CHAPTER III

RESEARCH METHODOLOGY

A. Research Objects

In this study, the object used is the annual data of export and import of countries involved in the ASEAN-Australia-New Zealand Free Trade Area (AANZFTA) in the years 2004-2016 ie ASEAN countries, Australia, and New Zealand. In the object of this study only take into account the five ASEAN countries, it is Indonesia, Malaysia, Singapore, Thailand and Philippines (hereinafter referred to as ASEAN-5). This is because the level of the economy of the five countries especially in international trade is relatively higher compared to Brunei Darussalam and CLMV Countries (Cambodia, Laos, Myanmar, and Vietnam) still limitations of information and unavailable data in the country.

B. Types and Data Sources

The data used in this research is secondary data. Secondary data is data obtained from related agencies. The data sources in this study are the United Nations International Trade Statistics Database (www.comtrade.un.org) with two digits Standard International Trade Classification (SITC) code Rev.2 and as well as several other sources that support this research.

C. Analysis Method

This research uses descriptive quantitative research methods conducted to provide an overview of phenomenon and the results of this study which then processed and analyzed to take conclusions.

Descriptive method is used to analyze the development of data used in this study. While the method of quantitative by combining two tools of analysis method. First method is analysis of Trade Intensity Index (TII). TII calculations are used to determine the trade intensity between ASEAN-5 (Indonesia, Malaysia, Singapore, Thailand and Philippines) with Australia and New Zealand in 2004-2016. second method is Constant Market Share analysis (CMS) by calculating the three variables used; (1) world export growth effect; (2) commodity composition effect; and (3) competitiveness effect. There are affecting export performance between ASEAN-5 with Australia and New Zealand in 1996-2016. The result is that these two analytical tools can analyze export performance and trade intensity for the case study of free trade agreement between ASEAN-5, Australia, and New Zealand.

1. Trade Intensity Index (TII)

The analysis formulated by Drysdale and Garnout (1982) is an index used to measure the intensity of trade between a country and another country or region. The TII index is formulated as follows:

$$TII_{jk} = \frac{(X_{jk}/X_j)}{(X_{wk}/X_w)}$$

Where :

TII_{jk} = TII from country j to country or region k

X_{jk} = Export from country j in country or region k

X_{wk} = World export on country or region k

X_j = Total country exports j

X_w = Total exports w (world)

The value of TII from country j to country or region k if it has a value more than 1 (TII>1) then indicates the intensity of trade conducted by country j to country or region k above the world average level and indicates the intensity of the country's important trade partner in the trade of a country or region k. But if the value of TII from country j to country or region k has a value of less than 1 (TII<1) then indicates the intensity of trade made by country j to country or region k below the world average level and indicates the intensity of the country's trade is not important as partner in country or region trade k.

2. Constant Market Share (CMS)

Constant Market Share (CMS) analysis was first discovered by Tyszynski (1951), Tyszki uses CMS analysis as a tool to assess a country's performance in export performance against trading partner countries. In the assumption of Constant Market Share (CMS) analysis that the export share of a country in a certain region or region is constant from time to time. The CMS model there are four variables used to determine the export performance of a country that is the increase or decrease of world trade as a whole and destination country, that is calculate export growth effect or world trade effect, calculate commodity composition effect, calculate market distribution effect, and calculate competitiveness effect.

In the first stage, calculate World Trade effect (WTE) which is formulated as follows:

$$rXi^1$$

Where:

r = percentage increase in total world exports between two different periods.

X_i^1 = export value of commodity i from certain country in period 1

Positive (+) and negative (-) signals are very important from the calculation of the export growth effect because if the result is positive, then country j has retained its export share in the country or k (export

destination country) market. Conversely, if the result is negative, the country *j* failed to maintain its export share within the country or *k* (export destination country) market.

In the second stage, export growth in the countries sues is described in the Commodity Composition Effect (CCE) as follows:

$$\sum_{i=1}^{n} (r_i X_i^1 - r X_i^1)$$

Where:

r_i = percentage increase of total world exports in commodity group *i* between two different periods.

If the increase in exports by a country is more than the World average in the same commodity group, then the value of the commodity composition is positive and if the increase in exports by a country is less than the World average in the same commodity group, then the value of the composition of the commodity is negative.

If positive (+) sign indicates that exports from the country have been concentrated in export commodities whose markets have relatively fast growth. If the negative (-) sign indicates that exports from the country have been not concentrated or fails in export commodities whose markets have relatively fast growth.

In the third stage, Market Distribution Effect (MDE) can be seen in the following formulated:

$$\sum i \sum j \ (rij - ri)X^1_{ij}$$

Where:

r_{ij} = the percentage increase in total world exports in the commodity group i in the country market j between two different periods.

$X_{ij}{}^1$ = value of commodity exports i of a particular country in j in period 1

If the results are positive (+) sign, then it shows the comparative ability of a country to increase its exports from the same commodity groups in the market that continue to grow relatively. While the negative sign (-) indicates that exports are only concentrated in markets that are stagnant.

In the fourth stage, that is calculating Competitiveness Effect (CME). The effect can be gained by calculating residuals that describe the difference between actual export growth and growth occurring when a country can maintain its export Commodity Market Share (CMS) to each country or destination area. Competitiveness Effect can be formulated as follows:

$$\sum i \sum j \ (X^2_i - X^1_i - r_i X^1_i)$$

Where:

X_i^2 = the value of commodity exports from a certain country in period 2

The competitiveness effect indicates how far a country is able to gain its market share even though the world demand movement tends to decline in both its market and its commodities. Thus, competitiveness effect are interpreted as the ability of a country to respond to changes in the export environment and adapt to regulate its export supply to world conditions. Positive sign (+) of residual shows an increase in exports because it has competitive competitiveness. While the negative sign indicates a decline in exports of a country due to declining competitiveness.

The four variables of CMS model as a whole can be formulated as follows:

$$x_i^2 - x_i^1 = rx_i^1 + \sum_{t=1}^{n} (r_i x_i^1 - r x_i^1) + \sum i \sum j \ (rij - ri)X_{ij}^1 + \sum i \sum j \ (X_i^2 - X_i^1 - r_i X_i^1)$$

$\quad\quad\quad$ (i) $\quad\quad\quad\quad$ (ii) $\quad\quad\quad\quad$ (iii) $\quad\quad\quad\quad$ (iv)

Where:

i. World Trade Effect (WTE)

ii. Commodity Composition Effect (CCE)

iii. Market Distribution Effect (MDE)

iv. Competitiveness Effect (CME)

D. Research Model

1. **Model of Trade Intensity Index (TII)**

   The TII model to be used in this research is as follows:

   $$TII_{jk} = \frac{(X_{jk}/X_j)}{(X_{wk}/X_w)}$$

   Where :

   TII_{jk} = TII from country j (ASEAN-5) to country or region k (Australia and New Zealand)

   X_{jk} = the export from country j (ASEAN-5) to country or region k (Australia and New Zealand)

   X_{wk} = World exports in countries or regions k (Australia and New Zealand)

   X_j = total country exports j (ASEAN-5)

   X_w = total exports w (world)

2. **Model of Constant Market Share Model (CMS)**

   The CMS model used in this study only used three operational variables:

   - World Trade Effect (WTE)
   - Commodity Composition Effect (CCE)
   - Competitiveness Effect (CME)

   The Market Distribution Effect (MDE) variables not used in this study only test the export performance between ASEAN-5 countries to the

Australian market and to New Zealand market only, so that the export destination market is only Australia and New Zealand.

So the variables of the CMS model in this research as a whole can be formulated as follows:

$$x_i^2 - x_i^1 = rx_i^1 + \sum_{i=1}^{n} (r_i x_i^1 - rx_i^1) + \sum i \sum j \ (X_i^2 - X_i^1 - r_i X_i^1)$$

$\qquad\qquad\qquad$ (i) $\qquad\qquad$ (ii) $\qquad\qquad$ (iii)

Where:

i. World Export Growth Effect (WTE)

ii. Commodity Composition Effect (CCE)

iii. Competitiveness Effect (CME)

E. Definition of Constant Market Share (CMS) Operational Variables

1. World Trade Effect

These variables indicate whether the increase in export value of commodities between ASEAN-5 (Indonesia, Malaysia, Singapore, Thailand and Philippines) to Australia and New Zealand is due to the increasing demand for total world commodity exports or not. The World Export Growth Effect (WTE) in this research can be formulated as follows:

$$rx_i^1$$

Where:

r = percentage change of world export total to Australia and New Zealand between two different periods.

X_i^1 = commodity export value i from ASEAN-5 countries to Australia and New Zealand in period 1

The growth effect variable of the World will show results with a positive (+) or negative (-) sign. If the results are positive sign, then the export of ASEAN-5 countries to Australia or increased export of ASEAN-5 countries to New Zealand is due to the increase in world demand, so that the ASEAN-5 countries are able to maintain their market share in Australia or New Zealand. On the contrary, if the result is negative sign, then it shows the exports of ASEAN-5 countries to Australia or the export of ASEAN-5 countries to New Zealand is not

affected by world demand. Thus, the negative sign indicates the ASEAN-5 countries failed to maintain their market share in Australia or New Zealand.

2. Commodity Composition Effect

This variable shows how exports of ASEAN-5 countries (Indonesia, Malaysia, Singapore, Thailand and Philippines) are concentrated into commodity classes that have a growth rate more than the world average growth. The Commodity Composition Effect (CCE) can be identified as follows:

$$\sum_{i=1}^{n} (r_i x_i^1 - r x_i^1)$$

Where:

r_i = percentage increase in total of world exports to Australia and New Zealand in commodity group i between two different periods.

If the growth of commodity exports of ASEAN-5 countries rose higher than the world average growth for all commodities, commodity effect would be positive. If the growth of commodity exports of ASEAN-5 countries rose lower than the world average growth for commodities, the commodity effect would be negative. This positive sign (+) indicates that exports of ASEAN-5 countries to Australia or New Zealand have been concentrated in commodity groups with relatively fast market growth, and vice versa if the negative sign (-) indicates that exports of

ASEAN-5 countries to Australia or New Zealand have been not concentrated in commodity groups with relatively fast market growth.

3. Competitiveness Effect

This variable is a residual that shows the difference or difference between the actual export change of export result of ASEAN-5 countries (Indonesia, Malaysia, Singapore, Thailand and Philippines) to Australia or to New Zealand between two periods. This effect can know the exports of the ASEAN-5 countries whether it is able to maintain its market share for every commodity in the Australian market or in the New Zealand market. The Competitiveness Effect (CME) can be seen as follows:

$$\sum i \sum j \ (X_i^2 - X_i^1 - r_i X_i^1)$$

Where:

X_i^2 = the value of commodity exports from ASEAN-5 Countries in the period 2

X_i^2 - X_i^1 = the actual change value exports from ASEAN-5 to Australia and New Zealand

If the competitiveness effect shows a positive sign (+), then it shows an increase in exports of ASEAN-5 countries to Australia or to New Zealand because the export commodities have competitive. On the contrary, a negative sign (-) indicating the export commodities of ASEAN-5 countries to Australia or to New Zealand has no competitive.