

Human Capital and Economic Convergence in Indonesia : An Empirical Analysis

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Abstract- This study examines conditional convergence using the Regional GDP variable per capita of initial government expenditure, domestic investment, inflation and the number of high school graduates as an important human capital in p and the dependent variable is the average per capita Regional GDP in twenty six provinces in Indonesia to determine whether There has been conditional convergence (β). The results showed that all provinces in Indonesia are still experiencing divergences. Initial per capita Regional GDP has a significant and positive effect on conditional convergence (β), the increase in government spending will increase conditional convergence (β). domestic investment positive but not significant, significant and negative inflation towards conditional convergence (β), the number of high school graduates is negative and significant to conditional convergence (β). The decline in the number of high school graduates increases the value of conditional convergence (β).

Index Terms- Conditional Convergence (β), human capital, Human Resources

I. INTRODUCTION

Human capital has a very important role in supporting the development of the Indonesian economy because human resources become the subject of development that has a central role in managing resources owned in Indonesia. Economy. Todaro (2006: 11-12) defines economic development as a multidimensional process that includes structural change, attitude and institutional life. In addition, economic development includes increasing economic growth, reducing inequality income distribution and poverty eradication, to produce a series of economic advancements that are truly beneficial and through an efficient process.

Economic growth is influenced by the accumulation of physical capital and the accumulation of human capital. Both types of capital is an important factor that determines economic growth. Stern (1991: 128) states that the accumulation of physical capital and human capital is a determinant of growth. Economic growth followed by equal distribution of income became one of the goals of achieving economic convergence.

According to Islam (2003), how the income level of poor countries will converge to rich countries by themselves so as to have implications for human well-being. According to Barro and Martin (2004: 17), one of the predictions of the Solow (1956) and Swan (1956) models, which have been taken seriously as empirical hypotheses in just the last few years is the occurrence of conditional convergence. The lower the rate of initial per capita GDP relative to the long-term or steady-state position, the faster the growth rate. The determinants that influence the economic convergence can be domestic investment consisting of PMDN and PMA, and government expenditure on the province in Indonesia. Then added with variable number of high school graduates to know the role and influence of human capital on economic convergence. Thus put forward the problem is how the influence of macroeconomic variables factors (government spending, domestic investment, inflation and human capital) in influencing economic convergence.

II. RESEARCHS ELABORATIONS

The basic theory of economic growth and the convergence of income is linked to the linkage between openness and economic growth. The hypothesis that openness can lead to better economic performance and contribute to the process of convergence of income between poor countries and the rich economy is supported by new growth theories.

Two concepts of convergence are discussed in Barro and Sala-i-Martin (1990 and 1992), Salai-Martin (1994), Bernard and Durlauf (1996) and Raiser (1998), and others. The first is the convergence of β which describes the inverse relationship between the level of initial income and growth. If an initially poor economy grows faster than the former is richer, there is a convergence of β . The other is the convergence of δ that focuses on the inequality of actual income between regions or countries. If income inequality decreases, the region or economy in question reaches the convergence of δ . It should be noted that the convergence of β is a necessary but inadequate condition for δ convergence, or δ convergence including β convergence, but not vice versa.

III. FINDINGS

1. Conditional Convergence with Variable Human Resources in Indonesia

To analyze the convergence of human resources, the number of residents who completed high school education for the 26 provinces included in the six corridors are Sumatra Island corridor, Java Island, Bali Island and Nusa Tenggara, Kalimantan Island, Sulawesi Island and Maluku Island and Papua. Based on the results of the research shown in Table 1.

Calculation of conditional convergence is done by using explanatory log variables per capita GDP (YCit-1) and then added with variables as determinant of growth rate of GRDP per capita consisting of government expenditure (Gi), domestic investment (PMDN), Inflation and Number of population SMA. Penghitungan conditional convergence is using panel data regression analysis with Fixed Effect Model approach. The use of the model is selected through the F test and Hausman test.

Based on Table 1, It can be seen that the value of R-squared is equal to 0.9955 or 99.55% which means 99.55% variation of initial GRDP variable, government expenditure, PMDN, inflation and Number of high school population in the model can be explained by PDRB variable (0.45%) Is influenced by variables outside the model. If seen from the probability value of F statistic 0.000 <0,05 means that initial GRDP variable, government expenditure, PMDN, inflation and high school population together have significant effect to PDRB.

$$\text{Convergence-}\beta = 0.290627 + 0.890798 (\text{Initial GDP}) + 0.25050 (\text{Government Expenditure}) + 0,000883 (\text{PMDN}) - 0.020273 (\text{Inflation}) - 0,040981 (\text{Population SMA})$$

Based on the above equation it can be explained that with the initial estimation coefficient (parameter) of real per capita GDP is positive and significant with coefficient value of 0.890798 means that any one percent increase of PDRB per capita will cause divergence instead of β -convergence to be 0, 890798 percent, while the coefficient of government expenditure also statistically have a positive and significant effect. In the variable of routine expenditure, the coefficient value is 0,025050, meaning that every increase of one percent of routine government expenditure will increase the value of the β -convergence. This can happen because the Indonesian government is active in the development process in various economic sectors is also very instrumental in realizing the β -convergence. The PMDN variable shows a positive but not significant relationship. Based on the coefficient value 0.000883 means any increase of one percent of PMDN will not cause the convergence- β . The inflation variable shows a negative and significant direction. Based on the coefficient value of 0.020273 means that any increase of one percent inflation will decrease the value of β -convergence. The variable of Indonesian population with high school education shows significant relation with coefficient value of -0,040981 meaning that every increase of one percent of Indonesian population with high school education leads to β convergence.

Table 1. Estimation of Conditional Convergence Regression With Fixed Effect Approach

| Variable | Koefisien | Std. Error | t-Statistik | Probabilitas |
|-----------------------------------|-----------|------------|-------------|--------------|
| Constanta | 0.290627 | 0.076031 | 3.822484 | 0.0001 |
| Log early per capita Regional GDP | 0.890798 | 0.018321 | 48.62157 | 0.0000 |
| Log GovernmentExpenditure | 0.025050 | 0.003680 | 6.806648 | 0.0000 |
| Log Domestic Investment | 0.000883 | 0.000835 | 1.056644 | 0.2912 |
| Log Inflation | -0.020273 | 0.002194 | -9.238091 | 0.0000 |
| Log High School | -0.040981 | 0.014588 | -2.809152 | 0.0052 |
| <i>Fixed Effects (Cross)</i> | | | | |
| Aceh | -0.043219 | | | |
| North Sumatera | 0.006600 | | | |
| West Sumatera | 0.005686 | | | |
| Riau | 0.086772 | | | |
| Jambi | 0.017142 | | | |
| South Sumatera | 0.006630 | | | |
| Bengkulu | -0.021169 | | | |
| Lampung | -0.014658 | | | |
| Dki Jakarta | 0.125034 | | | |
| West Java | -0.023974 | | | |
| Central Java | -0.032579 | | | |

| | |
|--------------------|-----------|
| Di Yogyakarta | -0.020779 |
| East Java | 0.003228 |
| Bali | 0,004527 |
| West Nusa Tenggara | -0.042762 |
| East Nusa Tenggara | -0.099360 |
| West Kalimantan | -0.021452 |
| Central Kalimantan | -0.030820 |
| South Kalimantan | -0.011070 |
| East Kalimantan | 0.135776 |
| North Sulawesi | 0.010742 |
| Central Sulawesi | -0.005940 |
| South Sulawesi | 0.002033 |
| Southeast Sulawesi | -0.006768 |
| Maluku | -0.072946 |
| Papua | 0.034165 |
| R-squared | 0.995519 |
| Adjusted R-squared | 0.995241 |
| Durbin-Watson stat | 1.934459 |
| F-statistic | 3583.943 |
| Prob(F-statistic) | 0,000000 |

Source: Central Bureau of Statistics 1995-2015 (Processed 2017)

2. Conditional Convergence with Variable Human Resources in Western Indonesia Region

Based on the results of the research shown in Table 2, obtained R square of 0.995784 which shows that 99.58% of the average GRDP per capita can be explained by the model used.

Based on the F test results, the independent variable significance is shown by the probability value $F = 0,000 < 0.01$ (ie the value of $\alpha = 1\%$) it can be said that together the initial GDP per capita, government expenditure, PMDN, inflation and population High school graduates have an effect on average GRDP per capita, in other words changes to 5 (five) variables together will affect the convergence in the West Indonesia region.

While based on t significance t significance is smaller than 0.05, even smaller than 0.01 for Early GRDP variable (0,0000), government expenditure (0,0000), and inflation (0,0000), whereas for variable number of population graduates SMA, significance level $t > 0.10$ ($\alpha = 10\%$) it can be said that partially affect the occurrence of economic convergence or divergence. These findings support previous research conducted by Konya and Guisan (2008: 9) in African convergence measured by living standards with the Human Development Index (HDI) consisting of productivity.

Furthermore, based on the coefficient of negative signified in 9 (nine) provinces of Aceh, Bengkulu, Lampung, West Java, Central Java, DI Yogyakarta, East Java, West Nusa Tenggara and East Nusa Tenggara. The other 7 provinces have positive coefficient signs, namely North Sumatra, West Sumatra, Riau, Jambi, South Sumatra, DI Jakarta, and Bali. These results are also consistent with expected expectations, and in accordance with previous studies from Coulombe and Lee, 1955, found convergence in almost all Canadian provinces from 1961-1991, and Cashin 1995, indicating that there is convergence in seven Australian states. In accordance with previous opinions from Friedman (1992) and Hotelling (1933) which states that convergence in certain groups of countries has shown a decrease in income gaps within the group over time.

Table 2. Estimation of Conditional Convergence Regression with Human Resource Variable in West Indonesia Region

| Variable | Koeffisien | t-Statistic | Prob. |
|---------------------------|------------|-------------|--------|
| Constanta | 0.206116 | 2.406016 | 0.0167 |
| Log early per capita RGDP | 0.847990 | 35.33994 | 0.0000 |
| Log GovernmentExpenditure | 0.033246 | 7.326965 | 0.0000 |
| Log Domestic Investment | 0.001568 | 1.304901 | 0.1929 |
| Log Inflation | -0.018815 | -6.996759 | 0.0000 |
| Log High School | -0.026853 | -1.736745 | 0.0835 |

| Fixed Effects (Cross) | | | |
|-----------------------|-----------|--------------------|----------|
| ACEH--C | -0.026581 | | |
| _NORTHSUMATERA--C | 0.000835 | | |
| _WESTSUMATERA--C | 0.005576 | | |
| _RIAU--C | 0.134280 | | |
| _JAMBI--C | 0.038353 | | |
| _SOUTHSUMATERA--C | 0.012281 | | |
| _BENGKULU--C | -0.027796 | | |
| _LAMPUNG--C | -0.017141 | | |
| _DKIJAKARTA--C | 0.167429 | | |
| _WESTJAVA--C | -0.048523 | | |
| _CENTRALJAVA--C | -0.057831 | | |
| _DIYOGYAKARTA--C | -0.017824 | | |
| _EASTJAVA--C | -0.011328 | | |
| _BALI--C | 0.015372 | | |
| _WESTNUSATENGGARA--C | -0.050176 | | |
| _EASTNUSATENGGARAR--C | -0.124450 | | |
| <hr/> | | | |
| R-squared | 0.995784 | Mean dependent var | 6.374854 |
| Adjusted R-squared | 0.995499 | S.D. dependent var | 3.065602 |
| S.E. of regression | 0.083823 | Sum squared resid | 2.079775 |
| F-statistic | 3495.707 | Durbin-Watson stat | 1.866704 |
| Prob (F-statistic) | 0.000000 | | |

Source: Processed data, 2017

3. Conditional Convergence with Variable Human Resources in Eastern Indonesia Region

In order to analyze conditional convergence by adding variable human resources that is the number of population of high school graduates in eastern Indonesia region. Based on the results of the research shown in Table 3, obtained R square of 0.996032 indicating that 99.60% of the average GRDP per capita can be explained by the model used.

Based on the F test results, the independent variable significance is shown by the probability value $F = 0,000 < 0.01$ (ie the value of $\alpha = 1\%$) it can be said that together the initial GDP, government expenditure, PMDN, Inflation, and the number of high school graduates Affect the average GRDP per capita, in other words changes to the 5 (five) variables together will affect the convergence in eastern Indonesia.

Table 3. Estimation of Conditional Convergence Regression with Variable Human Resources in Eastern Indonesia Region

| Variable | Coeffisien | t-Statistik | Prob. |
|-----------------------|------------|-------------|--------|
| C | 0.665715 | 3.022049 | 0.0029 |
| LN _{X1} ? | 0.947829 | 33.89469 | 0.0000 |
| LN _{X2} ? | 0.019165 | 2.422053 | 0.0164 |
| LN _{X3} ? | -0.000483 | -0.408714 | 0.6832 |
| LN _{X4} ? | -0.021307 | -5.501767 | 0.0000 |
| LN _{X5} ? | -0.120459 | -2.565526 | 0.0111 |
| Fixed Effects (Cross) | | | |
| _WESTKALIMANTA--C | -0.006131 | | |
| _CENTRALKALIMANTAN--C | -0.035581 | | |
| _KALIMANTANSELA--C | -0.009097 | | |
| _EASTKALIMANTAN | 0.049934 | | |

| | |
|------------------|-----------|
| --C | |
| _NORTHSULAWESI-- | |
| C | 0.023772 |
| _CENTRALSULAWES | |
| I--C | -0.004412 |
| _SOUTHSULAWESI-- | |
| C | 0.053282 |
| _SOUTHEASTSULAW | |
| ESI--C | -0.009415 |
| _MALUKU--C | -0.052266 |
| _PAPUA--C | -0.012172 |

| | | | |
|--------------------|----------|--------------------|----------|
| R-squared | 0.996032 | Mean dependent var | 5.987245 |
| Adjusted R-squared | 0.995728 | S.D. dependent var | 3.213619 |
| S.E. of regression | 0.080627 | Sum squared resid | 1.189622 |
| F-statistic | 3280.868 | Durbin-Watson stat | 2.114937 |
| Prob(F-statistic) | 0.000000 | | |

Source: Processed data, 2017

While based on t significance t significance smaller than 0.05, even smaller than 0.01 for Early GRDP variable (0,0000), and inflation (0,0000), while for government expenditure variable and the number of high school graduates, the level of significance $t > 0.10$ ($\alpha = 10\%$) then it can be said that the partial effect on the occurrence of economic convergence or divergence. These findings support previous research conducted by Bautista (2000: 85) on convergence in human capital between 31 states and the Federal District in Mexico, using the education index.

Based on the coefficient value that is marked negative there are 7 (seven) provinces of West Kalimantan, Central Kalimantan, South Kalimantan, Central Sulawesi, Southeast Sulawesi, Maluku and Papua. The other three provinces have positive coefficient marks, namely East Kalimantan, North Sulawesi, and South Sulawesi.

IV. CONCLUSION

Based on the research results it can be concluded that conditional convergence (β) has not occurred in 26 provinces in Indonesia. This is because the process of development in the provinces in Indonesia is still ongoing, still requires a large government spending to provide good infrastructure and infrastructure, PMDN, stable inflation and high quality human resources.

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