

Openness, Digital, and Human Development: Case Study of ASEAN Countries

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Abstract : The ASEAN Economic Community (AEC) is an initiative of ASEAN countries to realize ASEAN into a solid and calculated economic area in the international economic arena. Human Development Index (HDI) is a method used to measure the success or failure of a country or region in the field of human development. As the economy of countries becomes more openness and digital readiness is better, it is expected to influence the human development index. This study uses a quantitative method with panel data secondary to the 2011-2015 period by combining 10 ASEAN countries (Indonesia, Malaysia, Singapore, Thailand, Philippines, Vietnam, Myanmar, Brunei, Laos, Cambodia). From the calculation of T-Test, Effect of Openness on Human Development Index that it can be concluded that the openness variable partially influences the significance of the Human Development Index variable and Digital Influence on Human Development Index, it can be concluded that the Digital variable partially influences the positive significance of the Human Development Index variable. From the calculation of F value, So that simultaneously or together the independent variables have a significant effect on the dependent variable. Coefficient Determination Based on the table above, the Adjusted R-Square value is 0.9977. This shows that the model is able to explain 0.23% of the dependent variable, while the remaining 0.23% is influenced by other factors outside the regression model. The human development index in ASEAN countries is already good, Singapore is the country that has the highest Human Development Index while Myanmar, Laos, and Cambodia are the countries that have the lowest Human Development Index. To overcome the increasing human development index in Myanmar, Laos, and Cambodia, an open economy needs to be improved by conducting international trade. Digital technology is needed to further accelerate the economy of openness. Government policies of the three countries are to be more open in their economy. It is hoped that the policies of these three countries can contribute to creating a prosperous society in ASEAN countries and having a parallel human development index.

1 INTRODUCTION

A country in realizing the welfare of its population is carried out through the development process. Development is carried out based on the development trilogy. The three foundations in the development trilogy include economic growth, national equity, and stability. The quality of human resources has the most important role in economic development. Human beings act as processors and become capital in development. Human Development Index (HDI) is a method used to measure the success or failure of a country or region in the field of human development. The Human Development Index has three indicators, namely: life expectancy at birth (health), adult literacy rate and

average school length (education), and purchasing power (income).

The ASEAN Economic Community (AEC) is an initiative of ASEAN countries to realize ASEAN into a solid and calculated economic area in the international economic arena. AEC was formed with the aim of achieving economic integration in the ASEAN region which is believed to provide real benefits for all elements of society.

In order to encourage competitiveness in the global production chain, the use of technology and increasing innovation are inevitable. The digital economy industry (e-commerce) can be seen as an opportunity and a challenge. As an opportunity because it provides more space for the business world so that it encourages the emergence of start-

ups and new jobs, while as a challenge because of the immaturity of regulations and infrastructure for the industry so that e-commerce businesses have not been maximally competitive, so the implementation of AEC encourages the occurrence of competition in the e-commerce world. As the economy of countries becomes more openness and digital readiness is better, it is expected to influence the human development index.

2 LITERATURE REVIEW

2.1 Openness

The increasing variety of products in the domestic market today cannot be separated from the increasingly open role of international trade. When various regulations that are hindering nature agree to be reduced, the market becomes more open and the traffic of goods becomes higher. In openness, a party can consume goods or services that it does not produce. In openness too, resources will be allocated to sectors where the country has comparative and competitive advantages according to Dariah (2005). The economy in the world is now increasingly open, for that every country is trying to improve competitiveness to gain trade form gains.

According Novitasari (2015) In the theory of economic openness promises challenges and opportunities that the more open trade between one country to another can provide opportunities increasing the market access of domestic products in the international market as well as challenges to the competitiveness of domestic industries against foreign products. However, the benefits received by each country from economic openness do not show the same pattern and magnitude. For some developing countries, openness has a negative impact on economic growth but will be positively affected by developed countries that have optimized their openness to trade.

2.2 Digital

Setiawan (2017) explains that the digital world not only offers great opportunities and benefits for the public and business interests. But it also presents challenges to all areas of life to improve quality and efficiency in life. The use of various technologies really makes life easier, but even a digital lifestyle will depend more on cellphone and computer usage.

According to Musafak (2012) explained that the digital economy is an economy based on electronic

goods and services produced by electronic businesses and traded through electronic commerce. That is, businesses with electronic production and management processes and who interact with partners and customers and conduct transactions through the Internet and Web technologies. Musafak (2012) also describes the Digital Economy definition version of Encarta Dictionary is "Business transactions on the Internet: the marketplace that exists on the Internet". Understanding Digital Economy focuses more on transactions and markets that occur in the internet world. A broader understanding of just transactions or markets is the New Economy which according to PC Magazine is "The impact of information technology on the economy". The understanding is more emphasized on the application of information technology in the economic field. The digital economy is the economic sector which includes goods and services when developing, producing, selling or supplying depends on digital technology.

2.3 Human Development

According to Prato (2017) explained Human Development According to UNDP (1990), human development is a process of expanding choices for people to build their lives that are considered valuable. Some essential things in human development are so that people can feel a long and healthy life, knowledgeable, and have access to the resources needed for a decent life.

Human Development Index In 1990, UNDP introduced an indicator that had been developed, which is an indicator that can describe human development in a measurable and representative manner. Human Development Index(HDI) figures range from 0 to 100. The closer to 100, then it is an indication of better human development. Based on the value of the HDI, UNDP divided the human development status of a country or region into three groups, namely:

- a. $HDI < 50$ (low)
- b. $50 \leq HDI < 80$ (medium / medium)
- c. $HDI \geq 80$ (high)

3 METHOD

The population that became the object in this study came from secondary data obtained from the company Knoema, one of the digital economic data provider companies. The sampling method uses purposive sampling method, namely the

determination of samples with certain considerations. In this study, the sample was used using panel data obtained by time series data for 5 years and cross-section data of 10 ASEAN countries namely Indonesia, Malaysia, Singapore, Philippines, Thailand, Vietnam, Myanmar, Laos, Brunei, Cambodia.

3.1 Variable Identification

Research variables are independent and dependent. For the independent variables that exist in this study are Openness (X1), Digital (X2) while the dependent variable Human Development Index (Y).

3.2 Data analysis

The analytical method used in this study is a quantitative technique that uses mathematical and statistical models that are classified in certain categories to facilitate analysis using the Eviews program. While the analysis technique used is multiple linear regression analysis techniques to see the relationship between the independent variable and the dependent variable. The data used is the panel data there are three kinds of data panel estimation techniques, namely pooled the least square, fixed effect model, and random effect model. Test the suitability of the model to determine the most appropriate model is to use the Chow test. After that, the classic assumption test is a normality test and also hypothesis testing, namely partial t-test, simultaneous F test, a test of the coefficient of determination.

3.3 Econometry Model

The analysis technique in this study is a panel data regression analysis, while the regression model in the form of logs can be written as follows:

$$\ln Y_{it} = \beta_0 + \beta_1 \ln X1_{it} + \beta_2 \ln X2_{it} + e_{it} \quad (1)$$

Where:

Y = Human Development Index;

X1 = Openes;

X2 = Digital;

i = Country;

and t = time.

4 RESULT

There are three estimations of panel data regression, namely common effects (OLS), fixed effect models (FEM) or Random Effect (REM) models. Determining the panel model that will be used in this study, several tests must be carried out. Chow Test that can be used to determine whether the panel data model can be regressed with common effect models (OLS), fixed effect models (FEM) or Random Effect (REM) models. Chow test is used to determine whether the panel data model is regressed with the Common Effect model or with the Fixed Effect model.

H0: The best model is the Common Effect

H1: The best model is the Fixed Effect

4.1 Chow Test

Table 1: Chow Test.

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	860.818558	(9,38)	0.0000
Cross-section Chi-square	266.120753	9	0.0000

The table above shows that the best model is the fixed effect because the Chi-square probability value is below 0.05, this means that H0 is accepted.

Table 2: Fixed Effect Model.

Dependent Variable: HUM_DEV
 Method: Panel Least Squares
 Date: 06/10/18 Time: 20:28
 Sample: 2011 2015
 Periods included: 5
 Cross-sections included: 10
 Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPENES	0.034255	0.008692	3.941139	0.0003
DIGITAL	6.19E-10	2.32E-10	2.672796	0.0110
C	0.650633	0.009928	65.53572	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.997716	Mean dependent var	0.700200
Adjusted R-squared	0.997055	S.D. dependent var	0.122865
S.E. of regression	0.006668	Akaike info criterion	-6.977416
Sum squared resid	0.001690	Schwarz criterion	-6.518531
Log likelihood	186.4354	Hannan-Quinn criter.	-6.802670
F-statistic	1508.938	Durbin-Watson stat	1.165036
Prob(F-statistic)	0.000000		

From the results of panel data regression with the selected model is the Fixed Effect model, the regression model equation is obtained as follows:

$$\text{Human Development Index} = 0.034255 (\text{OPENNESS}) + 6.19 (\text{DIGITAL}) + e (2)$$

4.2 Normality Test

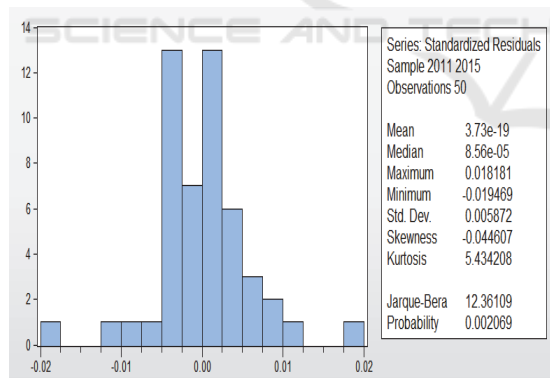


Figure 1: Histogram

From the output that has been tested, it states that the histogram form is distributed symmetrically so that the residuals are distributed normally. Based on the JB statistical test, the value is 12.361 with a probability of 0.002069 while the chi-square value with significance ($\alpha = 5\%$) is 0.05, so $JB < \text{Chi Square}$, then H_0 is accepted and H_1 is rejected meaning that the residual is normally distributed.

4.3 T-test (Partial)

Table 3: T-test (partial)

Dependent Variable: HUM_DEV
 Method: Panel Least Squares
 Date: 06/10/18 Time: 20:28
 Sample: 2011 2015
 Periods included: 5
 Cross-sections included: 10
 Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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Log likelihood	186.4354	Hannan-Quinn criter.	-6.802670
F-statistic	1508.938	Durbin-Watson stat	1.165036
Prob(F-statistic)	0.000000		

Based on the results above as follows:

Effect of Openness on the Human Development Index. The t-statistical probability value obtained is 0.0003, then the statistical probability $< \alpha = 5\%$ is $0.0003 < 0.05$. So that it can be concluded that the openness variable partially influences the significance of the Human Development Index variable.

Digital Influence on the Human Development Index. The obtained t-statistical probability value is 0.0110. Then the statistical probability $< \alpha = 5\%$ is $0.0110 < 0.05$. So it can be concluded that the Digital variable partially influences the positive significance of the Human Development Index variable.

Table: 4 Human Development Index.

Human Dev Index	Indonesia	Malaysia	Singapore	Thailand	Philipnes	Vietnam	Myanmar	Laos	Brunei	Kamboja
2011	0,67	0,67	0,92	0,73	0,67	0,66	0,53	0,55	0,85	0,54
2012	0,68	0,68	0,92	0,73	0,67	0,67	0,54	0,56	0,85	0,55
2013	0,68	0,68	0,92	0,74	0,68	0,68	0,55	0,57	0,86	0,55
2014	0,69	0,69	0,92	0,74	0,68	0,68	0,55	0,58	0,86	0,56
2015	0,69	0,69	0,93	0,74	0,68	0,68	0,56	0,59	0,87	0,56

4.4 F Test (Simultaneous)

From the calculation of F value, it is known that F arithmetic $>$ F table ($1508.939 > 3.18$) then H_0 is

accepted and H1 is rejected (F arithmetic is in H1 reception area). Then also the probability (prob.) Of the table above is equal to $0.000 > 0.005$, then H0 is accepted and H1 is rejected. So that simultaneously or together the independent variables have a significant effect on the dependent variable.

4.5 Coefficient Determination

Based on the table above, the Adjusted R-Square value is 0.9977. This shows that the model is able to explain 0.23% of the dependent variable, while the remaining 0.23% is influenced by other factors outside the regression model.

5 DISCUSSION

The human development index in ASEAN countries is already good, as can be seen in table 4 it can be explained that Singapore is the country that has the highest Human Development Index while Myanmar, Laos and Cambodia are the countries that have the lowest Human Development Index. To overcome the increasing human development index in Myanmar, Laos and Cambodia, an open economy needs to be improved by conducting international trade. Digital technology is needed to further accelerate the economy of openness. Government policies of the three countries are to be more open in their economy. It is hoped that the policies of these three countries can contribute to creating a prosperous society in ASEAN countries and having a parallel human development index.

6 CONCLUSION

This study aims to analyze the relationship between Openness, digital towards ASEAN countries human development index in the period 2011-2015 using panel data regression analysis techniques. Based on the results of statistical tests, the following conclusions can be drawn:

- a. Effect of Openness on Human Development Index , The t-statistical probability value obtained is 0.0003, then the statistical probability $< \alpha = 5\%$ is $0.0003 < 0.05$. So that it can be concluded that the openness variable partially influences the significance of the Human Development Index variable. Digital Influence on Human Development Index, The obtained t-statistical probability value is

0.0110. Then the statistical probability $< \alpha = 5\%$ is $0.0110 < 0.05$. So it can be concluded that the Digital variable partially influences the positive significance of the Human Development Index variable.

- b. From the calculation of F value, it is known that F arithmetic $> F$ table ($1508.939 > 3.18$) then H0 is accepted and H1 is rejected (F arithmetic is in H1 reception area). Then also the probability (prob.) Of the table above is equal to $0.000 > 0.005$, then H0 is accepted and H1 is rejected. So that simultaneously or together the independent variables have a significant effect on the dependent variable. Koefisein Determination Based on the table above, the Adjusted R-Square value is 0.9977. This shows that the model is able to explain 0.23% of the dependent variable, while the remaining 0.23% is influenced by other factors outside the regression model.

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