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The Impact of Unemployment and Human Development Index on Poverty in Gorontalo Province 2008-2017

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Abstract. This research aims to analyze the impact of unemployment rate and human development index on poverty in Regencies and City in Gorontalo Province. This research uses Panel Data Regression analysis with fixed effect model (FEM). This research uses regional datasets from the Registration Management Information System (SIMREG) and datasets from Central Statistics Bureau (BPS) during 2008-2017. Main findings of this research indicates that (i) unemployment rate has positive but insignificant impact on poverty rate; (ii) human development index has positive and significant impact on poverty rate.

Keywords: Unemployment Rate; Human Development Index (HDI); Poverty.

Poverty may impose a problem in economic development. Poverty itself is associated with many aspects in life, such as income, health, education, and so on. Poverty is also known as the inability of a person to satisfy minimum standard of living. This minimum standard of living is mainly based on the state of health, moral living, and self-esteem of those classified as the poor.

As explained before, poverty may impose as a problem in economic development. Poverty may become a benchmark that needs to be reduced for developing countries in order to redistribute the economic growth to all population.

Therefore, poverty alleviation strategies is really important for developing countries.

Overcoming poverty is essential in developing countries. Poverty reduction policies need to focus on the empowerment of the poor to be independent, in economic, socio-cultural, and political aspects. Hence, poverty alleviation strategies need to satisfy all aspects that is associated with poverty itself. Therefore, this research will further investigate the factors that is associated with poverty to create poverty alleviation strategies.

This research would specifically analyse the issue of poverty in Gorontalo Province, because poverty rate in Gorontalo

is relatively high compared to other provinces in Indonesia. According to BPS (2017), poverty is included as one of the fundamental problems in economic development in Gorontalo Province.

In addition, poverty rate in Gorontalo Province is relatively high and it

is also accompanied with stagnant unemployment rate as it is evident in Table 1 and Table 2. This phenomenon needs to be investigated to further understand the association between each variables.

Table 1. Number of Poor People in Gorontalo Province 2017

No.	Regencies/City	Total Population	Poor (%)
1.	Boalemo	158.333	21.85
2.	Gorontalo	374.923	20.55
3.	Pohuwato	153.991	21.27
4.	Bone Bolango	157.186	17.81
5.	Gorontalo Utara	112.975	19.23
6.	Gorontalo, City	206.454	5.70

Source: BPS, 2018

Table 2. Unemployment Rate and Labour Force Participation Rate 2008-2017

Year	Unemployment Rate (percent)	Labour Force Participation Rate (Percent)
2008	5.65	62.40
2009	5.89	63.77
2010	5.16	64.42
2011	6.68	64.03
2012	4.44	62.59
2013	4.15	61.46
2014	4.18	62.84
2015	4.65	63.65
2016	2.76	67.89
2017	4.28	64.78

Source: BPS, 2018

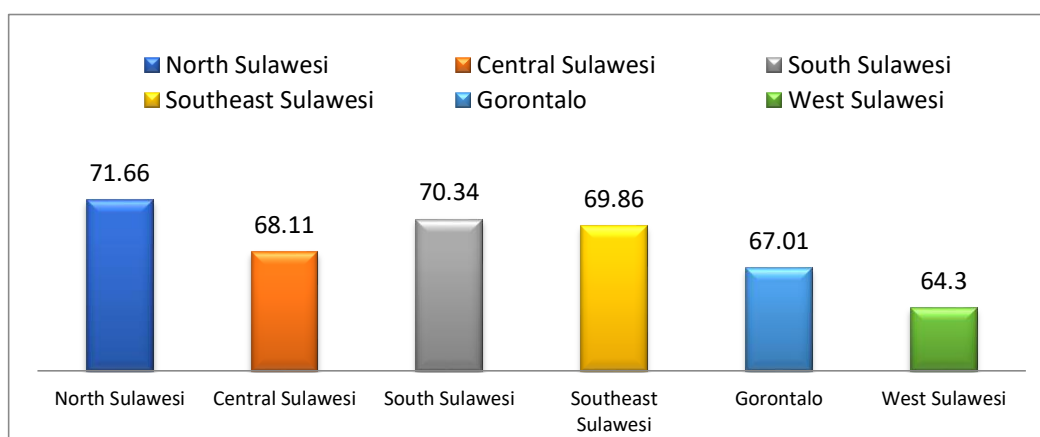
Furthermore, we need to estimate human development index as it has indirect impact on the complexity of poverty. The Human Development Index (HDI) is a breakthrough in assessing human

development. Previous studies mainly found that there is negative association between HDI and poverty, where ideally, if HDI is relatively high, means that the individual quality of life is high, that it is

supposed to be followed with low level of poverty. However, the HDI of Gorontalo province is relatively low compared to

other provinces in Sulawesi as it is evident in Figure 1.

Figure 1. Human Development Index in Sulawesi 2017



Source: BPS, 2018

According to the explanation above, this research would further investigate the impact of unemployment rate and human development index on poverty in Gorontalo Province.

LITERATURE REVIEW

Poverty is a complex problem regarding economic development. Poverty may have been associated with non-economic dimensions, but it is mainly referred to the economic dimension.

Subandi (2012) stated that poverty alleviation strategies need to address the quality of human resources due to poverty trap. Huraerah (2012) also stated that

poverty alleviation strategies need to prioritize structural, cultural, and political aspects into consideration.

Unemployment also has indirect impact on poverty, because unemployed people mostly classified as the poor due to their inability in fulfilling basic needs. While on the other hand, human development index also portrays individual ability, but through more systematic aspects such as income level, health, and education level. Both factors may have direct and indirect impact on poverty due to the complexity of poverty itself.

Previous studies found different sets of results regarding the association between

unemployment, human development index, and poverty. Meriyanti (2015) further validates that human development index has significant impact on poverty alleviation strategies, while Satriani (2014) found that unemployment and human development index has insignificant impact on reducing poverty rate.

Based on previous studies, this research hypothesizes that there is association between unemployment, human development index, and poverty. Through the conceptual framework, unemployment is hypothesized to have negative impact on poverty, while higher human development index may lead to lower poverty rate.

RESEARCH METHODOLOGY

This research uses secondary datasets from BPS and Registration Management Information System (SIMREG) BAPPENAS and other resources. This research uses datasets of unemployment rate, human development index, and poverty rate of five regencies and one city in Gorontalo Province during 2008-2017.

This research uses panel data regression in estimating the impact of unemployment and human development

index on poverty in Gorontalo Province. The panel data regression model is written in Equation 1 as follows:

$$Poverty_{i,t} = \alpha_0 + \alpha_1 UNEMP_{i,t} + \alpha_2 HDI_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $Poverty_{i,t}$ is poverty rate of regencies i during period t ; $UNEMP_{i,t}$ is unemployment rate of regencies i during period t ; $HDI_{i,t}$ is human development index of regencies i during period t .

RESULTS AND DISCUSSION

Model Specification Test

This research applies Chow Test to determine the model specification. Chow Test will specifically decide whether Common Effect Model or Fixed Effect Model needs to be addressed in this research. The decision in rejecting or not rejecting depends on the value of chi-square. If the value of chi square (X^2) > value of table chi-square (X^2), then H_0 is rejected and the model used in this research is the fixed effect model. If the value of chi square (X^2) < value of table chi-square (X^2), then H_0 is not rejected and the model used is random effect.

Results of Redundant Fixed Effect Test-Likelihood Ratio (Chow Test) in this research are as follows:

Table 3. Redundant Fixed Effect Test-Likelihood Ratio (Chow Test)

Redundant Fixed Effects Tests			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	129.03059	(5,52)	0.0000
Cross-section Chi-square	155.745667	5	0.0000

Source: Author's Calculation, 2019

From the results of the Chow Test above shows that the value of chi-squares (X^2), $>$ chi-squares (X^2), with a probability value (p-value) = 0.0000 which is lower than the significance level ($\alpha = 0.05$), then the most appropriate model for this research is the Fixed Effect Model (FEM).

Selection of FEM and REM with Hausman Test

As estimated through Chow Test, it is found that the most appropriate model in this research is FEM. Consequently, we

need to determine whether FEM or REM is the most appropriate model used in this research. The specification is developed with Hausman Specification Test. If Hausman test results show that the criteria of the Chi-Square statistics $<$ table Chi-Square, then the appropriate model is REM. Conversely, when the value of Hausman statistics shows that Chi-Square statistics $>$ Chi-Square Tables, then the most appropriate model is FEM.

Hausman test results are as follows:

Table 4. Hausman Specification Test

Correlated Random Effects - Hausman Test			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	11.035569	2	0.0040

Source : Author's Calculation, 2019

From the results of the Hausman Test above shows that the value of chi-squares (X^2) > table chi-squares (X^2) significant at 5%, therefore the most appropriate model in this research is FEM.

Multicollinearity Testing

Multicollinearity is one of the classical assumptions that needs to be

satisfied in BLUE. Multicollinearity referred to the absence of linear relationship between independent variables. To detect the multicollinearity, we measure the Variance Inflation Factor (VIF) of each R-Square (R^2).

Table 5. Multicollinearity Test Results

Variable	R-Square	VIF
Economic Growth	0.497727	1.090
Unemployment Rate	0.655567	2.902

Source: Author's Calculation, 2019

The results above show that the value of VIF of the two independent variables is less than ten (<10), thus, it is safe to say that there is multicollinearity between the independent variables in the model.

Autocorrelation Testing

Autocorrelation means that there is no correlation between one each observation regarding the time frame of the analysis. To detect autocorrelation, we need to measure Durbin-Watson (DW) method. DW Method is satisfied under following criteria:

- If the value: $1.65 < DW < 2.35$, it can be concluded that autocorrelation did not occur.

- If the value: $1.21 < DW < 1.65$ or $2.35 < DW < 2.79$, no conclusion can be drawn.
- If the value: $DW < 1.21$ or $DW > 2.79$, it can be concluded that autocorrelation occurred

From the results of the above analysis, the Durbin Watson value is 1.175966. This value is less than 1.21, so there is autocorrelation in the model. However, with the consideration that the regression model obtained in this study is not used for forecasting / forecasting, the impact of this autocorrelation can be ignored in this research.

Panel Data Regression

According to previous analysis, this research uses FEM to estimate the impact of unemployment rate and human

development index on poverty in Gorontalo Provinces. Empirical results estimated with FEM is evident in Table 6.

Table 6. Estimated Panel Data Model of Poverty in Gorontalo Province

Dependent Variable: POVERTY?

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.64311	4.028196	2.642154	0.0109
UNEMP?	0.087998	0.120955	0.727527	0.4702
HDI?	0.100079	0.059418	1.684319	0.0981*
R-squared	0.954619			
Adjusted R-squared	0.948509			
F-statistic	156.2631	Durbin-Watson stat		1.175966
Prob(F-statistic)	0.000000			

Source : Author's Calculation, 2019

Based on the empirical results, the model of this research is as follows:

$$Poverty_{i,t} = 10.643 + 0.087 UNEMP_{i,t} + 0.100 HDI_{i,t} + \varepsilon_{i,t}$$

This empirical result shows that if other factor were ignored, average poverty rate in Gorontalo Province would reach 10.64 percent. Moreover, unemployment rate has positive and significant impact on poverty rate, where one percent of increase in unemployment rate would raise poverty rate by 0.087 percent. While human development index also has positive and significant impact, where one percent increase of human development index,

would increase poverty rate by 0.100 percent.

Results of Fixed Effect Model

Results of FEM panel data regression is evident in Table 7. From 5 regencies and 1 city in Gorontalo Province, it can be seen through the FEM analysis that Boalemo Regencies has slightly higher coefficient compared to other regencies. Then the district that was corrected quite positively to poverty was Gorontalo District which had a coefficient value of 3.744, Pohuwato District was positively corrected with a coefficient value of 2.95 percent, after that only Gorontalo City which had a fixed effect coefficient value was Gorontalo

City which was positively corrected 2.19 percent poverty level. Bone Bolango Regency the percentage of poverty is corrected positively with a coefficient value of 0.216 percent, and finally a district that

has a poverty reduction reflected by a regression coefficient of -12.96 percent, meaning that poverty in Gorontalo District shows a declining trend.

Table 7. Estimated FEM Panel Data Regression on Poverty in Gorontalo Provinces

Dependent Variable: POVERTY?

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.64311	4.028196	2.642154	0.0109
UNEMP?	0.087998	0.120955	0.727527	0.4702
HDI?	0.100079	0.059418	1.684319	0.0981
Fixed Effects (Cross)				
_BOALEMO—C	3.858905			
_BONEBOLANGO—C	0.216166			
_POHUWATO—C	2.950447			
_KABGORONTALO--C	3.744584			
_KOTAGORONTALO--C	2.199115			
_GORONTALOUTARA--C	-12.96922			

Source : Author's Calculation, 2019

CONCLUSION

This study aims to investigate the impact of unemployment rate and human development index on poverty in Gorontalo Province. Based on the above explanation, it can be concluded that unemployment rate has positive but insignificant impact on poverty in Gorontalo Province. While human development index (HDI) has positive and significant impact on poverty rate in Gorontalo Province.

Based on the conclusion, this research further recommends that each government need to provide training or workshops to further alleviate poverty, government also need to evaluate policies regarding education, health, and economic dimensions to tackle poverty. Moreover, this research also suggests that government need to integrate or coordinate poverty alleviation strategies on the national or local level.

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