Labor, Digital and Growth GDP Analysis: Case Study of ASEAN Countries

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Abstract :The ASEAN Economic Community was formed with the aim of achieving the perfection of economic integration in the ASEAN region which is believed to provide tangible benefits for all elements of society. On the other hand, the use of technology in the company will also affect how much work is needed. Technological sophistication alone does not necessarily result in a decrease in the number of workers. Technological progress will lead to better production results. 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 Labor on GDP so that it can be concluded that the labor variable partially influences the significance of the GDP variable and effect of Digital on GDP so it can be concluded that the Digital variable partially influences the positive significance of the GDP variable. From the calculation of F value, 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 0.9975. This shows that the model is able to explain 99.75% of the dependent variable, while the remaining 0.25% is influenced by other factors outside the regression model. Labor and digital influences on GDP are already good, but there are some countries that have to be improved again such as Myanmar, Laos and Cambodia. The policies of these three countries in the use of digital technology are expected to improve the welfare of the workforce. If digital technology has been implemented properly, all countries in ASEAN will get the same welfare.

1 INTRODUCTION

The ASEAN Economic Community (AEC) was formed with the aim of achieving the perfect economic integration in the ASEAN region which is believed to provide tangible benefits for all elements of society. According to Abdurofiq (2015) explains there are at least 4 (four) things that become the focus of the implementation of the AEC, first, countries in the market unity and production base. Second, AEC will be used as a region with a very high level of competition. Third, the AEC will be used as a joint with equitable economic development. Fourth, the AEC will be integrated into equitable economic development among the entire ASEAN region.

In the case of Labor, Increasing the wage rate will result in an increase in production costs, so that it will increase the per unit price of the product produced. If the per unit price of the product being sold is increased, the reaction that usually arises is to reduce the purchase or no longer buy the product. So that there will be a change in the production scale called the effect of production scale (scale effect) where a condition that forces producers to reduce the number of products produced, which in turn can also reduce the company's workforce. An increase in wages assuming the price of other capital goods remains, the entrepreneur has a tendency to replace labor with machinery. The decrease in the number of workers due to the replacement with a machine is called the substitution effect. On the other hand, the use of technology in the company will also affect how much work is needed. Technological sophistication alone does not necessarily result in a decrease in the number of workers. Technological progress will lead to better production results, but its ability to produce products in the same or relatively equal quantity. Furthermore, the amount of labor demanded can be determined by the level of

productivity of the workforce itself. Productivity is the ability to produce something.

2 LITERATURE REVIEW

2.1 Labor

According to Takyuddin (2016) explains Labor is defined as a population in the working-age population. Whereas the definition of labor is contained in Law No. 25 of 1997 concerning Manpower, namely every man or woman who is in and/or will do work, both inside and outside the employment relationship to produce goods or services to fulfill community needs. According to Dumairy (1997) labor is a population that has an age within the working age limit. The purpose of choosing the age limit is so that the definition given is as possible as describing the actual reality. Each country chooses a different age limit because the situation of labor in each country is also different, so that the working age limit between countries is not the same. In Indonesia, the minimum age limit for labor is 15 years without maximum limits.

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 GDP

Economic growth is the development of activities in the economy which causes goods and services produced in society to increase so that it will increase the prosperity of the community (Sukirno, 1994) in Suparyati (2015). Still in Suparyati (2015) according to Budiono that economic growth is a process of increasing per capita output in a long period.

According to Athukorala (2003) in (Jufrida, 2016), foreign investment has a positive impact on the economy of the host country because through foreign investment can increase the availability of funds for the host country (recipient country). But the results of research conducted did not find a significant relationship between FDI and economic growth, especially for developing countries. (Liu and Su 2016 in Jufrida, 2016) also conducted research on the impact of FDI and human capital on economic growth in China by using panel data of cities in China from 1991 to 2010. They tested the determinants of economic growth with a focus on the role of FDI and human capital with the human capital-augmented Solow model. The results show that the GDP growth rate per capita is negatively related to the rate of population growth and is positively related to the level of investment in physical capital and human capital. They also found that FDI had a positive effect on GDP per capita growth and this effect was intensified by ownership of urban human capital. The total foreign investment and domestic investment, both government and private, is one of the variables in the calculation of national income which is a benchmark of economic growth, therefore investment should be maintained in the development of stability and continued efforts to increase.

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 Labor (X1), Digital (X2) while the dependent variable GDP (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 = Tourism; X1 = Labor; 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	536.393855	(9,38)	0.0000
Cross-section Chi-square	242.617390	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: GDP
Method: Panel Least Squares
Date: 06/10/18   Time: 20:39
Sample: 2011 2015
Periods included: 5
Cross-sections included: 10
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DIGITAL	2.61E-06	7.08E-07	3.681741	0.0007
LABOR	-4.90E-06	2.41E-06	-2.034794	0.0489
C	408.6378	92.47846	4.418735	0.0001

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.997592	Mean dependent var	244.4450
Adjusted R-squared	0.996895	S.D. dependent var	258.8520
S.E. of regression	14.42321	Akaike info criterion	8.381117
Sum squared resid	7905.098	Schwarz criterion	8.840003
Log likelihood	-197.5279	Hannan-Quinn criter.	8.555863
F-statistic	1431.317	Durbin-Watson stat	1.442360
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:
GDP = -4.90 (Labor) + 2.61 (DIGITAL) + e (2)
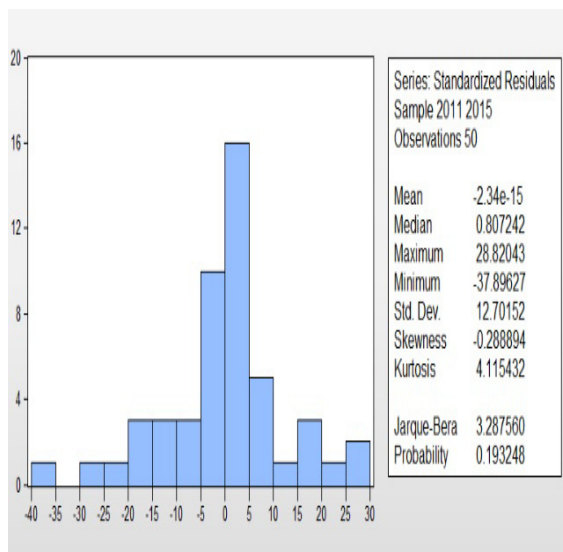
4.2 Normality test

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 3.287 with a probability of 0.1932 while the chi-square value with significance (α = 5%) is 0.05, so JB < Chi Square, then H0 is accepted and H1 is rejected meaning that the residual is normally distributed.

4.3 T test (Partial)

Table 3: T test (partial)

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Dependent Variable: GDP
Method: Panel Least Squares
Date: 06/10/18   Time: 20:39
Sample: 2011 2015
Periods included: 5
Cross-sections included: 10
Total panel (balanced) observations: 50
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Variable	Coefficient	Std. Error	t-Statistic	Prob.
DIGITAL	2.61E-06	7.08E-07	3.681741	0.0007
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Effects Specification

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Log likelihood	-197.5279	Hannan-Quinn criter.	8.555863
F-statistic	1431.317	Durbin-Watson stat	1.442360
Prob(F-statistic)	0.000000		

Based on the results above as follows:

4.3.1 Effect of Labor on GDP

The t-statistical probability value obtained is 0.0489, then the statistical probability <α = 5% is 0.0489 <0.05, but the coefficient value is -4.90. So it can be concluded that the labor variable partially does not affect but the significance of the GDP variable.

4.3.2 Effect of Digital on GDP

The obtained t-statistical probability value is 0.0007. Then the statistical probability <α = 5% is 0.0007 < 0.05. So it can be concluded that the Digital variable partially influences the positive significance of the GDP variable.

4.4 F Test (Simultaneous)

From the calculation of F value, it is known that F arithmetic > F table (1431.317 > 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.

Coefficient of Determination , Based on the table above, the Adjusted R-Square value is 0.9975. This shows that the model is able to explain 99.75% of the dependent variable, while the remaining 0.25% is influenced by other factors outside the regression model.

Table 4: Growth Labor

growth Labor	Indonesia	Malaysia	Singapura	Thailand	Philipnes	Vietnam	Myanmar	Laos	Brunei	Kamboja
2012	2,58	3,43	3,42	(0,23)	1,00	1,75	0,73	1,29	0,48	(2,17)
2013	1,11	3,89	0,86	(1,64)	1,16	1,47	0,78	1,24	(0,64)	0,05
2014	1,23	2,09	1,15	(0,17)	1,98	1,34	0,80	1,26	(0,37)	1,65
2015	1,19	1,64	1,97	(0,08)	2,12	1,08	0,66	1,60	1,42	1,74

5 DISCUSSION

Effect labor, digital to GDP is good enough, but must be increased in labor. In table 4 it can be explained that Singapore has good labor, it looks good labor growth. Whereas for the country of Thailand has decreased, this means that labor factors are very problematic in this country. Whereas other countries, seen the growth of labor has been good even though growth from year to year often changes,

sometimes increases, sometimes decreases. Government policy to provide training so that labor becomes quality and has high productivity. Mastery of digital technology for labor is needed so that labor can work effectively and efficiently.

6 CONCLUSION

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

6.1 Effect of Labor on GDP

The t-statistical probability value obtained is 0.0489, then the statistical probability $< \alpha = 5\%$ is $0.0489 < 0.05$. So that it can be concluded that the labor variable partially influences the significance of the GDP variable. Effect of Digital on GDP, the obtained t-statistical probability value is 0.0007. Then the statistical probability $< \alpha = 5\%$ is $0.0007 < 0.05$. So it can be concluded that the Digital variable partially influences the positive significance of the GDP variable.

6.2 The Calculation of F Value

It is known that F arithmetic > F table (1431.317 > 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. Coefficient of Determination, Based on the table above, the Adjusted R-Square value is 0.9975. This shows that the model is able to explain 99.75% of the dependent variable, while the remaining 0.25% is influenced by other factors outside the regression model.

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