25.00 – 49.99	<i>mild integration</i>

50.00 – 74.99	<i>moderately strong integration</i>
75.00 – 99.99	<i>strong integration</i>

Source: Retnowati (2007)

### III. RESULTS AND DISCUSSION

Figure 1.1 Graph Calculation Resus RSCA (Symmetric Revealed Comparative Advantage)



RSCA calculation results that are used using the Microsoft Excel application, can be seen in Figure 1,1, where the results of the RSCA from 2010 to 2018 show that the competitiveness of Indonesia's automotive exports is weakly competitive or has no competitiveness because it is below zero or has a minus value. However, it can be seen that the development of automotive exports in Indonesia is undeniably experiencing a significant increase. A positive trend is seen in Figure 1.1 which is experiencing continuous improvement. Which began in 2010 amounted to -0,700528504 then increased to reach -0,685596451 in 2011, and in 2012 experienced a considerable increase up to -0,49640948. This shows that there is improvement at the level of automotive production in Indonesia.

In 2013, decreased slightly to -0, 512 768 328, which experienced a slight adjustment in the automotive export. However, in 2014 it increased again to -0.42494914, a slight decrease in 2015 to -0.437801787, and has increased slowly starting from 2016 until its highest peak, namely in 2018, with several -0, 377481771, which shows that the rapid technological development causes automotive production and exports also increased, although from 2010 to 2018 experienced a significant increase but with results that are still below zero shows that Indonesia's automotive exports are weakly competitive or do not have competitiveness.

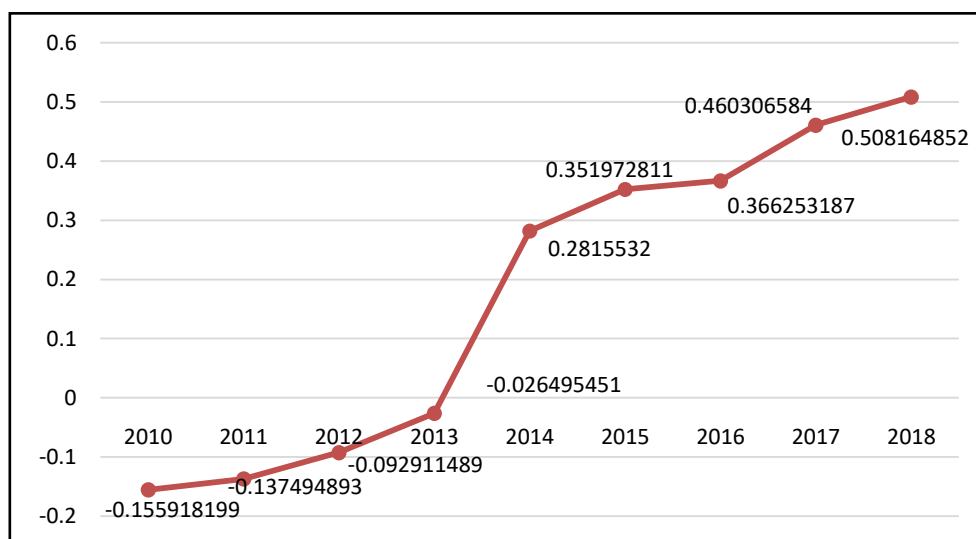


Figure 1.2 Graph Calculation Result ISP (Index Specialities Commerce)

ISP calculation results in Figure 1.2, show that Indonesia in 2010 to 2013 tends to be an importer in automotive commodities, it can be seen that in 2010 amounted to -0,155918199, in 2011 amounted to -0,137494893, in 2012 amounted to -0,092911489 and also in 2013 amounted to -0.026495451.

This also proves that there is a development for Indonesia to not only become an importer but offset by exporting activities which are also marked by positive trends or continue to increase from 2010 to 2013. Furthermore, in 2014 it jumped dramatically to 0.2815532. This proves a quite drastic change in the production of automotive commodities for Indonesia, which then carried out export activities. This positive trend continues until 2018. Where in 2015 it was 0.351972811, in 2016 it was 0.366253187, in 2017 it was 0.460306584 and in 2018 it was 0.508164852. In this case, Indonesia tends to be an exporter. This also shows that Indonesia has been serious in conducting production activities so that it can do more exporting activities compared to importing.

IIT calculation results of this index can be seen in Figure 1.3, which can be described that in 2010 the index of 84.40818011 means included in the classification of strong integration, increased continuously in 2011 amounted 86.25051065 including the strong integration, in 2012 amounted to 90.70885105 included in strong integration, and a peak in 2013 included strong integration with an index of 97.35045486. From these results show that entanglement between Indonesia and the world in terms of international trade of commodities automotive, tend to be intra-industry or trade in both directions.

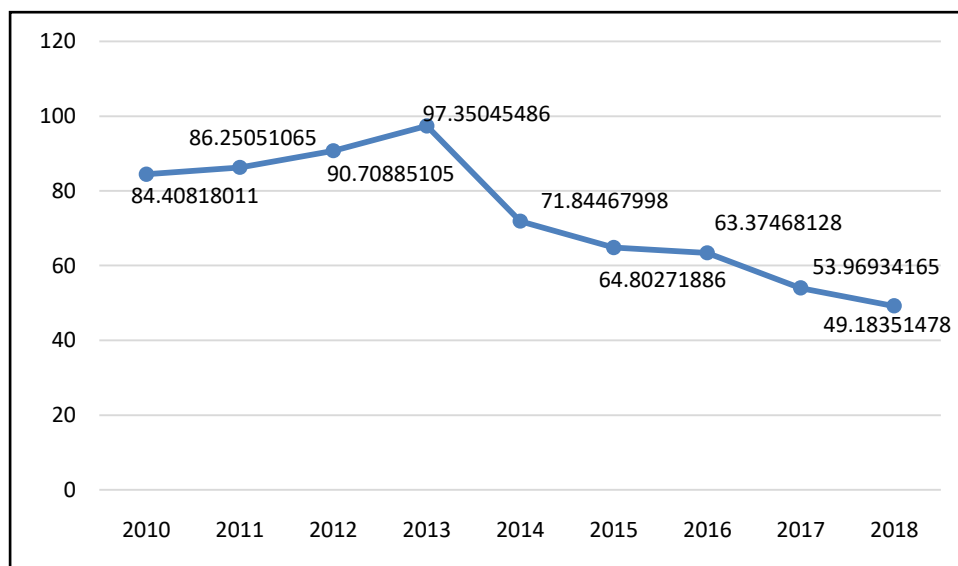


Figure 1.3 Graph Calculation Results IIT (Intra Industry Trade) Index

IIT calculation results of this index can be seen in Figure 4.3, which can be explained that in 2010 the index of 84.40818011 which means included in the classification of strong integration, increased continuously in 2011 amounted to 86.25051065 included in strong integration, in 2012 90.70885105 included in strong integration, and the peak in 2013 included strong integration with an index of 97.35045486. From these results, it shows that the attachment between Indonesia and the World in terms of international trade in the form of automotive commodities, tends to be intra-industry or two-way trade.

Furthermore, in 2014, it began to decrease by 71.84467998, including moderately strong integration, and continued to decrease until 2018. In 2015, 64.80271886 was included into moderately strong integration, in 2016 it was 63.376868128, including moderately strong integration, and in 2017 53,96934165 is included into moderately strong integration. This proves that intra-industry trade remains established but is still at a moderate level. In 2018 it also decreased to 49.18351478 but in a different classification that is mild integration, or also called in mild intra-industrial classification. This proves that the tendency of Indonesia in 2018 to conduct two-way trade activities that are not too significant or low value.

Determine that the Indonesian automotive industry is integrated in the Global Value Chain (GVC), seen from the results of the IIT and the comparison of the value of spare parts imports into Indonesia with the value of automotive exports from Indonesia. When capital goods or intermediate goods in the form of spare parts are imported by Indonesia, the indicator to prove this is by looking at how much-finished goods can be produced and exported to the world to enter the global market or Global Value Chain (GVC). It can be seen from Figures 1.4 and 1.5, in the years 2010 to 2013 the value of imports of spare parts into Indonesia increased, this was offset by exports of finished goods in the form of automotive. But only until 2012, in 2013 Indonesia's automotive exports decreased.

In 2013 Indonesia made improvements in terms of producing finished goods and made innovations and was assisted by government policies so that adequate development occurred from 2014 where the import value of spare parts entering Indonesia was not much compared to the export value of finished goods in the form of automotive issued by Indonesia to the world. And has increased until 2018. Import values are still greater than exports, indicating that Indonesia cannot be integrated into the Global Value Chain (GVC), but in terms of production, it has increased. This is also in line with the results obtained from the calculation of IIT showing two-way trade for the same commodity, namely automotive, began to decrease from 2014 to 2018.

If the three calculations are linked, it shows that Indonesia in 2012 with its government policy has succeeded in increasing automotive production. Where the policy issued is the "Production Program". Which is where the program consists of two groups. The first group is in the form of an energy-efficient and affordable price vehicle production program that is set forth through policies through industrial policies as stipulated in Government Regulation No. 41 of 2013.

The second group is in the form of a development program for motor vehicles with low carbon emissions using engine technology, including advanced petrol and diesel engines, biofuel engines, dual-fuel engines (petrol engines and gas engines), and hybrid engines. The results of the "Production Policy" are in the form of implementation which gave rise to low-carbon and environmentally friendly vehicle emission products. (GAIKINDO, 2014).

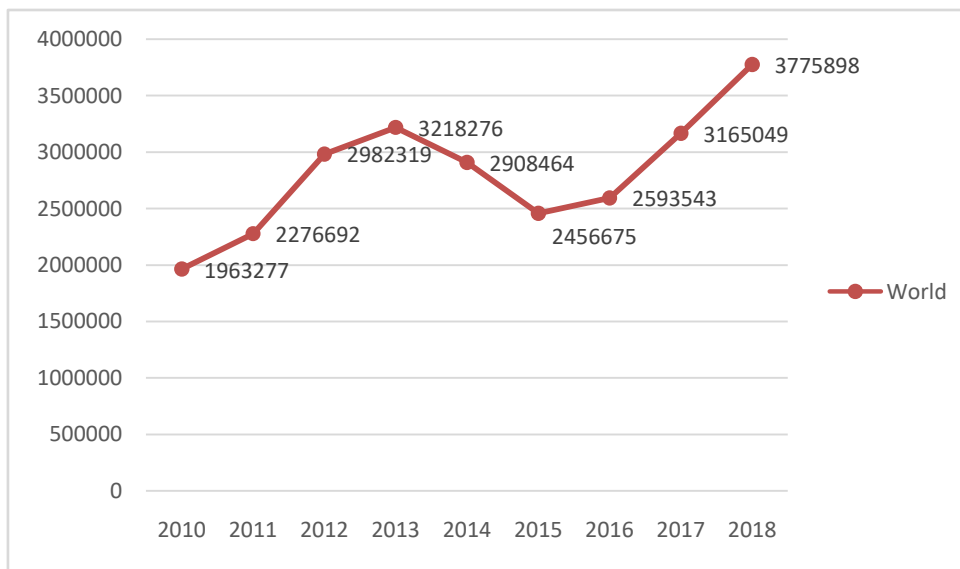


Figure 1.4 Indonesia Data Import Parts of the World  
Source: UN COMTRADE, 2018.

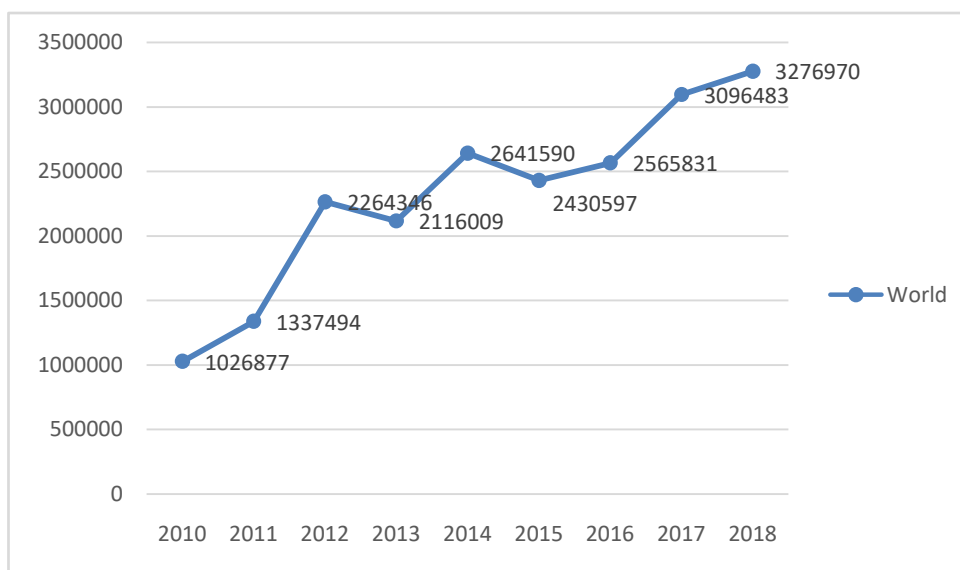


Figure 1.5 Data Export Automotive Indonesia to the World  
Source: UN COMTRADE, 2018.

Also, this result is supported by a statement from Michael E. Porter (1990) mentioning the role of government is very supportive in addition to the factor of production. Four main attributes that determine why certain industries in a country can achieve international success, the four attributes include conditions of production factors, conditions of demand and demands for quality in the country, the existence of supporting industries and conditions of competition in the strategy and structure of domestic companies.

Successful countries on an international scale are generally supported by good factor conditions, high domestic demand and quality demands, advanced upstream or downstream industries and intense domestic competition. Competitive advantage that is only supported by 1/2 attributes alone usually will not be able to survive, because the four attributes interact positively with each other in a successful country. Indonesia's participation in the GVC globally is important because that way Indonesia can take advantage in terms of national economic development, capacity building, and creating more jobs so that it can reduce unemployment and poverty.noodles

#### IV. CONCLUSION

Based on the results of the discussion, the following conclusions are obtained; Competitiveness of the Indonesian Automotive Industry in the Global Market. In the calculations carried out using RCA and RSCA, the index value is obtained that Indonesia has a weak competitiveness in the automotive industry in the global market. Automotive specialization from Indonesia. In the calculations done using ISPs, it was found that the index value in Indonesia from 2010 to 2013 tended to be an automotive importer and from 2014 to 2018 it tended to be an automotive exporter. Indonesian Automotive Industry in the Global Value Chain. In the calculations carried out with the IIT Index and also supported by the results of the RSCA and ISP, it shows that Indonesia from 2010 to 2018 has not been able to enter the GVC (Global Value Chain), but in 2014 to 2018 it has increased.

Based on the conclusions that have been described, the following suggestions can be submitted; It is expected that the domestic industry can develop supporting products for the automotive industry that can be used domestically or as a necessity for conducting automotive export activities. It is expected that government support is also in making policies and as a determinant of the support of the factors of production needed from the automotive industry so that the Indonesian automotive industry can compete not only domestically but competing with industries in the world.

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