

## Implementation of Okun Law Before Autonomy and After Regional Autonomy 1979-2022

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#### ABSTRACT

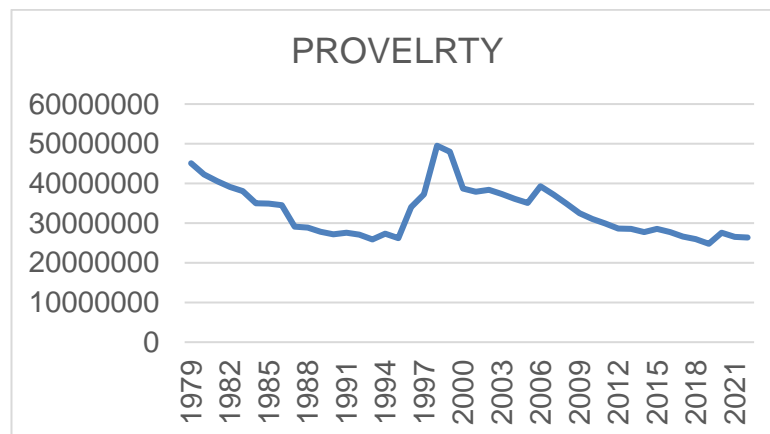
Regional Autonomy is carried out by many countries, including Indonesia. Autonomy is intended to provide better public services. The freedom to take initiative on the basis of granting regional autonomy opens up opportunities for regions to develop their potential to increase economic growth. High economic growth should be able to reduce unemployment. High unemployment rates have an impact on slowing the rate of economic growth. This research uses a paired t-test to see the differences between before and after regional autonomy and the analytical method used is the Vector Error Correction Model (VECM) to analyze the relationship between variables in the long and short term. The results of data analysis show that there is a one-way causal relationship between economic growth and unemployment which is significant and in the short term, the relationship between the unemployment rate variable and economic growth is only found in lag 3. In the long term the unemployment rate variable has a negative relationship with the unemployment rate. It can be concluded that Okun's law only exists in the long term.

**Keywords:** Autonomy, Economic Growth, Long Term, Short Term, Unemployment

## INTRODUCTION

Regional autonomy is the granting of authority to regional governments to independently regulate and manage national affairs. Regional governments have more control over the problems faced by their regions and also the potential they have to finance these programs. One of the authorities received by regional governments is to improve services and welfare of communities in the regions so that they are better. Among them is the authority to reduce poverty and unemployment levels. Currently, almost all provinces in Indonesia are facing classic problems that have long existed, namely poverty and unemployment. Data from the Central Statistics Agency (BPS, 2020) shows that the problem of poverty and unemployment in Indonesia is still quite high. The poverty level in Indonesia has experienced a downward trend since 1998. However, until the second semester of 2016, the figure was still in the double-digit range, namely 10.7 percent. In contrast to the poverty rate, the unemployment rate in Indonesia for the period 1998–2016 experienced no changing trend. In the period 1998–2005, the unemployment rate experienced an increasing trend. However, after that period until the second semester of 2016, there was a downward trend. In the second semester of 2016, the unemployment rate in Indonesia is slightly below the unemployment rate in 1998 (during the 1997/1998 economic crisis). Economic development is a policy to improve the quality of life, standard of living, expand employment opportunities, and aims to improve people's welfare, ultimately increasing people's purchasing power, so that in substance a country will encourage economic development to reduce unemployment with the aim of achieving better economic growth. When economic growth is not followed by additional employment opportunities, which will increase employment opportunities, it has an impact on income inequality, which results in conditions of economic growth with increased poverty.

**Figure 1. Poverty Rates**



According to data from the World Bank (n.d.), it shows the percentage level of poverty in Indonesia in 1979-2022. The graph above shows that there are fluctuations in the value of Indonesia's poverty percentage; there was a high increase in poverty in 1998 due to the monetary crisis that year. Basically, there is a very significant relationship between regional autonomy and poverty reduction. With the promulgation of Law Number 32 of 2004 concerning Regional Government, regional governments were entrusted with a very large role with the support of regional income sources, both through local original income and balancing funds from the central government (Sukirno, 2004). Regional autonomy also gives local governments the freedom to plan, implement, control, and evaluate programs based on local government policies. In this era of broad autonomy, regional government officials are required to take a greater role

in efforts to accelerate poverty alleviation. With this greater role for regional governments, the role of central government is increasingly shifting to conceptual matters. Based on national policy, a vision for welfare development in overcoming poverty has been developed, namely building a society that is advanced and prosperous, healthy and independent, and free from poverty and able to overcome disasters because they are aware that they are ready to overcome them. Apart from that, development priorities were also developed in the field of people's welfare and poverty alleviation, namely: firstly, developing human resources. These resources are very effective in reducing unemployment. If people's human resources are better, this will increase productivity which will later have an impact on economic growth (Iswanto & Maski, 2013).

Unemployment is a problem faced in economies in developing and developed countries. Marini and Putri (2020) stated this phenomenon occurs due to the gap number of the workforce and job opportunities (Damaianti & Chaerudin, 2021). Especially in developing countries, which are synonymous with population explosions that are not balanced by the availability of jobs, which can have a significant impact on unemployment rates. Not only are there problems with high population levels, developing countries also face fundamental macroeconomic, social, and political problems. Unemployment is an economic bench marked, with the unemployment rate it can be seen that the economic condition in a country is experiencing development or experiencing a slowdown. Economic stability will also be disrupted by high unemployment rates (Astuti, 2014). It is necessary to know first that economic growth is the growth of total output within a certain period or period. It can be seen how a country's economic growth is from the final results of goods and services produced within a certain period of time which can be represented through Gross Domestic Product (GDP) or Gross Domestic Product (GDP). Gross Domestic Product is the final value of goods and services produced by citizens in domestic countries, whether domestic citizens themselves or foreign citizens. A high unemployment rate will have an impact on slowing the rate of economic growth. Meanwhile, economic growth is a measure of economic success in a country in a certain period, aiming to show that the economy in a country is running. Economic growth is the goal for the government in a country to carry out economic development to create new jobs, in order to absorb unemployment (Febriana, 2015). Economic development is a policy to improve the quality of life, standard of living, expand employment opportunities, and aims to improve people's welfare, ultimately increasing people's purchasing power, so that in substance a country will encourage economic development in order to reduce unemployment with the aim of achieving growth, better economy. Describing the relationship between economic growth and unemployment rates in economic studies often uses Okun's law theory (Kusumastuti & Purnomo, 2018). Okun, there is a negative relationship between the unemployment rate and economic growth. When the unemployment rate decreases, more people work, and economic growth will increase. And conversely, when the unemployment rate increases, more people do not have jobs, then economic growth will decrease. Based on this description, this research aims to estimate the differences in poverty before autonomy and after the economy and to prove Okun's law on unemployment and economic growth in Indonesia in 1979-2022.

## **LITERATURE REVIEW**

### **Regional Autonomy**

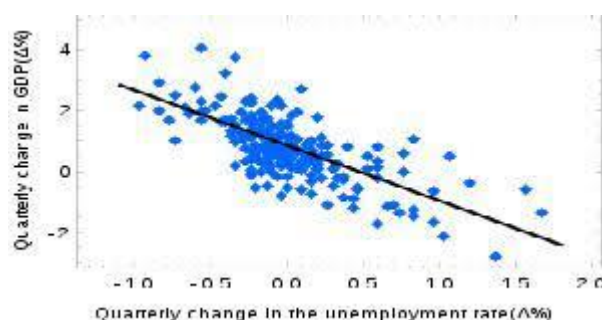
Regional Autonomy is the authority and obligation of an autonomous region to regulate and manage government affairs and the interests of local communities in accordance with statutory regulations. What is meant by real autonomy is regional freedom to exercise government authority in certain fields that actually exist and are needed and

that grow, live and develop in the region. What is meant by responsible autonomy is the realization of responsibility as a consequence of granting rights and authority to regions in the form of duties and obligations that must be assumed by regions in achieving the goal of granting autonomy, in the form of improving services and better community welfare, developing democratic life, justice, and equality, as well as maintaining harmonious relations between the center and regions and between regions in order to maintain the integrity of the Unitary State of the Republic of Indonesia. Research that has been conducted in Indonesia related to this article includes: (Setiawan & Herlambang, 2020). The impact of regional autonomy on economic inequality and unemployment in Indonesia. This research aims to analyze the impact of regional autonomy on economic inequality and unemployment in Indonesia. The research results show that regional autonomy has a positive impact on economic inequality in Indonesia. However, its impact on unemployment still needs to be studied further. Factors such as the availability of human resources and infrastructure also influence economic disparities and unemployment in regions. (Alghofari, 2011) conducted research entitled "The impact of regional autonomy on economic growth and unemployment in Indonesia". This research aims to analyze the impact of regional autonomy on economic growth and unemployment in Indonesia. The results of this research show that regional autonomy has a positive impact on economic growth in Indonesia. However, the impact on unemployment is still relatively low. This research also shows that factors such as investment and local government spending influence economic growth and unemployment in the region.

### Okun's Law

Okun's Law investigates the statistical relationship between the unemployment rate and the level of economic growth in a region. The research was carried out by Yale Professor and Economist, Arthur Okun, who published his findings in the 1960s. Okun's Law explains how much of a country's gross domestic product (GDP) may be lost when the unemployment rate is above the natural rate. The output produced depends on the amount of labor used in the production process; this shows a positive relationship between output and employment opportunities. Job opportunities can also be interpreted as demand for labor, namely a situation that describes the availability of jobs ready to be filled by job seekers (job seekers). The still high growth of the labor force and limited employment opportunities will result in an increase in the unemployment rate. The number of workers is equal to the labor force minus unemployment, so there is a negative relationship between output and unemployment.

Figure 1. Illustrated Okun's Law



According to Mankiw (2006), Okun's Law is a negative relationship between unemployment and GDP. Okun's Law is a reminder that the factors that determine business cycles in the short term are very different from the factors that shape long-term economic growth. Okun's law is a negative relationship between unemployment and Real GDP, which refers to a decrease in unemployment of 1 percent associated with additional growth in Real GDP of close to 2 percent.

## RESEARCH METHOD

The variables in the research use the variables poverty, unemployment, and economic growth, with time series data from 1979 to 2022; testing was carried out using the average difference test method for two samples, paired samples (paired sample t-test) on the poverty variable. This different test model is used for analyzing research models before and after regional autonomy. Paired sample t-test is used if the data is normally distributed. Research uses data Time Series with approach Vector Auto Regression (VAR) or Vector Error Corrections Model (VECM). Tool analysis Vector VAR or VECM used for correct no balance (Disequilibrium) and designed for used on data non-stationary which is known own cointegration relationship (Ajija, 2011).

## RESULTS

### Paired t-sample Test

Table 1. t-sample Test

t-Test: Paired Two Samples for Means			
	<i>Variable 1</i>	<i>Variable 2</i>	
Mean	34297273	31299545	
Variance	5.13E+13	2.31E+13	
Observations	22	22	
Pearson Correlation	0.183636		
Hypothesized Mean Difference	0		
Df	21		
t Stat	1.788739		
P(T<=t) One-tailed	0.044047		
t Critical One-tail	1.720743		
P(T<=t) Two-tailed	0.088094		
t Critical Two-tail	2.079614		

Based on the output above, it is known that the Sig. (2-tailed) of 0.08 > 0.05. Because the Sig value (2-tailed) of 0.08 is greater than 0.05, which means there is no significant difference or there is no influence between poverty before autonomy and poverty after regional autonomy. So, it can be concluded that poverty did not increase after regional autonomy occurred.

**VAR VECM Test**  
**Stationarity**

**Table 2. VAR VECM Test**

Group root unit tests: Summary				
Series: UNEMPLOYMENT, GROWTH, PROVERTY				
Date: 11/09/23 Time: 16:14				
Sample: 1979 2022				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on SIC: 0 to 1				
Newey-West automatic bandwidth selection and Bartlett Kernel				
			Cross-	
Method	Statistics	Prob.**	sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.65967	0.0000	3	121
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-7.16705	0.0000	3	121
ADF - Fisher Chi-square	55.7109	0.0000	3	121
PP - Fisher Chi-square	74.6686	0.0000	3	123
** Probabilities for Fisher tests are calculated using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.				

The first step before determining the model to be used is to test the stationarity of the variable data to be used. Stationary data has a tendency to approach its average value and fluctuate around its average. To test stationary data, this can be done using the Unit Root Test method introduced by Dickey and Fuller. In the stationary test, it compares the value of the ADF test with the critical value of the MacKinnon statistical distribution. The statistical value is shown in the statistical t-value. This is a procedural for determining whether the data is stationary or not stationary. In this test, the three variables have a significance value of  $< 0.05$ . Conclusion on Root Test showing that from variable level unemployment, economic growth, and poverty can be concluded that the data is stationary at 1st difference.

**Optimum Lag**

**Table 3. Optimum Lag Table**

Lag	LogL	L.R	FPE	AIC	S.C	HQ
0	-703.7048	NA	6.93e+13	40.38313	40.51645*	40.42915
1	-690.2622	23.81257*	5.39e+13	40.12927	40.66253	40.31335*
2	-680.1146	16.23613	5.12e+13	40.06369	40.99690	40.38584
3	-669.0856	15.75572	4.71e+13*	39.94775*	41.28091	40.40796

The Vector Auto Regression (VAR) method for determining optimal lag is also very important. With the aim of choosing the lag length of the variables included in the Vector Auto Regression (VAR) or Vector Error Correction Model (VECM) method. Vector Auto Regression (VAR) methodology, so that the desired lag length is sufficient to be modeled. Determining the lag length in the optimal lag test is also useful for eliminating auto-correlation problems in the Vector Auto Regression (VAR) or Vector

Error Correction Model (VECM) models. These results show that the 3rd lag is the most optimal lag because the 3rd lag has the most optimum value in each of the goodness of the model criteria. Namely the criteria, Final Prediction Error (FPE), Akaike Information Criterion (AIC). After testing the optimal lag length, it can be concluded that the 3rd lag is the most optimal lag.

### Causality Test

**Table 4. Causality Test Table**

Pairwise Granger Causality Tests			
Date: 11/10/23 Time: 05:18			
Sample: 1979 2022			
Lags: 3			
Null Hypothesis:	Obs	F-Statistics	Prob.
GROWTH does not Granger Cause UNEMPLOYMENT	41	2.27609	0.0974
UNEMPLOYMENT does not Granger Cause GROWTH		0.10653	0.9557
PROVERTY does not Granger Cause UNEMPLOYMENT	37	0.06779	0.9766
UNEMPLOYMENT does not Granger Cause PROVERTY		0.45408	0.7163
PROVERTY does not Granger Cause GROWTH	37	6.66637	0.0014
GROWTH does not Granger Cause PROVERTY		7.71487	0.0006

The Vector Auto Regression (VAR) method for determining optimal lag is also very important. With the aim of choosing the lag length of the variables included in the Vector Auto Regression (VAR) or Vector Error Correction Model (VECM) method. Vector Auto Regression (VAR) Methodology, so that the desired lag length is sufficient to be modeled. Determining the lag length in the optimal lag test is also useful for eliminating auto-correlation problems in the Vector Auto Regression (VAR) or Vector Error Correction Model (VECM) models. Shows the results of the Granger causality test, and the results show that the variables of economic growth and unemployment have a relationship because in the results of the Granger causality test, the probability value is 0.0974, which means the probability is greater than alpha 5% (0.05). Meanwhile, the relationship between the unemployment rate variable and the economic growth variable has no relationship as shown in the results of the Granger causality test. The probability value is 0.9557, which means it is greater than alpha 5% (0.05) or the unemployment rate variable does not affect the economic growth variable. With this, it can be concluded that during 1984-2022 in Indonesia there was only a one-way causal relationship between economic growth and the unemployment rate.

### Cointegration Test

**Table 5. Cointegration Test Table**

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalues	Statistics	Critical Value	Prob.**
None*	0.416045	36.13408	29.79707	0.0081
At most 1*	0.285484	17.30648	15.49471	0.0264
At most 2*	0.146425	5.541253	3.841465	0.0186

The Vector Auto Regression (VAR) method for determining optimal lag is also very important. With the aim of choosing the lag length of the variables included in the Vector Auto Regression (VAR) or Vector Error Correction Model (VECM) method. 34 Vector Auto Regression (VAR) Methodology, so that the desired lag length is sufficient to be modeled. Determining the lag length in the optimal lag test is also useful for eliminating autocorrelation problems in the Vector Auto Regression (VAR) or Vector Error Correction Model (VECM) models. The table above shows that if the p-value is < 0.05, then cointegration occurs, and then the VECM test is carried out.

### Long Term Test

**Table 6. Long Term Test Table**

Vector Error Correction Estimates			
Date: 11/09/23 Time: 18:26			
Sample (adjusted): 1983 2022			
Included observations: 35 after adjustments			
Standard errors in () & t-statistics in []			
Cointegrating Eq:	CointEq1		
UNEMPLOYMENT (-1)	1,000000		
GROWTH (-1)	-58.93038		
	(14.4878)		
	[-4.06759]		
PROVERTY (-1)	-1.59E-05		
	(4.9E-06)		
	[-3.25975]		
C	814.5594		

The table above shows a negative relationship between the unemployment rate, economic growth, and poverty, which is significantly seen from the T-statistics amounting to (-58.93038), which is more significant than the T-table as big as (1.97838). It can be interpreted that the unemployment rate variable has a negative influence on the variable growth economy as big as -0.5893038. If there is an increase in the unemployment rate variable by 1%, then it will cause a decrease in economic growth by -58%. This condition is in accordance with Okun's law and is in accordance with the hypothesis study that the level of unemployment has a connection negatively with economic growth. Then the effect of unemployment on poverty has a t-statistic of -1.59E-05, which means that unemployment has a negative relationship with poverty. If unemployment rises by 1%, then the poor population will fall by -1.59% because the number of the workforce in the last 3 years has risen by 68% from the previous year.

### Short Term Test

**Table 7. Short Term Test Table**

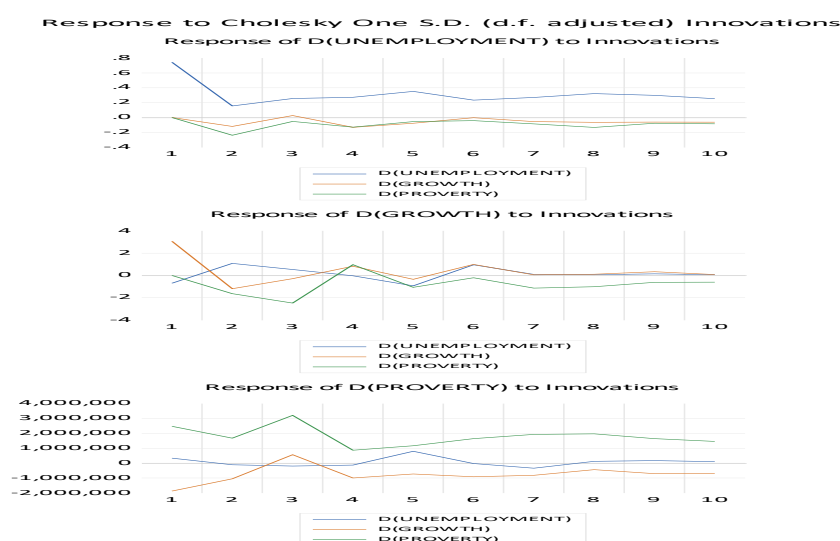
Error Correction:	D(UNEMPLOYMENT)	D(GROWTH)	D(PROVERTY)
D (UNEMPLOYMENT (-3))	0.206463	1.434256	-1145098.
	(0.20425)	(0.78598)	(762368.)
	[ 1.01084]	[ 1.82481]	[-1.50203]



Results estimation on lag 3 variable level unemployment showing mark t-statistics smaller from on t-table on level 5%, that is mark t-statistics which obtained amounted to (1.01084), smaller from on mark t-table equal to (1.97838). In conclusion is that at lag 3 or over a period of 3 years, there is a positive relationship between level variables unemployment and economic growth variables, matter it is not appropriate with the law okay, when level unemployment rises 1% on 3 years previously, will be increase economic growth as big as 1.8%.

### Impulse Response Test

Figure 2. Impulse Response Test



So, if select results on impulse analysis Response Function (IRF) in on, so can be concluded that law Okun in Indonesia only applies on period 3-4 in accordance on results test lag and estimation period short where the negative relationship between the unemployment rate and economic growth is significant at lag 3 or in year 3. Meanwhile, in the long term, there is an increase which is not in accordance with law Okun.

## DISCUSSION

### Differences in Poverty Before Autonomy and After Autonomy

Based on the results above, it is known that the Sig. (2-tailed) of 0.08 > 0.05. Because the Sig value (2-tailed) of 0.08 is greater than 0.05, which means there is no significant difference or there is no influence between poverty before autonomy and poverty after regional autonomy. So, it can be concluded that poverty did not increase after regional autonomy occurred, meaning that the role of economic policy carried out by the government was able to reduce poverty. This is in line with research conducted by Rahma, Fauzi, Juanda, and Widjojanto (2021) that the existence of autonomy gives each region the authority to regulate all affairs so that it is more effective in overcoming poverty.

### Proof of Okun's Law

Okun's law is a theory that underlies that by lowering levels unemployment will give rise to impact which effectively in increasing economic growth (Huruta, 2020). Indonesia is a developing country which still faces problems in the economy. One from that problem often faced is levels unemployment. Results of this study has implications in field economy specifically in problem levels Indonesia has relatively high unemployment.

The results of this study prove that there is a positive relationship between the unemployment rate and growth economy in the short term and negative in the long term. Phenomenon this because structural economy Indonesia too dominated by capital intensive and less attention to labor intensive. The government should pay attention problem this for making policy which more effective in improving the economic structural with the aim of reducing the unemployment rate and increase grow economy. When factor production in a country, increasing the number of workers will have implications for economic growth (Hambali, 2019). The results of this study support these findings that when there is an absorption of labor and an increase in working hours, and increasing labor productivity such as increasing skills of the number of workers involved in in market will impact on growth economy (Alim, 2021).

Because that, in matter lower levels unemployment expected government Indonesia need to encourage policies to reduce the unemployment rate, because in this research prove exists findings law Okun in Indonesia in short-term. Majority resident Indonesia work in sector agricultural and informal, as well location geographical Indonesia which is country island and still many people not enough grow education and skills is constraint which the government must face in solving the problem of unemployment in Indonesia and it has been proven that regional autonomy is able to reduce the problem of poverty with the negative relationship of unemployment which will increase economic growth (Noor, Nor, & Ghani, 2007).

## CONCLUSION

Based on the results above, it is known that the Sig. (2-tailed) of  $0.08 > 0.05$ . Because the Sig value. (2-tailed) of 0.08 is greater than 0.05, which means there is no significant difference or there is no influence between poverty before autonomy and poverty after regional autonomy. In the long term, it shows a negative relationship between the unemployment rate growth economy and poverty. Which significant can be seen from mark T-statistics amounting to (-58.93038) which bigger from mark T-table as big as (1.97838). It can be interpreted that the unemployment rate variable has a negative influence on variable growth economy. In the short term, results estimation on lag 3 variable level unemployment showing mark T-statistics smaller from on T-table on level 5%, that is mark T-statistics which obtained amounted to (1.01084) smaller from on mark T-table equal to (1.97838). In conclusion is that at lag 3 or over a period of 3 years, there is a positive relationship between level variables unemployment and economic growth variables, matter the in accordance with the Okun law.

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