# VALIDATION OF OKUN'S LAW IN PAKISTAN

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**Abstract**

*This paper critically analyzes the effect of GDP on unemployment level i.e. the validation of Okun's Law in Pakistan. Annual data for the period 1974-2014 is taken from Economic Survey of Pakistan. The study revealed that GDP is negatively related to unemployment. The negative effect of GDP on unemployment is low, implies that other factors like lose employment policies and non availability of professional skills retard the employment generating capacity of GDP growth rate. This study uses Augmented Dickey Fuller (1981) Test to test unit root problem. The study concludes that increase in GDP significantly decreases unemployment in the long-run.*

**Key words:** GDP; GDP Growth; Unemployment; ARDL

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## Introduction

Growth is a very important matter for developed and developing countries. Sustained growth along with employment generating policies will ultimately reduce unemployment. Growth also helps in upgrading the standard of living of the people. In the initial theories of the economic growth, unemployment was not given too much importance. According to classical economists, unemployment is created due to labour market rigidities i.e. taxes, wage laws and other regulations. According to Keynes, the main reason of unemployment is lack of effective demand for goods and services. Blanchard (1997) elaborated that there is no impact of unemployment on growth and there exist no long run effect of growth on equilibrium unemployment. These ideas were redefined in endogenous growth theory. Romer (1998) found that economic growth leads to inter-sector change which occurs within the sectoral structure of the economy and brings structural unemployment.

Variations in unemployment rate are negatively related to the variations in output. This relationship was first time developed by Okun (1962). This law is known as 'Okun's law'. However, this law does not hold in every country of the world and varies from country to country. When there is recession in economy then it not only reduces output but also leads to reduce employment. On the other hand, when an economy recovers from recession then it not only begins to produce more output but also hires more employees which lead to reduce unemployment. Okun estimated that one percent increase in unemployment led to 3 percent reduction in output. However, after Okun, by using modern econometric techniques, it was revealed that two percent increase in unemployment led to one percent reduction in output which was contrary to the finding of Okun (Samuelson and Nordhaus, 1995).

## Objective of the study

The main objective of this study is to analyze the inter-relationship of gross domestic product (GDP) and unemployment in Pakistan.

## Literature Review

At earlier studies Arthur Okun (1962) proposed a standard of 3 percent change in unemployment rate for every one percent change in GDP growth but in modern research most of the economists

claimed through empirical evidences that now Okun's coefficient assumed values other then 3 which can be more or less in magnitude. Several studies have been carried out in order to check the validity of Okun's law for different regions during different time periods with the application of different methods and techniques.

Single country studies on the Okun relationship are replete in the literature. Some single country studies are those of Gordon (1984), Knoester (1986), Prachowny (1993), Weber (1995), Moosa (1997, 1999), Attfield and Silverstone (1998), Lee (2000), Soegner and Stiassny (2002). They provide empirical evidences that validate the relationship proposed by the Okun's law. However, the estimates of the coefficient tend to vary among countries over time. As regards structural changes that may account for a structural break in the Okun's relationship, Lee (2000) adduced this to corporate restructuring, changes caused by rising female labour force participation; productivity and wage slowdown.

There are some studies that identified the shortcomings of Okun's law that include Altig et al (1997), Blinder (1997) and Lee (2000). For instance, Altig et al (1997) argue that Okun's law does not generally capture the shape of the time series of output; showing several instances in which the direction of GDP growth is inconsistent with the model's predictions. They conclude that GDP growth depends on the level and rate of change of labour resource utilization. It is pertinent, however, to note that the stability of the relationship establishes its usefulness as a forecasting tool.

Obadan (1995) and Sagbamah (1997) observed that growth and employment moved in the same direction. All other things being equal, the higher the growth rate, the higher the employment rate. A corollary to the foregoing is that growth and unemployment move in opposite direction. If the growth rate increases, unemployment rate will fall, all things being equal. However, it is important to note that for growth to bring about reduction in unemployment; such growth must be associated with labour force participation. According to the classical school of thought this brings about increase in the demand for goods and services and such leads to increase in the demand for labour services which, in turn, leads to increase in employment and thus decrease in unemployment. However, it is important to reiterate that the growth that brings about increase in employment (or decrease in unemployment) is that which is highly labour-intensive and goes with increased labour force participation.

Two different types of effects were elaborated by economists. Pissarides (1991) and Postel Vinay (1998) found that technological progress helped to reduce unemployment due to capitalization effect. Rapid growth raised the return of firms and new firms were launched to share the profit and in turn more jobs were created. Quick innovation made the labourers unemployed. Growth and technological progress had significant role in minimizing unemployment but this growth remain limited to a few areas and regional disparities emerged.

Thirwall (1966) and Martin (1997) had concentrated on regional unemployment. It was evaluated that how regional unemployment disparities vary over the business cycle. Mohlo (1995) found the impact of regional disparities on unemployment. Simple regression method was applied. The variables non-demographic labor market, industry product variable, regional factor endowments and demographic variables were used. The industry variable had significant impact in creating regional unemployment. Different factors had been evaluated to examine the reason of unemployment. Institutions had been used to reduce unemployment.

Karanassou, Sala and Snower (2003) empirically examined the long run trade off between inflation and unemployment by using Panel Data Study for the European countries. They empirically found that long run trade off between inflation and unemployment does exist in case of European countries. The researchers like Vandemoortele (1991); Oladeji (1994), Umo (1996), and Rama (1998) investigated the impact of unemployment on economic growth for the African economies and for Nigerian economy in specifically. They found that as growth rate of unemployment increases, it curtails economic growth and hence they found trade off between unemployment and economic growth.

In the last decade there is a growing body of studies taking into account the possible asymmetries in the relationship over the business cycle by Lee (2000), Harris and Silverstone (2001), Silvapulle et al.(2004), Malley and Mollana (2008), Fouguau (2008). For example Harris and Silverstone (2001) put emphasis on the importance of asymmetries in the Okun's Law because of some reasons. Firstly, it is important because, asymmetries in Okun's law play a discriminating role among alternative theories of joint labour and goods market behaviors. Asymmetry in Okun's law also indicates an asymmetry in Phillips curve relationship. Moreover, knowledge about present asymmetry is useful for both structural and stabilisation policies. Finally, once asymmetry is ignored when it is present, it is clear that forecasting errors would arise.

To sum up the above review of literature, it can be clearly seen that the main variables under consideration are only unemployment rate and GDP growth, whereas different versions are applied to the empirical data of various countries with different sample periods to compute Okun's coefficient.

## Methodology and sources of Data

### Sources of Data

The estimation of Okun's law entails data for unemployment and gross domestic product GDP for Pakistan. The data on GDP and unemployment were taken from various issues of 'Pakistan Economic Survey' and 'Pakistan Labour Force Survey'. The study covers the time period from 1973-74 to 2013-14.

### The Model

The model of this study contains two variables; Gross Domestic Product (GDP) and unemployment level. The data is initially converted to logarithmic form in order to improve the efficiency of the results. Our model consists of following equation:

$$LGDP = \alpha + \beta\ LUNEMP + \mu$$

Here LGDP is the natural logarithm of Gross Domestic Product (in million) and LUNEMP is the natural logarithm of unemployment (in million). $\mu$ is error term.

## Estimation and Interpretation of Results

We have applied ADF test for checking the Stationarity of data. Gross domestic product is nonstationary when intercept is included only, and remain nonstationary when trend is included alongside intercept. Unemployment is stationary at level when intercept is included in testing process.

**Table1: ADF Test for Stationarity**

| Variables | Test for unit root in | Include in test equation | T – statistics | Probability | Conclusion |
|---|---|---|---|---|---|
| **LGDP** | **Level** | **Intercept** | -1.68 | 0.42 | I(1) |

| | | | | | |
|---|---|---|---|---|---|
| | | **Intercept and Trend** | -2.21 | 0.11 | |
| | **1st Difference** | **Intercept** | -4.30 | 0.00 | |
| **LUNEMPL** | **Level** | **Intercept** | -3.10 | 0.02 | I(0) |

As both the variables are not integrated of the same order, in such a case for estimation of this model we used autoregressive distributed lag model, and estimated the effect of unemployment on gross domestic product for verifying Okun's law in Pakistan.

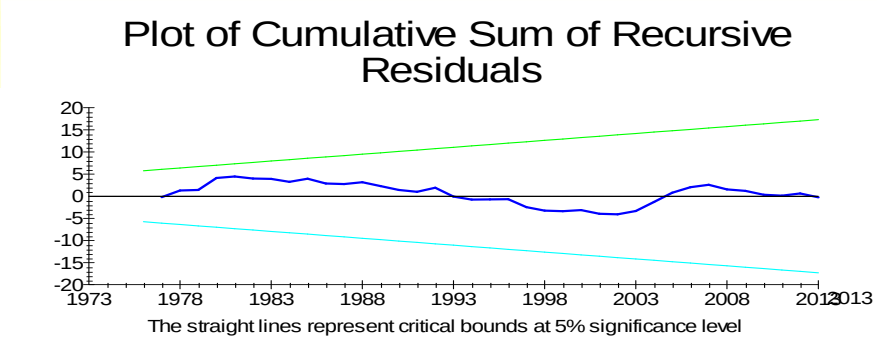
**Table 2: ARDL estimation results**

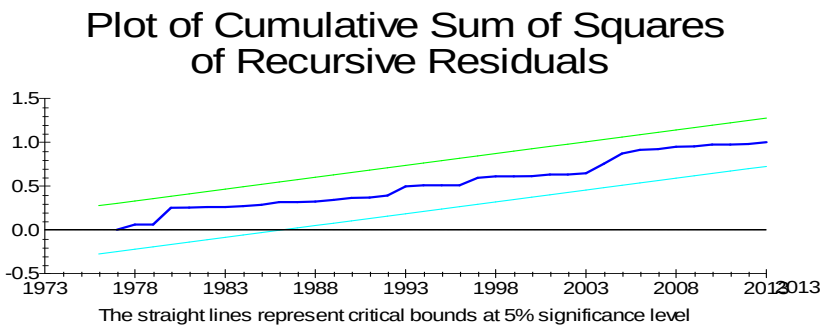
| **Variables** | **Coefficients** | **Standard Errors** | **T – statistics** | **Probability** |
|---|---|---|---|---|
| **ARDL Long run Results** | | | | |
| **LUNEMPL** | -.63535 | .12613 | -5.0372 | .000 |
| **Constant** | 15.8333 | .40041 | 39.5423 | .000 |
| **ARDL Short run Results** | | | | |
| **dLUNEMPL** | -.032092 | .017070 | -1.8800 | .068 |
| **dC** | .79975 | .27703 | 2.8868 | .006 |
| **ecm(-1)** | -.050511 | .018752 | -2.6937 | .010 |
| **R – Squared** | 0.29 | | **Adj R Squared** | 0.24 |
| **DW Statistics** | 1.66 | | **F – Statistics** | 7.46 |

This result indicates that in Pakistan each 1 percent increase in real GDP will reduce unemployment by 0.63 percent in long-run and 0.032percent in short-run respectively. The coefficient of error correction model is negative and significant that showed the speed of adjustment towards long run equilibrium that is 50 percent. The $R^2$ value shows that only 29 percent of variation in unemployment is explained by GDP, indicating that there are many other variables which are responsible for the variation in unemployment. The Durbin Watson statistics showed that there is not any problem of autocorrelation. The graph of recursive estimates shows that overall these models are stable and there is no problem of serial correlation.

## Conclusion

In long-run the negative effect of GDP growth on unemployment is 0.63. This low negative effect implies that other factors i.e. lose employment policies and non availability of professional skills retard the employment generating capacity of GDP growth rate. Market based and open economy development is needed. Privatization which is supposed to be depending on competence may be beneficial in this regard. Long term skill development and merit based recruitment policies may also accelerate employment generating capability of output growth. The findings have reported that as economic growth increases; it significantly decreases unemployment in the long run and short run respectively. It means that both fiscal and monetary authorities must set up an environment which could flourish investment opportunities in the country. Increase in investment will increase production and employment in the country and hence unemployment will decline.



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