The Impact of Domestic Investment on Economic Growth During 1980- 2016:(A Case Study of Pakistan)

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Abstract
Domestic investment performs a significant role to influence the economic growth in the society of Pakistan. The enhancement of economic development depends on domestic investment of the society. Labor force and investment show the productivity of an economy. Secondary data has been accumulated from the World Development Indicators (WDI) during of 1980 to 2016 to trace out the effect of the domestic investment on economic growth. The stationarity of data of domestic investment, exports, labor force, and economic growth are examined by applying Augment Dicky Fuller (ADF) test. Moreover, Johansen Co-integration test is used to determine the long-run association between domestic investment and economic growth. Error Correction Model (ECM) test was employed to scrutinize the short-run relationship between economic growth and domestic investment. The findings showed that exports positively influence on economic growth. Besides this, domestic investment and labor force negatively affect the economic growth. So, due to lack of skilled labor force and deficiency of proper investment, the share of the labor force and domestic investment have an insignificant impact on the economic growth in the society.
Keywords: Domestic investment, Economic growth, co-integration, ECM, Labor force, and Exports.

1. Introduction

Economic growth relies on the dynamic capacity of an economy in order to boost the level of national income of the society. Economic growth indicates the increment of services and goods developed by the economy. It is associated with potential output at full employment (Sial 2010). Investment rate is the fundamental factor to economic growth to examine the economic performance of a country.

Domestic investment is related to the change in capital to improve the economic growth in Pakistan. The investment brings change in capital stock during a given period. Investment can be measured over the time. Investment is the source of production of goods and services which are employed to produce other goods (Canh, 2017). Public and private investments increase the economic activity to create new sources of producing goods and services to stimulate the economic growth of Pakistan.

Furthermore, it is observed that economic growth in Pakistan only requires modification and development of domestic investment. Emphasizing on domestic investment inevitably enhances modification of the economy in the society. Due to high exportable activities and low inflationary rate, economic growth would be accelerated in Pakistan.

A little study is relatively conducted between correlation domestic investment and economic growth in Pakistan. Even if many works were conducted on the effect of Foreign Direct Investment (FDI) on economic growth. FDI is likely to help the economic growth (Ali, 2017). Thus, this paper is planned to bridge this gap in the literature through scrutinizing the connection between domestic investment and economic growth in the society of Pakistan.

The national investment is a significant factor which influences the economic growth of Pakistan. Economic growth looks like a foremost component of the business cycle. Moreover, local investment has an association with several macroeconomic factors made countries to pursue the asset choice for creating a positive climate for economic development (Bakari, 2017).

Domestic investment on public infrastructures like roads, sewerage connections, electricity and power generation, education, health, and communication projects play a vital role to increase production of goods and services in the economic activity of Pakistan. Investment plays a significant role in driving growth by enriching productivity levels (Haq, 2012). Pakistan is one of developing countries to face various problems to boost the economic growth. It requires more exports, human capital and capital (Romer, 2006). Pakistan needs to get benefit from better economic openness by its amalgamation into economies of globalization. With the help of globalization, Pakistan should maintain the pillars of the development of national economy. Thus, the paper tries to investigate empirically the influence of domestic investment and economic growth in Pakistan. So, it is separated into 6 sections. The next section displays the theoretical framework. Section 3 discusses empirical and theoretical pieces of literature. Section 4 represents methodology and modeling. Section 5 explains the results and estimations of various tests. Eventually, section 6 portrays concluding remarks and recommendations.

2. Theoretical framework

Neoclassical theory of investment is developed to portray the investment behavior. Investment behavior is associated with human beings. Haman beings play a positive role to accumulate capital to increase domestic investment. Neoclassical theory of investment explains the association between domestic investment and economic growth. In the nineteenth and twentieth century at the period of industrialization, the theory was found. The climate of domestic investment is completely associated with the growth rate of real output. More importantly, the relationship inputs and outputs are allocated to increase the economic growth. Domestic investment seems crucial for the economic prosperity.

Barro (1999) displayed a heavy saving stimulates the domestic investment and it eventually guides to a stable condition of output per worker, savings enriches economic growth rate.

Domestic investment is a productive factor for economic growth. Hence, domestic investments and capital formation increase economic growth. Economic model advocates that rise in investment leads to boost the capital formation which enhances the economic growth.

3. Literature review

A large number of empirical researches were carried out to scrutinize the relationship between domestic investments on economic growth. Economic growth relies on many factors which influence the steeper growth of the economy. In this particular area, various researches were organized by Rabanwaz Jafar et al 2015, Alfa 2012, Bint-e- Ajaz and Ellahi 2012, Swaby 2007, Nazmi and Ramirez (1997), Ali et al 2017,Uddin and Aziz 2014, Farooq 2016, Munnell (1992), kandege 2010, Ephaphra and Massawe 2016 and many more to study empirical association between investment and economic growth.

Rabnawaz and Jafar (2015) examine the positive connection between public investment and gross domestic product. For empirical investigation of investment and gross domestic product, time series data were gathered during the period of 1980-2009. To identify the presences of a bi-causal relationship between GDP and public investment, Granger causality test was employed.

Kandege (2010) evaluates the impact of investment on economic growth in Namibia during the period of 1970-2005. Many variables like public investment, net exports, economic openness, and human capital are included the positively significant influence on economic growth in the short and long term. So, the co-integration and error correction modeling approach has been used.

Swaby (2007) highlights the connection between public investment and growth in Jamaica. Public investment is associated with capital expenditure by Central Government. VECM is employed to seek the relationship between investment and growth.

Sial (2016) scrutinized in short and long run the importance of the investment on the economic health by applying the vector autoregressive approach (VAR). Private investment positively effects on financial growth. Ullah et al (2014) found the collaboration between domestic investment and foreign direct investment. Cointegration approach was used to in the paper.

Ozoh et al (2008) analyzed that investment has a key role to determine the economic growth. Economic growth depends on the effective decision of investment. The increment of investment leads to increase the economic prosperity.

Ali et al (2017) portrayed the global economic integration leads to enriching the Foreign Direct Investment. The study utilized time series data during 1991- 2015. Multiple regression lines were employed. The results indicate that foreign direct investment will boost the economic growth of Pakistan.

Khaliq and Noy (2007) investigate the influence of foreign direct investment on economic growth in Indonesia. FDI directly increase the economic growth. Devarajan et al (1996) examined that capital investment commonly related to productivity. Explicitly, it was found that the capital expenditure and current expenditure are essential for economic wealth.

Yakita (2001) found the help of the growth engine of human capital accumulation, economic health can be improved. It is analyzed that the monetary policy effects on economic growth. Fan et al (2004) discussed that government expenditure plays an essential to develop the infrastructure. The development of infrastructure is required for the all sectors advancement. Nazmi and Ramirez (1997) studied the output growth was influenced by investment expenditures significantly. Similarly, private capital spending has a positive impact on economic growth.

Easterly and Rebelo (1993) investigated that investment in transport and communication affect economic growth. It was found that development in infrastructure leads to enhance financial growth. Saghir (2012) analyzed the influences of investment in Pakistan employing time series data during 1970 -2010. Cointegration and Error correlation tests are analyzed to check the relationship between private and government investment. Government investment is positively insignificant in short run. Thus, private investment has positive and significant impacts on government investment. Ghani (2006) discovered the importance of investment and economic development are handy to develop the society. Private investment is a factor to enrich the economic welfare.

4. Methodology and data sources

4.1. Objective of the study

The economy of Pakistan has faced stagnant domestic investment. Low domestic investment restricted the economic wealth of Pakistan. So, the objectives of this paper are mentioned as followings:

❖ To scrutinize the influence of investment on economic prosperity in the society of Pakistan.

4.2. Methodology

This study was conducted by using secondary data. The study is focused on a quantitative approach to evaluate the data by using E-views software to examine the effect of domestic investment and economic growth.

4.3. Source of Data

The time series data are gathered during the 1980s to 2015. The secondary data is gathered from an Economic survey of Pakistan, World Development Indicators and Central Bank of Pakistan.

4.4. Model specification

The model is employed to initially empirical formulation attempted to record the causality of domestic investment and economic growth (Bakari, 2017), and Masoud Albiman Md and Suleiman NN, (2016). The output relies on domestic investment, labor and exports. So, the model is displayed as following:

$GDP_t = f$ (domestic investment, labor, exports)   (1)

Also, a log-linear econometric format is used in this model.

$Log (GDP_t) = \beta_0 + \beta_1 log$ (domestic investment)$_t + \beta_2 log(labor)_t + \beta_3 log(exports)_t + \varepsilon_t$ (2)

Where:

- β_0 = the constant.
- β_1 = coefficient of domestic investment.
- β_2 = coefficient of labor.
- β_3 = coefficient of exports.
- t = the time.
- ε = the random term.

5. RESULTS AND INTERPRETATION

In this section, several techniques are applied to discuss on empirical results. Augmented Dickey Fuller test has been employed to examine stationarity. For finding a long and short-run relationship, Johansen's cointegration test and Vector error correction model has been employed to recognize. Additionally, various econometric and investigative tests were applied in the paper.

Table 5.1: Augmented Dickey Fuller Test

Variables	Test-statistics	Critical value*	Prob.	Order of integration
Economic Growth (GDP)	-11.48783	-1.949319	0.0000	I (1)
LEXP(exports)	-5.696	-3.5442	0.0002	I (1)
LINV(domestic investment)	-5.047315	-3.5442	0.0013	I (1)
LFPR(labor)	-10.19232	-3.544284	0.0000	I (1)

* At 5% level of significance, critical values are taken.

The table is illustrating the results of unit root for stationary over the variables. The stationarity variables have been checked with the help of ADF test, and the entire variables are integrated I (1) it means all variables are stationary at first difference. The calculated value of economic growth (GDP) is -11.48783 which less than the critical value so null hypothesis is rejected. The calculated value of exports is -5.696 less than the table value so the alternative hypothesis is accepted and at the first difference, the exports are stationary. Moreover, the calculated value of the domestic investment is -5.047315 less than the table value so null hypothesis is not accepted and at the first difference, the variable is stationary. The third independent variable is labor force participate rate The ADF result of labor calculated value is -10.19232 less than the table value so null hypothesis is not accepted and the labor force participation rate is stationary at the first difference.

Table 5.2: Lag length criteria

The Lag Length	Akiake Information Criterion	Schwarz Information Criterion
0	1.474486	1.657703
1	-5.373223	-4.457138*
2	-5.544609	-3.895656
3	-5.162048	-2.780228
4	-5.707962	-2.593273
5	-6.622522*	-2.774965

* Shows through criterion, the lag order selected

The 5 lags are suitable for this model according to results of lag length criteria. A number of lags are found with the help of AIC whose value demonstrates the number of lags at 5 is fit in our model in the above table.

5.3. Johansen Co-integration:

With the help of Johansen Cointegration test, the long run relationship among variables is examined. Applying Johansen Co-integration test requires two conditions must be fulfilled.

1. The residuals ought to be stationary at level.
2. The variables should be combined at first order.

Table 5.3.1: Unrestricted Co-integration Rank Test (Trace Statistics)

Hypothesized No. of CE(s)	Eigen Values	Trace Statistics	Critical Values	Probability
None *	0.725047	83.87870	47.85613	0.0000
At most 1 *	0.592158	41.27060	29.79707	0.0016
At most 2	0.290772	11.67372	15.49471	0.1733
At most 3	0.010120	0.335660	3.841466	0.5623

Source: Estimating by the author using E-Views

Two variables are co-integrated among four variables which are portrayed in the above table's results because two variables' probability is less than 5% of a significant level, and also Trace Statistics values are greater than the Critical values. Hence, it has been found that two variables have long run relationship. Besides this, the rest of variables are not co-integrated to each other because the probability values are greater than 5 percent and also Trace Statistics values are less than the Critical values, which indicates the absence of the long run relationship between them.

Table 5.3.2: Unrestricted Co-integration Rank Test (Max Eigan value)

Hypothesized No. of CE(s)	Eigen Values	Maxi-Eigen Statistics	Critical Values (0.05)	Probability
None *	0.725047	42.60811	27.58434	0.0003
At most 1 *	0.592158	29.59687	21.13162	0.0025
At most 2	0.290772	11.33806	14.26460	0.1381
At most 3	0.010120	0.335660	3.841466	0.5623

Source: Author's acquire estimation in E-views

With the usage of co-integration test, the presence of long-run relationship has been checked among the variables. The results have been examined with the help of Maxi-Eigen values. If the critical values are less than the Maxi-Eigen values, the presence of long-run relationship has found among the variables. If the critical values are greater than the Maxi-Eigen values, then a long run relationship is not present among the variables. The result is indicating that GDP and exports have long-run relationship because the Maxi-Eigen values of GDP and exports are greater than the critical values.

Table 5.3.3: Normalized Co-integrating coefficients

Variables	Coefficient	Standard Error	t-statistics
LEXP	-3.62732	0.46970	-7.7226315
LGINV	5.67765	0.90674	6.2616075
LFPR	0.187673	0.4127	0.4547444

*   Estimating by author employing E-views

The above table defines the results that the positive values of coefficient demonstrate the variables negatively affect the dependent variable. However, the negative sign of variables shows that the variables positively affect the dependent variable. The variables are economic growth, domestic investment, labor force, and exports in this model. It has been found that exports have negative coefficient value is-3.62732. The negative value indicates that exports are positively correlated with GDP. One percent rises in the exports, the economic growth arises -3.62732 percent. The integration has positively interrelated to the economy. On the other hand, the labor force is insignificant it means it has no impact on GDP.

5.2. Error Correction Model (ECM):

For the short run adjustment among the variables, the Vector Error Correction Model mostly is employed to investigate. In the long run from short-run disequilibrium, it describes the velocity of adjustment of variables to attain equilibrium. The ECM results are interpreted in two ways.

1. The negative values of coefficient variables lead long-run relationship in convergent trend.
2. The positive values of coefficient variables lead long-run relation in the divergent trend.

Table 5.3: Vector Error Correction Model

Variables	Coefficient	Standard Error	t-statistics
D(LEXP)	0.212210	(0.06503)	[3.26304]
D(LFPR)	-0.99775	(1.81907)	[-0.54849]
D(LGINV)	-0.05456	(0.03593)	[-1.51838]
ECM	-0.01639	(0.01131)	[-1.94904]

*   The author used hold source of E-Views

The error correction model has negative values -0.01639, the value suggests 1% chance for convergence to disequilibrium from long run to short run.

6. Conclusion

This study is to scrutinize influence among the variables such as domestic investment, exports and labor force rate which are playing a constructive role to enhance the economic growth. Economic growth improves the productivity of the society. The ADF, Johansen co-integration, ECM test were applied to explore the short and long run relationship among variables. The results showed that positive impact exists between exports and GDP in a long run. Nevertheless, domestic investment and labor force have a negative consequence on economic growth in the long run. One of the essential factors is the lack of infrastructures which is restricted the society in a developing circle. Lack of advanced technology and skilled labor force in Pakistan, economic activities are restricted to not accelerate the economic growth. Economic growth requires income, advanced technology and skilled labor force which are the backbone of the economy to accelerate the economic activities in Pakistan. Founds displayed that the domestic investment and labor force are inefficient and ineffective in Pakistan. Thus, they are required to be more developed to enrich the economic health of Pakistan to enhance the prosperity of the society.

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