

# The Influence of Total Factor Productivity towards the Economic Growth of Indonesia

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## Abstract

Economic growth is one of the major keys in the development of a country. This research aims to analyze the effect of capital accumulation growth, the regional minimum wages, and total factor productivity growth against Indonesia's economic growth. The analysis in this study uses the equation by the method of Error Correction Model (ECM). This study analyzed the relationship between the independent variable and the dependent variable, both in the short-term and long-term. Estimation results show that in the short-term both the variable capital accumulation, the regional minimum wage and total factor productivity growth affect Indonesia's economic growth but in the long-term, there are two variables that influence positive and insignificant i.e. investment, the Regional Minimum wage affects economic growth in Indonesia. And Total Factor Productivity growth in the long-term have a positive and significant influence on economic growth in Indonesia. Thus, it can be concluded that Total Factor Productivity is the main determining factor affecting economic growth in Indonesia.

**Keywords:** Economic growth, capital accumulation, wage, productivity growth.

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## Introduction

Economic growth is one of the major keys in the development of a country. High economic growth capable of encouraging faster development process in every country. The high economic growth rate is also expected to be able to improve the welfare and prosperity of the inhabitants (Ramayani, 2012). Sukirno (2015) stated that economic growth is a problem of the economy in the long run. Economic growth means the development of activities in the economy that caused the goods and services produced in the community increased and the prosperity of communities increased. The higher a country's economic growth, then the higher a country's ability to meet the needs of the community, so that it will be an increasingly higher ability of a country to prosper in society. To measure the success of economic development especially in the field, one of the economic growth rates is the charge indicators will. According to Suparmoko (2016), one of the indicators that can be used to measure economic growth is Gross Domestic Product (GDP) for the national scale and Gross Domestic Product (GDP) for the scale of the region. Gross Domestic Product (GDP) can indicate how big the activity of an economy as a whole.

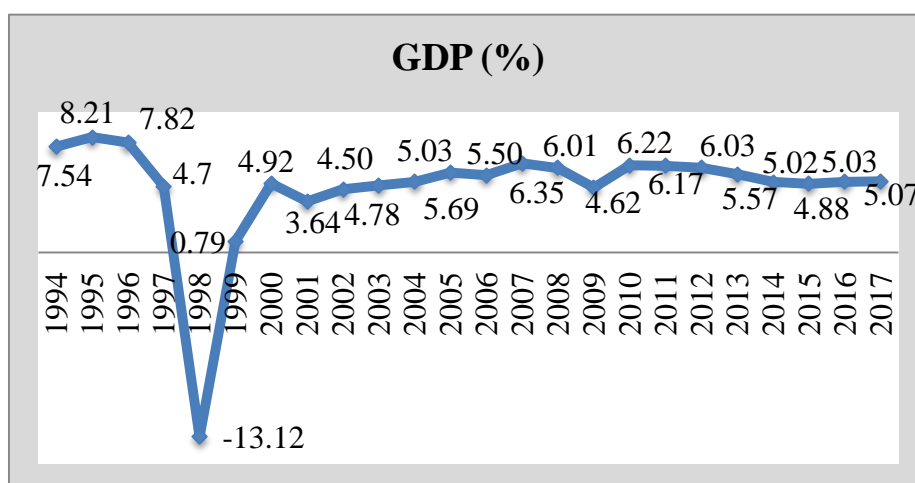


Figure 1 The development of economic growth (GDP) in Indonesia years 1994-2017

The monetary and economic crisis that occurred in mid-1997, which continues into the multidimensional crisis, brought the impact on economic growth in Indonesia. The movement of the gross domestic product in Indonesia is experiencing dynamic improvement. Since the year 1996 the movement likely to have a positive trend. But in 1997 amounted to 1,518,304 billion rupiahs and 1998 1,319,000 billion rupiahs (minus the 13.12 percent) which occur on the turmoil the gross domestic product, this is because Indonesia is still experiencing a time of monetary crisis which disrupted the economy in General. But as the development after the crisis began to suffer from gross domestic product rise means. Then, in subsequent years, Indonesia's economy experienced a recovery (recovery), although when compared with other Asian countries that suffered a similar crisis, the economic recovery process in Indonesia is relatively slower.

One of the purposes of the Indonesia Government that is contained in the MP3EI (Masterplan Acceleration and expansion of the economic development of Indonesia)

2011-2025, is making Indonesia as one of the ten largest economic power in the world by the year 2025. In its report, the World Bank Global Development Horizons 2011 also mentioned that more than 50% of economic growth in the world in 2025 will be donated by six new economic powers, namely Brazil, China, India, Indonesia, South Korea, and Russia. In line with the statement of the World Bank, the results of the study with McKinsey Global Institute, related *The Economy: Unleashing the Archipelago of Indonesia's Potential* (2012) mentioned that Indonesia is on the order of the 16<sup>th</sup> largest economy in the world, and in 2030 Indonesia it is ranking of the world's largest seven.

Theoretically, the economic growth is based on two components. The first use of more inputs, such as the use of labor and capital stock more, so it will produce more output. The second is the increase in output per unit of input, which became known as productivity. Thus, productivity is one of the important factors that affect economic growth. In the neo-classical growth theory, one of which was developed by Robert Solow, the output growth rate depends on the level of accumulation of capital, the number of formation/the use of manpower and technology. Capital is a very important production factor in determining high low national income or gross domestic product (GDP). However it is often misconstrued interpret that without capital, the economy of a country is said to be will not develop at all. Capital is not the only factors that determine economic growth. With the amount of capital that is a bit plus the strong willingness of a country's population growth will occur (Suparmoko, 2016).

According to the theory of Harrod-Domar, capital accumulation is affected by the investments made in the period before. Investment, in fact, is the first step of economic development activities. Developing countries such as Indonesia are basically good investment requires more investment in the country as well as overseas investments, investments will act as a transfer medium needs resources such as technology, managerial capabilities, the exports and capital from industrial countries to developing countries. Therefore, the investment would boost productivity and associated with economic growth.

In 1997, the value of domestic investment peaked worth 18,628 billion rupiahs with a total of 345 projects unit. The value of the domestic investment continues to decline since the year 2001 domestic investment lives worth 9,890 billion rupiahs approximately minus 55.11%. And Indonesia's economic growth in the year 2001 experienced a slowdown. The gross domestic product (GDP) in 2001 reached 3.64%, this is the case is inseparable from the development of conditions inside and outside the country that are less profitable. From within the country, the slowdown is due to the still high risk and uncertainty with respect to the rising social and political tensions, as well as weak law enforcement led to declining confidence the world efforts to undertake activities production and investment, which in turn impedes economic expansion more. The above phenomenon shows there is conformity theory of Robert Solow, the output growth rate depends on the level of accumulation of capital, the number of formation/the use of manpower and technology.

Other factors that can affect output or gross domestic product (GDP) of a country is a factor of labor. Absorption of labor also affected by wages. Awarding wage given by entrepreneurs theoretically regarded as the price of power that was sacrificed for the sake of production workers. An increase in the price of the product an item lowers the demand

for such goods. This condition is forcing manufacturers to reduce the amount of the resulting product, hereinafter can also reduce the demand for labor (Todaro, 2000).

In fact, the increase of regional minimum value wage in Indonesia followed with trend GDP growth climbed every year. The regional minimum wage in 1998 experienced an increase of Rp 150,900 or about 11.77%. The opposite happened a decline GDP growth in Indonesia amounted to minus 13.12% in 1998, this is because of shocks on condition of economic, political, and Social Affairs in Indonesia. The increase in the value of the regional minimum wage can cause the incidence likely companies to pay wages below the minimum wage. In addition, there are a few companies that could not afford to pay the minimum wage because of an increase in the value of the UMR. The increase in the value of the regional minimum wage will cause companies to think back to infuse capital so that the investment that went into the area and the absorption of labor decline. It will directly lower the GDP growth in Indonesia. Although wages did not affect economic growth directly, if it is associated with labor, wages will affect the demand and supply of labor. The small number of a large workforce will affect the amount of output produced, which will also further promoted economic growth.

One way to measure the influence of technologies against economic growth can be seen from the role of Total Factor Productivity (TFP). Total Factor Productivity (TFP) is another factor that affects economic growth in addition to labor and capital. TFP is regarded as the technology advances that are exogenous. A country's economic growth is largely determined by the level of productivity of each component of the factors of production. In classical economic growth theory developed by Solow (2010), the factor inputs of labor and capital is the determinant of a country's economic growth. Outside of labor and capital, there is another factor that is often referred to as total factor productivity (TFP), which affect economic growth. In other words, this can explain the TFP is the role of factors other than the factors of labor and capital. Solow (2010) explained that the role of technology as a variable exogenous also represented as Total Factor Productivity (TFP). Solow growth theory also assumes that the output is determined by the input of capital and labor, where both the input level of interacting on a particular technology.

Johannes & Njong (2012) investigates that drive labor productivity convergence between agriculture and manufacturing activities in Cameroon over 1969-2005. Our findings indicate that while government spending on education, health, and road infrastructures promote convergence agricultural spending reinforces inequality in sectoral labor productivity. De (2006) investigates study aims to assess the total factor productivity (TFP) growth of the Indian port sector. The study also finds that, contrary to popular belief, the economic climate in post-reform period has yet to make any substantial impact on the performance of Indian ports in terms of the most popular measure of performance.

This research aims to analyze the effect of capital accumulation growth, the regional minimum wages, and total factor productivity growth against Indonesia's economic growth.

## Methodology

### Theoretical Framework

Generally, there are two approaches used in measuring TFP. The first one involves that use of an aggregate production function for econometric analysis while the second one is the income/growth accounting approach (Ritter, 1988; Elias, 1990; and Barro, 1998).

The basis of this paper is the R. M. Solow (1956) model. The model in the study of the production function model is adapted from the Cobb-Douglas. According to Pressman J (2004) calculation of Total Factor Productivity (TFP) is based on the Cobb-Douglas production function, where the value of A in the production function refers to a Total Factor Productivity (TFP).

$$Y = AL^{\alpha}K^{\beta} \dots\dots\dots (1)$$

Where  $Y$  is output,  $K$  is physical capital stock,  $L$  is labor and  $A$  is the level of technology.  $L$  and  $A$  are assumed to grow exogenously at rate  $n$  and  $g$  respectively. Calculation of Total Factor Productivity (TFP) then do the transformation of the natural logarithm function against Cobb-Douglas production with the following stages:

$$Y_t - Y_{t-1} = A_t L_t^{\alpha} K_t^{\beta} - A_{t-1} L_{t-1}^{\alpha} K_{t-1}^{\beta} \dots\dots\dots (2)$$

$$\frac{Y_t - Y_{t-1}}{Y_{t-1}} = \frac{A_t}{A_{t-1}} - \left(\frac{L_t}{L_{t-1}}\right)^{\alpha} \left(\frac{K_t}{K_{t-1}}\right)^{\beta} - 1 \dots\dots\dots (3)$$

$$\frac{Y_t - Y_{t-1}}{Y_{t-1}} + 1 = \frac{A_t}{A_{t-1}} - \left(\frac{L_t}{L_{t-1}}\right)^{\alpha} \left(\frac{K_t}{K_{t-1}}\right)^{\beta} \dots\dots\dots (4)$$

$$\frac{Y_t}{Y_{t-1}} = \frac{A_t}{A_{t-1}} - \left(\frac{L_t}{L_{t-1}}\right)^{\alpha} \left(\frac{K_t}{K_{t-1}}\right)^{\beta} \dots\dots\dots (5)$$

$$\ln\left(\frac{Y_t}{Y_{t-1}}\right) = \ln\left(\frac{A_t}{A_{t-1}}\right) + \alpha \ln\left(\frac{L_t}{L_{t-1}}\right) + \beta \ln\left(\frac{K_t}{K_{t-1}}\right) \dots\dots\dots (6)$$

$$A_t^* = Y_t^* - \alpha L_t^* - \beta K_t^* \dots\dots\dots (7)$$

$$A_t^* = Y_t^* - \alpha L_t^* - (1-\alpha) K_t^* \dots\dots\dots (8)$$

where  $\alpha + \beta = 1$ , values of  $\alpha$  in the equation above shows part (share) growth of labor from the total output or  $(MPL \times L)/Y$ , and  $MPL$  (marginal product of labor) is none other than wage labor bill. Where  $Y$  is economic growth in Indonesia,  $K$  is capital accumulation growth,  $W$  is the regional minimum wage and  $A$  is the Total Factor Productivity (TFP).

### Variable, Measurement and Data Sources

Gross Domestic Product ( $GDP$ ) – This paper uses real  $GDP$  and the data  $GDP$  is obtained from Central Bureau Of Statistics Indonesia period 1994-2017.

Capital Accumulation Growth ( $K$ ) – This paper uses capital is the realization of domestic investment in all sectors of the economy in Indonesia from Bank Indonesia period 1994-2017.

Wage Employment ( $W$ ) - This research uses data regional Indonesia's minimum wage is the lowest monthly wage consisting of wages fixed allowances which include principal Government from Central Bureau Of Statistics Indonesia period 1994-2017.

Total Factor Productivity ( $TFP$ ) – TFP analysis is necessary because of the large portion of output that is not explained by the classical inputs (capital and labor). Normally, TFP is not readily available as compared to variables such as  $Y_t, K_t, L_t$ . TFP is normally obtained as a residual.

### *Analysis Techniques*

This research is the research of time series data by using the approach of Error Correction Model (ECM) is a technique for correcting the imbalance in the balance towards short-term long-term (Nachrowi, D Nachrowi; Usman, 2006:371). This study uses statistics programs to help E-Views version 7.

$$DLnY_t = \gamma_0 + \gamma_1 DLnK_t + \gamma_2 DLnW_t + \gamma_3 DLnTFP_t + \gamma_4 LnK_{t-1} + \gamma_5 LnW_{t-1} + \gamma_6 LnTFP_{t-1} + \gamma_7 ECT + \Sigma i \dots \dots \dots (9)$$

where:

$Y_t$  = GDP (%)

$K_t$  = Capital accumulation growth (billion rupiahs)

$W_t$  = The regional minimum wage (rupiah)

$TFP_t$  = Total Factor Productivity (%)

$DLnY_t$  = Changes in GDP in the long-term

$DLnK_t$  = Changes in capital accumulation growth in the long-term

$DLnW_t$  = Changes in the regional minimum wage in the long-term

$DLnTFP_t$  = Changes in Total Factor Productivity in the long-term

ECT = Error Correction Term

B = backward lag operator

Coefficient  $\gamma_0$  = Intersep

Coefficient  $\gamma_1, \gamma_2, \gamma_3$  = The regression coefficient of the long-term

Coefficient  $\gamma_4, \gamma_5, \gamma_6$  = The regression coefficient of the short-term

Coefficient  $\gamma_7$  = *speed of adjustment*

### Analysis of Research Findings

#### Test Stasioner

The first thing to do is to examine whether the data is stationary or not. Stationer this test needs to be done because a regression analysis should not be done when the data used is not stationary and normally if it is still has done the resulting equations then are spurious regression.

The unit root test is normal testing was introduced by David Dickey and Wayne Fuller. The root test is done to find out whether the data used stationary or not. Data testing performed using test Augmented Dickey-Fuller (ADF) was the count of an ADF when the variable is greater than the critical value of MacKinnon, means the variable is stationary.

Table 1 Result Unit Root Test

Variables	Value ADF	Critical Value MC-Kinnon			Information
		1%	5%	10%	
GDP (Y)	-2.589296	-3.788030	-3.012363	-2.646119	Nonstationary
Capital (K)	0.804246	-3.769597	-3.004861	-2.642242	Nonstationary
Wage (W)	-0.142833	-3.752946	-2.998064	-2.638752	Nonstationary
TFP (A)	-3.027041	-3.769597	-3.004861	-2.642242	Stationary

Based on table 1 that not all variables are stationary at the level of basic level or still have problems root units. Therefore, the average variable rate on the insignificant level it needs to be tested by the degree of integration

The test of the degree of integration is a continuation of the test unit and the roots are only required when all the data has not been stationary at a basic level. A test of the degree of integration used to know how data will be stationary. When the data have not been stationary at one then testing must remain continued until each variable is stationary. To do this test used a test of ADF. The taking of decision is when the count of a DF variable is greater than the critical value of MacKinnon, the stationary variable means.

Table 2 Result Test of The Degree of Integration

Variables	Value ADF	Critical Value MC-Kinnon			Information
		1%	5%	10%	
GDP (Y)	-5.947072	-3.769597	-3.004861	-2.642242	Stationer
Capital (K)	-7.028360	-3.769597	-3.004861	-2.642242	Stationer

Wage (W)	-3.805281	-3.769597	-3.004861	-2.642242	Stationer
TFP (A)	-3.870213	-3.886751	-3.052169	-2.666593	Stationer

Based on table 2 that the GDP variable ( $Y$ ), capital ( $K$ ), wages ( $W$ ) and Total Factor Productivity ( $A$ ) had been stationary at the same degree, that is one degree, shown from the ADF value count greater than the value of the critical (Mackinnon critical values) at  $\alpha = 5\%$ . Thus, all the variables are stationary at first differencing.

### *Estimation Error Correction Model (ECM)*

Estimation model of GDP ( $Y$ ) using the ECM model aims to seek short-term balance or correct an imbalance towards short-term long-term balance. To know that a used ECM model is valid or not can be seen from the value of the Error Correction Term ECT are significant or not. If it is significant then the specification model ECT GDP ( $Y$ ) in Indonesia can be justified by either using a model of ECM. Equation Error Correction Model (ECM) for a short-term period and long-term are as follows:

Table 3 Estimation Error Correction Model (ECM)

Dependent Variable: D(LNY)

Method: Least Squares

Date: 02/28/19 Time: 01:54

Sample (adjusted): 1994 2017

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNK)	4.046342	1.306979	3.095950	0.0074
D(LNW)	6.448044	2.864951	2.250665	0.0398
D(LNA)	0.522731	0.148094	3.529725	0.0030
ECT	0.486796	0.211167	2.305265	0.0359
LNK(-1)	0.002476	0.374089	0.006619	0.9948
LNW(-1)	0.192512	0.351338	0.547941	0.5918
LNA(-1)	0.545211	0.171933	3.171077	0.0063
C	-2.834243	2.622063	-1.080921	0.2968
R-squared	0.674514	Mean dependent var	-0.014844	
Adjusted R-squared	0.522621	S.D. dependent var	1.197639	
S.E. of regression	0.827480	Akaike info criterion	2.727345	
Sum squared resid	10.27085	Schwarz criterion	3.122299	
Log likelihood	-23.36446	Hannan-Quinn criter.	2.826675	
F-statistic	4.440713	Durbin-Watson stat	1.432244	
Prob(F-statistic)	0.007401			

In this research Error Correction Model (ECM) used a quadratic cost function is single (single period quadratic cost function) to place the adjustment corrects imbalances in the



long term and short term. As for the model of the Error Correction Model (ECM) in the short-term are as follows:

$$D \ln Y_t = -2.834243 + 4.046342 K_t + 6.448044 W_t + 0.522731 A_t + 0.486796 ECT + \epsilon_i$$

This study shows the results of the estimation method using Error Correction Model (ECM) obtained the value of the Error Correction Term (ECT) with a positive and significant at the  $\alpha = 5\%$  for estimation of GDP ( $Y$ ) then the above model is valid to use. The results of the estimation of ECM above shows that short-term changes in variable capital ( $K$ ), the regional minimum wage ( $W$ ), Total Factor Productivity ( $A$ ) has a positive influence towards GDP ( $Y$ ). The magnitude of the balance and changes in GDP ( $Y$ ) against the previous period now is 4.86%. The value of the coefficient of 0.486796 ECT. While his t-statistics is 2.305265 with probability  $\alpha 0.0359$  so significant at  $= 5\%$  and the model can be used.

As for the Error Correction Model (ECM) in the long-term are as follows: adjustment is obtained from the values of the coefficient of 0.486796 ECT. While his t-statistics is 2.305265 with probability  $\alpha 0.0359$  so significant at 5% and means that the model can be used.

$$\ln Y_{t-1} = -2.834243 + 0.002476 K_{t-1} + 0.192512 W_{t-1} + 0.545211 A_{t-1} + \epsilon_i$$

The results of the estimation of ECM above show that long-term changes in variable capital ( $K$ ), the regional minimum wage ( $W$ ), Total Factor Productivity ( $A$ ) previous period had a positive influence towards GDP ( $Y$ ).

### *Statistical Test*

#### 1) F-Test (Test of Simultaneous)

Based on the results of the processing of data by the method of Error Correction Model of the short-term and long-term value of F is obtained to calculate of 4.440713 with the probability of 0.007401 smaller than  $\alpha = 5\%$ , therefore,  $H_0$  is rejected. Then the variable capital ( $K$ ), the regional minimum wage ( $W$ ) and Total Factor Productivity ( $A$ ) in the short term and the long term effect of significant together towards GDP ( $Y$ ) in Indonesia.

#### 2) Test Determination ( $R^2$ )

Based on the results of the processing of data by the method of Error Correction Model (ECM) of the short-term and the long-term (Table 3) obtained the value of R Squared of 0.674514 with the meaning of the variable capital ( $K$ ), the regional minimum wage ( $W$ ) and Total Factor Productivity ( $A$ ) affect GDP ( $Y$ ) in Indonesia amounted to 67.45% and 32.55% influenced the rest of the variable outside of the model.

#### 3) T-Test (Partial Test)

*Influence the capital ( $K$ ) against economic growth ( $Y$ ) in Indonesia*

Variable capital ( $K$ ) in the short-term positive effect significantly and have a positive relationship towards the growth of the economy ( $Y$ ) in Indonesia. Partial regression coefficients of 4,046342 short-term and the probability is smaller ( $0,0074 < 0,05$ ), so significant at  $\alpha = 5\%$ . If the change of capital ( $K$ ) rose by 1 billion growth of the economy ( $Y$ ) in Indonesia will be up by 4,046342. Theoretically, the economic growth rate correlated positively with the investment as expressed among others by Keynes in Jhingan (2006) and Mankiw (2007:93), the Harrod Domar in Arsyad (2010:82-86), the Solow-Swan in Arsyad (2002), Kuznet in Arsyad (2002), Todaro, 2000:136), and Schumpeter in Sukirno (2015). Keynes suggested that the Government increase spending because of the respect of the Government as an independent agent who is able to stimulate the economy through public work. During the recession, the increase in government spending will encourage consumption and investment and hence raise the national income.

While variable capital ( $K$ ) in the long-term have no effect significant and have a positive relationship towards the growth of the economy ( $Y$ ) in Indonesia. Partial regression coefficients of 0,002476 long term and the probability of larger ( $0,9948 > 0,05$ ), and thus not significant at  $\alpha = 5\%$ . If the change of capital ( $K$ ) rose by 1 billion economic growth ( $Y$ ) went up by 0,002476. This is due to the growth of domestic investment and fluctuating indicates that still lack investor confidence, both from home and abroad, to invest capital. Despite advances, the performance of an investment in Indonesia is still relatively limited. According to a report published by Indonesia, the economy is Bank Indonesia's investment climate, the conditions are not yet conducive is the main cause of the still low level of the ratio of the investment against economic growth. A World Bank survey indicates that the investment climate in Indonesia was still under the other ASEAN countries and China. The survey identifies the factors that may inhibit investments, among others, the uncertainty of regulation, weak law enforcement, and infrastructure for the production and the productivity of labor is relatively not optimal, the availability of the infrastructure has not been adequate, and utilization technologies that are not optimal compared to competitor countries (Ervin Mardalena, 2009)

#### *Influence the regional minimum wage ( $W$ ) against economic growth ( $Y$ ) in Indonesia*

Variable the regional minimum wage ( $W$ ) in the short-term positive effect significantly and have a positive relationship towards the growth of the economy ( $Y$ ) in Indonesia. Partial regression coefficients of 6,448044 short-term and the probability is smaller ( $0,0398 < 0,05$ ), so significant at  $\alpha = 5\%$ . If the change of the regional minimum wage ( $W$ ) rose by 1 the rupiah then economic growth ( $Y$ ) in Indonesia will be up by 6,448044. It fits with the theory of supply and demand work. The natural wage rate rises proportionally with the living standards of the community. Same is the case with other prices, the price of Labor (wages) is determined by supply and demand, then the equilibrium conditions, theoretically the workers will receive a wage that is equal to the value of their contribution in the production of goods and services (Gregory Mankiw, 2014). When there is a high wage then it will make the cost of industrial production also increased, as a result, the price of a product has also increased. An increase in the price of the product an item lowers the demand for such goods. This condition is forcing

manufacturers to reduce the amount of the resulting product, hereinafter can also reduce the demand for labor (Todaro, 2000:61).

Waisgrais (2003) investigates concerned with the economic and institutional factors affecting the relationship between the labor market and wage inequality in the Greater Buenos Aires area ("GBA") over the period 1980-99. The main hypothesis advanced is that the variations in levels of wage inequality were caused by changes in economic conditions and by the reforms implemented in the labor market, which were key factors in the process of wage determination and in the generalization of atypical and precarious forms of employment that impacted upon the distribution structure. In particular, the study considers long-term trends in wage inequality affecting employees in Greater Buenos Aires and the development of the labor market in the light of the institutional and economic factors that are relevant to wage inequality. In the empirical analysis, various econometric models are applied and the Theil index is broken down overpopulation subsets defined in accordance with the employees' economic, demographic, labor and human resources characteristics.

While variable the regional minimum wage ( $W$ ) in the long-term have no effect significant and have a positive relationship towards the growth of the economy ( $Y$ ) in Indonesia. Partial regression coefficients of 0,192512 long term and the probability of larger ( $0,5918 > 0,05$ ), and thus not significant at  $\alpha = 5\%$ . If the change of the regional minimum wage ( $W$ ) rose by 1 billion economic growth ( $Y$ ) went up by 0,192512. Since the setting of a minimum wage will reduce the demand for labor in the formal sector. The excess supply of labor is absorbed by the informal sector the level of wages is not governed by the regulation, which in turn will reduce the level of wages. If the share of employment in the informal sector is lower, then the impact of the distribution of revenues will thus deteriorate. The placement of the regional minimum wage increases has to be offset by an increase in labor productivity so companies or entrepreneurs can increase its production or output decisions and labor, while the company can live more feasible.

#### *Influence the Total Factor Productivity ( $A$ ) against economic growth ( $Y$ ) in Indonesia*

Variable Total Factor Productivity ( $A$ ) in the short-term positive effect significantly and have a positive relationship towards the growth of the economy ( $Y$ ) in Indonesia. Partial regression coefficients of 0,522731 short-term and the probability is smaller ( $0,0030 < 0,05$ ), so significant at  $\alpha = 5\%$ . If the change of Total Factor Productivity ( $A$ ) rose by 1 percent then economic growth ( $Y$ ) in Indonesia will be up by 0,522731.

While variable Total Factor Productivity ( $A$ ) in the long-term positive effect significantly and have a positive relationship towards the growth of the economy ( $Y$ ) in Indonesia. Partial regression coefficients of 0,545211 long-term and the probability is smaller ( $0,0063 < 0,05$ ), so significant at  $\alpha = 5\%$ . If the change of Total Factor Productivity ( $A$ ) rose by 1 percent then economic growth ( $Y$ ) in Indonesia will be up by 0,545211.

According to Neo-classical theory advanced by Solow (Mankiw, 2007:77), economic a growth depends on capital accumulation, growth of employment and the level of

technological advancement. In the short term, assumed capital, natural resources and technology constant. Being in the long term all variables not constant. This view is based on the assumption underlying the Classical analysis, that the economy will still experience the level of use of full (full employment) and a capacity of capital equipment will still be fully used all the time. In other words, up to where the economy will evolve depending on the population, capital accumulation, and advances in technology. On the other hand according to the output levels of endogenous growth models in addition to depending on the level of inputs of capital and labor, but also depends on the level of technology. Technology in the production function is regarded as one of the input is endogenous. The relationship between the output and the input of different technology-the other input. This is because technological developments influence the overall output and changed according to time (Froyen, 1996:404-413).

And some of the research that is harmony Kim & Han (2001), Kamruzzaman, Manos, Psychoudakis, & Martika (2006) and Tang & Chyi (2008) shows that Total Factor Productivity (TFP) has a positive influence toward economic growth. Tang & Chyi (2008) investigates a new explanation of total factor productivity growth of Taiwanese industry. Besides the channels identified in the literature, this study finds that the venture capital (VC) industry development significantly promotes productivity growth. In addition, an indicator of the legal environment has been established to record changes in VC-related legislation during the past two decades in Taiwan. The legal indicator serves as an instrumental variable that can avoid estimation bias resulting from potential endogeneity between VC development and productivity growth.

### **Conclusion and Recommendations**

Only the variable Total Factor Productivity that has a significant influence on economic growth in Indonesia is good in the short-term and long-term. Variable capital and regional minimum wage have a significant influence on economic growth in Indonesia in the short-term. While variable capital and the regional minimum wage in the long-term have no effect significant and have a positive relationship towards the growth of the economy in Indonesia. Correction Error Term value (ECT) is 0,486796 shows the process of proofreading toward long-term balance is increasingly slowing.

Only the variable Total Factor Productivity that has a significant influence on economic growth in Indonesia is good in the short-term and long-term. To optimize the output of the industry with high productivity then the industry can innovate to improve the efficiency of each of the factors of production. In addition, the Government can enact policies that encourage the absorption of technology industry to become stronger or higher through policies that could encourage such high productivity of investment and trade.

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