

Does Indonesia's economic growth reduce unemployment?

Dwi Windu Suryono

Management Department

Sekolah Tinggi Ilmu Ekonomi Indonesia Jakarta
Jakarta, Indonesia

d.windu@gmail.com

Agustian Burda

Management Department

Sekolah Tinggi Ilmu Ekonomi Indonesia Jakarta
Jakarta, Indonesia

agustian_burda@stei.ac.id

Rama Chandra

Management Department

Sekolah Tinggi Ilmu Ekonomi Indonesia Jakarta
Jakarta, Indonesia

rama_stei@yahoo.co.id

Abstract — *This study is aimed at examining the existence of Okun's law, the negative relationship between economic growth and unemployment using First Difference Model to secondary data on real Gross Domestic Product and the open unemployment rate of Indonesia during the period 1986 - 2018. Okun's law exist in the Indonesia's economy. Economic growth during 1986-2018 was able to reduce the number of unemployed people in Indonesia*

Keywords— *Okun's law, economic growth, unemployment, First Difference Model.*

I. INTRODUCTION

Since 2014 Indonesia's economic growth has been said to be stable at around five percent. Stability on macro indicators has no impact to spur economic movement or growth. Though new employment is needed to absorb labor from a large population. This illustrates that the prerequisites for macroeconomic stability are not optimized to be able to accelerate growth and reduce poverty, unemployment, and income inequality.^[1]

The strategy of pursuing economic growth in an effort to reduce unemployment is based on Okun's law. He revealed there were indications of a negative relationship between economic growth, the gap in real output with potential output and unemployment. Okun stated that a one percent reduction in unemployment would increase output by around three percent.^[2] Therefore to avoid unemployment, the economy must continue to develop. Over a period of more than thirty years, some economists found strong empirical order in the relationship, and became an important rationale in the macroeconomic framework.^[3]

The study of the existence of the Okun law in Indonesia is important, because so far it has been used as the basis for a strategy to pursue economic growth to reduce unemployment. In addition, the Okun coefficient can be a reference to the target number of unemployment and is the basis for evaluating actual economic growth achievements compared to its potential level.^[4]

II. THEORETICAL FRAMEWORK

Okun's Law postulates a negative relationship between the unemployment rate and the real Gross Domestic Product (GDP). This empirical relationship is a major part of every

traditional macro model. In his article Okun empirically presents several relationships:^[5]

First, the first difference regression of the unemployment rate (U) to the percentage change in output (Y), using quarterly data for the period 1947-1960, had result :

$$\Delta u = 0.3 - 0.3\Delta Y/Y \dots (2.1)$$

If there is no economic growth, the unemployment rate will increase by 0.3 every quarter. Economic growth is needed one percent per quarter or four percent per year so that the unemployment rate does not increase or decrease.

Second, it regresses the unemployment rate to the output gap, using quarterly data for the period 1953-1960, and the results are obtained:

$$U = 3.72 + 0.36gap \dots (2.2)$$

This result implies that every one percent increase in unemployment associated with the economy will lose output 3.6 percent of its potential level. Even though there is no output gap, unemployment remains at 3.72 percent.

Third, estimating the elasticity of output to the level of employment :

$$(Y^*-Y)/Y = 0.032(U - 4) \dots (2.3)$$

The coefficient of 0.032 can be interpreted that every one percent decrease in unemployment will increase output by approximately three percent, so that actual output is getting closer to its potential level or it can be stated that the output gap will become more isolated in line with the decline in unemployment. The coefficient is then known as the Okun coefficient.

Okun's coefficient interpretation shows the magnitude of changes in the unemployment rate as a result of one percent changes in economic growth.^[6] Okun coefficient is one of the important components that economists study in analyzing Okun's law for several reasons :^[7] *First*, if the unemployment rate is a policy variable, then the Okun coefficient can be interpreted as the magnitude of the economic target to reduce the unemployment rate. *Second*, forecasting output is often made to express forecasting of the unemployment rate. *Third*, the Okun coefficient is very useful to find out whether the output is above or below its potential value.

III. METHODOLOGY

To examine the existence of Okun's law in Indonesia, the model specifications used:

1. First Difference Model :

$$Y_t - Y_{t-1} = \alpha + \beta(UNP_t - UNP_{t-1}) + \varepsilon_t \quad (3.1)$$

$$\Delta Y_t = \alpha + \beta \Delta UNP_t + \varepsilon_t \quad (3.2)$$

Y_t : Real GDP of a certain year

Y_{t-1} : Previous year's real GDP

UNP_t : Unemployment of a certain year

UNP_{t-1} : Unemployment of the previous year

2.. Unit Root Testing

Stationarity is very much needed in time series analysis so that spurious analysis does not occur. Because in the research period there were two shock crises, the authors recommend the Philip-Perron test to check the stability and this test tool is able to respond to the shock that occurs. The procedure for unit root testing using the Philips- Perron test is as follows:

$$\hat{t}_\alpha = t_\alpha \left(\frac{\gamma_0}{f_0} \right)^{1/2} - \frac{(f_0 - \gamma_0)se(\hat{\alpha})}{f_0^{1/2}s} \quad (3.7)$$

$$t_\alpha = \frac{\hat{\alpha}}{se(\hat{\alpha})} \quad (3.8)$$

$Se(\alpha)$ is the standard error of the coefficient y_{t-1} and s is the standard error of equation (3.8). γ_0 is a consistent estimate of the error variance in equation (3.8). The Philips-Perron statistical value, which is t_α compared to the Mc Kinnon table's critical value. If the Philips-Perron statistical value is more negative than the Mc Kinnon table's critical value or the Philips-Perron statistical probability value is less than the significance level (α) of 0.05; then H_0 is rejected so it can be concluded that the time series data has been stationary.

IV. RESULTS

The data used in this study are real GDP data (base year 2010) and open unemployment rate (UNP) in the period 1986 - 2018, sourced from the Indonesian Central Statistics Agency (Biro Pusat Statistik). Real GDP and UNP data are transformed by natural logarithms.

Table 1. Stationarity test result

Variables	Phillip Pherron Test					
	None		Individual Effect		Individual and Linier Effect	
	Tstat	Prob.	Tstat	Prob.	Tstat	Prob.
UNP	0.04210	0.9792	2.02806	0.3628	0.33261	0.9827
GDP	4.18984	0.9999	2.38154	0.9999	2.26303	0.8617
D(UNP)	331.028	0.0000	95.6247	0.0000	52.6067	0.0000
D(GDP)	-16.8656	0.0000	-9.12931	0.0000	-6.43234	0.0001

Based on the results of the Phillip-Perron test, both real GDP and UNP data in level as well as in integrated logarithmic

transformation in order 1 or have been stationary in the form of *first difference*.

Table 2. First Difference Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UNP)	-0.188121	0.057055	-3.297171	0.0016
C	0.020501	0.005358	3.826043	0.0003
R-squared	0.147166	Mean dependent var		0.016558
Adjusted R-squared	0.133629	S.D. dependent var		0.045241
S.E. of regression	0.042110	Akaike info criterion		-3.466780
Sum squared resid	0.111715	Schwarz criterion		-3.399876
Log likelihood	114.6704	Hannan-Quinn criter.		-3.440382
F-statistic	10.87133	Durbin-Watson stat		3.131039
Prob(F-statistic)	0.001608			

The Estimation of the first difference model of the Okun equation :

$$D(GDP) = 0.020501 - 0.188121D(UNP) \quad (3.9)$$

The variables in the equation (3.9) are integrated in order 1 and the residuals have been stationary in the first difference, meaning there is a long-term equilibrium between output and the rate of open unemployment. The coefficient of equation (3.9) -Okun coefficient- is significant at the five percent level significance. Coefficient (-0.188121) indicate that there is a cointegration between real GDP and the rate of open unemployment, so that it can be stated Okun's law exist in the Indonesia's economy.

V. CONCLUSIONS

Okun's law exist in the Indonesia's economy, indicated by a significant Okun's coefficient at first difference model. these results indicate there is a long-term equilibrium between GDP real and the rate of open unemployment. Indonesia's economic growth during 1986-2018 was able to reduce the number of unemployed people in Indonesia

REFERENCES

- [1] Juoro, U. 2018. "What do Indonesian economists say about 2018 Indonesia's economic projection?" (Apa Kata Pakar Ekonom Indonesia tentang Proyeksi Ekonomi Indonesia 2018?). unpublished.
- [2] Blanchard, O. 2011. *Macroeconomics*. updated edition. Prentice Hall, Boston, New York.
- [3] Noor, Z. M., Nor, N. M., & Ghani, J. 2007. The relationship between output and unemployment in Malaysia: Does Okun's law exist. *International Journal of Economics and Management*, 1(3), 337-344.
- [4] Darman, D. 2013. Effect of Economic Growth on the Unemployment Rate: Okun's Law Analyst (Pengaruh Pertumbuhan Ekonomi terhadap Tingkat Pengangguran: Analisis Hukum Okun). *The Winners*, 14(1), 1-12.
- [5] Gylfason, T. 1997. *Okun's Law and Labor-market Rigidity: The Case of Sweden*. SNS.
- [6] Barreto, H., & Howland, F. 1993. *There are two Okun's law relationships between output and unemployment*. Crawfordsville, Wabash College.
- [7] Darman, D. 2013. Effect of Economic Growth on the Unemployment Rate: Okun's Law Analyst (Pengaruh Pertumbuhan Ekonomi terhadap Tingkat Pengangguran: Analisis Hukum Okun). *The Winners*, 14(1), 1-12.