

**Employment –Economic Growth Nexus: An Empirical Evidence From Pakistan**

**Muhammad Siddique**

*Associate professor of Economics at Government Postgraduate College No. 01 Abbottabad, Pakistan*

**Kiran Mustafa**

*Lecturers in Economics and Management sciences department respectively in Abbottabad University of Science and Technology, Abbottabad, Pakistan*

**Muhammad Zulqarnain Safdar**

*Lecturers in Economics and Management sciences department respectively in Abbottabad University of Science and Technology, Abbottabad, Pakistan*

**Muhammad Muddassar Khan**

*Lecturers in Economics and Management sciences department respectively in Abbottabad University of Science and Technology, Abbottabad, Pakistan*

**Altaf Hussain**

*Assistant Professor of Economics at Islamia College University Peshawar, Pakistan.*

**Abstract**

*The present study takes stock of linkage between economic growth and employment in Pakistan for the period 1981 to 2015 using data from Economic Survey of Pakistan through Johansen Co-integration technique. The study carries out ADF test to check the unit root in time series variables. The study also employs Granger causality test to find the causation of variables. The empirical results of the study suggest that there exists invariably long run relation between economic growth and employment. Granger causality test also suggests that economic growth causes employment. Long run estimation results reveal that there is positive and significant association between economic growth and employment in Pakistan. The study recommends making the economic growth pro-employment so as it benefits may be trickle down to poor.*

**Keywords;** Co-integration, Economic Growth, employment, Pakistan

**Introduction**

The problem of ensuring productive employment to ever expanding workforce of our economy has emerged as a big challenge to the economy. Economic growth is considered the lubricant of employment generation. Rapid economic growth is only possible through technological progress. But lack of innovation greatly hinders technological advancement. Torun (2007) rightly termed innovation engine for economic growth. It is fact that the capital augmenting technology inhibits the further demand for labor in the manufacturing sector of Pakistan and employment elasticity tends to fall as capital intensities increase (Shiekh and Iqbal 1992). Despite this fact it is worth mentioning that some economies of the world not only succeeded in keeping the pace of technological progress but they also maintained full employment. (Cohen 2012) attributed the long term record of success of US economy is to a growing and well educated work force, ample research and development expenditures by both private and public sectors, the availability of capital to find expansion and access to market. Development economists often reduce this to short hand of “the capital/labor ratio” in which capital investment in combination with a steady improving workforce, contribute to sustainable growth and rising personal income

Over past two decades many countries have experienced enormous economic growth with sustained employment and technological progress. East Asian countries like Taiwan, Korea and Hong Kong recorded unprecedented growth rate since about mid 1960’s. The interesting feature of this robust growth is that this growth was accompanied by high output elasticity of demand for labor force in these countries. This high elasticity turned to be well

versed with increasing level of human capital in terms of better health and higher skill. This resulted in an impressive wage increase almost at same rate as capita output.

Fast economic growth is considered very essential for rapid expansion of productive and remunerative employment. According to (Schmid, 2008, p88-90), the type of economic growth (extensive and intensive), is important variable that determines the rhythm of job creation in relation to economic growth. According to Cohen (2012) two broad categories affecting innovation, productivity and long run growth competitiveness are labor and capital, the nations have their greatest success when workers are skilled and given incentive to be productive. If employment growth is in excess of the growth of output it leads to decline in productivity of employees. It is consensus among economists that economic growth needs to be employment integrated. It is increasingly recognized by economic managers seeking to make economic growth endogenous that effects of growth can only be trickled down if bolstered by domestic resources. Employment intensive economic growth has been conceived as powerful strategy to achieve the objective. Sustained employment is the desire of every country and viable economic growth the need. ILO's World Employment Report for 1996-97 mentioned that during 1986-1993, in the countries of East Asia with sole exception of Indonesia employment grew at more than 3 percent per annum. But countries like India and Pakistan employment performance was weaker.

In some developing countries employment has usually been expanded at a substantially faster rate than output. The objective of such expansion in employment is apparently to protect workers rather than to make growth endowed resources based development. Producing employment as a method of social security is not instrumental. It does not guarantee rapid economic growth. Using employment merely as an instrument for guaranteeing livelihood irrespective of the employee's contribution to output has never been a prudent policy. (Economic growth no doubt in substance is the engine of employment generation.) It is agreed that output growth may not always be associated with high employment generation in short period but the multiplier impact of growth on expenditure would necessarily lead to increase investment and demand for labor leading to higher employment in long run. High growth rate is necessary but not the sufficient condition for creating remunerative, productive and decent employment. (Rashid Amjad, 2007).

The developing countries presently are engaged in pursuing the poverty reduction policies with integrating the employment as a rout of out of poverty. Likewise the Millennium development goals relating to poverty reduction do not explicitly mention employment as a means for achieving them.

A cut in employment for the purpose to reduce the fiscal deficit has not been an effective tool. Conversely, the productive efficient and results bearing employment as warranted by growth pattern can be used as effective tool to make the economic growth balanced and resilient.

The strong and resilient economic growth warrants creating employment opportunities. Pakistan is specifically vulnerable to the kind of expression given the fact that its economy is lackluster in creating as many jobs as required by the more than 5 million labor force entrant youngsters. The palpable evidence provided by LFS (2010) suggests that economic growth during first half of last decade created substantial new jobs.

**Table 1.1:** Labor Force Employment, GDP Growth Trend for Pakistan

Year	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
<b>Labor Force</b>	50.33	51.78	52.0	53.7	58.10	59.3	59.74	60.10	61.04
<b>Employed Labor Force</b>	47.65	48.09	49.5	50.8	54.7	55.8	56.01	56.52	57.42
<b>GDP Growth</b>	6.8	3.7	1.7	3.1	3.0	3.84	3.68	4.05	4.04

Source: Economic Survey of Pakistan 2015-16

**2. Theoretical and Empirical Review of literature:** Exhaustive literature prevails on employment - growth nexus with strong empirical evidence. The economic growth - employment relationship has been most debated issue in current literature particularly in ILO strategies. This exigency arises because majority of the countries are experiencing jobless growth- growth in which economy grows but growth in employment is not commensurate. Recent studies (Kapsos, 2005, Dopke, 2001) on European Union show that there is positive and strong relationship economic growth and employment implying that economic growth generates new jobs, but intensity differs from country to country and from period to period.

Employment is susceptible to multiple variables which affect it through several ways. A sustained economic growth acts as a catalyst for employment creation in the country. Cohen (2012) linked the long term record of success of US economy to a growing and well educated work force, ample research and development expenditures by both private and public sectors, the availability of capital to find expansion and access to market, development economists often reduce this to short hand of “the capital/labor ratio” in which capital investment in combination with a steady improving workforce, contribute to sustainable growth and rising personal income. On the other hand Yan (2009) rightly attributed China’s high and impressive economic growth since the initiation of economic reforms in 1978 to export-oriented, labor – intensive manufacturing activities resulting from massive innovation.

Herman (2001) empirically investigated the effect of economic growth on employment in EU countries between 2000 and 2011. The estimation results of the paper suggested the existence of a low employment elasticity of economic growth in EU. But that elasticity differs significantly from country to country. The paper suggested that only process of economic growth be taken into consideration which creates new job.

Pasha (2003) analyzed the relationship between growth and poverty reduction for Asian countries. The paper explored the macroeconomic variables which account for this relationship. The results of paper divulged that rate of employment and agricultural growths are strong determinants of pro- poor growth in Asian countries. The paper suggested that such policies need to be designed which help achieving higher agricultural development and greater employment generation.

Garner (2003) addressed the issue of whether or not current GDP growth in MENA countries generates adequate employment or that higher GDP growth is required, stating at the outset that ‘the bleak job picture is one of regions most urgent and destabilizing problem’. The paper focused upon two points that are relevant to the discussion, (i) the public sector remain an important source of employment and job creation and (ii) labor market rigidities in some countries are likely to impose serious efficiency costs and could undermine the country’s ability to grow in response to structural changes.

Providing good employment opportunities is perhaps the greatest challenge facing MENA region Keller and Nabil (2003)

Seyfried (2005) examined the relationship between employment and economic growth for ten largest states of United States employing simple regression technique on the data collected from the Bureau of Economic Analysis for the period 1990 -2003. The results were also compared with those generated through pooled regression. The findings of the study suggested that economic growth influences employment positively but insignificantly.

Choi (2007) examined the employment elasticity of growth for the Korea 2005 through 1971. The paper identified structural determinants of employment elasticity for the Korean economy. The paper pointed out that superficially labor saving technology alone might not be responsible for slow increase in employment but other side of the labor market, labor supply to wage is an important determinant of employment of economic growth. Economic growth has been insufficient compared to the region's labor force and that high growth does not guarantee good labor market outcomes. The study also suggested that unemployment will persist with high growth if it is capital intensive and pointed out that employment has strongly expanded despite low levels of growth. This, they argue is a reflection of the nature of employment creation in region whose public sector employment has been used as scapegoat for large portion of the labor force.

Ayoyinka (2011) took stock of how economic growth affects employment in Nigeria by formulating a simple model for employment. Relationship between economic growth and employment was estimated through OLS method. The results showed positive and statistically significant relationship between employment and economic growth in Nigeria. The paper recommended evolving labor- promoting investment strategies to reduce the high open unemployment in Nigeria.

Burggraeve et al (2015) examined the relationship between employment and GDP trend during various recession episodes in Belgium. The findings of the study suggested that employment and economic growth remained stable and unaffected by recession and cycles. A one percent rise in GDP led to 0.5 percent increase in employment.

**Analytical Framework:** The present study explains the association between economic growth and employment in Pakistan. The anatomy is that balanced economic growth creates job opportunities for both male and female. According Kuznets, (1955) economic growth measured by GDP per capita, first increases inequality, disparity starts declining as development process perpetuates. People tend to secure more jobs.

**The Model:** On the basis of empirical and theoretical studies the present study employs GDP for the estimation of inverse Solow type association between economic growth and employment. So economic growth and employment is modeled as:

$$Emp = f(GDP\ Growth)$$

**Data Sources:** The study covers the span from 1981 to 2015. Data has been taken from website of world Bank

### Methodology

The study uses Johansen co integration technique to capture the impact of economic growth on the employment in Pakistan for the period 1981 to 2015. As time series data show trend, so study carried out Augmented Dickey Fuller (ADF) 1979 test. A brief explanation of the ADF is given below:

**ADF Unit Root Test:** ADF has been developed by {Dickey and Fuller, (1981)} which is applied in case residuals seem to be time variant. The estimable equations modeled as following:

$$\Delta Y_t = \beta_0 + \beta_1 T + \gamma Y_{t-1} + \alpha_1 \sum_{i=1}^n \Delta Y_{t-i} + \varepsilon_t$$

Where  $\Delta$  is difference operator and  $\epsilon_t$  is error term satisfying the assumption of normality.

$$Y_t = (\Delta Y_t - Y_{t-1})$$

$$\Delta Y_{t-K} = Y_{t-K} - Y_{t-K-1} \quad (K=2, 3, 4, \dots, N)$$

The main object of the present study is to test whether  $\gamma$  is equal to zero or not. The series  $Y_t$  is to be stationary if the estimates of  $\gamma$  is less than tabulated t-statistic.

**Co-integration Test<sup>1</sup>:** Granger (1981) was first to introduce the concept of co-integration, which was further developed by Engel and Granger (1987), and Phillips and Ouliaris (1990). Johansen co-integration test is widely used which evaluates the postulation of linear deterministic drift in the data. Likelihood ratio (LR) is applied for number of Co-integrating vectors. The Likelihood Statistic Ratio (LSR) for the trace test is:

$$LSR = -T \sum_{I=1}^{P-n} \ln(1 - g_i)$$

Where  $g_x * 1$ ,  $g_p$  estimated p-x eigen values. The null hypothesis ( $H_0$ ) is that there are at most n co-integrating vectors. Here n is 0, 1, or 2.

### Empirical Results

We start with results of descriptive statistic exhibited in table (4.1). Results reveal that series are normally distributed as is evident from the value of kurtosis which appears to be near 3. For a normal distribution, if kurtosis = 3 and skewness = 0, the value of Jarque –Bera<sup>2</sup> is expected to be zero.

**Table 4.1:** Descriptive Statistics

Mean	34.13806	5.213387
Median	31.06000	5.060000
Maximum	54.70000	7.920000
Minimum	24.70000	1.750000
Std. Dev.	8.049398	1.922046
Skewness	1.061428	-0.264851
Kurtosis	3.082462	2.091275
Jarque-Bera Probability	5.829706	1.429053
	0.054212	0.489424
Sum	1058.280	161.6150
Sum Sq. Dev.	1943.784	110.8278
Observations	35	35

Source: Own calculation based on E.View (4)

<sup>1</sup> Johansen Co-integration technique is appropriate for multiple equations but one can also use it to single equation.

<sup>2</sup> Jarque-Bera test of normality is an asymptotic or large-sample test. Strictly speaking the sample size of in our employment-economic growth is rather small one.

Next the estimated results of ADF test are presented in table (4.2)

**Table 4.2: Unit Root Results**

Variables	level	Difference	1 percent	5 percent	prob	order
GDP Growth	-3.82	-5.80	-3.68	-2.97	0.000	I(0),I(1)
Employment	-4.53	-6.32	-3.68	-2.97	0.000	I(0),I(1)

**Calculations are based on Statistical package E.View (4):** Results shown in table (4.2) are indicative of no unit root, neither at level nor at first difference, both GDP as well as employment. This infers that long run relation between economic growth and employment exists.

Now regression employment- growth is run through OLS and residuals are saved. The results are presented in the table (4.6)

ADF test is carried out on residuals and results are reported in table (4.4)

**Table: (4.3): ADF Test for Residuals**

ADF	99%	95%	90%	D-W	P-value
-3.46*	-3.68	-2.97	-2.62	1.85	0.001

**Calculations are based on Statistical Package E.View (5.1):** \*Indicates the 5 percent level of significance

Results portrayed in table (4.3) indicate that residuals are stationary at first level.

After this Johansen Co-integration test is employed to evaluate the co-integration. Co-integration test results are reported in table (4.4).

**Table (4.4) Johansen Co -integration Test for Trace Statistic**

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.505168154	32.62894762	15.41	20.04
	9	9		
At most 1 **	0.344002856	12.22636647	3.76	6.65
	2	7		

**(\*\*) denotes rejection of the hypothesis at the 5%(1%) level  
Trace test indicates 2 co- integrating equation(s) at both 5% and 1% levels**

Johansen Co-integration Test TS shows refusal of no co-integration at 5% as is indicative from the values of trace statistic. Trace statistic values exceed critical values both at 5% and 1% significance level. Hence both variables are co-integrated

**Table 4.5 Johansen Test for Co-integration MEVS**

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value
None **	0.50516815494	20.4025811517	14.07
At most 1 **	0.34400285623	12.2263664779	3.76

**\*(\*\*)** denotes rejection of the hypothesis at the 5%(1%) level  
**Max-eigenvalue test indicates 2 cointegrating equation(s) at both 5% and 1% levels**

MEVS results illustrated in table (4.5) signal that the existence of two co-integrating vectors both at 1% as well as 5% level of significance. So variables are co-integrated. The existence of long run association between economic growth and employment leads us to analyze long run impact of economic growth on employment. The empirical findings of marginal impact of economic growth on employment is illustrated in table 4.7 below.

**Table 4.6:** Estimation results of Long-Run Relation Employment-GDP Model

Variable	Coefficient	St	t-stat	p-value
C	41.80	4.03	10.35	0.000
GDP growth	0.41	0.12	3.42	0.014
<b>R-Squared 0.36</b>	<b>D.W 2.06</b>	<b>Prob(F) 0.000</b>		

**Author’s own Calculation based on E.View:** The OLS results shown in the table (4.6) are evident of economic growth being the statistically significant at 1 percent level of significance. Value of Durbin –Watson statistic suggests the absence of serial autocorrelation. However, LM test also validates the results

**Table (4.7)** Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.343717	Probability	0.712187
Obs*R-squared	0.769680	Probability	0.680559

Source: Author’ own calculations

It is apparent from the results shown in table (4.7) that there is no serial correlation between GDP growth rate and employment.

**Table (4.8)** Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Probability
GDP growth does not Granger Cause employment	33	3.43725478	0.04867815
Employment does not Granger Cause GDP growth		0.24941019	0.78125500

Source: Author’ own calculation

The Granger Causality Test shown in the table (4.8) points that null hypothesis that economic growth does not cause employment is rejected. While null hypothesis that employment does not Granger cause economic growth is accepted.

## 5. Conclusion

This study empirically investigates the association between economic growth and employment with reference to Pakistan over the period of 1981-2015. The ADF test has been applied to test the stationarity of the variables of the study. Johansen C0-integration test to assert the existence of C0 -integration is executed. The long run estimation results suggest that economic growth is not only significant in creating job opportunities in Pakistan, it is also producing positive impact on employment during the study period as is indicative of the correct algebraic sign associated with GDP growth rate.

Only sustained balanced and resilient economic growth ensures productive, remunerative and employment. A nominal, wavering and untenable economic growth by every standard cannot be termed as pro-employed. A tottering growth of economy appears to just guarantee a mere pittance to its workers. Hence Pakistan under present circumstances needs to follow and implement Global Employment Agenda of ILO which stresses to address the twine issues of promoting higher productivity and creating employment opportunities in order to raise the standard of living of its masses and secure long-period sustainable growth. There is a pressing need for sustaining the rapid labor-absorbing growth which ensures the provision of productive and remunerative employment to the poor. Macroeconomic policies conducive to employment expansion are recommended to be adopted. Public expenditure through public works programs need to be enhanced. Public expenditures on basic education and skill development are readily made available for the poor. Last but not least that government needs to avoid short-lived and short sighted policies. Rather government needs to undertake long-term and effective measures to steer the country out of the current predicament. Comprehensive strategies for creating employment opportunities through robust economic growth need to be evolved. Enterprises in the formal sector with micro and small scale enterprises need to be created. This not only gives impetus to economic growth but also creates employment opportunities particularly for labor disadvantaged families.

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