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GDP, Unemployment and Okun's Law: Evidence from India

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ABSTRACT

In a present-day one, the solemn is problem unemployment and which one of the indigestible tasks for economic development. According to World Bank estimates, youth unemployment growth percent was in India 3.60%, currently, Indian governments invest in education to reducing unemployment and simultaneously enhance the good human capital formation. The famous economist Okun (1970) found that the relationship implies that a GDP growth by 3% leads to 1% decrease in unemployment. Currently, various studies have been taking place to find out the relationship between output and unemployment is not 3% but it fluctuates depends on their counties economic and social dimensions. The present paper inspects the Okun's type association between output and unemployment in the Indian economy. Further, it uses co-integration analysis to estimate Okun's elasticity in the long run and in the short run by using the Vector Error Correction Mechanism (VECM). The analysis depends on annual data obtained from the by the World Bank for the period 1990-2017. However, Okun's model was applied in India in the long run and short run the coefficient was statically spelling out the significant negative effect of the unemployment rate to national output. The absence of a statistically significant relation between unemployment and output growth indicates that a cyclical recovery is not accompanied by a reduction of unemployment. There is a bidirectional correlation between real output and unemployment in India and unemployment influences real output directly as well as indirectly. There is a long run relationship between real output and unemployment.

Key Words : Output, Unemployment, Okun's law, Co-integration, VECM, India

INTRODUCTION

Now-a-days the world faces with major economic and financial problems, including among others the problem of unemployment and insufficient economic growth. Increasing the army of the unemployed is a very debatable issue everywhere around the world, not excluding even the developed economies. The economic growth and the unemployment rate are the key indicators that simultaneously are monitored by both the policy makers and the public as they create a clear picture about the economic development of a country. Moreover, the linkage between unemployment rate and economic growth as a relevant macroeconomic issue cover a wide area of theoretical and empirical research. It is a widely accepted view in economics that higher growth rate of the GDP of an economy increases employment and reduces unemployment. This theoretical proposition

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relating output and unemployment is known as "Okun's Law". This relation is among the most prominent in macroeconomics theory and has been found to be hold for several countries and regions mainly, in developed countries.

One of the largest problems that most developing countries face is unemployment. Unemployment can be regarded as the cause of poverty and economic dispersion. Okun's law defines an inverse association between cyclical fluctuations in the output gap and the unemployment gap, where the values of coefficients vary from country to country and time to time (Lal *et al.*, 2010).

The subject of unemployment is a pervading challenge in developing economies. With the incidence of the global economic crisis, the increasing rate of unemployment extends even in developed nations of the world. The high incidence of unemployment implies inefficient use of the labour resources available in the country or region under study. However, full employment, one of the primary macroeconomic goals of the government of a country, implies effective maximization of its resources.

Okun's law is a key relationship in macroeconomics and it was proposed by the American economist Okun (Caraiani, 2010). In its original form, the relationship implies that a GDP growth by 3% leads to a 1% decrease in unemployment.

It is the feature of supply side economics, as output increases in a recovery phase resulting in unemployed workers being hired. If output falls in a recession phase consequently workers are laid off from their jobs (Mossa, 2008).

The unemployment rate was estimated to be 5.0 per cent at the All India level under the UPS approach or in other words 5.0 per cent of the persons aged 15 years and above who were available for work could not get work during the reference period. In rural sector, unemployment rate was 5.1 per cent whereas in urban sector, the unemployment rate was 4.9 per cent under the UPS approach.

Unemployment rate in India has shot up to a five-year high of 5 per cent in 2015-16, with the figure significantly higher at 8.7 per cent for women as compared to 4.3 per cent for men, says a report by Labour Bureau. Unemployment rate was 4.9 per cent in 2013-14, 4.7 per cent (2012-13), 3.8 per cent (2011-12) and 9.3 per cent (2009-10). Labour Bureau did not bring out any such report for 2014-15.

According to the Global Employment Trends 2014 the unemployment rate has raised to 3.8%, last year it was 3.7%. With Population of 1.20 billion in our country the unemployment rate is increasing day by day. The problem of unemployment is rising but still many industries are facing the problem of skilled candidate for their company. The present study discusses the Okun law, unemployment and output or GDP in Indian context.

Review of literature:

Sheehan and Zahn (1980) majority of the works done on the relationship between unemployment and output growth focused on the development economies relativity, few have focused on unemployment and output growth in developing countries. He equally included inflation and real gross domestic product which are not supposed to enter into his model at the same time. As a result, this study tends to find out the magnitude of the impact of unemployment on output growth as well as captures the effect of structural adjustment programme.

Barreto and Howland (1993) this study is an attempt to investigate the relationship between unemployment and GDP growth in Arab countries for the period of 1994 to 2010 using unit root

testes methodology and Pooled EGLS (Cross-section SUR). We find that the economic growth has negative and significant effect upon the unemployment rate it means that 1% increase in economic Growth will decrease the unemployment rate by 0.16%. Furthermore, the coefficient of Growth Rate of Population is significant at the 5% level and the sign is positive indicating that 1% increase in Growth Rate of Population will increase the unemployment rate by 0.37%

Prachowny (1993) it answer the question "Does Okun's Law exist?" Yes, Okun's Law can be applied to explain the Malaysian condition. Any attempts to reduce unemployment will result in increasing the growth rate of the GDP. But knowing the existence of these relationships alone will not solve the problem of unemployment in the country. The problem must be tackled from both sides of the labour market, from the job seekers' point of view as well as from the employers' point of view.

Clifford and Brian (1998) have discussed that If output and unemployment are cointegrated, and we equate Okun's "potential" magnitudes with the stochastic trend or "permanent" component in output and unemployment (both defined in terms of the Beveridge and Nelson decomposition), then Okun's coefficient can be interpreted as the cointegrating coefficient between the variables. In addition output and unemployment "gaps" can be calculated from the vector equilibrium correction model linking the two variables.

Harris and Silverstone (2001) were discussed that unemployment is regarded as a serious problem faced most developed and developing countries and resulting socio-economic problems. The governments have given great attention to create job opportunities and reoperation the idle units to eliminate this phenomenon.

Alanana (2003) the Okun's coefficient constructed using forecasts is more correlated with the actual data than the initial release data. This suggests that forecasters are relying on the Okun's coefficient in revised data to construct their forecasts, even if their targets are the initial data. In fact, due to the data revisions in real GDP, if fore casters are targeting initial release data, then Okun's law may be of less use to them .Therefore, perhaps forecasters believe in Okun's law, even if they shouldn't.

Turturean (2008) the study provides an empirical evaluation of the relationship between output and unemployment using the first difference? and output-gab versions of the regression equations that were first estimated by Okun. The study particularly adopts vector autoregressive (VAR) mechanism to estimate this relationship; and finds out that the Okun's coefficient is not significant in Nigerian economy. But however, the trade-off between output-gab and unemployment gab is positive, meaning that a decrease in the gap between natural rate of unemployment and current rate of unemployment leads to a decrease in the difference between potential GDP and real GDP.

Malley and Molana (2008) have described that economy may move between 'high-effort' and 'low-effort' states. Our estimates of the threshold unemployment rate which separates these states are significantly positive for G7 countries; only German data exhibit tendency to being persistently in the high-effort state. They draw attention to the relevance of these findings for interpreting Okun's law. It is worth noting that given the similarity between our definition of the threshold rate of unemployment and the NAIRU and the robustness of our empirical method for identifying and estimating a time-varying threshold rate, our approach complements those studies

Ting and Lios (2011) that aimed to examine the existence of Okun's relationship in terms of Malaysia economy, The relationship is measured by applying the first difference and gap model with Hodrick-Prescott filter (HP filter), furthered with Autogressive Distributed Lag (ARDL) to determine the co-integration between the variables and their causality. The result show the Okun's

coefficient is -1.825 per cent which is significant at 1 per cent error.

Kreishan (2011) has investigated the relationship between unemployment and economic growth in Jordan through the implementation of Okun's law, Using annual data covering the period 1970-2008. The empirical results reveal that Okun's law cannot be confirmed for Jordan. Thus, it can be suggested that the lack of economic growth does not explain the unemployment problem in Jordan.

Economou and Psarianos (2016) their study was examined the Okun's Law in European countries by distinguishing between the transitory and the permanent effects of output changes upon unemployment and by examining the effect of labor market protection policies upon Okun's coefficients. Okun's Law is robust to alternative specifications. The effect of output changes to unemployment rates is weaker for countries with increased labor market protection expenditures and it is more persistent for countries with low labor market protection.

Objectives of the study:

The present analysis obtained the following objectives such as;

1. To study the employment growth and development in India
2. To find out the relationship between GDP and unemployment in Indian Context

Hypothesis of the study:

The present study hypotheses as fallows

1. There is significant relationship between employment and economic growth
2. There negative positive relationship between GDP and Unemployment growth

METHODOLOGY

Data sources:

The data used in this paper consists of quarterly time series from 1991 to 2017. The data on the unemployment rate and economic growth are provided by World Bank and Hand Book of Indian Economy published by RBI.

Econometrics Methodology:

Unit Root Test For Stationarity:

$\Delta yt=\gamma y_{t-1}+\nu_t$ No constant and No trend (1.2)

$\Delta y= \gamma y_{t-1}+\nu_t$ Constant but no trend (1.3)

$\Delta yt= \alpha+\gamma y_{t-1}+\lambda t+\nu_t$ Constant and trend (1.4)

Recall the RGDP plot, which is slightly quadratic in time, so you would choose the regression model that included a constant and a trend to conduct the unit root test. The test is conducted by estimating the regression and implementing a t-test for the following hypothesis:

H0: $\gamma = 0$

H1: $\gamma <$

The augmented version of the DF test (ADF) adds lagged differences to the model and the models become:

Dickey-Fuller regressions:

$$\Delta y_t = \sim + ¥ y + ª t + \sum_{s=1}^{m} a\Delta y_{t-s} + \neg_t \quad (1.5)$$

$$\Delta y_t = \sim + ¥ y + \sum_{s=1}^{m} a_s \Delta y_{t-s} + \neg_t \quad (1.6)$$

$$\Delta y_t = \sim + ¥ y_{t-1} + ª t + \sum_{s=1}^{m} a \Delta_{t-s} + \neg_1 \quad (1.7)$$

You have to pick a lag length to implement this test. The lag length should be enough to ensure that the residuals are not autocorrelated.

Since the series fluctuated from a non-zero mean and didn't seem to have trend, we will use the model with a constant but no trend. We will use one lag for the ADF test. So we will be estimating the following regression model for both the Ft and the Bt

$$\Delta y = \sim + ¥ y_{t=1} + a \Delta y + \neg_t \quad (1.8)$$

Granger Causality test :

$$\Delta \ln RGDP = \sim_0 + \sum_{i=1}^{n} \sim_{1i} \Delta \ln UE_{t-i} + \sum_{j=1}^{n} \sim_{2j} \Delta \ln RGDP_{t-j} + \sim_3 ECT_{t-1} + «_{1t} \quad (1.9)$$

$$\Delta \ln RGDP_t = \ _0 + \sum_{i=1}^{n} \ _{ij} \Delta \ln UE_{1-i} + \sum_{j=1}^{n} \ _{2i} \Delta \ln RGDP_{t-j} + \ _3 ECT_{t-1} + «_{2t} \quad (1.10)$$

where, RGDP is Real output of our economy; UE is the Unemployment situation; ECT is error correction captured the cointegration regression; u_1 and u_2 are mutually uncorrelated white noise residuals.

Vector Error correction Model:

$$\Delta y = \Pi y_{t-k} + \Gamma_1 \Delta y_{t-1} + \Gamma_2 \Delta y_{t-2} + ... + \Gamma_{k-1} \Delta y_{t-(k-1)} + «_t \quad (1.11)$$

where $\Pi = \left(\sum_{i=1}^{k} \ _i \right) - I_g$ and $\Pi = \left(\sum_{j=1}^{i} \ _i \right) - I_g$

$$\Delta FFINVST = \Pi_{t-k} + \Gamma_1 \Delta BSE_{t-1} + \Gamma_2 \Delta NSE_{t-2} + Z_1 * ECT_{t-1} ..... + \Gamma_{k-1} \Delta y_{t-(k-1)} + «_t \quad (1.12)$$

where y is the vector (RGDP and UE) respectively Δ is the symbol of difference operator, μ_t is a vector of residuals. The VECM model information about the short term as well as as long term adjustment changes in Δy, via the estimated parameters Γ and ∏, respectively. Here the expression $\prod y_{t-k}$ is the error correction term and Γ can be factor into two separate metrces α and β, such as ∏=αβ', where α' denotes vector co-integration parameters while á is the vector of error correction coefients measuring the speed convergence to the long run steady state.

$$\prod \begin{bmatrix} \Delta \ln RGDP \\ \Delta \ln UE \end{bmatrix} = \begin{bmatrix} a_1 \\ a_2 \end{bmatrix} + \begin{bmatrix} \ _{11} & \ _{12} \\ \ _{21} & \ _{22} \end{bmatrix} \begin{bmatrix} \Delta \ln RGDP_{t-1} \\ \Delta \ln UE_{t-1} \end{bmatrix} \quad (1.13)$$

If r=2, so that there is one cointegrating vector, then α and β will be (2×2)

$$\Pi = \begin{bmatrix} \sim_1 \\ \sim_2 \end{bmatrix} \left(\ln RGDP_{11} + \ln UE_{12} \right) \begin{bmatrix} y_1 \\ y_2 \end{bmatrix}_{t-k} \quad (1.14)$$

And written as

$$\Pi = \begin{bmatrix} a_1 \\ a_2 \end{bmatrix} \left(\ln RGDP_{11} + \ln UE_{12} \right) + \begin{pmatrix} a_1 \\ a_2 \end{pmatrix} \left(ECT_{t-1} \right) \begin{pmatrix} g_{1t} \\ g_{2t} \end{pmatrix} \quad (1.15)$$

where RGDP is UE, in India ECT_{t-1} is error correction term lagged one period. θ_1 and $\theta_{2,}$ are mutually uncorrelated white noise residuals.

RESULTS AND DISCUSSION

Now-a-days the world faces with major economic and financial problems, including among others the problem of unemployment and insufficient economic growth. Increasing the army of the unemployed is a very debatable issue everywhere around the world, not excluding even the developed economies. Moreover, the linkage between unemployment rate and economic growth as a relevant macroeconomic issue cover a wide area of theoretical and empirical research. It is a widely accepted view in economics that higher growth rate of the GDP of an economy increases employment and reduces unemployment.

The lower rates were caused by the role of the informal sector in providing jobs; government investment in social infrastructure (labour intensive), such as building public schools and health facilities; programs that absorb the less educated workers; and agricultural growth increasing significantly, which created job opportunities not only in the agricultural sector itself but it also created other job opportunities in related sectors that support the agriculture sector, such as transport and manufacturing. The various table discussed that unemployment situations in India.

Table 1 : Unemployment Rate (in labour force)according to usual status

Round	Year	Rural		Urban	
		Female	Male	Female	Male
27th	1972-73	0.5	1.2	6	4.8
32th	1977-78	2	1.3	12.4	5.4
38th	1983	0.7	1.4	4.9	5.1
43th	1987-88	2.4	1.8	6.2	5.2
50th	1993-94	0.9	1.4	6.1	4.1
55th	1999-00	1	1.7	5.7	4.5
61th	2004-05	1.8	1.6	6.9	3.8
66th	2009-10	1.6	1.6	5.7	2.8
68th	2011-12	1.7	1.7	5.2	3

Source: NSS Report No. 554: Employment and Unemployment Situation in India, 2011-12

Above table explained that Unemployment Rate at usual status as per NSSO rounds in India. In the year of 1972-73 to 2011-12 period is he rural area of round 27th 0.5 of females and 1.2 of male peoples of unemployment and 2011-12 the round of 68th the unemployment ratio in 1.7 of the females and also 1.7 males in unemployment in the rural areas. And urban areas same to the 1972-73 in 27th round in 6 percent of the females and 4.8 of the males in unemployed in the censes of the NSSO round is expressed in India

Econometric Results:

Descriptive statistics and unit root test results below for the variables are presented in the table below.

Unit Root Test Results :

Table 2 : ADF unit root test results for level, first difference

Augmented Dickey-Fuller test statistic (ADF)				
Variables	Levels data	Ist Difference	IInd Difference	Stationary status
LRGDP	-0.871221	-0.871221	-5.402971	(I)
LUE	-0.185240	-7.379677	-	(I)
Phillips-Perron test statistic(PP)				
LRGDP	-0.868297	-5.447892	-	(I)
LUE	-2.780028	-12.05513	-	(I)

Notes: LRGDP: Real GDP, UE: Unemployment * indicates statistical significance at (*)1%, (**)5% and (***) 10% significance level by MacKinnon (1996) one-sided p-values

The ADF test, PP test and KPSS tests are implemented to conclude whether the series are stationary or not and the results showed that LRGDP growth rates are stationary at first difference being second order integrated I (1), while the other variables are I (1).

Cointegration tests:

To test for cointegrating relationships we first need to decide whether deterministic components such as constant, time trend and dummy variables should be included in the model. Using the general to specific approach, a model with five lags, a constant and trend was chosen as the most appropriate model for the cointegration space. The cointegration tests, using the trace and the maximum eigenvaue methods in Table 3 show that all the variables included in the model are not cointegrated. This means that we have to use the VAR methodology and not the VECM to do our estimations. The article uses the variables in their stationary levels.

Table 3 : Johansen Cointegration tests for D(LRGDP. 1) D(LUE,1), D(LRGDP,2) and D(LUE,2)

Trace statistics					Max-Eigen Statistics				
H_0	H_1	Eigenvalue	Trace	CV	H_0	H_1	Eigenvalue	Trace	CV
r=1	r≥0	0.287759	7.825924	15.49471	r=1	r≥0	0.287759	7.804806	14.26460
r≤1	r≥1	0.000918	0.021119	3.841466	r≤1	r≥1	0.000918	0.021119	3.841466

Note: r stands for the number of cointegrating vectors, Trace test indicates 1 cointegrating eqn (s) at the 0.05 level. H0: Null hypothesis, H1: Alternative Hypothesis, CV: Critical Value.The lag structure of VAR is determined by the highest values of the sequential modified LR test statistic (each test at 5% level) criterion. The critical values are taken from Johansen and Juselius (1990).*: Indicates Statistical Significance at 5%.

Having confirmed that all variables included in the causality test are integrated of order one, the next step is to test for the existence of cointegration relationship between real GDP and unemployment rate. The Johansen- Juselius cointegration technique, based on maximum likelihood estimation, is deployed for the same. The test basically depends upon two statistics, known as trace statistics and maximum eigenvalue statistics. If cointegration is detected between these variables, then the existence of Granger causality either way cannot be ruled out. The results of both the tests, under both bivariate frameworks, are given in Table 4. The results indicate the existence of a stable long run relationship between Real gross domestic product and unemployment rate in india. Both the trace statistics and maximum eigenvalue statistics reject the null hypothesis of no cointegration. In particular, the results show that there is one cointegrating vector between real output and unrmpoyment in India.

Granger Causality Test:

The variable are long run relation and they are moving same director, meaning that we find the long run model there is a relation between real output and unemployment and inverse relationship between real output and unemployment in India. 2 variable are long run coefficient

Table 4 : Granger Causality test

Null Hypothesis	Log 2		Lag 4		Lag 6	
	F- Value	α –value	F- Value	α -value	F- Value	α –value
Log Unemployment versus Log GDP						
LUE does not Granger Cause LRGDP	0.90225	Reject	0.66926	Reject	0.68299	Reject
LRGDP does not Granger Cause LUE	2.63855	Do not Reject*	2.59081	Do not Reject*	3.46212	Do not Reject**

Note: (*) 10% significant level data

The results indicate the absence of a direct causal relationship in long term between real output rates and unemployment, but do confirm the bidirectional correlation between real output and unemployment in india, for 10% levels. The findings also emphasize the bidirectional causality from unemployment to real output growth rates. Granger causality has also showed that, at a 10% level (up to 6 lags), uneployment influences real output directly as well as indirectly.

Results found that in most cases of real output is bidirectional relation common phenomena in most of the cases (Mukherjee and Mishra, 2005). LRGDP Granger causes LUE up to 6 lags at 10% level of significance. Where it is assumed that the disturbances μ_{1t} and μ_{3t} are uncorrelated. In passing, note that, since we have two variables, we are dealing with bilateral causality.

VECM Lag order selection:

Table 5 shows the results of the lag length selection test. The article uses several criteria to determine the maximum lag length. In particular, the Akaike Information Criteria (AIC), the sequential modified LR test statistic and the Schwarz Information Criterion (SIC) are used in order to determine the appropriate maximum lag length to use for each of the endogenous variables. All these criteria concur that the maximum lag length for the two endogenous variables are two (2). This implies that one should estimate the vector autoregression for this study using the lag length of six (6) for each endogenous variable.

Table 5 : VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	4.873601	NA	0.002640	-0.261236	-0.162051	-0.237871
1	44.64736	68.70012*	0.000102*	-3.513396*	-3.215839*	-3.443300*
2	46.13597	2.300581	0.000130	-3.285088	-2.789160	-3.168262
3	48.77434	3.597787	0.000152	-3.161304	-2.467004	-2.997748
4	52.51499	4.420757	0.000165	-3.137726	-2.245055	-2.927439

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Vector error correction model:

Where LRGDP is real output , LUE is unemployment ECT_{t-1} is error correction term lagged

one period. θ_1, and θ_2 are mutually uncorrelated white noise residuals.

Table 6 : Vector Error Correction Estimates

Cointegrating Eq:	CointEq1	
LRGDP(-1)	1.000000	
LUE(-1)	13.95613	
	(4.74140)	
	[2.94347]	
C	-24.56562	
Error Correction:	D(LRGDP)	D(LUE)
CointEq1	-0.163090	-0.022445
	(0.07741)	(0.02045)
	[-2.10697]	[-1.09769]

Table 7 : Regression System Equation

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.163090	0.077405	-2.106968	0.0503
C(2)	-0.175435	0.210290	-0.834253	0.4157
C(3)	-0.159890	0.209385	-0.763617	0.4556
C(4)	1.683823	0.965089	1.744734	0.0991
C(5)	0.359674	0.759382	0.473641	0.6418
C(6)	0.226305	0.069894	3.237850	0.0048
R-squared	0.269942	Mean dependent var		0.160280
Adjusted R-squared	0.055219	S.D. dependent var		0.236007
S.E. of regression	0.229399	Akaike info criterion		0.112750
Sum squared resid	0.894606	Schwarz criterion		0.408965
Log likelihood	4.703380	Hannan-Quinn criter.		0.187247
F-statistic	1.257165	Durbin-Watson stat		1.309666
Prob(F-statistic)	0.326841			

D(LRGDP) = C(1)*(LRGDP(-1) + 13.9561333457*LUE(-1) - 24.56561966) + C(2)*D(LRGDP(-1)) + C(3)*D(LRGDP(-2)) + C(4)*D(LUE(-1)) + C(5) *D(LUE(-2)) + C(6)

Trace statics is more than critical value we normally reject null hypothesis. If the variables are cointegrated we can run the VECM. It is significant meaning that dummy is positively impact on independent variable coefficient is positive impact on the independent variables. There is a long run relationship between real output and unemployment. Validity among long relation because and relation is negative. The Vector Error Correction model spells that unemployment rate is negatively impact on real gross domestic product in the long run.

Conclusion:

In this thesis was analyzed the correlation between economic growth and unemployment rate based on the Law of Okun (1962), for the case of India. To analyze the Okun's coefficient were used four types of models such as the difference model, the ECM and VAR model in order to examine the possible relationship between these two variables in the short and long term. However, we find no robust evidence about the linkage between them already in all models. From the ECM

model we conclude that there is not a short term relationship between these two variables. In addition, the VAR model doesn't suggest a long-term relationship, thus we can conclude that the change of unemployment rate is not a predictive variable of the change of real Real GDP growth. Consequently Granger causality test indicate a bidirectional causal relation between changes in real GDP growth and changes in unemployment rate and *vice-versa*. It should be noted that the study has its shortcomings and limitations, first the limiting number of observations due to availability of the data on annual basis and second, the study doesn't estimate the effects of labor market regulations.

The absence of a statistically significant relation between unemployment and output growth indicates that a cyclical recovery is not accompanied by a reduction of unemployment. There is a bidirectional correlation between real output and unemployment in India and unemployment influences real output directly as well as indirectly. There is a long run relationship between real output and unemployment. Validity among long relation because and relation is negative. The Vector Error Correction model spells that unemployment rate is negatively impact on real gross domestic product in the long run.

Although in the recent years, the authorities of the state have made ambitious economic reforms to promote private sector and to reduce the unemployment rate, the public sector still remains the primary source of employment and the unemployment rate declines very slowly. The economic policies should be directed to encourage the employers to hire more workers during periods of expansions. As a result of this research, it is also recommended that the state should develop sustainable strategies and policies for a more pronounced reduction of the informal employment, in order to have greater positive repercussions on economic growth.

However, the results of this study have particularly important policy implications for economic policy makers in the India, since this is the first attempt that empirically explores the causal link between these two indicators by examining them with several regression models.

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