

## **What Determines Private Investment? The Case of Pakistan**

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### **ABSTRACT**

This study is an attempt to analyse the determinants of private investment in Pakistan over the period 1972-2005. The ARDL co-integration approach is employed to check the existence of a long-run relationship as well as short-run dynamics of investment. The results show that most traditional factors have little or no impact on private investment. These results may support the idea that non-traditional factors such as quality of institutions, governance, entrepreneurial skill, etc., are prerequisites for private investment to flourish. We find partial support for the accelerator principle and the crowding-out hypothesis in the case of Pakistan. However, the hypothesis that the volume of the funds is as important as the cost of the funds used in financing private investment and the McKinnon-Shaw hypothesis are not verified in the case of Pakistan.

*JEL classification:* E22, O40, Z10, C20

**KEY WORDS:** Private Investment, Growth, Crowding Out, Co-integration

### **Introduction**

The policy makers, all worlds have concern about the gravity as well as the duration of business cycles especially the recession. Investment in capital goods plays a crucial role in both the cyclical and long run performance of any economy. Being the main components of the aggregate demand, it is leading sources of economic growth in the long run. That is why the capital accumulation has traditionally been given a prime place in the literature on economic growth. The literature on growth empirics confirms that investment in capital goods is one of the most robust determinants of cross country growth (Levine & Renelt, 1992: 82-

4, 942-63; Durlauf & Quah, 1999: 231-306). This type of stand is based on neoclassical theory of economic growth (Solow, 1956: 65-94; Lucas, 1988; Romer, 1990) that emphasises on investment in physical and human capital into the production process. The question arises why did some societies manage to accumulate and innovate more rapidly than others? The search for an answer to this question has caused a shift in focus from exclusive attention on narrowly defined economic factors to the significance of various social structures and culture in providing an 'enabling environment'. The literature on new growth theory based on North and Weingast (1989) stresses the importance of creating an institutional environment that is generally supportive of markets e.g., protection of property rights, enforcement of contracts, and voluntary exchange at market-determined prices.<sup>1</sup> So good quality institutions are crucial for investment, as investors will be reluctant to risk their capital when property rights are weak and poorly protected. (Johnson, *et al*, 2002; Soto de, 2000) emphasised the importance of financial institutions to investment. North and Weingast (1989) proposed that political institutions with check and balance on government can have beneficial effects on private investment.

The decade of 1980s, witnessed a decline in investment in developing countries. This provides a source of inspiration for empirical research into what determines the private sector investment. Beside this, the institutional and structural characteristics of capital formation in developing economies (repressed credit market), strong government hold, foreign currency dependency and instability (both economic and political) induce the interest in this area of research. The investment and especially the private investment as a primary instrument to enhance economic growth, becomes more important in the vent of liberalisation and deregulation. That is why, as the engine of economic growth and development has been accorded the focal place in developing countries.

Given the paramount importance of private sector investment, it is essential to probe into those factors which affect the investment decision. Huge literature focusing theoretically as well as empirically on investment process is available. The literature is divided into crowding-in vs. crowding-out effects of public investment on private investment (Aschauer, 1989; Erenberg, 1993; Pereria, 2001) bi-causal relationship between investment and output growth (King & Levine, 1994; Blomstrom, *et al*, 1996; Podrecca Carmeci, 2001; Easterly & Levine, 2001) and impact of macroeconomic uncertainty on investment activity (Solimano, 1989; Rodrik, 1991; Pindyck & Dixit, 1994; Mavrotas, 1997; Severn, 1998).

There are several studies considering different aspects of investment in Pakistan (Saker, 1993; Looney, 1997-99; Khan, 1997; Haque, *et al.*, 1991; Hassan, *et al.*, 1996; Hassan, 1997; Naqvi, 2002). This study attempts to estimate private investment demand function, using co-integration techniques and taking into consideration the larger set of variables, over the period 1972–2005. The econometric model used in this study is based on Ribeiro & Joanilio, (2003) that takes account of the influence of external constraints on private investment beside

more common variables. The objective is to estimate a well specified private investment function that must be consistent with economic theory. The co-integration analysis allow the short term and long term effects of the explanatory variables that can be distinguished from one another (Ribeiro & Joanilio, 2003). This study consists of six sections. In section two some facts and figures regarding saving, investment and economic growth are presented. The third section contains some considerations regarding the factors affecting the investment. The fourth section briefly describes the empirical methodology and empirical results are analysed in section five. In the last section, some concluding remarks are given.

### **Some Facts and Figures about Pakistan's Economic Performance**

Pakistan economy has witnessed different ups and downs in its short history. The external environment played vital role in the economic growth of Pakistan. In 1950s, the Korean War boosted the economic growth while in 1960s, huge foreign aid and assistance by the international organisations helped in maintaining high and rapid growth. However, the civil War, nationalisation policy of government and oil shock rendered the economic growth in 1970s. The nationalisation policy squeezed the private investment and two third of total investment was made by public sector. Total investment was average 15.4 percent of GDP during this decade. In 1980s, the denationalisation policy encouraged the private sector investment. Besides, huge foreign aid due to Afghan War also pushed the economy towards revival. There was an increase in total investment as well as in share of private investment during 1980s. The decade of 1990s was worst in economic history of Pakistan. Political instability, floods and economic sanctions after nuclear test badly affected the economic performance. The growth fell from 6.2 percent in 1980s to 4.9 percent in 1990s, though there was a slight increase in total investment. Decade wise description of public and private investment is given in Table 1.

**Table 1**  
Decade-wise GDP Growth, Public and Private Investment 1972-98

Period	GDP Growth (%)	Public Investment as Percentage of GDP	Private Investment as Percentage of GDP	Total Investment as Percentage of GDP
Average				
1972-80	5.83	9.59	5.84	15.43
1981-90	6.20	9.17	7.79	16.96
1991-98	4.90	7.85	9.38	17.23

*Source: Pakistan Economic Survey (Various Issues).*

Saving and investment as percentage of real GDP in Pakistan has been low as compared to other neighbouring countries (see Table 2 to 4). The gross domestic saving and investment in Pakistan was on average 17 percent of GDP during 2003-

05. The gross domestic saving in India was on the average 29 percent of GDP, 16 percent in Sri Lanka, 19 percent in Bangladesh and 35 percent in Bhutan during the same period. While gross domestic investment in India was an average of 30 percent of GDP, 24 percent in Sri Lanka, 24 percent in Bangladesh and 59 percent in Bhutan. The gross domestic saving in Eastern and North-eastern countries was the highest (34 percent) of GDP and in China it was 44 percent. It was 20 percent in the least developing countries and 24 percent in the developed countries. The gross domestic investment in Eastern and North-eastern countries was also highest especially in China (44 percent). It was 30 percent in the least developing countries and 24 percent in the developed countries.

Despite low saving and investment, the GDP growth in Pakistan has been satisfactory and its growth was highest after China and India. However, this is not surprising because it was favourable global environment that helps Pakistan in achieving high economic growth during this period. Besides, Pakistan received reasonable foreign assistance for being front line state the war against terrorism.

## **Determinants of Investment**

There is no denial that investment is the most important resource in economic growth, therefore, understanding the pros and cons of investment process are crucial. However, it is a complex process, as it depends on decisions taken in past, present environment and future expectations (Lucas & Prescott, 1971). The factors which affect investment are divided into two broad categories, economic factors and non-economic factors.







## **1. Economic Factors**

On the basis of theoretical and empirical considerations Servén & Solimano, (1992) suggest that in developing countries, private investment is determined mainly by level of domestic output, the real interest rate, public investment, credit available for investment, size of the external debt, the exchange rate and macroeconomic stability. The neoclassical theory of investment, based on the work of Jorgenson, (1963) treats the value of the capital stock desired by a competitive enterprise, as a positive function of its output level. Accelerator theory also suggests that as demand or income increases in an economy, so does the investment made by firms. Furthermore, when demand levels result in an excess in demand, firms increase investment to match demand. The real interest rate is also considered an important variable in determining the level of investment by neoclassical theory. A negative relationship is expected theoretically because of the increases in the interest payable being disincentive to investment. However, McKinnon, (1973 and sShaw, (1973) suggest that there could positive relationship between investment and real rate of interest rate because higher real rate of interest would increase savings, volume of domestic credit will increase as a result and equilibrium investment be higher. This hypothesis, known as McKinnon and Shaw hypothesis, is based on assumption that quantity of financial resources is main constraint on investment rather than cost financial resources. In the developing countries, the public sector generally plays a large part in economic activity through public sector investment. The public sector investment may have “crowding out” or “crowding in” effects on private sector investment. The other important factor that affects the private sector investment is credit constraint due to underdeveloped capital markets and financial intermediation in developing economies. Because of the absence of long term financing and the futures market, bank loans and external borrowing may be the only sources of credit available for private sector investment financing. Another factor that exemplifies the influence of external credit constraints on the financing of production activities is the size of the external debt. High debt levels divert the resources previously used to finance local companies towards service payments and charges being transferred abroad. Exchange rate also plays a crucial role in investment decisions by private entrepreneur especially in this globalised world it has become more important. A change in currency value, changes the real costs of purchasing imported capital goods, the profitability of the private sector is affected and possibly causing investment to change. Furthermore, this may result into change in real income of the economy as a whole, thus altering the production capacity. The change in exchange rate also affects the investment through sectors producing internationally traded goods due to its impacts on competitiveness and export volumes. The other thing that is important in investment decision making, is irreversible nature of investment in capital goods (Pindyck, 1988). As many capital goods are company specific and cannot be sold at the same prices, they were purchased. It means an irrecoverable cost is attached with resale of such goods. This irreversibility may result into uncertainties which in turn have a large influence on investment decision. That is



why, investors are reluctant to carry out major investments, even in the prosperous environment. The adjustment cost attached depends on degree of economic stability and the credibility of public policies. This is the very reason that recent studies on private sector investment in developing countries (Greene & Villanueva, 1995; Servén & Solimano, 1993; Agosin, 1994) have included the variables representing uncertainties in the investment decision-making process. Some studies (Barro, 1991; Alesina, *et al.*, 1992; Mauro, 1993) investigate the relationship between political instability and investment. However, it is hard to define political instability. Many approaches have been used in this regard. Two of them are worth mention here. In the first approach, political instability is defined as executive instability, i.e; propensity to observe government changes which is associated with policy uncertainty, for example, threat to property rights. The second approach is based on socio-political unrest that is measured by some index of variables related to such unrest. Both measures, however, are difficult to construct. We also include foreign direct investment (FDI) because it can affect the private domestic investment in different ways.

## 2. Economic Factors

In addition to the economics factors stated above, there are some other factors that are important for the rapid private sector investment growth. These include the good governance, quality of institutions and entrepreneurial skills for the private sector to make big investment decisions, based on a rational assessment of risks and potential pay-offs. These factors play complementary role with the traditional economic factors. It has been suggested the types of entrepreneurship that can be identified and the enterprise strategies adopted, are heavily influenced by the external environment (Peng & Heath, 1996: 492-528; Peng, 2000) in general, and the institutional context in particular (Welter & Smallbone, 2002). In this regard, institutionalist theory offers a suitable interpretative frame of reference since it emphasises the role of external political, economic and societal influences on individual behaviour (North, 1990). The institutional framework which is adequate for entrepreneurship consists of the “set of fundamental political, social and legal ground rules that establishes the basis for production, exchange and distribution” (Davis & North, 1971). Examples of relevant formal institutions include the legal framework and the financial system. Fundamental rules such as private property rights are a major influence on the nature and extent of any entrepreneurial activity, whilst day to day economic and political decisions, as well as unwritten rules, determine the actual scope for the behaviour of entrepreneurs and their actions.

## Model and Methodology

The following Ribeiro and Joanelio (2003) we used the model as given in Equation (1)

$$inv_t = \beta_0 + \beta_1 y_t + \beta_2 r_t + \beta_3 inv_{pt} + \beta_4 er_t + \beta_5 cred_t + \beta_6 exd_t + \beta_7 inf_t + \beta_8 fdi_t + \varepsilon_t \quad (1)$$

Where  $y_t$  is real GDP  $r_t$  is the real interest rate,  $inv_{pt}$  is public sector investment,  $ex$  is real exchange rate,  $cred$  is ratio of private sector credit to GDP,  $exd$  is external debt,  $inf_t$  is change in inflation rate, and  $fdi$  is foreign direct investment. Where  $\beta_1 > 0, \beta_2 < 0, \beta_3 < 0$  or  $\beta_3 > 0, \beta_4 < 0$  or  $\beta_4 > 0, \beta_5 > 0, \beta_6 < 0, \beta_7 < 0, \beta_8 < 0$  or  $\beta_8 > 0$ .

We employ auto-regressive Distributed Lags (ARDL) approach due to Pesaran and Shin (1999) for estimation of the long run investment function. One big advantage of ARDL is that it takes care of endogeneity of the explanatory variables. The other advantage of ARDL is that it does not require any unit root pre testing.

Following Pesaran et al (2001), the dynamic relationship between private investment and its determinants entered in Equation (1) can be examined through the following specification.

Let

$$z_t = (inv_t, y_t, r_t, i_{pppt}, er_t, cred_t, exd_t, inf_t, fdi_t)' = (inv_t, x_t)'$$

as econometrics literature suggests. Equation (1) can be specified in an error-correction modelling format as:

$$\Delta inv_t = \beta_0 + \sum \beta_i \Delta inv_{t-i} + \delta \sum \Delta z_{t-j} + \gamma_0 inv_{t-1} + \gamma \sum z_{t-1} + \varepsilon_t \quad \dots \quad (2)$$

$i=0, 1, 2, \dots$  and  $j=1, 2, 3, \dots$

Here  $z = [y, r, i_{pppt}, er, cred, exd, inf, fdi]'$ ,  $\delta$  and  $\gamma$  are vector of coefficients. The Equation (2) can be estimate in two steps. In the first step, the null hypothesis of 'non-existence of the long vrun relationship' among the variables i.e.  $H_0: \gamma_k = 0$ , is tested against the alternative of  $H_1$ : not all  $\gamma_k$  are zero. where  $k=1, 2, \dots, 7, 8$

The relevant statistic to test the null is the familiar F-statistic with new critical values tabulated by Pesaran, *et al.* (1996). Once the long run relationship i.e. the co-integration among the variables is confirmed, the following Error Correction Model (ECM) can be estimated at second step:

$$\Delta inv_t = \beta_0 + \sum \beta_i \Delta inv_{t-i} + \delta \sum \Delta z_{t-j} + \lambda EC_{t-1} + v_t \quad \dots \quad (3)$$

Where  $\lambda$  represents the speed of adjustment parameter and  $EC$  is residual obtained at the first step.

## Empirical Results

Before estimation, we test for time series properties of our data. We apply Augmented Dickey Fuller (ADF) test to see whether the variables included in this study are stationary or not. The results of unit root test are given below in Table 5.

**Table 5**  
*The Unit Root Results*

Variables	$\tau$ -statistics
Y	-2.2
Ipry	-3.8*
Ipby	-4.8*
Credy	-2.8
Exdy	-2.8
Fdiy	-0.5
Rir	-3.4*
Er	-2.1
Inf	-4.5*

*Note:* \*Indicates significance at 5 percent.

The results show that ratio of private investment to GDP (ipry), ratio of public investment to GDP (ipby), real interest rate (rir) and inflation rate (inf) are level stationary while remaining variables i.e. GDP, credit to GDP ratio (credy), external debt to GDP ratio (exdy), foreign direct investment (fdiy), and exchange rate (er) are non-stationary in their level. Therefore the most appropriate estimation technique is (ARDL).

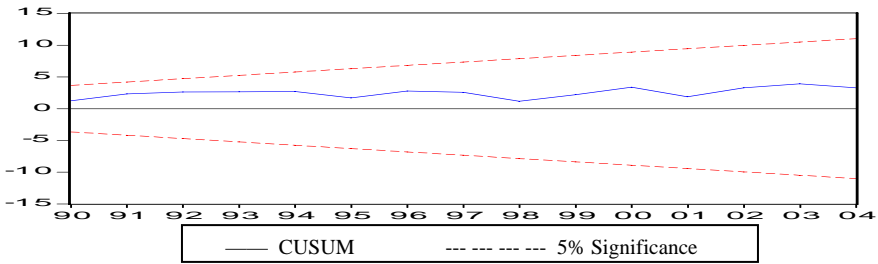
As first step, we estimate different specification of the Equation (3) and the most parsimonious estimation results are reported in Table 6.<sup>2</sup>

**Table 6**  
*Results of ARDL Approach*

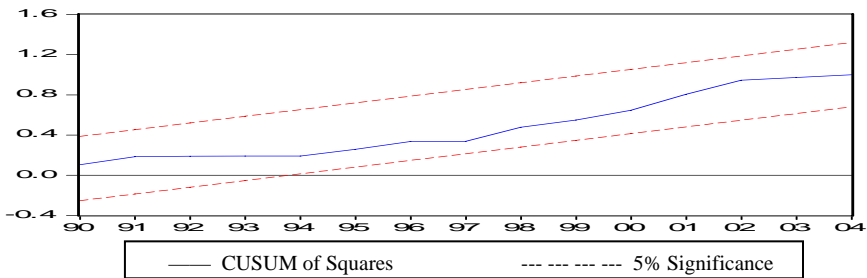
Variable	Dependent Variable: D(IPRY)	
	Coefficient	t-statistic
D(IPRY(-1))	0.51	2.9
D(Y(-1))	0.07	2.3
D(EXDY)	-0.11	-4.1
D(EXDY(-1))	0.13	4.0
D(FDIY)	-29.92	-2.0
D(RIR)	-0.001	-2.1
D(INF)	-0.002	-2.6
IPRY(-1)	-1.07	-4.9
LYP(-1)	0.05	4.9
IPBY(-1)	0.15	1.2
EXDY(-1)	-0.12	-3.3
FDIY(-1)	-0.35	-1.7
RIR(-1)	-0.002	-2.2
INF(-1)	-0.0003	-0.5
C	-0.41	-4.7

The model estimated (Table 6) passed different diagnostic tests. The F-statistic for serial correlation is 1.2, which indicates the absence of serial correlation. Jack Bara test statistic is 0.08 which confirms the normality. The ARCH test for heteroscedasticity is also clear (here F-statistics is 0.47). The CUSUM and CUSUM of Square tests of stability also confirm that the estimated model is stable as shown in Figures 1 and 2 below.

**Fig. 1. CUSUM Test for Stability**



**Fig. 2. CUSUMSQ For Stability**



Finally we apply the Wald test to see whether long run relationship exists between the variables. The value of F-statistics which is 4.5, confirms the co-integration among the variables. Then we normalise the coefficients of lagged level variable by dividing on the coefficient of *ipry* (Assuming all the other coefficients are zero) and hence obtained the long run elasticities. The normalised equation is given below.

$$ipry = 0.05y^* + 0.14ipby - 0.11exdebt^* - 0.33fdiy^* - .001rir^* - 0.0002 inf \quad (4)$$

The results show that real GDP is positively related to private investment. The impact is significant in long run. The impact of public investment on private investment is insignificant though positive. The impacts of external debt, foreign direct investment, real interest rate and inflation rate on private investment are negative and also significant except inflation.

Now we estimate the error correction model as given in Equation (2). The results are presented in Table 7.

**Table 7**  
*Short Run Dynamics (ECM) of Private Investment*

Variable	Dependent Variable is D(ipry)	
	Coefficient	t-statistic
C	-0.002	-1.1
D(Y)	0.03	1.2
D(IPBY)	-0.21	-1.7
D(EXDY)	-0.10	-4.6
D(FDIY)	-16.4	-1.5
D(RIR)	-0.0005	-0.7
D(INF)	-0.001	-1.5
E <sub>t</sub> (-1)	-0.45	-3.1

*Note:*  $E_t = ipry - (0.05 y + 0.14 ipby - 0.11 exdy - fdiy - .001 rir - 0.0002 inf)$ .

The results show that error correction term has negative sign and significant which confirms the existence of long run relationship at first step. Real GDP has positive but insignificant impact on private investment in the short run. While public investment exerted negative and significant (at 10 percent) impact on private investment. This result is in line with Ghani and Din (2006) that public investment crowd out the private investment in case of Pakistan. The impact of external debt on the private investment is negative and significant. Negligible and insignificant impact of real interest rate on private investment shows the non-responsiveness of private investment to interest rate. The other two variables i.e. FDI and inflation rate have negative and insignificant impact on private investment. Surprisingly, when we include credit in model, it shows insignificant impact on the private investment. It was because of “putting good money after bad money” i.e. credit was given to sick units to enable them to repay loans due to banks (Tanner, 2001). But these were not used for productive purposes (as in 1990 loans restructuring exercise, was undertaken under the auspices of the government.

The results show that most of the traditional factors have very weak or producing no impact on private investment in case of Pakistan. These may support the view that “it is the poor quality institutions that are responsible for low investment in Pakistan”. The crowding out effect of public investment also indicates the inefficiency in utilising public sector funds or corruption element, on the part government official. The large budget deficit with no check and balance on government expenditure is another example of institutional weakness. The debt accumulation due to huge budget deficit has negative impact on private investment, as the deficit was result of non-developmental expenditures, especially on defense and debt servicing.

## **Conclusions**

This study attempts to estimate from private investment demand function in case of Pakistan over the period 1973 to 2005. The ARDL co-integration technique is used for estimation. We find partial support for the accelerator principle and crowding out hypothesis in case of Pakistan. However, the hypothesis that volume of funds is as important as cost of fund used in financing private investment and McKinnon-Shaw hypothesis are not verified in case of Pakistan. The external debt affects the private investment negatively both in long and short run. Negligible impact in long run as well as in short run of real interest rate on private investment shows the non-responsiveness of private investment to interest rate. These results show that most of the traditional factors have very weak or no effects on private investment in case of Pakistan. These results are supportive to view that poor quality institutions are responsible for low investment in Pakistan. The crowding out effect of public investment also indicates the inefficiency in utilising resources or corruption element on the part of government official. However, these are crude conclusion. For accurate effects of institutional quality on investment, one needs solid proof. Many difficulties are involved in this regard. First one is the accurate definition of good quality institutions and measurability of quality. The second is that, even there are some comparative indices on quality of institutions on world level, the time series of such indices are impossible as institutions take a longer time to change.

The conditions which are pertained in countries such as Pakistan, the policy needs to focus on overall institutional framework of entrepreneurial activities in order to facilitate the development of productive entrepreneurship and minimise the unproductive forms of entrepreneurial behaviour. To improve the quality of laws and regulations, are the key elements in establishing the framework conditions that are essential for economic development. Additionally, strengthening the legislative environment can be a highly cost-effective strategy for stimulating and promoting entrepreneurship particularly when government resources are limited as in case of Pakistan. Regulations that are overly burdensome, complex or impractical may reduce business competitiveness by contributing to higher administrative and compliance costs, as well as to a diminution of the rule of law when non compliance becomes rife. Moreover, the negative effects of an inadequate and poorly implemented legal and regulatory framework can impair the development of legitimate private sector activity at the expense of a burgeoning informal economy. However, developing effective institutional arrangements for the governance and support of businesses in the economy is no less than a challenge in countries like Pakistan, because of powerful lobbies of vested interest groups.

## Notes

1. See North (1990), Barro (1996), Landes (1998), Knack (1996-2003), Hall and Jones (1999), and Acemoglu, *et al.*, (2001).
2. The lags are selected on the basis of AIC criterion.

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