

Effect of Health, education, investment and Unemployment on GDP per Capita in Indonesia

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ABSTRACT

The process of sustainable economic development is reflected in the development of per capita gross domestic product (GDP per capita). This study aims to determine the effect of health, education, investment and unemployment on GDP per capita in Indonesia. The variables used are gross domestic product per capita, average length of schooling, life expectancy, foreign investment and open unemployment rate. This research is motivated by the inequality of GDP per capita in Indonesia. This research uses panel data regression method and random effect model (REM). This study uses secondary data from the Central Bureau of Statistics (BPS). This study uses data for 2015-2020 in 34 Indonesian provinces. The results showed that the average length of schooling, life expectancy, foreign investment and the open unemployment rate had a significant effect on GDP per capita in Indonesia. The policy implication of this research is that in formulating policies in the context of welfare improving (GDP per capita) the government should increase subsidies for aspects of education, health and job creation.

Keywords: GDP per capita, Foreign Investment, Open Unemployment Rate, Life Expectancy, Mean Years of Schooling,

I. INTRODUCTION

As Todaro explain that economic development is a process of action that aims to expand job opportunities, strengthen economic relations between regions, increase and equalize people's income . The process of sustainable economic development is reflected in the development of per capita gross domestic product. One of the main factors that can affect the magnitude of the difference in gross domestic product per capita between rich and poor countries is the level of productivity. Productivity is directly measured by the number of goods and services that a person produces per hour.

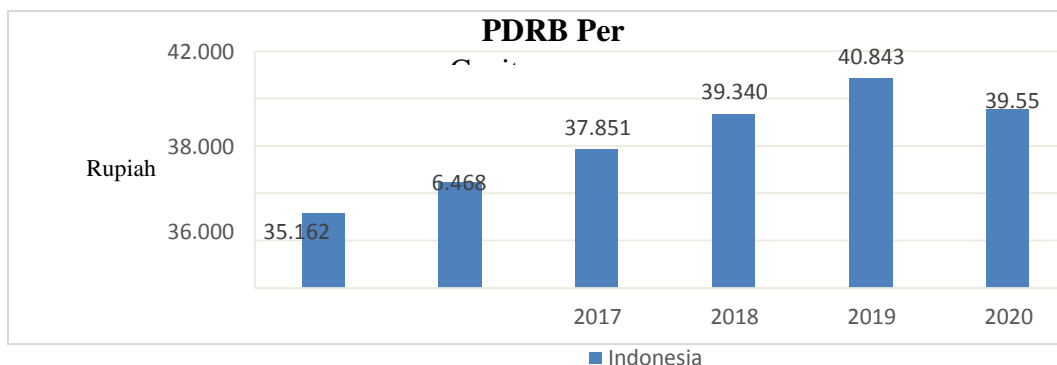


Figure 1. 1

PDRB Per Capita in Indonesia 2015—2020 Source: BPS (2020)

Figure 1.1 shows the development of gross domestic product per capita in the province of Indonesia, from 2015 to 2020 it shows an increase in gross domestic product per capita. Indonesia's economic development in 2015 to 2019 is considered to be

still quite good in the midst of various global and domestic economic challenges. This shows an increase in PDRB per capita in 2015 from IDR

35.16 million by 2019 from IDR 40.84 million. In 2020, PDRB per capita in Indonesia fell to IDR 39.55 million due to the global crisis due to the Covid-19 pandemic, indicating a decline in PDRB per capita over the last 5 years. DKI Jakarta has the highest per capita gross domestic product, this is due to the appreciation of the rupiah exchange rate, because so far per capita income is based on the dollar exchange rate and economic growth is getting better. Maluku has the lowest per capita gross domestic product due to the lack of use of natural resources and lack of competitiveness, which results in high levels of poverty [4].

In the long term, inequality in PDRB per capita can have negative impacts such as increasing unemployment and deteriorating the quality of health and education. Education plays an important role in society. Improving the quality of education in a country can improve living standards, which can improve the quality of the workforce [9]. Investing in education by going to school and achieving higher levels is expected to generate higher incomes. Education is one of the most important investments in human capital, so education plays an important role in economic development [3].

Health and education are the most important factors in the development of human resources. A trained and physically fit workforce is an important factor in increasing output. Health and education are indicators of human capital. Health is the essence of well-being, while education is the basic thing that a person must have to live a better life. The higher the education and health of workers, the higher the output for a country and thus the income.

The mean years of schooling is used as a measure to determine the level of education in Indonesia. The mean years of schooling (MYS) in Indonesia continues to increase from year to year. The lowest average school time was 8.32 years in 2015, the highest grade in 2020 was 8.90 years. This is an indication that educational attainment is evenly distributed across all provinces in Indonesia [4]. Life expectancy is used as a health variable to see how much impact it has on GDP per capita in Indonesia. Life expectancy is a measure that can determine the quality of public health. The higher the life expectancy, the higher the ability of the elderly to carry out productive activities [9].

Gross domestic product per capita of a country is strongly influenced by investment. In the macroeconomic theory on the expenditure side, gross regional income is the sum of various variables, including investment [4]. There are 2 types of investment, namely foreign investment and domestic investment, regional investment from the government and private investment. Private investment can come from abroad and from within the country. Meanwhile, government investment is used to provide public goods. Government investment can be calculated from the difference between the total government budget and current spending.

Foreign investment invested in Indonesia fluctuates. In 2015-2017 there was an increase in foreign investment, but in 2018-2020 it decreased. The increase in investment is caused by improving the quality of infrastructure and productivity to achieve high quality results. In economic development, the unemployment rate is one of the priority targets that must be reduced. The higher the employment opportunity, the higher the GDP per capita [6].

So, it can be concluded that it is very important to conduct research on the factors that affect economic growth. This research is motivated by the inequality of GDP per capita in Indonesia that government very concern to distribute evenly. This research uses panel data regression method and random effect model (REM).

2.LITERATURE REVIEW

Economic development is very crucial as a process of change that takes place continuously with an increase in per capita income and this increase must last a long time. Economic development is marked by the increasing income per capita of the community, while economic growth is not necessarily accompanied by an increase in the income per capita of the community. According to Cadil [5] that the income of the community that continues to increase reflects an increase in shared welfare. Economic development does not only create additional output, but must provide opportunities for people to have choices. Some economist share that economic development should have goals such as increasing productivity, increasing employment opportunities and reducing social inequality. To be able to conclude that economic development is an effort that aims to increase per capita income, the increase in per capita income must be maintained in the long term.

Then, gross domestic product is the value of total income and total regional expenditure on the production of goods and services. PDRB is the result of Gross Added Value generated from all aspects of the economy in a particular region. Gross value added is the value of production minus the value of intermediate consumption. Real PDRB is a better way to calculate the production of goods and services because it is not affected by changes in prices. Nominal PDRB explains that the value of goods and services is measured at current prices, meaning that the value of PDRB can increase if the prevailing prices also increase [4] PDRB can show the ability of a region in managing its natural resources. The difference in economic growth achieved depends on the natural

resources and production factors of the area. Then, the economic development of a country, large or small, is determined by the quality and quantity of resources owned by a country. In line with education and health, the quality of human resources can be determined. Both are needed to achieve the most basic development goals. Health is the essence of well-being whereas education is the basic thing that one must have to have a better life. Health is a state free from disease and disability and in a perfect state of mental, physical and social [4]. Life Expectancy can be used to measure health quality.

Furthermore, education is an important factor in a country, with education it can create quality human resources. Those with higher education are better prepared for change in a country. This means that education is a basic need that must be owned by someone, because with increasing education will increase welfare [3]. Education can be used as a long term investment because higher education brings higher income. The higher the level of education, the higher the skills of workers, so that the level of productivity is higher [5]. Education is part of human capital and if it is increased it will increase national income. Mean years of schooling can be used to measure educational attainment. Means school is the number of years a person spends in formal education.

Other factor such as education is useful as an absorber of advanced technology from time to time and to develop educational capacity and sustainable human resource development [10]. This makes it clear that education plays an important role in the Human Development Index. Health as a productivity enhancing factor. This shows that education and health need to be balanced as drivers of economic development. Human capital is a term often used by economists to describe human health, education, and the ability to increase productivity. If these factors are improved, revenue streams can be generated in this area. Human capital is a long-term investment because improving education and health will increase future income.

One aspect is also important is an investment. Investment plays an important role in the economic development of a country, because investment can increase production capacity, increase national income and create jobs. Then he states that investment can increase economic activity, create jobs and improve people's living standards. This role comes from the three main functions of investment, investment includes components of total expenditure such as increased investment, increased aggregate demand, accompanied by an increase in the addition of capital goods so that production capacity can be increased, and investment increases.

Finally, unemployed is someone who is temporarily laid off and waiting to be called by a previous employer, or someone who is unemployed and actively looking for work. Someone who is unemployed does not get an income because work can reduce the standard of living and affect psychological pressure. The open rate is a measure used to represent the proportion of the total workforce. Unemployment consists of residents who do not have jobs and residents who are looking for work, residents who do not have jobs and are preparing for business, residents who think it is impossible to find work and residents who worship but have no other job.

2.1 Previous Research

Education and health has positively related to PDRB per capita is a result of Ogundari's research [10][11][12]. A Research conducted by Appiah [1], it states that higher education will increase the community's ability to carry out productive activities, so that it will increase people's output and income, as well as increase PDRB per capita. The better the health, the older the people can carry out productive activities, so that income increases and per capita gross domestic product increases. Investment has a positive relationship to PDRB per capita is the conclusion's of Azam [2], investment can improve the quality of human resources, create jobs and transfer technology. Workers who have good skills and are balanced with job opportunities will increase PDRB per capita. The presence of investment is not always positively related to PDRB per capita. Research from Azam & Ahmed [2] states that investment does not have an impact on increasing GDP per capita caused by inflation and the role of the government. Research of Chand [6] states that unemployment has a negative relationship with PDRB per capita, unemployment is people who are not working and people who are looking for work. People who do not work have no income and produce no output. Increased unemployment will reduce gross domestic product per capita.

3. RESEARCH METHOD

This study uses macro data with quantitative methods, namely OLS (Ordinary Least Square) panel data. This study uses cross section data from 34 provinces in Indonesia and time series data from 2015-2020. The data in this study have been provided by BPS. The equation of the model used in this study is as follows: $lny_{it} = \beta_0 + \beta_1 lnX1_{it} + \beta_2 lnX2_{it} + \beta_3 lnX3_{it} + \beta_4 X4_{it} + \varepsilon_{it}$

This study uses the dependent variable the PDRB per capita (LNY) and the independent variables include the Mean Years of School (LN1), the Life Expectancy (LN2), the Foreign Investment (LN3), and the Open Unemployment Rate (X4). PDRB per capita in this study is the quotient of PDRB by the total population in thousand rupiah which has been transformed in the form of a natural logarithm. The average length of schooling is the number of years a person spends in formal education with units of years that have been transformed in the form of a natural logarithm. Life expectancy is the average number of years a person has lived during his life which has been transformed in the form of the natural logarithm. Foreign investment in this study uses the

realization of foreign investment in units of USD \$ million which has been transformed in the form of natural logarithms. The open unemployment rate in this study is the percentage of the number of unemployed to the total workforce in percent.

3.1 Analysis Techniques

The estimation method uses a panel data approach (pooled data), panel data estimation can use the PLS (Pooled Least Square), FEM (Fixed Effect Model) and REM (Random Effect Model) approaches based on certain assumptions made.

Table 1. Panel Data Estimation Result

Variabel	Sistem	Years sch.	Life E.	Invs	unemploy	c
PLS	Coefficient	2,0685	2,82330,1044		0,0015	-6,6349
	SE	0,3729	0,93050,0212		0,0194	3,6816
	P>[t]	0,000***	0,002**0,000***		0,936*	0,073***
FEM	Coefficient	1,0356	4,39480,0111		-0,0154	-10,433
	SE	0,3173	1,71660,0049		0,0037	6,6606
	P>[t]	0,001**	0,011**0,026**		0,000***	0,119*
REM	Coefficient	1,1001	4,18650,0121		-0,0148	-9,6987
	SE	0,2619	1,36150,0049		0,0037	5,2887
	P>[t]	0,000***	0,002**0,015**		0,000***	0,068**

Description: (***) significant at the 1% level; (**) significant at the 5%; level; (*) significant at the 10% level.

Source: Processed data (2022)

Table 2. The comparison of the result

Goodness of fit	PLS	FEM	REM
Observasi (n)	204	204	204
Prob>F	0,0000	0,0000	0,0000
R ²	0,3868	0,9949	0,5282

Source: Processed data (2022)

Table 1 shows the estimation results of OLS (Ordinary Least Squares) panel data using the PLS, FEM and SEM approaches. The selection of the model used to determine the best model can be selected by several tests, including the Chow test, which shows the results of the Chow test with a probability value of 0.0000 because the probability value is smaller than alpha, then H0 is thus discarded. The model is the FEM model. The Hausman test gives a probability result of 0.009 because the probability value smaller than alpha is accepted as H0, so the model chosen is the REM model.

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	15.345030	5	0.0090

4.RESULT AND DISCUSSION

The theory of Gujarati states that the GLS method has passed the classical assumption test. In the evaluation program, the GLS estimation model is the REM model. In this study the model chosen is the REM model, so it can be concluded that this study does not need to test the classical assumptions. The following are the results of the panel data regression test of the random effect model.

Table 2 Random Effect Model Estimation Result

Variable	Coefficient	Std.Error	t-Statistic	Prob
C	-9,698789	5,288782	-1,833842	0,0682**
Years sch.	1,100120	0,261983	4,199209	0,0000
Life E.	4,186596	1,361548	3,074880	0,0024***
invs	0,012103	0,004966	2,437215	0,0157**
unemployet	-0,014869	0,003729	-3,987126	0,0001
R-squared	0,528287		Mean dependent var	0,404382
Adjusted R-squared	0,518806		M.D dependent var	0,062528
S.E. of regression	0,043375		Sum squared resid	0,374392
F-statistic	55,71675		Durbin-Watson stat	0,685497
Prob(F-statistic)	0,000000			

Description: (***) significant at the 1% level; (**) significant at the 5% level; (*) significant at the 10% level.

Source: Processed data (2022)

Table 2 shows the results of the REM regression estimation, the mean years of schooling variable (LN_{X1}) has a probability value of 0.000 less than alpha (5%), which means that the RLS variable has a significant effect on PDRB per capita. The life expectancy variable (LN_{X2}) has a probability value of 0.002 which is smaller than alpha (5%), meaning that the mean years of schooling variable has a significant effect on PDRB per capita. The foreign investment variable (LN_{X3}) has a probability value of 0.015 which is smaller than alpha (5%), which means that the foreign investment variable has a significant effect on gross domestic product per capita. The open unemployment rate variable (X₄) has a probability value of 0.000 which is smaller than alpha (5%), meaning that the open unemployment rate variable has a significant effect on gross domestic product per capita.

F-statistical test is a test used to see that the independent variable affects the dependent variable simultaneously. Based on the regression results in Table 2, the probability value of the F-statistic is 0.0000 (probability value is smaller than alpha 0.05), which means at the same time the mean years of schooling (LN_{X1}), life expectancy (LN_{X2}), is foreign investment (LN_{X3}) and the open unemployment rate (X₄) combine to affect per capita gross domestic product (LN_Y).

Then, the variable average length of schooling has a positive and significant effect on PDRB per capita in Indonesia. The results of this study are also supported by the research of Teodorescu [12] which states that an increase in the level of education can increase income, so that it can lead to an increase in gross national product per capita. As Ogundari [10] stated that education is useful as an absorber of advanced technology from time to time and to develop educational capacity and sustainable human resource development [10]. Research by Hanushek [8] states that the higher the education or the tertiary level, the more impact on PDRB per capita, this is based on the performance of individual skills that are getting better, as indicated by the income that will be obtained by each individual.

The variable life expectancy has a positive and significant effect on PDRB per capita in Indonesia. The results of this study are also supported by the research of Ecevit [7] which states that the level of health measured using the life expectancy has a significant effect on PDRB per capita. An increased life expectancy will increase the average age of people's lives so as to provide longer opportunities for people to carry out activities. Then productive activities can lead to increased income.

Investment is a step taken by the government to improve the economic development of a country. By increasing investment it will increase employment opportunities and educate human resources. The wide employment opportunities will increase productive activities and produce output so that it can increase PDRB per capita in Indonesia. The foreign investment variable has a significant positive effect on PDRB per capita in Indonesia. An increase in foreign investment will cause an increase in the number of production and services so that it can trigger an increase in PDRB per capita. This result is supported by research conducted by Azam [2] which states that foreign investment has an important role in increasing a country's income, meaning that foreign investment can improve the quality of human resources in the form of training, education and technology transfer. A qualified workforce and balanced with the opening of wide job opportunities can increase income in a country.

Furthermore, the other factor which influences the PDRB is unemployment. Unemployed are people who are not working or people who are looking for work. The impact of unemployment on economic unemployment can lead to a decrease in national income and lead to poverty. The open unemployment rate variable (X4) has a coefficient value of -0.014869 and a probability of 0.0001. These results indicate that unemployment has a significant negative effect on PDRB per capita in Indonesia. This result is supported by research conducted (Chand et al., 2018) which states that more unemployment will reduce per capita PDRB. People who do not work will not produce money, goods and services, the more unemployment will affect PDB, the decline in PDRB can reduce the PDRB per capita of a region.

5.CONCLUSION

Economic development can be measured by gross domestic product per capita, gross domestic product. The economic development of a country can be influenced by various factors. Then, based on the analysis in this study, it can be stated that the variables of Mean Years of Schooling, Life Expectancy, Foreign Investment and Open Unemployment Rate partially and simultaneously have a significant effect on PDRB per capita in Indonesia in the 2015-2022 period. It can be noted if the government formulate policies must consider those important variables because have significant impact on economic growth and social welfare subsequently.

There are some crucial suggestions for the government as an executive for some policies. They have to be more active to maximize the existing measures, such as reducing the cost of educations, also the cost of insurance per month per person such that the poor can improve their health. The government is expected to build training centers for unemployment that are spread evenly throughout Indonesia. So the community is able to reach to improve the skills and abilities in producing output. It has a positive impact on increasing PDRB per capita in Indonesia.

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