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Sectoral Investment and Employment Generation in Pakistan: An Econometric Analysis

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ABSTRACT

This study is projected at investigating the influence of Sectoral Investment on Employment Generation. For this purpose, time series data is collected from Pakistan over the period from 1972 to 2017. Augmented Dickey fuller test reveals that few variables considered in the study are stationary at level and few at first difference. So, econometric results are estimated using autoregressive and distributed lag model for long run elasticities. Long run co-integrating relationship is established at 2.5 percent level using ARDL bound testing approach. ARDL long run results concludes that Agricultural Investment, Industrial Investment, Services Sector Investment and Trade openness are increasing employment while inflation and tax revenue are seemed to be negatively related with employment of Pakistan in the long run.

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1. Introduction

Employment Generation is considered as key tool which shows the progress of any society. It is the only factor which may be a cause of reducing poverty among developing countries but employment opportunities are dependent upon available resources, technology, governance, political scenario and institutional plans. Similarly, human capital, skills and capability regulate outcome or reward of employed labor force. Pakistan is the 10th largest country of the world according to the size of the labor force. It has been observed that employment is decreased in Pakistan during past few years there may be various reasons for this one noticeable thing is that labor force participation rate has also decreased at the ages of 15-19, 20-24. Almost, 24 percent labor force is involved directly or indirectly in agriculture and agriculture supplied raw material to the industrial sector. But Investments in agriculture sector and use of mechanized tools have made agriculture sector relatively capital intensive in recent years and it has shifted labor force to other sectors.

Kugler and Kugler (2001) discussed the impact of Payroll Taxes on Employment and Wages during the time period of reforms of Colombian Social Security. The estimates of the study reflected that only about a fifth of increase in payroll taxes was shifted to workers as lower wages and the unemployment among the unskilled was increased due to sharp rise in labor costs faced by firms. Chukwu et al. (2003) examined growth of Nigeria for 1981 – 2013 and showed that capital expenditure on agriculture and health had negative relationship with economic growth and capital expenditure on road education had positive relationship with economic growth.

Chen and Ku (2005) explained the consequences of investment on domestic employment in China for period of 1993-1999. The study examined that foreign production had lead to increasing domestic employment and at the same time overseas production reduced costs of domestic production. Aterido and Dreamier (2007) examined Investment and employment growth for the time period of 2000-2006. Study showed that weak business environment shifted downward the size of firms and it was the cause of reduction in employment and growth of all firms specially micro and small firms. Corruption and poor access also reduced the employment by affecting the growth of medium size and large firms.

Bose et al. (2007) examined results of government expenditure in 30 developing countries during 1970-1980. The result showed that capital and expenditure on education had positive effect on economic growth. Baba et.al (2010) explored the cause and effect relation between Investment and Agricultural Growth and Rural Development of Himachal Pradesh. Moreover they investigated about behavior of investment in agriculture growth and poverty alleviation. The findings of the study explored that there was a negative trend in the growth rate of public investment and it was found that there was a significance effect of public and private investment on poverty alleviation and agricultural growth.

Amjad (2010) analyzed informal employment and foreign direct investment in Pakistan using data of 30 years from 1980 to 2010. The researchers estimated that there existed positive relationship between employment and foreign direct investment, in Pakistan while Informal employment is negatively related with export, GDP, electricity consumption, manufacture & service sector. Informal employment was positively related with education level and tax rate.

Agrawal et al. (2011) interrogated the effect of FDI on economic growth of India and China. The study found, from the analysis on time series data ranged from 1993-2009, that an increase in FDI would result increase in GDP of China and India. Beatrice (2012) explained impact of capital investment on unemployment in Romania for period of 2004-2012 and explored significant reduction of net investments due to a decrease in FDI and due to lower domestic and external demand which had led to rising unemployment.

Ahmad and Ahsan (2011) explored the role of service sector in the enhancement of growth of the economy, development of trade and generation of employment in Pakistan. According to them, information technology (IT), research and development, up gradation of technology and human resource development (HRD), dynamic leadership at national level, Quality education can be improved the services sector of Pakistan. Koojaroenprasit (2012) examined the effect of foreign Direct Investment on Economic Growth of South Korean economy for the time period of 1980- 2009. Researchers explored that FDI had positive and significant impact on economic growth. Moreover, the study indicated that human capital, employment and export also had positive while domestic investment had no significant impact on economic growth.

Phetsavong and Ichihashi (2012) estimated the impact of public investment on economic growth of developing Asian Countries by using the time series data during the period of 1984-2009. Result showed that private domestic investment contributed the main important role in generating economic growth, and second important factor was FDI so FDI and private investment had positive relationship with economic growth, while public consumption had negative impact on economic growth.

Dolence and Laporesk (2012) investigated the relationship between Labor Taxation and its and Employment Growth. For this purpose characteristics of labor taxation and labor market performance had studied for five different groups of workers. It was concluded that European Union -27 should continue with the trends tax wage as it will improve the labor market performance in the United States. Adekunle and Aderemi (2012) explored the relationship among Domestic Investment, Capital Formation and Population Growth in Nigerian Economy. The researchers concluded that the relation between growth rates of the population and capital formation was indirect and moreover the policy recommended that capital formation can be used to increase income and to reduce poverty

in the country. Aurangzeb and Haq (2012) estimated the impact of Investment on economic growth of Pakistan during 1981-2010. The study concluded public investment, private investment and foreign direct investment as having positive impact on economic growth.

Faridi and Chaudhry (2013) explored the relationship of globalization with employment in Pakistan. The results showed that globalization, health expenditure and national savings were positively related with employment while population had negative effect on employment. Umai and Ullah (2013) investigated the effects of GDP and Inflation on Unemployment Rate in Pakistan. According to the result, inflation had insignificant impact on GDP and unemployment but the correlation between unemployment and inflation was positive and between GDP and unemployment rate the coefficient was statistically insignificant. Ileginosa et al. (2015) examined the impact of domestic investment on economic growth and analyzed trends of private investment on economic growth. The study took time series data from economy of Nigeria over the period of time from 1970 to 2013 and illustrated that economic growth was positively influenced by private investment while government protective investment exert inverse impact on economic growth.

Shuaib and Ndidi (2015) investigated the cause effect relation between capital formation and economic development of Nigeria. According to them, there exist strong relationship between capital formation and economic development and government should continue to encourage savings, investment and improve infrastructure which leads towards the sustainable growth. Faridi et al. (2015) investigated the influence of Sectoral output on employment in Pakistan ranging from 1972 to 2014. The study explored that industrial, services sector and exports had positive effect on employment and consumer price index, exchange rate and population had positive as well as negative effect on employment. Dikko (2016) explored the impact of Capital Accumulation on Unemployment in South Africa and Nigeria. The findings of the study suggested that capital accumulation and unemployment were positively correlated with each other and moreover capital accumulation increased the unemployment rates in Namibia, Nigeria, and South Africa. It was suggested that capital accumulation required for the steady state level of employment, satisfactory level of economic growth and development.

Vermeulen (2017) explored relationship between Inflation and unemployment in South Africa. He found that there exist no tradeoff between inflation and employment. Moreover, there exists negative impact of inflation on unemployment in short run while positive long run relationship was found. This study is different from previous studies in a number of ways. Previously, the effectiveness of various economic variables has been observed with employment and economic growth but few studies were relevant to Sectoral investment and employment generation. Keeping in view, the objective of the study is to explore the influence of Sectoral Investment on Employment Generation. The study considers various sectors as Sectoral investment like investments on Agriculture, Industrial and services sectors. The objective of the study is to determine the effect of Sectoral Investment (Agriculture Sector, Services Sector and Industrial Sector) on the Employment Generation in Pakistan during 1972 - 2017.

2. Data and Methodology

This section gives detailed description about data sources, type, range, methodology to be used for estimation, model specification and variables used in this study along with their hypotheses.

2.1 Data Description

The study employs annual time series data over the period from 1972 to 2017. Data on some selected variables are collected through official sources such as World Development Indicators published by World Bank Organization, Handbook of Statistics on Pakistan Economy 2015 published by State Bank of Pakistan and Economic Survey of Pakistan (2017-18) published by Federal Bureau of Statistics Pakistan. All variables are taken in natural log form so that results may be interpreted in percentage form or for calculation of elasticities.

2.2 Model Specification

Considering the objective of the study which is to see the influence of Sectoral Investment on Employment Generation in Pakistan, the study specifies following models;

$$Employment = f\begin{Bmatrix} Agricultural\ Investment, Industrial\ Investment, \\ Services\ Sector\ Investment, Inflation, \\ Trade\ Expansion, Fiscal\ Policy \end{Bmatrix}$$

The above model may be rewritten in equation form as given below;

$$EMP = \beta_0 + \beta_1 AGRIN + \beta_2 INDIN + \beta_3 SERIN + \beta_4 INF + \beta_5 TR + \beta_6 FP + u_i$$

In the above equation, EMP shows log of employment, AGRIN is log of investment in agriculture sector, INDIN presents log of investment in industrial sector, SERIN represents log of investment in services sector, INF demonstrates log of Inflation, TR illustrates log of Trade Expansion and FP exhibits log of fiscal policy while β'_s are coefficients and u_i is error term of this model.

2.3 Definitions of Variables

The variables used in above econometric model may be defined as follows;

2.3.1 Employment (EMP)

Employment may be defined as the proportion of population which is employed during the survey week. It is dependent variables in this study and employed labor force in Pakistan is taken as proxy of employment. Employed labor force is measured in numbers.

2.3.2 Agricultural Investment (AGRIN)

Agricultural Investment is the amount of investment in Agriculture sector. In this study, gross fixed capital formation of agriculture sector is taken as proxy of Agricultural investment which is measured in Pakistani rupees. Agricultural investment is expected to be positively related with employment in Pakistan.

2.3.3 Industrial Investment (INDIN)

Industrial Investment is the amount of investment in Industrial sector. In this study, gross fixed capital formation of industrial sector is taken as proxy of Industrial investment which is measured in Pakistani rupees. It is hypothesized as positive with employment in Pakistan.

2.3.4 Services Sector Investment (SERIN)

It is investment done in expansion of services sector of Pakistan. In this study, gross fixed capital formation of services sector is taken as proxy of Services Sector investment which is measured in Pakistani rupees. The expected relationship between Services Sector Investment and employment is positive in Pakistan.

2.3.5 Inflation (INF)

To trace out the effect of inflation on employment, the study considers consumer price index. Consumer price index is price index which is measured in units and it is expected that inflation and employment may be negatively or positively associated with each other. Faridi et al. (2015) found negative or positive both impact of CPI on employment in the study.

2.3.6 Trade Expansion (TR)

To see the effect of expansion in trade on employment generation, the study considers trade openness which can be measured by following formula;

Trade openness = (Exports + Imports) / GDP

Trade openness is measured in units. Trade openness is expected to be positive or negative with employment of Pakistan.

2.3.7 Fiscal Policy (FP)

Fiscal policy is an important factor which is having a significant effect on employment generation. The study considers tax revenue as a proxy of fiscal policy. It is measured in Pakistani rupees. It is hypothesized that tax revenue may have negative effect on employment of Pakistan.

Table 1: Description of Variables

Variables	Description	Sources of Data	Units of Measurement	Expected Relationship
EMP	Employed Labor Force	World Development Indicators, Economic Survey of Pakistan (2017-18)	Number	Dependent Variable
AGRIN	Agricultural Investment	Handbook of Statistics on Pakistan Economy 2015, Economic Survey of Pakistan (2017-18)	Pakistani Rupees	Positive
INDIN	Industrial Investment	Handbook of Statistics on Pakistan Economy 2015, Economic Survey of Pakistan (2017-18)	Pakistani Rupees	Positive
SERIN	Services Sector Investment	Handbook of Statistics on Pakistan Economy 2015, Economic Survey of Pakistan (2017-18)	Pakistani Rupees	Positive
INF	Inflation, Consumer Price Index	World Development Indicators	Index/ Units	Negative
TR	Trade Openness	World Development Indicators	Index/ Units	Positive/ Negative
FP	Fiscal Policy, Tax Revenue	World Development Indicators	Pakistani Rupees	Negative

2.4 Methodology

The results of the study would be estimated on preliminary stage and econometric stages. Preliminary stage of analysis considers Granger Causality test while econometric analysis includes unit root test, ARDL bound test, ARDL long run estimates and ARDL short run estimates along with few diagnostic statistics. ARDL technique is normally used where few variables of econometric model are stationary at level or I (0) and few variables are integrated of order 1 or I (1). The study uses Phillips and Perrons (PP) test for examination of unit root problem while ARDL bound test would be calculated using following equation;

$$EMP = \left[\begin{array}{c} \delta_{\circ} + \sum_{j=0}^{u} \delta_{2j}\, \Delta AGRIN_{t-j} + \sum_{j=0}^{u} \delta_{3j}\, \Delta INDIN_{t-j} + \sum_{j=0}^{u} \delta_{4j}\, \Delta SERIN_{t-j} \\ + \sum_{j=0}^{u} \delta_{5j}\, \Delta INF_{t-j} + \sum_{j=0}^{u} \delta_{6j}\, \Delta TR_{t-j} + \sum_{j=0}^{u} \delta_{7j}\, \Delta FP_{t-j} \\ + \alpha_0\, EMP_{t-1} + \alpha_1\, AGRIN_{t-1} + \alpha_2\, INDIN_{t-1} + \alpha_3\, SERIN_{t-1} \\ + \alpha_4\, INF_{t-1} + \alpha_5\, TR_{t-1} + \alpha_6\, FP_{t-1} + \omega_{1t} \end{array}\right]$$

ARDL long run results may be estimated by using following equation;

$$EMP = \left[\begin{array}{c} d_{\circ} + \sum_{j=1}^{m} d_{1j}\, \Delta EMP_{t-j} + \sum_{j=0}^{o} d_{3j}\, AGRIN_{t-j} + \sum_{j=0}^{p} d_{4j}\, INDIN_{t-j} \\ + \sum_{j=0}^{q} d_{5j}\, SERIN_{t-j} + \sum_{j=0}^{r} d_{6j}\, INF_{t-j} + \sum_{j=0}^{s} d_{7j} TR_{t-j} \\ + \sum_{j=0}^{t} d_{8j} FP_{t-j} + v_1 \end{array}\right]$$

ARDL short run results may be estimated by using following equation;

$$\Delta EMP = \left[g_{\circ} + \sum_{j=1}^{m} g_{1j}\, \Delta EMP_{t-j} + \sum_{j=0}^{n} g_{2j}\, \Delta AGRIN_{t-j} + \sum_{j=0}^{o} g_{3j}\, \Delta INDIN_{t-j} + \sum_{j=0}^{p} g_{4j}\, \Delta SERIN_{t-j} + \sum_{j=0}^{q} g_{5j}\, \Delta INF_{t-j} + \sum_{j=0}^{r} g_{6j}\, \Delta TR_{t-j} + \sum_{j=0}^{s} g_{7j} \Delta FP_{t-j} + \psi_1\, ECM_{t-1} + \in_{1_t} \right]$$

Where δ_i, d_i, g_i are coefficients, $\in_{1_t}$, v_1, ω_{1t} are error terms and ECM_{t-1} is error correction mechanism or speed of adjustment term.

3. Econometric Results

This section reports result of the study which are calculated using causality analysis, Augmented Dickey Fuller test – Unit Root test, ARDL bound testing, ARDL long run & ARDL short run tests.

3.1 Causality Analysis

The results of causality analysis are estimated using Granger Causality test which are reported in table 2. It reveals that Agricultural investment has one way causal relationship with employment. Employment Labor Force is a source of Agricultural Investment in Pakistan as Pakistan is an agriculturist country. Services sector investment has also causal affect on employment in Pakistan shows that if services sector is developed in Pakistan so there would be effect on Employed labor force. Industrial Investment is proved to be a cause of employment generation and on the other side employed labor force also affects industrial investment in Pakistan. Tax Revenue has no causal effect on employed labor force. Similarly, trade openness does not have any causal effect on employed labor force in Pakistan.

Table 2: Granger Causality Test

Granger Causality Test Results	
Agricultural Investment ←Employment	Unidirectional Causality
Services Sector Investment → Employment	Unidirectional Causality
Industrial Investment ↔ Employment	Bidirectional Causality
Tax Revenue ≠ Employment	No Causality
Trade Openness ≠ Employment	No Causality
Consumer Price Index ←Employment	Unidirectional Causality

3.2 Augmented Dickey Fuller – Unit Root Test

In this study, Augmented Dickey Fuller test is used to examine the problem of unit root in the variables and their results are given in table 3. The variables i.e. employed labor force, agricultural investment, industrial investment, services sector investment, fiscal policy (tax revenue), inflation & trade openness are explored at level by including Intercept and Trend & Intercept and also at 1st difference by including Intercept. The results finalizes that Employment, Agricultural Investment and Services Sector Investment are stationary at 1st difference while Fiscal Policy (Tax Revenue), Industrial Investment, Inflation (Consumer Price Index) and Trade Openness are stationary at level. These results indicate that, having few variables stationary at level and few at 1st difference, Autoregressive and Distributed lag model (ARDL) is the best choice for estimation of econometric results.

3.3 ARDL Bound Test

After checking unit root test using Augmented Dickey Fuller test, it is necessary to check existence of long run relationship among variables used in the study which are employed labor force, agricultural investment, industrial investment, services sector investment, inflation, tax revenue and trade openness. The value of F-statistic is 4.1157 with number of parameters 6. This value of F-statistic is greater than the value of upper bound (I1 bound) at 2.5 percent level of significance as reported in table 4. It indicates that there exists long run relationships among variables used in this study.

Table 3: Unit Root Test

Variable	Test for unit root in	By Including	t- Statistics	Probability	Remarks
Employed Labor Force	Level	Intercept	0.456131	0.9831	I(1)
		Intercept and trend	-3.00731	0.1421	
	1st difference	Intercept	-9.9955	0.0000	
Agricultural Investment	level	Intercept	-0.805515	0.8074	I(1)
		Intercept and trend	-2.282712	0.4339	
	1st difference	Intercept	-6.46953	0.000	
Fiscal Policy	level	Intercept	-4.71495	0.0004	I(0)
Services Sector Investment	level	Intercept	-0.427535	0.8951	I(1)
		Intercept and trend	-2.62782	0.2706	
	1st difference	Intercept	-8.47023	0.000	
Industrial Investment	level	Intercept	-3.234251	0.0247	I(0)
Inflation	level	Intercept	-1.44317	0.5523	I(0)
		Intercept and trend	-3.73144	0.0307	
Trade Openness	level	intercept	-3.09785	0.0342	I(0)

Table 4: Bound Test Results

Test Statistic	Value	K
F-statistic	4.115749	6
Critical Value Bounds		
Significance	**I0 Bound**	**I1 Bound**
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Note: Null Hypothesis: No long-run relationships exist

3.4 ARDL Long run Results

The results of ARDL long run are presented in table 5 in which first column is about names of variables, second column shows values of coefficients, third column reports the values of standard errors, forth column presents the values of t-statistics and fifth column illustrates probability values concerning to each variable. Considering Agricultural Investment, the results reveal that investment in agriculture is significant variable and gives positive impression on employment in long run. It may be interpreted as one percent increase in investment in agriculture will lead to 0.10 percent increase in employment in Pakistan in the long run. Positive relationship may be defined as higher investment in agriculture sector will increase more demand for agricultural inputs like labor. Hiring more labor in this way will be a cause of more employed labor force.

Investment in industrial sector is also a significant variable and has positive impact on employment in long run. Statistically, its interpretation may be as one percent increase in investment in industrial sector will increase employed labor force by 0.12 percent. Positive relationship may be justified as more investment in industrial sector will increase demand for labor and capital. Directly or indirectly, demand for labor will increase in every sector of economy so there would be upward pressure on employment in the long run. As regards to investment in services sector, it is seen that it is statistically significant variable and gives positive effect on employment in the long run in Pakistan. On the average, one percent increase in investment in industrial sector will be a cause of 0.9 percent increase in employment. The positive sign may be explained as when investment will increase in services sector, demand for worker or labor will increase. The firms or industries or other sectors will hire more labor so employment will increase in the long run. Faridi et al. (2015) also found the same relationship in their studies.

With regards to Inflation, it is observed that there is negative association of inflation in Pakistan with employed labor force in the long run. On the average, one percent higher inflation may decrease employed labor force by 0.23 percent. Statistically, its coefficient is significant as well. The reason of negative sign may be that higher inflation

will inversely affect purchasing power of people. It will severely affect demand for goods and services in return demand for labor will also decrease causing lower level of employment. Faridi et al. (2015) also found negative impact of CPI on employment in their studies. In this study, Tax revenue is found to be statistically insignificant with employment labor force. Although it is having negative sign attached with which portrays those higher taxes may become a cause of lowering purchasing power in the long run which slowdowns the process of industrialization in Pakistan. In this response, employed labor force will decrease.

Trade openness is obtained as having insignificant probability value with positive sign. More trade with other countries will be the most important cause of having more employed labor force in the long run. To trace out the effect of excluded variables from the study, constant term is considered in this study which is also significant with positive sign. In the long run, elasticity of employment with respect to Agricultural Investment, Industrial Investment, Services sector Investment and Inflation are respectively 0.10, 0.12, 0.09 and -0.23.

Table 5: ARDL Long Run Result

Variable	Coefficient	Standard Errors	t-Statistic	Probability
Agricultural Investment	0.1040	0.0218	4.7517	0.0001
Industrial Investment	0.1232	0.0429	2.8723	0.0082
Services Sector Investment	0.0932	0.0267	3.4832	0.0018
Inflation	-0.2329	0.1291	-1.8036	0.0834
Tax Revenue	-0.0172	0.0521	-0.3303	0.7439
Trade Openness	0.0152	0.1126	0.1349	0.8938
Constant	10.9583	1.4343	7.6398	0.0000
Selected Model: ARDL(1, 2, 0, 2, 2, 1, 2)				

3.5 ARDL Short run Results

The short run results of ARDL are given in table 6 with short run coefficients, standard errors, t-statistic and probability values. In the short run, without lagged terms, agricultural investment, industrial investment and services sector investment are positive with employment while their lagged terms are negative with employed labor force. Inflation is negative as well as positive, tax revenue is also negative while trade openness is positive with employed labor force. Considering the most important of them i.e. Error Correction term, it is revealed to be negative which shows that the short run results would be converged towards long run results if there exist any disequilibrium in the short run.

Table 6: ARDL Short run Result

Short run coefficient				
Variable	**Coefficient**	**Standard Errors**	**t-Statistic**	**Probability**
D(AGRIN)	0.019278	0.027501	0.700998	0.4898
D(AGRIN(-1))	-0.065391	0.025971	-2.517856	0.0186
D(INDINC)	0.017167	0.023260	0.738028	0.4674
D(INDIN(-1))	-0.050750	0.026513	-1.914161	0.0671
D(SERIN)	0.065810	0.019356	3.399972	0.0023
D(SERIN(-1))	-0.028019	0.016410	-1.707422	0.1001
D(INF)	-0.503323	0.194342	-2.589882	0.0158
D(INF(-1))	0.544195	0.188191	2.891711	0.0078
D(FP)	-0.207188	0.076082	-2.723203	0.0116
D(TR)	0.009903	0.074031	0.133771	0.8947
CointEq (-1)	-0.651285	0.175010	-3.721409	0.0010

4. Concluding Remarks

There is a close linkage among investments of various sectors and their impact on employment generation in Pakistan. Considering the importance, the present study explores the contribution of Sectoral investment in employment generation in Pakistan. For covering the objective, the study collects time series data from 1972 to 2017 from Pakistan. Reliable sources are followed for the collection of data like Economic Survey of Pakistan (2017-18), Handbook of Statistics on Pakistan Economy 2015 and World Development Indicators. For having results in form of elasticities, the study uses log - log form of the model by taking natural log of all variables. While specifying the model, Investments in Agriculture (Pak. Rupees), Industrial (Pak. Rupees) & Services sectors (Pak.

Rupees) along with some control/ supporting variables i.e. Inflation (Index/ Units), Trade Openness (Index/ Units) & Tax Revenue (Pak. Rupees) are taken as explanatory variables while Employed labor force (Numbers) is taken as dependent variable.

Granger Causality is applied for having cause and effect relationships among variables which reveal Bidirectional Causality among Industrial Investment and Employment, Unidirectional Causality among Agricultural Investment & Employment, Services Sector Investment & Employment, Consumer Price Index & Employment while No causality among Trade Openness & Employment, Tax Revenue & Employment in Pakistan. Augmented Dickey Fuller – Unit root test is applied to analyze the stationary of variables which concludes that Employed labor force, agricultural investment and services sector investment are stationary at first difference I(1) while trade openness, Inflation, Industrial Investment and Tax Revenue are stationary at level I(0). Having few variables stationary at level and few at 1st difference indicate that application of Autoregressive and Distributed Lag (ARDL) model for long run and short run results are most suitable in this study.

ARDL Bound test is applied for checking long run association among variables which decides that there exists long run Cointegration among variables used in this study. Moreover, it has been observed that Agricultural Investment, Industrial Investment and Services Sector Investment are obtained as enhancing factors for employment in Pakistan in the long run with significant coefficients while inflation and taxes are seemed to be reducing factors for employment. On the other side, trade openness has been uncovered as increasing employment in Pakistan but coefficient value is not statistically significant. In the short run, error correction term shows that there is convergence from short run results to long run results due to having negative sign attached with CointEq (-1).

On the basis of econometric results of the study, it may be suggested that there is need to use expansionary Fiscal & Trade policy in Pakistan for employment generation. Moreover, investments in agriculture sector, industrial sector and services sector are should also be increased for attaining higher employment level in Pakistan in the long run. Price level should also be controlled to curing purchasing power of people from harmful effects.

References

Adetiloye, K. A., & Adeyemo, K. A. (2012). Domestic Investment, Capital Formation and Population Growth in Nigeria. *Developing Country Studies*, *2*(7), 37-46.

Agrawal, G., & Khan, M. A. (2011). Impact of FDI on GDP: A comparative study of China and India. *International Journal of Business and Management*, *6*(10), 71

Ahmed, A., & Ahsan, H. (2011). Contribution of services sector in the economy of Pakistan. *Working Papers & Research Reports, 2011*.

Amjad, Z. (2010). Informal Employment and Foreign Direct Investment In Pakistan". International Journal Of Sciences: Basic And Applied Research (IJSBAR).

Aterido, R., & Hallward-Driemeier, M. (2007). Investment climate and employment growth: The impact of access to finance, corruption and regulations across firms.

Baba, S. H., Saini, A. S., Sharma, K. D., and Thakur, D. R. (2010). Impact of investment on agricultural growth and rural development in Himachal Pradesh: Dynamics of public and private investment. *Indian Journal of Agricultural Economics*, *65*(1), 135-158.

Bose, N., Haque, M. E., & Osborn, D. R. (2007). Public expenditure and economic growth: a disaggregated analysis for developing countries. *The Manchester School*, *75*(5), 533-556.

Chen, T. J., & Ku, Y. H. (2005). The effect of overseas investment on domestic employment. In *International Trade in East Asia, NBER-East Asia Seminar on Economics, Volume 14* (pp. 109-132). University of Chicago Press.

Dikko, A. (2016). Capital Accumulation and Unemployment in Namibia, Nigeria, and South Africa. *International Journal of Social, Behavioural, Educational, Economic, Business and Industrial Engineering*, *10*(1), 19-31.

Faridi, Z.M.D., Nasim, I., Bashir, F.(2015). A Time Series Analysis Of Investigating The Influence Of Sectoral Output On Employment In Pakistan. Journal Of Poverty, Investment and Development,15.

Faridi, M. Z., & Chaudhry, M. A. (2013). Globalization and its impact on Employment: Evidence from Pakistan. *Journal of Political Studies*, *20*(2), 125.

Haq, A. U. (2012). Impact of Investment Activities on Economic Growth of Pakistan. *Business & Management Review*, *2*.

Iacovoiu, V. B. (2012). Impact of Capital Investments on Unemployment in the Context of Economic Crisis. The Case of Romania. *Petroleum-Gas University of Ploieşti, Bd. Bucureşti*, *39*, 36-47

Ilegbinosa, I. A., Micheal, A., & Watson, S. I. (2015). Domestic Investment and Economic Growth in Nigeria From 1970-2013: An Econometric Analysis. *Canadian Social Science*, *11*(6), 70-79.

Khan, R. A. (2008). Role of construction sector in economic growth: Empirical evidence from Pakistan economy. In *Proceedings of the First International Conference on Construction in Developing Countries (ICCIDC), Karachi, Pakistan* (pp. 279-290).

Koojaroenprasit, S. (2012). The impact of foreign direct investment on economic growth: A case study of South Korea. *International Journal of Business and Social Science*, *3*(21).

Kugler, A., & Kugler, M. (2009). Labor market effects of payroll taxes in developing countries: evidence from Colombia. *Economic development and cultural change*, *57*(2), 335-358.

Laporšek, S., & Dolenc, P. (2012). Labour taxation and its impact on employment growth. Managing Global Transitions , 10(3), 301–318

Phetsavong, K., & Ichihashi, M. (2012). The impact of public and private investment on economic growth: evidence from developing Asian countries. *Hiroshima University*.

Rendall, M. (2013). Structural change in developing countries: has it decreased gender inequality?. *World Development*, *45*, 1-16.

Rizvi, S. Z. A., & Nishat, M. (2009). The impact of foreign direct investment on employment opportunities: panel data analysis: empirical evidence from Pakistan, India and China. *The Pakistan Development Review*, 841-851.

Shuaib, I. M., & Ndidi, N. D. E. (2015). Capital formation: impact on the economic development of Nigeria 1960-2013. *European Journal of Business, Economics and Accountancy*, *3*(3), 23-40.

Umair, M., & Ullah, R. (2013). Impact of GDP and Inflation on Unemployment Rate: A Study of Pakistan Economy in 2000-2010. *International Review of Management and Business Research*, *2*(2), 388.

Vermeulen, J. C. (2017). Inflation and unemployment in South Africa: Is the Phillips curve still dead?. *Southern African Business Review*, *21*(1), 20-54.