EMPIRICAL ANALYSIS OF ECONOMIC DETERMINANTS OF PRIVATE INVESTMENT IN PAKISTAN (1975-2015)

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ABSTRACT

Various empirical studies in developing countries showed that economies led by the private sector achieved better economic performance than the one led by the state. Pakistan has a very sluggish growth in private sector which is a major cause of slow economic growth in the country, private investment in Pakistan is effected by many internal and external factors, these factors determined the private investment in Pakistan. For clear understanding of the private investment fluctuation in Pakistan, study on the factors is very important. Therefore, this research is designed to find out major economic determinants which can stimulate or hinder the private investment in Pakistan. In this study for estimation, ARDL approach was applied on time series secondary data (i.e. from 1975 to 2015). The empirical evidence confirms that long run relationship between the variables is present. Furthermore, result confirms that public investment is proportionally related to private investment and has significant relationship. Whereas, inflation rate and exchange rate have significantly negative impact on private investment. Results also recommended that in the short run, the disequilibrium is rapidly adjusted. Based on study results, it is recommended that policy makers develop more effective policies to improve private investment through macroeconomic stability in Pakistan.

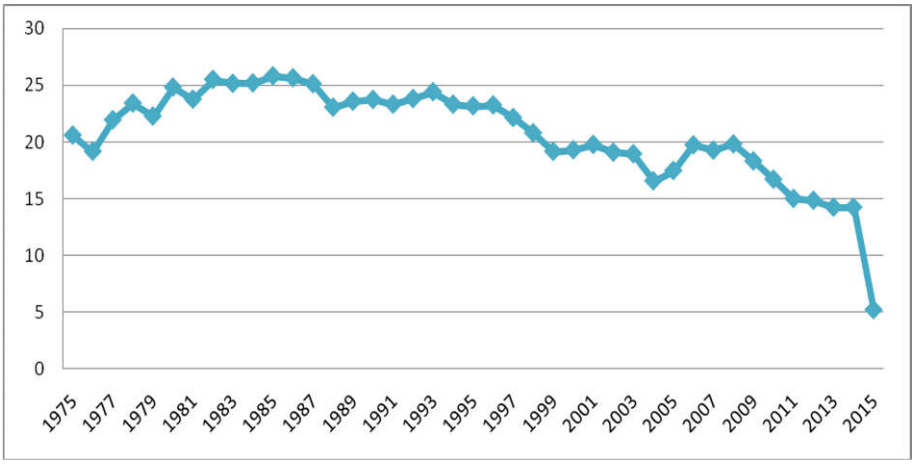
Keywords: Private Investment, Gross Domestic Product, Inflation, Economic Growth, Time Series Data, Pakistan.

INTRODUCTION

Investment is the amount spent by businesses to add to the stock of capital over a given period of time. There are two main kinds of investment, which are public investment and private investment and both have their marginal productivity. Private investment is investment by businesses and financial institutions rather than by a government Private investment provides more employment opportunities, enhance per capita income and is supposed to be a good source of revenue therefore, government should adopt the policy to increase the private investment. A country like Pakistan, with retarded economic growth and stunted development, direly needs sufficient Private investment. Pakistan is also rich in natural resource and can be attractive place for investors. According to BOI (2010) "Pakistan is a land abundant in business opportunities for investors awaiting eager exploration

of markets as well as identifying and mitigating inherent business risks". However, private sector investment is inadequate in many developing countries like Pakistan.

FIGURE-1
TRENDS OF PRIVATE INVESTMENT IN PAKISTAN



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

Figure-1 shows unsustainable trend of private investment in Pakistan from 1975 to 2015. In 1970s, due to Nationalization Policy, civil war and high oil prices, private investment in Pakistan remained low and unsustainable. During 1993 to 1999, a private investment trend shows decrease, which is mainly caused by political instability, distorted price signals, traditional production technologies in agricultural sector and brain drain of manpower. Figure-1 also indicates that during 2000s private investment in Pakistan did not significantly increase. The key factors of that slump are bomb blasts in the country, global violence, judicial entanglement, assassination of Benazir Bhutto, uncertainty in international oil and food prices, slow down of capital flows, rise in current account and fiscal deficit, extra ordinary price increase and weaker rupee/dollar, withdraw of subsidies to major sector of economy, low level of growth rate of GDP, etc. Whereas, during the mentioned period of time, private investment in Pakistan slightly increased in some years, which is mainly due to denationalization policy, Economic Reforms, Privatization Act 2000, establishment of the Board of Investment, the Insurance Act 2001 and monetary expansion.

On the one hand, private investment is a major source of increasing the economic growth in country, on other hand, sustainable economic development can play an important role in enhancing private investment. However, in Pakistan private investment trend decreased mainly due to many economic factors. Private investment determination in developing countries

is difficult, as Public investment is determined by the state whereas, private investment is not directly controlled by government and it is hard to discover its determinants. In this connection, the present study is designed to identify the economic factors of private investment in Pakistan**.** This study is based on time series data and findings of this study can help to formulate polices for enhancing private investment in Pakistan.

LITERATURE REVIEW

During the past few decades, all over the world, particular attention has been given to evaluate the output of private investment. Theoretical and empirical review of literature on the determinants of private investment is discussed below.

Greene and Villanueva (1991) focused to analyze the impact of various economic factors and policy influence on private investment during the specific period of time (i.e. 1975 to 1987) for preferred developing countries. The result of the study indicates that the rate of inflation and burden of external debt had significantly negative impact on private investment. On other side, per capita GDP and economic growth rate had significantly positive impact on explaining private investment within selected countries. Furthermore, significantly positive impact of public investment on private investment indicates that the public investment crowds in the private investment. The research study also confirm that the real interest rate have negative impact on private investment which was in accordance with standard neo-classical theory. In addition, during 1975 to 1981, rate of inflation, public investment, per-capita GDP and rate of interest had a larger impact on private investment. Comparatively, during 1975 to 1981 external debt had more significant impact than between 1982 to 1987.

Mataya and Veeman (1996) investigate the trends of private investment in Malawi during selected time period that is 1967 to 1988. The research study shows the two-way causal association between public and private investment. According to the study, private investment is negatively associated with real interest rate and positively related with estimated output and public investment. Contractionary fiscal and monetary policies have negative effects on public investment. On other hand, the impact of monetary and fiscal policies remains positive on private investment.

Laopodis (2001) focused to analyze the effects of public expenditures on private investment within four selected countries that is Portugal, Ireland, Greece and Spain. This study used ARDL technique in order to investigate the effects of public expenditures on gross private investment. Laopodis decomposed the public expenditures into military and non-military expenditures. The study explore that the public expenditures negatively related with private investment in Spain. While, in Portugal, Ireland and

Greece public expenditures had positive association with private investment. The study also implied that the military expenditures did not affect private investment within selected countries.

The study conducted by Naqvi in 2002 for Pakistan, indicates that public investment increases with the increase in private investment, and both investment are important for economic growth. VAR co-integration technique has been used to analyze the data.

Khan and Arshad (2007) conducted the research on the relationship of private investment and interest rate in Pakistan. Study result suggested that interest rate has negative impact on the private investment in Pakistan.

Schmukler and Serven (2002) explored the influence of real exchange rate uncertainty on private investment within selected developing countries. The study is based on annual time series data. Theoretically, the impact of real exchange rate on investment remains uncertain. In addition, analytically it depends on the trade openness, output share of variable inputs and financial market development. According to this study, real exchange rate uncertainty had a negatively significant impact on private investment. Furthermore, high openness and weak financial development were connected with a significantly negative uncertainty-investment link and vice versa.

Saniya *et.al.,* (2008) investigated the private investment in Pakistan for the period of 1970-2006. Authors investigate the relationship of private investment with net capital inflows, past capital stock, sources of fund, volume of bank credit, public investment. Results concluded that from these variables only volume of the bank credit has positive and significant impact on private investment, while other variables have significant and negative impact on private investment in Pakistan.

The study on the service sector of Pakistan is conducted by Ahmad and Qayyum in 2008. They explore that government's non-development expenditure effect negatively on the private investment in long run and also explore the negative relationship between interest rate and inflation in service sector of Pakistan

Study on the Malaysia in 2009 was conducted by James on the three main types of investment which are private investment, public investment and foreign direct investment by using the data from 1960-2003. Co-integration result in long run suggested positive relationship of public investment and FDI with private investment.

Exchange rate is the main determinants for private investment study of S. Goldberg in 1962 the study explores the negative relationship between the imported input of production and positive relationship with the export share with exchange rate. Another important determinant of private investment is interest rate, and the study conducted by Klaim *et.al.,* 2001 suggested that higher interest rate motivates investor to invest, due to this saving increases

with increase in the investment. Due to higher interest rate currencies also appreciate. On the other side study explored that for industrial investment, investor is mostly in favor of low interest rate; because cost for borrowing loan will be low due to low interest rate which lead investment.

Basic infrastructure is important to grow the economy in country. And public investment play major role to provide the infrastructure to economy. In this regard Dritsakis in 1987 suggested that "public investment is the major source to provide the basic physical infrastructure like roads, bridges, transport facilities, equal distribution of resources for increasing the capital stock of country".

METHODOLOGY AND DATA SOURCES

This study has taken time series annual data of 40 years from 1975 to 2015 (data has been taken from 1972 to 2017 because of main structural break down of east and west Pakistan separation , but due to technical problem data has been taken from 1975). Data is collected from World Bank Official Website, 2016. Different techniques have been used to analyze the data, like Reviews 9 and MS-Excel.

This study has used Augmented Dickey Fuller (ADF) to check the stationary of data. According to the result of stationary data, ARDL approach has been used to analyze the long run and short run relationship between the variables. ARDL method was introduced by Pearson *et.al.,* (2001), and it is best technique to use with mixed result of stationary data, that some at stationary level and other are at first difference. Therefore, this approach can be used to test for both long run and short run dynamics of private investment. ARDL method use the further tests to confirm the long run relationship existence and to check validity and specification of the model.

EMPIRICAL FINDINGS

Table-1, indicate that the variable Public Investment, Inflation and GDP growth rate become stationary at Level 1(0) while, private investment, Interest Rate and Official Exchange Rate becomes fixed at first difference 1(1).

TABLE-1
AUGMENTED DICKY FULLER (ADF) TEST RESULTS

Variables	At Level		At First Difference	
	Constant	Constant & Trend	Constant	Constant & Trend
PI	1.461122 (0.9989)	-0.668020 (0.9687)	--6.600082* (0.000)	-7.976413* (0.000)
GDP	-4.182199* (0.0021)	-5.003094* (0.0012)	————	————
INF	-4.591272* (0.0006)	-4.395389* (0.0075)	————	————
EX	1.704026 (0.9995)	-1.880614 (0.6454)	-4.347123* (0.0013)	-4.545505* (0.0042)
PUBI	-4.169646* (0.0021)	-4.232283* (0.0092)	———	————
INT	-2.523978 (0.1175)	-2.516514 (0.3190)	-6.105866* (0.000)	-6.033542* (0.000)

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

NOTE:

- Values in parentheses ( ) indicates probabilities and * indicates probability is <5%.
- Lag lengths are determined by the Akakike Information Criterion with maximum number of 2 lags.
- Variables used are defined as: PI= private investment, GDP= gross domestic product annual growth rate, INF= rate of inflation, EX=exchange rate, PUBI = Public Investment and INT= Interest Rate.

Bound test is used to confirm the long run relationship between variables. Table22 shows the result of bound test and LB specifies the lower bound and UB upper bound critical values respectively. Model is estimated with six explanatory variables. The result shows that the F-statistics value is higher than the upper bound value of Pesaran table. Hence, according to Pearson *et.al.,* (2001) if F-stat>UB, it means that a long run relationship is present between the variables.

TABLE-2
BOUND TESTING RESULTS

F-Statistics	Significant level	Bound Critical Values	
		Lower Bound	Upper Bound
5.304651	10 %	2.26	3.35
	5%	2.62	3.79
	2.5%	2.96	4.18
	1%	3.41	4.68

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

Table-3 shows results of long run analysis. The value of R-squared (i.e. 0.977) implies that about 98 percent of the variations in private investment is explained by the selected independent variables. Furthermore, Value of R^2 also indicates that the model is a good fit. Whereas, significant value of F-Statistics indicates that the equation as whole is statistically significant.

TABLE-3
SUMMARY OF ARDL LONG RUN MODEL

Statistical Measures	Results
R-Square	0.977
Adjusted R^2	0.9404
F-Statistics	26.832 (0.000)

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

The long run co-integration result presented in Table-4 reveals that, public investment, inflation and exchange rate have significant impact on private investment. However, public investment has positive while inflation and exchange rate have negative impact on private investment in long run. Results also show that GDP growth rate and interest rate have insignificant impact on private investment in long run in Pakistan.

TABLE-4
LONG RUN RESULTS

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PB	1.948821	0.939129	2.075135	0.0569
INT	1.245244	0.825974	1.507608	0.1539
INF	-1.24684	0.624016	-1.9981	0.0555
GDP	0.02933	0.455911	0.064333	0.9496
EX	-0.20083	0.038149	-5.26441	0.0001
C	18.31114	7.266881	2.519807	0.0245

"The negative and significant value of co-integration equation confirms the existence of co integration and also reports the speed of adjustment from short run equilibrium to long run equilibrium" (Stephen H. Hall 2007). Negative and significant value of co-integration equation i.e. -0.69421 presented in Table-5 confirms the existence of co-integration and indicates that the adjustment process is very fast.

TABLE-5
SHORT RUN RESULTS

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PI(-1))	-1.1263	0.353989	-3.18175	0.0067
D(PI(-2))	-0.50333	0.285212	-1.76476	0.0994
D(PI(-3))	-0.65651	0.287085	-2.28683	0.0383
D(PB)	0.51074	0.128868	3.963291	0.0014
D(PB(-1))	-0.11517	0.115296	-0.99894	0.3348
D(PB(-2))	-0.64899	0.142224	-4.56318	0.0004
D(INT)	0.052375	0.239649	0.218551	0.8302
D(INF)	-0.07598	0.12183	-0.62362	0.5429
D(INF)	0.125364	0.12128	1.033672	0.3188
D(INF)	-0.04119	0.087581	-0.4703	0.6454
D(INF)	0.203586	0.091074	2.235402	0.0422
D(GDP)	0.335822	0.193433	1.736112	0.1045
D(GDP(-1))	0.688334	0.178763	3.850527	0.0018
D(EX)	0.011755	0.117069	0.100411	0.9214
D(EX(-1))	0.398821	0.150812	2.644483	0.0192
D(EX(-2))	-0.2053	0.153171	-1.34032	0.2015
CointEq(-1)	-0.69421	0.302488	-2.29499	0.0377

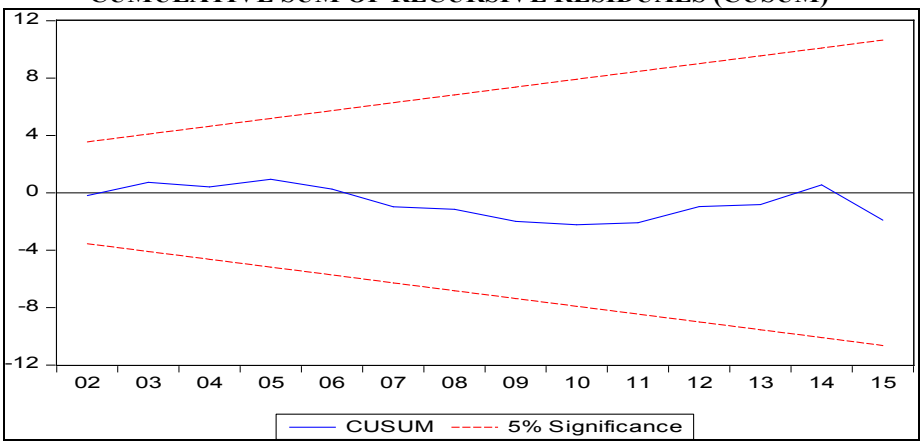
Table-6 indicates the results of diagnostic tests. The insignificant values of White test and LM test prove the absence of heteroskadasticity and autocorrelation respectively, in this analysis. Furthermore, insignificant value of Jarque Bera test proved that residuals are normally distributed and Model is specified. Statistical value of Durbin-Watson (i.e. 1.98) indicates that model fulfills the requirements of good model without any numerical error.

TABLE-6
DIAGNOSTIC TESTS RESULTS

Diagnostic Tests	Results
Breusch-Godfrey Serial Correlation LM Test	0.127 (0.7212)
Breusch-Pagan-Godfrey Heteroskedasticity Test	18.763(0.6599)
White Heteroskedasticity Test:	14.0824(0.8985)
Jarque Bera	1.1928 (0.5507)
DW -Statistics	1.98

To test for model misspecification and for the stability of the ARDL model, cumulative sum (CUSUM) is used. If the plotted CUSUM line graph remains inside the 5 percent significance level then it is concluded that the model is correctly specified. This indicates that the model is stable.

FIGURE-2
CUMULATIVE SUM OF RECURSIVE RESIDUALS (CUSUM)



CONCLUSIONS & RECOMMENDATIONS

Private investment is not significantly increasing in Pakistan. The causes of slow growth in private investment are its determinants which have negative impact on private investment. Co-integration results of the study reveal that there is a long run relationship between dependent and independent variables. It is proved in the study that inflation affects negatively on private investment in long run. In long run, due to inflation, cost of input increases which causes slow growth in investment. Exchange rate also proves to be the major determinant which inversely relates with private investment. In the long run, when exchange rate increases, it devalues national currency and affects adversely on the prices of imported items. Due to this, private investment decreases. Results indicate that public investments have significant and positive impact private investment in the long run as government increases infrastructure which facilitates the private investment. Results also show the insignificant impact of Interest rate and GDP growth rate on private investment in the long run. This indicates that the volatile GDP components fail to increase the private investment in Pakistan. On other side, the interest rate is adjusted in Pakistan on personal interest that why interest rate relationship with the private investment is weak which is also confirmed by this study results. ECM outcomes confirm quick speed of convergence towards equilibrium if disequilibrium shock come outs.

It is suggested, therefore, that it is necessary for policy makers to have proper macroeconomic stability in the economy. This will undoubtedly improve private investment in Pakistan. For sufficient economic growth and sustainability of Pakistan's economy, study suggests that the government should transform the local industries and provide basic infrastructure for production of goods and services. Rate of interest and inflation should be

kept at stable level because macro economic uncertainties hurt private investment in Pakistan. More effective initiatives should be adopted to motivate society towards investment. Non development expenditure in Pakistan is more than the development expenditure which is also a major cause of slow economic growth in Pakistan. Therefore, it is recommended that Government of Pakistan should adopt the policy to increase the development expenditures. This study will help to overcome the major problems which hinder private investment in Pakistan and help policy makers to take appropriate decisions while making policy for the economic growth of country.

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