The Impact of Public and Private Investment on Economic Growth of Pakistan

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Abstract
However, Investment explained as the basic tool for increasing the economic growth of any nation, and further it stands for enhancing the capital stock of country; and also numbered as the basic component of the economic growth because sustainable economic growth uttered an impossible without increasing investment. Specifically, investment consisted of two types including the first private investment and second public investment whereas both investments comprised of their marginal productivity. The purpose of this research aimed to evaluate the influence of the private and public investment on GDP growth rate with the special reference to Pakistan. For this research, the annual time series data employed to cover the period from 1975 to 2018. According to stationary test of data the OLS used for estimation because all variables counted as the stationary at level. Both investments narrated as an important for increasing economic growth in country. The findings proved that both investment (i.e., private & public) have significantly positive influence on economic growth of Pakistan. The research study proposed that the both kinds of investment should be complementary not substitute to each other.
Keywords: Ordinarily Least Square Method (OLS); Private investment; Time series data; Economic growth; Public investment.

1. Introduction
The economic growth is one of the assenting parts of living standard for every country. Every nation strives to improve the economic growth in all sectors. The main rationale behind the economic growth is the welfare of the people so that they could fulfill their basic needs through goods and services.
Along with developing nations, the economic growth is an essential for developed nations too. It is true that economic growth of developing and developed nations is not the same in this perspective. For developing nations; economic growth means the fulfillment of basic needs. It is not about the utilization of proper resources for modernization like developed countries (Kutz, & Shapiro, 1992).

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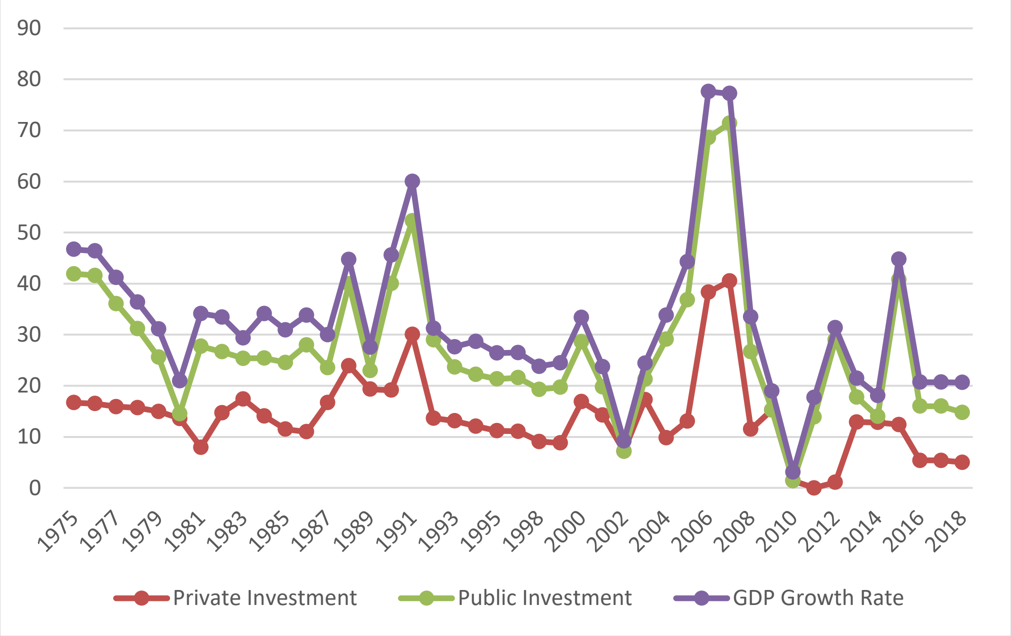
Figure 1. Trends of Public Investment, Private Investment and GDP growth rate in Pakistan (in % of GDP growth rate) n= 43 Years



Source. World Bank, 2019

Figure 1 shows the trends of Public and Private Investment and GDP growth rate in Pakistan during the past 43 years. Data trends pointed out the positive correlation between the private and public investment with GDP growth rate. It also proves that the GDP growth rate and the investment did not increase in Pakistan during the reported period. The economy of Pakistan mainly consists of three sectors- agricultural sector, manufacturing sector and services sector. An (ADB, 2010), indicated that before 1980, many industries came under the direct control of the government and as a result of nationalization policy; It was only after 1980, when the government realized that the private sector is also vital for the economic development of the country in 1981, an increase in investment was witnessed owing to change in policies by the government. In 1981, the private investment stood at 7.97, the public investment at 19.77 and GDP at 6.4. After nationalization policy in 1970s, the government decided to work with both sectors public and private, but the effects of nationalization were felt in the early years of 1980 because of low investment in the country and less attraction for foreign investors. Furthermore, the report also revealed that many private sectors investors were not interested to invest in Pakistan after the Nationalization policy, and it became the main reason behind slow growth in gross investment in the country. The Trend also indicates the increase in Gross investment from 1982 to 1986. The private investment also increased at the average of 13.73. The increase in investment during the period of 1982 to 1986 taken on account of the liberal foreign policy which is also mentioned in the study of (Zakaria, 2008). It discussed in the study that in 1980 the investment environment was friendly because of liberalization of exchange rate regime. Such the figure disclosed the decrease in Gross investment from 1987-1992 and the private investment noted as 17.41091, public investment 13.30273 and GDP 5.73. Again, the author explored that the decrease in investment between the years of 1980s taken on account of high tariff, the strict industrial licensing; inefficient financial sector with mostly public ownership and monopoly in many sectors or prices under the control of government. The various studies illuminated that the reason of low level of investment in later half of the 1980s era claimed the more military expenditure rather than development expenditure. Investment increases in 1993-2000, the important factor behind the increasing trend of investment in Pakistan while the government introduced new alteration for friendly business environment as the researcher Khan (2006) contributed in literature that the era of 1990 figured out the start of the privatization and most of the public industries deregulated which was good sign for new investors in country. Investment decreased from 2002-2004, though the government had provided many incentives to increase the investment in Pakistan, but the overall; there was terrible situation in world. The circumstances failed to provide the business-friendly environment. According to table No: 36, the investment increased from 2005-2010. Such the research study conducted by Ellahi (2012), explored that the investment decreased in the country after 2009 because of gas shortage, terrorist activities and shortage of energy. In 2013 – 2016, the gross investment increased, but it was not a significant increase in Pakistan as compared to other nations. The specific reason behind the low investment in the country as compared to other south Asian nations viewed as the unstable macroeconomic policies and political instability. As a consequence of this, confidence of investor in this country uttered as low. For sustainable GDP growth rate investment played the significant role. In this regard, Hyder et al., 2003 declared that mostly in Pakistan; the public investment helps in increasing the private investment and further the private investment proved to be better source of increasing economic growth in country.

According to World Bank (2019), the private investment is very low as compared to other countries. Thus, it is too much important to study the investment in all decades for understanding the fluctuation in economic growth. This study provided fresh evidence on identifying the impact of the Private investment and public investment on economic growth.

The study consists of 5 various sections. The section one provides an introduction while the second section focuses on the literature review, and the section third illustrates the research methodology. The section fourth presents the study outcomes. Lastly, Section fifth describes the conclusion and suggestions.

2. Literature Review

The economic growth is one of the inevitable parts of living standard for every country. Every nation strives to improve the economic indicators of all sectors. The main rationale behind the economic growth explained as the welfare of the people so that they could fulfill their basic needs through goods and services.

According to Vaish (1976), "When the combination of the production and factor endowments increases in economic activity by increasing the factor of production that it is called economic growth in the country. And when the production possibility curve shift to upper right side by increasing output it means that economic growth increases". Further Kutz and Shapiro (1992) focused on the economic growth as: "When gross national product increases in real GNP in particular time period it means that economic growth of country increases".

Investment is the part of GDP and thus, the fluctuation of GDP depends on investment. Productivity both short runs and long run rely upon an investment which also enhances the capital goods and create job opportunities (Dornbusch, 1999).

GDP growth rate counted as a significant indicator for estimating the economic growth of a country. According to Amber, Muhmmad and Faridual (2012) economic growth and investment reduce poverty in a country. However, in Pakistan GDP growth rate is not significantly increasing and remained as low.

Both investments explained as an essential for the economic growth of any country, good infrastructure is necessary for the investment because it facilitates and provides friendly environment to investors and good infrastructure that comes from the public sector while the public sector having a role to build up new roads, bridges etc., which makes further investment more easily (Dritsakis, 1987), and thus, the public investment regarded as an important for country which facilitates the further investment or private investment in this regard. Whereas another researcher of Khan had views and found element through empirical evidence that both investments played the major role in the economic growth of country, but data mentioned that the private investment played the more significant role as compared to the public investment (Mohsin & Carmen, 1990). When the government only focuses on the public investment rather than private and then, the negative impact can develop that decreases the private investment in country. Further the various researches also confirmed this statement one of the important studies of (Erden, 2005) confirmed the crowd out effect of public investment on private investment. The study of Aka (2007) empirically analyzed the influence of the public and private investment on economic growth by applying ARDL technique, covering the time of 30 years (i.e., from 1969 to 2001). According to Study, in short run, the impact of Private investment (i.e., significantly positive) on GDP growth rate is higher as compared to the public investment. Whereas, in long run, the impact of public investment (i.e., significant and positive) on economic growth is higher than private investment. Zou (2006) examined the effect of private as well as public investment on economic growth with special focus on the economy of USA by applying ordinary least squares (OLS) and the economy of Japan by applying GMM. Hence, such the research findings confirmed that the private investment played an important role in the economic growth of USA's economy as compared to public investment. Contrary to this, in Japan's economy, both the public and private investment played crucial role. Another international study, Nazmi (1997) suggested that there is a positive relationship of public investment and economic growth of Maxico. Moreover, the study of Cruz (1999) by using 46 years of data of Brazil public and private investment analyzed the relationship with economic growth. The study concluded that in short run public investment discourages the private investment means public investment have crowd out effect, but result suggested positive impact of both public and private investment on economic growth of Brazil. Further, the researcher also concluded that both investments are necessary for increasing economic growth of country, but if government prefers to increase public investment only then overall ratio of investment will decreases.

These some international studies explored the importance of public investment as well as private investment for enhancing the economic growth of any country. For national analysis studies of different researchers have found out the relational ship between investments (both private and public) with economic growth of country while the different researches have different conclusion. Mostly results are ambiguous in this regards, and the most important research of Naqvi (2002) explored the relationship of investment with the overall economic stability of the country of Pakistan. The researchers used time series data of 37 years, and analyzed the data by applying modern economic technique named as VAR cointegration and empirically found the influence of investment on economic stability; the research revealed that the economic growth of Pakistan was positively influenced by both private and public investment. But the research of Ghani (2006) revealed the fact that the private investment has more significant and positive impact on the economic growth of Pakistan as compared to public investment. Moreover, the researcher also explored the fact that increasing public investment on the cost of private investment decreases overall macroeconomic stability of country.

According to Usman (2016), economy of Pakistan can be stable through more job opportunities and forest sector is the major source of employment in country not only it provides the employment but forest is important for stable climate change in country. But unfortunately, Pakistan is facing the problem of deforestation: the government failed to provide the protection to forest the sector of agricultural sector which decreases the overall economic growth of country. Further, it shows that the public investment failed to provide the productive incentives to forest the sector and lack of the private investment is also seen in forest sector.

Arshad & O'Kelly (2018), investigated the energy sector of Pakistan, and in this study, the researchers highlighted the issues who are unskilled labor, quality labor, shortage of electricity which decreases productivity. Pakistan has abundant energy resources, such as coal and 60,000 MW hydro resources that can create enough energy to meet the demand of the country, but the problem is poor government management. The issue is not resource, but the policy development. The proper policy for allocation of resources is important in this respect. It is true that only public sector cannot fulfill the requirements of energy sector, but new investment from private sector is also important in this regard and the research conducted by Khan (2014) that energy sector of Pakistan is not performing well due to more public investment. Moreover, the researcher used the regression analysis for empirical analysis of the role of private power plants of electricity industry of Pakistan and public power plants of electricity industry of Pakistan. The result of study proved that public plants in electricity industry of Pakistan are less efficient than the private power plants of the electricity industry.

The research of Zuberi (2008) explored the need of power generation in Pakistan. Without any doubt, it can be said that it is impossible for a country to increase its economic growth without electricity. Furthermore, the research concluded that only government by itself cannot meet the demand of electricity, but it should create opportunity for the private investors to invest in electricity.

In nutshell, it can be said that an increase the amount of goods and services referred to economic growth in an economy. Whereas, in long run economic growth depends on savings and complementary public and private investment. It is concluded from the above both international and national studies that public and private investment viewed as the essential for economic stability of a country, and the different studies have different conclusion or imperial finding for the same variables. Investment explained as the essential part of Gross domestic product GDP and GDP uttered as the basic tool to measure the economic growth of country, so in every age; it is always important to study the investment and economic growth. The trend shows that mostly government of Pakistan focuses on the public investment not private investment, but as many studies in literature review indicated that the private investment regarded as an important for economic growth in country. This research study would empirically find that the public investment is more important than private investment or not in Pakistan. Because mostly the studies in literature have ambiguous results in this way.

3. Data & Methodology

The research study comparatively explored the contribution of both type of investment (i.e., the private and public) in economic growth of Pakistan. For this research, time series annual data of forty-three years used (that is from 1975 to 2018). Data as taken from 1975 to 2018 because of the main structural break down of West and East Pakistan separation. The Secondary data gathered from the official website of World Bank. For data analysis and presentation Viewed as 9 and MS-Excel was used. Stationary of data checked by using Augmented Dickey Fuller (ADF) unit root test. After determination of order of integration on the bases of unit root test results Ordinarily Least Square method as applied for estimation.

3.1 *Model of Economic Growth of Pakistan*

Growth = (F) Private Investment + Public Investment
In Functional

$$gr_t(f) = \beta 0 + \alpha_1 pi_t + \alpha_2 pub_t + \varepsilon$$

$$gr_t = \text{GDP growth rate in percent}$$

$$pi_t = \text{private investment in percentage of GDP}$$

$$pub_t = \text{public Investmnet in percentage of GDP}$$

$$a_1, \alpha_2, a_3, \text{are the parameters and } \varepsilon \text{ is error term}$$

Table 1. Variables & Data Sources.

Variables	Data Source	Explanation/Definition
Public Investment	World Bank Official, 2019. data is in % of GDP.	Public investment defined as public expenditure that adds to the public physical capital stock. This would include building of roads, ports, schools, hospitals etc. (World Bank, 2002).
Private Investment	World Bank Official, 2019. data is in % of GDP.	“Private investment is investment by businesses and financial institutions rather than by a government (Abel Bernalk , 1967)”.
GDP Growth Rate	World Bank Official, 2019. data is in % of GDP.	“GDP is a total measure of the flow of goods and services at market value resulting from current production during a year in a country” (Gardner Ackley, 1967).

4. Study Results

Unit root test outcomes presented in table one, highlighted that the order of integration of the Public Investment, Private Investment and GDP growth is 1(0).

Table 2. Augmented Dicky Fuller (ADF) test Results

Variables	**At Level**		**Inference**
	Constant	Constant & Trend	
Private Investment (PI)	-.461122* (0.0089)	-4.668020* (0.0087)	I(0)
Gross Domestic Product Annual Growth Rate (GDP)	-4.182199* (0.0021)	-5.003094* (0.0012)	I(0)
Public Investment (PUBI)	-4.169646* (0.0021)	-4.232283* (0.0092)	I(0)

Source. World Bank Official Website 2016 (http://data.worldbank.org/)

- ( ) are probabilities.
- = probability is < 5%.
- 2 lags selected by Akaike Information Criterion

Value of R square (i.e., 0.497) existing in table two specified that approximately 50% changes in economic growth explained by the presented regression model. The value of F-Statistics (i.e., 17.447) specified that the equation is statistically significant in illumination connection between dependent (i.e. GDP growth rate) with independent variables (i.e., public and private investment).

Table 3. Summary of Empirical Results for Multiple Regression Model

Statistical Measures	**Results**
R-Square	0.4970
Adjusted R2	0.3809
F-Statistics	17.447(0.006)

Table three highlights the co-efficient in regression model. The positive value of a1 coefficient value (i.e., 0.3611) pointed out the average rise of economic growth due to private investment. While the a2 result (i.e., 0.039) shows the positive, significant but poor relationship with economic growth. The value of F-statistics is the significant and specified that the equation is statistically explained the role of private investment in economic growth of Pakistan.

Table 4. Result of Ordinary Least Square Method

Variable	**Coefficient**	**T-statistics**	**P-values**
Private investment	0.361105	2.44598	0.0114
Public investment	0.03975	1.3935	0.01517
C	3.3547	6.651442	0.0000

Diagnostic tests results presented in table 4. The insignificant outcomes of Breusch-Pagan-Godfrey test and LM test confirmed that in this analysis; there is no any problem of heteroskedasticity and autocorrelation respectively, Additionally, normal distribution of residuals confirmed by the insignificant outcome of Jarque Bera test and proved that the Model is specified. Numerical figure of Durbin-Watson (i.e., 2.0) shows that model justified the necessities of good model.

Table 5. Diagnostic Test Results

Statistical Measures	**Results**
Breusch-Godfrey Serial Correlation LM-Test	6.3811 (0.004)
Heteroskedasticity Test Breusch-Pagan-Godfrey	2.643869 (0.1793)
Heteroskedasticity Test: White	0.1749 (0.9703)
DW –Statistics	2.0
J.B test	0.4666(0.792)

Cumulative Sum (CUSUM) and Cumulative Sum (CUSUM) of square test on residuals of the model used to confirm the reliability of the ARDL model. Figure 2 explained that the critical values lie down less than 5% of significance of CUSUM test. Furthermore, figure 3 indicated that CUSUM square also lies under 5 % of significance and revealed that model is fit.

Figure 2. Cumulative Sum of Recursive Residuals

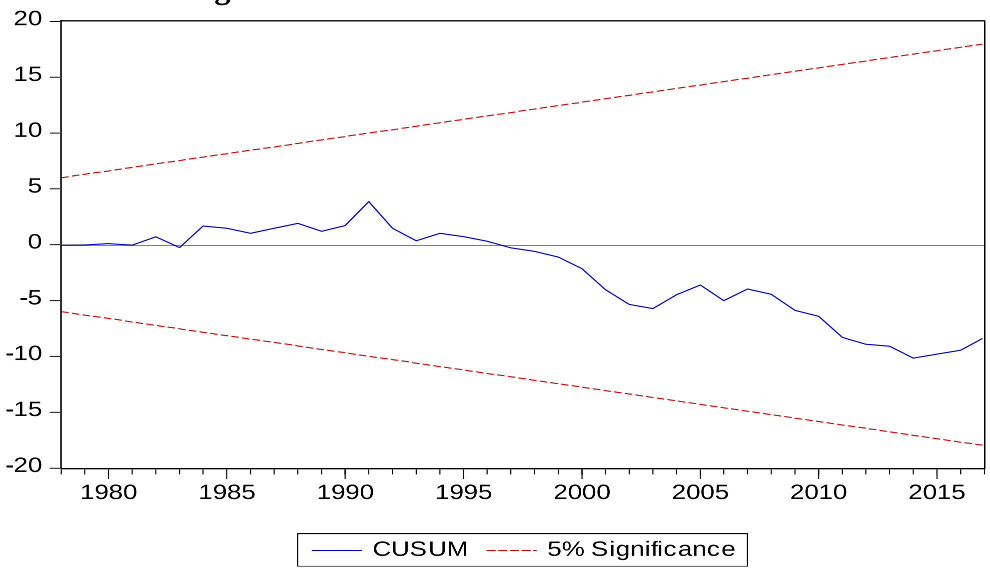
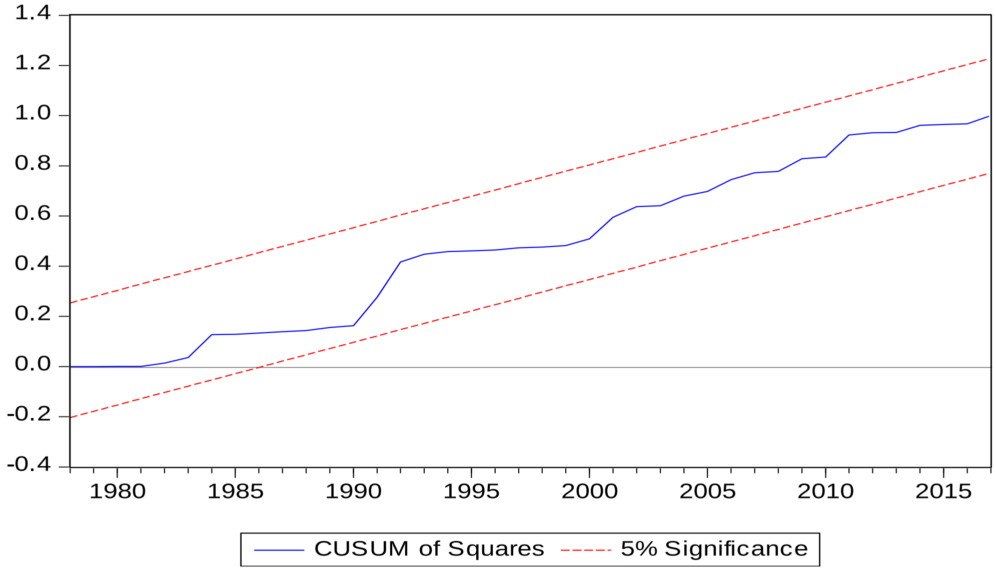


Figure 3. Cumulative Sum of Squares of Recursive Residuals



5. Conclusion

It is concluded from the acquaintance as given in this research paper that economic growth increases due to both public and private investment. The various research studies of different scholars explained that both investments are important for economic growth, but mostly private investment can increase the opportunities of employment that help in the decreasing of poverty.

The results of economic growth model illuminated that the economic growth in Pakistan significantly and positively affected by both public and private investment; however, the impact of private investment (i.e., beta co-efficient is 0.361) on economic growth is larger as compared to public investment (i.e., beta co-efficient is 0.039).

The empirical findings highlighted that the economic growth increases positively with private investment while public investment has significant, positive, but poor impact on the economic growth. Moreover, both investments have positive impact on economic growth of Pakistan.

6. Discussion and Recommendations

This research study explored the relationship between the private investment; public investment and economic growth of Pakistan by employing the time series data from Economic survey of Pakistan from 1975 to 2018. Data trends and researches mentioned that the economic growth of Pakistan is not significantly increases. The first part of the study concerned with the introduction of economic growth as well investment and concluded that economic growth can increase through increasing the productivity in the country, and productivity increases by increasing investment, mainly investment is of two type, the private investment and public investment, both are important for enhancing the economic growth of developed as well developing countries. Pakistan economy as divided in three major sectors such as agricultural, industrial and service sector, this research study briefly provided the status of these sectors and indicated that these three sectors are facing many problems which are responsible for the slow economic growth and low productivity. Furthermore; many a research studies of the different scholars explained that both investments are important for economic growth, but mostly private investment can increase the opportunities of employment and help in the decreasing of poverty. Researches of the different scholars also mentioned the fact that in Pakistan economy government failed to provide the financial resources which are important for productivity in these sectors, and also government sector failed to provide new equipment and modern techniques of production which can enhance output more; this is the reason and needs to increase the private sector investment in Pakistan that can increase the productivity in country. The empirical findings highlighted that the economic growth increases positively with the private investment while public investment has the significant, positive, but poor impact on the economic growth. Moreover, both investments have the positive impact on economic growth of Pakistan.

It is recommended and, the study results that it is need of the hour that Pakistan should increase the sustainable growth in the private sector that would lead to increase the economic growth in country. The study outcomes confirmed that public investment crowd out private investment in Pakistan. Therefore, it is suggested that public investment needs to be complimentary rather than compete with the private investment. The Government needs to formulate monetary policy with special focuses on the suitable Interest rate for development of private sector. Banking sectors must take the more effective initiatives to pursue saving mobilization from all aspects of the economic agent. Further, it is also suggested that the government should have to give proper attention for the development of infrastructure and transformation of local for enhancing output of production which also leads to increase the export and motivates the investors for investment in the private sector.

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