Impact of Political Structure and Foreign Direct Investment on Growth in Pakistan

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بسم الله الرحمن الرحيم

DECLARATION

I, Nilofer d/o Liaqat Hussain, declare solemnly that this thesis has been authored by me for the fulfillment of requirement of M.Phil degree from PIDE. This dissertation is the result of my own effort and use of resources quoted in the thesis explicitly. Any item copied from the internet or any other written source used has been quoted with reference to the source of citation.

Nilofer d/o Liaqat Hussain

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ABSTRACT

Savings and investment are vital ingredients of growth in an economy. Saving contributes to investment which contributes to physical and human capital formation both of which promote growth of Gross Domestic Product (GDP) of a country. This thesis aims at determining the role of the three types of investment i.e., public, private and foreign direct investment (FDI) in the growth of Pakistan economy with a special focus on the contribution of FDI and political structure of the country in terms of democracy and dictatorship in GDP growth of the country. Cointegration analysis of time series data was used to analyze two models; one without controlling for political structure, and the other incorporating a dummy variable for political structure (democracy/dictatorship).

Autoregressive Distributed Lag (ARDL) Bounds Testing Approach has been used to analyze the relationship between GDP growth, investment, government expenditure and political structure for Pakistan using data from the Government of Pakistan and the State Bank of Pakistan (1970-2015). The results indicate that while public and private investment and lending rate have a positive impact on growth, public consumption and FDI decelerate GDP growth. And political structure dummy turned out to be positive and highly significant implying that in case of Pakistan dictatorship regimes are associated with positive growth rate and vice versa. The study recommends building infrastructure, bringing about reforms and restructuring the existing infrastructure to boost the positive impact of FDI and help bring in more of it. Also the investor confidence should be bolstered by improving the law and order and security situation of the country and introducing investment friendly policies to further harness the positive impact of investment on growth.

Key Words: Investment, FDI, Growth, Political Structure (Democracy/Dictatorship), Cointegration, Autoregressive Distributed Lag Bounds Testing, Pakistan.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Growth, specifically GDP growth is used widely as a measure of economic performance of a country [Hassan (1997)]. Growth, specifically economic growth is driven by consumption, investment and net exports & services through output expansion (Government of Pakistan; 2013). Most economies are demand driven economies and among them some attain consumption led growth; Pakistan is a classic example of consumption oriented economy (Government of Pakistan; 2013). Investment in technical progress, education and training helps create skilled labor and boost productivity, also, investment by government can help overcome market failures associated with private sector investment, complementing it and paving the way through technological advancement for sustained long-run growth as has been demonstrated for developing countries including Pakistan by Phetsavong and Ichihashi (2012). No economy can grow without investment, as is postulated by the vast amount of literature including the endogenous growth theories and the recent extensions of neo-classical growth models [Clark (1923); Romer (1986); Grier and Tullock (1989); Fischer (1993); Barro and Sala-i-Martin (1999)].

All three components of investment; the public, private and the foreign investment play a vital role in the growth of an economy. As far as the foreign direct investment is concerned, for a developing country like Pakistan which faces regular budget deficits and

is lagging behind in production technology, foreign direct investment (FDI) can fill in the gap though technological transfers, development of human capital, creation of competition in the input market and corporate revenue creation in the host country [Gudaro, Chhapra and Sheikh (2012)], however, a major hurdle in the way of attracting FDI and embarking on a path of sustainable growth is the unstable political and law and order situation of the country. When the political structure in the country moved somewhat towards stability, the law and order situation would deteriorate and vice versa, so the macro-economic stability required for better growth could not be achieved for more than a few years at a time, and those few years, the growth spurts have been obvious.

The political structure of a country plays an important role in the performance and prospects of the economic system [Plumper and Martin (2003)]. Democracy and autocracy both have their own merits and demerits and economists have divided opinions about which of the two is a more functional form of government especially when it pertains to growth [Zakaria and Fida (2009)]. One school of thought supports democracy associating it with economic freedom, rule of law and sound economic policies which through establishing credibility eventually lead to economic growth [Friedman (1962); Rodrik (1999); North (1990); Baum and Lake (2003); Plumper and Martin (2003)] whereas the other propounds that not only do democratic governments favor consumption over investment, but they also yield to the elite and vested interest groups in policy decisions which may be damaging to the economy on the whole [Olsen (1965; 1982)]. But it may just be that both these schools of thought may be setting aside the socio-

cultural aspects of a particular economy for which a particular form of government may turn out to be more suitable than the other [Zakaria and Fida (2009)].

The inter-linkage of growth and investment, and growth and political structure has been explored in literature separately but a comprehensive analysis using all three aspects has not been conducted specifically for Pakistan which is what this study attempts to conduct besides extending the analysis of the data up to the existing time period to observe the impact of changing political and investment scenario of the country on its economy.

1.2. Growth, Investment and Political History of Pakistan

1.2.1 Growth Perspective

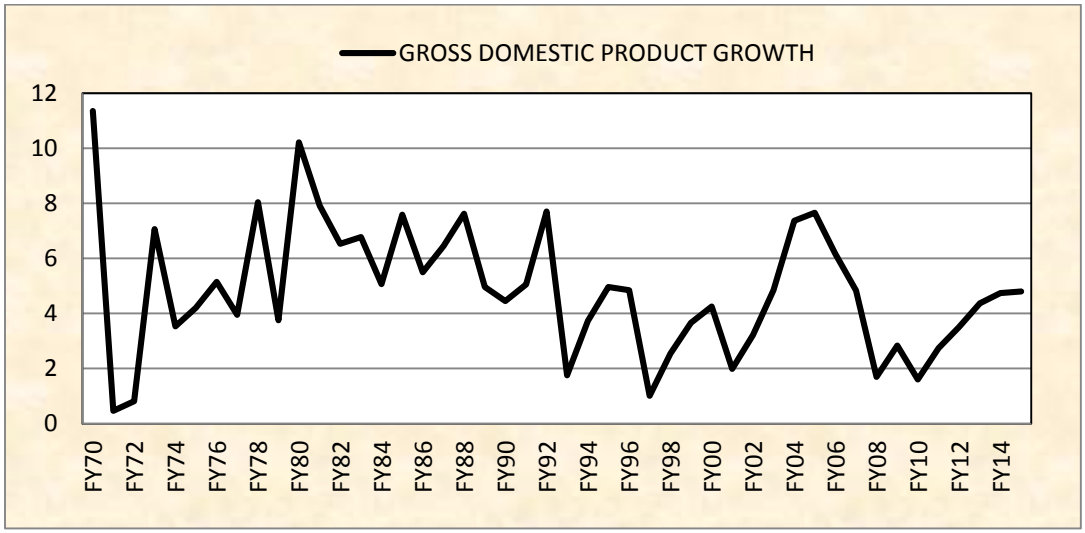
Growth in case of Pakistan has remained unsteady, fluctuating from highs to lows based on the political and economic situation. Average growth rate in the 50's ranged around 2.7% with frequent changes in the political leadership, in 60's it ranged around 6.5% with the agricultural reforms, bumper crops and industrialization based on agriculture, in 70's growth dipped to around 5.1% in the wake of cessation of East Pakistan the nationalization policy which resulted in inefficient entities and wasted resources [Hassan (1997)].

The 80's observed a growth spurt that averaged around 6.4% due to privatization, export promotion and regulation, however, in the 90's gain due to unstable political environment and the economic restrictions post the nuclear blasts by the country, the growth averaged around 4.7%. Post 9/11 and the war on terror and the inflow of Aid and rescheduling of loans and implementation of strict IMF conditionalities, the growth in Pakistan started

climbing and reached a record high of 8.96% in 2004 before tumbling down again to a record low of 1.21% in 2008 due to energy crisis, the worsening debt situation and the internal security issues [Bint-e-Ajaz and Ellahi (2012)].

After the change of the political government, there has been observed small but gradual increase in growth due to improving security situation in the country in the wake of Zarb.e.Azb and the recent drive for transparency and answerability initiated by the security agencies of the country. The trend graph below (Figure 1.1) shows the growth rate of GDP over time for Pakistan.

Figure 1.1: GDP Growth Rate of Pakistan (1970-2015)



Data Source: World Bank (WDI; 2016)

1.2.2 Investment Perspective:

In 1947 when Pakistan appeared on the map of the world, it did not have any industrial set up, it was a purely agrarian economy. It was apparent to the policy makers of the time to establish an industrial set up for the existing raw material in the 50's. Due to the focus

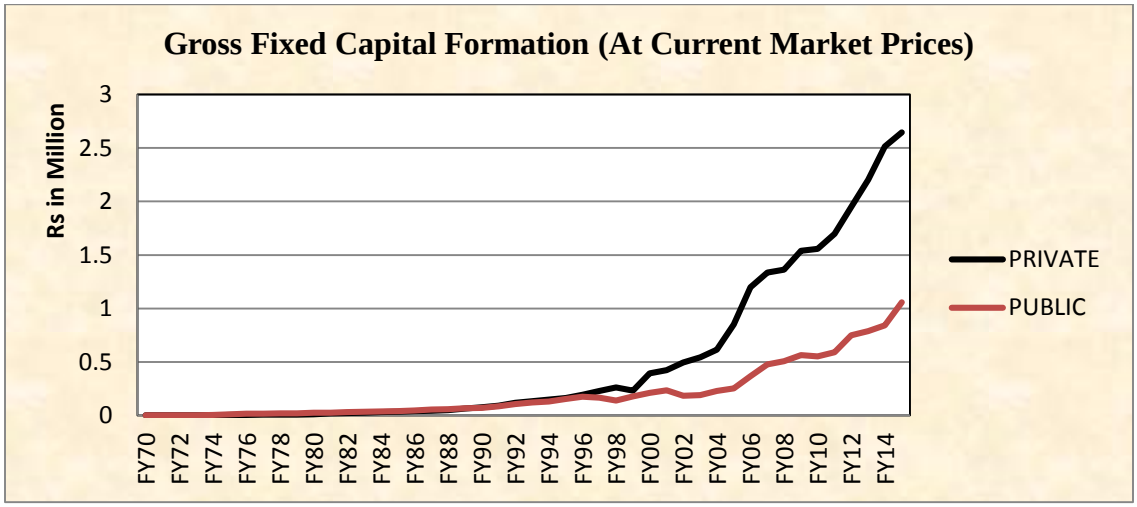
of investment on industrialization, agriculture suffered. But not for long, as investment in agriculture picked pace with the agricultural reforms in early 60's. At the same time disbanding of controls and liberalization of imports doubled the private investment in the country, but after the war of 1965 private investment shrank due to increased defense budget. The investment recovered somewhat in the latter half of the 60's but this recovery was marred by the cessation of East Pakistan [Ahmed and Qayyum (2007)].

The nationalization policy of the 70's nipped private investment even further, whereas the public investment rose to almost double with a growing emphasis on capital rather than consumer goods. With the gradual reversal of nationalization under the military government, the private investment showed a positive trend but was dominated by public investment nevertheless. The soviet invasion of Afghanistan lead to an increased inflow of aid and investment into Pakistan in the early 80's but in the wake of drying up of the foreign aid and budget deficit accumulation, Pakistan had to turn to IMF for assistance. The continued privatization by later governments pushed up the private investment and with the encouragement of interest in the information technology industry, the promotion of small and medium enterprises, easy access of farmers to loans through banks and the creation of Independent Power Projects, investment would have gone up had it not been for the economic sanctions post nuclear blasts by Pakistan and the freezing of foreign currency accounts by the government [Ahmed and Qayyum (2007)].

With the onset of another military government, and the economic revival plan, coupled with the foreign aid flow in the aftermath of 9/11 and the structural adjustment plan following the strict conditionalities of IMF, the economy revived; investment in services industry flourished. Even with the materialization of energy crisis, internal security threat

and political turmoil in 2007-2008, when growth of the country nosedived, the private investment in services industry showed an increasing trend as can be seen in the figure below. Although the share of public investment has been on the rise, but private investment seems to have far surpassed it in playing its role in the growth of the economy [Ahmed and Qayyum (2007)].

Figure 1.2: Public and Private Gross Fixed Capital Formation (1960-2015)



Data Source: State Bank of Pakistan's Handbook of Statistics (2010)

FDI in Pakistan remained fairly low over the first four decades with the stress on built up of local industry and its pronounced role in the 60's and the nationalization trend in the 70's. FDI did pick its pace somewhat in the 80's with promotion of Export Promotion Zones and increased remittances but due to high regulation, the results were not as good as they could have been. Finally in the 90's FDI started showing an increasing trend due to trade liberalization and establishment of special industrial zones but post the nuclear blasts by Pakistan FDI dipped again [Atique, et al. (2004)]. However, after the 9/11 terrorist attacks, Pakistan's coalition with US in fight against terrorism, and the reformative policy pursuance under the Musharraf regime, FDI inflows surged until the

reinstatement of a democratic government in 2007 after which the investor confidence seemed to have declined tremendously especially due to the debt conditions and declining security situation of the country.

1.2.3 Political Perspective

Since its inception in 1947 the political arena of Pakistan has been filled with turmoil and uncertainty. Although Pakistan inherited the Government of India Act, 1935 which meant that we came into existence as a parliamentary democracy, and all the subsequent constitutions of Pakistan maintained this status quo, in the 68 years since 1947 [Zakaria and Fida (2009)]. Pakistan has faced 3 military regimes [from October, 1958 to March, 1969; July, 1977 to August, 1988 and October, 1999 to Aug 2008]. Even when dictatorship did not overturn democracy, the boat of democracy kept tilting time and again as we saw six Prime Ministers change from 1951 to 1958 and four elected governments from 1988 to 1998 [Zakaria and Fida (2009)]. The first elected government to complete its full tenure was as late as 2008-2013, six decades after the country came into existence. Because of the repeated military coups and government overturns, democracy could never take hold in Pakistan to provide adequate facilities for 'law and order', build political infrastructure or bring about economic development.

1.3 Significance of Study

The current study will analyze the effects of political structure of the economy and Foreign Direct Investment on growth in Pakistan. Although there is a vast amount of literature on investment and growth in Pakistan but all the papers have observed the inter-

linkages between the components of investment and growth in piecemeal. Blejer and Khan (1984), Ghani and Din (2006), Sial, et al. (2010), Bint-e-Ajaz and Ellahi (2012) and Phetsavong and Ichihashi (2012) have tried to take a comprehensive look at the subject in question, however, all these papers have still not incorporated the impact of political structure on the economy which could help judge what kind of investment is to be undertaken in what kind of political regime and as to which political regime suits the economic structure of Pakistan. Zakaria and Fida (2009) have explored the impact of democracy on growth by using Generalized Method of Moments (GMM), however, the analysis has not been extended to investment and this study seeks to fill the gap by adopting a comprehensive approach using all the vital determinants of growth and investment and checking their dynamic linkages to be able to better suggest as to the investment decisions that should be undertaken by the economy for better growth prospects. This study will not only use Autoregressive Distributed Lag (ARDL) approach for the joint analysis of Investment, Growth and Political structure, not used in case of Pakistan before but will also be extending the data analysis up to the prevailing time period so as to incorporate the effects of the evolving political and foreign investment scenarios on growth.

1.4 Objective of the Study

There are two main objectives of this study:

- To assess the long-run and short-run impact of foreign direct investment on growth in Pakistan using the ARDL approach.

- To judge the effect of political structure (democracy/dictatorship) on growth in Pakistan, using the ARDL approach.

1.5 Methodology

Two models of growth will be used in this study to analyze the impact of investment on growth and to assess the impact of political structure (democracy/dictatorship) on growth with a dummy variable using the ARDL approach.

$$Y_t = f\ (C_{gt}, I_{pt}, I_{gt}, FDI_t, LR_t, \varepsilon_t) \quad \ldots (1)$$

$$Y_t = f\ (C_{gt}, I_{pt}, I_{gt}, FDI_t, LR_t, D_t, D_t.FDI_t, \varepsilon_t) \quad \ldots (2)$$

In statistics, a **unit root test** determines whether a time series variable is stationary or not using an autoregressive model. A well-known test valid in large samples is the augmented Dickey–Fuller test (ADF), used in this study to assess the stationarity of the series under consideration.

Cointegration tests the long-run relationship between variables. Much of the theoretical and empirical research in economics has focused on econometric analysis of long-run relations. Where the variables in the long-run relation of interest are trend stationary, the general practice has been to model the series as stationary distributed lag or **Autoregressive Distributed Lag (ARDL) models** developed by Pesaran and Shin (1999). This paper will make use of the ARDL model to examine whether the variables grow together or converge over time that is if they are co-integrated or not, applying the bounds test approach of Pesaran et al. (1996, 2001), we also use the **Error Correction Model (ECM)** introducing dynamics in the model.

The diagnostic tests like Breusch-Godfrey serial correlation Lagrange Multiplier test and ARCH test will also be conducted to check for autocorrelation, heterogeneity etc.

1.6 Organization of Study

The plan of the study follows thus; the literature on the topic is discussed in the Second chapter, Chapter Three discusses the methodology adopted for the analysis and the model used to methodically examine the data and estimate the results. Chapter Four discusses the results of the estimation and the analysis in detail, while the Fifth and the last chapter concludes the study and includes the policy recommendations in the light of the analysis.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Growth has been an area of interest for the economists ever since the beginning of economics. Theories were propounded about factors affecting growth by the classicals, the Keynesians, the neo-classicals and the endogenous growth theorists. Various models were presented, new techniques introduced to estimate the models, theoretical and micro-foundations developed by economists like Clark (1923); Solow (1956); Blejer and Khan (1984); Kormendi and Meguire (1985); Romer (1986); Grier and Tullock (1989); Barro (1990); Barro (1991); Mankiw et al. (1992); Fischer (1993); Barro and Sala-i-Martin (1999); Rodrik (1999); Baum and Lake (2003); Ghani and Din (2006).

This study intends to explore the relationship of investment and growth with a focus on the FDI and the political structure (democracy/dictatorship) for Pakistan. The literature being discussed has been bifurcated as follows, first discussed is the literature on the investments both public & private and growth, next the literature regarding the impact of FDI on growth and finally the analysis of the political structure on growth has been presented. Both foreign and national literature has been discussed in each section encompassing and keeping the focus on the topic under discussion.

2.2. International Literature

2.2.1 Public/Private Investment and Growth

Blejer and Khan (1984) developed a variant flexible accelerator model incorporating the role of fiscal and monetary policies with theoretical consistency. They then estimated the model through restricted least squares method using time series pooled data from 1971-1979 for 24 developing countries and assuming similar basic economic parameters. They found that the government can affect the private investment through its own policy decisions; a strict monetary policy would discourage growth unless private sector credit is not reduced, also shortage of foreign investment would negatively impact private investment due to higher public borrowing, but fiscal contraction has rather vague results so the government should make infrastructural investment reductions very carefully.

Phetsavong and Ichihashi (2012) have also performed a cross country analysis of 15 developing Asian countries using annual data from 1984 to 2009 using correlation test, deducing that domestic private investment is the most important contributor of economic growth, followed closely by FDI whereas the public consumption is a deterrent of growth. Their results also state that public investment acts as a substitute for private investment and FDI in developing Asian economies weakening the positive impact of private investment and FDI on growth when its own share in GDP increases.

2.2.2 FDI in Investment and Growth Analysis

The significance of Foreign Direct Investment (FDI) for developing countries is undeniable according to the economic research done internationally and specifically for

Pakistan. Doces (2010) analyzed why FDI bypasses the developing countries, linking FDI with democracy for a sample of 55 low and middle income countries over the period of 1990-99 and controlling for various important variables. He used Generalized Method of Moments (GMM) improved by Arellano and Bond to prove that more democratic countries attract more FDI. He concluded that most poor countries fail to attract FDI due to unstable political condition and there is dis-incentive for foreign investment due to absence of democratic framework.

Gudaro et al. (2012) have used multiple regression models to investigate the impact of FDI and Consumer Price Index (CPI) in relation to growth over the period of 1981-2010 in case of Pakistan. They found out that FDI and growth are related positively whereas inflation has a negative relation with growth and both these relations are significant however, like Falki (2009) they also suggest to focus on infrastructure, improving the education and creating a friendly environment to attract direct investment from abroad.

2.2.3 Political Perspective and Growth

The role of political structure (democracy/dictatorship) in the growth of an economy has been under scrutiny increasingly in the recent times. Although the debate about the merits and demerits of democracy has been ongoing since the time of Milton Friedman back in the 60's, where Friedman (1962) spoke about the political and economic freedom reinforcing the impact of democracy on growth but Olson (1965; 1982) has the opposite view that democracy diverts the sources away from investment and towards consumption to get political popularity, thus retarding growth. Another opinion about the inverse U-shaped relation of democracy and growth was suggested by Barro (1996; 1997) which

has been tested by Plumper and Martin (2003) using the data of 83 countries over the period 1975-1997. They argued that this inverse relationship is because the type of government in a country affects the policy decisions and the tools they use for attaining political support thereby influencing the rate of economic growth.

Baum and Lake (2003) argue that democracy is not just a brake or a boost for the economy and should not be lightly taken by merely adding it to a model and looking at the sign of the co-efficient as effects of democracy work through indirect channels towards growth. Using the data of 128 countries from 1967 to 1997 in five-year increments and employing two-equation system of recursive regression, they concluded that democracy has subtle effect on growth depending on a country's level of development as determined by life expectancy and the level of education.

Helliwell's (1994) analysis of 125 countries using the data from 1960 to 1985 of the two-way relationship between democracy and growth incorporated Gastil's index for political freedom, Bollen index and Pourgerami Democracy Index. He is of the view that countries with higher level of income have greater level of democracy which is not because of reverse causation, and that higher democracy level does not lead to accelerated growth, however, democracy does have a positive impact on education and investment which then lead to higher growth.

2.3 Literature from Pakistan

2.3.1 Public/Private Investment and Growth

Research from Pakistan includes the paper by Iqbal and Zahid (1998), separating the impact of vital macroeconomic factors like education and stock of capital on growth for Pakistan using framework of multiple regression from 1959 to 1997. Their results show that growth is linked to openness, better education and higher physical capital stock in case of Pakistan; however, due to the negative impact of external debt, they recommend reliance on domestic sources and sound long-run policies for sustainable growth.

Another important analysis in this regard was carried out by Ghani and Din (2006) using Vector Autoregressive Approach (VAR) and time series data from 1973 to 2004 to check the impact of public investment on growth. Their analysis is based on four variables, including also the private investment and public consumption due to theoretical considerations. Their investigation led them to the conclusion that public investment and consumption have an insignificant negative impact on growth whereas private investment is a major driver of growth. Following the same model Sial et al. (2008) also focused on the role of investment in growth incorporating political and economic uncertainty in their VAR analysis for Pakistan extending their data analysis from 1973 up to 2008. The variables were estimated in log-form using Johansen's cointegration technique and Error Correction Mechanism (ECM) and the deductions were the same as Ghani and Din, with an additional finding that a positive short run relationship exists between economic uncertainty (used as a proxy for inflation) and growth.

Bint-e-Ajaz and Ellahi (2012) used a comprehensive approach based on incorporating different models to link the public and private investment with growth for Pakistan. They used a three equation model, one equation for each variable and estimated the model using unit root, Johansen and Johansen and Juselius tests for cointegration and short-run ECM for each equation. Their evaluation shows that both public and private investments depend on exchange rates, inflation and GDP level. Private investment depends also on the lending rate but public investment seems not to be affected by revenue generation through taxation. They also deduce a robust positive relationship and a two-way causal relationship between private and public investment, and growth.

2.3.2 FDI in Investment and Growth Analysis

Ahmed and Hamdani (2003) studied 32 developing countries over 1965 to 1992 pooling cross-section and time series data and using three techniques; common, fixed and random-effects models to check the impact of labor, public expenditure, private investment and FDI on growth. They concluded that despite its significance for growth FDI does not play as major a role as domestic private investment which has more consistent and reliable results, that there is low labor productivity in LDCs and that public spending has a positive impact on growth but only as long as its share in GDP does not grow too large to crowd out private investment.

Falki (2009) used Engle Granger cointegration to test the production function based on endogenous growth for Pakistan for the period 1980-2006. Her impact assessment of FDI on growth is not as significant as it could be if some pre-requisite conditions like liberal trade policy, effective competition and adequate market are created.

2.3.3 Political Perspective and Growth

Zakaria and Fida (2009) have also discussed all three schools of thought but they are of the opinion that all the previous studies based on cross-country analysis tend to overlook the socio-cultural conditions of a particular economy where a particular form of government, (democracy/dictatorship) may be more successful than the other. They also opined that the level of democracy in a country varies over time which the use of period average data may ignore and lead to biased results. They, therefore, restricted their analysis to Pakistan taking time series data from 1947 to 2006 and using regression analysis with Polity2 as a measure of democracy concluding that democracy affects economic growth in Pakistan slightly negatively going through the indirect channel of public consumption, physical and human capital, and trade openness.

2.4 Conclusion

The literature on the topic of the study was discussed in this chapter with the initial literature pertaining to the growth due to public and private investment including both the foreign and the national literature, the second portion, likewise, pertained to the inter-linkage of investment to growth explored by various authors besides the incorporation of the FDI component and finally the incorporation of the political perspective in the analysis of investment and growth was discussed through relevant literature.

The following chapter will discuss the methodology used for the analysis, discussing both the theoretical and the econometric model and the sources of the data used. The next chapter will show the estimation output while the last chapter will give the conclusion and the policy recommendations.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter outlines the methodology used for the analysis and delineates how the relationship between investment and growth will be drawn out using the ARDL model with GDP growth as a dependent variable and investment, government expenditure and political structure as the independent variables. The chapter includes the theoretical background of the study, followed by the modeling and the econometric techniques used; the sources of data and the conclusion.

The next chapter will then show the estimation outputs and discussion of the results. The fifth chapter will then conclude the study giving the policy recommendations as well.

3.2 Theoretical Background

The classical theories regarding growth and development include the Linear Growth Theories by Rostow (1960) and Harrod (1939)-Domar (1946) both of which are centered on Capital fundamentalism. While Rostow (1960) was of the opinion that foreign aid can help trigger capital generation through investment at Take-off Stage, Harrod (1939) and Domar (1946) focused on investment and growth through saving, more a country saves out of a given GDP, greater the GDP growth will be. However, these linear stage theories failed to take into account the economy specific scenarios of the less developed countries and were too aggregative to provide basis for quantitative research.

Even the neo-classical revival of the classical theories focused on growth being brought about by an exogenous change in technology. The classicals believed in growth based on the law of variable proportions and diminishing utility from the factors of production contributing to growth, however, they assumed technology, a vital ingredient of growth, to be constant and ignored the economies of scale. Solow (1956), a neo-classical, proposed a growth theory with diminishing returns on capital and labor, and substitutability between labor and capital where eventually a state of no further economic growth is reached called the steady state given that there is no technological change implying technological advancement to be exogenous. His model is based on four parameters; technological growth rate, population growth rate and depreciation rate besides the saving rate explained by Harrod (1939)-Domar (1946) as the motivators for growth, however, his model failed to explain how to increase growth rate and could not justify overtime increase in growth rate since it still assumed the technological advancement as exogenous. Ramsey (1928), Diamond (1965) and other neo-classicals later improved upon Solow's model by variation in one assumption, that the saving rate is not exogenous; rather, it is the decision of the consumer, and that population turnover exists in case of the latter's model, but the results of their models model were the same as regards growth, as those of Solow. Their results regarding welfare, however, were different with Ramsey's social planner having no role while Diamond's social planner having a say in the welfare of the economy.

In the 80s and 90s came forward the endogenous growth theorists like Romer (1986), Lucas (1988), Barro (1990) and Barro and Martin (1999) who tried to explain

technological advancement mathematically, believing technological growth to be caused by knowledge production and human capital.

The endogenous growth theories where technological advancement is explained by knowledge production take knowledge to be acquired knowledge, abstract/applied knowledge or learning by doing. This knowledge production could be of the basic scientific knowledge, research & development and innovation and can also be increased by the availability of opportunities to talented individuals for the production of knowledge through increase in market size, protection of property rights etc. The endogenous theorists using human capital regard it as an important source of growth besides the physical capital focusing on social infrastructure, worker training and entrepreneurship.

Over the history of evolving growth theories, the importance of saving, investment and physical capital has been undeniable. Investment itself can be further bifurcated into public, private and foreign direct investment. This study focuses on the role played by the FDI and political structure on growth in Pakistan with a cursory glance at the role of government consumption and public and private investment as contributing factors of growth.

3.3 Modeling Growth and Investment

The link between private, public investment and economic growth has been explored by researchers like Blejer and Khan (1984), Barro (1990), Barro (1991), Iqbal and Zahid (1998), Ibrahim (2000), Sial, et al. (2010), Phetsavong and Ichihashi (2012), Bint-e-Ajaz and Ellahi (2012).

The production function from which the growth model has been derived by Barro (1991) is as follows:

$$y = A\,k^{1-\alpha}\,g^{\alpha} \qquad \ldots 3.1$$

Where y = output per head,

k = capital per head,

g = real government purchases per head,

A = total factor productivity, and $(0<\alpha<1)$

The production under this function could be carried out by the households or the competitive firms. Assuming a 'one-sector production technology', Barro (1991), explains that the net product (y) can be used either for consumption (c), investment (k) or government purchases (g). These government purchases refer to the procurement of resources for further use in production and can be taken in the sense of government investment expenditure where "k" would then be interpreted as the private investment expenditure.

Since FDI contributes to economic growth through technological transfers, infrastructural and institutional development, FDI is incorporated in the above model through the total factor productivity (A) to counter any specification errors on the pattern of Balasubramanyam et al (1996), Atique et al (2004) and Falki (2009).

The models being used in the study are derived from 3.1 and are expressed in functional form as follows:

$Y_t = f\ (C_{gt}, I_{pt}, I_{gt}, FDI_t, LR_t, \varepsilon_t)$ …. 3.2

$Y_t = f\ (C_{gt}, I_{pt}, I_{gt}, FDI_t, LR_t, D_t, D_t.FDI_t, \varepsilon_t)$ …. 3.3

Where

Y_t = GDP = Growth of GDP

C_{gt} = CG = Government Consumption Expenditure

I_{gt} = IG = Public Investment

I_{pt} = IP = Private Investment

FDI_t = FDI = Foreign Direct Investment

LR_t = LR = Lending Rate

D_t = DMY = Dummy variable which takes the value 0 for democracy & 1 for dictatorship

$D_t.FDI_t$ = Interaction term between the dummy variable and the FDI

ε_t = the error term

Eq 3.2 and 3.3 are the growth equations of the economy and show that the growth of GDP in real terms depends not only on both public (positive relationship) and private investment (positive relationship) theoretically, but also on the lending rate, since lower interest rates lower the borrowing costs, garnering investment and growth.

We improve upon the earlier models used by incorporating the dummy of democracy/dictatorship in the second model along with an interaction term between the

dummy variable and FDI to test for the joint impact of political structure and foreign direct investment on growth.

FDI which has not been incorporated in any combined analysis of growth and investment for Pakistan yet, is also incorporated in both models.

Also Public Consumption expenditure has been incorporated in the Growth equation based on the argument that expenditure on Public Consumption if productive would help promote economic growth.

The data for GDP growth has been taken as the log of Gross Domestic Product (At constant Factor Cost) (FC). The variable has been used at constant factor cost to counter the impact of inflation in the data. The construction of the variable according to the Federal Bureau of Statistics (FBS) was based on the classification and concept of the United Nations' System of National Accounts (UN-SNA). A combination of income, expenditure and product methods was used where income accruing from public administration and defense, banking and insurance, storage, transport and communication and services sectors was used in the income method, estimated value addition was used in the expenditure method based on co-efficient of value added and investment made. Finally, to compute the value addition in manufacturing, agriculture, mining and quarrying, wholesale and retail business, gas and electricity distribution and dwelling ownership, product method has been applied.

Government Consumption Expenditure has been taken as the log of General Government Consumption Expenditure and Private & Public Investment as the log of Private and Public Gross Fixed Capital Formation (At Current Market Prices) respectively. FBS

constructs the Gross Fixed Capital formation separately for the public and private sectors by 'aggregating the investment made by the general government, public sector bodies, autonomous and semi government enterprises collecting the data from the respective agencies and classifying the demand of grants of the developmental and non-developmental budgets of the federal, provincial and local governments bodies' and by 'the use of expenditure or survey method, financial approach and the commodity flow method' respectively.

For FDI the log of Foreign Direct Investment was incorporated while for lending rate the value of interest rate has been used as a proxy. FBS captures the data on FDI through the net flows of exchange companies and the banking system of the country.

The dummy variable used for democracy/dictatorship has been generated based on the tenure of the political and dictatorial regimes. The inclusion of dummy variable follows the pattern of Pesaran et al. (2001) who are of the view that including 'one-off' dummy variables does not affect the asymptotic theory developed for ARDL.[1]

The dummy variable has been used instead of the indices mentioned in earlier studies like Gastil's index for political freedom, Bollen index and Pourgerami Democracy Index or Polity2 due to their weakness in measurement, aggregation or conceptualization [Munck and Verkuilen (2002)]. While the Bollen index omits participation, has a problem of restricted empirical scope, Gastil's index has a maximalist definition but has various problems in its measurement and aggregation procedure. And while Polity data like

[1] The current study assumes that the dummy variable incorporated here is not a structural change variable. If, however, the dummy variable is considered a structural change variable, the ADF unit root test would be replaced by Perron (1989) test and the ARDL approach to cointegration would be replaced by Gregory Hansen Cointegration tests which are residual-based cointegration tests in models with regime shifts.

Bollen omits participation, and faces the problem of redundancy besides flaws in its aggregation procedure, the democracy index is vague as to the sources of collection and fills in the gaps using data of similar countries where survey data is not available [Munck and Verkuilen (2002)].

Also according to the sensitivity analysis conducted by Zakaria and Fida (2009), the correlation co-efficient between democracy index of Polity2 and the democracy dummy 0.89 indicating that the democracy dummy is a good proxy for the index of political structure.

The ARDL approach to test co-integration has been used here due to failure of Engel Granger and Johansen approach for the data under consideration (all the variables used in this analysis are not integrated of the same order which is a pre-requisite for Engel Granger and Johansen approach).

ARDL also captures the data generating process in a general-to-specific framework by incorporating sufficient lags and incorporates the short-run dynamics through ECM without losing the long-run information (Laurenceson and Chai, 2003). Furthermore, the dynamic ECM from ARDL can be derived via a 'simple linear transformation' (Bnaerjee et al, 1993).

The dynamic Autoregressive Distributed Lag (ARDL) Model based on the pattern of Pesaran et al. (1996, 2001) to be estimated is:

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \alpha_3 D_t + \alpha_4 D_t . FDI_t + \sum_{i=0}^{p-1} a_i \Delta C_{g\,t-i} + \sum_{j=0}^{q-1} b_j \Delta I_{p\,t-j} + \sum_{k=0}^{r-1} c_k \Delta I_{g\,t-k} + \sum_{l=0}^{s-1} d_l \Delta FDI_{t-l} + \sum_{m=0}^{u-1} e_m \Delta LR_{t-m} + \lambda_1 Y_{t-1} + \lambda_2 C_{g\,t-1} + \lambda_3 I_{p\,t-1} + \lambda_4 I_{g\,t-1} + \lambda_5 FDI_{t-1} + \lambda_6 LR_{t-1} + \varepsilon_t$$

... 3.4

The difference terms in the above equation represent the short-run process whereas the lag terms in the latter half of the equation show the long run variables. Trend and drift terms have been included in the model along with a dummy variable. The model is estimated once without the dummy variable, and then including the dummy variable to examine the impact of political structure on growth. The co-efficient of the lagged dependent variable in Eq 3.4 (λ_1) is the error correction co-efficient which gives the speed of adjustment. If this co-efficient is insignificant it implies that a change in dependent variable does not depend on past errors.

3.4 Econometric Methods

For the model being used in this study, discussed above, the data analysis was conducted and the variables were first tested for the existence of unit root before moving on to the analysis of cointegration.

3.4.1 ADF Test for Unit Root

A series having past effects is said to be integrated and hence non-stationary because of its future path being dependent on the past influence. To check for such non-stationarity, many tests have been developed, out of which the Dickey and Fuller (1979) test with the augmentation for the error term which is not white noise and has the problem of autocorrelation has been used here. The Augmented Dickey-Fuller (ADF) test tackles the problem of serial correlation of error terms by incorporating the lagged dependent variable in the equation as additional regressor. The ADF equation in general form is given below:

$$\Delta Y_t = \alpha + \beta t + \rho Y_{t-1} + \sum_{i=1}^{p+1} \gamma_{t-i} \Delta Y_{t-i} + \varepsilon_t$$

Where i= 1,2,3,…….,n

Estimating the difference form equation by OLS, we test the hypothesis

H_0: $\rho \geq 0$ (non-stationary)

H_1: $\rho < 0$ (stationary)

Since the standard t-statistics do not apply to non-stationary series due to the downward bias in the ADF distribution, we compare the estimated ADF stat with Mackinnon (1990) t-values instead of the normal t-values. The serial correlation problem is checked by using the Breusch-Godfrey (1978) serial correlation Lagrange Multiplier test and the lags of the dependent variable are included until the error term becomes white noise.

3.4.2 ARDL Bounds Testing Approach for Cointegration

Cointegration is a statistical property of time series variables. Two or more time series are cointegrated if they share a common stochastic drift. In other words if there exists a stationary linear combination of non-stationary random variables, the variables combined are said to be cointegrated. The ARDL approach to test cointegration was developed by Pesaran and Shinn (1997) which utilizes both the theory of unit roots and the long-run economic theory to provide the basis for developing an error correction mechanism. They suggested a two-step strategy for developing an appropriate ARDL model for inference. First, they recommend selecting the required number of lags of dependent variable (denoted by p) and the regressor/s (denoted by m) by utilizing the information criteria like Akaike (1969, 1973) Information criterion (AIC), Schwartz Bayesian (1978) Information Criterion (SC) or The Hannan Quinn (1979) Criterion (HQ). Then the estimation of the model should be carried out based on the number of lags suggested by the information criteria suggested.

Bound testing approach was developed by Pesaran et al (1996, 2001) to check for cointegration when the underlying regressor are a combination of trend or difference stationary series. Two sets of asymptotic critical values was developed with one set assuming all regressor to be I(1) or difference stationary and the other set assuming them to be I(0) or trend stationary. Under this scenario, if the computed statistic falls outside the critical value bounds, a conclusive inference can be drawn regarding the cointegration among the variables.

The unrestricted error correction model in general form is given below:

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \sum_{i=0}^{p-1} a_i \Delta Y_{t-i} + \sum_{j=0}^{q-1} b_j \Delta X_{t-j} + \lambda_1 Y_{t-1} + \lambda_2 X_{t-1} + u_t$$

Where Y $\longrightarrow$ p (n) and X $\longrightarrow$ q (m)

The estimation of the ARDL equation is done by applying ordinary least square technique and testing the hypothesis using Wald Co-efficient test where:

H_0: $\lambda_1=\lambda_2=\lambda_3=\lambda_4=\lambda_5=0$ (No Cointegration)

H_1: At least one λ is non-zero. (Cointegration exists)

The estimated Wald F-Statistic is then compared to the critical value bounds to conclude about the existence of cointegration among the variables with or without the knowledge of the rank of the forcing variables depending on whether the computed value lies within the bounds or outside them.

3.4.3 Diagnostic Tests

We will apply the diagnostic checks for autocorrelation, heteroskedasticity, and normality.

For autocorrelation we use the Breusch-Godfrey (1978) serial correlation Lagrange Multiplier test with the null hypothesis being that there is no serial correlation among the errors in the regression model. To test for the presence autoregressive conditional heteroskedasticity we use the ARCH test of Engle (1982) with the null being no hetro.

Jarque-Bera (1987) Test (JB Test) has been used to check for normality or the goodness of fit of the model. The null hypothesis of JB Test is a joint hypothesis of zero skewness and zero excess kurtosis.

3.5 Data Sources

Time series data has been obtained for GDP growth (Y), Government Consumption Expenditure (C_g), Private Investment (I_p), Public Investment (I_g) and Foreign Direct Investment (FDI) from the Government of Pakistan (Bureau of Statistics); Lending Rate (L.R) from Sate Bank of Pakistan (SBP) (1970-2015). The Handbook of Statistics (50 Years of Statistics) of SBP was used for data collection purposes.

3.6 Conclusion

In this chapter, the methodology and the models were discussed beside the econometric tests used and the sources of data. The following chapter will show the estimation based on the models and techniques discussed with the estimation outputs discussed in detail. The last chapter will then conclude the study and suggest the policy initiatives that the government should adopt in the light of the evidence obtained from the analysis.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

In this chapter we quantitatively analyze the impact that FDI and political structure have on growth in the Pakistan economy by using the ARDL method of co-integration. What follows is the summary of the data descriptive, the results of the model with focus on FDI, the results of the model explaining the political impact on growth for Pakistan and the concluding remarks.

The next chapter will conclude the study and suggest the policy measures to be adopted in the context of the analysis conducted.

4.2. Data Summary

The summary statistics of the variables under consideration were obtained and are presented in table 4.1.

Table 4.1: Summary Statistics of Data Series

Statistic	GDP	CG	IP	IG	FDI	LR
Mean	4,533,449.	504,958.0	508,515.3	210,468.5	6,313,613.	11.21217
Median	1,139,036.	165,123.5	126,823.0	114,179.0	731,427.0	11.04500
Maximum	25,821,943	3,242,656.	2,644,947.	1,056,680.	33,832,601	15.00000
Minimum	43,347.00	4,846.000	3,493.000	3,267.000	996.0000	5.000000
Std. Dev.	6,928,766.	789,340.4	747,424.0	261,258.8	10,354,969	2.010413

These statistics include the mean, median, maximum and minimum of the series besides the standard deviation from mean. As can be seen in the following table, the mean GDP of Pakistan over the period under consideration is 4.5 million rupees where the mean public consumption and private investment each ranges around 0.5 million, average public investment is 2.1 million rupees and average FDI inflow for Pakistan is Rs 6.3 million. The minimum FDI inflows in the country were observed in 1972 post separation of East and West Pakistan, whereas the maximum inflow of 33.8 million was seen in 2008 after the restoration of democracy which was welcomed worldwide.

The graphical analysis of the variables under consideration follows:

Figure 4.1 (a): LGDP and LFDI.

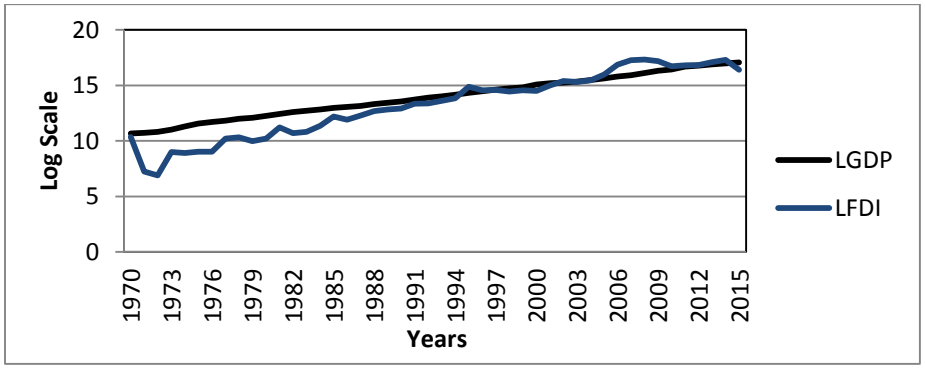


Figure 4.1 (b): Rate of change of GDP and FDI

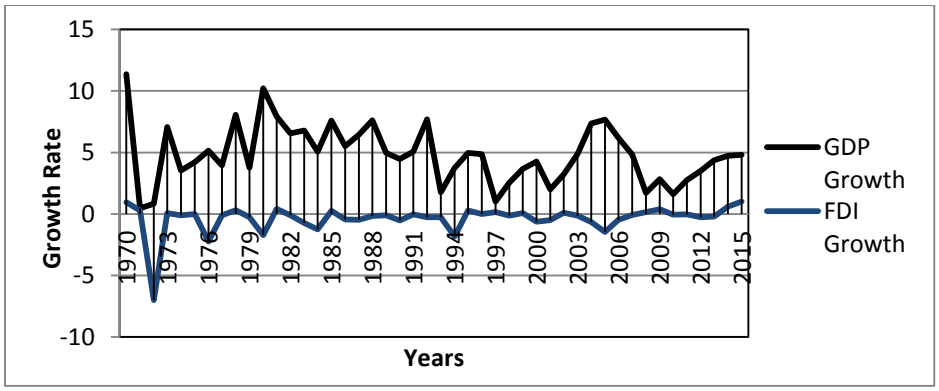


Figure 4.1 (a) clearly shows that GDP and FDI rise steadily while 4.1 (b) shows that GDP growth being faster than the FDI growth in the first three decades and the reverse being true for the last decade or so. This suggests that the linear time trend should be included in the analysis, at least initially.

Figure 4.2: Government Consumption, Private Investment and Public Investment

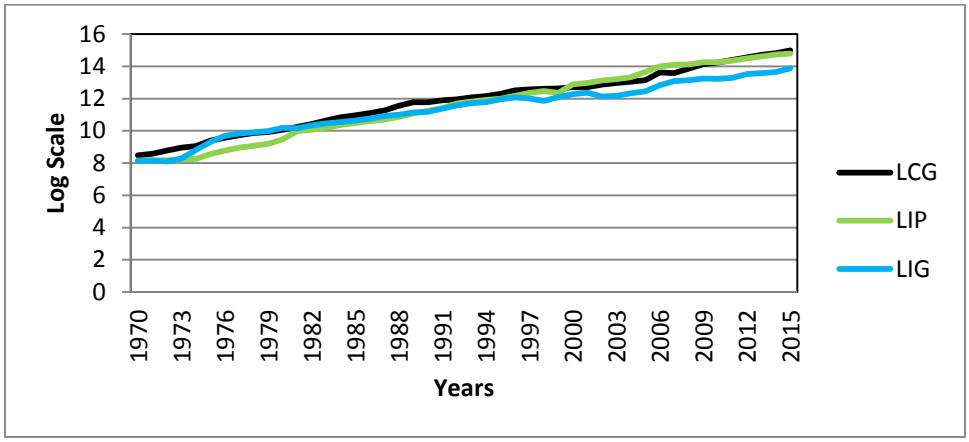
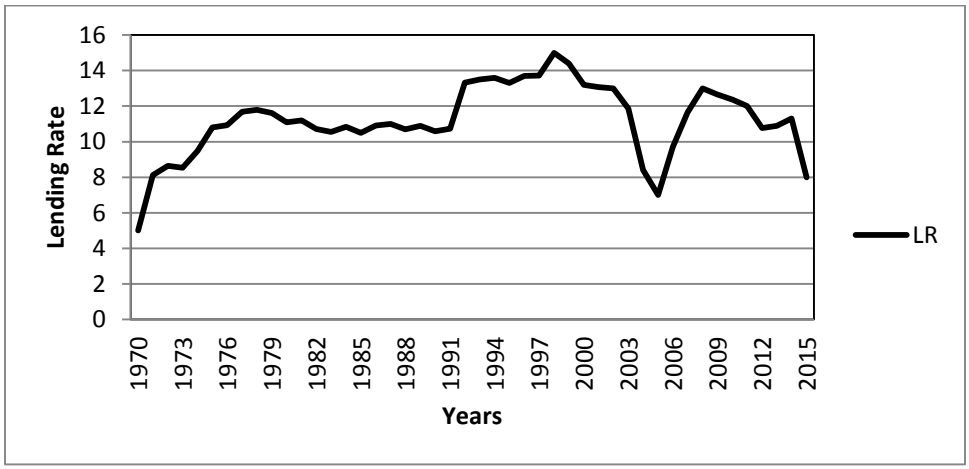


Figure 4.3: Lending Rate of Pakistan



The same can be observed for the variables Government Consumption (Cg), Private Investment (Ip), Public Investment (Ig) and Lending rate (LR) in the figures 4.2 and 4.3.

All these variables have been growing over time showing that a linear time trend term should be incorporated in the analysis of these variables.

4.3 ADF Test for Unit Root

ADF unit root test was applied to the variables under consideration to assess the stationarity of the series. Table 4.2 shows the variables in log-level and log-difference forms where the variable is non-stationary at level. The number of lags used to remove the problem of autocorrelation is also shown in the table along with the order of integration.

As can be seen from the table the logged series of GDP, CG, IP, IG and the series of L.R are non-stationary in level form but taking first difference of the series (shown in bold format) makes them stationary, whereas the variable FDI is stationary in log-level form. The t-statistic values shown in the table for the model with drift and trend are compared with the critical value given at the bottom of the table at 5% level of significance.

The Tick Mark in the first two columns shows whether the trend and drift terms have been included in the unit root analysis of the variables.

Based on the orders of integration obtained from the table above ARDL approach has been used instead of Engel Granger and Johansen approach since it is a pre-requisite for both of them that all the variables used in this analysis be integrated of the same order. And as is required by the ARDL model, the dependent variable is non-stationary i.e. it is integrated of order 1.

Table 4.2: Unit Root: ADF Test

Variables	Co-efficient	Trend	P	Number of Lags	Order of Integration
LGDP	✓	✓	-2.240082	2	I(1)
ΔLGDP	✓	✓	**-5.275161**	**0**	**I(0)**
LCG	✓	✓	-1.866987	0	I(1)
ΔLCG	✓	✓	**-7.135121**	**0**	**I(0)**
LIP	✓	✓	-2.197379	0	I(1)
ΔLIP	✓	✓	**-6.665761**	**0**	**I(0)**
LIG	✓	✓	-2.198326	0	I(1)
ΔLIG	✓	✓	**-4.501620**	**0**	**I(0)**
LFDI	✓	✓	-5.568588	1	I(0)
LR	✓	✓	-2.573439	1	I(1)
ΔLR	✓	✓	**-4.930919**	**0**	**I(0)**

Note: **Critical Value** @ **5%** level of significance = **-3.51**

4.4 Modeling effect of FDI on Growth in Pakistan

Hit and trial method was used to select the optimum number of lags to be incorporated and the results were corroborated by using the lag selection criteria like Akaike (1969, 1973) Information criterion, Schwartz (1978) Information Criterion or the Bayesian Information Criterion and The Hannan Quinn (1979) Criterion. The lag order of the underlying VAR model was obtained and is presented in the following table:

Table 4.3: Statistics for Selecting the Lag Order of the Growth Equation

VAR Lag Order Selection Criteria
Endogenous variables: LGDP LCG LIP LIG LFDI LR
Sample: 1970 2015
Included observations: 42

Lag	AIC	SC	HQ
0	6.812939	7.102550	6.919093
1	-4.542982	**-2.226089***	-3.693749
2	-4.351717	-0.007543	-2.759405
3	-5.184563	1.186892	-2.849173
4	**-7.124127***	1.274610	**-4.045658***

* indicates lag order selected by the criterion
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

According to the results obtained from the AIC and HQ information criteria mentioned above, 4 lags are the optimum number to be incorporated in the analysis. The importance of the number of lags of the underlying VAR model can be judged from the fact that if the number of lags is not sufficiently large enough, the residual serial correlation problem will not be mitigated, and simultaneously, if the number of lags is not sufficiently small, the conditional ECM may become unduly over-parameterized, hence a delicate balance has to be maintained while selecting the appropriate number of lags of the variables to be incorporated (Pesaran et al.; 1996, 2001).

Substituting the value obtained in the first unrestricted error correction equation we estimated it using OLS technique and dropped the insignificant variables from the results obtained before re-estimating the equation using the General to Specific Modeling Approach (Gets Modeling) of Hendry (2003). Since the dropping or deletion is a subjective decision the insignificant middle lags have been deleted.

4.4.1 Long Run Model

The estimation results of the long run model of the final equation selected are given in the table below:

Table 4.4: Estimated Long Run Coefficients using the ARDL Approach

ARDL(4,4,4,4,3,4) Dependent Variable is LGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.113179	1.434276	4.959420	0.0001
TREND	0.103670	0.021855	4.743540	0.0001
LCG	-0.189713	0.045208	-4.196480	0.0004
LIP	0.095530	0.048666	1.962966	0.0637
LIG	0.250065	0.068526	3.649207	0.0016
LFDI	-0.077688	0.026821	-2.896510	0.0089
LR	0.013356	0.005278	2.530344	0.0199

In the long-run, the co-efficient of Government consumption expenditure turned out to be negative and significant and as is pointed out by Ghani and Din (2006), Government consumption or the public consumption can hinder economic growth if the nature of such expenditures diverts resources from productive usage. Similar results have been derived by Kormendi and Meguire (1985), Grier and Tullock (1989), Barro (1991) and Rebelo (1991).

The co-efficient of Private investment turned out to be positive though not very significant as defined by the theoretical evidence of, among others, Blejer and Khan (1984) who are of the view that private investment through infrastructural development leads to economic growth and the monetary or fiscal policy adopted by a country must take into account this fact. Khan and Kumar (1997), Ahmad and Hamdani (2003), Ghani

and Din (2006), Sial et al (2010) and Bint-e-Ajaz and Ellahi (2012) also concur that private investment has a positive influence on economic growth.

Public investment also turns out to have a significant positive relation with growth, and in this case, a more dominant positive impact on growth is exhibited by public investment than the private investment. In fact we can safely say that public investment is twice as productive as private investment similar to the analysis of Romer (1987), Barro and Sala-i-Martin (1992) and Naqvi (2003).

Foreign Direct Investment, contrary to popular belief, comes up with a negative sign and although the results are highly significant, the negative relationship of FDI and growth is not a strange result in case of Pakistan. Similar negative relationship was observed by Atique et al (2004), Khan (2007) and Falki (2009) for Pakistan. The impact of FDI on growth and capital accumulation in an economy depend on the country specific conditions, whereas the same FDI can have a positive impact on growth for a developing country with the infrastructure and technological advancement due to its complementarity to domestic investment in an investment friendly environment, the same does not hold true for developing countries with weak infrastructure and unstable political regimes exacerbating the situation besides other factors[2].

Finally, the lending rate exhibits a positive relationship with growth against the results obtained by earlier studies. This may be because other factors besides the direct channel of interest rate through borrowing cost may affect the decision of investors, for example, the increasing property or gold prices and the resulting return on investment in property

[2] Falki (2009)

and gold purchase may be higher than the higher cost of borrowing, providing an incentive to the investors to continue investing leading in aggregate to a higher growth. Also the real impact of the increased lending rate may not be observed since the increase may not be sufficient as to discourage investment. Within a range a change in lending rate does not affect the investment decisions of the investors.

4.4.2 ECM or Short Run Model

The results of the Short Run Model are given in the following table:

Table 4.5: Error Correction Representation for the Selected ARDL Model

ARDL(4,4,4,4,3,4) Dependent Variable is DLGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-3))	0.502214	0.158724	3.164074	0.0049
D(LCG)	0.118130	0.053668	2.201106	0.0396
D(LCG(-1))	0.206685	0.062184	3.323770	0.0034
D(LCG(-2))	0.272842	0.054308	5.023957	0.0001
D(LCG(-3))	0.217692	0.056430	3.857737	0.0010
D(LIP)	0.114855	0.060790	1.889361	0.0734
D(LIP(-3))	-0.118119	0.045889	-2.574015	0.0181
D(LIG)	0.148648	0.039572	3.756410	0.0012
D(LIG(-2))	-0.171146	0.046432	-3.685956	0.0015
D(LIG(-3))	-0.181289	0.044885	-4.038985	0.0006
D(LFDI)	-0.062383	0.016507	-3.779199	0.0012
D(LFDI(-1))	0.035461	0.011715	3.027073	0.0067
D(LR)	0.012577	0.004814	2.612675	0.0167
D(LR(-3))	0.021642	0.004092	5.288302	0.0000
ECM(-1)	-0.744716	0.145277	-5.126180	0.0001
Diagnostic Test Results				
Adjusted R-squared:				**0.793585**
F-statistic:				8.506150
B-G Serial Correlation LM Test $\chi^2_{(2)}$:				**4.441273**
ARCH $\chi^2_{(1)}$:				**0.231392**
JB TEST $\chi^2_{(2)}$:		0.161452	Probability:	**0.922447**

The ECM results of the ARDL equation show that the coefficient of the lagged-level dependent variable is significant. θ (where $\theta = \lambda_{1)}$ comes out to be -0.744716 i.e. the speed of adjustment of lags of past errors is -0.74 approx. before the long term variables converge to the long-term equilibrium path. We could also say that since the speed of convergence is three quarters (0.74 = 3/4), the variables converge in a year and a quarter to the long-run equilibrium path.

The negative sign of θ also tells us that error in GDP Growth in the past was positive which is why the change in the variable turns out to be negative for the sake of correction of the error in the next period.

The ECM results also indicate that in the short run, GDP growth is affected by all five independent variables under consideration significantly. Whereas in the long-run, the public consumption impacts the growth of GDP negatively, but in the short run we observe the opposite results, since public consumption expenditure through provision of public goods can promote growth (Ghani and Din; 2006), however, in the long run, if the nature of such expenditures crowds out the resources for productive long-term benefits, the positive impact of the short run may deteriorate. The impact of private and public investments in immediate short-run is positive, just as in the long-run. The aggregated short-run impact of FDI is still negative even though by the second lag, FDI starts to show a positive impact on growth. The lending rate decidedly has the same positive impact on growth as in the long-run.

The results of the diagnostics checks applied indicate that we fail to reject the null hypotheses of B-G LM test for autocorrelation and ARCH, meaning that the problems of

autocorrelation and autoregressive conditional heteroskedasticity do not exist in the ARDL equation estimated.

Jarque-Bera test results also show the goodness of fit of the model to be around 92% i.e. the data is distributed normally around the mean.

4.4.3 Test of Cointegration: Bound Test

To test the cointegration of variables the bounds testing approach developed by Pesaran et al. (1996, 2001) was used. Wald coefficient test was applied on the equation estimated to test the hypothesis as a check for cointegration. The test with unrestricted intercept and unrestricted trend yielded an estimated value of $F_{(6,20)}$= 8.144844 where the upper and lower bounds for $F_{(6,20)}$ are 2.87 and 4.00 respectively at 5% level of significance.

A comparison of the estimated F-statistic with the critical upper and lower bounds obtained from the Table C1.v of Pesaran, Shin and Smith[3]* indicates that the F-calculated is greater than F_u, the upper bound, implying the rejection of the null hypothesis of no co-integration among the variables, i.e., cointegration exists in the data.

[3] * Table in appendix

4.5 Modeling effect of Political Structure on Growth in Pakistan

Hit and trial method was used yet again to select the optimum number of lags to be incorporated and the results were corroborated by using AIC, SC and HQ information criteria. The lag order of the underlying VAR model was obtained and is presented in the following table:

Table 4.6: Statistics for Selecting the Lag Order of the Growth Equation

VAR Lag Order Selection Criteria
Endogenous variables: LY LCG LIP LIG LFDI LR DMY DLFDI
Sample: 1970 2015
Included observations: 42

Lag	AIC	SC	HQ
0	9.665676	9.996660	9.786995
1	-2.122552	**0.856310***	-1.030681
2	-1.915215	3.711524	0.147207
3	-3.452734	4.821883	-0.419759
4	**-8.396831***	2.525664	**-4.393305***

* indicates lag order selected by the criterion
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

The above table shows that 4 lags are the optimum number to be incorporated in the analysis with the inclusion of dummy for political structure as well by AIC and HQ criteria. Substituting this value in the unrestricted error correction equation we estimated it using OLS technique.

4.5.1 Long Run Model

The estimation results of the final equation selected are given in the table below:

Table 4.7 Estimated Long Run Coefficients using the ARDL Approach with Dummy for Political Structure

ARDL(1,4,0,4,2,2) Dependent Variable is LGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.3670	0.50722	20.4387	0.000
TREND	0.15100	0.010403	14.5154	0.000
LCG	-0.22478	0.094478	-2.3791	0.027
LIP	0.15944	0.074907	2.1285	0.046
LIG	0.10638	0.11785	0.90273	0.377
LFDI	-0.072107	0.032905	-2.1914	0.040
LR	0.040227	0.0084865	4.7401	0.000
DMY	0.39411	0.14637	2.6926	0.014
D.LFDI	-0.31151	0.010434	-2.9856	0.007

Note: DMY = 1 for dictatorship and 0 for democracy.

The results for Public consumption expenditure, private investment, public investment, FDI and lending rate are the same in terms of sign of the co-efficient and the same logic as to the relationship between GDP growth and the respective variables can be given as to the one already explained in section 4.4.1, however, as regards significance, the public investment turned out to be insignificant in the long run in the presence of dictatorship voiding its role in GDP growth.

The dummy variable for political structure turns out to be positive and is highly significant implying that in case of Pakistan, during the dictatorship regimes growth turns out to be positive and vice versa. This result is somewhat similar to the one that has been derived earlier by Zakaria and Fida (2009) who observed a negative relationship between democracy and growth. The theoretical justification for this positive relationship between output growth and dictatorship provided by the economists is that a dictatorial or autocratic system can implement strict economic policies coercively and somewhat prevent the role of elitist self-interest groups besides sacrificing current consumption for

investment and thus being able to mobilize savings more effectively than democratic regimes [Zakaria and Fida (2009)].

The interaction term between the dictatorship dummy and the FDI turns out to be negative, implying that the joint impact of dummy and FDI on growth is negative or growth-retarding; during a dictatorship regime the inflow of FDI retards growth by 31% more than it does if the impact of political structure is not included in the model, this negative impact for FDI can be explained to be caused by weak infrastructure and insufficient availability of complementary factors of production [Falki (2009)]. Another possible explanation for this negative joint effect of FDI and dictatorship could be that most of the FDI inflows have been targeted towards the services sector of the economy instead of industrial and large scale manufacturing due to which the growth effects of export promotion and technological transfers could not be generated [Falki (2009)].

4.5.2 ECM or Short Run Model

The results of the Short Run Model including the dummy variable for political structure (democracy/dictatorship) are given in the following table:

Table 4.8 Error Correction Representation for the Selected ARDL Model using Dummy for Political Structure

ARDL(1,4,0,4,2,2) Dependent Variable is DLGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCG)	0.077396	0.057450	1.3472	0.191
D(LCG(-1))	0.22248	0.080476	2.7645	0.011
D(LCG(-2))	0.31444	0.069167	4.5461	0.000
D(LCG(-3))	0.21947	0.059809	3.6696	0.001
D(LIP)	0.12581	0.053152	2.3669	0.026
D(LIG)	0.15112	0.052239	2.8928	0.008
D(LIG(-1))	0.052368	0.057562	0.90976	0.372
D(LIG(-2))	-0.060834	0.057144	-1.0646	0.298
D(LIG(-3))	-0.14296	0.044775	-3.1929	0.004
D(LFDI)	-0.011114	0.016429	-0.67646	0.505
D(LFDI(-1))	0.034556	0.013495	2.5607	0.017
D(LR)	0.016810	0.0056880	2.9553	0.007
D(LR(-1))	-0.0096983	0.0061883	-1.5672	0.130
DMY	0.31097	0.10927	2.8459	0.009
D.LFDI	-0.024580	0.0076189	-3.2261	0.004
ECM(-1)	-0.78903	0.13690	-5.7634	0.000
Diagnostic Test Results				
Adjusted R-squared:				**0.7433**
F-statistic:				8.2192
B-G Serial Correlation LM Test $\chi^2_{(2)}$:				**3.1552**
ARCH $\chi^2_{(1)}$:				**0.2969**
JB TEST $\chi^2_{(2)}$:		0.9571	Probability:	**0.6196**

The ECM results of the ARDL equation show that the coefficient of the lagged-level dependent variable is significant. θ (where $\theta = \lambda_{1)}$ comes out to be -0.78903 i.e. the speed of adjustment of lags of past errors is -0.79 approx. before the long term variables converge to the long-term equilibrium path. We could also say that since the speed of convergence is four fifth (0.79~ 4/5), the economy converges in a year and 2 months roughly to the long-run equilibrium path. The negative sign of θ, just as in the first

model, tells us that error in GDP Growth in the past was positive which is why the change in the variable turns out to be negative for the sake of correction of the error in the next period.

A comparison of the two models also indicates that with dictatorship in perspective, the convergence to long-run equilibrium path is a little quicker.

The results of the diagnostics checks applied to the above ARDL equation including the dummy for political structure indicate yet again that autocorrelation and autoregressive conditional heteroskedasticity do not exist in the ARDL equation estimated since we fail to reject the null hypotheses of B-G LM test and ARCH test respectively.

Jarque-Bera test results also show the goodness of fit of the model to be around 95% i.e. the data is distributed normally around the mean.

4.5.3 Test of Cointegration: Bound Test

To test the cointegration of variables the bounds testing approach developed by Pesaran et al. (1996, 2001) has been used. Wald coefficient test was applied on the equation estimated in the same manner as for the first model to test the hypothesis as a check for cointegration. The test with unrestricted intercept and unrestricted trend yielded an estimated value of $F_{(6,19)}$= 11.10672 where the upper and lower bounds for $F_{(6,19)}$ are 2.87 and 4.00 respectively at 5% level of significance.

A comparison of the estimated F-statistic with the critical upper and lower bounds obtained from the Table C1.v of Pesaran, Shin and Smith[4]* indicates that the F-calculated is greater than F_u, the upper bound, implying the rejection of the null hypothesis of no co-integration among the variables, i.e., cointegration exists in the data.

4.6 Conclusion

This chapter outlined the estimation results of the study and discussed both the models used. The first model which related the role of FDI in growth of the economy resulted in the same conclusions as are reported by earlier literature that the role of Foreign Direct Investment in case of Pakistan is negative. The second model shows that when the dummy variable for political structure is incorporated in the model, it turns out to be positive and is highly significant implying that in case of Pakistan, during the dictatorship regimes growth turns out to be positive and vice versa. Having discussed the results of the study in this chapter, the next chapter will conclude the study giving the policy suggestions and outlining prospective research possibilities.

[4] * Table in appendix

CHAPTER 5

CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Introduction

This study analyzed the role of investment in the growth of the economy using the three components of investment; public, private and foreign investment besides public consumption and lending rate. Two models were defined; a general model of investment and growth and a second model including a dummy for democracy and dictatorship as a proxy for determining the role of political structure in growth for Pakistan. ARDL Bounds testing approach was used to test for cointegration and long-run and short run analysis of the variables. The data used was obtained from the Government of Pakistan and the State Bank of Pakistan from 1970-2015 using the "50 Years of Statistics" and the various issues of "Yearbook of statistics".

This chapter concludes the study and sums up the findings of the estimation/analysis.

5.2 Conclusions

It has been observed that while the public and private investment have a positive impact on growth for Pakistan generally and in the presence of the dummy for political structure, the FDI and public consumption have a negative effect on growth in case of Pakistan. Public investment including the expenditure on the Public sector development program (PSDP) and other such public investment expenditures are twice as effective as private investment in case of Pakistan according to the results obtained. The negative role of FDI

in case of Pakistan is supported also by the earlier studies; this may be because of the relatively low FDI inflows in case of Pakistan over the decades as compared to other developing countries. The poor law and order situation of the country and political instability may also be the contributing factors in discouraging the FDI inflows in Pakistan besides the lacking infrastructure and system inefficiencies. Another reason for the negative impact of FDI could be that a portion of these FDI inflows comprises of the loans, the borrowing cost of which outweighs the benefits of the FDI.

The public consumption expenditure predictably has a negative impact on growth of the economy since public consumption expenditure diverts the scarce resources away from productive and developmental usage.

The results obtained when the role of political structure (democracy/dictatorship) was analyzed through the incorporation of the dummy variable in the general model of investment and growth indicate that the role of dictatorship in the investment-growth scenario turned out to be positive and significant as is observed in the graphical analysis (Figure 1.1 and Figure 4.1 (b)). Growth spurts have been rather more obvious in dictatorships than democratic regimes as coincidentally during the two dictatorial regimes under consideration, due to soviet invasion in the former and war on terror in the later dictatorial decade, the inflow of foreign aid had been on the high side and the strict implementation of IMF conditionalities and reforms during the Musharraf era also helped improve growth of the economy. While in dictatorship growth tends to increase, the opposite would hold true for democracy as has been proved by Zakaria and Fida who hold that democracy impairs growth indirectly through the channel of public consumption and physical capital stock. They are also of the view that the inefficiency

during democratic regimes may be due to the fact that the dictatorial take overs hindered the proliferation of conditions for an effective democratic form of government in the 'Land of Pure' and that only if a sustainable level development is achieved, democracy will then be able to improve growth.

5.3 Policy Recommendations

Based on the results obtained in this study, it is recommended that:

1. To ensure a positive role of FDI in growth of Pakistan, the government needs to create an investor friendly environment in the country to attract more FDI and make the existing infrastructure and system more conducive to the utilization of the FDI for productive and developmental purposes.
2. The political instability and the poor law and order situation of the country should be curbed by introducing the right reforms and providing the legal cover and protection to the framework of the country.
3. The capital flight should be checked and loan agreements made after a thorough cost and benefit analysis so as to avoid the negative impact of the FDI. Also there should be a focus on the technology import into the country and facilitation should be made for the investors for technological advancement in the country.

5.4 Future Research Prospects

Further research in this area can be made with a focus on the investment-growth possibilities of the developing China-Pakistan Economic Corridor (CPEC).

Another aspect of research could be the use of some other proxy of political structure (democracy/dictatorship) other than a dummy variable or the use of multiple dummies since each subsequent political regime, whether democratic or dictatorial has its own regime specific connotations on the investment and growth of the country since each government has their own fiscal and monetary policy and since hybrid government structures have also been observed in case of Pakistan.

Researchers could also try and explore the variables which link political structure and growth besides investment so as to be able to explain further the positive relationship between growth and dictatorship and negative relationship between democracy and growth.

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APPENDIX

Bounds Testing Approaches to the Analysis of Long-Run Relationships

M.H.Pesaran, Y.Shinn and R.J.Smith

Table C1: Critical Value Bounds for the F-Statistic

Testing for the Existence of a Long-Run Relationship

Table C1.v: CASE V with unrestricted intercept and unrestricted trend

	90%		95%		97.50%		99%		mean		variance	
k	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
0	9.81	9.81	11.64	11.64	13.36	13.36	15.73	15.73	5.33	5.33	11.35	11.35
1	5.59	6.26	6.56	7.30	7.46	8.27	8.74	9.63	3.17	3.64	3.33	3.91
2	4.19	5.06	4.87	5.85	5.49	6.59	6.34	7.52	2.44	3.09	1.70	2.23
3	3.47	4.45	4.01	5.07	4.52	5.62	5.17	6.36	2.08	2.81	1.08	1.51
4	3.03	4.06	3.47	4.57	3.89	5.07	4.40	5.72	1.86	2.64	0.77	1.14
5	2.75	3.79	3.12	4.25	3.47	4.67	3.93	5.23	1.72	2.53	0.59	0.91
6	2.53	3.59	2.87	4.00	3.19	4.38	3.60	4.90	1.62	2.45	0.48	0.75
7	2.38	3.45	2.69	3.83	2.98	4.16	3.34	4.63	1.54	2.39	0.40	0.64
8	2.26	3.34	2.55	3.68	2.82	4.02	3.15	4.43	1.48	2.35	0.34	0.56
9	2.16	3.24	2.43	3.56	2.67	3.87	2.97	4.24	1.43	2.31	0.30	0.49
10	2.07	3.16	2.33	3.46	2.56	3.76	2.84	4.10	1.40	2.28	0.26	0.44

$\Delta Y = f\ (\Delta C_{gt}, \Delta I_{pt}, \Delta I_{gt}, \Delta FDI_t, \Delta L.R_t, D_t, D_t.FDI_t, ECM_{t-1}, \varepsilon_t)$

Pakistan Institute of Development Economics

CERTIFICATE

This is to certify that this thesis entitled: "Three Essays on Monetary Policy in Pakistan" submitted by Mr. Tasneem Alam is accepted in its present form by the Department of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Doctor of Philosophy in Economics.**

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