



Output and Unemployment Relationship in India: Testing the Validity of Okun's Law

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ABSTRACT

Potential output measures the productivity capacity of the economy when unemployment is at its natural rate. Because people move from job to job as a regular event, the natural rate of unemployment is generally believed to be greater than zero. There will almost always be some unemployment in the economy. Thus, potential output is not the maximum an economy could theoretically produce, but a lower sustainable number. In most economic models the level of the output that is produced is proportional to the level of the input-typically, capital and labour. Thus one might imagine that increasing unemployment above its natural rate might be associated with output falling below its potential, and vice-versa.

Keywords:- Potential, Unemployment, Sustainable, Proportional, Capital.

INTRODUCTION

Both output and unemployment are accorded prominent positions in the macroeconomic analysis in developing countries. However the subject of unemployment is a persistent challenge in these countries. The high level of unemployment identifies the inability of the country to efficiently utilize the labour resources.

Real economic growth, as expressed by the change rate of real GDP per capita, has a direct bearing on unemployment rate. Therefore, named for Yale University economist Arthur Okun (1962), the law provides an accurate prediction technique for the unemployment rate (Kitov, 2011). Okun's law describes the empirical relationship between changes in output and changes in the unemployment rate. The law states that, for every 2% that real GDP falls, there will be a 1% increase in the unemployment rate. Thus, indicating responsiveness of unemployment to the growth in output.

LITERATURE REVIEW

There exists ample literature on validity of Okun's Law, yet some economists question it. Khemraj et al (2006) observed in the US economy that even though the US economy grew stronger, the output growth was not coextensive with the growth in employment.

Elsby *et al.* (2010) postulated that the Okun's Law performed well in the first part of the 2007 recession. The last quarter of the year 2009 witnessed a departure from the rule as the overall economic activity rebounded and unemployment continued to rise.

Lee (2000) advocated that the structural changes that account for the structural break in the output-unemployment relationship include corporate restructuring; changes caused by rising female labour force participation, wage slowdown and productivity levels.

IMF (2010) suggested that the relationship between unemployment and output broke down during the Great Recession of 2008-2009. The correlation between the changes in output and unemployment across countries was low.

STATEMENT OF RESEARCH PROBLEM

The occurrence of jobless growth in any economy will go contrary to the proposition of the Okun's law. The present analysis is to determine the causal relationship between output and unemployment. Hence, the study examines the validity of Okun's Law in Indian Economy.

OBJECTIVE

The objective of the analysis is to determine the relationship between output and unemployment in the Indian Economy and hence, investigate the validity of Okun's law.

METHODOLOGY

The present study employs time series data on unemployment and gross domestic product on India (1962-2012) obtained from the Bureau of Labour Statistics India and the World Bank respectively.

HYPOTHESIS

Null Hypothesis (H₀): No significant relationship between unemployment and output.

Alternate Hypothesis (H₁): There exists a significant relationship between unemployment and output.

ANALYSIS

Software's used for the analysis: **Microsoft Excel and SPSS.**

REGRESSION MODEL:

The regression equation assumed for analysis was:

$$Y = \alpha + \beta X$$

Dependent variable Y is the Unemployment rate.

Independent variable X is the GDP growth rate.

α and β are the parameters representing intercept and slope respectively.

Table 1: Shows India's GDP and Unemployment Rates (1962-1992)

YEAR	GDP	UN
1962	2.93	5.5
1963	5.99	5.7
1964	7.45	5.2
1965	-2.64	4.5
1966	-0.06	3.8
1967	7.83	3.8
1968	3.39	3.6
1969	6.54	3.5
1970	5.16	4.9
1971	1.64	5.9
1972	-0.55	5.6
1973	3.30	4.9
1974	1.19	5.6
1975	9.15	8.5
1976	1.66	7.7
1977	7.25	7.1
1978	5.71	6.1
1979	-5.24	5.8
1980	6.74	7.1
1981	6.01	7.6
1982	3.48	9.7
1983	7.29	9.6

1984	3.82	7.5
1985	5.25	7.2
1986	4.78	7
1987	3.97	6.2
1988	9.63	5.5
1989	5.95	5.3
1990	5.53	5.6
1991	1.06	6.8
1992	5.48	7.5
1993	4.75	6.9
1994	6.66	6.1
1995	7.57	5.6
1996	7.55	5.4
1997	4.05	4.9
1998	6.18	4.5
1999	8.85	4.2
2000	3.84	4
2001	4.82	4.7
2002	3.80	5.8
2003	7.86	6
2004	7.92	5.5
2005	9.28	5.1
2006	9.26	4.6
2007	9.80	4.6
2008	3.89	5.8
2009	8.48	9.3
2010	10.55	9.6
2011	6.33	8.9
2012	3.24	8.1

Graph 1: Showing the Comparison in India's GDP and Unemployment Rates (1962-2012)

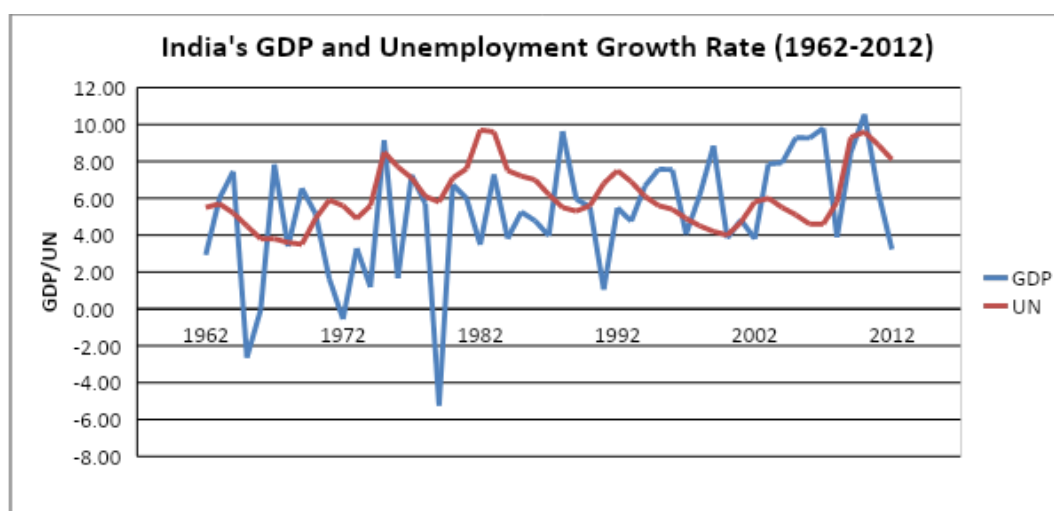


TABLE 2: Showing correlation between the GDP and Unemployment

	GDP	UN
GDP	1	
UN	0.131636	1

TABLE 3: Showing Regression Analysis Results**Variables Entered/Removed^a**

Model	Variables Entered	Variables Removed	Method
1	GDP ^b	.	Enter

a. Dependent Variable: UN

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.120 ^a	.014	-.006	1.654	.014	.717	1	49	.401

a. Predictors: (Constant), GDP

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.962	1	1.962	.717	.401 ^b
	Residual	134.078	49	2.736		
	Total	136.039	50			

a. Dependent Variable: UN

b. Predictors: (Constant), GDP

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.877	.442		13.292	.000
	GDP	.062	.073	.120	.847	.401

a. Dependent Variable: UN

TABLE 4: Showing Descriptive Statistics

STATISTIC	GDP	UN
Mean	5.183978	6.076471
Standard Error	0.450891	0.227667
Median	5.533455	5.7
Mode	#N/A	5.6
Standard Deviation	3.220004	1.625864
Sample Variance	10.36843	2.643435
Kurtosis	1.300173	-0.1891
Skewness	-0.91126	0.657466
Range	15.78457	6.2
Minimum	-5.23818	3.5
Maximum	10.54639	9.7
Sum	264.3829	309.9
Count	51	51

RESULT

Real GDP and Unemployment rates between the years 1962 to 2012 has varied considerably. The real GDP of India has grown at an average rate of 5.2%.

The growth of unemployment is expected to have fallen due to the Okun's prediction. However the results indicate that there has been a positive association between the GDP growth rate and unemployment rate in the Indian Economy in the 1962-2012 time frame. The correlation between GDP rate and Unemployment rates came out to be 0.13. This means that when the unemployment increases by 1%, output increases by 0.13% Thus the Okun's law prediction has not been satisfied.

The regression coefficient β is 0.12 and the corresponding t-value is 0.847 which lies in the acceptance area under the normal distribution. Hence, we accept the null hypothesis that there exists no significant relationship between output and unemployment.

The value of R^2 came out to be 0.014. This indicates that only 1.4% of variability in the unemployment can be explained by the linear relationship between relationship between output and unemployment. Hence, it may not always be appropriate to consider that expansion in output will generate more employment.

The mean GDP growth falls below the mean of labor force growth. This implies that new jobs created will be limited to accommodate all new job seekers. This leads to a fall in the proportion of the labor force that is employed. Hence the unemployment rate will rise.

The total output is a combination of several variables like number of workers, the hours they work and efficiency level. Thus, to reason as to why Okun's law failed to hold in Indian context is the possibility that the underlying variables showed atypical cyclical patterns.

CONCLUSION

Since the unemployment increases with increase in country's economic growth, there is a cause for concern. Such kind of output and unemployment responses may be attributed to factors like a non-constant relationships among hours, capital and labour force; fluctuations in multi-factor productivity and changing distribution of the sectoral growth rates.

Moreover, a variety of potential factors like measurement errors in employment computation, unusual changes in employer and worker behaviour, and atypical gush in productivity and efficiency of producing output.

IMPLICATIONS

Knowledge regarding the extent of asymmetry in the output and unemployment relationship could be useful for both structural policies like labour market reforms and stabilisation policies including appropriate monetary policy responses.

This also helps avoiding forecasting errors.

The conceptualisation of unemployment in our country has become such an arduous, economic, social and political issue that requires urgent steps to eliminate its sluggishness.

Thus employment generation programmes and policies towards reducing the level of unemployment like job creation and entrepreneurial development efforts may significantly impact the output level on an increasing scale. This however requires proper implementation and execution of policy.

LIMITATION OF THE STUDY

Use of advances statistical/ econometric tools like co-integration analysis and error correction analysis would have delivered absolute appropriate results.

SCOPE FOR FUTURE RESEARCH

Avenue for future research will undoubtedly include the investigation of structural changes in economy which give rise to increase in unemployment with increase in output or in particular, reasons for the jobless growth.

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