



The Effect of HDI, Unemployment, and Investment on GRDP and Poverty

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Abstract

Poverty is a major global development problem that must be continuously addressed so that it can be resolved more quickly. The purpose of this study was to analyze the direct and indirect effects of HDI, unemployment, and investment variables on GRDP and poverty during the 2017-2020 period. This type of research is quantitative descriptive research and the data used are secondary data. This study used a research method, namely panel data in the 2017-2020 period, with the fixed effect model (FEM) technique as the best technique. The interpretation method used a panel data regression analysis tool from the FEM method and path analysis. The result showed that the variables HDI (X_1), Unemployment (X_2) and Investment (X_3) had a significant effect both directly on poverty (Z) and indirectly through GRDP (Y_i) on poverty (Z). Then based on the result of the path analysis, HDI gives the biggest contribution in influencing the poverty level in Central Java Province.

Keywords: Poverty, GRDP, HDI, Unemployment, Investment

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INTRODUCTION

Poverty is a major global development problem that must be continuously addressed so that it can be resolved more quickly. Indonesia has achieved quite rapid economic growth over the last 50 years (Hill, 2021). But the fact is, until now most of the Indonesia's population is still

trapped in the problem of poverty. The root of the problem of poverty in Indonesia occurs because of the unequal income gap, so that the gap between the rich and the poor is widening. Poverty will have an impact on people's lives and become a problem for institutions and it is necessary to rethink the impact of poverty on

children (Drago, 2021). According to central bureau statistics (BPS), poverty is the inability from an economic point of view to meet basic food and non-food needs as measured from the expenditure side.

Sharp, et.al (1996) in (Kuncoro, 2010) identify the causes of poverty from an economic perspective; (1) on a micro level, poverty arises because of the unequal pattern of resource ownership that causes an unequal income distribution, (2) Poverty arises because of differences in the quality of human resources. The low quality of human resources will lead to low productivity so that in turn the wages are low, (3) Poverty arises because of differences in access to capital.

The three causes of poverty lead to the vicious circle of poverty theory proposed by Ragnar Nurkse (1953). The cycle of poverty is a series of mutually influencing each other, causing a poor country to always be in a poor state. Ragnar Nurkse stated "A poor country is poor because it is poor" which means a country is declared poor because it is poor.

According to data from BPS (2021) the total population of Indonesia was 270.20 million in September 2020, while from the total population of 270.20 people, the poverty rate reached 10.14%. With such a high population, it is possible that Indonesia is still trapped by the problem of poverty. Then, the condition of poverty in Indonesia is getting worse with the Covid-19 pandemic. The impact is that the economy experiences shocks both internally and externally due to a decline in global economic activity.

The problem of poverty is not spared in Central Java Province, it is marked by Central Java Province which has the second highest poverty rate compared to other provinces

outside Java. For this reason, profitable policies that lead to faster growth are needed and should be pursued when the goal of the policy is poverty alleviation (Iniguez-Montiel, 2014).

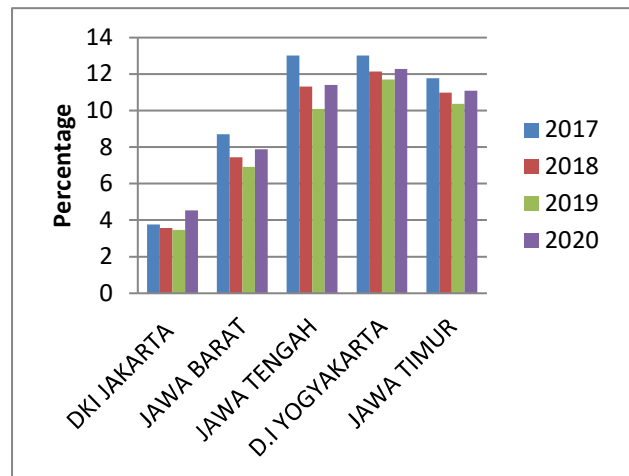


Figure 1. percentage of poverty in Java

Source : Data Processed, 2022

Figure 1 shows that the percentage level of poverty in Central Java Province is the second largest after Yogyakarta D.I. Where, respectively, D.I Yogyakarta, Central Java and East Java are still relatively high compared to DKI Jakarta and West Java. During the COVID-19 pandemic, the poverty rate in Central Java increased by 1.33%, then DKI Jakarta by 1.06%. West Java with an increase in the poverty rate of 0.97%, then East Java by 0.72%, and finally, the percentage increase in the poverty rate in Yogyakarta Special Region of 0.58%.

The decline in the poverty rate in Central Java is the largest nationally in terms of the last two years, namely 2017 and 2018. However, based on data sourced from the Central Java Statistics Agency, poverty in 2017 and 2018 was 13.01% and 11.32% where the poverty rate was more than 10% or classified as hardcore poverty, and in 2020 during the Covid-19 pandemic, Central Java has the largest percentage increase in poverty among

other provinces on the island of Java. The Central Java Provincial Government has issued a central java policy to tackle the poverty problem. The policy of the movement is directly to suppress the positive impact of Covid-19 and indirectly also aims to suppress the increase in the poverty rate.

Development is a process toward a better direction in the context of realizing a prosperous, fair, and highly competitive Indonesian society. Development is carried out to create a prosperous society through economic development to overcome various development problems and social problems such as unemployment and poverty (Puspita, 2015). Therefore, development must continue to be carried out optimally so that every process carried out is according to purpose.

One of the efforts to reduce poverty is to improve the quality of human resources (Puspita, 2015). Then, a strong relationship has actually been found between the level of education or human capital, the level of achievement, and poverty which is usually prominent in developing countries, where the lower the level of education, the higher the probability of being poor (Iniguez-Montiel, 2014).

The Human Development Index (HDI) in Central Java Province has increased from 2017-2020. The increase in the Human Development Index on a high national or regional scale will be followed by an increase in the level of labor productivity. With increasing labor productivity, it will lead to a high level of one's income, thereby increasing economic growth and reducing poverty.

The problem of poverty in Central Java occurs for several reasons, one of which is the high unemployment rate. Unemployment is a

condition when someone in the workforce wants to find a job but has not found one (Sukirno, 2010). Unemployment has a risk that someone who is not lucky will spend his time in a state of not having a job and having a lower income (Cirelli et al., 2021).

Based on economic theory investment can be in the form of purchasing capital or goods that are not for consumption but are used for production (producing production goods) in the future (Prasetyo, 2009). Investment is the most important aspect in achieving development goals and economic growth on a national and regional scale (Suharlina, 2020). Investment in Central Java Province in 2017-2020 has a good development.

Investment is a powerful link between economic growth and poverty reduction (Ocaya et al., 2012). Then, Harrod-Domar theory explains that to improve the economy in the long term (steady growth), it is necessary to form capital or investment. GRDP is the added value produced by all economic units in an area of the total number of product or service units produced. The value of this GRDP will explain how an area is able to manage existing resources (Rahman & Chamelia, 2015).

Based on BPS (2022), there are two programs for the Gross Regional Domestic Product (GRDP), namely: (1) GRDP based on applicable prices, used to find out economic shifts, (2) GRDP based on constant prices, used to calculate growth economy from year to year. According to Kuznet, quoted from (Tambunan, 2015) Economic growth and poverty have a strong correlation.

Following the Kuznet hypothesis, the poverty rate tends to increase in the initial phase of development but progressively decreases along with the progress of development. The

Efforts or policies already made in reducing poverty levels through increasing human resources. But poverty in Central Java cannot be overcome. The aim of paper is to analyze the direct and indirect effects of HDI, unemployment, and investment variables on GRDP and poverty during the 2017-2020.

RESEARCH METHODS

This type of research is quantitative descriptive to explain the method of poverty reduction in Central Java Province. The data source used is secondary data sourced from the BPS. Panel data analysis methods and path analysis are used in this study.

The experimental model in this study uses the e-views technique to determine the best regression model, then after finding the best model, it will continue with the SPSS technique. Panel data method is by combining cross-section and time series data. In this study, panel data can be systematically written as follows:

$$Y_{it} = \beta_0 + \beta_1 \text{Log } X_{1it} + \beta_2 \text{Log } X_{2it} + \beta_3 \text{Log } X_{3it} + \epsilon_{it}$$

$$Z_{it} = \beta_0 + \beta_1 \text{Log } X_{1it} + \beta_2 \text{Log } X_{2it} + \beta_3 \text{Log } X_{3it} + \beta_4 \text{Log } Y_{it} + \epsilon_{it}$$

Meanwhile, path analysis is an analytical technique used to analyze causality between variables arranged in a temporary order by using path analysis as a value to determine the effect of exogenous variables on endogenous variables (Sarwono, 2012). Can be systematically written as follows:

$$Y_i = \rho_1 X_1 + \rho_2 X_2 + \rho_3 X_3 + \epsilon_1$$

$$Z_i = \rho_4 X_1 + \rho_5 X_2 + \rho_6 X_3 + \rho_7 Y_i + \epsilon_2$$

Where ρ is static coefficient of path analysis; X_1 is IPM; X_2 is unemployment; X_3 is Investment; Y_i is GDRP; Z is poverty; ϵ_1 is Residual or predictor from model-1; ϵ_2 is Residual or predictor from model-2. Furthermore, to determine the existence of direct and indirect effects in this study, it was carried out through Microsoft Excel.

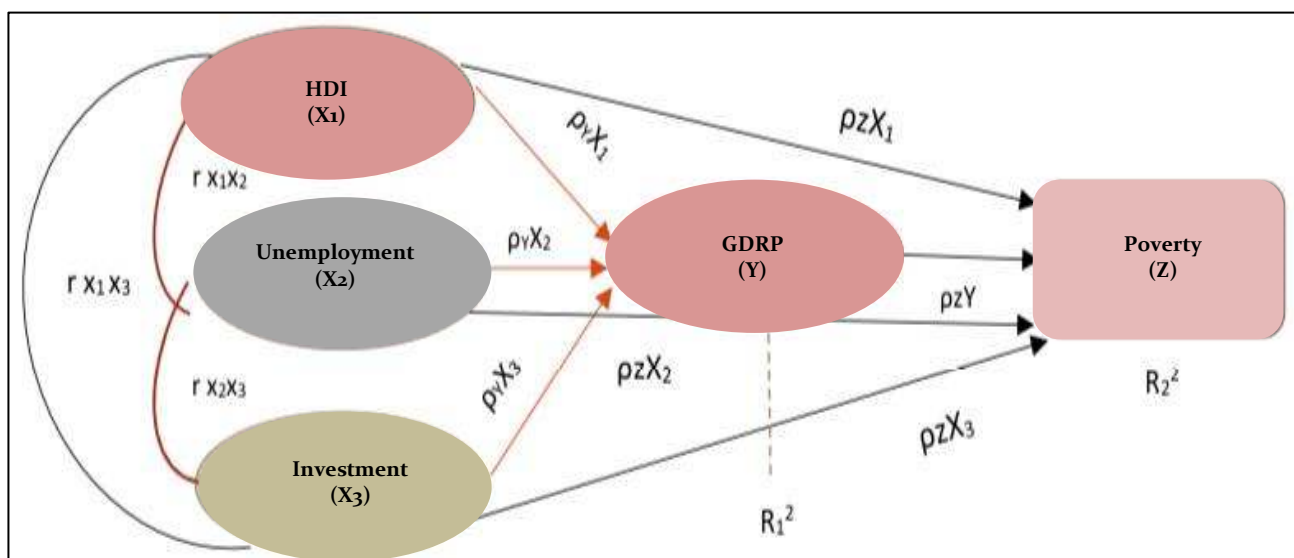


Figure 2. path analysis model description

Source : Data Processed, 2022

RESULTS AND DISCUSSION

Based on the result of experimental tests conducted first through panel data, the best model was determined, namely the Fixed Effect

Model. Then to make it easier to understand path analysis, a derivative of the panel data multiple regression analysis (FEM) models is used.

Table 1. Result of Fixed Effect Model Sub-structure I

Variables	Coefficients	t-stats	prob
HDI	0.077112	25.58778	0.0000
Employment Rate	-0.007733	-4.896725	0.0000
LogInvestment	-0.002490	-1.759381	0.0815
R-Square (R ²)			0.999442
Adjusted R-squared			0.999240
Durbin-Watson stat			1.639010
F-statistic			4941.032
Prob (F-statistic)			0.000000

Dependent variable: log PDRB

Source: E-views 10 output, 2022

Then, the results of the coefficient of determination test (R²) of 0.999442, which means that the GRDP variable can be explained by variations in the model from the HDI, unemployment, and investment variables of 99.94% while the remaining 0.06% is explained by other variables outside the model. Furthermore, the error term (e₁) is 0,0245 or 2.4% which is obtained from $\sqrt{(1-0.999)}$ 4.

Based on table 2, shows the regression results that the unemployment variable has a positive and significant effect on poverty. While HDI, GRDP, and investment variables have a negative and significant influence on poverty in Central Java Province. Then, the results of the coefficient of determination test (R²) of 0.982338, meaning that the poverty variable can be explained by variations in the model from the HDI, Unemployment, GRDP and Investment variables of 98.23% and the remaining 1.7% is explained by other variables outside the model.

Furthermore, the error term (e₂) is 0.1330 or 13.3% which is obtained from $\sqrt{(1-0.9823)}$. Based on the result of the path analysis of sub-structure I, it shows that partially the HDI variable has a positive and significant effect on GRDP. Furthermore, the unemployment variable has a negative and significant effect on GRDP and the investment variable has a negative and significant effect on GRDP.

Based on the results of the path analysis of sub-structure I, it shows that partially the unemployment variable has a positive and significant effect on poverty. Furthermore, the variables HDI, GRDP, and investment have a negative and significant effect on poverty. Based on calculations through SPSS, in the determination test of sub-structure I it can be seen that the coefficient of determination or R square in the sub-structure model-I is 0.999 or 99.9% while the error term (e₁) is 0.031 or 3.1% which is obtained from $\sqrt{(1-0.999)}$. Thus, it can

be said that the exogenous variable HDI (X_1), Unemployment (X_2) and Investment (X_3) can affect the endogenous variable GRDP (Y) by 99.9%. while the remaining 0.1% is explained by other variables outside the model.

Meanwhile, the determination test of sub-structure II explains that the coefficient of determination or R square is 0.982 or 98.2%,

while the error term (e_2) is 0.134 or 1.34% which is obtained from $\sqrt{(1-0.982)}$. Thus, it can be said that the exogenous variables HDI (X_1), Unemployment (X_2), GRDP (Y_i) and Investment (X_3) can affect the endogenous variable of poverty (Z) by 98.2% while the remaining 1.8% is explained by other variables. which is outside the model.

Table 2. Result of Fixed Effect Model Sub-structure II

Variables	Coefficients	t-stats	prob
IPM	-0.491764	-1.796884	0.0753
Employment Rate	0.176415	3.014998	0.0033
LogGRDP	-11.98085	-3.629211	0.0004
LogInvestment	-0.083999	-1.753870	0.0825
R-Square (R^2)			0.982338
Adjusted R-squared			0.975692
Durbin-Watson stat			2.055723
F-statistic			147.8262
Prob (f-statistic)			0.000000

Dependent variable : poverty percentage

Source : E-views 10 output, 2022

Based on Figure 3, the coefficient value of each exogenous variable on the endogenous variable. Then, it can be written in the equation model as follows:

$$Y_1 = 0.542.X_1 - 0.023.X_2 - 0.007.X_3 + \varepsilon_1$$

$$Z_1 = -0.586.X_1 + 0.088.X_2 - 0.040.X_3 - 2.032.Y_1 + \varepsilon_2$$

Furthermore, based on the results obtained from the SPSS results, further calculations are needed to determine the magnitude of the direct and indirect effects using Microsoft Excel (table 6). Based on the regression results in the path analysis model, HDI has a standardized coefficient beta value of 0.542 and a sig value of 0.000 < 0.05, this means

that H_0 is rejected, and H_A is accepted. This means that HDI has a positive and significant effect on GRDP.

Some of the research result that are in accordance with the result of this study is (Maulana, 2015) which states that human capital which consists of the average length of schooling and life expectancy has a positive and significant effect on regional economic growth in the Central Java Province.

The result of this study can show that HDI can be a driver for the economic development of a region. With high-quality human development, it will increase people's work productivity and increase income through employment opportunities which will ultimately

have an impact on increasing economic growth which is reflected in GRDP. This is in accordance with the trickle-down effect theory which states

that economic growth will automatically trickle down to create new jobs and economic development.

Table 3. Result of Path Analysis Sub-structure I

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig
	B	Std. Error	Beta		
(Constant)	26.956	.211		127.766	.000
HDI	.077	.003	.542	25.588	.000
Unemployment Rate (%)	-.008	.002	-.023	-4.897	.000
LogInvestment	-.002	.001	-.007	-1.759	.082

Dependent variable: Log PDRB

Source: SPSS statistic 22 output, 2022

Based on the regression results in the path analysis model, HDI has a standardized coefficient beta value of -0.586 and a sig value of $0.075 < 0.1$. Then H_0 is rejected, and H_A is accepted, meaning that HDI has a negative and

significant effect on poverty. The results of this study are in line with research conducted by (Megawati & Sebayang, 2018; Nurmainah, 2013) which states that HDI has a negative and significant effect on poverty.

Table 4. Result of Path Analysis Sub-structure II

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig
	B	Std. Error	Beta		
(Constant)	432.853	89.266		4.849	.000
HDI	-.492	.274	-.586	-1.797	.075
Unemployment Rate (%)	.176	.059	.088	3.015	.003
LogGDRP	-11.981	3.301	-2.032	-3.629	.000
LogInvestmeent	-.084	.048	-.040	-1.754	.082

Dependent variable: poverty percentage

Source: SPSS statistic 22 output, 2022

The results of this study are in accordance with the theory of vicious circle of poverty which states that the cause of poverty is the result of low productivity so that people's incomes are low. Then, the results of this study indicate a decrease in poverty when the HDI increases,

indicating that high-quality human resources will affect one's work productivity so that one's income will increase and be able to meet their daily needs and reduce poverty levels. The HDI variable can directly affect poverty by 0.3434 or by 34.34%. This means that HDI has a

contribution of 34.34% in controlling the poverty level in Central Java Province. Indirectly, HDI can affect poverty through GRDP of 0.6454 or 64.54%. This means that indirectly HDI has a contribution of 64.54% in controlling the poverty level in Central Java Province through

GRDP. Based on the regression result, Unemployment (X_2) has a standardized coefficient beta of -0.023 and a sig value of 0.000 < 0.05. Then H_0 is rejected, and H_A is accepted. This means that unemployment has a negative and significant effect on GDP.

Table 5. Determination Test

Determination test sub-structure I					
Model	R	R square	Adjusted R Square	Std. Error of the estimate	Durbin-watson
1	1.000a	.999	.999	.017361	1.698
Determination test sub-structure II					
Model	R	R square	Adjusted R square	Std. Error of the estimate	Durbin-watson
1	.991a	.982	.976	.578831	2.233

Source: SPSS statistic 22 output, 2022

The results of this study support the results of research conducted by (Paramita & Purbadharmaja, 2015) which states that unemployment has a negative and significant

effect on economic growth in the Province of Bali. The results of this research support Okun's Law theory regarding the relationship between GRDP and unemployment.

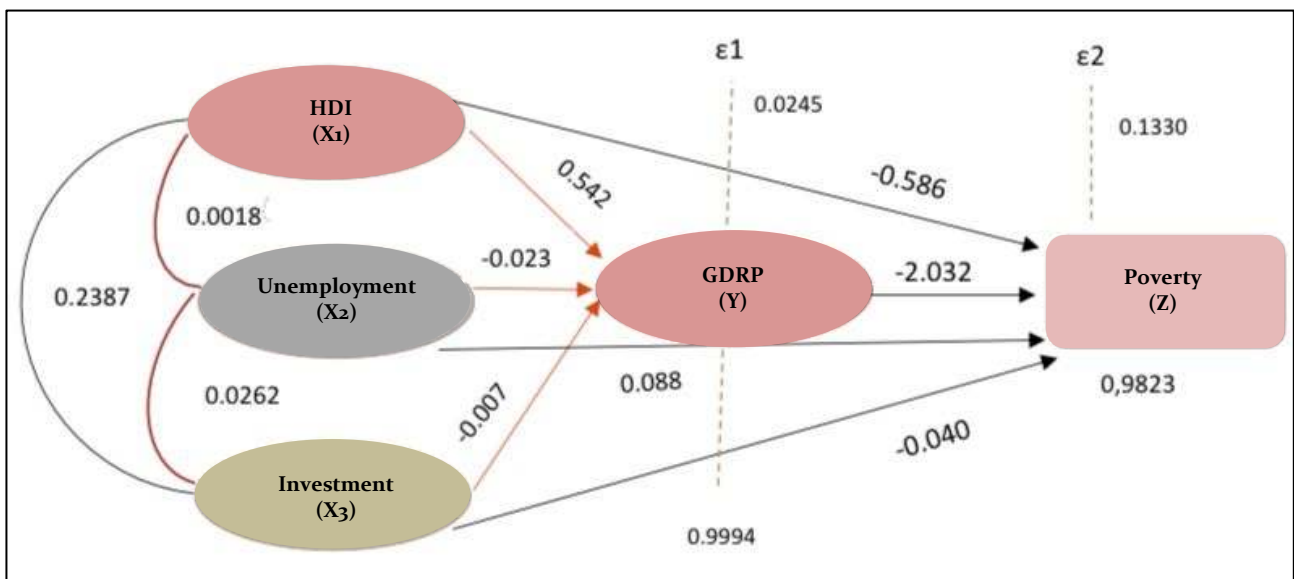


Figure 3. diagram of path analysis result

Source : Data Processed, 2022

Okun's theory of law states that if there is an increase in the unemployment rate in an area,

it will cause a decrease in GRDP by 2 percent. So that it can reduce the unemployment rate and

be followed by an increase in GRDP. If the GRDP in an area fall, it will be followed by a decrease in the level of production, this indicates that the decline in production is caused by a declining

level of public consumption, which in turn will result in the company reducing the level of production to reduce the number of workers which will result in a person losing his job.

Table 6. Direct and indirect effect

Variable	Beta Coefficient	Direct effect	Indirect effect				Total indirect effect	Total effect
			X ₁	X ₂	X ₃	Y _i		
HDI(X ₁)	(0.586)	0.3433		(0.0001)	0.0056	0.6454	0.6509	0.9942
Unemployment (X ₂)	0.088	0.0077	(0.0001)		(0.0001)	(0.0041)	-0.0043	0.0034
Investment (X ₃)	(0.040)	0.0016	0.0056	(0.0001)		0.0006	0.0061	0.0077
GDRP (Y _i)	(2.032)	4.1290	0.6454	0.0041	(0.0006)		0.6489	4.7779

Source : Data Processed, 2022

Based on the regression results, the unemployment variable (X₂) has a standardized coefficient beta value of 0.088 and a sig value of 0.003 < 0.05. Then H₀ is rejected, and H_A is accepted, meaning that unemployment has a positive and significant impact on the poverty level in Central Java Province.

The results of this study are in line with the results of research conducted by (Anser et al., 2020; Mansi et al., 2020; Puspita, 2015; Ramdani, 2015) which states that unemployment has a positive and significant effect on poverty. The result of this study indicates that people who are unemployed not only lose their jobs but also income so that they cannot fulfill their basic needs, so they fall into the category of poor people.

Keynes's theory which states that poverty is caused by unemployment is true and can be accepted theoretically in this study. Then, Keynes's theory which states that economic growth is an effective aspect in overcoming poverty can be said to be correct because in this

research economic growth which is reflected in GRDP has a major contribution in influencing poverty, which is 11.98%. The unemployment variable directly influences poverty of 0.0077 or 0.77%. This means that unemployment has a contribution of 0.77% to the poverty rate in Central Java Province.

Indirectly, unemployment can affect poverty through GRDP of 0.0041 or 0.41%. This means that unemployment has an indirect contribution of 0.41% in influencing the poverty rate in Central Java Province through GRDP. Based on the results of the regression carried out, it shows that Investment (X₃) has a standardized coefficient beta of -0.007 and a sig value of 0.082 < 0.1.

So, H₀ is rejected, and H_A is accepted, meaning that investment (X₃) has a negative and significant effect on GRDP (Y_i). These results are in accordance with the research (Tahu, 2021) which states that investment has a negative effect on economic growth in East Nusa Tenggara Province.

The results in this study contradict the theory of Harrod-Domar which states that an increase in investment plays an important role in improving the economy so that it experiences prolonged growth. This additional investment is needed to increase aggregate spending. Furthermore, Harrod-Domar's theory emphasizes the role of the demand side in realizing growth.

The negative effect between investment and GRDP shows that investment takes time and cannot directly encourage increased economic growth through Gross Regional Domestic Product. Based on the results of the regression carried out, it shows that the investment (X_3) has a standardized coefficient beta value of -0.040 and a sig value of $0.082 < 0.1$. then H_0 is rejected, and H_A is accepted.

It mean that investment has a negative and significant effect on the poverty level in Central Java Province. The results of this research are in line with the results of research (Ratih et al., 2017) which states that investment has a negative and significant effect on poverty in the Sarbagita area in Bali Province.

Then, this research is in accordance with the theory that has been put forward by Sukirno (2000) that investment activities carried out continuously by the community will increase economic activity and employment, increase national income, and increase the level of prosperity of the community.

The results of this study indicate that an increase in investment accompanied by maximum employment will then cause the unemployment rate in Central Java Province to decrease. Thus, the people of Central Java Province can get out of the problem of poverty. Investment directly influences poverty by 0.0016 or 0.16% . This means that investment has a

contribution of 0.16% in controlling the poverty rate in Central Java Province. Meanwhile, indirectly, investment can affect poverty through GRDP of -0.0006 or 0.06% . This means that investment indirectly has a contribution of 0.06% in influencing the poverty level in Central Java Province through GRDP.

CONCLUSION

Based on the results of the research that has been done, there is several conclusions that can be drawn. The HDI variables has a significant effect on GRDP in Central Java Province for the 2017-2020 period. The unemployment variables has a significant effect on GRDP in Central Java Province for the 2017-2020 period.

The investment variables has a significant effect on GRDP in Central Java Province for the 2017-2020 period. The HDI variable has a significant effect on poverty in Central Java Province for the 2017-2020 period. The unemployment variable has a significant effect on poverty in Central Java Province for the 2017-2020 period. The GRDP variable has a significant effect on poverty in Central Java Province for the 2017-2020 period.

The investment variable has a significant effect on poverty in Central Java Province for the 2017-2020 period. The HDI variable has a significant indirect effect on poverty through GRDP of 64.54% . Based on the results of path analysis HDI gives a major contribution in influencing poverty. The unemployment variable has a significant indirect effect on poverty through GRDP of 0.41% . Based on the results of path analysis HDI gives the smallest contribution in influencing poverty. The investment variable has a significant indirect effect on poverty through GRDP of 0.06% .

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