International Journal of
Economics Development Research, Volume 3(3), 2022
pp. 217-226

The Relationship Between Unemployment And Economic Growth: Is Okun's Law Valid For The Jordan Case?

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Abstract:

The purpose of this paper is the validity of Okun's Law for Jordan's economy over the period 1990 to 2020. The relation between unemployment and economic growth was tested. It aims to analyze the impact of unemployment on economic growth and to propose recommendations for enhancing economic growth and reducing unemployment in Jordan since the Jordanian economic growth was slow before the Covid-19 outbreaks. The research employed ARDL Bound Cointegration method having validated it's appropriateness withDickey-Fuller and Philips-Perron tests. The empirical results reveal the existence of Okun's law in the Jordan economy, with a 1% decrease in Gross Domestic Product which is correlated with a 0.276% increase in the unemployment rate. Based on these empirical outcomes, several policy recommendations are formulated to increase the attraction of foreign direct investment (FDI)which is needed to minimize the country's high unemployment rate. Jordan's policymakers are urged to embrace both labor and growth-inducing measures.
Keywords: *ARDL, Covid-19, Economic growth, Okun's Law Unemployment*

1. Introduction

Unemployment is regarded as a serious problem faced by most developing countries and resulting in socio-economic problems. It is noted that one of the greatest challenges of the Jordanian economy today is the high rate of unemployment that has maintained a rising trend over the years. As well, a report by the National Department of Statistics (2020) cited the unemployment rate as 24 percent. This tends to put the country in grave danger, as a world bank survey in 2011 reported that 40 percent of those who join terrorist organizations indicated that they are motivated by unemployment. While 50 percent of those involved in criminal activities are also stimulated by unemployment (Seth, 2018).

In curtailing unemployment, economic growth has been recognized as a key variable that can address the Menace. The contributions of both economic growth and development cannot be overemphasized as they have been recognized as one of the necessary conditions for economic welfare. It is a medium through which unemployment can be reduced, inflation can be stabilized, and innovation can be promoted. As well, the economic growth allows for the emergence of entrepreneurs who decrease unemployment by creating new jobs. The Jordanian economy has remained largely underdeveloped, the per capita income is low and unemployment also is high despite the growth (Kasasbeh, 2021). This shows that various

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macroeconomic policies by the government have been unable to achieve a sustained reduction in unemployment. Also, it is too unable to sustain economic growth as it has plunged into recession in recent times. After the downturn in the economy in the late 1980s, the problems of unemployment, are caused by a hasty introduction of the economic reform program in 1989. In examining unemployment and economic growth nexus around the world, many studies have proved the existence of the conflicting relationship between economic growth and unemployment; with some showing a positive relationship while others showing an inverse relationship. These include the works of Alhdiy et al. (2015), Lee (2000), Fuad (2011), Geidenhuys, and Marinkov (2007) among others.

Unemployment in Jordan

Jordan has been suffering from the issue of unemployment for a long time. This is an addendum to the crises that have surrounded Jordan since the 1980s. Moreover, the resulting migration and asylum have exacerbated the crisis. All government programs and plans aimed to reduce unemployment.

Unemployment is one of the causes that threaten economic stability and societal harmony. The noted rise in unemployment in Jordan is due to political, social, and economic motives. The key causes of this phenomenon can be summed up as Jordan's unnatural surge in population growth. This is due to the problems that neighboring countries were facing. Thus, such problems include entering Kuwait in 1990, the return of a quarter-million Jordanians from the Arabian Gulf region, the occupation of Iraq in 2003, the reception of nearly half a million Iraqi people (Alkasasbeha et al., 2018; Al-Sawaie, 2020). During the events of the Arab Spring in Syria, the reception of over one million Syrian citizens exceed 1.3 million Syrian citizens by the end of 2016 (CIA World Fact Book, 2017). In the Covid-19 pandemic in 2020, the government worked to enact measures to delay disease spread through closing schools, shutting down businesses, ordering people to stay at home, and prohibiting big gatherings. In addition to that, pandemics may affect the economy in a variety of ways (Al-kasasbeh, 2022). They reduce consumer demand for specific goods and services, which leads to reduced labor demand, and poses a significant obstacle for decision-makers at all levels and sectors (Alkasasbeh & Al-kasasbeh, 2022).

This concerns the inability of economic growth policies to meet their goals, Jordan's pressure of internal and external debt, and the inadequacy of Jordanian education. The inability of the economy creates new jobs, the employment of those who are willing to work and can work at prevailing levels of wages in the market. Figure 1 shows the unemployment rate from 2000 to 2020, with the highest rate at 24 percent in 2020. However, it has shown an upward trend since 2008.

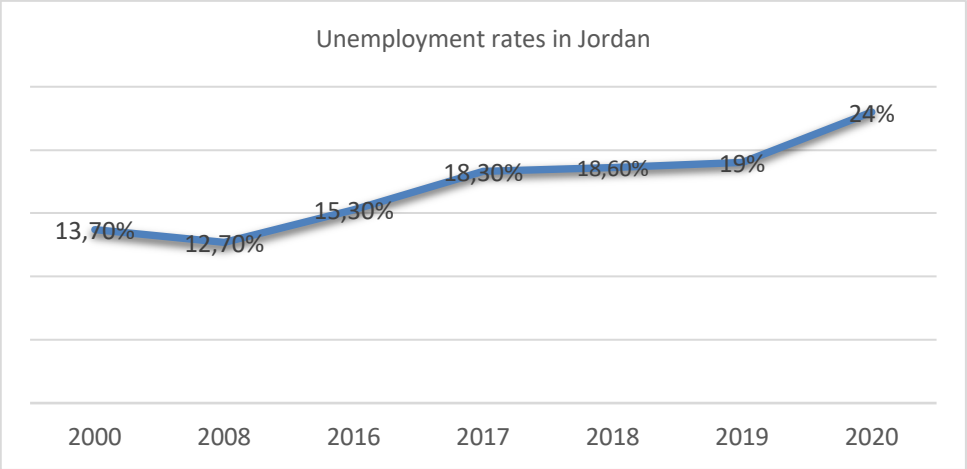

Figure 1. Unemployment Rates in Jordan

2. Theoretical Background

The relationship between unemployment and economic growth has received considerable attention in economic literature which includes many developing countries. As well, economists are accustomed to referring to Okun's Law. However, Arthur M. Okun, an American economist, was the first to show a negative empirical relationship between the two variables using data from the United States (1947-1960) in 1962. According to Okun, the elasticity of the unemployment rate to US economic growth is –0.3. When growth increases (declined) by 1%, the unemployment rate fell (increases) by 0.3 points. As a result, Okun's Law describes an empirical relationship between unemployment and real output growth. It has also proved to be one of the more durable correlations in current macroeconomics analysis. Following Okun's pioneering work, numerous economists explored the link between changes in the unemployment rate and output growth, examining the sign and magnitude of Okun's coefficient in various specifications and for various nations. Several academics, however, used modern econometric techniques and updated data to test the validity of Okun's Law throughout different periods and for different nations.

Through using different econometric techniques, Jibir, Bappayaya and Babayo (2015) examined the impact of unemployment on the economic growth of Nigeria during the Period 1982- 2014. The main goal of this paper is to examine the effect of unemployment on economic growth in Nigeria, as well as the direction of causality. There is a negative association between unemployment and the real GDP proxy for economic growth, as seen by the OLS results in Okun's law. Furthermore, the granger causality test indicates that there is no causal association between unemployment and economic growth. The study also suggests that the acquisition

skills can be established and the educational system can be transformed so that youths become job creators rather than job seekers.

Chand et al. (2017) seek to ascertain the influence of economic growth on India's unemployment rate. Gross Domestic Product was used as a proxy for economic growth in this study. Correlation and regression analysis were utilized to determine the type and extent of economic growth's influence on the unemployment rate. It has been found that there is a substantial adverse correlation between economic growth and the unemployment rate. Additionally, it was shown that GDP is responsible for 48% of the change in the unemployment rate. The results are consistent with Okun's law and other research findings.

Soylu et al. (2018) investigated the relationship between economic growth and unemployment during the annual time series data for the period 1992-2014. Then applying the Pooled Panel OLS and Panel Johansen Co-integration tests to analyze the relationship between unemployment and economic growth in Eastern European Countries. This relationship has been discussed in the light of Okun's Law in this article. The outcomes reveal that unemployment is influenced positively by economic growth. A 1% increase in GDP reduces unemployment by 0.08 percent due to Okun's coefficient for Eastern European countries. There is co-integration between these critical macroeconomic variables.

Altunöz (2019) examined the relationship between economic growth and unemployment in the eurozone in the light of Okun's Law during the period 2000-2012 by using panel integration methods and panel error correction. The use of several non-stationary panel root unit tests for all the countries included in the study was examined for unemployment hysteresis. The results of this analysis suggest that the law of Okun is valid. The cointegration coefficient is smaller than the Okun's coefficient measured for the United States and other developed-country tests. The United States is used in the study since it has the world's strong economy. Furthermore, since growth and unemployment in developing countries are more volatile, they are included in the study to compare with developed countries.

Louail and Riache (2019) investigate Okun's law in the Saudi economy by studying the influence of the OUTPUT gap on unemployment rates and the role of economic growth in unemployment reduction. The method of autoregressive distributed lag bounds testing is used to investigate the presence of Okun's law in the Saudi economy from 1991 to 2017. The empirical outcomes demonstrate that Okun's law exists in the Saudi economy. Computed coefficients using the Gap Version showed the gross domestic product gap which had a negative and substantial effect on unemployment rates. Thus, a 1% rise in GDP is associated with a 0.29 percent drop in the jobless rate.

Al-Sawaie (2020) examined the relationship between unemployment and economic growth in Jordan covering the period 1976–2018. He used the Autoregressive Distributed Lag cointegration and Causality test. A negative relationship was discovered between unemployment and GDP, which corresponds to the funding from Okun's law. He was also able to identify the long-term and short-term direction of the relationship between GDP and unemployment, indicating bidirectional causality.

The theory that can be used in explaining the association between growth and unemployment is Okun's law. He was the first economist who investigated the empirical association between unemployment and economic growth. As well as, to measure the cost of unemployment and its impact on the economy, one of the tools is used by economic policymakers. A 1% rise is hypothesized in unemployment would result in a 2% decrease in GDP growth. Okun's Law can be expressed in this form:

$U_t - U_t^* = \beta(Y_t - Y_t^*) + \varepsilon_t$

Where:

U_t= The natural level of unemployment

U_t^* = the potential unemployment

Y_t= he real output product (GDP)

Y_t = potential output

β = The Okun's coefficient

3. Methodology

Data Sources, Description, and Estimation Technique

Secondly, the data on Gross Domestic Product (GDP) were sourced from the publications of the Central Bank of Jordan (CBJ). To estimate the model, the statistic properties of economic growth and unemployment were considered as well as the lag selection test to determine the lag length of the model. Unit root tests on both variables were carried out using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP). Bound tests were also employed to test the long-run relationship between economic growth and unemployment in Jordan. Also, a parsimonious error correction model of the ARDL model was estimated to determine the short-term dynamic between economic growth and unemployment. The model was finally diagnosed for stability.

4. Empirical Findings/ Result

The non-stationarity of time series data is one of the econometric problems in empirical research. When utilizing time-series data, it is critical to do unit root testing to ensure that variables in a regression model are stable (Uwakaeme, 2015). It is worth noting that if we run a regression while the variables in the model are non-stationary, spurious regression and inconsistent findings are likely to occur.

Hence, the conclusions are drawn from such data are likely to make no sense. Because unit root tests have varying degrees of power, they provide alternative findings, particularly for macroeconomic variables (Chiliba, Alagidede, &Schaling, 2016). As a result, a battery of unit root tests is employed, namely the Augmented Dickey-Fuller (Gujarati and Porter, 2005), Phillips and Perron (PP) (1988), to ascertain the order of integration of various series in the hope of obtaining mutually reinforcing results that will improve the data's efficiency and consistency (Marketa, A. and Darina, 2016). If the series has a break, the ADF and PP unit root tests appear to support the theory that the series has a unit root (Perron, 1989). Table 1 summarizes the findings of the unit root test to analyze the stationary of unemployment and the GDP:

Table 1. ADF and PP Unit Root Tests

	ADF		PP	
Variables	Level	1st Diff.	Level	1st Diff.
	T-Stat	T-Stat	T-Stat	T-Stat
GDP growth rate	-0.460	-4.408***	-0.460	-4.408***
Unemployment	-1.847	-3.922**	-1.847	-3.922**

Source: Research finding. Note. **and ***Significant levels at 5% and 1%.

Before using the ARDL method, the unit root properties of the variables in consideration are investigated using the PP and ADF unit root tests. The findings of unit root tests are shown in Table 1. According to the empirical results., all the variables are stationary at their first differences.

ARDL Bound Cointegration Test

The ARDL approach includes testing whether or not a long-run relationship exists between the variables in a model. For this determination, a "bounds testing" approach has been established. Therefore, the following ARDL model is specified to ascertain if there is a long-run association between growth and unemployment in Jordan. Table 2 summarizes the findings of the bounds test.

Table 2. Bounds Test Results

Critical Value	Lower Bound Value	Upper Bound Value
1%	4.84	5.84
5%	3.94	4.73
10%	3.04	3.78
F-Statistic= 10.91628, K=1		

Source: Research finding

The Bounds test was used to evaluate the cointegration hypothesis. Based on Table 2 above, the null hypothesis was dismissed at a 1% significance level. However, the F-statistic calculation was higher than the upper critical value. As a consequence of the ARDL test, there is a long-term cointegration between the unemployment rate and the Economic Growth Rate. In addition, the lag periods were chosen using the Schwarz Criterion (SC).

Estimated Long-Run Analysis

At 5% significance levels, Okun's coefficient showed the direct proportionality of GDP growth. As a result, a 1% fall in GDP growth raises the unemployment rate by 0.276 %. This exemplifies the link between economic growth and unemployment. As a result, we assume that Okun's law exists in the Jordanian economy. This is supported by Al-Sawaiea's (2020) study, which examined the relationship between economic growth and unemployment in the Jordanian economy in both the short and long term from 1976 to 2018.

This is the rationale for the policy of deliberately boosting the economic growth, as well as decisions made in this respect, whether fiscal or monetary decisions. This is because these decisions expand the markt economy, stimulate beneficial projects and attract foreign direct investment.

Table 3. Estimated Long-run Coefficients

Variable	Std. Error	t-Statistic	Prob.
C	0.885421	-12.04506	0.0001
Economic Growth Rate	0.128848	-1.48153	0.0809

Source: Research finding

Estimated Short-Run Analysis

The Error Correction Term ECT (-1) measures the speed at which the short-run disequilibrium (actual) and long-run equilibrium (expected) adjust. It has the right sign and is statistically significant 5%. According to the estimated coefficient, if the right policy measures are implemented, it would take the speed of 83.3 % in the case of disequilibrium in the short term to be corrected in the long term. Theoretically, the value Error Correction Term ECT (-1) must be significant and negative as shown in Table 4.

Table 4. (Estimated Short-run Coefficients)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.079301	0.476130	0.193312	0.878
D(GDP(-2))	0.077659	0.160375	0.548990	0.062
D(UN(-1))	-0.078445	0.090879	-0.797609	0.301
D(UN(-2))	-0.107199	0.097695	-1.428990	0.263
ECT (-1)	-0. 833004	0.254105	-3.042515	0.015

Source: Research finding

The Parameters Stability Analysis

The CUSUM test conveys the behavior of the cumulative total of the residuals. As well, the cumulative sum of squares (CUSUMSQ) test was used to measure the model's structural stability. These two tests are seen in Figures 2 and 3. They show

the stability of the regression within the crucial bounds of 5%. As a result, the model is structurally stable. Previous experiments have shown that the model is appropriate, and the findings have a high quality.

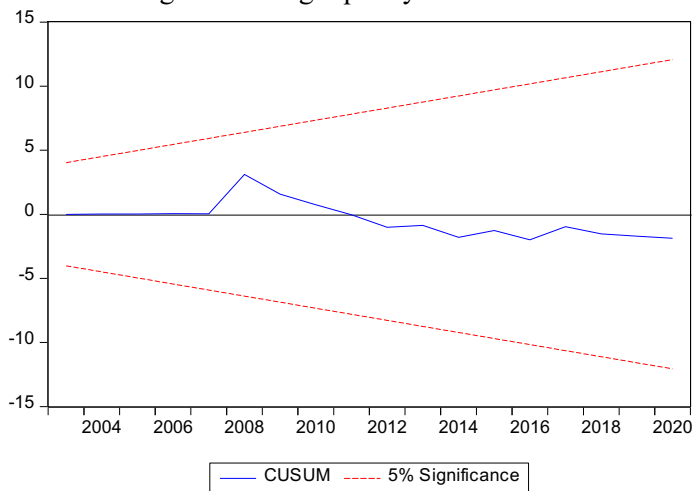

Figure 2. CUSUM test

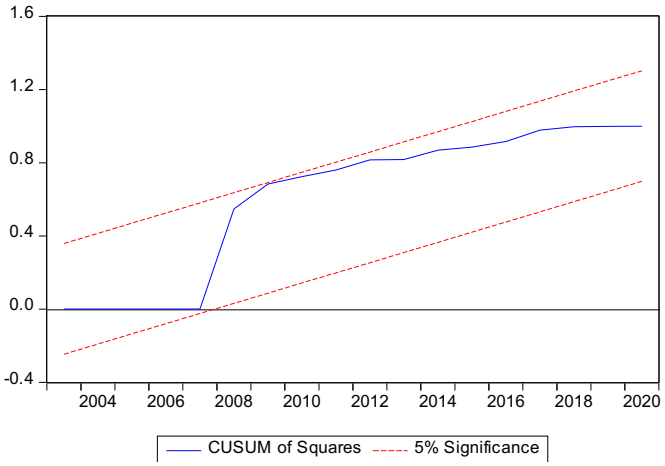

Figure 3. CUSUMSQ test

5. Conclusion

The study critically investigates the influence of unemployment on the economic growth of Jordan using time series data covering the period 1990-2020. As well, the relationship between unemployment and economic growth was discovered to be adverse, indicating that reducing unemployment would ensure Jordanian economic growth. Thus, the effects of Okun's law coefficient suggest a negative association between unemployment and GDP, since low economic growth is one of the reasons for the rise in unemployment. As the decrease in aggregate demand triggers the

decline in aggregate supply, and as a result, a decrease in production leads to a decrease in economic growth rates. Thus, companies cut staff, which raises unemployment, so the economic climate exacerbates long-run unemployment issues. In brief, it is concluded that the study's findings favor Okun's law, as they prove that growing GDP decreases unemployment in Jordan.

Based on the findings of the study, the following recommendations are presented:

1. The government and policymakers must develop policies to promote self-employment and lower the cost of doing business in the country to achieve fast, and sustainable economic growth.
2. Formulation of efficient policies and programs to reintegrate unemployed youth, especially into the informal sector of the economy.
3. The government should ensure that the educational system is changed so that young school leavers and graduates can create jobs rather than look for them.
4. There is also a need to implement policies geared toward improving the informal economy to promote entrepreneurship, which would likely minimize unemployment and increase Jordanians' welfare and living standards.

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