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The Determinants of Private Investment: An Empirical Evidence from Pakistan

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ABSTRACT

Key point of this article is to explore the determinants of private investment in the context of the Pakistan for the era of the 1991 to 2018.Time series data is collected from the International Financial Statistics (IFS), World Bank and different issues of Pakistan Economic Survey. By using the different econometric techniques such as Descriptive Statistics, Correlation Metrix, LM Test, Heteroskedacity Test and Ordinary Least Square (OLS) analysis outcomes of the study are obtained. In this study dependent variable is Private Investment (PRI) while the other variables such as Public Investment (PBI), Gross Domestic Product (GDP), Interest Rate (IR), External Debt Service (EDS), Foreign Direct Investment (FDI) are independent variables. OLS results show that PBI, GDP and FDI are statistically significant and have positive impact on the PRI. Interest Rate (IR) and External Debt Service (EDS) is statistically insignificant that indicate it is not taking part in the growth of the Private Investment (PRI). The study results suggest that public investment would be used on the economic and social infrastructure such as roads, health and education services that directly affect the private sector.

Keywords

Private Investment; Ordinary Least Square (OLS) Method; Pakistan

1 Introduction

Investment is an important ingredient and act as a catalyst for stimulating economic growth. It discusses different economic channels which enhances the overall economy which not only accelerates the economic growth but also brings long run prosperity. Economic growth thus can be achieved by promoting technical progress and production techniques in terms of innovation and employment by giving more job opportunities as well as generating more revenues by reducing poverty. Generally, there are two basic components of investment i.e private investment and public investment. Both play a vital role in determining the long lasting productive capacity and assert a critical impact on growth which varies because the marginal productivities of both kinds of investment vary. Public investment in comparison with private investment has stronger effect on growth. Private investment is basically including the technical progress by utilizing production techniques in terms of innovation; employment which brings more job opportunities; raises the production capacity thus generating more revenues and reducing poverty; improves standard of living by raising the income level of poor. Whereas public investment on the other hand improves the environment for the implementation of private investment.

It has been shown that as a whole private investment play significant role in uplifting the economic growth of economy (Beddies 1999). Similarly, Augustine (2014) explained that it's a datum fact that efficiency in the private sector is comparatively higher than that of the public sector.

Emphasis have been given on capital accumulation for economic growth. A large literature of connection between accumulation of physical capital and growth can better be examined by well-known neo-classical theory and flexible acceleration theory in the perspective of investment model. Usually countries with well-established private investment reveals stimulated growth patterns. However, in developing countries where investment is low

and thus possess deficient opportunities regarding innovations bring uncertainties in terms of return which eventually become major reason of slow growth. In addition, in developing countries there are many resources which are not exhausted or actually lying idle, e g lands, and minerals consisting of gold, diamond and platinum etc. Nyoni and Bonga (2017) confirmed that sustainable economic growth mainly requires an economy's ability to not only invest but to make efficient and maximum productive use of those particular existing resources at its disposal.

In conclusion, private investment has the capacity to organize resources and make wise decisions regarding investment which not only enhance productive capacity but also the efficiency level of the economy. The study observed the main determinants of the private investment in Pakistan for the era of 1991-2018 consisting of time series data. The study is based on determinants of private investment with particular reference to Pakistan. The model is then applied to time-series data over the period 1991 to 2018.

2 Literature review:

Hyder and Ahmed (2004) conducted a study on the declivity of private investment and found the strategy causing the decrease in growth of economy. The economic, scoial and political factors were observed causing a great decline in growth rate. Less public investment was the major cause of low investment in private sector during the decade of 90's. It was suggested that government should invest at plausible level while assembling a restoration strategy to get stable path of growth of an economy.

Asante (2000) examined the determinants of private investment for Ghana. It was observed that macroeconomic instability is the big hurdle in private investment. The real credit growth was affecting the private sector positively and had statistically significant impact private investment. Public and private investment needed to be complementary. To boost private sector, government must have invested in infrastructural based economies while military rule had negative impact on the growth of private sector.

Sale (1993) inquired the determinants of private investment and its impact on the investment of government for Pakistan. It was observed that private investment was mutually related to GDP growth, public investment and extension of credit in private sector. The macroeconomic stability was suggested to regulate economic growth.

Ghura and Goodwin (2000) conducted a study on the determinants of private investment for different regions (SSA, Latin America and Asia). Real GDP growth regulated the private investment in Latin America and Asia while affected negatively in SSA. Private investment had been stimulated by public investment in SSA and had been affected adversely in Latin America and Asia. High demand of credit in private sector caused an increase in private investment in Latin America and SSA. This group of countries had captured the vicious circle of low growth rate and low investment. The improvements in tax bases and administration were suggested in developing countries. Moreover, social and political freedom can be beneficial for high private investment.

Le (2004) established the connection of private investment with risk aversion, return rate differential and different kinds of economic and political risk. Socio-political instability due to violent protests caused the descent in private investment. Change of constitutional government encouraged the private investment. Policy uncertainty due to variability of capacity of government caused the declination in private investment while numerous changes in enforcement of contract increased the investment by demoting the risk.

Acosta and Liza (2005) investigated the determinants of private investment empirically for Argentina. The results evoked that decisions for investment can be made through shocks in aggregate demand and shocks of return (i.e. trade liberalisation and exchange rate). But "crowding-out effect" was also observed in public investment. The

path for capital accumulation, in long run, appeared as rigidly dependent credit and financial market and on fiscal sustainability.

Like previous studies Lesothlo (2006) found the same decreasing trend in private investment due to macroeconomic instability for Botswana. The empirical results confirmed the negative impact of public investment on the private investment. It was suggested that both foreign and domestic investment required to mobilize to get better growth rate.

Wai and Wong (2007) examined the flexible accelerator theory (modified version) for developing countries. It was observed that public investment, capital inflow and bank credit change played a key role in the determination of private investment. The crowd out effect and contributory effect of public investment were observed.

Majeed and Khan (2008) examined the factors playing a key role in determining the private investment in Pakistan. The empirical study observed that private sector was compressed for credit, there definitely was a diminution in private investment. Real interest rate also had a negative but a significant impact on private investment. Suggestions to encourage the private investment was the reduction in cost of funds or financing (i.e. real i, and exchange rate) and investment in infrastructure that can attract heavy investment in private sector.

Hassan and Salim (2011) investigated the determinants of private investment for Bangladesh. The empirical evidence was slightly comforting the hypothesis of flexible accelerator. The role of interest rate was significant while national product was found to be significant. Government expenditures were crowding out private investment. Its impact was minimal as interest rate was not so much responsive to investment.

Frimpong and Marbuah (2010) addressed that Ghana was using private sector-led growth strategy. It was observed that private investment was determined by real interest rate, inflation, real exchange rate, public investment and a regime of constitutional rule in short run. In long run, private investment was influenced by external debt, real exchange rate, real interest rate and real output significantly.

Mocheal and Aikeli (2014) inquired the determinants of private investment for Tanzania. The results exhibited that government investment, credit to private sector and GDP growth were playing important role in determining the private investment. Exchange rate, degree of openness of the economy and interest rate were not influencing the private investment significantly. It was suggested to make improvements in both monetary and fiscal policy to get better investment rate.

Ekpo (2016) investigated the issues and determinants of private investment for Nigeria. It was observed that private sector had face a huge loss due to the fluctuations in crude oil prices and government intervention. Government intervention caused a high investment in public sector due to which it got dominance in Nigeria during 1970-1980. The size and growth rate of market, interest rate, inflation rate, public investment rate, fiscal deficit, investment climate, political and economic stability, availability and access to bank credit and institutional factors were identified as determinants of private investment in Nigeria.

Ali and Shaheen (2016) analyzed the determinants of private investment for Pakistan. The economic growth stimulated by reducing unemployment, increasing people's living standard and income. Inflation was affected the private investment negatively while GDP, credit and savings affected positively.

Jenkins (2016) determined the factors of private investment in Zimbabwe. The shortage in foreign exchange was found the major in the formation of private capital. Moreover, price control, political developments and

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Vol. 5 No.4, 2021

government policy for labor caused the declination in investment. In long run, investment was constrained by retained profits.

Combey (2016) investigated the key factors affecting the investment in private sector for West African Economic and Monetary Union (WAEMU). The results showed that aggregate demand conditions, in short run, influenced the private investment while in long run, it was influenced by political stability and GDP. The short run elasticity of output gap and GDP were significant. The long run semi- elasticity of political stability and elasticity of GDP were also significant.

Batu (2016) considered the investment an important element for economic growth. The results exhibited that exchange rate, public investment and national income were found as key variables to determine the private investment. Other variables like credit, international trade, money supply and inflation rate were affecting the private investment negatively.

Nyoni and Bonga (2016) did an empirical analysis of the determinants of private investment. It was found that public investment and GDP were affecting the private investment strongly.

3 Data and Methodology

To get good and useful results of research, choice of good variables and their reliable sources of data and correct econometric techniques are main factors. This study observed the main determinants of the private investment in Pakistan for the era of 1991-2018.Time series data source is secondary that is collected from the International Financial Statistics (IFS), World Bank and different issues of Pakistan Economic Survey. The mathematical model is,

$$PRI=f\ (PBI, IR, GDP, FDI, EDS)$$

The econometric model will be written as,

$$PRI_t=\alpha_0 + \alpha_1\ PBI_t+ \alpha_2\ IR_t+ \alpha_3\ GDP_t+ \alpha_4\ FDI_t+ \alpha_5\ EDS_t+ \varepsilon$$

Table: 1 Description of the selected Variables

Dependent Variable	Description of Variables
PRI	Private Investment
Independent Variables	
PBI	Public Investment
IR	Interest Rate
GDP	Gross Domestic Product
FDI	Foreign Direct Investment
EDS	External Debt Service

Methodology that are used to get required results from the study is Descriptive Statistics, Correlation Metrix, LM Test, Heteroscedasticity Test and Ordinary Least Square Analysis.

4 Empirical Results

Descriptive Statistics

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Vol. 5 No.4, 2021

These statistics give the summary of each variables individually that are used in the model. Years of observations are 28 (1991-2018). Table 2 show that standard deviation of PVI is highest from others variables that is 48.70092. All the used variables in the model is positively skewed. Kurtosis values of PVI, PBI, GDP and FDI show that data distribution is Leptokurtic because their values are more than the standard value 3.

Table: 2 Descriptive Statistics

	PVI	PBI	GDP	IR	EDS	FDI
Mean	32.30357	25.12214	4.441429	11.80357	0.782143	1.151172
Median	10.44	4.55	4.22	11.25	0.6	0.829203
Maximum	165.8	155.1	9	20	1.5	3.668323
Minimum	7.9	3.2	0.36	6.25	0.3	0.382827
Std. Dev.	48.70092	45.96946	1.877701	3.861225	0.393516	0.848694
Skewness	1.864506	1.864229	0.291209	0.312819	0.276756	1.872882
Kurtosis	4.745487	4.773	3.306063	2.104429	1.570051	5.514481
Jarque-Bera	19.77762	19.88574	0.505032	1.392381	2.742983	23.74559
Probability	0.000051	0.000048	0.776844	0.498481	0.253728	0.000007
Sum	904.5	703.42	124.36	330.5	21.9	32.23281
Sum Sq. Dev.	64038.04	57056.16	95.19554	402.5446	4.181071	19.44762
Observations	28	28	28	28	28	28

Source: Software E-Views 9.0

kurtosis. While other variables such as IR and EDS, data distribution is Platokurtic. These variables have less kurtosis value than its standard value.

Table: 3 Correlation Metrix

	PBI	GDP	IR	EDS	FDI
PBI	1				
GDP	0.054399	1			
IR	0.476162	-0.17607	1		
EDS	0.481353	-0.03941	0.582003	1	
FDI	-0.17403	0.284592	0.01974	-0.17833	1

Source: Software E-Views 9.0

Correlation matrix show the association of variables between one another in the series and signs of the variables indicate the direction of the relationship between them. Table findings show that all the values of the variables in the study is less than the .9 which indicate that multicollinearity not exist in the data.

Table 4: Auto-Correlation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.756232	P. Value	0.0865

Source: Software E-Views 9.0

outcomes of the table disclose; auto not exist in the data because the p-value is more than 5% which is 0.0865.

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Table 5: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.39296	P. Value	0.2654

Source: Software E-Views 9.0

Outcomes of the table reveal, auto not exist in the data because the p-value is more than 5% that is 0.2654.

Table: 6 Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PBI	1.106467	0.010247	107.9813	0.0000
GDP	0.735655	0.205332	3.582753	0.0018
IR	0.236514	0.149537	1.581642	0.1287
EDS	-1.20698	1.779528	-0.67826	0.505
FDI	0.888895	0.366683	2.424151	0.0245
R-squared	0.997509	Durbin-Watson stat	1.793102	
Adjusted R-squared	0.996915			

Source: Software E-Views 9.0

In this study dependent variable is Private Investment (PRI) while the other variables such as Public Investment (PBI), Gross Domestic Product (GDP), Interest Rate (IR), External Debt Service (EDS), Foreign Direct Investment (FDI) are independent variables.

The values of the coefficients and probability of Public Investment (PBI) are 0.0000 and 1.106467 respectively, means PBI is statistically significant and has positive impact on the PRI. That shows 1unit increase in the PBI will lead to increase 1.106467 units in the Private Investment (PRI). This result is inconsistence with the (Dethier & Moore, 2012; and Makuyana & Odhiambo, 2017). The values of the coefficients and probability of Gross Domestic Product (GDP) are 0.0018 and 0.735655 respectively, means GDP is statistically significant and has positive impact on the PRI. That shows 1unit increase in the GDP will lead to increase 0.735655 units in the Private Investment (PRI). This result is inconsistence with the (Magableh & Ajlouni, 2016). The values of the coefficients and probability of Interest Rate (IR) are 0.1287 and 0.236514 respectively, means IR is statistically insignificant that indicate it is not taking part in the development of the Private Investment (PRI). The values of the coefficients and probability of External Debt Service (EDS) are 0.505 and -1.20698 respectively, means EDS is statistically insignificant that indicate it is not taking part in the progress of the Private Investment (PRI). The values of the coefficients and probability of Foreign Direct Investment (FDI) are 0.0245 and 0.888895 respectively, means FDI is statistically significant and has positive impact on the PRI. That shows 1unit increase in the FDI will lead to increase 0.888895 units in the Private Investment (PRI). This result is inconsistence with the (Batten & Vo, 2009). Model' goodness-of-fit of is revealed through the value adjusted R2 in the multiple regression analysis. Almost 99% of changes in the Private Investment (PRI) is due to the Independent variables but the exogenous aspects work only 1% from external the model that only bounded by the error term.

5 Conclusion

Key point of this article is to explore the Private investment determinants in the context of the Pakistan for the era of the 1991 to 2018.Time series data is collected from the International Financial Statistics (IFS), World Bank and different issues of Pakistan Economic Survey. By using the different econometric techniques such as Descriptive Statistics, Correlation Metrix, LM Test, Heteroskedacity Test and Ordinary Least Square (OLS)

analysis outcomes of the study are obtained. In this study dependent variable is Private Investment (PRI) while the other variables such as Public Investment (PBI), Gross Domestic Product (GDP), Interest Rate (IR), External Debt Service (EDS), Foreign Direct Investment (FDI) are independent variables.

According to the outcomes of the OLS Analysis PBI is statistically significant and has positive impact on the PRI. This result is inconsistence with the (Dethier & Moore, 2012; and Makuyana & Odhiambo, 2017). GDP is statistically significant and has positive impact on the PRI. This result is inconsistence with the (Magableh & Ajlouni, 2016). Interest Rate (IR) and External Debt Service (EDS) are statistically insignificant that indicate it is not taking part in the development of the Private Investment (PRI). FDI is statistically significant and has positive impact on the PRI. This result is inconsistence with the (Batten & Vo, 2009). Recommendation of the study is public investment would be used on the economic and social infrastructure such as roads, health and education services that directly affect the private sector.

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