JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
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SHORT-RUN AND LONG-RUN IMPACT OF INFLATION, UNEMPLOYMENT, AND ECONOMIC GROWTH TOWARDS POVERTY IN INDONESIA: ARDL APPROACH

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Abstract

Poverty alleviation has become a vigorous program in the world in recent decades. In line with the efforts applied by the government in various countries to reduce poverty, some evaluations have been practised. The impacts of macroeconomic variables such as inflation, unemployment, and economic growth have been commonly employed to be assessed for their impact on the poverty. Previous studies in Indonesia yielded mix results regarding the impact of such macroeconomic variables on the poverty. Different methods and time reference issue were the suspected causes. This paper aims to overcome such problem by utilising the Autoregressive Distributive Lag (ARDL) equipped with the latest time of observations. This paper finds in the long-run, inflation, unemployment, and economic growth significantly influence the poverty. In the short-run, only inflation and economic growth are noted affecting poverty significantly.

Keywords: Inflation, unemployment, economic growth, poverty, ARDL method
JEL Classification: E61, I38, J68, O40

INTRODUCTION

The concept of poverty can be translated into various definitions. BPS-Statistics of Indonesia (hereafter BPS, 2016) contrasted the definition into relative and absolute poverty whereas other researchers described the poverty as other notions. Suyanto (2001) described poverty as a condition of income insufficiency, fragility, body limitation, and powerlessness. On the other hand, the Haughton and Khandker (2009) defined poverty as a lack of well-being. It is definitely that the recognition of poverty can also be defined in the broader approaches by researchers.

The poverty has become problem in many developing countries, Indonesia is not an exception. The poverty rate in Indonesia has been gradually decreased over the time, despite the economic crisis in 1998 that significantly put more people into poverty. In fact, Indonesia reached the lowest poverty rate in 2018 at 9.82% thanks to the poverty alleviation programs applied by the government of Indonesia such as *Bantuan Langsung Tunai (BLT) 2005*, *Program Keluarga Harapan (PKH) 2007*, *Pendataan Program Perlindungan Sosial (PPLS) 2011*, and *Pemutakhiran Basis Data Terpadu (PBDT) 2015* (BPS, 2016). Moreover, the Government of Indonesia

has also been providing subsidies on some particular goods (i.e. *Beras untuk Rakyat Miskin* (Raskin) and Energy Subsidy).

Based on the Direktorat Penyusunan APBN & Direktoral Jenderal Anggaran (2018), the social protection budget for 2018 accounts around 283.8 trillion of rupiah or 12.78% to the total budget (2,220.7 trillions of rupiah). The social protection budget covers the basic needs such as food, education, entrepreneurship, and health through *Program Keluarga Harapan*, *Bantuan Pangan (Keluarga Penerima Manfaat)*, *Penerima Bantuan Iuran (PBI)*, *Penyediaan Bantuan Kelompok Usaha Ekonomi Produktif*, *Program Indonesia Pintar*, *Bidik Misi*, and *Dana Desa*. Various poverty alleviation programs applied by the Government of Indonesia show the intense effort to reduce poverty. It becomes essential to assess some influential macroeconomic variables to the poverty rate concerning the huge amount of social protection fund spent annually.

Theoretically, the poverty could be reduced when the economy grows in a good quality accompanied by higher employment and controlled inflation. Some studies in Indonesia have been conducted to identify the significant of such macroeconomic factors that influence the fluctuation of the poverty rate in Indonesia. Yanti (2011) examined the impact of economic growth, inflation, and employment on the poverty in Indonesia utilising the *multiple regression* method. Slightly different research conducted by Jonnadi, Amar & Aimon, (2012) that focuses on the relationship between economic growth and poverty using *Two-Stage Least Square* (TSLS) regression method on the panel data of all provinces in Indonesia. Megasari, Amar, and Idris (2015) employed the TSLS regression to examine the significant factors that affecting economy and poverty in Indonesia. Moreover, Windra, Marwoto, and Rafani (2016) investigated the impact of inflation, economic growth, and unemployment rate on the poverty in Indonesia using multiple regressions.

Previous research obtained mixed result regarding the impact of the observed macroeconomic variables on the poverty rate. The difference of the results is suspected caused by the application of different methods applied on the different time span of observations. Ultimately, this paper suggests the new approach to analyse the impact of the macroeconomic variables (economic growth, inflation, and unemployment) to accommodate the time span issue. This paper employs the *Autoregressive Distributive Lag* (ARDL) model developed by Pesaran and Shin (1998) that possess advantages to handle relatively-short period of time series. Moreover, ARDL method is utilized to assess the impact of Indonesia's macroeconomic variables on the poverty both in the short-run and the long-run. This paper has four sections remaining; literature review, research's method, result and discussion, and conclusion. There will be some policy recommendations at the very end of sections regarding the analysis.

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

LITERATURE REVIEW

Theoretical Review

Basically, inflation worsens the poverty in two different channels. When the price increases, it could reduce people's disposable income as well as their real income (Cardoso, 1992). In an actual research conducted by Easterly and Fischer in 2001 particularly on 31,869 samples from 38 countries, the samples categorized as poor would feel worse off comparing with the richer samples due to inflation. Moreover, they found that inflation reduces the income share of bottom quintile, lowers the minimum wage, and also induces higher poverty rate.

In Indonesia, people will be classified as a poor when their per capita per month expenditure (as a proxy for income) falls below the poverty line. BPS (2017) elaborated the method to calculate poverty in Indonesia as well as the poverty line. It is explained that the price level takes significant impact in the construction of the national poverty line. The higher inflation the bigger possibilities for people to fall below the poverty threshold since the higher poverty line caused by inflation. In addition, higher inflation does not only affect the construction of poverty line but also the households' real expenditures. All in all, the inflation brings an adverse impact on the poverty through the higher poverty line and lowering the real income/expenditure.

The relationship between economic growth and poverty can be observed based on Simon Kuznets curve hypothesis explaining that when the national income increase, people's income distribution would improve (Roemer and Gugerty, 1997). The other channel on how economic growth influences poverty was explained by Islam (2004) in the labor approach. The higher economic growth would increase the productivity of employment that could lead to a higher income for the poor. On the other hand, another theory came up with a different perspective. Todaro (1997) expained the economic growth either could reduce or worsen the poverty that depends on the inequality. The growth would benefit the poor when the inequality is relatively small; however, contrast result would happen when the growth is followed by high inequality. Thus, the mix outcomes could occure depend on the rate of inequality.

The interaction behaviour of unemployment and poverty spreads into mix interpretations. Some researchers considered that unemployment and poverty are connected directly while others found that poor countries sometimes do not possess high unemployment levels (Hassan, Khalid, & Kayani, 2016).

The research that examined the direct and indirect impact of unemployment towards poverty was done by Saunders (2002). He concluded that unemployment would put individuals into a higher risk of poverty through weaker economic condition and additional social consequences. Therefore, the problem caused by unemployment not only could be seen in the economic perspective but also social consideration.

Unarguably, it is obvious that earning money through working is a way to increase income; thus, the possibility of falling below the poverty line becomes smaller. Eventually, the lower unemployment rate could overcome the poverty problem.

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

Empirical Evidence

The studies observing the impact of macroeconomic variables such as inflation, economic growth, and unemployment on the poverty have been conducted in the different countries employing different methods. This section summaries some previous studies in some countries as well as Indonesia.

Cardoso (1992) examined the impact of the inflation tax on the people that classified as poor. The study focused on the redistribution and poverty specifically on the Latin American Countries in 1965-1989. By utilising panel regression, it was found that inflation puts an adverse impact on the poverty through real wages.

Roemer and Gugerty (1997) emphasised their research on the hypothesis whether the economic growth could reduce poverty. Based on the regression technique on 26 developing countries in 1960-1993, they found that a ten-percent of economic growth leads to the growth of income for 10% of the poor people. It showed that the economic growth reduces poverty.

Islam (2004) constructed multiple regression models that observe the possible effect of economic growth and unemployment on the poverty. By using cross-countries data, the economic growth and employment were noted to yield a significant impact on the poverty reduction. It was suggested that the economic growth should be pro-poor growth to stimulate productive employment for reducing poverty.

The utilization of ARDL method in Pakistan to estimate the impact of macroeconomic indicators involving inflation, unemployment, and the economic growth upon poverty were conducted by Ahmad and Riaz (2011); Chani, Irfan, Pervaiz, Jan, Ali, Chaudhary (2011); Afzal, Malik, Begum, Sarwar, and Fatima (2012); Aleemi and Azam (2015); Hassan et al. (2016); Faridi, Chaudhry, Farooq and Arif (2016); also Ahad (2016). Although using the same focus of observation locus, the time reference and the additional variables in models varied. It carried different outcomes on their conclusion particularly the significances of the independent variables.

Nwosa (2014) employed the *Ordinary Least Square* (OLS) and Co-integration methods to analyse the impact of public debt, government expenditure, and the economic growth on the unemployment and poverty in Nigeria 1980 to 2011. One of the results was that the economic growth in Nigeria has negative and insignificant influences on the poverty.

Nindi and Odhiambo (2015) investigated the impact of Swaziland's economic growth on the poverty by using the ARDL model. The research covered the period 1980 to 2011. The result showed that the economic growth does not affect poverty in the short-run and long-run. It was explained that high-income inequality in Swaziland takes part as a cause for the result.

Recent research conducted by Kemili and Belloumi (2018) in Tunisia using the time reference 1970 to 2013 to assess the relationship between inequality and growth on the poverty. The ARDL method yielded the conclusion that the growth has a positive relationship to the poverty; in other words, the growth could not create a lower poverty rate. Again, high inequality was the suspected variable for the result.

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

In Indonesia, relevant studies were also conducted to examine the impact of the economic growth, unemployment, and inflation on the poverty rate in Indonesia that mainly employed *multiple regression* method either in time series or panel data form. The method utilized by previous research comprises of *Simple Multiple regression*, *Two-Stage Least Square (TSLS)*, and *Panel Regression*.

By using the *multiple regression* method, Yanti (2011) found that insignificant impact of economic growth and inflation on the poverty rate while the higher job vacancy significantly could reduce poverty. The research took 1999-2009 as the time frame. Similar research was also conducted by Windra et al. (2016). The research used a *multiple regression* method and took the period from 2001 to 2015 as the time of observations. Although obtaining the same coefficients' sign of regression with previous studies (for growth and inflation), the significance of variables was different; inflation was the only variable that does not affect the poverty whereas growth and unemployment significantly put the impact on the poverty.

Jonnadi et al. (2012) used a different approach to examine the interaction of economic growth on the poverty. Based on the panel data spanned from 2005 to 2009 across 33 provinces in Indonesia, the TSLS method in the research suggested that poverty and economic growth have a significant and negative relationship. TSLS regression method was also utilised by Megasari et al. (2015) to analyse the economy and poverty in Indonesia, 1983 to 2013. Inflation, economy, and unemployment were included in the regression model to observe the poverty fluctuation. The economy, inflation, and unemployment were then to be said to affect poverty significantly.

Wulandari (2015) conducted a research employing panel regression method to examine the impact of economic growth, inflation, unemployment, and education on the poverty rate in Indonesia, using 2008 to 2012 time reference. The panel regression comprised of 33 provinces in Indonesia. The research yielded a slightly different conclusion compared with the previous studies. The economic growth was found does not affect poverty significantly whereas inflation and unemployment significantly influent the poverty rate.

From the previous studies, the impacts of the inflation, economic growth, and unemployment were diverse on the poverty in term of significance. It was evident that the length of time observation in the time series determines outcomes. Furthermore, in Indonesia, the utilisation of ARDL model for similar research has not been done. ARDL model is also more advance in term of handling short observation and providing comprehensive results in the short-run and long-run analysis.

METHODOLOGY

Data

This paper employs the secondary data for the ARDL analysis in Indonesia. For the poverty rate, data were extracted from BPS' website. The data for Inflation, unemployment, and economic growth were gathered from the World Bank's World Development Indicators (WDI). This paper covers the period from 1976 to 2017. All macroeconomic variables in this paper are expressed in percentage.

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

Econometrics Model

From the previous section, it is stated that the poverty rate is affected by the inflation, unemployment, and economic growth. Therefore, the relationship between dependent and independent variables is formulated in a function as:

$$pov = f(inf, unem, grow) \quad (1)$$

Equation 1 can be expressed as the following ARDL model:

$$\Delta pov_t = \beta_0 + \beta_1 pov_{t-1} + \beta_2 inf_{t-1} + \beta_3 unem_{t-1} + \beta_4 grow_{t-1} + \sum_{i=1}^{p} \delta_{1i} \Delta pov_{t-i} + \sum_{j=0}^{q} \delta_{2i} \Delta inf_{t-j} + \sum_{k=0}^{q} \delta_{3i} \Delta unem_{t-k} + \sum_{m=0}^{q} \delta_{4i} \Delta grow_{t-m} + \varepsilon_t \quad (2)$$

Where β_1, β_2, β_3, β_4 are the long-run coefficient. To satisfy the co-integration in the long-run, the following null hypothesis should be rejected:

H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$

H_1: at least one $\beta \neq 0$

However, due to short series, the *Bounds Testing* by Pesaran et al. (2001) is replaced by the test utilized by the previous study conducted by Muthalib et al. (2018). The co-integration exists if the error term of the model is stationary at level; thus ADF test is applied in regarding this situation.

When co-integration exists in the long-run, the next step is to estimate the long-run equation. The ARDL (p,q) model can be formulated as:

$$pov_t = \alpha + \beta_1 inf_t + \beta_2 unem_t + \beta_3 grow_t + \mu_t \quad (3)$$

Where p and q are the maximum lag utilized in ARDL model, μ is error term in the long-run, *pov* is the poverty rate (headcount index) in percent, *inf* is yearly inflation in percent, *unem* is unemployment rate in percent, *grow* is economic growth in percent, t is time, α is intercept, and β is coefficient.

A further step is to estimate the short-run model utilising the *Error Correction Model* (ECM). ECM is provided in the co-integration test previously that can be expressed as:

$$\Delta pov_t = \alpha + \sum_{i=1}^{p} \theta_{1i} \Delta pov_{t-i} + \sum_{j=1}^{q} \varphi_{1j} \Delta inf_{t-j} + \sum_{j=1}^{q} \varphi_{2j} \Delta unem_{t-j} + \sum_{j=1}^{q} \varphi_{3j} \Delta grow_{t-j} + \gamma ECT_{t-1} + \varepsilon_t \quad (4)$$

Where θ and φ are the short-run coefficients and γ is the speed of adjustment.

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

ARDL Additional Procedures

Unit Root Test

Although the variables in the model should not have stationer on the same degree, Pesaran and Shin (1998) suggested avoiding the variables to be stationer in the second degree. Therefore, as the preliminary test for ARDL, the unit root test using *Augmented Dickey-Fuller* (ADF) test is conducted to justify the order of stationary of variables.

Maximum Lag Selection

According to Pesaran Shin, and Smith (2001), maximum lag specification depends on the minimum value of *Akaike Information Criteria* (AIC), *Schwarz's Bayesian Information Criteria* (SBC), and *Hannan-Quinn Criterion* (HQ). This paper chooses the smallest AIC, SBC, and HQ values.

Model's Diagnostics

To validate the ARDL model, there are some diagnostics checks that comprise of Normality test (the residuals of the model should be normally distributed or p-value > 5%), *Breusch-Godfrey Serial Correlation LM* test (there is no serial correlation of residuals if p-value > 5%), *Breusch-Pagan-Godfrey* Heteroskedasticity test (no heteroskedasticity if p-value > 5%), and model stability using CUSUM and CUSUM Square plot (the model is stable from the possibility of one or multiple structural break if the plot does not cross the thresholds lines at 5% of significance (Brown et. al. (1975)).

RESULT AND DISCUSSION

ARDL Model Analysis

To perform ARDL analysis, as a requirement, the stationary of the variables have been checked and results as follow to check that there is no variable stationer at I(2):

Table 1. Stationary Check of Variables using ADF Test

Series	Level		First Difference	
	t-statistic	Probability	t-statistic	Probability
pov	-0.0192	0.9454	-3.0145	0.0491
inf	-1.2507	0.6320	-4.8584	0.0013
unem	-1.5309	0.5005	-3.5128	0.0170
grow	-2.5179	0.3170	-8.9723	0.0000

Source: Author's Calculation

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

Table 1 provides the result of ADF test for stationary of variables in the model. All variables are stationer at the first difference (less than I(2)), the next stage of ARDL analysis can be conducted which is the maximum lag selection using minimum AIC. The result of the lag selection can be observed from table 2.

Table 2. Maximum Lag Length Selection

Lag	AIC	SC	HQ
0	4.1395	4.3850	4.2046
1	4.1357	4.4302	4.2138
2	3.6183	4.0626	3.7300
3	2.9365*	3.4325*	3.0534*

Source: Author's Calculation
Notes: * indicates the minimum value. Lag 4 cannot be included due to an insufficient degree of freedom.

From table 2 the maximum lag to be utilized in the further ARDL model can be concluded. The ARDL model will employ 3 as the maximum lag in the equation. The uniqueness of the ARDL model compared with other model is the lag-length difference among variables. To choose the ARDL model with lags of the variables, the AIC criteria will be used as a threshold. The optimum ARDL model based on AIC can be seen in figure 1.

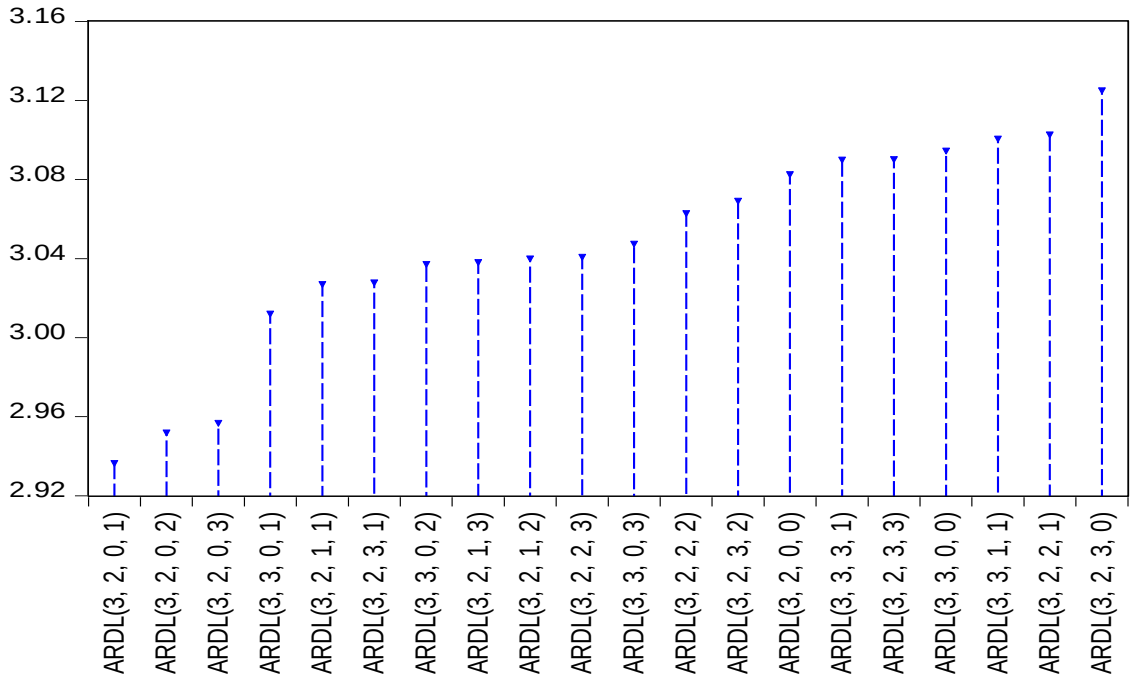

Figure 2. ARDL Model Selection
Source: Author's Processing using EViews

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

Figure 1 suggests that the best ARDL model for the maximum 3 lags is ARDL (3, 2, 0, 1) since it provides the minimum AIC value. EViews thoroughly calculates AIC based on the combination of lags from variables with 3 for the maximum lag. Since the ARDL (3, 2, 0, 1) has the lowest AIC as can be seen in figure 1, then variable *pov* utilises 3 lags, *inf* utilises 2 lags, *unem* uses no lag, and *grow* employs 1 lag.

Sequentially, the co-integration test can be applied as a mandatory stage for further analysis. As suggested in the previous section, the error correction term of the ARDL model should be stationary at the level or I(0) to prove that the co-integration exists. From the preliminary calculation, the ADF test's result for error correction term can be examined in table 3.

Table 3. Stationary Check of Error Term of ARDL Model using ADF Test

Series	Level		First Difference		Stationer at
	t-statistic	Probability	t-statistic	Probability	
Error term	-2.929994	0.0595	Not Conducted	Not Conducted	Level / I(0)

Source: Author's Calculation

Table 3 infers that the co-integration exists among variables in the long-run. Hence, further analysis could be conducted. The result for the long-run model using ARDL is presented in Table 4.

Table 4. Long-run ARDL Model Equation

Variable	Coefficient	t-statistic	Probability
inf	0.9545	6.1655	0.0000***
unem	0.6065	2.1816	0.0498**
grow	-0.9434	-2.0599	0.0618*
c	8.6270	3.3413	0.0059***

Source: Author's Calculation
Notes: *,**,*** indicate that the significance at α = 10%, 5%, and 1% respectively.

For the long-run analysis, the impact of inflation, unemployment, and economic growth on the poverty in Indonesia can be inferred from table 4. All independent variables significantly affect the poverty rate in the long run. There are no unmatched expected signs on the coefficients. In the long-run, inflation significantly put an impact on the poverty at α = 1% while unemployment and economics growth influence the poverty rate at 5% and 10% respectively. These results prove the basic assumption that higher inflation could strike the poor, lower unemployment can reduce poverty, and good economic growth can eradicate poverty in the longer time frame. In addition, this result also confirms the previous research

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

conducted by Cardoso (1992), Roemer and Gugerty (1997), and Islam (2004). In Indonesia's case, this result is similar with Megasari (2015).

Short-run analysis for the ARDL model also takes a significant impact on the policy-making process. In order to obtain the short-run ARDL model, the *Error Correction Model* (ECM) could be examined based on equation 4. It is depicted in table 5.

Table 5. Short-run ARDL Model Equation (ECM)

Variable	Coefficient	t-statistic	Probability
Δpov_{t-1}	0.3357	3.2446	0.0070***
Δpov_{t-2}	-0.4365	-6.1360	0.0001***
Δinf	0.3531	7.2006	0.0000***
Δinf_{t-1}	-0.3302	-5.0845	0.0003***
$\Delta grow$	-0.4195	-3.0529	0.0100***
ECT_{t-1}	-0.7483	-7.4826	0.0000***
Adjusted R-squared 0.9318		S.E. of regression 0.7819	

Source: Author's Calculation
Notes: *,**,*** indicate that the significance at α = 10%, 5%, and 1% respectively.

Short-run dynamics of macroeconomic variables could be properly examined. ECT has a negative sign and significant at α = 1% which means that indeed co-integration exists in the long-run with the speed of adjustment by 74.8% to the long-run equilibrium. In the short-run time span only inflation and economic growth that significantly affect the poverty rate. The economic growth could reduce poverty on a smaller level in shorter period compared with the long-run impact (0.4195 vs. 0.9434). This makes sense because the income inequality needs time to adjust to a better level; thus, poverty rate can decrease. Inflation in the shorter time analysis gives a mix impact on the poverty that can be seen on the coefficients of Δinf and Δinf_{t-1} (positive and negative). It describes the dynamics of the impact of inflation on the poverty; however, the speed of adjustment is quite high at 74.8% to the long-run equilibrium. Regarding the insignificant impact of unemployment towards poverty in short-run, the examination result opposes the previous results in Indonesia underlining that unemployment significantly put adverse impact on the poverty (Yanti (2011), Windra et al.(2016), Megasari et al. (2015), Wulandari (2015)). This result, however, fill the gap among the methods utilized in observing the nexus between unemployment and poverty in timely manner. All in all, the impact of unemployment could be seen in the longer time frame rather than in the shorter time.

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

Diagnostics Result

The validity of the ARDL model should be confirmed by the diagnostics in order to provide robust interpretations from the models. The first test conducted is normality test of residuals that can be seen from figure 2. Since the probability is higher than 5%, the residuals satisfy the normality diagnostics.

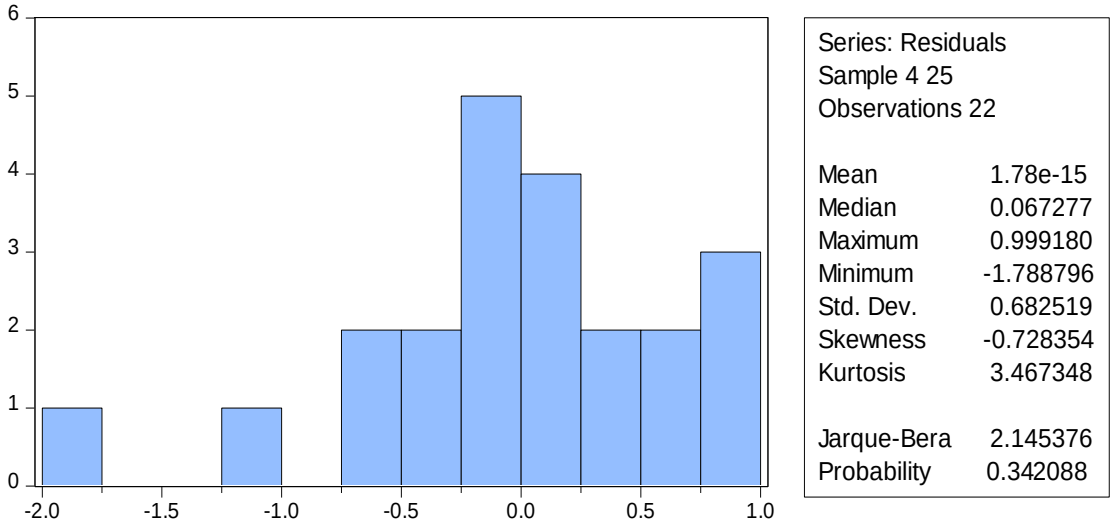

Figure 2. Histogram of Model's Residuals
Source: Author's Processing using EViews

The next check is the serial correlation on the residuals; table 6 provides the tests for serial correlation and heteroscedasticity which informs the calculation for the obs. R-squared is 0.1034 with the probability 0.9914 meaning that bigger than 5% (the residuals do not suffer serial correlation). A similar result for the heteroscedasticity test that provides probability value equal to 0.8868; thus, the model is free from heteroscedasticity.

Table 6. Serial Correlation and Heteroscedasticity Test Results

Test	Obs.R-squared	Probability	Interpretation
Breusch-Godfrey Serial Correlation LM	0.1034	0.9914	No serial correlation
Breusch-Pagan-Godfrey	4.3508	0.8868	No heteroscedasticity

Source: Author's Calculation

JDEP Vol 2 No 1 (2019): hlm 15-29
JDEP
Jurnal Dinamika Ekonomi Pembangunan
https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index

Finally, the check for the model's stability is presented by CUSUM and CUSUM of Square graphs.

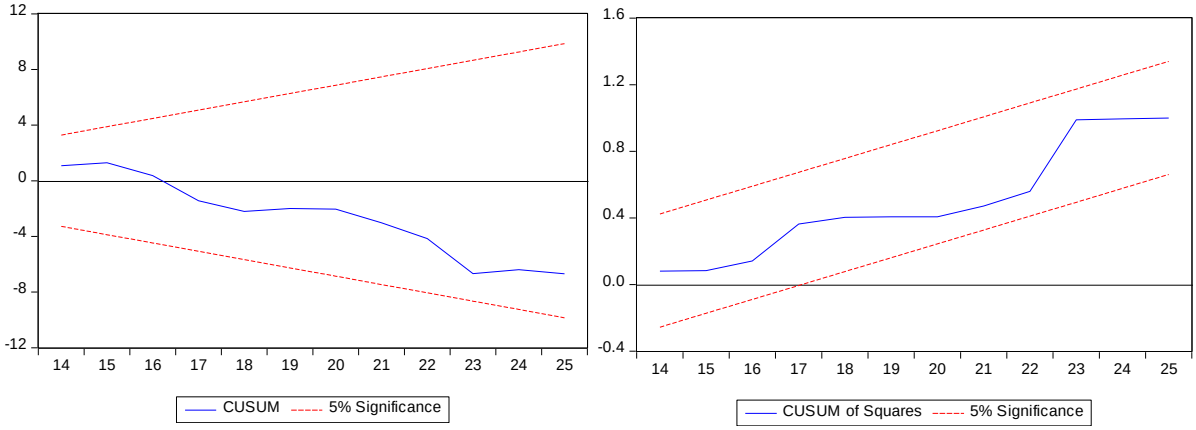

Figure 3. CUSUM and CUSUM of Squares
Source: Author's Processing using EViews

From figure 3, there is a conclusion showing that the ARDL model is stable and the coefficients can statistically explain the interaction between dependent variable and regressors. Eventually, the ARDL (3, 2, 0, 1) model is strongly proven to pass the diagnostics check.

CONCLUSION

Previous studies produced mixed results regarding the impact of macroeconomic variables such as inflation, unemployment, and economic growth on the poverty rate, especially in Indonesia. Different methods utilised as well as the various time of observations have become the causal subjects of such phenomena. This paper aims to overcome such uncertainty by employing the ARDL model in order to suggest a robust conclusion that covers the time reference issue, in the short-run and the long-run. Eventually, this paper formulated some conclusions.

The independent variables (inflation, unemployment, and economic growth) significantly affect the poverty rate in the long-run. 1% increase in yearly inflation would lead to an increase in poverty rate by 0.95%; 1% increase in the unemployment rate causes the poverty rate inclines by 0.61%; and 1% increase in the economic growth could reduce poverty by 0.94%.

In the short-run, only inflation and economic growth influence poverty in significant level. The speed of adjustment of the ECM model to the long-run equilibrium is quite fast accounted by 74.8% per year. There are some dynamics of the price level impact on the poverty (difference in the coefficients' sign); due to small samples of observations, the further impact of inflation in a longer lag cannot be examined. The expected signs of coefficients, overall, are straightforward.

Some social protection programs have been being applied by the Government of Indonesia to reduce poverty either in the short-run and the long-run. Concerning the significant impact of macroeconomic variables in the long-run, the social protection programs that provide returns in the future should continue (i.e.

educational aids and scholarship, also microfinance for micro and small enterprises). For the short run, poor people should be protected from the adverse impact of inflation. Some programs such as *Program Keluarga Harapan*, *Bantuan Pangan (Keluarga Penerima Manfaat)*, and Penerima *Bantuan Iuran (PBI)* are acceptable to be maintained. Another suggestion is that the reduction of some energy subsidy (fuel and electricity) should be done carefully to avoid the high fluctuation of inflation. Finally, the Government of Indonesia ought to focus not only on the economic growth but also on the inequality; to provide a good and high quality of economic growth in order to reduce poverty.

REFERENCE LIST

Afzal, M., Malik, M. E., Begum, I., Sarwar, K., & Fatima, H. (2012). Relationship among education, poverty and economic growth in Pakistan: an econometric analysis. *Journal of Elementary Education*, *22*(1), 23-45.

Ahad, M. (2016). Nexus between Income Inequality, Crime, Inflation and Poverty: New Evidence from Structural Breaks for Pakistan. *International Journal of Economics and Empirical Research*, *4*(3), 133-145.

Ahmad, K., & Riaz, A. (2011). An Econometric Model of Poverty in Pakistan: ARDL Approach to Co-integration. *Asian journal of business and management sciences*, *1*(3), 75-84.

Aleemi, A. R., & Azam, M. (2015). The Nexus of Financial Deepening, Economic Growth and Poverty: The Case of Pakistan. *Business Review*, *10*(2).

Brown, R. L., Durbin, J., & Evans, J. M. (1975). Techniques for testing the constancy of regression relationships over time. *Journal of the Royal Statistical Society. Series B (Methodological)*, 149-192.

Cardoso, E. (1992). *Inflation and poverty* (No. w4006). National Bureau of Economic Research.

Chani, D., Irfan, M., Pervaiz, Z., Jan, S. A., Ali, A., & Chaudhary, A. R. (2011). Poverty, inflation and economic growth: empirical evidence from Pakistan. *World Applied Sciences Journal*, *14*(7), 1058-1063.

Direktorat Penyusunan APBN, & Direktorat Jenderal Anggaran. (2018). *Informasi APBN 2018*. Jakarta: Ministry of Finance of the Republic of Indonesia.

Easterly, W., & Fischer, S. (2001). Inflation and the Poor. *Journal of Money, Credit and Banking*, *33*(2), 160-178. DOI:10.2307/2673879.

Faridi, M. Z., Chaudhry, M. O., Farooq, F., & Arif, R. (2016). Labor Force Participation and Poverty Alleviation in Pakistan: An Empirical Analysis. *Pakistan Journal of Social Sciences (PJSS)*, *36*(2), 1251-1263.

Hassan, M. U., Khalid, M. W., & Kayani, A. S. (2016). Evaluating the Dilemma of Inflation, Poverty and Unemployment. *Bulletin of Business and Economics (BBE)*, *5*(2), 67-82.

Haughton, J., & Khandker, S. R. (2009). *Handbook on poverty+ inequality*. World Bank Publications.

Islam, R. (2004). The nexus of economic growth, employment and poverty reduction: An empirical analysis. Geneva: Recovery and Reconstruction Department, International Labour Office

Jonnadi, A., Amar, S., & Aimon, H. (2012). Analisis pertumbuhan ekonomi dan kemiskinan di indonesia. *Jurnal Kajian Ekonomi*, *1*(1), 140-164.

Megasari, H., Amar, S., & Idris, I. (2015). Analisis Perekonomian dan Kemiskinan di Indonesia. *Jurnal Kajian Ekonomi*, *3*(6), 1-18.

Muthalib, A. A., Adam, P., Rostin, R., & Saenong, Z. (2018). The Influence of Fuel Prices and Unemployment Rate towards the Poverty Level in Indonesia. *International Journal of Energy Economics and Policy*, *8*(3), 37-42.

Nindi, A. G., & Odhiambo, N. M. (2015). Poverty and economic growth in Swaziland: An empirical investigation. *Managing Global Transitions*, *13*(1), 59-74.

Nwosa, P. I. (2014). Government Expenditure, Unemployment and Poverty Rates in Nigeria. *Journal of Research in National Development*, *12*(1), 77-84.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds Testing Approaches To The Analysis Of Level Relationships. *Journal of Applied Econometrics*, *16*(3), 289-326. DOI: 10.1002/jae.616.

Pesaran, M. H., & Shin, Y. (1998). An autoregressive distributed-lag modelling approach to cointegration analysis. *Econometric Society Monographs*, *31*, 371-413.

Roemer, M., & Gugerty, M. K. (1997). *Does economic growth reduce poverty?*. CAER II Discussion Paper 4, Cambridge, MA: Harvard Institute for International Development.

Saunders, P. (2002). The direct and indirect effects of unemployment on poverty and inequality. *Australian Journal of Labour Economics*, *5*(4), 507-529.

Statistics Indonesia (BPS). (2018). *Jumlah Penduduk Miskin, Persentase Penduduk Miskin dan Garis Kemiskinan, 1970-2017*. Retrieved from https://www.bps.go.id/statictable/2014/01/30/1494/jumlah-penduduk-miskin-persentase-penduduk-miskin-dan-garis-kemiskinan-1970-2017.html [accessed on May 21st 2018].

Statistics Indonesia (BPS). (2016). *Penghitungan dan Analisis Kemiskinan Makro Indonesia Tahun 2016*. Jakarta: Statistics Indonesia (BPS).

Suyanto, B. (2001). Kemiskinan dan Pemberdayaan Masyarakat Miskin. *Masyarakat, Kebudayaan dan Politik*, *14*(4), 25-42.

Todaro, M. P. (1997). *EconomicDevelopment.* Reading, MA: Addison-Wesley.

Windra, W., Marwoto, P. B., & Rafani, Y. (2016). Analisis Pengaruh Inflasi, Pertumbuhan Ekonomi, Dan Tingkat Pengangguran Terhadap Kemiskinan Di Indonesia. *Jurnal Ilmiah Progresif Manajemen Bisnis*, *14*(2), 19-27.

World Bank. (2017). *World development indicators: 1960-2017*. Retrieved from http://data.worldbank.org/data-catalog/world-development-indicators [accessed on May 21st 2018].

Wulandari, F. H. (2015). *Pengaruh Pertumbuhan Ekonomi, Inflasi, Pengangguran, Dan Pendidikan Terhadap Kemiskinan Provinsi Di Indonesia Tahun 2008-2012*. Thesis, Yogyakarta: Atma Jaya University.

Yanti, N. (2011). *Pengaruh Pertumbuhan Ekonomi, Inflasi, Dan Tingkat Kesempatan Kerja Terhadap Tingkat Kemiskinan Di Indonesia Tahun 1999–2009*. Thesis, Yogyakarta: UPN Veteran.