

Determinants of poverty in indonesia through the error correction model (ECM) approach

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Abstract

Poverty is a classic problem faced by developing countries including Indonesia. An increase in poverty will reduce the welfare of the Indonesian people. This study aims to determine the effect of unemployment and inflation on poverty in Indonesia. The results of the ECM analysis show that unemployment has a significant effect on poverty in the short term and long term in Indonesia while inflation has an insignificant effect on poverty in the short term and long term in Indonesia.

Keywords: Unemployment; Inflation; Poverty; ECM

1 Introduction

Various development and social problems such as unemployment and poverty need to be addressed by implementing development to realise community prosperity through economic development. An important aspect to see development performance is economic growth and how effectively resources are used so that employment can absorb the available labour force. The production of goods/services is increasing as a result of better economic growth. Labour is needed to produce these goods/services so that unemployment decreases and poverty decreases. If people are not unemployed, it means that they have a job and an income that is expected to fulfil their needs. If people's needs are met, they will not be poor. A low unemployment rate or high employment opportunities will reduce the poverty rate. Efforts to reduce unemployment and poverty must be aligned and equally important. Factors that affect poverty are inflation and unemployment (Sukirno, 2006).

Inflation shows a decline in real income so that people's purchasing power also decreases. The goods and services consumed by the people are reduced, so the consumption of the people will decrease. This decrease in consumption indicates a decrease in people's welfare. Thus, an increase in inflation causes more groups of people to fall into the poor group so that the poverty rate increases (Susanto, 2014). Fuji (2011) argues that food inflation has a

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negative impact on poor farming households. The purchasing power of the poor shrinks when the price of essential commodities increases but income does not increase at the same pace (Fuji, 2011).

income does not increase at the same pace (Wilson, 2011). Inflation has a greater impact on poor households in rural as well as urban areas. Poor rural households are more vulnerable to inflation (Sugema, et al. 2010). Cardoso (1992), Powers (1995), Ravallion (1998), and Braumann (2004) found that there is a positive correlation between inflation and poverty. Chauhary and Chaudhary (2008) found that food price inflation increased poverty in Pakistan.

The higher the unemployment, the more poverty will increase and vice versa, the lower the unemployment rate, the more poverty will decrease (Sukirno, 2004). Unemployment and poverty have a positive relationship because unemployment will cause the level of income and prosperity of the community to not be optimal and they are always among the very poor (Mardiana and Ani, 2019).

The differences in national poverty lines make it difficult to compare and analyse poverty statistics in different countries. Therefore, in order to objectively calculate and compare poverty rates in different countries, the World Bank has introduced international poverty lines (Sachs, 2005). Individuals or families living on incomes or consumption expenditure below the poverty line are designated as poor with reference to the poverty line (Ravallion, 1992). Poverty often hampers economic development in various countries, including Indonesia. Poverty as a result of the failure of economic development must continue to be suppressed and a solution must be found, so that poverty no longer has a detrimental impact on the country. Research results (Feriyanto et al, 2020) show that unemployment and wages have a significant positive effect on poverty in provinces in Indonesia.

Based on data obtained from BPS, the unemployment rate is in line with the poverty rate in Indonesia, meaning that if unemployment rises, poverty will also rise. In Indonesia, unemployment in 2020 was 7.07% and poverty also increased to 10.19%. But in 2022, unemployment decreased to 5.86% and poverty also decreased to 9.57. Indonesia's inflation data shows that inflation in 2020 was 1.68 while inflation in 2022 increased to 5.51%. High inflation will cause unemployment to increase so that poverty will increase. However, Indonesia's data shows that inflation is low but unemployment and poverty rise (2020) while inflation rises but unemployment and poverty fall (2022).

The results of research (Junaidin and Muniarty, 2020) state that inflation has no effect and is not significant on poverty in Bima City. Rashid (2012) found that although in most cases inflation shows a positive and statistically significant correlation with poverty, however, in the case of low-income countries, the relationship between inflation and poverty is negative and statistically insignificant in certain specifications.

2 Research method

This research uses a quantitative approach. This approach explains how inflation and unemployment affect poverty in Indonesia. According to Yusuf (2018), quantitative research is one type of research whose specifications are systematic, planned, and clearly structured from the beginning to the making of the research design. Furthermore, Sugiyono (2018) states that quantitative research is research that requires a lot of use of numbers (numerical), starting from data collection, analysis, to interpretation of the analysis results.

Secondary data is data and information obtained from books or documents published previously and not obtained directly from the field. The data used in this study are unemployment data, inflation data and poverty data for 20 years (2002-2022) in Indonesia. This data is then analysed to determine the effect of inflation and unemployment on poverty in Indonesia. Inflation data was obtained from Bank Indonesia, while unemployment and poverty data was obtained from Statistics Indonesia (BPS).

The object of this research is Indonesia. This research focuses on Indonesia's fluctuating inflation conditions over 20 years, unemployment conditions followed by its development in line with poverty. This means that the higher the unemployment rate, the higher the poverty rate. Conversely, a decrease in unemployment is followed by a decrease in poverty.

The data analysis method is a technical method used to analyse data that has been collected and tabulated using software or by manual calculation (Yusuf, et al. 2020). Analysis techniques are one of the decision-making support systems commonly known as decision support systems (DSS). Decision Support System is a model, method, technique, or method used to make or support a decision. The data analysis used in this study uses the Error Correction Mechanism (ECM) method using the eviews 12 statistical tool. The ECM approach is able to correct the lancing regression results by explaining the short-term and long-term parameters (Sarungu and Endah). Lancing regression occurs if the variables

in the model are not interconnected, but the regression results show a significant regression coefficient and a high coefficient of determination (Agus, 2009). Variable Y is poverty in Indonesia while variable X1 is unemployment in Indonesia and variable X2 is inflation in Indonesia. Data used for 20 years from 2002 to 2022.

3 Results and discussion

The results of the stationarity test at the level for all variables (unemployment, inflation and poverty) are not stationary because the ADF value is more positive than the critical value, so all variables will be tested by testing the degree of integration at the first difference level. The table below shows that all variables are stationary at the 5% and 10% significance levels because the ADF value is more negative than the critical value.

Table 1 Stationarity Test Results of Poverty, Unemployment and inflation in Indonesia

Null Hypothesis: D(KEMISKINAN) has a unit root			
Exogenous: Constant			
Lag Length: 0 (Automatic - based on SIC, maxlag=4)			
		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.481101	0.0026
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	
Null Hypothesis: D(PENGANGGURAN) has a unit root			
Exogenous: Constant			
Lag Length: 0 (Automatic - based on SIC, maxlag=4)			
		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.599656	0.0020
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	
Null Hypothesis: D(INFLASI) has a unit root			
Exogenous: Constant			
Lag Length: 1 (Automatic - based on SIC, maxlag=4)			
		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.389856	0.0004
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

Source: data processed by Eviews 12

The cointegration test aims to test the regression residuals, whether they are stationary or not. A cointegration test can only be performed if all variables have the same degree of integration. The table below shows RESID (residuals) are stationary at all significance levels. Stationary cointegration regression residuals indicate all variables have a long-run equilibrium relationship and can form a short-run ECM model developed by Engle-Granger.

Table 2 Cointegration Test Results

Null Hypothesis: ECT has a unit root			
Exogenous: Constant			
Lag Length: 0 (Automatic - based on SIC, maxlag=4)			
		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.032303	0.0489
Test critical values:	1% level	-3.808546	
	5% level	-3.020686	
	10% level	-2.650413	

Source: data processed by Eviews 12

The short-term ECM estimation results show that ECT (-1) is negative and significant (prob 0.00 < 0.05), meaning that the model used can be estimated and valid. The ECM estimation results show that only the unemployment variable has a significant effect on poverty in the short term in Indonesia.

The short-term equation of the effect of unemployment and inflation on poverty in Indonesia is: Poverty = -0.02 + 0.28 unemployment - 0.01 inflation

A 1% increase in unemployment will increase poverty by 28% in Indonesia and a 1% increase in inflation will reduce poverty by 1% in Indonesia in the short run.

Table 3 Short-Term ECM Estimation Results

Dependent Variable: D(KEMISKINAN)				
Method: Least Squares				
Date: 06/26/23 Time: 09:56				
Sample (adjusted): 2003 2022				
Included observations: 20 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.023656	0.007486	-3.160042	0.0061
D(PENGANGGURAN)	0.281820	0.072059	3.910946	0.0012
D(INFLASI)	-0.006218	0.011376	-0.546547	0.5922
ECT(-1)	-0.430895	0.096817	-4.450592	0.0004
R-squared	0.665320	Mean dependent var		-0.032139
Adjusted R-squared	0.602567	S.D. dependent var		0.051375
S.E. of regression	0.032388	Akaike info criterion		-3.845187
Sum squared resid	0.016784	Schwarz criterion		-3.646041
Log likelihood	42.45187	Hannan-Quinn criter.		-3.806312
F-statistic	10.60228	Durbin-Watson stat		2.938216
Prob(F-statistic)	0.000440			

Source: data processed by Eviews 12

Table 4 shows the results of the ECM analysis to determine the long-term relationship between unemployment and inflation on poverty in Indonesia over the last 20 years (2002-2022). The equation of the effect of unemployment and inflation on poverty in Indonesia in the long run is: $\text{poverty} = 0.82 + 0.813 \text{ unemployment} + 0.070 \text{ inflation}$

The long-run OLS regression results show a 1% increase in unemployment will increase poverty by 81.3% in Indonesia in the long run. A 1% increase in inflation will increase poverty by 7% in Indonesia in the long run.

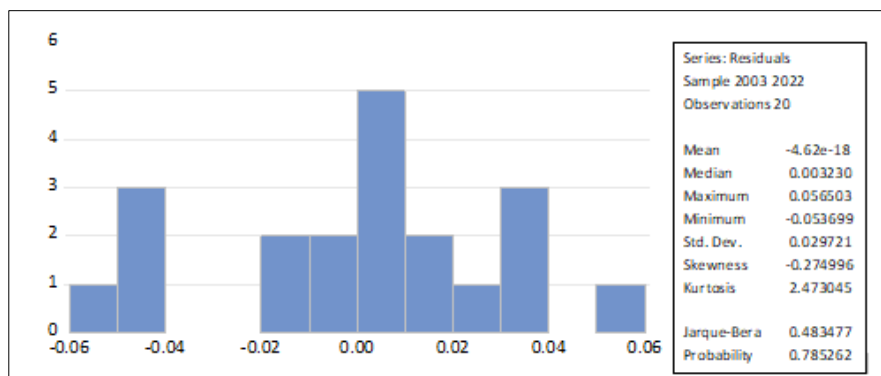
Table 4 Cointegration OLS Regression Results

Dependent Variable: KEMISKINAN				
Method: Least Squares				
Date: 06/26/23 Time: 09:44				
Sample: 2002 2022				
Included observations: 21				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.819556	0.166309	4.927899	0.0001
PENGANGGURAN	0.813447	0.096504	8.429137	0.0000
INFLASI	0.069267	0.038536	1.797464	0.0891
R-squared	0.878010	Mean dependent var		2.535942
Adjusted R-squared	0.864455	S.D. dependent var		0.235128
S.E. of regression	0.086566	Akaike info criterion		-1.924262
Sum squared resid	0.134885	Schwarz criterion		-1.775044
Log likelihood	23.20475	Hannan-Quinn criter.		-1.891878
F-statistic	64.77624	Durbin-Watson stat		1.183260
Prob(F-statistic)	0.000000			

Source: data processed by Eviews 12

The cointegration regression OLS results show A 1% increase in unemployment will increase poverty by 81.3% in Indonesia in the long run. A 1% increase in inflation will increase poverty by 7% in Indonesia in the long run.

The results of the normality test using the Jarque-Bera method show a prob value of $0.79 > 0.05$, meaning that the data is normally distributed.



Source: data processed by Eviews 12

Figure 1 Normality

The multicollinearity test uses a partial correlation approach by comparing R2 between variables. VIF value $0.55 < 10$, meaning there are no symptoms of multicollinearity

Table 5 Multicollinearity

	PENGANGGURAN	INFLASI
PENGANGGURAN	1	0.5466088293504803
INFLASI	0.5466088293504803	1

Source: data processed by eviews 12

The prob value is $0.07 > 0.05$, meaning that there are no symptoms of heteroscedasticity.

Table 6 Heteroscedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	2.761230	Prob. F(3,16)	0.0761
Obs*R-squared	6.822430	Prob. Chi-Square(3)	0.0778
Scaled explained SS	3.215919	Prob. Chi-Square(3)	0.3595

Source: data processed by eviews 12

The prob value is $0.07 > 0.05$, meaning that there are no autocorrelation symptoms, either positive or negative.

Table 7 Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	3.314210	Prob. F(2,14)	0.0663
Obs*R-squared	6.426493	Prob. Chi-Square(2)	0.0402

Source: data processed by eviews 12

Based on the ECM analysis conducted, it is concluded that unemployment has a significant effect on poverty in Indonesia. Unemployment results in the absence of income earned by the community so that it will reduce the purchasing power of the Indonesian people which will eventually lead to poverty. Unemployment is basically a contributor to the increase in poverty in Indonesia. If you want to suppress or reduce poverty in Indonesia, it is necessary to expand employment opportunities so that the available job opportunities are able to meet the existing labour supply in Indonesia which will have an impact on reduced unemployment and reduce poverty.

Based on the results of the ECM analysis, inflation has an insignificant effect on poverty in Indonesia. If the increase in inflation is accompanied by an increase in people's income, then the effect of inflation has no impact on the poverty rate. Inflation fluctuates up and down every year but people's income based on the city/district minimum wage is increasing every year. So it is assumed that people's income in Indonesia is increasing every year, so inflation does not have a significant effect on reducing people's purchasing power. In line with Oye's research (2012) which states that during inflation, the fixed income group loses because the prices of some goods and services rise faster than nominal wages. The poor class suffers because their wages remain fixed but commodity prices continue to rise. The view of Powers (1995) states that inflation affects the poor directly through a decline in their real wages due to the short-term rigidity of nominal wages.

4 Conclusion

Unemployment and inflation have an influence on poverty in Indonesia and there is a long-run equilibrium relationship during the period 2002-2022. The results of the analysis through the ECM approach show that the unemployment

variable has a significant effect on poverty in the long term and short term while inflation has an insignificant effect on poverty in Indonesia. Suppression of poverty can be done by increasing employment opportunities in Indonesia which will meet the supply of labour so as to reduce unemployment. Reduced unemployment will reduce poverty.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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