

Analysis Of Macro Economy Indicator In Asean Regional Countries To Middle Income Trap

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Abstract:

This study observes how the opportunities of middle income countries located in ASEAN avoid Middle Income Trap. Human Development Index, Foreign Direct Investments, Goods and Services Exports, and the Government Effectiveness Index are regressed to GNI per capita with panel analysis. Secondary data are used and was published officially by the World Bank and the United Nation Development Program (UNDP) in 5 ASEAN Regional Countries, namely Indonesia, the Philippines, Malaysia, Thailand and Vietnam in the period 2004-2017. In addition, this study discusses the contribution of the Incremental Capital Output Ratio (ICOR) coefficient to Gross Domestic Product. The results of the study state that, there are significant and positive effects between the independent variables on the dependent variable. Expected that, its important to give a priority to macro economics as a result of this research. For Advanced Research, you can use bonus demographic and investment variables in order to provide forecasting to avoid the Middle Income Trap.

Key word : *Middle Income Trap*

Introduction

ASEAN contributed with a great number Economic Growth of percentage in the world. Pricewaterhousecooper in 2017 as a Prominent Economics Research Institution released that Indonesia, Thailand, Filipina, Malaysia, Vietnam with others 27 countries are contributed to 85 percent of economic growth in the world for 2016 to 2050. In 2050 it predicted that Indonesia in the 4th rank in the world, Phillipines in 19th rank, Vietnam in 20th rank, , Malaysia in 24th rank and Thailand in 25th rank. As a phenomena, Middle

Income Trap is a term that make a country cant make them self in higher classification (Aiyar *et all*, 2013). Economic growth with a standard needed to avoid it (Bruecnerr *et al*, 2017). According to research conducted by Felipe (2012), the 14-year threshold is the maximum number of years for countries with upper middle income countries income classifications to rise to high income countries and 28 years is the maximum limit for countries with lower middle income country classifications. to upper middle income countries. As one indicator in macroeconomic Gross

National Income (GNI) per capita is used to measure the prosperity of a country. The value of Gross National Income is influenced by Gross Domestic Product (GDP). Gross National Income is the total income of domestic and foreign citizens claimed by residents and consists of Gross Domestic Product (GDP) plus the factor of income received by foreigners, less income earned in the domestic economy by non-residents (Todaro & Smith, 2006).

The minimum percentage limit of economic growth and the minimum time limit is in the classification of middle income countries being the basis for the importance of sustainable economic growth. The formulation of policies related to the selection of macroeconomic variables that get priority scale is more related to efforts to increase GNI per capita also needed for middle income countries to be able to avoid the middle income trap. In addition, an analysis of economic growth on the Incremental Capital Output Ratio (ICOR) is also needed to determine the investment and capital ratios in the ASEAN regional countries to avoid the middle income trap.

Blanchard and Johnson (2012) state that the Gross Domestic

Product (GDP) decomposition raises consumption, investment, government expenditure, net exports, and inventory investment, GDP data is assumed to be total demand for goods, so it can be formulated using the following formula:

$$Z \equiv C + I + G + X - IM$$

Z : Total Demand of Goods

C : Consumption

I : Investation

G : Government Spending

X : Export

IM : Import

As the theory of economic growth, the macroeconomic variable in this study, namely GNI per capita is an approach to the total demand for goods, where the total demand for goods or Gross Domestic Product (GDP) will contribute to GNI per capita. GNI represents the power of production and factors of production, stated in the equation formula that, Net Primary Income (NPI) has a contribution in the amount of GNI, as follows:

$$GNI = GDP + NPI$$

Furthermore, the variable Foreign Direct Investment (FDI) and Human Development Index (HDI) are approaches to investment (I). The Government Effectiveness Index (GEI) is an approach to Government (G). Whereas Goods and Service Exports (GSX) are a macroeconomic

variable approach to Exports (X). So that it refers to the theory of economic growth, it is stated that macroeconomic variables FDI, HDI, GEI, and GSX affect the GNI per capita.

As a traditional literature, the Harrod-Domar Growth model, in which the rate of output growth is determined by the level of savings and ICOR, suggests that ICOR can be a key variable to link investment requirements with targeted economic rates of growth. The results of the study stated that ICOR has a positive effect on GDP per capita. ICOR calculation method, is the ratio between capital and output, Irawan (2010) states that ICOR is mathematically the ratio of the change between capital increase (investment) to additional output, with ΔK being Investment or capacity addition and ΔY Growth of Output or notated as follows:

$$ICOR = \frac{\Delta K}{\Delta Y}$$

Next, the formula approach used for investment variables is Gross Capital Formation (GCF) and GDP difference n-1 to n year GDP as a variable to increase World Bank GDP using the term Gross Capital Formation previously known as

Gross Domestic Investment as a macroeconomic variable that consists of adding economic fixed assets plus a net change in inventory levels. Fixed assets including land improvements (fences, ditches, waterways, etc.); purchase of factories, machinery and equipment; and construction of roads, railways, and the like, including schools, offices, hospitals, private residences, and commercial and industrial buildings. Inventory is an inventory of goods owned by a company to meet temporary or unexpected fluctuations in production or sales, and "work in progress." Furthermore, ICOR is obtained by comparing the amount of Gross Capital Formation (GCF) to the addition of GDP (ΔGDP), so that:

$$ICOR = \frac{GCF}{\Delta Y}$$

The World Bank defines the world economy into four groups as low-income, lower-middle-income, higher middle-income, and high-income. The classification is in Gross National Income (GNI) per capita which is calculated using the Atlas method with Unit for this measure is US Dollars.

Table 1. Income Category based on GNI per Kapita (US dollar)

Income Classification of Country	GNI per capita
<i>high income</i>	>\$12.056
<i>upper middle income</i>	\$3.896 - \$12.055
<i>lower middle income</i>	\$996 - \$3.895
<i>low income</i>	< \$995

source : *World bank* (2019)

Salebu (2014) in his research on Indonesia in the period 1993-2013 also stated that Foreign Direct Investment has a positive and significant influence on GDP. Similarly what was stated in research in Vietnam by Quoc and Thi (2018) and Mills and Zaho (2013) stated that FDI had an influence on GNI.

Blanchard and Johnson (2012) stated that GDP is the result of the sum between consumption, investment, government spending, exports after imports. Goods and Services Export (GSX) can contribute to access to the currency of a country carrying out these activities, to further contribute to increasing the country's income (Bakari, Mabrouki, 2017).

The Human Development Index (HDI) is used as an indicator to state a country's prosperity, this index measures income per capita, life expectancy, and education level. In

other words, this index not only measures a country's economic performance, but also other social dimensions, which at the same time have an impact on a country's economic growth (Paoloni and Lombardi, 2018).

The quality of public services, the quality of civil services and the degree of independence from political pressure, the quality of policy formulation and implementation, and the credibility of the government's commitment to policy are some of the indicators in the Government Effectiveness Index. The score given by the Worldwide Governance Indicators (WGI) for the Government Effectiveness Index is -2.5 (weak) to 2.5 (strong) with the year the study began to be 2003 and covers more than 200 countries (Kauffman, Kray, and Mastruzzi, 2010). Alam et al (2017) in their research stated that the Government Effectiveness Index has a positive

and significant effect on economic growth.

Based on the research objectives and empirical studies, the hypotheses proposed to be tested are as follows:

1. Foreign Direct Investment (FDI) has a positive effect on GNI per capita
2. Goods and Services Export (GSX) has a positive effect on GNI per capita
3. Human Development Index (HDI) has a positive effect on GNI per capita
4. Government Effectiveness Index (GEI) has a positive effect on GNI per capita
5. Incremental Capital Output Ratio (ICOR) has a positive effect on GDP Growth

2. Method

This research is a quantitative descriptive study that tests theory through measurement of research variables with numbers and analyzes data using statistical procedures. Quantitative analysis is carried out to determine the effect of Human Development Index (HDI), Foreign Direct Investment (FDI), Goods and Services Export (GSX), and Government Effectiveness Index (GEI) on Gross National Income (GNI) per capita. Descriptive analysis is used to illustrate how the effect of the capital to GDP ratio will subsequently have an impact on economic growth and have a reciprocal effect on Gross National Income (GNI) using the ICOR Method.

Table 2. Input Data Description in FDI, GSX, HDI, dan GEI to GNI per Capita

Variable	unit	Source of Data
<i>Gross National Income (GNI)</i>	Dollar US	<i>World Bank</i>
<i>Foreign Direct Investment (FDI)</i>	Dollar US	<i>World Bank</i>
<i>Goods and Services Export (GSX)</i>	Dollar US	<i>World Bank</i>
<i>Human Development Index (HDI)</i>	Indeks	<i>United Nation Development Program (UNDP)</i>
<i>Government Effectiveness Index (GEI)</i>	Indeks	<i>World Bank</i>

Table 3. Input Data Description ICOR to GDP Growth

Variable	unit	Source of Data
<i>ICOR</i>	Indeks	<i>World Bank (data diolah)</i>
<i>GDP Growth (ΔGDP)</i>	Persen	<i>World Bank</i>

The econometrics model that will be used to analyze the effect of the Human Development Index (HDI), Foreign Direct Investment (FDI), Goods and Services Export (HTX), and Government Effectiveness Index (GEI) on Gross National Income

(GNI) per capita on five middle income countries that are in the ASEAN Regional, are semilog (linear-log) regression models that refer to Aviliani et al (2014) and Malale et al (2014), namely

$$Y = \beta_0 + \beta_1 HDI_{it} + \beta_2 FDI_{it} + \beta_3 GSX_{it} + \beta_4 GEI_{it} + \varepsilon_{it}$$

Y	=	Linier Logarithm of <i>Gross National Income</i> (GNI) (US dollar)
HDI	=	<i>Human Development Index</i> (Index)
FDI	=	<i>Goods and Services Ekspor</i> (US dollar)
GSX	=	<i>Foreign Direct Investment</i> (US dollar)
GEI	=	<i>Government Effectiveness Index</i> (Indeks)
$\beta_1, \beta_2, \beta_3, \beta_4$	=	Slope Coefisien
β_0	=	intersep coefisien
i	=	Country i in ASEAN
t	=	Time Period of Research
ε_{it}	=	<i>Error term</i> (Dummy)

Meanwhile, to analyze the effect of ICOR on GDP growth using simple panel data regression, with a reciprocal regression model, so the equation model is as follows:

$$Y = \beta_0 + \beta_1 \frac{1}{\Delta GDP_{it}} + \varepsilon_{it}$$

Y	=	ICOR (index)
ΔGDP	=	<i>GDP Growth</i> (percent)
β_1	=	Slope Koefisien
β_0	=	intersep Koefisien
i	=	Country i in ASEAN
t	=	Time Period of Research
ε_{it}	=	<i>Error term</i> (Dummy)

Before the data is processed, a classic assumption test is performed which consists of normality, multicollinearity, heteroscedasticity, and autocorrelation. Some classic assumptions that must be tested in

the model that will be used in research include the following:

1. Normality, A residual histogram is the simplest graphical method used to determine whether the shape of the probability distribution function (PDF) of a

random variable is in the form of a normal distribution or not. If the residual histogram resembles a normal distribution graph, it can be said that the residual has a normal distribution.

2. Multicollinearity, According to Widarjono (2005) multicollinearity assumption test is conducted to ensure the model is free from multicollinearity problems, the existence of a relationship between independent variables in one regression is called multicollinearity. The linear relationship between the independent variables can occur in the form of a perfect linear relationship and an imperfect linear relationship. The existence of multicollinearity still produces estimators that are BLUE (Best, Linear, Unbiased Estimator), but causes a model to have a large variance. Gujarati (2009) states Variance Inflation Factor (VIF) is used as an indicator in multicollinearity. If the VIF of a variable exceeds 10 as a result of R squared close to 0.90 then the variable will be very collinear. VIF is defined as: $VIF = 1 / (1 - R^2)$
3. Heteroskedasticity test, White Test is one method that can be used to

detect the presence or absence of heteroscedasticity problems, the steps taken are:

- a. Estimating the equation for the next residual is obtained
 - b. Regress the auxiliary equation
 - c. The null hypothesis in this test is there is no heteroskedasticity. The White test is based on the number of samples (n) multiplied by R squared which will follow the chi squares distribution with degrees of freedom as many as independent variables not including constants in auxiliary regression.
 - d. If the calculated chi-square probability ($obs * R^2$) is smaller than the chi-square table (5%) that the data are heteroskedasticity.
4. One test to detect autocorrelation is the Durbin-Watson test. The Durbin-Watson (DW) statistical value obtained from the EViews 11 program is compared with the DW table values. The model is said to be free from autocorrelation if the Durbin-Watson statistical value is in the non-autocorrelation area. Determination of the area is assisted by DL and DU table

values. By using the following hypothesis:

H0: There is no autocorrelation

H1: There is autocorrelation

Fixed Effect Model, This approach is used to improve LSDV where a large cross section unit will not reduce the degree of freedom. This fixed effect approach allows different intercepts between individuals but the intercepts of each individual do not vary over time. This approach is written with the following equation:

$$Y_{it} = \beta_{0i} + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_n X_{nit} + \mu_{it}$$

3. Result

Figure 1. showed the probability value of the analysis results is greater than the real level of 5% or not significant ($0.055102 > 0.05$) and the Jarque value is smaller than the Chi-square table ($5.797149 < 9,48733$), so it can be concluded that the data are normally distributed

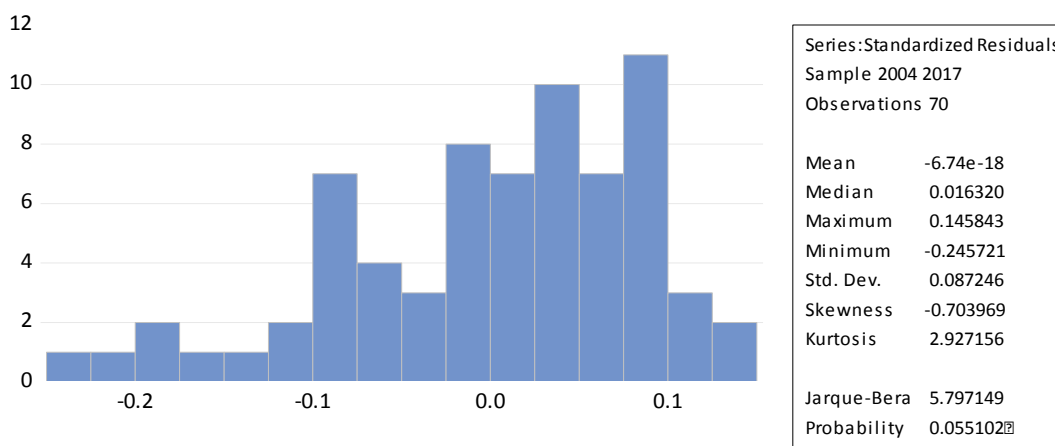


Figure 1. Histogram Graphic, Normality Test

In Table 5. it can be seen that there is no problem of multicollinearity. This can be seen from the VIF value

on the Centered VIF for the four independent variables of less than 10.

Table 5. Multicolonierativity Test

Variabel	R Squared	VIF
X1 (HDI)	0.890422	9.125919
X2 (FDI)	0.402876	1.674694
X3 (GSX)	0.747208	3.955821
X4 (GEI)	0.818029	5.495381

Table 6. Result of Heteroskedasticity Test

Variabel	Probabilitas
X1 (HDI)	0.4707
X2 (FDI)	0.9837
X3 (GSX)	0.3103
X4 (GEI)	0.8508

d=2.025511

0	dl	du	2	4-du	4-dl
	(1.4943)	(1.7351)		(2.2649)	(2.5057)

Figure 2. Durbin Watson Statistic (non autokorelasi)

For heteroskedasticity Test, the overall value of the Independent Variable probability is greater than 0.05, it can be ascertained that there is no heteroscedasticity problem in the study sample

In autocorrelation Test, there is found that the sample gate an positive autocorellation, then white test is used to solve. The result show w value as in Figure 2. is 2.025511 These results indicate there is no autocorrelation, which means the positive autocorrelation problem has been successfully cured.

Based on the test model that has been done as well as from the comparison of the best values, the panel data regression model used is the Fixed Effect Model (FEM). In previous tests the model has passed the classic assumption test so that the results obtained after the estimation are consistent and cannot. The following table shows the results of the estimated data with the number of observations of the Five Countries in the ASEAN Region during the period 2004-2017 (14 years).

Table 7. Fixed Effect Model (FEM) Result

C	Coefficient	t-Statistik	Probability
Konstanta (C)	-0.0863	-0.1506	0.8808
HDI (X1)	11.1129	12.3406	0.0000
FDI (X2)	1.0389	3.5438	0.0008
GSX (X3)	1.2233	2.6996	0.0090
GEI (X4)	0.3877	3.9528	0.0002
R-squared	0.9861	-	-
F-Statistik	539.678	-	0.0000

Sumber : Data diolah, 2019

From the regression results in Table 7., it can be concluded that overall the results of the panel data regression equation are as follow

$$\ln GNI_{it} = \beta_0 + \beta_1 HDI_{it} + \beta_2 FDI_{it} + \beta_3 GSX_{it} + \beta_4 GEI_{it} + \varepsilon_{it}$$

Y	=	In Gross National Income (GNI) (dollar)
HDI	=	Human Development Index (Indeks)
FDI	=	Foreign Direct Investment (US dollar)
GSX	=	Goods and Services Ekspor (US dollar)
GEI	=	Government Effectiveness Index (Indeks)
$\beta_1 \beta_2 \beta_3 \beta_4$	=	Slope Coefficient
β_0	=	Intercept Coefficient
i	=	Country in i di ASEAN
t	=	Period of Research
ε_{it}	=	Error Term

$$GNI_{it} = -0.0863 + 11.1129HDI_{it} + 1.0389FDI_{it} + 1.2233GSX_{it} + 0.3877GEI_{it}$$

- A constant of -0.0863 can be interpreted that if all the independent variables (Human Development Index of Foreign Direct Investment Goods and Services Exports and Government Effectiveness Index) are considered constant or unchanged, the Gross National Income of the Five Countries in the ASEAN Regional will decrease by 0.0863
- The regression coefficient of variable X1 (Human Development Index) of 11.1129 can be interpreted that when the Human Development Index rises by 1 basic point index, the Gross National Income of Five Countries in the ASEAN Region has increased by 11.1129 dollars assuming the other independent variables remain.
- The regression coefficient of variable X2 (Foreign Direct

Investment) of 1.0389 can be interpreted that when Foreign Direct Investment rises by 1 basic point index, the Gross National Income of Five Countries in the ASEAN Regional has increased by 1.0389 dollars assuming the other independent variables remain.

- d. The regression coefficient of variable X3 (Exported Goods and Services) of 1.2233 can be interpreted that when Exported Goods and Services rises by 1 dollar the Gross National Income of the Five Countries in the ASEAN Regional has increased by 1.2233 dollars assuming the other independent variables remain.
- e. The regression coefficient of variable X4 (Government Effectiveness Index) of 0.3877 can be interpreted that when the Government Effectiveness Index x rises by 1 basic point index, the Gross National Income of Five Countries in the ASEAN Regional has increased by 0.3877 dollars assuming the other independent variables remain constant.

For Adjusted R2 It can be seen that the variables X1 X2 X3

and X4 (Foreign Direct Investment Human Development Export Goods and Services Index and Government Effectiveness Index together have a contributing effect on Y (Gross National Income per Capita) of 0.9851 or 98.51 percent and the remaining 1.49 percent is influenced other factors not examined.

The Result of F-Statistic Test Foreign Direct Investment, Goods and Services Export variables and the Government Effectiveness Index together have a positive and significant effect on the Human Development Index. While the Human Development Index has a negative and significant effect on GNI per capita in the ASEAN region, Indonesia, the Philippines, Malaysia, Thailand, and Vietnam.

Vietnam, has the smallest individual effect value, which is - 0.3277, It shows that the variables of the Human Development Index, Foreign Direct Investment, Export Goods and Services, and Government Effectiveness Index have the smallest effect to increase the Gross National Income per capita compared to Thailand, followed, Malaysia, Thailand, Indonesia and finally the Philippines.

Table 8. Interpretation Result of Individual Fixed Effect

Variable	Coefficient	
C	-0.0863	
HDI	11.1129	
FDI	1.0389	
GSX	1.2233	
GEI	0.3877	
Country	Effect	Individual Effect
Indonesia	0.2301	0.1438
Filipina	0.2755	0.1892
Malaysia	-0.0236	-0.1099
Thailand	-0.0332	-0.1195
Vietnam	-0.2364	-0.3227

Table 9. Regression Result of GDP Growth to Icor

C	Coefficient	t-Statistic	Probability
Constanta (C)	7.002549	13.26152	0.0000
X_Icor	-9.070307	-3.505237	0.0008
R-squared	0.353198	-	-
F-Statistik	6.989683	-	-

Simple regression between GDP and ICOR growth using the reciprocal function model, the Fixed Effect Model (FEM), where GDP (Y) and ICOR ($X = 1 / x$) shows significant results with probability values as table 4.10 shows the number 0.0008 and the value ICOR coefficient of -9.070307 which means inversely proportional to GDP Growth.

So that the ASEAN Regional countries in this study can avoid the Middle Income Trap is expected to prioritize several variables, namely the Human Development Index of Foreign Direct Investment Goods and Services Export and the Government Effectiveness Index through the participation of the Government. Improving product

quality, through diversification or technology enhancement, is a good enough effort to increase the value of exports of goods and services as well as tax policies that favor the importing country. Security conditions and a good business climate will also provide opportunities for increased investment. Likewise for increasing human capital, through increasing HDI. Skilled workers can certainly help in increasing a country's GDP, so it also has an impact on increasing per capita income. The effect of government policy is clearly seen in the economic conditions of a country, Malaysia is in the shadow of Middle income Trap with Bumiputera's policies in its economy since 2010, which actually makes

Malaysia stagnate in GNI per capita for 15 years. Through the ICOR approach in Harrod Domar's theory shows that the smaller the ICOR value of a country, the better economic growth of a country in a country. To get an ICOR value equal to 1, then at least it takes the value of investment or capital stock as much as GDP growth in that year.

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