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## Relationship between Open Unemployment Rate, Employment Opportunity Rate, Dependency Ratio and Economic Growth in Indonesia

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### Abstract

*In this study, it analyzes the dynamics of employment in Indonesia before and during the Covid-19 pandemic. The COVID-19 pandemic has an impact on all sectors, especially the employment sector in Indonesia. This study used the variables of open unemployment rate, employment opportunity, dependency ratio and economic growth. This study used dynamic analysis with the vector error correction model (VECM) method with the research year 1987-2021. The results of this study explain that GDP has a long-term effect on changes in the value of the dependency ratio, the Employment Opportunity Rate has a coefficient of 430.7657 in Lag 1 which can be interpreted to mean that if there is an increase in the value of the Employment Opportunity Rate by 1% in the previous year, it will reduce the dependence ratio in the long term. the variable open unemployment rate has a coefficient of 430.6932 in Lag 1 which means that if there is an increase in the open unemployment rate of 1% in the previous year, it will increase the value of the dependency ratio in the long term. the relationship of GDP to the dependency ratio in the short term. The value of the GDP coefficient of 0.020050 in Lag 1, the figure explains that if the value of GDP increases by 1 percent in the previous year, it can encourage an increase in the value of the dependency ratio of 0.020050 percent in the current year.*

**Keywords:** *Economic Growth, Unemployment, Employment Opportunnity, VECM*

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## INTRODUCTION

Unemployment is a very complete problem because it affects and is influenced by many factors. The occurrence of unemployment can be caused by a lack of employment opportunities that are not able to meet the number of the workforce. In developing countries, increasing unemployment is a problem that must be resolved immediately. As a result of the emergence of unemployment will cause other bigger social problems such as poverty. However, unemployment itself occurs due to the economic growth of a region. Currently, it is not only people with low education who are unemployed, many people with high education are also unemployed.

The Covid-19 pandemic has also reduced the level of employment opportunities for the population and reduced the level of labor force participation. Employment opportunities describe how much of the working age population and the labor force can be absorbed in the workforce. According to the Central Statistics Agency, the Covid-19 pandemic has reduced the labor force participation rate and the ratio of the workforce to the total population as well as the absorption of labor in labor-intensive business fields such as the processed industry. Since 2019, data on the number of employment opportunities in Indonesia has experienced a significant rise and fall.

Unemployment and employment opportunities that occur in a country can cause social problems such as increasing population crime, decreasing people's purchasing power and reducing the welfare of the population. The emergence of the COVID-19 pandemic has an impact that can be felt by all sectors of the economy in Indonesia.

At the global level, employment issues regarding the importance of job opportunities are contained in the sustainable development goal of the 8th goal, namely "increasing inclusive

and sustainable economic growth, productive and comprehensive employment opportunities, and decent work for all” (BPS, 2021) .

In accordance with the description of the background above, it can be seen that the purpose of this study is to analyze the dynamics of the Labor Sector in Indonesia.

## RESEARCH METHODS

This study uses quantitative methods using time series data for the Dependency Ratio, Open Unemployment Rate, Job Opportunities and Economic Growth in Indonesia with a time span of 1987-2021.

**Research Data Analysis** In this study using dynamic analysis techniques using the Vector Autoregressive (VAR)/VECM method. The VAR/VECM method uses three stages, namely the Data Stationarity Test, Cointegration Test and the third Granger Causality Test.

## RESULTS AND DISCUSSION

### Data Stationarity Test or Unit Root Test (Unit Root)

After conducting the data stationarity test with the result that each variable does not have a unit root, then the Lag length test is then carried out which is used for VAR/VECM analysis.

### Data Stability Test

The model is declared stable if it has a value of 1 or less than 1 or . Overall, the modulus value in the above results is less than 1, so the model in this study meets the data stability test requirements.

### Cointegration Test

All variables in this study, namely TPT, TKK, Dependency Ratio and economic growth have cointegration. This statement is based on the results of the Max-Eigenvalue which informs that there are at least four cointegrations at a significance level of 0.05%. Likewise, the results of the trace test also show that there are four cointegration values at a significance level of 0.05 percent. So it can be concluded that the model that will be used for the next is the VECM model.

### Granger Causality Test

The results of the Granger causality test can be seen that two variables have a relationship with other variables, namely the Open Unemployment Rate. TPK with Dependency Ratio has a one-way relationship that can be known through the probability value of TPK 0.0538 which is smaller than the significance value of 0.05 percent. Meanwhile, the relationship between dependency ratio and TPK shows an insignificant value, namely 0.8539, which is greater than a significance value of 0.05 percent, which means that the relationship between the two variables does not have a causal relationship. In accordance with the Classical Theory, unemployment occurs due to an excess in the supply of labor, then wages will fall so that the demand for labor will continue to increase.

The results of causality between the level of employment with the dependency ratio. The relationship between the level of employment and the dependency ratio is a one-way relationship that can be proven by the probability value of the employment opportunity level of 0.0564 which is smaller than the significance value of 0.05 percent. While the relationship between the dependency ratio and the level of employment opportunity which has an insignificant value of 0.8604 is greater than a significance value of 0.05 percent, which means

that this variable has no causal relationship. If the community has a high level of job opportunities, in accordance with the employment needs, meets the criteria for job seekers, the higher the employment opportunity value of the population will reduce the dependency ratio of the population.

#### Vector Error Correction Model (VECM)

In the VECM test results, there are four variables that have a long-term and short-term relationship. The ECT estimation results show at least one suitable variable to be used as the dependent variable or endogenous variable, namely the Dependency Ratio of 1.71040 and the r-square value of 0.920852 which is the highest value than the r-square on other variables. A good r-square is having a value close to 1, so the best estimate of the regression model used in this study is the dependency ratio variable. After the endogenous variables can be identified, the next step is to review other variables that have long-term and short-term relationships. The results of the VECM test are as follows:

Cointegrating Eq:	CointEq1			
RK(-1)	1.0000000			
GDP(-1)	<b>-8.082229</b>			
	(0.89113)			
	[-9.06964]			
TKK(-1)	<b>430.7657</b>			
	(65.7067)			
	[ 6.55589]			
TPK(-1)	430.6932			
	(65.8511)			
	[ 6.54041]			
C	-43087.50			
Error Correction:	D(RK)	D(GDP)	D(TKK)	D(TPK)
CointEq1	<b>0.002982</b>	0.105524	-0.006014	0.005242
	(0.00108)	(0.01155)	(0.00539)	(0.00534)
	[ 2.76486]	[ 9.13986]	[-1.11546]	[ 0.98080]
D(RK(-1))	0.895269	-1.853857	-1.427415	1.534786
	(0.18110)	(1.93838)	(0.90517)	(0.89733)
	[ 4.94344]	[-0.95640]	[-1.57697]	[ 1.71040]
D(RK(-2))	-0.000759	2.218272	1.783683	-1.887236
	(0.17637)	(1.88777)	(0.88153)	(0.87390)
	[-0.00431]	[ 1.17507]	[ 2.02339]	[-2.15956]
D(GDP(-1))	0.020050	0.077392	-0.012425	0.005176
	(0.00861)	(0.09218)	(0.04304)	(0.04267)
	[ 2.32812]	[ 0.83959]	[-0.28866]	[ 0.12131]
D(GDP(-2))	0.022936	-0.013999	-0.065742	0.061337
	(0.00783)	(0.08382)	(0.03914)	(0.03880)
	[ 2.92883]	[-0.16702]	[-1.67966]	[ 1.58081]
D(TKK(-1))	-1.299502	-52.92012	0.549873	-0.983077

	(0.49110)	(5.25639)	(2.45458)	(2.43332)
	[-2.64608]	[-10.0678]	[ 0.22402]	[-0.40401]
D(TKK(-2))	-0.599979	-52.40232	-1.780423	1.581384
	(0.41991)	(4.49440)	(2.09875)	(2.08058)
	[-1.42882]	[-11.6595]	[-0.84832]	[ 0.76007]
D(TPK(-1))	-1.348750	-52.82961	0.588722	-1.052520
	(0.49830)	(5.33343)	(2.49056)	(2.46899)
	[-2.70669]	[-9.90537]	[ 0.23638]	[-0.42630]
D(TPK(-2))	-0.584197	-52.70393	-2.091561	1.920137
	(0.42628)	(4.56254)	(2.13057)	(2.11212)
	[-1.37046]	[-11.5515]	[-0.98169]	[ 0.90910]
C	-0.022019	0.257672	0.232399	-0.234072
	(0.05150)	(0.55118)	(0.25739)	(0.25516)
	[-0.42758]	[ 0.46749]	[ 0.90292]	[-0.91736]
R-squared	0.920852	0.906215	0.385932	0.390424
adj. R-squared	0.888473	0.867849	0.134723	0.141052
Sum sq. resids	0.517858	59.32523	12.93656	12.71344
SE equation	0.153424	1.642133	0.766828	0.760187
F-statistics	28.43985	23.61997	1.536296	1.565628
Likelihood logs	20.57460	-55.28281	-30.91518	-30.63681
AkaikeAIC	-0.660913	4.080176	2.557199	2.539801
Schwarz SC	-0.202870	4.538218	3.015241	2.997843
Mean dependent	-0.669063	-0.128125	-0.115000	0.115000
SD dependent	0.459413	4.517236	0.824367	0.820232

can be written in a systematic equation as follows:

$$RK = 0.002982 (ECT) - 8.082229 (GDP(-1)) + 430.7657 (TKK(-1)) + 430.6932 (TPK(-1)) + 0.895269 (D(RK(-1))) - 0.000759 (D(RK(-2))) + 0.020050 (D(GDP(-1))) + 0.022936 (D(GDP(-2)))$$

The above equation explains that the value of GDP has a long-term effect on changes in the value of the dependency ratio. GDP coefficient is -8.082229 in Lag 1 can be interpreted that if there is a 1% decrease in GDP value in the previous year, it will reduce the dependency ratio in the long term. In accordance with research conducted by (Sayema Haque et al, 2019) that there is a significant negative relationship between the dependency ratio and economic growth per capita. In the journal it is explained that the need for policies that can overcome the demographic bonus. Changes in demographic composition will result in higher economic growth so that effective public policies are needed. Greater spending on health and family planning programs is critical to reducing birth and death rates as well as combating various diseases that affect labor force productivity levels.

The next estimation result of the Employment Opportunity Level variable has a coefficient of 430.7657 at Lag 1 which means that if there is an increase in the value of the Employment Opportunity Rate by 1% in the previous year, it will reduce the dependency ratio in the long term. In accordance with the opinion (Neka et al., 2015) which states that job opportunities are the same as demand for labor, the number of job vacancies in the world of work. If the number of job demands increases, the dependency ratio will decrease because the population will work according to the required criteria. The number of people who then work and the addition of job opportunities for residents will improve the welfare of the population.

The next estimation result of the open unemployment rate variable has a coefficient of 430.6932 at Lag 1 which means that if there is an increase in the open unemployment rate of 1% in the previous year, it will increase the value of the dependency ratio in the long term. In accordance with the classical theory that unemployment occurs due to a temporary misallocation of resources because it can be overcome by the price mechanism. If there is an excess in the supply of labor, wages will fall so that the demand for labor will continue to increase. If unemployment increases, the burden on everyone will also increase. The dependency ratio of the population will continue to increase.

The next estimation result is shown by the change in the value of the dependency ratio itself. The coefficient value is 0.895269 in Lag 1 and the coefficient value - 0.000759(D(RK(-2))) in Lag 2, this value indicates that if there is a decrease in value of 1 percent in the previous 1 year and 2 years previously, each of which is - 0.000759 to 0.895269 in the current year the dependency ratio value will potentially decrease by 0.000759 percent and potentially increase to 0.895269 percent.

The next estimation result is the relationship between GDP and dependency ratio in the short term. The GDP coefficient value is 0.020050 at Lag 1, this figure explains that if the GDP value increases by 1 percent in the previous year, it can encourage an increase in the dependency ratio value of 0.020050 percent in the current year. Similarly, what happened in Lag 2. The value of GDP at Lag 2 was 0.022936, so it can be seen that if there was an increase in the value of GDP by 1 percent in the previous 2 periods, it would also increase the value of the dependency ratio in the current year. This is different from the research conducted by (Sayema Haque et al, 2019) which states in his research that in the short term there is no relationship between GDP and the Dependency Ratio in ASEAN countries, one of which is in Indonesia.

#### ***Variant decomposition (VD)***

Whereas in the 10 analysis periods there are variables that dominate or are dominant variables in contributing to changes in the value of the Employment Opportunity Level, namely the Open Unemployment Rate variable. It is known in the table above, the value of the contribution of the employment rate variable is calculated from 80 percent to 99 percent in 10 analysis periods.

Then, the results of the Variance Decomposition analysis show that in the 10 analysis periods there are variables that dominate or are dominant variables in contributing to changes in the value of the open unemployment rate, namely the Employment Opportunity Rate variable. It is known in the table above, the value of the contribution of the employment rate variable is calculated from 7 percent to 17 percent in 10 analysis periods.

The results of the Variance Decomposition analysis show that in the 10 analysis periods there are variables that dominate or are dominant variables that contribute to changes in the value of the dependency ratio, namely the Employment Opportunity Level variable. It is known in the table above, the value of the contribution of the employment rate variable is calculated from 6 percent to 33 percent in 10 analysis periods.

## **CONCLUSION**

1. After the cointegration test is carried out, the model used is the Vector Error Corection Model (VECM) because the result is a correlation between variables with a probability value of 0.000

2. In the long run GDP can affect changes in the value of the dependency ratio, an increase in economic growth will lead to a reduction in the unemployment rate so that it will reduce the value of the dependency ratio
3. If there is an increase in the value of the Employment Opportunity Rate by 1% in the previous year, it will reduce the dependency ratio in the long term. The more jobs open, the more opportunities for the working-age population to work, which will then reduce the value of the dependency ratio
4. if there is an increase in the open unemployment rate of 1% in the previous year, it will increase the value of the dependency ratio in the long term. Rising unemployment will increase the number of dependency ratios as more burdens are borne by the working population
5. the relationship of GDP to the dependency ratio in the short term If the value of GDP increases by 1 percent in the previous year, it can encourage an increase in the value of the dependency ratio of 0.020050 percent in the current year. based on previous research that in the short term there is no relationship between GDP and Dependence Ratio in ASEAN countries, one of which is in Indonesia.

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