Analysis of Economic Inequality in Indonesia

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Abstract

Development is carried out to improve the welfare of the community, so that increased economic growth and equitable income distribution are needed. Rapid economic growth that is not matched by equity, will lead to regional disparity. The purpose of this study is to; (1) analyze the factors causing the development imbalance and economic growth in all provinces in Indonesia; (2) analyzing the biggest contributors to development inequality between provinces in Indonesia, (3) forming a model of development inequality and economic growth in each province and Indonesia (4) raising ideas or ideas for solutions to controlling development inequality and economic growth in Indonesia. The variables studied were wiliamson index, human development index, unemployment and General Allocation Funds for each province in Indonesia in 2010-2017. The data observed were primary data and secondary data from various related agencies, such as BI, BPS, BAPPENAS and Ministry of Finance. Before being analyzed, the data will pass the next classical assumption assumption stage with the Panel Data Model. From the results of the study found that the unemployment rate has a negative and significant effect, while the DAU and HDI have a positive and significant effect on the level of inequality in Indonesia.

Keywords: wiliamson index, unemployment, DAU, human development index, panel data model

Introduction

The Indonesian people since the early days of independence have had great attention towards creating a just and prosperous society as contained in the fourth paragraph of the opening of the 1945 Constitution. Development programs carried out so far have always paid great attention to efforts to reduce poverty because basically development conducted aims to improve community welfare. Nevertheless, the problem of poverty until now continues to be a prolonged problem. Actually there have been many poverty alleviation programs carried out by the government, but it hasn't brought any meaningful changes. The development strategy developed by the Indonesian people so far is based on high economic growth. The high economic growth was apparently not followed by equitable distribution of income among all groups of people. So there is a trade-off between growth and equity which is then known as inequality (Prawoto, 2009).

One way to measure the level of regional economic disparity between districts or cities is the Williamson Index. Williamson in (Kuncoro, 2004) examined the relationship between regional disparities with the level of economic development, using economic data from developed and developing countries. Regional economic disparities are becoming greater and development is concentrated in certain regions. At a more 'mature' stage, as seen from economic growth, there appears to be a balance between regions and the disparity decreases significantly.

Various efforts have been made by the government to reduce the level of inequality, but it has not been fully resolved. Table .1 provides an overview of development inequality and economic growth using the Williamson index and several factors that influence it

Table I Development of the Williamson Index, HDI, Unemployment, GRDP and Provincial General Allocation Funds in Indonesia in 2017

Province	IW	HDI	Unemployment	General Allocation Fund (thousand rupiah)
ACEH	0,241228	70,6	6,98	1.930.152.204
SUMUT	0,356276	70,57	6,005	2.493.484.717
SUMBAR	0,228882	71,24	5,69	1.953.594.421
BABEL	0,17971	69,99	4,12	969.535.866
KEPRI	0,276648	74,45	6,8	1.043.954.307
JABAR	0,492105	70,69	8,355	2.879.143.808
JATENG	0,456634	70,52	4,36	3.520.364.822
DIY	0,337916	78,89	2,93	1.312.215.989
BALI	0,188633	74,3	1,38	1.234.481.776
NTB	0,264798	66,58	3,59	1.416.022.952
SULBAR	0,283176	64,3	3,095	977.903.640
MALUKU	0,212898	68,19	8,53	1.465.641.669
PAPUA	0,864547	59,09	3,79	2.570.118.273

Source : Statistics Indonesia (2018), Ministry of Finance (2018)

From Table 1, only Papua Province has high inequality criteria, provinces that have moderate inequality are; North Sumatra, West Java, Central Java, Banten, East Kalimantan and South Sulawesi, while provinces that have low levels of inequality are; Aceh, West Sumatra, Babylon, Riau Islands, DIY, Bali, NTB, Kaltara, North Sulawesi, West Sulawesi, Gorontalo and Maluku. The provinces of Papua and Central Java which have the highest level of inequality actually get a relatively high DAU compared to other provinces in Indonesia. The overview of these two indicators at a glance explains that the administration of DAU, which is expected to reduce inequality, has not succeeded in reducing inequality.

Inequality in development and economic growth is also influenced by population growth, both in terms of quantity and also the quality of the population. The quality of an area is very dependent on the quality of human resources (HR). The indicator used to measure HR quality is the Human Development Index (HDI). HDI can also be interpreted as building one's ability through improving the level of health, knowledge or education and skills. In summary, Ranis and Stewart (2002) interpret human development as an improvement in a person's condition so that it allows for a longer and healthier and more meaningful life. According to UNDP (2013), Maipita (2013) human development index (HDI) is a comparative measurement of life expectancy, literacy, education and living standards for all countries throughout the world.

Methods

This study will observe the Williamson index, the unemployment rate, general allocation funds and the human development index between provinces in Indonesia during 2010-2017. This study uses documentation techniques in collecting data, i.e., gathering data from various related sources. Because this study uses secondary data, the data was taken from the Bank of Indonesia, the Central Bureau of Statistics, the Department of National Development and Planning, and the Government of Medan City, and other relevant sources of research.

Analysis of the data in this study uses panel data regression (pooled data). Panel data was chosen because it has a great combination of time series and cross-section data, then in the panel data model, the same cross-section units are surveyed for several time-series (Gujarati, 2003). The Data Analysis panel is used to analyze the impact of population fluctuations, regional minimum wages, rice prices, the level of economic growth at

the inflation rates of districts and cities in North Sumatra. From those variables, the research model can be formed as follows:

$$Y_{it} = \alpha_{it} + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_{it}$$

Information:
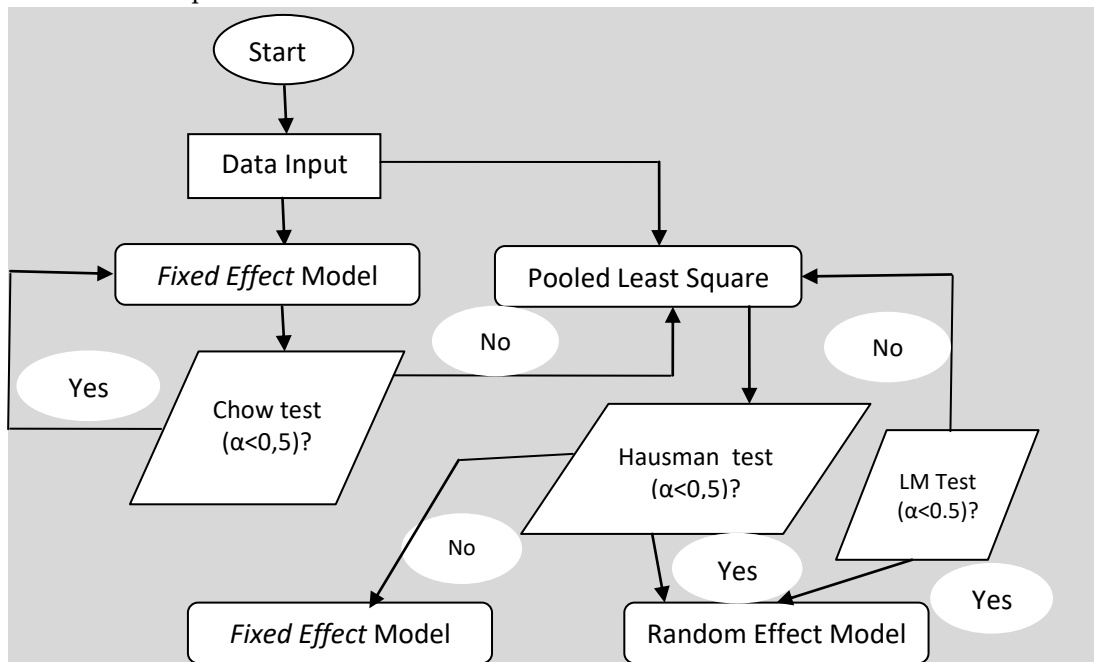|	
Y_{it}	= Williamson Indeks
X_1	= Unemployment rate (%)
X_2	= Human Development Index
X_3	= General Alocation Funds (Rp Million)
$\beta_1, \beta_2, \beta_3, \beta_4$	= Coefficient od Regression
α_{it}	= Intercept

Figure 1 research design

This study uses the Chow Test to determine which are the more appropriate model between Fixed Effect and Common Effect in estimating a panel data (Gujarati, 2003). Next, the Hausman test is used to compare the Fixed Effect model with a random effect (Widaryono, 2009). And finally, the Lagrange Multiplier test is used to compare the Random Effect and Common Effect models as the best to used to estimate panel data. Furthermore, the statistical test was carried out with the F test to test the significance of the model and the t-test to test the significance of the influence between the independent and dependent variables. However, before a regression analysis is conducted, this study first tests the classical assumptions to ensure that the data used meets the statistical rules of thumbs to be analyzed (Gujarati, 2003)

Results and Discussion
Test of Assumption
The result of classical assumption test in table 1 show that all coefficients of the independent variables are significant, then it can be concluded that there is no violation of the heteroscedasticity assumption. Then, the result of multicollinearity test shows that $R_1^2 = 0.553429 > R_2^2 = 0.185851; R_3^2 = 0.287442; R_4^2 = 0.185182$, thus the fixed effect model does not contain multicollinearity.

Table 2 The Result of Heteroscedasticity test

Dependent Variable: LOG(ABS(RESID?))
Method: Pooled Least Squares
Date: 10/06/19   Time: 13:50
Sample: 2010 2017
Included observations: 8
Cross-sections included: 33
Total pool (balanced) observations: 264

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-15.26597	5.033883	-3.032643	0.0027
LNTKT?	-0.003907	0.022905	-0.170559	0.8647
LNIPM?	2.496005	1.172479	2.128828	0.0342
LNDAU?	0.712740	0.206682	3.448480	0.0007
Fixed Effects (Period)				
2010—C	-0.232442			
2011—C	0.042421			
2012—C	0.256969			
2013—C	0.168590			
2014—C	0.215340			
2015—C	-0.291620			
2016—C	-0.096001			
2017—C	-0.063258			
Effects Specification				
Period fixed (dummy variables)				
R-squared	0.111196	Mean dependent var		-3.500165
Adjusted R-squared	0.076065	S.D. dependent var		1.085445
S.E. of regression	1.043346	Akaike info criterion		2.963516
Sum squared resid	275.4083	Schwarz criterion		3.112514
Log likelihood	-380.1841	Hannan-Quinn criter.		3.023388
F-statistic	3.165221	Durbin-Watson stat		0.549500
Prob(F-statistic)	0.000768			

Source: Result of data analysis using EViews 8.1

The Model of Inflation

Chow-test

The result of the chow test, in table 2, shows that the value of Prob. cross-section F equal to 0.000001 which means that the value obtained is <0.05, then it can be concluded that the Fixed Effect model is more appropriate than the Common Effect model.

The Estimation of Panel Data Regression with Fixed Effect Model

Researchers using the Eviews 8.1 software to estimate the model. This study aims to analyze the level of inequality in Indonesia annual observation of time during 2010-2017. Table 3 presents the results of data processing using the Fixed Effect method. From the estimation results of the model, researchers will further analyze the statistical significance test and the a priori economic test analysis (direction and meaningfulness). A priori economic test explains how the independent variable influences the dependent variable by observing the probability of the t-statistic value to investigate the significance level and also the direction of the regression coefficient of each independent variable.

Table 3 Chow Test Results

Redundant Fixed Effects Tests
Pool: DATAPANEL
Test period fixed effects

Effects Test	Statistic	d.f.	Prob.
Period F	2.404452	(7,253)	0.0213

Period fixed effects test equation:
Dependent Variable: LNIW?
Method: Panel EGLS (Period weights)
Date: 10/06/19   Time: 13:24
Sample: 2010 2017
Included observations: 8
Cross-sections included: 33
Total pool (balanced) observations: 264
Use pre-specified GLS weights

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.091268	0.250572	-4.355101	0.0000
LNTKT?	-0.013196	0.001072	-12.30945	0.0000
LNIPM?	0.322540	0.058406	5.522323	0.0000
LNDAU?	0.041172	0.011246	3.661001	0.0003
Weighted Statistics				
R-squared	0.523721	Mean dependent var		0.078752
Adjusted R-squared	0.518225	S.D. dependent var		0.091608
S.E. of regression	0.063002	Sum squared resid		1.032001
F-statistic	95.29936	Durbin-Watson stat		0.340697
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.466447	Mean dependent var		0.075485
Sum squared resid	1.018150	Durbin-Watson stat		0.338492

Source: Result of data analysis using EViews 8.1

Table 4 presents the result of the analysis of Panel Data Regression. We can formulate the Williamson Indeks with Equation Model in Indonesia as follows:

$$\text{LOG (IW)} = -0{,}628645 -0{,}014962 \text{ LOG (unemployment rate)} + 0{,}216383 \text{ LOG (IPM)}$$
$$+ 0{,}053569 \text{LOG (DAU)}.$$

The intercept value of the regression model is -0,63. It means that if the independent variables, that is unemployment rate, Human Development Index, and General Alocation Funds are assumed to be null, then the level of Wiliamson Index in Indonesia will decrease by 62.8%.

According to table 4, it can be seen that unemployment rate, Human Development Index, and General Alocation Funds have a significant effect on Inflation at $\alpha = 5\%$. Interestingly, Table 4 also shows that the Prob (F-statistic) value is 0.00000 (<0,05) which means that the independent variables simultaneously have a significant impact on inflation rate. Furthermore, Table 3 also presents the value of R^2 equal to 0.553. It indicates that the variation of wiliamson index can be explained simultaneously by the independent variables of 55,3 %% while the other 45,7% is explained by other factors not included in the model.

Tabel 4 Results of Estimation of the Panel Data Equation Model (Fixed Effect Model)

Dependent Variable: LNIW?
Method: Pooled EGLS (Period weights)
Date: 10/06/19   Time: 13:23
Sample: 2010 2017
Included observations: 8
Cross-sections included: 33
Total pool (balanced) observations: 264
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.628645	0.283467	-2.217703	0.0275
LNTKT?	-0.014962	0.001153	-12.98163	0.0000
LNIPM?	0.216383	0.066046	3.276226	0.0012
LNDAU?	0.053569	0.011720	4.570648	0.0000
Fixed Effects (Period)				
2010—C	-0.023703			
2011—C	-0.007072			
2012—C	0.003254			
2013—C	0.005178			
2014—C	0.005160			
2015—C	-0.021000			
2016—C	0.019542			
2017—C	0.018641			
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.553429	Mean dependent var		0.078752
Adjusted R-squared	0.535778	S.D. dependent var		0.091608
S.E. of regression	0.061843	Sum squared resid		0.967628
F-statistic	31.35397	Durbin-Watson stat		0.344341
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.488039	Mean dependent var		0.075485
Sum squared resid	0.976947	Durbin-Watson stat		0.352862

Source: Result of data analysis using EViews 8.1

Discussion

The estimation model produces a negative coefficient for the unemployment rate variable equal to -0.014962 with a probability value of 0.0000 (<0.05). This indicates that the unemployment rate has a negative and significant effect on the Williamson rate index in Indonesia. The higher the unemployment rate, the lower the Williamson rate index in Indonesia. An increase in unemployment will reduce the level of inequality measured by the Williamson index, and vice versa. This condition illustrates that unemployment in Indonesia is generally in the lower middle class, which has wage levels below the minimum wage, so if unemployment is absorbed instead of reducing inequality, because generally this unemployment group is in the informal sector with low wage rates, because the income received is not able to improve their welfare, so that in the aggregate is not able to reduce inequality. A different matter was conveyed by Dorcas, et al, 2018 that simultaneously investment, government spending, agglomeration and labor had a significant simultaneous effect, but partially labor did not significantly influence the level of inequality in South Sumatra in 2011-2015.

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Conclusions

The Conclusion of this research are; (1) The unemployment rate has a negative and significant effect on inequality in Indonesia, this illustrates that the policies undertaken have not been fully able to improve the welfare of the community, even though in aggregate unemployment is reduced; (2) The Human Development Index has a positive effect on the level of inequality in Indonesia, the quality of resources is increasing, but inequality is still high. Development is still not evenly distributed throughout the region, the accumulation of quality resources in urban areas, as a result rural areas are still a granary of poverty; (3) The general allocation fund has a positive and significant effect on the level of inequality in Indonesia, so that the allocation of DAU must be appropriate to the regions, because the purpose of DAU is to reduce inequality; (4) In general, the level of inequality in Indonesia is in the medium category, it needs regulations that support the distribution of income evenly throughout the provinces in Indonesia.

Acknowledgments

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