

An Analysis Of Determinants Of Private Investment In Pakistan

Vol. 2 No. 2, 2016
ISSN 2412-303X

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International
Interdisciplinary
Journal of Scholarly
Research (IJSR)

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Abstract

Private investment is very important for the prosperity of any country. It pushed up the economic growth by solving the problems of unemployment, raising income and standard of living of people. This paper investigates the economic factors that affect Private Investment in Pakistan using the data from 1980-2011. Engle Granger Cointegration technique has been applied to analyze the long run and short run relationship with private investment. Results show that savings, credit and gross domestic product effect positively while inflation effect negatively private investment.

Keywords: Private Investment, Pakistan, Cointegration, Error Correction Model.

Introduction

In recent years attention has been given to private investment as it boost up the economy and reduces poverty. Investment ensures the long run prosperity and progress of any country.

It promotes production techniques, employment level, income, standard of living and production capacity. A country faces low level of economic growth, unemployment and poverty mostly because of unbalanced government expenditure, unfavorable weather conditions, low level of investment, political instability and many other factors existing in the economy. Private investment has a more favorable and stronger effect on growth than public investment. Reason is that private investment is more efficient and transparent as compare to public sector. But as a whole private investment play important role in boosting the economic growth of economy (Beddies 1999).

Emphasis have been given on capital accumulation for economic growth (Solow1956).Capital formation has been focused to promote economic growth (Bakare 2011). For investment Pakistan is considered to be good due to its characteristics like expanding infrastructure, stability, predictability, cheap labor and wide areas of sectors for investment. So it is interested to know the factors that contribute to investment in different sectors of Pakistan. The objective of this study is to analyze the factors that contribute to private investment in Pakistan. For this purpose latest time series data for Pakistan's economy for the period 1980-2011 has been used.

Private investment is contributing significantly than public and general government investment in Pakistan. This can be seen by the tables given below consisting data of public and private investment. Some facts and figures about Pakistan's economy are as follows.

Decomposition of Gross Fixed Capital Formation (GFCF)

Vol. 2 No. 2, 2016
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Sector	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
GFCF	844,836	1,134,942	1,565,838	1,814,620	2,094,743	2,114,132	2,066,946	2,069,242	2,255,864
Private Sector	616,514	852,424	1,197,740	1,335,849	1,539,647	1,561,600	1,545,179	1,549,480	1,639,510
Public Sector	103,536	129,482	162,022	172,697	204,873	175,472	182,194	148,798	176,661
General Govt	124,786	153,036	206,076	306,074	350,223	377,060	339,573	370,964	439,693

Table No 1.1 (Million Rs) Source: Economic Survey of Pakistan, 2011-12

This table shows the decomposition of GFCF in private, public and general government sector investment. Data from 2003-2004 to 2011-2012 has been taken to see the sector wise share in total investment. Facts and figures reveal that private sector has more share than public and general government sector in gross domestic investment every year.

Meanwhile the share of private and public investment in GDP as well is very unbalance. Nowadays share of private investment in Pakistan is tremendously increasing.

Structure of Investment

Description	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Gross Fixed Investment	15.0	17.5	20.5	20.9	20.5	16.6	13.8	11.5	10.9
Public Investment	4.0	4.3	4.8	5.6	5.4	4.3	3.6	2.9	3.0
Private Investment	10.9	13.1	15.7	15.4	15.0	12.3	10.2	8.6	7.9

Table No 1.2 (As Percentage of GDP) Source: Economic Survey of Pakistan, 2011-12

Table 1.2 shows share of public and private investment as percentage of GDP. Data of two sectors has been taken for comparison. Data reveals that private investment has more share of investment as % of GDP than public sector. Facts show that private investment in Pakistan is more than public and general government investment. This provides motivation of research into what determines the private-sector investment in Pakistan.

Literature Review

Many researchers have studied private investment and discussed related variables and their relationship.

Most useful and relevant studies for this study include Sajawal and Arshad (2007) who divided the determinants of private investment into Economic factors and Non-Economic factors. They have employed ARDL Cointegration approach to investment function. The results in this study reveal that most of the traditional factors have weak effect on private investment due to the poor quality institutions that are responsible for low level of investment. Finally study concluded that in Pakistan there is need to improve the entrepreneurial skills so that people use their finance in their own country and budget deficit can be reduced and there is need to improve laws and regulations in order to establish the suitable frame work for economic development.

Haroon M. and Mohamed Nasr (2009) have analyzed the role of private investment in economic development of Pakistan for the period 1986-87 to 2007-2008. In this paper different variables has been analyzed which are supported by literature and are helpful in determining private investment in Pakistan. Results reveal that GDP, savings and debt servicing have significant impact on private investment, while inflation shows insignificant impact. They have recommended that encouraging competition among local producers and giving the technical and financial support to businessmen will encourage private investment in Pakistan.



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Another study has been conducted on time series analysis of determinants of private Investment in Ghana by Francis et. al (2010) for the period 1960-2010. To analyze the relationship statistical technique OLS has been used. There is evidence that GDP and credit has positive and significant impact on private investment in long run while exchange rate has negative and significant impact on private investment. For positive feedback from investor emphases has been given on the stability of currency.

Ouattara B. (2000) analyzed the long run determinants of private investment in Senegal using time series data over the period of 1970-2000. It uses Johansen cointegration as estimation technique. The results provide an important insight into the determinants of private investment. Real income affects positively and significantly private investment, while the coefficient of credit to the private sector is negative and significant, thus implying that increase in credit to private sector will not boost private investment. It is recommended that there should be provision of training to entrepreneurs and proper utilization of credit.

In a paper written by Atoyebi et al. (2010) Ordinary Least Square method has been used to examine the relationship between gross domestic investment, exchange rate and domestic credit to private investment. The exchange rate has positive impact on private investment. While insignificant and negative impact of credit have been seen. The effect of GDP on domestic private investment of Nigeria is positive and significant. The negative impact of credit is justified on the ground that if private sector lacks adequate credits it will reduce the production capacity.

An attempt has been made by Saghir R. and Khan (2012) to analyze the determinants of public and private investment in Pakistan using time series data for the period 1970-2000. By using cointegration and error correction the analysis shows that GNP has positive and significant impact on private investment.

Similarly, Sakr K. (1993) in his study investigates the determinants of private investment in Pakistan. It is estimated that GDP growth and credit are positively correlated with private investment.

By applying the cointegration technique Valadkhani A. (2004) has captured the factors that determine the private investment in Iran. The study strongly reveals negative effect of inflation whereas GDP is considered to be the main determinant.

Similarly Bakare A.S (2011) evaluates the theoretical analysis of capital formation and growth in Nigeria. The study includes the ambiguous effect of exchange rate. Even if the short run effect of devaluation is negative it may be positive in long run.

Asante Y. (2000) also analyzed the positive effect of exchange rate on private investment of Ghana as it stimulates exports.

Assa et al. (2012) examined macroeconomic variables effecting private investment in Malawi for three decades from 1979-2009 by applying Engle Granger cointegration technique. Results reveal that in short run investment decision is mainly determined by bank credit to the private sector while in long run it is determined by GDP growth and real exchange rates.

Model Specification

The study incorporates those economic factors which strongly influence the private investment in Pakistan. For analysis purpose data has been used from 1980 to 2011 of calendar years.

The functional form of Pakistan's Private Investment is;

$$LPI_t = \beta_0 + \beta_1 LSAV_t + \beta_2 LINFL_t + \beta_3 LGDP_t + \beta_4 LER_t + \beta_5 LEXD_t + \beta_6 LCREDT_t + \epsilon_t$$

Where;

LPI= Log of Private Investment.

LGDP= Log of Gross Domestic Product.

LSAV= Log of Gross Domestic Savings.

LER = Log of Exchange Rate Index.

LEXD = Log of External Debt Stock.

LINF = Log of Inflation (CPI)

LCREDT =Log of Credit to Private Sector

E = Error Term.

Private investment is dependent variable and all other variables are independent or determinants. All these variables are taken in real form.

Assumptions And Expectations

Economic factors of private investment included in this study are gross domestic savings, gross domestic product, foreign direct investment, exchange rate, external debt stock and inflation.



H1: GDP has a positive impact on private investment.

The study assumes that GDP has positive impact.

H2: Domestic savings has positive impact on private investment

It has been assumed that, more the people will save the more will be the private investment.

H3: External debt has negative impact on private investment.

High debt payment transfer our resources used to finance in domestic country to abroad for the payment of services received.

H4: Inflation rate has negative impact on private investment.

The negative relationship between inflation rate and private investment is expected. Higher inflation in the country leads to lower interest to investor.

H5: Exchange rate has positive impact on private investment.

Paper assumes that change in the currency value changes the price of exported goods and ultimately the investment decision of investor.

H6: Credit has positive impact on private investment.

It has been assumed that availability of credit has positive effect on investment decision.

Not only economic factors effect investment decision but there are also some non-economic factors which effect private investment like good governance, quality of institution and entrepreneurial skills. The study includes estimation of only economic variables.

Methodology

First step is to check the stationarity of time series data. Augmented Dickey Fuller test is the most familiar technique to check the stationarity of time series data. If all variables are integrated at I (0) and some at I (1) the ARDL technique is applied. Since here all the variables are integrated at I (1) as shown by table A.1 so we cannot apply simple regression because results will be spurious in this case. Study apply cointegration if all variables are integrated at I (1). Next step is to check the stationarity of error term. For the short run relationship error term must be integrated at I(0) as shown in table A.3. Since all the prerequisites of cointegration are fulfilled so Engle Granger technique has been applied. To analyze the short run relationship error correction mechanism and lagged values of variables are used through Akaike Information criterion (AIC) and Schwartz criterion (SC) as shown in table A.4. Data has been taken from World Development Indicator and International Financial Statistics.

Long run investment function of private investment is;

$$LPI_t = \beta_0 + \beta_1 LSAV_t + \beta_2 LINFL_t + \beta_3 LGDP_t + \beta_4 LER_t + \beta_5 LEXD_t + \beta_6 CREDIT_t + \varepsilon_t \dots (1)$$

$$= 17.409 + 0.336 LSAV_t - 0.108 LINFL_t + 1.585 LGDP_t + 0.246 LER_t - 0.366 LEXD_t + 0.503 LCREDIT_t$$

[3.246] [-0.632] [4.794] [0.693] [-2.24] [3.084]

[] indicate t value

Results of equation 1 are shown in table A.2. It is concluded that private investment seems to be positively related with saving (long term elasticity is 34%), gross domestic product (1.6%) and credit (50%) while it is negatively related with inflation (-11%) and external debt stock (-37%). Coefficients of all these variables are significant as t value is greater than 2. Insignificant relation is found with external debt stock.

Error Correction Model

$$\Delta LPI_t = \beta_0 + \beta_1 \Delta LSAV_{t-1} + \beta_2 \Delta LINFL_{t-1} + \beta_3 \Delta LGDP_{t-1} + \beta_4 \Delta LER_{t-1} + \beta_5 \Delta LEXD_{t-1} + \beta_6 \Delta LCREDIT_{t-1} + ECM(-1) \dots (2)$$

$$0.1319 + 0.379 \Delta LSAV_{t-1} - 1.6004 \Delta LINFL_{t-1} + 2.036 \Delta LGDP_{t-1} + 1.030 \Delta LER_{t-1} + 0.326 \Delta LEXD_{t-1} + 0.6105 \Delta CREDIT_{t-1} - 1.0312 ECM(-1)$$

[3.508] [-2.804] [2.237] [2.292] [1.110] [3.123] [-3.963]

[] indicate t value

Findings

Short run relationship has been explained by table A.5. Coefficient of ecm is negative and t value is greater than 2 which indicates the short run equilibrium. Credit has positive sign and t value is greater than 2. Value of coefficient shows that if credit expands by 1% it leads to 61% positive variation in private investment.

Positive linkage between GDP and private investment is shown by the positive sign of coefficient. If GDP grows by 1% it expands private investment by 2%. Further 1% increase in



saving causes 38% rise in private investment.

Exchange rate effects positively private investment e.g. 1% variation in value of currency leads to 1% increase in private investment. Inflation effects negatively as 1% increase in prices discourage private investment by 1.6%. Coefficients of GDP, saving, credit, exchange rate and inflation are significant. External debt stock does not support the hypothesis.

The coefficient of determination which is R-squared shows the percentage of variation in dependent variable due to independent variables (explanatory variables). Here R-squared is 0.816 which shows that 82% change in dependent variable is due to explained variables and 18% change is due to some other variables outside the model. It shows the good fitness of the model.

Different tests (Breusch-Godfrey Serial Correlation LM Test) and Heteroskedasticity Test (ARCH) has been applied to check the serial correlation and heteroskedasticity. Probability of F statistics in all these tests is greater than 0.05 which indicates that there is no serial correlation and heteroskedasticity (TableA.6, 7).The CUSUM and CUSUM of Square tests of stability also prove that the estimated model is stable as shown in Figures 6.1 and 6.2 below. There is no movement outside the critical lines it shows the stability in the model.

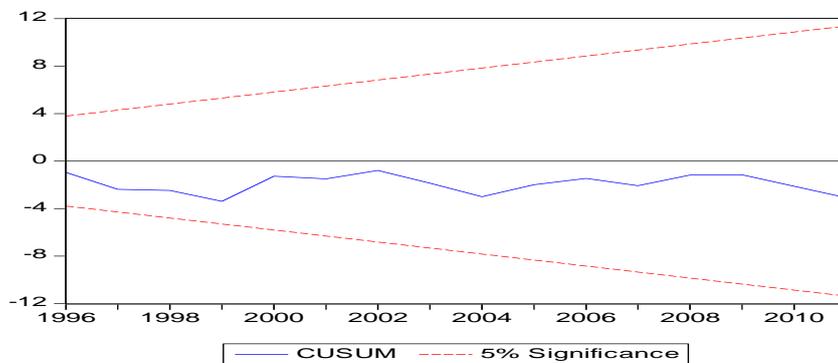


Figure No6.1

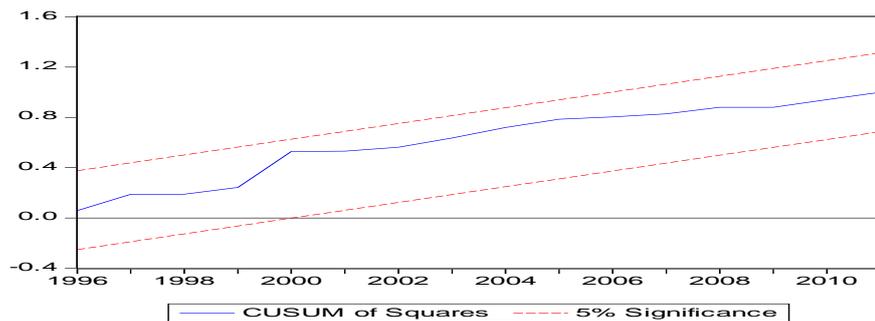


Figure No 6.2

Conclusion

The main aim of this paper is to investigate the determinants of private investment within the context of Pakistan by taking the time period from 1980-2011. This paper also analyses the nature of relationship of these factors with private investment. The study includes the technique of cointegration for the estimation of data. According to the results savings, gross domestic product, credit, and external debt stock effect significantly and support the theory in long run while in short run saving, credit, exchange rate and lagged value of inflation and gross domestic



product affect significantly.

Recommendations

In order to stimulate private investment in Pakistan there is need to implement effective policies. Private investment can be boosted up by following;

- ❖ It is recommended that government should take steps to increase savings to encourage private investment.
- ❖ Provision of credit and its proper utilization should be ensured to promote private investment.

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Appendix:

Results of Augmented Dickey Fuller Test



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Variable	Level	1 ST Difference	Level of Integration
LINV	0.2735	0.0007	I(1)
LSAV	0.2020	0.0000	I(1)
LINFL	0.8823	0.0213	I(1)
LGDP	0.0509	0.0146	I(1)
LER	0.3549	0.0004	I(1)
LEDS	0.3549	0.0027	I(1)
LCREDIT	0.0859	0.0078	I(1)

Table No A.1

Long Run Results

Variable	Coefficient	Std. Error	t-Statistic
C	-17.40979	6.230489	-2.794290
LSAV	0.336821	0.103671	3.246109
LINFL	-0.108614	0.171746	-0.632410
LGDP	1.585949	0.330758	4.794886
LER	0.246605	0.355710	0.693276
LEDS	-0.366280	0.163504	-2.240189
LCREDIT	0.503750	0.163319	3.084465

Table No A.2

Stationarity of Residuals at level

T test	Probability
-5.019527	0.0003

Table No A.3

Lag Selection Criteria

Lag	AIC	SC
0	-9.051770	-8.724823
1	-21.13907*	-18.52350
2	-21.96487	-17.06068*

Table No A.4



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Results of Error Correction Model (ECM)

Variable	Coefficient	Std.Error	t-Statistic
C	0.131996	0.080945	1.630684
DLSAV	0.378965	0.108010	3.508598
DLSAV(-1)	-0.070111	0.092255	-0.759967
DINFL	0.359491	0.383335	0.937800
DLINFL(-1)	-1.600455	0.570701	-2.804366
DLGDP	-1.411269	1.053490	-1.339614
DLGDP(-1)	2.036115	0.910121	2.237192
DLER	1.030502	0.449499	2.292558
DLER(-1)	0.218968	0.440460	0.497134
DLEDS	0.055936	0.253880	0.220324
DLDS(-1)	0.326074	0.293759	1.110005
DLCREDIT	0.610514	0.195450	3.123631
DLCREDIT(-1)	-0.377668	0.213514	-1.768825
ECM(-1)	-1.031228	0.260157	-3.963868

Table No A.5

Breusch-Godfrey Serial Correlation LM Test

Prob. F	0.4037
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Table No A.6

Heteroskedasticity Test: ARCH

Prob. F	0.8163
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Table No A.7