

Impact And Influence Of Inflation, Economic Growth, And Inflation In Indonesia: VECM Analysis

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Abstract

This study was conducted with the aim of describing, studying, and exploring the impact and influence of inflation, economic growth, and inflation in Indonesia. This study uses secondary data with a time span of 2001-2021 published in the World Bank. The used analytical method is quantitative with the VECM (Vector Error Correction Model) using the variables inflation, unemployment, and GDP as representatives of growth of economic. It can be seen that inflation has a positive correlation and relationship to unemployment and has a negative influence on economic growth. The rising trend of inflation will lead to an increasing in unemployment which will also cause a decrease in economic growth. On the other hand, economic growth in the previous period had a positive/beneficial influence on unemployment and had a negative/detrimental influence and effect on economic growth in the current period. These results identify how increased economic growth will result in lower inflation rate as well as reduce economic growth in the current period. This was due to an increase in the unemployment rate. In addition, causality or causal relationships only occur in the unemployment variable that affects inflation. While the causal relationship between other variables has no significant effect.

Keywords: Inflation, Unemployment, Economic Growth.

JEL Classification: E31, E24, F43

July 6, 2022 Accepted: August 1, 2022
DOI : 10.54204/TAJI/Vol712022005

Background

Economic growth is positively impacted and influenced by inflation. Thus, an increase in inflation will also increase economic expansion. On the other hand, the response has an inverse correlation that is negative to economic growth in the Philippines. Thus, an increase in action will cause economic growth to decline (Lubbock, Merin, & Gonzalez, 2022). This is also reinforced by findings Hussain, Bashir, & Shahzad, (2021) which state that unemployment has a detrimental effect and relationship on economic growth in China. Based on the causality relationship, there is a two-way correlation and relationship between real GDP and the unemployment rate, as well as the inflation rate and unemployment rate (Khalid, Akalpler, Khan S., Shah, & Khan, 2021).

Inflation has a direct causal influence or correlation with economic growth in the short time period. Meanwhile, there will be a two-way relationship or feedback in the long term. This indicates that inflation has a strong influence so that an increase in the economy also increases inflation. Thus, effective control policies need to be implemented in order to encourage the expected economic growth with controlled inflation. On the other hand, unemployment and

growth of economic are causally related in one direction only. and there is no feedback. This implies that unemployment has an impact by reducing economic growth. In addition to inflation control policies, effective policies are also needed to overcome unemployment (Sahnoun & Abdennadher, 2019). High inflation will have an effect on reducing innovation and economic growth so that it will have an impact on unemployment (Chu, Cozzi, Fan, & Furukawa, 2021). The inflation rate gives and causes an unfavorable effect and impact on economic growth in South Africa. In addition, unemployment has an indirect impact on growth of economic. It can be seen that inflation has a detrimental impact and correlation on economic growth and simultaneously will have an indirect impact and effect on the unemployment rate (Leward & Lazarus, 2021).

Economic growth does not affect and impact the unemployment rate in Bhutan. In other words, economic improvement has no effect on reducing unemployment. This happens because the situation of the workforce and the sector's contribution to GDP are moving unequally. Another reinforcing factor is the phenomenon of laying off workers when the economy is down, causing cyclical unemployment. On the other hand, there is inflation has a detrimental effect and influence on unemployment in the short term period, which means that an increasing in inflation will reduce the unemployment rate. In addition, a positive relationship and correlation will occur between unemployment and also inflation over a long period, meaning that higher inflation will increase unemployment as well (Tenzin, 2019).

This is also claimed in research (Panigrahi, Azizan, Sorooshian, & Thoudam, 2020) which indicates inflation and unemployment rates have an effect on GDP in the long run in ASEAN-5 countries. The findings from (Hegelund & Taalbi, 2023) this provide strong evidence suggesting that long-term unemployment and the investment component are negatively related. Economic growth and inflation do not directly affect and there is no significant effect and influence on unemployment in South Sulawesi Province (Nurdiana, Hasan, Arisah, Riesso, & Hasanah, 2020). In addition, unemployment rate has a detrimental side and impact/effect on the fiscal especially in the long run (Ouardighi & Munier, 2019).

The findings differ (Septrila & Kurniasih, 2022), inflation has no effect on unemployment in ASEAN countries. This was due to disruptions to food commodities and fuel price adjustments that occurred in several countries. In addition, economic growth has a detrimental impact and influence with unemployment so that an increasing in GDP will reduce unemployment. On the other hand, both inflation, unemployment and economic growth are factors that affect and impact poverty both in the short time period and absolutely the long term (Murjani, 2019).

In addition, based on the findings (Ramzan, 2021) stated that inflation and also unemployment have an insignificant impact and influence on growth of growth in Pakistan. The unemployment rate has no effect and correlation on economic growth. In addition, together unemployment and economic growth are factors that affect gross capital formation (Pasara & Garidzirai, 2020). This research aims to determine and explore the relationship, impact and influence between inflation, economic growth, and unemployment in Indonesia.

Research methods

This study will try to explore and analyze the relationship, impact and influence of inflation, economic growth, and unemployment in Indonesia. We use secondary data for the period 2001-

2021 published at the World Bank. The variables used are inflation, unemployment, and GDP variables for economic growth. The method used to analyze is VECM with the following systematic equations:

$$GDP_t = \beta_0 + \beta_1 INF_t + \beta_2 UNP_t + e_t$$

$$INF_t = \beta_0 + \beta_1 GDP_t + \beta_2 UNP_t + e_t$$

$$UNP_t = \beta_0 + \beta_1 INF_t + \beta_2 GDP_t + e_t$$

Information:

GDP = Economic Growth (in percent)

INF = Inflation

UNP = Unemployment

β = Konstanta

e = Error term

t = Time Period

The following are descriptive variables used to analyze in this study in table 1.

Table 1. Descriptive Variables

Variable	Description	Source	Unit of Analysis
GDP	The annual percentage of the GDP per person in constant local currency. Divide the gross domestic product by the midyear population to get the GDP per person. It is assessed without accounting for the degradation and depletion of natural resources or the deterioration and depletion of man-made assets.	World Bank	Percent
INF	Inflation is calculated using the implicit GDP deflator's annual growth rate, which captures the rate of change in prices throughout the entire economy. The ratio of GDP in current local currency to GDP in constant local currency is known as the implicit deflator of GDP..	World Bank	Percent
UNP	The labor force that is neither employed nor actively looking for work is referred to as being unemployed. The definitions of the labor force and unemployment vary each	World Bank	Percent

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Results and Discussion

Table 2. Unit Root Test on GDP, INF, and UNP.

Variables	Unit Root	Statistics for the ADF Test	Probability	Description
Economic Growth (GDP)	Level	-3.315099	0.0279	
	First Diff	-6.992122	0.0000	Stationer
Inflation (INF)	Level	-1.233768	0.6371	
	First Diff	-6.834875	0.0000	Stationer
Unemployment (UNP)	Level	-0.483834	0.8752	
	First Diff	-4.403823	0.0030	Stationer

Table 2 explains the results that GDP, INF, and UNP are not stationary at the levels, so further testing is needed, namely at the first difference level. These results indicate that GDP, INF, and UNP are stationary first difference level with a higher ADF statistical value and a probability value of less than 0.05.

Table 3. Lag Optimum Test

Lag	LogL.	LR	FPE	AIC	SC	HQ
0	-124.1897	NA	67.05992	12.71897	12.86833	12.74812
1	-98.80188	40.62046*	13.23616*	11.08019*	11.67763*	11.19681*

Table 3 shows the Optimum Lag test. In the table above, it can be concluded that the variable lengths of GDP, INF, and UNP are at HQ, SC, AIC, FPE, and LR at lag 1. So the optimum lag length used is lag 1.

Table 4. Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0,05 Critical Value	Probability
None *	0.684987	29.93523	29.79707	0.0482
At most 1	0.246402	7.987575	15.49471	0.4667
At most 2	0.128468	2.612557	3.841466	0.1060

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

Table 4 shows the results of the cointegration test. Where it is indicated that there is 1 cointegration which is known through the trace test information. In addition, it can be strengthened by a probability value <0.05 so that it is based on the cointegration test results for further analysis using the VECM model.

Table 5. VECM Analysis

	D(INF)	D(UNP)	D(GDP)
D(INF(-1))	0.068878	0.075446	-0.132575

	(0.22088)	(0.03881)	(0.13203)
	[0.31184]	[1.94383]	[-1.00411]
D(UNP(-1))	-0.807654	-0.584808	2.080132
	(1.68968)	(0.29691)	(1.01002)
	[-0.47799]	[-1.96963]	[2.05949]
D(GDP(-1))	-0.545732	0.041907	-0.709482
	(0.41456)	(0.07285)	(0.24781)
	[-1.31640]	[0.57528]	[-2.86302]
C	-0.182071	-0.131026	-0.158147
	(0.71551)	(0.12573)	(0.42771)
	[-0.25446]	[-1.04211]	[-0.36976]

t-table value 1,7247

Table 5 above shows the results of the VECM analysis. The analysis was carried out by testing the significance by comparing and looking the value of the t-statistic with the t-table. The significant relationship occurs in the INF variable which has a significant effect on UNP with the t-statistic [1.94383] greater/higher than the t-table 1.7247. It can be seen that inflation that occurred in the previous period had an effect and impact on the unemployment rate in the current period. A significant relationship also occurs in UNP and UNP with a t-statistic value of [-1.96963] with a value greater than t-table 1.7247. It was explained that the unemployment rate that occurred in the previous period had an impact on the current period. UNP also has a significant and influence on GDP with the t-statistic [2.05949] which is greater/higher than t-table 1.7247 so that it can be explained that unemployment that occurred in the previous period influenced and impacted Indonesia's economic growth in the current period. Finally, a significant relationship occurs in GDP which has a significant correlation on GDP with a t-statistic value [-2.86302] which is more than t-table 1.7247. This can be interpreted that economic growth in the previous period had an effect on Indonesia's economic growth in the current period.

Significance relationships can also be searched through a comparison of the coefficient values with the t-statistic values. The criterion being measured is if the t-statistic is greater/higher than the coefficient value then there is a significant relationship. Through this test method, it can be seen that INF has a positive effect and correlation on INF with a t-statistic [0.31184] where the value is greater/higher than the coefficient value (0.22088). In addition, INF also has a positive effect on UNP as evidenced by a larger t-statistic [1.94383] than the coefficient (0.03881). From these results it can be seen that inflation has a strong influence on unemployment where any increase in inflation will also increase unemployment. The results are different, where INF has a significant negative impact on GDP with a t-statistic value [-1.00411] which is greater than the coefficient value (0.13203). From these results it is clear that any increase in inflation will reduce economic growth.

UNP has an effect on UNP with a t-statistic value [-1.96963] which is greater than the coefficient value (0.29691). From these results it can be explicable that increasing in the unemployment in the previous period will also have an impact unemployment in the current period.

GDP has a negative and significant influence INF where t-statistic [-1.31640] which is greater/higher than the coefficient value of (0.41456). These results explain that economic expansion has a negative and detrimental impact on inflation, which means that any increasing in economic growth will reduce inflation. Besides that, GDP also has a positive/beneficial significant correlation and effect on UNP as evidenced by the t-statistic value [0.57528] which

has a greater value with a coefficient value (0.07285). This result is quite surprising because it can be explained that the increase in growth of economic in the previous time period will increasing unemployment in the current time period. However, there is a correlation between the positive effect on GDP and UNP where GDP has a significant negative/detrimental effect and influence on GDP with a t-statistic value [-2.86302] which is larger with a coefficient value (0.24781). These results illustrate that increased economic growth in the previous time period will reduce growth of economic in the current period. When linked to the previous results, it can be ascertained that the decline in growth of economic in the current time period was due to the positive impact of an increase in the unemployment rate.

Table 6. Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
UNP does not Granger Cause INF	20	24.3950	0.0001
UNP does not Granger Cause INF		0.45110	0.5108
GDP does not Granger Cause INF	20	0.30150	0.5901
INF does not Granger Cause GDP		2.07929	0.1675
GDP does not Granger Cause UNP	20	0.08686	0.7718
UNP does not Granger Cause GDP		3.09718	0.0964

Table 6 shows Granger Causality Test, where a unidirectional causal relationship occurs in the UNP variable that affects INF with a probability value of 0.0001. Meanwhile, the causal relationship between other variables has no significant effect.

Conclusion

The results obtained in this study are that inflation has a beneficial relationship and influence to unemployment and detrimental impact on economic growth. An increasing in inflation will lead to an increase in unemployment which will simultaneously provide a reducing effect economic growth and expansion. On the other hand, economic growth in previous time period had a beneficial impact on unemployment and had a detrimental impact on growth of economic in the current time period. These results explain that an increasing in economic expansion will reduce the inflation rate as well as reduce economic growth in the current period. In addition, there is a beneficial correlation between growth of economic and unemployment as well as a detrimental correlation between economic growth in the past period and economic growth in the current period. This can occur due to an increasing in the unemployment rate which also affects declining economic growth. In addition, causality or causal relationships only occur in the unemployment variable that affects inflation. While the causal relationship between other variables has no significant effect. In the future, similar studies can be carried out with different methods in order to provide broad and maximum results.

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