AN ANALYSIS OF THE IMPACT OF GOVERNMENT BUDGET DEFICIT ON THE KEY MACROECONOMIC VARIABLES IN PAKISTAN: 1960-2005

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APPROVAL SHEET

A Thesis entitled; **"An Analysis of the Impact of Government Budget Deficit on the Key Macroeconomics Variables in Pakistan: 1960-2005"** prepared by **Mr. Abdul Qayyum Khan** be accepted as partial fulfilling this part of the requirements for the degree of Doctor of Philosophy in Economics

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PAKISTAN

DEDICATED

To

My brother Rehman Gul , whose persistent struggle, enduring patience and farsighted thinking laid the foundation stone of a successful family.

And

To my parents, all family members and particularly the youngest Farznan.

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Abdul Qayyum Khan
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ABSTRACT

The aim of this study was to achieve three main objectives. Firstly to analyze the impact of budget deficit on macroeconomic variables, secondly to analyze the effect of domestic bank borrowing and external borrowing on budget deficit and thirdly to analyze the causality among the macroeconomic variables. Annual data for the sample period 1960-2005, taken from Economic Surveys of Pakistan and International Financial Statistics was used. Simultaneous equation model was used to investigate the mechanism through which the monetary and fiscal impulses were channeled and then their effects were transmitted to other macroeconomic variables. The effects of increase in money supply due to borrowing from domestic banking system and foreign borrowing to finance budget deficit were channeled through private and public investment to other macroeconomic variables. Linear regression model was used to analyze the effect of domestic borrowing and external borrowing on budget deficit. The Vector Autoregressive (VAR) model was used to analyze the causality among the macroeconomic variables, using the impulse response function (IRF) and the error variance decomposition analysis. The stationarity of the time series data was checked by using Augmented Dickey-Fuller (ADF) test. Akaike Information Criterion (AIC) was used to select the optimum lag. Johansen Likelihood Ratio (LR) test was used to ascertain the cointegration in the regressions used for analysis. Error Correction Mechanism (ECM) was used to analyze the existence of short term disequilibrium in the model. The study revealed that fiscal and monetary variables are important to determine the macroeconomic stability in Pakistan. The expansion in government capital expenditure through money supply for two cases (short term/long term) indicates that this policy in short term had no favorable impacts upon Pakistan economic development in terms of crowding-in effects. The rapidity of adjustment during the whole process towards long run steady state was very low. In the long-term this policy had favorable impacts on both private and public investment (crowding-in effects).The short-term and long-term policies both had favorable impact in terms of output development. It results in gain of better internal performance in terms of consumption expenditure, capital expenditure and balance of trade. In short-term domestic outputs adjust previous discrepancy in the same period, and had the capacity to

gain competitiveness and a better external performance. The short-term policies for foreign sector were uncertain. A short-term result indicates that frequent devaluation will not improve trade balance but would increase the cost of production. The long-term policies had favorable impact in terms of foreign sector development. Income elasticity of export was less than the income elasticity of import. Instead of having favorable impact of devaluation on foreign sector in long-term, Pakistan trade balance deteriorated in line with deterioration in foreign assets stocks. The employment generating capacity of output growth was low. Budget deficit financing in terms of borrowing from domestic banking system and foreign borrowing had almost the same capability of financing budget deficit, but the financing elasticity of foreign borrowing with respect to budget deficit was greater than one, indicating that Pakistan relies mostly on foreign borrowing for deficit financing, which results in foreign reserve outflows. Any innovation of one standard deviation towards economic growth and budget deficit took seven years for each one to become effective, while for unemployment it took eight years and for poverty reduction it took more than ten years to become effective. The response of the four macroeconomic variables (Economic growth, budget deficit, unemployment, and poverty) to innovations or impulses introduced were mostly explained in their own. Only two unilateral causality were present, and mostly independent type relationships were detected. Based on the finding of the study it is recommended that government should give priority to long-term private/public investment policies, which can gain better results in economic growth, poverty alleviation and unemployment reduction. Export sector needs more attention in terms of quality standard, price control, and internationally adopted marketing strategies. Parallel and effective running of monetary, fiscal and exchange rate policies are needed to reduce balance of payment deficit. Market based economy development, privatization, skill development, and merit based recruitment policies may also accelerate employment generating capacity of output growth. The existing fiscal policy needs alteration in terms of objective achievement and prolonged channels towards implementation. Multidimensional fiscal policies with coordination of monetary policy will be appropriate to combat all the macroeconomic evils. Domestic sources of deficit financing should encourage to deter foreign reserve outflows. Three separate government policies in respect of budget deficit reduction indicates that the

reduction in government expenditure (capital or consumption) exerts the most undesirable influence on the overall macroeconomic performance, and domestic source financing policy produces favorable impact compared to foreign borrowing financing. Hence, the reduction in government expenditure in order to reduce the budget deficit is not the best strategy and especially the policy of reducing government capital expenditure. The government expansionary monetary policy for budget deficit reduction would have some positive effects on Pakistan's economy, but the government has to be conscious about the inflationary effects of this policy.

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ADB	Asian Development Bank
ADF	Augmented Dickey-Fuller
ADP	Annual Development Program
AIC	Akaike Information Criteria
CAR	Crude Activity Rate
CBR	Central Board of Revenue
CCFF	Compensatory and Contingency Financing Facility
CPI	Consumer Price Index
DRMC	Debt Reduction and Management Committee
EARU	Employment Analysis and Research Unit
ECM	Error Correction Mechanism
EFF	Extended Fund Facility
ESAF	Enhanced Structural Adjustment Facility
ESP	Economic Survey of Pakistan
FBS	Federal Bureau of Statistics
FIBs	Federal Investment Bonds
IFS	International Financial statistics
IDA	International Development Association
ILO	International Labor Organization
IMF	International Monetary Fund
IOL	Islam Online
IRF	Impulse Response Function
LDCs	Less Developed Countries
LR	Likelihood Ratio
LSE	Lahore School of Economics
NDVP	National Development Volunteer Program

NSD	National Savings Directorates
NSS	National Saving Schemes
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Square
2SLS	Two Stages Least Square
OEC	Ontario Economic Council
PCO	Population Census Organization
PIBs	Pakistan Investment Bonds
PICIC	Pakistan Industrial Credit and Investment Corporation
PIDC	Pakistan Industrial Development Corporation
PRGF	Poverty Reduction Growth Facility
PRSPs	Poverty Reduction Strategy Papers
PSBR	Public Sector Borrowing Requirement
PWP	People Work Program
RAR	Refined Activity Rate
REH	Ricardian Equivalence Hypothesis
SAAT	South Asia Multidisciplinary Advisory Team
SAF	Structural Adjustment Facility
SAPs	Structural Adjustment Programs
SBP	State Bank of Pakistan
SDR	Special Drawing Rights
SOE	State Owned Enterprises
US	United State
VAR	Vector Autoregression
WB	World Bank

Chapter 1

INTRODUCTION

1.1 Background of the Study

Budget deficit has sturdy impact on macroeconomic variables in both developed and developing countries. But developing countries are more prone to budget deficits owing to limited financing choices, irreconcilable corrective policies, saggy political situation, and tied down of donor's conditionality. Most of the developing countries meet in excess expenditure than their revenue, and trap in a budget deficit. Pakistan is one of the developing countries facing the same state of affairs. In budget deficit experience, developing countries are tugged to involve in debt financing, which is anticipated to be high inflationary and negatively affects other macroeconomic variables.

Budget deficit crops up when expenditure exceeds revenue. Deficits were considered as the definitive propellant of economic growth. Under the influence of the "Keynesian revolution" most economists thought that high employment and stability could be accomplished through appropriate manipulation of budget (Martino, 1998). In recent times, however, a reversion in the profession's conventional lore has been proved. Deficits are now being held responsible for various economic problems.

In Pakistan during 1960-1971, overall fiscal deficit and real GDP growth at factor cost averaged over 2% and 6% of GDP respectively. Total investment growth averaged over 16% of GDP. During 1972-1977, total investment, total revenue, and total expenditure averaged over 17%, 16%, and 21% of GDP respectively. Overall fiscal deficit and real GDP growth averaged over 5% and 4% of GDP respectively. In 1977-1988, overall fiscal deficit and real GDP growth at factor

cost in Pakistan averaged over 7% and 5% of GDP respectively. Total investment, total revenue, and total expenditure growth rate averaged over 18%, 17%, and 24% of GDP respectively (Economic survey of Pakistan, various issues).

The period of 1989-1999, has been marked by a great deal of sluggish economic growth, recurring foreign exchange crisis and political instability. Frequent removal of government leading to successive elections did not give strong and clear mandate or stability. During this period the overall GDP growth rate averaged over 4%, fiscal deficit averaged over 6%, while total investment and total revenue averaged over 18% and 17% of GDP respectively. During 1999-2005, the overall budget deficit to GDP ratio decreased to 3% in 2005 from 6.1% in 1999, GDP real growth increased from 4.2% in 1999 to 8.4% in 2005. Government total revenues decreased from 15.9% of GDP in 1999 to 13% of GDP in 2005. Total expenditure goes down to 16% of GDP in 2005, from 22.0% of GDP in 1999(Economic Surveys of Pakistan, various issues).

The actual problem with any fiscal deficit expansion lies with how it could be financed. Domestic banks, domestic non-banks, and external sources are the three broad options accessible for deficit financing. The first option effect is likely to be highly inflationary, as budget deficit is financed through money creation. The latter two options would accumulate further debt, which would extract a greater debt-servicing requirement in the future. Private sector debt will tend to involve higher interest rate than multilateral or official bilateral debt, and where perceived risk is high, these rates are liable to be further inflated. Developing countries like Pakistan are characterized by under-developed institutions, rampant corruption, immature financial markets, and profitable financing options are likely to be severely limited. In Pakistan policy makers, besides being restricted by IMF conditionality, have argued that they were unwilling to involve in expansionary policy measure due to a lack of financing choice – additional loudening of debt at

high rates of interest would have led to untenable debt repayments, and domestic bank financing would create threatening inflationary consequences (Haq, 2003).

The issue of budget deficit has attracted a great deal of attention over the last two decades, as reflected in considerable debate in academic literature and in policy-making community. The budget deficit, and its financing, has become the main problem facing the Pakistan economy.

In Pakistan attention towards the budget deficit stems from the fact that budget deficits have become so large, especially during the last two decades, 1980-2000[1]. Most of the deficit occurred in country during the period of political instability[2]. The political instability period experienced large falls in real GDP growth, significant increases in the budget deficit, and accompanied massive increase in money supply, high inflation rates and severe depreciation of Pakistani currency (Shah, 2002).

In the present study attempt has been made to investigate budget deficits impact on macroeconomic variables namely economic growth, unemployment and poverty. The relationship between budget deficit and its funding source has been analyzed. Further, causality between budget deficits and macroeconomic variables has also been analyzed. Simultaneous equation, linear regression model and, Vector Autoregression (VAR) with two Stage Least Square (2SLS) and Ordinary Least Square (OLS) techniques have been applied for analysis.

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[1] Political instability, foreign investor lack of interest in investment, border tension with India, population burden due to Afghan refuges, and imposition of foreign sanctions.

[2] Democratic governments dismissed four times in short period (1990, 1993, 1996, and 1999)

1.2 Justification of the Study

The Pakistan government is unable to dispense its debt from revenues, and is borrowing to finance its debt servicing obligations. The large fiscal deficits problem facing the Pakistan's economy has pressed policy makers to pay special attention to this particular issue, with the objective of trying to introduce suitable policy to reduce the effects of fiscal deficit on Pakistan's economy. Budget deficits and their funding exert an important impact on macroeconomic outcomes. In Pakistan the importance of budget deficit and their funding cannot be overlooked, as these have strong bearing on economic growth, unemployment and poverty. More recently, quests have been made in practice and in literature in all developing countries specifically in Pakistan that fiscal policies must be premeditated in such a way, which trim down fiscal deficit without affecting other macroeconomic variables. The experience with fiscal policies, however demonstrates that in many cases these policies have badly affected other macroeconomic variables. The problem therefore is how the fiscal deficit can be reduced in a sustained manner without creating unfavorable effects on the other objectives of economic policy (increase economic growth, reduce unemployment, and poverty). This is the question addressed in this study.

1.3 Objectives of the Study

The current study is designed to show the impact of budget deficit on key macroeconomic variables, which will be a significant and important contribution to the literature in general and for the case of Pakistan in particular using data from 1960-2005[3]. The same research will also analyze the relationship between budget deficit and its funding source, and show causality between budget deficit and macroeconomic variables. This study establishes a linkage between budget deficit and macroeconomic variables for a single developing country Pakistan

[3] The period of study select from 1960, because of lowest budget deficit, while beyond that period budget deficit increase gradually up to 1990s, and again decline in 2000s

using only time series data, because cross section data assume common economic structure. What is true for one country is not necessarily true for another country. Economic structure, causes of budget deficit, and funding of budget deficit of different countries are different from each other. The main objective of the present study is to analyze the impact of budget deficit on macroeconomic variables, particularly economic growth, unemployment, and poverty. This study will also analyze the relationship between budget deficit and its funding source. The study will provide a guideline for economists, researchers, and policy makers to implement suitable policies for better macroeconomic performance in Pakistan.

The main objectives of this study are as follows:

(1) To analyze empirically the impact of budget deficit on key macroeconomic variables in Pakistan.

(2) To analyze the relationship between budget deficit and its funding sources.

(3) To analyze causal relationship between budget deficit and macroeconomic variables in Pakistan.

(4) To make appropriate suggestions for suitable policy implementation for problems arising from the budget deficit in the light of finding of the study.

1.4 Data and Methodology

1.4.1 Data Collection

This study used annual data for the period 1960-2005. Different sources for the data were approached (Government of Pakistan, private sector, and international organizations) to find out the nature of the available data. In order to convert current price data into constant price time series, financial year 1964 has been used as the base year. It will be necessary, before starting to perform any empirical estimation of the model, to analyze the time series data, which is used in this study.

The analysis of data depends on finding out whether the series is stationary or non–stationary. Augmented Dickey-Fuller (ADF) test is used to observe the hypothesis that the variable in question has a unit root. Johansen Likelihood Ratio (LR) test is used, to detect the existence of a long run relationship among the variables included in this study. For the short run relationship, an Error Correction Mechanism (ECM) (Engle and Granger, 1987) is estimated (where long run co integrating relationship is found).

1.4.2 Methods of Study

Three distinct schools of thought, Neoclassical, Keynesian, and Ricardian provide different paradigm regarding the effects of budget deficit on macroeconomic variables. The Keynesian argue that generally budget deficits consequence in an increase in domestic production, which makes private investors more hopeful about the future course of the economy and hearten them to invest more. More investment improves economic growth, reduces unemployment, and alleviates poverty. The Keynesian theory of income and prices: the income approach is used to analyze the impact of budget deficit on macroeconomic variables.

In order to analyze the impact of budget deficit on economic growth, unemployment and poverty the simultaneous equation model is used. The two stage least square method was used for estimating the important simultaneous equation models. The simultaneous equation is more effective due to the interdependence of macroeconomic variables.

In Pakistan mostly two sources are used for deficit financing i.e. domestic borrowing and external borrowing, but in 1990s privatization process got momentum and the inflow from privatization used for deficit financing in late 1990s. The data about privatization for the entire study period was not available and has not been included as a source of budget deficit financing. A simple linear

regression model is used to analyze the effect of each source of budget deficit financing on budget deficit with Ordinary Least Square (OLS) technique. Budget deficit is placed as dependent variable, domestic and external borrowings are kept as independent variables in linear regression model.

The Vector Autoregressive (VAR) model is used to analyze the causality among the four main variables of the study (Budget deficit, Economic growth, Unemployment, and Poverty). This model treats all the variables in the system as endogenous. The dynamic impact of the random errors on the variable's system is also analyzed using the Impulse Response Function (IRF), and the error variance decomposition. OLS method is applied for estimation of parameters. For lag length (k) selection Akaike Information Criteria (AIC) is used. Firstly it was found out that the variables are stationary individually and then it was known that these variables are co integrated in order to avoid mootness in the Vector autoregressive (VAR) equation.

Statistical packages, SPSS, Minitab, and EView were used to estimate the coefficients of the models used for impact of budget deficit on macroeconomic variables, relationship of budget deficit with its funding sources and inter-causality among variables.

1.5 Organization of the Study

The study has been organized into seven chapters. Brief introduction of the study has been given in first chapter. Literature review has been discussed in second chapter. It is based on widespread literature examining the relationship between budget deficit and economic variables, focusing on theoretical debates, empirical studies in both developed and developing countries.

Materials and methods have been discussed in third chapter. This chapter intends to state the data sources, analytical framework, economic and econometric models, and estimation techniques.

Chapter four examines in detail the performance of macroeconomic variables in Pakistan over the period 1960-2005, broken down into five distinct phases: General Ayub and Yahya Khan period (1960-1971), Zulfiqar Ali Bhutto period (1972-1977), Zia ul Haq period (1978-1988), the politician period (1989-1999) and the Pervaiz Musharaf period (2000-2005). This chapter will point out the main economic characteristics of Pakistan economy.

Chapter five analyzes the Pakistan experience with fiscal deficits and public debt. It concentrates on the role of government in the economy, the method used by the authorities to finance the budget deficit, and the problems that might happen for the economy from growing the fiscal deficits and public debt in Pakistan. This chapter analyzes the public sector deficits and debt in Pakistan during the period 1960-2005.

Chapter six accommodates analysis of data, results and discussions regarding the effect of budget deficit on macroeconomic variables, relationship between budget deficit and its financing sources, and inter-causality between macroeconomic variables and budget deficit.

Chapter seven summarizes the major conclusion derived, followed by policy implication, and suggestions for future study.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

The relevant literature review has important place in the study of a problem. It highlights the background of the problem to be examined. In addition, important information on research techniques is gained from the previous research reports. This chapter extensively reviews the previous work done on budget deficit impact on various macroeconomic variables both theoretically and empirically. The macroeconomic variables like inflation, interest rate, trade, exchange rate, investment, and economic growth have been specially focused. The purpose of theoretical debates is to review some of the major theoretical arguments regarding the linkage between budget deficit and macroeconomic variables. There is a good deal of empirical research that examines the relationship between budget deficit and macroeconomic variables. The results of these empirical studies on the relationship between budget deficit and macroeconomic variables in both developed and developing countries are presented in separate sections. Some of these studies provide considerable evidence in favor of a relationship between the budget deficit and certain macroeconomic variables.

2.2 Theoretical Debates

2.2.1 Budget Deficit and Inflation

Since Friedman, government budget deficit and its funding is considered the primary cause of inflation and has received serious attention. In the literature[4], three different associations between budget deficits and inflation are predominant.

[4] Dwyer (1982) argued that the most direct association between government budget deficit and inflation is that by enhancing the real value of outstanding bonds and professed net wealth, a deficit can elevate total spending and price level because the economy is working at full employment

Friedman (1968) argued that the monetary authorities could control the inflation rates, with control of the money supply, particularly in the long-run. Deficits can bring about inflation, but only to the level that they are monetised. Therefore, deficits financed by money supply are inflationary, while bond financed deficit need not be[5]. The current approach to the policy of the monetary authorities decides, whether bond financed deficits are inflationary or not. Bond-financed deficits are inflationary, if they stabilize interest rates, as this calls for spreading out in the money supply that eventually leads to increasing prices.

Barro (1978) observed that deficits are outcome of inflation, rather than inflation being a consequence of deficits. The government budget deficit is the alteration in nominal value of outstanding government bonds. The nominal values of bonds have to increase to preserve the real value of outstanding bonds, if the expected inflation increases. The monetarists have argued that there is positive relationship between government deficits and monetary growth, affirming that higher bond-financed deficits will place upward pressure on interest rates and on government bonds. Since the central bank is dealing with smoothing movements of interest rate, so it will then tend to raise the money supply.

Sargent and Wallace (1981) have supported the proposition that central bank will be compelled to monetise the deficit either at the same time or in later periods. In the long-run, such monetisation results in an increase in the money supply and the rate of inflation. They further argued that the central bank might be enforced into monetary adjustment of the deficits. But, deficits are still inflationary through crowding-out, even if central bank does not monetise the deficit i.e. non-monetised deficits bring about higher interest rates. Private investment crowded-out due to higher interest rates, and therefore diminish the rate of growth of real output.

[5] Buchman and Wagner (1977) argued that if government deficits would monetised due to political pressure, then the monetary authorities do not have a true choice.

Higher interest rate also urges the financial sector to improve the payment system and make government bonds more alternative for money[6]. They demonstrated that the time paths of government spending and taxes are exogenous, bonds-financed deficits are non-sustainable as it will thrust interest rate tremendously high and the central bank would ultimately have to monetise the deficit. This will boost the money supply and inflation in the long-run.

An alternative view, described by Miller (1983), argued that government budget deficits are certainly inflationary irrespective of whether the deficits are monetised or not. As said by Miller, deficit policy brings about inflation through different channels.

Abizadeh et al. (1986) focused on the link between deficits and inflation in their studies. They argued that one way of settling the controversy over deficits and inflation is to "test the possibility of causal relationship between the growth of government expenditures and inflation. This should be done with regard to the fact that government can grow without necessarily creating deficits". Their study directed them to conclude that "the hypothesis of a direct relationship between the size of the deficits and the size of government is sustained". Their studies implication was that increases in government expenditures enlarge budget deficits. If higher government expenditure increased deficits, and increased deficits in turn originate inflation, then higher government expenditure can bring about inflation.

Meltzer (1989) argued that deficits have an effect on inflation by providing a monetarist approach. He argued that money issued to finance government spending during 1980s, in Argentina, Bolivia, and Brazil provide example of

[6] Miller (1980) argued that current bond financed deficits do not insinuate a future tax liability to society. The government will deliver more bonds to shelter the maturing indebtedness as well as any new collection to total indebtedness. Since government bonds are not support by tangible assets or by future taxes; the bonds are in quintessence a part of the money supply.

inflation. He argued that in most developed countries the experience does not support the view that deficits must sooner or later raise money growth and turn out inflation. Italy is one of the examples, which experienced a budget deficit of about 10 percent of GNP during the 1980s. However, inflation was reduced to about 5 percent a year from about 20 percent during this period. Japan and the United States are other examples, where persistent deficits and declining inflation are noticeable. In Japan the budget deficits climbed while the inflation rate was almost zero during the 1980s. During the same period inflation rate in U.S. declined to about 4 percent from 10 percent, in spite of the increasing budget deficit of the 1980s. The reason for the decline in inflation rates can be ascribed to the decline of money growth notwithstanding borrowing.

2.2.2 Budget Deficits and Trade Deficits: The Twin Deficits

According to Mundell-Fleming (1963, 1962) framework, an increase in the government's budget deficit can create a supplementary increase in the trade deficit through increase consumer spending. Budget deficit encourages an increase in imports, due to an increase in the disposable income and the financial wealth of consumers. Depreciation in the exchange rate due to increased demand for foreign goods, to the extent mitigated the effect on net export. However, in large open economies larger budget deficit also pushes up the interest rate, as this appreciates the exchange rates, which encourage a net capital inflow and a larger turn down in net exports.

Feldstein and Horioka (1980) found that investment and savings are highly correlated, causing the current account deficits and budget deficits to move together. An alternative view is that the "twin deficits" are not linked in the straightforward manner portrayed by conventional economists. The relationship from the budget deficit to the current account deficit can be feeble or nonexistent. Therefore, there may not be present any expected or orderly relationship between

the two deficits given that there could be a large number of other factors that might serve to make the twin relationship uncertain.

Fieleke (1987) gave the theoretical basis for the association between the trade deficit and the budget deficit. He argued that "the dominant theory is that an increase in government borrowing in a country will put upward pressure on interest rates (adjusted for expected inflation) in that country, other things being equal, attracting foreign investment". As foreign investors obtain the country's currency so as to invest there, they bid up the price of that currency in foreign exchange market. The elevated price of the country's currency will dishearten foreigners from purchasing its goods but will on the other hand encourage residents of the country to use their own more precious currency to purchase foreign goods, so that the country's current account will move in the direction of a deficit. The Keynesian absorption theory proposes that a rise in the budget deficit would induce domestic absorption and therefore import expansion, causing a current account deficit.

Barro (1989) provided another divergent view of the Ricardian Equivalence Hypothesis (REH). He affirmed that shifts between taxes and budget deficits did not matter for the real interest rate, the current account balance, or the quantity of investment. In other words, the REH negates any relationship between the two deficits.

2.2.3 Budget Deficits, Crowding-in and Crowding-out Effects of Public Expenditure

Three distinct schools of thought are found out after examining the literature on the effects of budget deficits on private investment. These are Neoclassical, Keynesian, and Ricardian Equivalence.

Bernheim (1989) provided a concise summary of the three paradigms. The Neoclassical school considered that individuals planned their consumption over their entire life cycle. Budget deficits increase current consumption, through shifting taxes to future generations. Neoclassical school argues that increased consumption insinuates a decrease in saving by assuming full employment of the resources. To bring equilibrium in the capital markets interest rate must rise. Higher interest rate, in line, results in a reduction in private investment[7].

Keynesians presented a counter argument to the crowds-in effect by making allusion to the expansionary effects of budget deficits. They argued that generally budget deficits result in an increase in a domestic production, which makes private investors more hopeful about the future course of the economy inducing them to invest more, which is known as "crowding-in" effect. The traditional Keynesian view varies from the standard Neoclassical paradigm in two basic ways. First, it allows the possibility that some economic resources are unemployed. Second, it assumes the presence of a large number of liquidity-constrained of individuals. The second presupposition guarantees that aggregate consumption is very perceptive to changes in disposable income.

Barro (1989) argued in his Ricardian Equivalence approach that a rise in budget deficits, due to a rise in government spending, must be paid at that time or later on, with the total present value of receipts fixed by the total present value of spending. Thus, today's taxes reduction must be match by a rise in future taxes, leaving interest rates unaltered and thus private investment unaffected[8].

Bailey (1971), Buiter (1977), and David and Scadding (1974) were interested in the relationship between private investment and public expenditures largely due to

[7] It should be mentioned that the neoclassical economist also believes in the crowding-out effect of budget deficits.
[8] See Bernheim (1989), for key theoretical objections to the Ricardian Equivalence approach.

the crowding-out effect of public spending. The "crowding-out" effect trims down the capability of the government to manipulate economic activity through fiscal actions.

Yellen (1989) argued that in standard Neoclassical macroeconomic models, the method chosen by the government to finance its expenditure program affects the levels of consumption, investment and net export. Such models presume that national saving is lower, and aggregate consumption is higher, if a given government expenditure program is finance by issuing bonds rather than through current taxation. Higher current consumption insinuates an equal and offsetting reduction in other forms of spending, if resources are fully employed, so that output is fixed. Thus, investment and/or net exports ought to be absolutely "crowded-out".

Premchand (1984) asserted that funding the budget deficits by borrowing from the public insinuates an increase in the supply of government bonds. To improve the attractiveness of these bonds the government presents them at a lower price, which brings about higher interest rates. The increase in interest rate discourages private investment, private spending, and the issue of private bonds. Consequently, this contributes to the financial crowding-out of the private sector.

Barro (1990, 1991) used endogenous growth models by enlarging them to comprise tax financed government services that affect production and utility. Over the period 1960-85, in a cross sectional study of 98 countries, he studied the effects of tax financed government expenditure on investment and output. He found that growth and investment had a negative correlation with the ratio of real government consumption expenditure to real GDP (g^c/y). The argument was that government consumption lowered saving and growth through the distorting effects

from taxation or government expenditure programs, but had no direct effect on private productivity.

Heng (1997) used an Overlapping Generation (OLG) model to provide a theoretical framework to examine the "crowding-in" issue of private capital by public capital. He argued that public capital crowds-in private capital through two channels, first its impact on the marginal productivity of labor and savings, and second gross complementarity's/substitutability between public and private capital.

Kelly (1997) argued that public investment and social expenditure may encourage economic lengthening by reducing social conflict and, creating an atmosphere auspicious for investment in human and physical capital. He also argued that social expenditure boosts growth by nurturing welfare and productivity enhancements. He continues to argue that the complementarity of public and private action is probable to be important in developing nations where such factors as stern income inequality, asset concentration, the dissimilar nature of production in the agriculture and industrial sectors, and fragmental financial markets which characterize most developing countries, may deserve considerable public investment programs.

2.2.4 Budget Deficit and Exchange Rate

In a closed economy the hypothesis of "portfolio crowding-out" insinuates that there is a significant positive relationship between budget deficits and real interest rates. Such an association is consistent with a domestic loanable fund[9] approach to interest rate determination.

[9] According to the LFT (Loanable Fund Theory) interest rate are determined as a result of communication between supply and demand of loanable funds. Supply of loanable funds comprises national saving and changes to the stock of money. Demand for loanable funds is consist of investments and changes in demand for money balances. A rise in supply or a decline in demand for funds decreases interest rates. On

Portfolio crowding-out can happen through the exchange rate affecting the current account, in an open economy. This view highlights the significance of international capital movements in reaction to debt disturbances and the association between budget deficits and exchange rates (Bundt and Solocha, 1988). Mundell (1963) and Fleming (1962) found that fiscal policy with expansionary debt financing is absolutely crowded-out under a flexible exchange rate and perfect capital mobility in a small open economy model, where prices are fixed and exchange rates are likely to be static.

Barro (1974) presumed that if taxpayers comprehend that current deficits must be offset by future taxes, they will boost their savings by an amount equal to the present value of future tax liabilities owing to current deficits. As a result, government deficits finance by higher saving does not affect the exchange rate.

Bisignano and Hoover (1982) explained how rises in the deficit may appreciate or depreciate the exchange rate depending on the relative significance of wealth effects and relative asset substitution effects[10]. They concluded that the currency will appreciate due to the deficit combined with tight monetary policy.

The monetary approach to exchange rate determination and the currency substitution hypothesis asserts that the world portfolio demand for currencies of developed economies is perceptive to exchange rate anticipation. Currency substitution rendering economies to international financial disturbances that bounces back through international money markets. An important dialogue of the

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the other hand, a decrease in supply or an increase in demand for funds causes higher interest rates (Hoelscher, 1983; 1986).

[10] The association between a rise in the domestic country debt stock and domestic country currency rely on relative substitutability in wealth between domestic money, domestic bonds, and foreign bonds. Intuitively, a rise in the domestic debt stock may produce either excess demand or excess supply of foreign bonds, which may need either depreciation or an appreciation of the domestic currency to re-equilibrate this market. Here, the exchange rates serve to revalue domestic wealth to achieve the demand for foreign assets into line with the supply. See Branson, Halttunen, and Masson (1977), Bisignano and Hoover (1982), and Penati (1983) for a more detailed analysis of this relatioship.

currency substitution manuscript is the difference between currency mobility and capital mobility for issues of monetary control in the open economy.

Boyer (1978) showed that capital mobility, as distinct from currency mobility, is an imperative mechanism of international portfolio adjustment. Mckinnon (1982, 1984) and Cuddington (1983) described that currency replacement will impede independent monetary control under flexible exchange rates. Likewise Swanson and How (1986) argued that well-organized international cash management policies may improve spot currency market volatility.

Daniel (1985) showed how currency substitution acts as a channel for the international transmission of monetary disturbances under flexible exchange rates using two countries perfect foresight model. The insinuation is that monetary effects of fiscal policy are channeled through international money markets, which, outside of international policy coordination, manipulate the exchange rate and change the alternative set of policy makers regarding monetary control.

Hakkio (1996) provided the indirect effects of budget deficit on exchange rate. He argued that deficit attenuation can cause a higher demand for loanable fund through three main channels - lower anticipated inflation, lower foreign exchange risk, and a greater anticipated rate of return on domestic assets because of lower inflation. Large size budget deficits that are financed by printing money bring about higher inflationary expectation. The large size of debt could convince the markets that it ultimately will be paid through an inflation tax, even if the debt is not monetised. A plausible effort to control the deficit lowers inflationary expectations and the inflation premium on long-term interest rates. Nominal long-term interest rates could turn down by the same percentage due to Fisher effects and real rates would remain the same. However, if nominal long-term interest rates do not fall to the extent that of the anticipated inflation premium has declined, then

real long-term rates would increase. Therefore, a deficit diminution makes domestic assets more attractive and causes the currency to appreciate. The overall effect of a deficit diminution on exchange rate is reliant on whether the deficit is credible, long-term, and sustainable.

Stoker (1999)[11] used a two countries cash-in-advance framework with a clearly specified government sector. The cash-in-advance restriction will hold for both purchases of consumption goods and government debt. His study concentrated on the impact of government deficit spending on the exchange rate. He concluded that the level of government deficit spending affects the exchange rate in two ways. An increase in deficit spending results in an increase in the value of a country's currency, in the short-term. However, this is not simply because of the deficit, but it is caused by the increase in government spending. In the long-term, the effects of this deficit depend on how the debt is to be paid for. If the debt is paid by taxation, it results in a provisional decline in the value of currency. The decline is permanent, if the debt is paid for through money growth.

2.3 Empirical Studies

2.3.1 Budget Deficit and Inflation

Empirical studies investigating the relationship between inflation and budget deficits have not reached a consensus on the possible relationship between budget deficits and inflation rates. The empirical evidence is laden with inconsistent results.

McCallum (1984) utilized a perfect foresight version of the competitive equilibrium model to examine the theoretical legality of a "monetarist hypothesis"

[11] It is worth mentioning that three presumption made in Stocker's study are vital to emphasis. Firstly, goods from various countries enter the agents' utility functions independently in the model, there is no purchasing power parity. Secondly, the government overtly purchases goods from its own country. Finally, the cash in advance restriction holds for both purchases of consumption goods and government debt.

which affirms "that a constant, per capita budget deficit can be sustained without inflation if it is financed by the issue of bonds instead of money". He found the hypothesis to be invalid if the deficit is defined to be exclusive of interest payments but valid under a conventional definition (Shojai, 1999).

Ahking and Miller (1985) modeled deficits, money growth, and inflation as a trivariate autoregressive process in the U.S. over the period 1950-1980. They treated government deficits, base money growth, and inflation as endogenous variables in their trivariate autoregressive model results. They found that, a two ways causal relationship occurs for 1950s and 1970s between government deficits and inflation. Therefore, government budget seems to be inflationary in 1950s and in 1970s, but not in 1960s.

Darrat (1985) examined empirically the relationship between deficits and inflation during the post 1960 period in U.S. He utilized the OLS technique and the outcome of his study suggested that both monetary growth and federal deficits significantly influenced inflation during the 1960s and 1970s. He also concluded that federal deficit bore a stronger and more consistent relationship to inflation than monetary growth.

Hondroyiannis and Papapetrou (1994) used bivariate co integrated system to test the hypothesis of a relationship between the budget deficit and inflation for the period 1960-1992 using annual data for Greece. Their study employed a measure of the budget deficit the public sector net borrowing requirement (PSBR) as a percentage of gross domestic products, and examined the direction of causality between the growth of the PSBR and the inflation rate. The main findings of their study recommended that there is a long-term relationship between PSBR and the price level in Greece economy. It is also noted that there is bi-directional causality between the two variables using Granger-causality test. The results of the error

correction model recommended that an increase in the public sector net borrowing requirement results in an increase of the inflation rate with a lag of one period.

Sowa (1994) estimated an inflation equation for Ghana, using an Error Correction Model (ECM) over the period 1963-1990. His study found that inflation in Ghana is influenced more by output volatility than by monetary factors, both in the short-run and in the long-run.

Metin (1995) analyzed the inflationary process in Turkey, using a general framework of sectoral relationship over the period 1950-1988. Government in Turkey moved from monetisation of the deficits to bond financing in the mid 1980s. His study found that fiscal extension was determining factor for inflation. Only in the short-run, the excess demand for money affected inflation positively. On the other hand, the excess demand for goods, the excess demand for assets in capital markets, and imported inflation had little or no effect on inflation. A key policy insinuation was that Turkish inflation could be reduced quickly by reducing the budget deficits.

Metin (1998) examined the relationship between the public sector deficit and inflation using a parsimonious, conditional, single equation model for inflation using annual data over the period 1950-1987 for Turkey. In his model inflation depends on the budget deficit, the real growth rate of income, and base money. He observed that budget deficits significantly affect inflation in Turkey[12].

Darrat (2000) used an Error Correction Model (ECM) over the period 1957-1993 to examine if high budget deficits have any inflationary consequences in Greece. His empirical results showed that the deficit variables exert a positive and

[12] See Metin (1998) for more details about the economic framework, and the single equation modeling approach used in this study.

statistically significant impact on inflation in Greece. He concluded that in addition to money growth, higher budget deficits have also performed a significant and direct role in the Greek inflationary process.

2.3.2 Budget Deficit and Trade Deficit

Empirical examination of the twin deficits relationship have taken many forms, ranging from single equation ordinary least square (OLS) models to two-stage least square models to small-scale structural models to unconstrained vector-auto regression (VAR) models to co integration and vector-error correction (VEC) models. Each of these models has certain deficiencies, but some models are obviously superior to others. The results acquired are quite perceptive to modeling technique selected (Shojai, 1999).

Previous studies (Eisner, 1986, 1991, Summers, 1986) of the twin deficits depend on single equation OLS or two-stage least square models. Such models frequently found that changes in some measure of the budget deficits are correlated with changes in some measure of the trade deficit. Eisner (1991) utilized an OLS equation using the ratio of net exports to GNP as independent variables and including the price adjusted high employment deficit as a percentage of GNP as an explanatory variable. He used annual data for U.S. over the period 1957-1988, and noticed a positive effect of the budget deficit on the trade deficit, although the estimated coefficient is only marginally statistically significant.

Abell (1990 b) estimated a seven variables VAR model using monthly data for U.S. over the period 1979:2-1985:2, which correspond to the period of dollar appreciation in the early 1980s. The variables incorporated in the system were the federal government budget deficit, the U.S. merchandise trade balance, M1 money supply, Moody's AAA bond yield, The Dallas Federal Reserve Bank's 101-country trade-weighted dollar exchange rate, real disposable personal income, and

the consumer price index (CPI). He used the national income identity to examine the relationship between the budget deficit and trade deficit. His study found that budget deficits influence trade deficits indirectly rather than directly. He found that indirect causation running from the budget deficit to trade deficit through the interest rate and exchange rate exists. His reported impulse response functions depicted a positive response of the trade deficit to a one-standard deviation shock to the budget deficit.

Kearney and Monadjemi (1990) used the Vector Autoregressive (VAR) technique to investigate international evidence from eight countries (Australia, Britain, Canada, France, Germany, Ireland, Italy, and the United Sates) over the period of floating exchange rates from 1972:1-1987:4 using quarterly data. For these countries, they estimated five variables VARs. They did not incorporate the government budget deficit as a separate variable, instead preferred to include government expenditures and tax revenues. Their VAR equation includes money creation and exchange rate but not income or an interest rate. The outcomes that emerge from their empirical analysis of eight countries can be summarized as signifying the existence of a temporary twin deficits link between the stance of fiscal policy and performance on the current account of the balance of payments, which does not continue overtime. Examination of the impulse response function corroborates that fiscal expansion will lead to protracted periods of improved current account performance as the economy adjusts towards its long-run equilibrium. They concluded that the twin deficits link fluctuates internationally in magnitude and duration, and it is not autonomous of the government's financing decision.

Zietz and Pemberrton (1990) estimated a multi-equation, structural, open economy model over the period 1972:4-1987:2 for the U.S. economy. Their model incorporates equations for short-term interest rates, the real trade-weighted

exchange rate, domestic absorption, the domestic inflation rate, import, export, and trend absorption. They derived two-stage least square estimates for each equation. Simulation of the model specifies a strong effect of budget policy on net export, chiefly through the effect of domestic absorption on imports. The effect through rising interest and exchange rate is negligible. In spite of the considerable effects of fiscal policy on net exports, they concluded that less than half of trade deficits of the 1980s could be elucidated by government policy. They acquired the results that budget deficit affects the trade deficit largely through its impact on domestic absorption and income rather than through higher interest rate and exchange rate.

Tallman and Rosensweig (1991) noted that some studies using a Mundell-Fleming framework point out that the twin deficit concept is consistent with the data. In the opposite side, other studies, finding no underlying link between government and trade deficits, are consistent with the Ricardian equivalence. Similarly, results also depend upon the data selection, the option of variables to include in estimated equation is vital, as is the form in which variables enter the equation. The way in which variables enter in equations also emerges to be an important determinant of empirical results. They noticed that the chances of finding a twin deficits relationship come out to be greater if variables are entered as ratios to GNP, instead of as first differences.

Bachman (1992) tested the twin-deficits hypothesis in the U.S. over the period 1974-1988, using quarterly data. He also tested the relationship between the trade deficit and three other causal variables comprising gross domestic investment, relative productivity, and the exchange rate risk premium. He used bivariate analysis and finding no evidence of co integration between the current account and budget deficit. The result also suggested a unidirectional Granger causation from the federal deficit to the current account.

Islam (1998) examined empirically the causal relationship between budget deficits and trade deficits over the period 1973:1-1991:4 for Brazil. He used the Granger's test of causality to investigate the relationship. His empirical results suggested the existence of bilateral causality between trade deficits and budget deficits.

Mohammadi (2000) used cross section data over the period 1975-1995, for a sample of 67 countries. He examined the empirical validity of the conventional and the Ricardian views relating to the potential impact of budget deficits on the foreign trade balance. The outcome of his study concluded that there is positive and significance relationship between government budget surplus and the trade balance.

Arora and Dua (1993) examined the effect of budget deficit on investment and on trade deficits over the period 1980-1989. In their model X_t is the dependent variable, D/Y is the ratio of budget deficit to GNP, Y is the GNP, m is the percentage change in the previous period GNP, e is the percentage change in real exchange rate from previous period are independent variables. They concluded that higher budget deficits crowd-out domestic investment and increase trade deficits.

Piersanti (2000) used the Granger-Sims causality technique to examine the relationship between the current account deficits and budget deficits over the period 1970-1997, for seventeen OECD countries. He used budget deficit and current account balance as a percentage of GDP, instead of their absolute levels. From the empirical examination, his study acquired evidence that sturdily supported the view that current account deficits have been linked with large budget deficits during the study periods in most industrial countries.

Chaudhary and Shabbir (2005) used simultaneous equation model with 2SLS techniques to investigate the impact of budget deficit on money supply, foreign reserve and balance of payments. They used annual data for the period 1965-1999. From the empirical evidence they concluded that changes in money supply affect trade balance through output. They also concluded that increase in government budget deficit, partially due to an income inelastic revenue structure, create excessive supply of money over demand and bring about foreign reserves outflow.

2.3.3 Budget Deficit, Crowding-out and Crowding-in Effects of Public Expenditure

There are two opinions about the effects of increased government expenditure on investment. The traditional one asserts that government expenditure crowds-out private investment, while the none-traditional opinions see government expenditure stimulating investment. The crowding-in investment happens when the economy's resources are underemployed. Most of the empirical work investigates the effect of government expenditure on economic growth.

Guess and Koford (1984) used the Granger-causality test to find the causal relationship between budget deficits and inflation, GNP, and private investment over the period 1949-1981, using annual data for seventeen OECD countries. The outcomes of their study concluded that budget deficits do not cause changes in these variables.

Aschauer (1989b) empirically investigated the effect of public expenditure on private investment and the rate of return on private capital over the period 1953-1986, using annual data for the U.S. He found that an increase in public investment may be anticipated to trim down private investment almost one-to-one as the private sector uses the public capital for its required purposes instead of expanding private capacity. Public investment might be thought to increase

private investment as the former increases the profitability of private capital stock. The empirical results showed that while both channels emerge to be operating, the latter comes to dominate, so the net effect of increase in public investment had a positive effect on private investment. His study indicated that government investment had a positive effect on private investment and caused crowding-in rather than crowding-out.

Barro (1991) investigated 98 countries over the period 1960-1985 and observed a negative relationship between the output growth rate and the share of government consumption expenditures. He found a positive but statistically insignificant relationship between public investment and the growth rate, when the share of public investment was considered.

Argimon et al. (1997) considered the effects of public consumption and public investment on private investment, using annual data for fourteen OECD countries for the period 1978-1989. They separate private investment from public investment. They found that public consumption and public investment are negatively linked with private investment, even though only the public consumption effect is significant.

Ghali (1997) examined the relationship between government spending and economic growth over the period 1960-1996, using annual data in Saudi Arabia[13]. His study found that changes in government spending have no impact on per capita real output growth.

Ghali and Al-Shamsi (1997) used cointegration and Granger-causality test to examine the effects of fiscal policy on economic growth over the period 1973:1-

[13] Saudi Arabia has the largest budget deficit among the Gulf countries. In 1991 the government deficit reached to 27 percent of GDP, for a detail discussion see Ghali (1997).

1995:4, for the small oil producing economy of the United Arab Emirates. They divided public spending into consumption and investment expenditure and illustrated how multivariate cointegration techniques can be utilized to test for the long-run relationships and the intertemporal causal effects between government spending and economic growth. Their study indicates that government investment has a positive effect on economic growth, while the effect of government consumption is insignificant.

Kelly (1997) examined the effects of public expenditure on economic growth over the period 1970-1989, for 73 developing and developed nations. He used OLS technique to estimate economic growth as a function of various public expenditure (such as social expenditure, educational expenditure, and other expenditures), and some other variables such as private investment, and the trade openness variables. He found that public investment specifically housing expenditure, have a consistent positive and significant relationship with growth. Social security expenditures are positively linked to growth in each specification of the model. He suggested that nations must follow social welfare and growth simultaneously. His results indicated that health expenditure is negatively and sometimes significantly linked to growth, whereas for education it varies in sign and significance.

Miller and Russek (1997) took a sample of developed and developing countries over the period 1975-1984. They found that both the component of government expenditure and the method of financing can have different effects. They found that debt financed increases in health, defence, welfare and social security expenditures negatively affect growth of real per capita GDP in developing countries. Whereas debt financed increases in education expenditure positively affected growth in developed countries. Their study makes difference from previous studies in that they separated the effects of government expenditure based on the method of tax financing or debt financing.

Monadjemi and Huh (1998) used the Error Correction Model (ECM) to examine the relationship between private investment and government spending over the period 1970:1-1991:4 in Australia, UK, and the US. Empirical results of their study gave limited support for crowding-out effects of government investment on private investment. The rate of interest and corporate profitability indicated significant effects on private investment in two out of three cases.

Ahmed and Miller (2000) investigated the effects of disaggregated government expenditure on investment using OLS, fixed-effect, and random-effect methods. Their study introduced a government budget constraint. They also distinguished between tax and debts financed expenditure. They utilized pooled times series and cross-section data over the period 1975-1984 for 23 developing and 16 developed countries. Their study ran two sets of regressions. One set used total government expenditures and other set used disaggregated expenditure items. The different categories of government expenditure incorporated were defence expenditure, education expenditure, health expenditure, social security and welfare expenditure, economic affairs and service expenditure, transportation and communication expenditure and other expenditure. All these expenditures were taken as ratio to GDP. Their study also included trade variables, because they argued that trade variable explain investment vigorously. The empirical results provided several conclusions. First, the openness variables have a significant positive effect on investment only in developing countries, while in developed countries it have not any affect on investment. Second, communication and transportation expenditure crowds-in investment for developing countries only. Third, tax financed government expenditure, crowds-out investment more frequently than that of debt financed government expenditure. Lastly, expenditure on social security and welfare crowds-out investment for both tax and debt-financed government expenditures in both developing and developed countries.

2.3.4 Budget Deficit and Exchange Rate

Chenery and Strout (1966, 1969) presented Dual Gap Model. The idea that foreign aid boosts economic performance and creates economic growth is based on Chenery and Strout's Dual Gap Model. They claimed that that foreign aid encourages development by adding to domestic savings as well as to foreign exchange accessibility, thus easing the way to close either the savings-investment gap or the export-import gap. Chenery and Strout (1966) extended the Harrod-Domar thesis, and initiated the so-called Financial Two Gap Approach. This approach is utilized to calculate the amount of foreign aid required to harmonize the foreign exchange and domestic savings needs of developing countries. The Financial Two Gap Approach presumed that a gap exists either between saving and investment or between exports and imports. They hypothesized that developing countries could not restrain the deficiency of savings and foreign exchange on their own due to their inadequate resources. Accordingly, the Financial Two Gap Approach's rationale is that foreign aid should make up the disparities between either the saving-investment gap or the export-import gap.

Burney and Akhtar (1992) empirically examined the effects of budget deficits on exchange rate over the period 1971-72 to 1989-90, for Pakistan. They used exchange rate model with Ordinary Least Square (OLS) method. In their model, e is the real exchange rate, π_d and π_f are domestic and foreign inflation rate, TOT is the term of trade, i_d and i_f are the domestic and foreign interest rate, Y is the level of economic activity, and BD is the budget deficit. They concluded from their study that budget deficits have significant positive impact on the real exchange rate directly as well as indirectly through the price level.

Humpage (1992) used the Engle-Granger cointegration technique to examine the existence of a long-run relationship between the level of the US federal budget deficit and the exchange rate during the period 1973-1991. He utilized the level of

the deficit rather than deficit as a percentage of GDP. He asserted that when the level of deficit is very large, it could have considerably different effect on the exchange rate. His study found no proof of a long-term linkage between common aggregate measure of US fiscal policy and real long-term interest rates, real dollar exchange rates, and real net export.

Hakkio (1996) utilized pooled annual data for eighteen OECD countries over the period 1979-1994 and regressed the real exchange rate on the budget deficit as a percentage of GDP. To estimate the indirect impact of a deficit diminution on the exchange rate, a country's inflation rate in line with the average OECD inflation rate, the stock of government debt (as a percentage of GDP) relative to OECD average, and the change in government spending as a share of GDP are incorporated in the regression line to proxy the impact of expected inflation. The manner the government opts to use these tools (increasing tax rate or cutting government spending) have significant effects on the anticipated rate of return on domestic assets, thereby leading to changes in the demand for domestic assets and in rank to changes in the exchange rate.

2.3.5 Budget Deficit and Interest Rates

There are two contrary opinions concerning the effects of government budget deficits on interest rates. The discussions are revolving on the efficacy of the Neoclassical and Keynesian models, on the one hand, and the Ricardian model on the other hand. The Neoclassical and Keynesian models embody the standard analysis where the impact of increased deficits on interest rates operates through the effects of higher spending and increased wealth on the demand for money. In the Ricardian model, though, the value of the new debt is simply professed as the present value of future tax liabilities. This means that the government debt is not

considered as net wealth and, accordingly, money demand would not be affected. Therefore, interest rates remain unchanged as well[14].

Several researchers have tried to find a relationship between nominal interest rates and the U.S. deficit using post-war data. Feldstein and Eckstein (1970) used instrumental variable technique using annual data for United States over the period 1954:1-1969:2, to show the impact of public debt on interest rate. They found that relatively slow growth of public debt has wielded descending pressure on interest rates.

Hutchison and Pyle (1984) examined the relationship between the real interest rate and government budget deficit across seven major industrial countries including United States, United Kingdom, France, Japan, Italy, Canada, and Germany. They used annual date for the period 1973-1982 and applied Ordinary Least Square (OLS) technique. In their model r_{ti} is the short-term interest rate at time t in country i, B_{ti} is government budget deficits at time t in country i, M_{ti} is money growth at time t in country i, U_{ti} is the unemployment rate at time t in country i, D_{ti} is the dummy variable taking value 1 for country i for all t, and μ_{ti} is the random error term. Their result showed that short-term real interest rates are systematically and positively linked with central government budget deficits across countries and across time.

Evan (1985) studied the relationship between large budget deficits and high interest rates in United States in four different periods - the civil war, World War I, World War II, and post World War II using IS-LM model with two Stage Least Square (2SLS) method. The periods he selected were 1858-1870, 1912-1922, 1938-1950, and 1979-1984. In his IS-LM model, R is the nominal interest rate, G is real government spending, D is real budget deficit, M/P is the real money stock,

[14] For a detailed analysis of these three paradigms see Bernheim (1989).

π is the anticipated inflation rate, US is an error term that measures autonomous private spending, and UM is an error term that measures autonomous money demand. He concluded that large budget deficit have never been linked with high interest rates.

Hoelscher (1986), and Cebula (1988, 1991), showed that federal deficits have a positive effect on nominal long-term interest rates, make the slope of the yield curve to increase, and crowd-out private investment. Bernheim (1987, 1989) asserted that the Ricardian equivalence hypothesis does not hold. Carrol and Summers (1987) observed evidence that support the Ricardian equivalence hypothesis and report that there is a one-to-one association between the government deficit and private saving.

Cebula (1988) used IS-LM based model with instrumental variables technique. He regressed the nominal interest rate on Moody's Aaa-rated corporate bonds against the number of variables, including federal budget deficits. He conducted his study for United States using seasonally adjusted data over the period 1955:1-1984:4. In his IS-LM model NR is the nominal interest rate yield on Moody's Aaa-rated corporate bonds, Sd is the real structural deficits, Y is trend real GNP, CD is the real cyclical deficits, M is the change in monetary base, G is real federal government purchases of goods and services, P is the expected inflation rate during quarter t, RTR is the ex ante real three month treasury bill rate, and t stand for time. He concluded that the federal budget deficit exercises a positive and significant impact on nominal corporate bond rates.

Zahid (1988) examined the relationship between deficits and interest rates over the period 1971-1982, for U.S. using quarterly data. In his study r is the real 3-month T-bill rate, D is the budget deficit, H is the high power money, TREND is the trend in nominal GNP, CYCLE is the ratio of real GNP to its trend value. He

found that budget deficit have significant positive impact on the real interest rate when the government budget deficit is defined appropriately to reflect the government excess demand for funds from the nongovernmental public, and cyclical variation in deficits.

Al-Saji (1993) studied the relationship between government budget deficit and nominal long-term interest rate for United Kingdom using an open economy IS-LM model with two Stage Least Square(2SLS) method. He used annual data from 1960:1-1990:4. His model consist of R which, is the nominal long-term interest rate, P_t^e is the anticipated rate of inflation, MP is the real money stock, DF is the real government budget deficit, GP is real government spending, XP is the real balance of trade, e_t is the error term. He concluded that budget deficits have a positive and significant effect on nominal long-term interest rates.

Cebula and Rhodd (1993) studied the relationship between budget deficit and nominal interest rates for United States using functional model with instrumental variables technique. They used quarterly data over the period of 1971:4-1985:4. In their model they used following variables namely R which is the nominal long-term interest rate, P is the anticipated future inflation, RSR is the expected short-term rate of interest, B is the real net borrowing by federal government, M is the net purchase of securities by central bank, and C is the real net capital inflow towards the economy from other economies. Based on the functional model they estimated an equation in which R_t is the nominal average interest rate, a_o is the intercept, P_t is the anticipated inflation, RSR_t is the ex ante real interest rate, B_t/Y_t is the ratio of budget deficit and GNP, M_t/ Y_t is the ratio of net acquisition of credit market to GNP, and C_t/Y_t is the ratio of net foreign capital flow and GNP. They obtained from their study the result that budget deficits have a positive and significant impact on the nominal long-term interest rates.

Liargovas et al. (1997) studied the relationship between budget deficit and interest rates in Greece using Error Correction Model (ECM) with Engle-Granger cointegration method. They used annual data from 1980-1994. In their model, M is the real demand for broad money, GDP is the real gross domestic products, P is the consumer price index, TBR is the real T-bill rate, R is the real deposit rate, GDEBT is the real debt of central government, λ is the error correction coefficient, μ, and ε are the disturbance terms. Their study concluded that there is positive link between the budget deficit and interest rates in Greece.

Knot and de Haan (1999) used the deficit announcement effect methodology to examine the relationship between budget deficits and interest rates using annual data over the period 1987-93 in Germany. The results of their study suggested that the positive relationship between budget deficits and interest rates is because of fear that government debt may crowd-out private investment.

Ewing and Yanochik (1999) examined the impact of federal budget deficits on the term structure of interest rates using quarterly data over the period 1977:1-1991:3 in Italy. They used the cointegration technique for estimation. The finding of their study suggested that budget deficits increased the yield spread between the long-term government bonds and the three months treasury bill rate. Further test supporting the hypothesis of their study and revealed the absence of any reverse causality. Their results are consistent with those of Cebula (1991) who found that U.S. deficits show a significant effect on the term structure of interest rates. Their finding concluded that budget deficits may hamper long-term economic growth in Italy, by means of crowding-out effect and by rising long-term interest rates relative to short-term interest rates.

Cebula (2000) examined the impact of budget deficits on ex post real long-term interest rates over the period 1973-1995 in U.S., using the model in which,

$EPRLR_t$ is the ex post real average interest rate yield in year t on ten year treasury notes, PCY_t is the change in real per capita real GDP in year t, $EARSR_t$ is the ex ante real average interest rate yield in year t on three months U.S. treasury bills, B_t/Y_t is the ratio of structural federal budget deficit in year t to the potential GDP in year t, C_t/Y_t is the ratio of the net flow of foreign capital into the U.S. in year t to the potential GDP in year t as a percentage, and μ is the stochastic error term. He used instrumental variables technique to estimate the model. He found that budget deficits increase the long-term real ex post rate of interest.

Modeste (2000) used the loanable funds model of interest rate determination to examine the relationship between budget deficits and interest rate movements. A basic belief of the model is that interest rates would fall (rise) as economic forces either decrease (increase) the demand for loanable funds or increase (reduce) the supply of such funds. He applied his methodology for Jamaica over the period 1964-1996. The results of his study revealed that the government's budget deficits have a significant positive effect on the long-term interest rate. Along side this result, a major insinuation of his study was that budget deficits, besides it forcing up interest rates, can cause crowding-out of private investment.

Vamvoukas (2000) used Cointegration, Error Correction Model (ECM), and several diagnostic and specification tests to study the relationship between budget deficit and interest rates in Greece. He used three different time periods data to analyze the relationship. The period he selected were 1949-1994, 1953-1994, and 1957-1994. His result supported the Keynesian model of significant positive relationship between budget deficit and interest rates.

2.3.6 Budget Deficit and Growth

Roubini and Sachs (1989) examined the effect of growth slowdown, rise in unemployment, and the higher interest rates on the increased budget deficits in

OECD countries after 1973. They used time series regression model using pooled cross section data. In their model d (b_{it}) is the annual deficit, d ($b_{i, t-1}$) is the lagged deficit, d (U_{it}) is the change in unemployment rate, d (n_{it}) is the change in GDP growth rate, b_{it} * d ($r_t - n_t$) is the change in interest rate minus growth rate multiplied by lagged debt-GDP ratio, P_{it} is the political variable in country i at time t, and v_{it} is the error term. They concluded from their study that shocks like slower growth and higher unemployment after 1973, and higher real interest rates in 1980s increased budget deficit of industrialized countries.

Nelson and Singh (1994) utilized cross section data of seventy developing countries during two time periods, 1970-1979 and 1980-1989, to examine the effect of budget deficits on GDP growth rates using Ordinary Least Square (OLS) method. They also investigate the relationship between growth and public policy variables. The variables included in the model were GDP growth rate which was used as dependent variable, while independent variables included were government budget deficit, government revenue, defence spending, domestic private and public investment, population growth rate, per capita income, education, and inflation rate. They concluded from their study that the budget deficit variable exercised little or no impact of any statistical significance on economic growth in LDCs during the 1970s and 1980s.

2.4 Summary

It is concluded from the empirical studies presented in this chapter concerning the impact of public investment on private investment and economic growth that cross section analysis cannot capture the government spending and growth relationship. Time series analysis revealed the causal linkage between variables, while cross section analysis identified correlation but not causation between variables.

The empirical studies regarding the relationship between budget deficit and inflation presented in this chapter showed strong evidence that budget deficit finance through monetization and rising money supply bring about inflation. The inflationary effect of government deficits depends on the ways through which the deficit is being financed and the impact of that on aggregate demand.

Studies regarding the impact of budget deficit on the trade deficit presented inconclusive results. Majority of the studies concerning the relationship between budget deficit and trade deficit found evidence that the twin deficit relationship arising through exchange rate. The key outcome from all these studies supported the Keynesian proposition, suggesting that, increase in budget deficit induced domestic absorption, causing import expansion, which results in trade deficit.

Empirical studies of the impact of budget deficit on exchange rate showed strong evidence, in both developed and developing countries, usually supporting the conventional macroeconomic theory, rather than the Ricardian equivalence proposition. The empirical finding also concluded that the effects of budget deficit on exchange rates depend on the means of financing the deficits, whether through taxation or through money growth.

The key outcomes found from the empirical studies regarding the impact of budget deficit on interest rate, supporting the Keynesian model of significant and positive relationship between budget deficit and interest rates.

It is concluded from this chapter that empirical evidence and theoretical analysis did not match. The overall, evidence presented in this chapter, with respect to the relationship between budget deficit and economic variables are inconclusive. It seems from the review that different conclusion can be reached, by using different

econometric models, econometric technique/methodology, and the country/period of study.

This chapter has reviewed the significance of budget deficit for the key macroeconomic variables. The inconclusive results, for some variables, indicate that budget deficits and their funding exert an important impact on macroeconomic outcomes. In Pakistan the importance of budget deficit and their funding cannot be overlooked, as these have strong bearing on economic growth, unemployment and poverty. From this review it is observed, that such study may also needed for Pakistan too, and their lack represent a major deficiency. So the current study is designed to show the impact of budget deficit on key macroeconomic variables during 1960-2005, which will be a significant and important contribution to the literature in general and for the case of Pakistan in particular.

Chapter 3

MATERIALS AND METHODS

3.1 Introduction

In this chapter, data sources followed by its analysis have been given in detail. Methodology designed for the study has been discussed. Further, analytical framework has been presented. Econometric models to be used are explained. Simultaneous equation models are used to examine the impact of budget deficits arising from increased government expenditure on macroeconomic variables such as economic growth, unemployment, and poverty. Linear regression model is used to analyze effects of budget deficits financing sources on budget deficits. Vector Autoregressive (VAR) models are used to analyze the causality among the macroeconomic variables and budget deficits. Two Stage Least Square (2SLS) and Ordinary Least Square (OLS) techniques are used for analysis. These models are also used to analyze the government's policy approach in response to the Pakistan fiscal crisis.

3.2 Data Collection Procedure

The definition and sources of all variables used are given in table 3.1. Annual data for the sample period 1960-2005 is used. In order to convert current price data into constant price time series, financial year 1964 has been used as the base year. Secondary data was obtained from various national and international institutions namely:

(1) Ministry of Finance, Government of Pakistan.

(2) Federal Bureau of Statistics (FBS), Government of Pakistan.

(3) Economic Survey of Pakistan, various issues.

(4) Central Board of Revenue, Pakistan, various issues.

(5) State Bank of Pakistan (SBP), Annual and quarterly reports, various issues.

(6) International Financial statistics yearbook (IFS), various issues.

It will be necessary, before starting to perform any empirical estimation of the model, to analyze the time series data, which is used in this study. The analysis of data depends on finding out whether the series is stationary or non–stationary. Augmented Dickey-Fuller (ADF) test examines the hypothesis that the variable in question has a unit root. If the series is found to have a unit root differencing the data is appropriate to make it stationary, in order to avoid the problem of spurious regression arising from non-stationarity in the time series. Johansen Likelihood Ratio (LR) test is used to detect the existence of a long run relationship among the variables included in this study. For the short run relationship, an Error Correction Mechanism (ECM) is estimated (where long run co-integrating relationship is found). The parameters estimated are used to analyze the government policy approach in response to the Pakistan fiscal deficit.

3.2.1 Testing for Stationarity

To check the stationarity of the given time series an Augmented Dickey-Fuller (ADF) test is used. The Akaike Information Criterion (AIC) is used to select the optimum ADF lag. Stationarity of the variables are checked once with an intercept is included only, and again when both an intercept and a linear deterministic trend is included. EView is used to conduct the unit root test of stationary. For each variable separate test is conducted.

3.2.2 Testing for Cointegration

Most of the time series variables used in the study are non-stationary, there is possibility that regression of one non-stationary variable on another non-stationary variable produce spurious regression. To detect spuriousness in regression, Johansen Likelihood Ratio (LR) test is used. The computed t value of Likelihood Ratio (LR) test statistics is compared with critical values. According to the test criteria if the computed value is greater than the critical value, then null hypothesis

of no cointegration is rejected and there is to be a long term relationship amongst the variables even though if the variables are non-stationary individually.

3.2.3 Error Correction Mechanism (ECM)

In order to find out the short term behavior of the model Granger representation theorem is used. Once it is found that the regression variables have long term relationship (cointegration) then Error Correction Mechanism (ECM) is used to learn about the short term behavior of the variables. In Error Correction Mechanism (ECM) first difference of dependent variables are regressed on first difference of all independent variables and the lag value of residual obtained from regression of variables at level. A statistical packages Minitab and EView are used for estimation. The parameters of all independent variables show short term effects of independent variables on dependent variables, and parameter of lag value of residual show the rapidity in which the short term disequilibrium will restore.

3.3 Methodology

3.3.1 Simultaneous Equation Model

To analyze the impact of budget deficit on the economic growth, unemployment and poverty, monetary and fiscal variables are linked to observe the process and their role in the economy of Pakistan. The Quantity Theory of Money insinuates that when money supply increases more quickly than real output, it generates inflation. However, there are structural variables, which also create this in developing countries. Thus, monetary or fiscal models need to include such variables in order to fully explain the phenomenon (Yousaf, 1988).

De Silva (1977) developed a simultaneous equation model and used Ordinary Least Square (OLS) method to estimate the key equations separately. Chaudhary and Ahmed (1995) estimated this model with the same estimation method as De Silva, in Pakistan. Chaudhary and Shabbir (2005) used simultaneous equation

model and estimated the key equations separately using 2SLS method. Similar approach is used in this study. The basic model does not capture the affects on unemployment and poverty. To improve upon the shortcomings in literature and obtain reliable result for unemployment and poverty the model is extended by incorporating the private and public investment function in order to obtain better results. The objective of this exercise is to examine the mechanism through which the monetary and fiscal impulses are channeled and then their influences are transmitted to other macroeconomic variables, i.e. domestic price level, output, private and public investment and situation of unemployment and poverty.

The money supply function is given as follows.

$$M^s = f\ (BCP, GBB, RES) \qquad (1)$$

Where M^s is the money supply, RES is the international reserves, GBB is the government borrowing from the banking system (to finance the budget deficit) and BCP is the commercial banks credit provided to the private sector.

Demand for real money balances is the function of real income and interest rate.

$$(M^d/P) = f\ (y, i) \qquad (2)$$

M^d is the demand for nominal cash balances, P is the domestic price level, y is real income and i is interest rate.

The price level is determined by the monetary equilibrium that fluctuates with change in money supply and demand for real money balances. If ΔM^d (change in money demand) $> \Delta M^s$ (change in money supply) then prices will fall, if ΔM^s (change in money supply) $> \Delta M^d$(change in money demand) then prices will rise,

if ΔM^s (change in money supply) = ΔM^d(change in money demand), there will be no change in price level. But modern theory of Kenesian state that the real cause of fluctuations in prices is due to variations in the level of aggregate income or expenditure. Changes in money supply can bring changes in prices level only if they change aggregate spending in relation to the supply of output.

The real output is the function of real government expenditures (consumption expenditure), private investment, public investment, balance of trade and real rate of interest.

$$y = f\,(GC, PINV, PUINV, BT, r) \qquad (3)$$

Where GC is the total consumption expenditure, PINV is the private investment, PUINV is the public investment, BT is balance of trade, and r is the real rate of interest.

The private investment depends on real income, rate of interest, and availability of bank credit to private sectors.

$$PINV = f\,(y, BCP, i) \qquad (4)$$

Where y is the real income, i is the rate of interest, and BCP is the bank credit to private sector.

The public investment depends on real income, real rate of interest rate, net foreign exchange reserves.

$$PUINV = f\,(y, RES, r) \qquad (5)$$

Where RES is the foreign exchange reserves (balance of payment).

The supply of exports depends on real income, relative prices of exports and nominal exchange rate.

$$x = f\ (y, RPx, ER) \tag{6}$$

Where y is the real income, RPx is the relative prices of export (px/p), and ER is the nominal exchange rate.

The demand for real import depends on real income, relative prices of imports, international reserves and nominal exchange rate.

$$m = f\ (y, RES, RPm, ER) \tag{7}$$

Where RPm is the relative prices of import (Pm/p) and RES is the international reserves.

Change in unemployment depends on percentage change in real gross domestic product (GDP).

$$\Delta UE_t = f\ (\Delta GDP_t)^{15} \tag{8}$$

Where ΔUE_t is the change in unemployment level, ΔGDP_t is the percentage deviation of GDP growth from normal growth rate.

The economic growth, per capita income used to measure poverty level (PCIC), balance of trade and foreign exchange reserves (balance of payments) equation are defined as:

$$EG = \Delta y / y \tag{9}$$

$$GNP = y + NFIA \tag{10}$$

$$PCIC = GNP/Tpop \tag{11}$$

[15] According to Okun's law every percentage points growth in real GDP above the normal growth rate, the unemployment rate declines by the slope coefficient percentage points.

The workings of the models are as follows: The expansion in money supply (M^s) takes place owing to, say, an expansion in government borrowing from the banking system to finance budget deficit (GBB). When the government spend this borrowing (increase both in consumption and investment expenditure), means increase in output (Equation 16) that in turn increases the public's demand for real money balances (Equation 15), private investment (Equation 17), and at the same time gross national income (Equation 23). The change in domestic price level depends on change in aggregate income or expenditure. If increase in aggregate spending due to increase in money supply (ΔM^s) is more than the volume of production then prices increases, if increase in volume of production of output is more than the increase in aggregate spending then prices will decreases, and if aggregate spending and volume of production of output is same then prices remain the same. The change in prices affects the supply of export and demand for import through relative prices of exports and imports (Equations 19 and 20). Changes in exports (x) and imports (m) affects the balance of trade (BT) (Equation 25), which in turn affects the reserves (Balance of payment equation 26).This will bring a corresponding change in M^s (Equation 14) and at the same time in public investment (Equation 18), which again affect output y (Equation 16). When output y increase, economic growth (Equation 22) will also increase, unemployment (Equation 21) will decrease, gross national product (Equation 23) will increase, and ultimately per capita income (Equation 24) used to measure poverty level will increase. Thus the system is interdependent.

3.3.2 Linear Regression Model

Budget deficit financing is the arguable issue in all developing countries including Pakistan for the last three decades. In Pakistan mostly two sources are used for deficit financing i.e. domestic borrowing and external borrowing, privatization proceed also used for deficit financing in late 1990s. A simple linear regression

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model is used to analyze the effect of each source of budget deficit financing on budget deficit with Ordinary Least Square (OLS) technique.

The following model has been used for analysis of financing sources effects on budget deficit

$$BD = f\ (GBB, fB) \tag{27}$$

The model in linear form is written as

$$BD = \kappa_0 + \kappa_1\ GBB + \kappa_2\ fB + \varepsilon_1 \tag{28}$$

Where GBB is government domestic bank borrowing to finance budget deficit and fB is government external borrowing to finance budget deficit

3.3.3 Vector Autoregression Model (VAR)

In order to encapsulate the causality among the four main variables of the study (Budget deficit, Economic growth, Unemployment, and Poverty) Vector Autoregression (VAR) model is used, which treats all the variables in the system as endogenous. The Impulse Response Function (IRF) and variance decomposition is used to analyze the dynamic impact of the random errors on the variable's system. To avoid vagueness in the vector autoregressive equations, first observe that the variables are stationary individually and then observe that these variables are cointegrated. OLS method is applied for estimation of parameters. For lag length (k) selection Akaike Information Criteria (AIC) is used. A statistical package EView is used to estimate the coefficients. More specifically, the following multivariate VAR models are used for estimation:

- $BD_t = \alpha + \sum_{j=1}^{k} \alpha_j\ EG_{t-j} + \sum_{j=1}^{k} \beta_j\ UE_{t-j} + \sum_{j=1}^{k} \gamma_j\ PCIC_{t-j} + \sum_{j=1}^{k} \lambda_j BD_{t-j} + \mu_{1t}$ (29)

- $EG_t = \alpha' + \sum_{j=1}^{k} \chi_j\ EG_{t-j} + \sum_{j=1}^{k} \delta_j\ UE_{t-j} + \sum_{j=1}^{k} \eta_j\ PCIC_{t-j} + \sum_{j=1}^{k} \nu_j\ BD_{t-j} + \mu_{2t}$ (30)

- $UE_t = \alpha'' + \sum_{j=1}^{k} \psi_j EG_{t-j} + \sum_{j=1}^{k} \xi_j UE_{t-j} + \sum_{j=1}^{k} \tau_j PCIC_{t-j} + \sum_{j=1}^{k} \upsilon_j BD_{t-j} + \mu_{3t}$ (31)

- $PCIC_t = \alpha''' + \sum_{j=1}^{k} \sigma_j EG_{t-j} + \sum_{j=1}^{k} \varepsilon_j UE_{t-j} + \sum_{j=1}^{k} \Omega_j PCIC_{t-j} + \sum_{j=1}^{k} \Phi_j BD_{t-j} + \mu_{4t}$ (32)

Where each equation is estimated separately. In this specification μ_{it} is the random error term which is assumed not to be correlated across time.

Where PCIC = Indicate per capita income used to measure poverty level

UE = Indicate unemployment

EG = Indicate economic growth (GDP growth rate)

BD = Indicate budget deficit

k = lag length

3.4 Summary

This chapter extensively reviewed the sources of all variables employed in this study. Augmented Dickey-Fuller (ADF) test is used to ascertain the stationarity of the data. For maximum lags length selection Akaike Information Criteria (AIC) is selected. Most of the time series variables used in the study are non-stationary, there is a possibility that regression of one non stationary variable on another non stationary variable produce false regression. To detect falseness in regression Johansen Likelihood Ratio (LR) test is used. Error Correction Mechanism (ECM) is used to ascertain the short term behavior of the variables.

Analytical framework and economic and econometric model has been assessed in this chapter. The models are utilized to analyze the budget deficit arising from increased government expenditure impact on macroeconomic variables such as economic growth, unemployment, and poverty. Linear regression model is used to analyze the effect of government domestic bank borrowing and foreign borrowing

on budget deficit. The causality among the macroeconomic variables and budget deficits has been analyzed.

It is concluded that monetary impulses entered into the economy in the form of money supply due to an increase in government borrowing from the banking system to finance budget deficit. This exercise examines the mechanism through which the monetary and fiscal impulses are channeled and then their influences are transmitted to other macroeconomic variables. The effects of increase in money supply due to borrowing from domestic banking system and foreign borrowing to finance budget deficit are channeled through private and public investment to others macroeconomic variables.

Table 3.1
Definition and sources of Variables

	Variables	Sources	Definition of Variables
1	Real Money supply (M^s)	1960-2005 (SBP) (IFS)	M^s in million of Pak. Rupees, deflated by consumer price index at constant 1964 prices. It comprises, Currency in circulation, Other Deposit with SBP, Schedule bank demand deposit, Schedule banks time deposit, and Post office saving deposit
2	Demand for Real money (M^d)	1960-2005 (SBP)	Demand for money (M^d) are in million of Pak Rupees, deflated by consumer price index at constant 1964 prices. It comprises, Mo (Reserve Money) consist of (i) currency in circulation (ii) other deposits with the State Bank of Pakistan (iii) Currency in tills of scheduled Banks (iv) Bank's deposit with the State bank of Pakistan. M1(Narrow Money) consists of (i)Currency in circulation (ii)Other deposits with the State Bank of Pakistan (iii) Scheduled banks' demand deposits, M2(Broad Money) includes (i)M1 (ii)Scheduled Bank's Time deposits(iii)residents foreign currency deposits
3	Real Domestic government bank borrowing(GBB)	1960-2005 (IFS)	Government borrowing from the banking system to finance the budget deficit is in Million of Pak Rupees, deflated by consumer price index at constant 1964 prices.
4	Real Gross domestic Product (y)	1960-2005 (ESP)	GDP in million of Pak. Rupees at current market prices, deflated by consumer price index at constant 1964 prices.
5	Interest rate (i)	1960-2005 (IFS)	Interest rate used here is the nominal discount rate
6	Real interest rate (r)		Calculated from inflation and nominal interest rate
7	Real Bank Credit (BCP)	1960-2005 (SBP)	Commercial banks credit to private investment in million of Pak. Rupees, deflated by consumer price index at constant 1964 prices.
8	Domestic prices (P)	1960-2005[1] (FBS)	Domestic prices measured by CPI (Consumer Price Index)
9	Real Government consumption expenditure (GC)	1960-2005 (FBS) & (ESP)	Government consumption include both private and government consumption expenditure in million of Pak Rupees, deflated by consumer price index at constant 1964 prices.
10	Real Private Investment (PINV)	1960- 1963(gap)[2] 1964-2005 (FBS)	Private investment is in million of Pak Rupees, deflated by consumer price index at constant 1964 prices.
11	Real Public investment (PUINV)	1960-1963(gap)[2] 1964-2005 (FBS)	Public investment is in million of Pak Rupees, deflated by consumer price index at constant 1964 prices.
12	Real Reserves (RES)	1960-2005[3] (SBP)	Foreign exchange reserves data is in million of dollar and converted into Pak rupees by multiplying dollar amount into Rupees per dollar rate, and deflated by consumer price index at constant 1964 prices.
13	Previous (lag) Reserves (RES_{-1})		Previous or lag reserves is reserves in previous year of each respective years.
14	Rupees per Dollar (RPD)	1960-2005 (IFS)	Rupees per dollar data are taken from International Financial Statistics

15	Economic Growth (EG)		Calculated from the Gross Domestic Product at Market Prices
16	Unemployment (UE)	1960(gap)[4] 1961(FBS) 1962-63(gap)[4] 1964-65(FBS) 1966(gap)[4] 1967-04(FBS) 2005(ESP)	Data for some years are not available and is proxied by taking average.
17	Gross National Product (GNP)	1960-2005 (FBS)	Gross National Product is in million of Pak Rupees, it is the sum of Gross Domestic Product at market price and Net Factor Income from Abroad (NFIA)
18	Net Factor Income from Abroad (NFIA)	1960-2005 (FBS)	Net Factor Income from Abroad are in million of Pak Rupees
19	Per Capita Income (PCIC)		Per capita income is used to measure poverty level and calculated by dividing Gross National Product by total population
20	Total Population (Tpop)	1960-2005 (ESP), (IFS), (PCO)	Population Data are taken from different sources
21	Real Balance of Trade (BT)	1960-2005 (FBS)	Balance of trade is the difference between Export plus re-export minus Import minus re-import, is in million of Pak Rupees, deflated by consumer price index at constant 1964 prices.
22	Real Export (x)	1960-2005 (FBS)	Export and re-export are added together to get total export. Export are in million of Pak Rupees, deflated by consumer price index at constant 1964 prices.
23	Real Import (m)	1960-2005 (FBS)	Import and re-import are added together to get total import. Import are in million of Pak Rupees, deflated by consumer price index at constant 1964 prices.
24	Foreign borrowing (fB)	1960-2005 (IFS)	Foreign borrowing is in million of Pak Rupees
25	Budget Deficit (BD)	1960-2005 (CBR) and (IFS)	Real Budget deficit is the government budget deficit and is in million of Pak Rupees [(5)].
26	Exchange Rate (ER)	1960-2005 (IFS)	Exchange rate is the market rate of Pak. Rupee per SDR
27	Export Price (x)	1960-2005 (FBS)	Unit value of export
28	Import Price (m)	1960-2005 (FBS)	Unit value of import
29	Relative Prices of Export (RPX)		Calculated from Export prices and domestic prices
30	Relative Prices of Import (RPm)		Calculated from Import prices and domestic prices
31	Government Revenue (GR)	1960-2005 (IFS)	Real government revenue in million of Pak Rupees [(5)].
32	Government Expenditure (GE)	1960-2005 (IFS)	Real government expenditure in million of Pak Rupees [(5)].

(1) Based on 2000-01 = 100

(2) Data were not available before 1964, so taking average ratio of both public and private investment to fixed investment for available years and then calculating the missing year value on the basis of that average.

(3) Data are at the end of each year's June

(4) Average for the labor force percentage and unemployed labor force percentage for the years 1961 and 1962, for the year 1961 and 1964, and for the years 1965 and 1967.

(5) Real value calculated using the CPI at constant 1964 prices.

SBP= State Bank of Pakistan; IFS= International Financial Statistics; ESP= Economic Survey of Pakistan; FBS= Federal Bureau of Statistic; CBR = Central Board of Revenue; PCO= Population Census Organization

Chapter 4

MACROECONOMIC PERFORMANCE OF THE PAKISTAN ECONOMY 1960-2005

4.1 Introduction

In this chapter macroeconomic performance of the Pakistan economy during 1960-2005 has been discussed in detail. Over the study period, five phases in the evaluation of Pakistan's budget deficit and macroeconomic performance are distinguished. These phases are differentiated on the basis of macroeconomic performance. The first phase of evaluation of Pakistan's budget deficit and macroeconomic performance is during 1960-1971, of General Ayub and Yahya regimes have been discussed. The second phase of evolution of Pakistan's budget deficit and macroeconomic performance is during 1972-1977, of Zulfiqar Ali Bhutto regime has been analyzed. In the third phase Zia ul Haq regime's macroeconomic performance during 1977-1988 has been discussed. In the fourth phase during 1989-1999, politician's regime macroeconomic performances are discussed. In the final phase during 1999-2005, General Pervaiz Musharaf regime's macroeconomic performance has been discussed.

4.2 Historical Background

Pakistan came into being on August 14, 1947 with two separate Muslim-majority wings, one situated in the eastern and another in the northwestern regions of the South Asia. These two wings comprised the provinces of Balochistan, East Bengal, the North West Frontier Province, West Punjab and Sindh. Partition resulted in mutual insurgence across India and Pakistan— millions of Hindus and Sikhs moved to India and millions of Muslims moved to Pakistan. In several princely states disputes arose including Jammu and Kashmir which led to the First Kashmir War (1948). Both Pakistan and India occupied large parts of the state in result of that war. Pakistan was considered a dominion in the commonwealth of

nations from 1947 to 1956. In 1958 Pakistan was declared a republic, and involved in second war with India in 1965. Pakistan president was Ayub Khan during the war with India. His descendant, Yahya Khan had to deal with the cyclone which caused 500,000 deaths in East Pakistan. Violent political repression and tension escalated civil war (Bangladesh Liberation War) and the Indo-Pakistani War of 1971 and eventually the separation of East Pakistan as an independent state of Bangladesh due to economic and political unrest in East Pakistan (Latif).

Since independence Pakistan could not find true democracy. A continuous interruption has been seen from military General either through their own ambition of power or wrong policies of elected government invited them to take the rein of government in their own hand. This mix up of democratic and military governments has not only weakened the economic position internally, but out side country image has also been affected badly, which further worsen the economic status of Pakistan.

According to the defined period of study, the different periods of government have to be split into five regimes. These five regimes consist of two democratic and three military regimes. The first regime was of military rule starting with Ayub khan, who ruled the country from 1958-1969, but in this study we take the regime of Ayub from 1960-1969. His successor, Yahya Khan ruled the country from 1969–1971(Zaidi, 1999).

The second tenure is that of democratic government, which came in shape of Zulfaqar Ali Bhutto leadership. Z.A. Bhutto ruled the country from 1972-1977. Again military General took charge of the government, this time General Zia ul Haq dismissed civilian government and imposed martial law. General Zia ruled the country from 1977-1988. Once again the democratic government was established in 1988, but unfortunately in ten years of democracy the elected

governments were dismissed four times. In these ten years two persons came into power twice each. Their combined tenure consists of ten years starting from 1988 to 1999. General Pervaiz interrupted again, removed Nawaz Sharif and took charge of government in his own hands in 1999 (Pakistan Daily Times, 2002).

4.3 Financial Dependency, Economic Growth, and Inequality in Ayub Khan (1958-69) and Yahya Khan (1969-1971) Regimes

Ayub Khan regime economic strategy had quickened GDP growth, but sharply accelerated inter-personal and inter-regional economic inequalities. The economic policies of the Ayub regime slowed down export growth, confined Pakistan's economy into an inefficient industrial base, and increased loan dependence in the next four decades (Zaidi, 1999).

The government introduced a highly regulated policy framework for import substitution industrialization in the consumer goods sector to flow into the manufacturing sector the large profits of traders in raw cotton and jute, after the Korean boom in 1953. In this policy framework, tariff protection for consumer goods manufacturers combined with direct import controls on competing goods. The average rate of effective protection estimated was as high as 271 per cent in 1963-64, and fell to 125 per cent in 1968-69(Kemal, 1999). The emerging industrial elite were facilitated to make huge profits from the domestic market with no competitive pressure to attain higher levels of efficiency and an export capability.

The government encouraged the import substitution industrial growth in the consumer goods sector more systematically, providing cheap credit, high protection rates to domestic manufacturers of consumer goods, and direct import controls on competing imports during 1960s. Import controls on machinery and industrial raw materials established earlier in the 1955, was removed at the same

time. New incentives for exports including bonus voucher scheme, tax exemptions, tax rebates, and accelerated depreciation allowances to increase post tax profits were offered in addition to various forms of protection. Exports of certain manufactured goods were enabled to receive, bonus vouchers equivalent to a specified percentage of the foreign exchange earned in addition to the rupee revenue of their exports. The exporters earned an additional premium through sale of the bonus vouchers to potential importers for a price usually 150 to 180 per cent above the face value in the market. Domestic manufacturers earned large rupee profits on exports through bonus voucher scheme, but in terms of foreign exchange no gain to the economy. Pakistan's main industries were producing negative value added (when input costs and output values are both measured in dollar terms) during 1960s (Soligo and Stern, 1965).

Pakistan's foreign exchange short fall, narrow export base and the debt problem persisted, during the 1960s despite large export volumes and import substitution was due to the phenomenon of negative value added in industry. The share of the traditional textile industry in total exports increased from 30 per cent in 1960s to 50 per cent in 1990s (Sikander, February 2001). It can be argued in a broader perspective that the emerging industrial elite were enabled to make large rupee profits from domestic and export sales, with no market pressures to achieve international competitiveness or to diversify into high value added industries through a range of protection measures and concessions in the 1960s. The nature of both economic elite and the government is illustrative in the experience of the 1960s. The government transferred rents to the industrial elite by means of tariffs manipulation, exchange rate mechanism and subsidies in order to secure its power base, which makes the economic elite tradition bound propensity dependence on government support. The sociological propensity of the ruling elite is illustrated in the economic policies and procedures during the 1960s, which seeks rents from government that in turn reinforces its power through such patronage. Stretching

back to the eighteenth century the region's history is full of such sociological propensities. These tendencies at an economic cost became a growing burden for a fragile economy persisted in varying extent for the next four decades (World Bank, 1997).

The government adopted a deliberate policy in 1960s, of concentrating national income in the hands of the upper income groups on the basis of economic assumption that the rich save a larger proportion of their income and hence a higher national savings rate could be achieved with an unequal distribution of income. In practice the assumption that it would elevate domestic savings over the time failed to become visible, while the policy of dispensing incomes in favour of the economic elite succeeded. In the rural sector, 15 percent of resources generated annually were moved to the urban industrialists and 63 to 85 per cent of these moved resources went into increased urban consumption. The actual savings rate remained below 12 per cent and never raise to targeted domestic saving rate of 25 per cent (Griffin, 1965).

A sharp increase in foreign aid requirement resulted, from the failure of the economic elite to save out of their increased income during the 1960s. In 1950-55 gross foreign aid inflows was US$373 million, and increased to US$2,701 million in 1965-70. The compositions of foreign aid also change from grants to higher interest loans[16], besides the rapid increase in inflows. Eventually, the debt-servicing burden rose dramatically. In 1960-61 debt servicing as a percentage of foreign exchange earnings was 4.2 per cent and increased to 34.5 per cent by 1971-72. In the next three decades the magnitude of this figure further escalated, and reached to 40 per cent by the year 2000 (Economic survey of Pakistan, 2003).

[16] Grant and grant type assistance comprised 73 per cent of total foreign aid during 1950-55. By 1965-70, this type of assistance had reduced to only 9 per cent of total foreign aid. See: Economic Survey, Government of Pakistan, Finance Division, Islamabad, 1974, p. 133.

A small group of families with inter-linking directorates dominated banking, insurance and industry in Pakistan by the end of the 1960s, due to government policy of re-distributing incomes in favor of the rich. In term of value added only forty-three families controlled 46 per cent of the value added in the large scale-manufacturing sectors. In banking sector, the concentration was even higher than industry, 84.4 per cent of earning assets and 91.6 per cent of private domestic deposits constituted by seven family banks. Furthermore, State Bank balance sheets compilation of listed companies shows that industrial companies controlled by the same families can obtain loans from the family banks. In the insurance industry forty-three industrial families controlling 75.6 per cent of the assets of Pakistani insurance companies, and tended to favor industrial companies owned by the same group. The major entrepreneurs and industrial families were a quite closely knit group. Many of the family members have caste and kinship relations, and sit on each other's boards of directors. Other families' members occupied one-third of the seats controlled by forty-three families of the seats of the boards of directors of companies (White, 1974).

The forty-three families had substantial power over government agencies authorizing industrial projects, besides dominating insurance, banking and industry. For sanctioning large-scale industrial projects, PICIC (Pakistan Industrial Credit and Investment Corporation) was the responsible agency. Seven directors of PICIC were from the forty three leading industrial families out of the total twenty one directors. Their active involvement in the public sector financial institutions directly affected their private economic interests.

The majority of Pakistan's population was suffering an absolute decline in their living standards, while an elite and highly monopolistic class was accruing wealth, during the process of rapid economic growth of the 1960s. In 1969-70 per capita consumption of food grain of the poorest 60 per cent of Pakistan's urban

population declined to 96.1 from an index of 100 in 1963-64. Over the same period in the case of the poorest 60 per cent of rural population the decline was even greater. In 1969-70 per capita consumption of food grain declined to only 91 from an index of 100 in 1963-64, in case of the poorest 60 per cent of rural population (Hamid, 1974). Rural sector poverty was so grave in 1971-72, that 82 per cent of rural households could not afford to provide even 2,100 calories per day per family member (Naseem, 1977).

Investment based on private profitability in an economy where there were significant differences in the infrastructure facilities available in the different regions, to be concentrated in the relatively developed regions. Consequently, regional variation would tend to broaden over time. This actually happened in the case of Pakistan. The Punjab and the Sindh attracted a larger proportion of industrial investment than the other provinces, due to having relatively more developed infrastructure. The growth in income was mainly in Karachi and Hyderabad in Sindh. Thus, economic inequalities broadened not only between East and West Pakistan, but also within West Pakistan.

Green revolution differential impact of agricultural growth accelerated the growth of regional income disparities within West Pakistan during the 1960s. Punjab and Sindh had a relatively larger proportion of their area under irrigation, and they experienced much faster growth in their incomes associated with the adoption of high yield varieties of food grain required irrigation, compared to Balochistan and North West Frontier Province. The existence of distinct language and culture in each of the provinces of Pakistan had escalated systematic growth of regional disparities which created heightened political tensions. Devolution of political power at the provincial level with authentically federal democratic structure required to address these tensions. Large federal expenditures and decentralization of political power make certain the development of the under-developed regions

and could ensure the unity of the country. The mounting economic variations between provinces created unstable political tensions in the absence of such a polity (Naveed and Akmal, 1974).

The effective land reform failed in Pakistan, and consequently landownership concentrated in the hands of a few big landlords. In 1972, large landowners owned 30 per cent of total farm area, and they rented out most of their land to medium and small-sized tenants. In the late 1960s, due to the availability of the green revolution technology the larger landowners found it beneficial to take up again some of their rented out land for self cultivation, using hired labour and capital investment. Consequently the economic polarization of rural society grew. The landlords' incomes increased, comparatively those of the poor peasantry, as their operated farm area declined. The increase in the farm area during the period 1960 to 1978, in terms of farms size of 150 acres and above, comprised half their total farm area in 1978, while in terms of the source of increase, formerly rented out land resume 65 per cent of area. About 0.8 million tenants became landless wage laborers in the period 1960 to 1973, due to growing landlessness of the poor peasantry accompanied by resumption of formerly rented out land. As many as 43 per cent had entered into the total rural wage laborers in Pakistan in 1973, as a result of polarization of the poor peasantry (Hussain, 1988).

The increased peasant dependence on the rural markets for agricultural inputs and outputs that were arbitrated by large landlords was associated with the polarization of rural society and increased landlessness of the poor peasantry. The poor tenant simply relied on the use of the land of landlord, while used his own seeds, animal manure and the government's canal water, in the pre 'Green Revolution' period. The social and political influence of the landlord remained intact in the post 'Green Revolution' period and the peasant began to depend on the landlord for the purchase of inputs (chemical fertilizers, pesticides, HYV seeds, the landlord's tube

well water, and credit). In many cases, with the agriculture commercialization the reliance of the poor peasant intensified, as renovation of annual production cycle annually depended on the intervention of the landlord. In respect to the landlord's power the peasant work at a wage rate below the market rate part of the time, but at the same time due to the decrease in his operated area following land resumption, the tenant was obliged to harmonize his income by working as a wage laborer. In order to pay back loans for inputs purchased, the peasant sell large part of his output at harvest time when prices were low, which further constricted his income. The peasant purchased his remaining consumption requirements at high prices from the market[17] .

The agriculture commercialization conveyed new mechanisms for the simulation of rural poverty, even though overall agricultural growth quickened in a situation where landlords and the local power structure managed markets for inputs and outputs. The 1960s period high rate agricultural growth could not continued in succeeding years. The rural poverty that had transpired in this period protracted over the next four decades.

4.4 Investment, Growth and Budget Deficit in Zulfiqar Ali Bhutto (1973-77) Regime

The most important initiative of the Bhutto regime was the nationalization of forty-three large industrial units in the capital and intermediate goods sectors such as fertilizers, cement, oil refining, chemicals and engineering. The government first nationalized the cooking oil industry and then cotton ginning, rice husking mills and flour milling just three years later.

[17] See, Akmal Hussain, For a more detailed analysis of poor peasant incomes 'Technical change and Rural Polarization' in *Strategic Issues in Pakistan's Economic Policy*, pp. 150-156.

after the 1965 war, (ii) high production cost and declining domestic demand impede the export production of the manufacturing sector, and (iii) lack of diversification of investment into non traditional industries by entrepreneurs where there was considerable growth potential.

Some sociological features that characterized most of Pakistan's entrepreneurial elite, declined private sector manufacturing investment in the post 1965 period, which continued in 1990s were: (i) dependence on foreign savings rather than own parsimony, (ii) dependence on subsidies of various kinds and state benefaction, and (iii) lack of innovativeness, risk avoidance and tradition bound nature.

Contrary to manufacturing investment, the compensation in form of an increase in the total public sector investment was more than the decline in the total private sector investment as a percentage of the GDP. The overall investment/ GDP ratio during the Bhutto period was slightly higher than the preceding period reached to 15.5 per cent (see table 4.1). GDP growth rate declined compared to the preceding period, despite of an increase in the total investment/GDP ratio (as table 4.2 shows, GDP growth during the Bhutto period was about 5 per cent compared to 6.3 per cent in the earlier 1960-73 period), which indicates a decline in the productivity of investment.

Public investment large proportion was going into unproductive spheres during the period, and the capacity of investment to generate growth declined. Defence and public administration were growing at the rate of 11.4 per cent, while the commodity producing sector was growing at only 2.21 per cent during the period. The lion's share of the public investment in the productive sector went into the steel mill project beginning in 1973. An outmoded Soviet design project, involved a complex technology that was both capital intensive and inefficient, and

consequently the propensity of declining productivity of investment was aggravated (Noman, 1988).

There was a sharp decline in the rates of return on investment in public sector existing manufacturing industries while some industries showed good profits to start with, due to a combination of poor management of existing units and improper location of new units on political grounds. In the Bhutto period the lowering of GDP growth happened because of two sets of factors :(i) public sector investment concentration in the unproductive sectors of the economy, and (ii) politics attachment in public sector investment decisions, regarding production management, technology choice and geographic location.

The imperative provision of enormous subsidies to agriculture and industry combined with obligation of maintaining a large military and bureaucratic apparatus in the Ayub period, compelled Z.A. Bhutto government to depend on financial borrowing.

Budget deficits broaden further as expenditures on defence and administration increased sharply in the Z.A. Bhutto period. Bhutto's policy of renovating the defence establishment in the hope of charming it over after his special appointment of General Zia ul Haq as the Army Chief increased defence expenditures. Bhutto build federal security force, which he believed to be personally loyal to him,[19] was the main cause of large expenditures on government administration. Loyalists outside the civil services cadre appointed at the upper and middle echelons through the policy of lateral entry in the enlarged and re-structured bureaucracy. These attempts in Bhutto period had huge financial loss to the national exchequer. Defence expenditure as a percentage of GDP was 2.7 per

[19] See, A. Hussain, For a more detailed discussion on the nature of changes within the state structure, *"Strategic Issues in Pakistan's Economic Policy"*, pp. 378 and 379

cent in 1965 and reached to 6.7 per cent in 1974-75. Similarly expenditures on general administration as a percentage of GDP increased from 1.1 per cent in 1964-65 to as much as 1.8 per cent in 1974-75 (Economic Survey of Pakistan various issues).

The losses of the public sector industries additionally loaded the budget, besides the increased expenditures on defence and administration. Poor performance of these industries on the one hand and pricing policy on the other generated the deficits in these industries. Restrained prices under official pressure of nationalized units were not recovering much more than their operating costs.

Investment undertaken were hardly finance from internally generated funds, thereby requiring heavy borrowing from foreign governments. The ability to finance increased government expenditures from tax revenue were constrained by two factors: (i) slowing down of GDP growth, and (ii) inability of government to improve direct taxation coverage, as a result, the deficit increased rapidly. The government reduced subsidies on consumption goods and increase indirect taxation in order to control the rising budget deficit. However, in the face of increasing current expenditures these measures failed to reduce the budget deficit. Monetary expansions were approached to finance budget deficit, ensuing in accelerated inflation.

National Development Volunteer Program (NDVP) and the People Work Program (PWP), the two initiatives designed to benefit the poor were enfeebled due to financial constraint following the huge non development expenditures. The aim of the former was to provide employment to educated unemployed and the latter to generate employment opportunities for the rural poor through labor intensive projects. Both of these programs were marginalized due to budgetary constraints (Noman, 1988).

4.5 Economic Growth and the End of Recession in Zia-ul-Haq (1977-89) Regime

The crippling fiscal and political pressures on the Zia regime moved forward from a slow down of GDP growth and government revenues together with growing debt servicing burden that had occurred at the end of the Bhutto period. But, for two factors: (i) provision of generous financial support by the West, and (ii) the speeding up of inflow of remittances from the Middle East which was US$0.5 billion in 1978 and reached to US$3.2 billion in 1984(Economic Survey of Pakistan, 1980), these had not created much economic problems for Zia regime. About 10 million people, mostly in the lower middle class and working class strata[20] directly benefited from these remittances. The inflow of funds not only eased balance of payments pressures, but also reduced potential political pressures.

The booms in the construction and consumption linked with Middle East remittances coupled with the easing of budgetary pressures, helped in stimulating economic growth. GDP average growth reached to 6.6 per cent during the Zia period 1978-88, as it was about 5 per cent during the Z.A. Bhutto period 1973-77 (see table 4.2). The data in table 4.1 indicates that increased in investment accelerated GDP growth up to some extent, during the Zia period. The gross fixed capital formation as a percentage of GDP was 15.5 per cent in the Bhutto period and reached to 16.8 per cent in the Zia period (see table 4.1).

The large numbers of public sector industries in the Bhutto period were denationalized in the Zia period, and the private sectors were assigned a greater role in the growth process. The private sectors offered a number of incentives such as duty free imports of selected capital goods, tax holidays, low interest credit and accelerated depreciation allowances in the Zia regime. Increased investment in

[20] As many as 78.9 per cent of emigrants to the Middle East were production workers, see, Jillani et. al., Labour Migration, PIDE, Research Report No. 126.

housing and remittances from Middle East coupled with these incentives, created an encouraging environment for new investment. Private sector gross fixed investment as a percent of GDP was 4.8 per cent in the Bhutto period, and reached to 7.1 per cent in the Zia regime (see table 4.1).

The public sector gross fixed capital formation as a percentage of GDP declined slightly to 9.7 per cent in the Zia period, which was 10.7 per cent in the preceding period (see table 4.1). The data of manufacturing sector indicates a considerable acceleration in the growth of overall manufacturing which increased from 5.5 per cent in the 1970s to 8.21 per cent in the 1980s. In large scale manufacturing sector, in terms of the composition of investment, intermediate and capital growth sectors shows significant acceleration in the investment. The percentage share of intermediate and capital growth sectors in the total manufacturing increased from about 43 per cent at the end of the Bhutto period to about 50 per cent in the mid-1980s (see table 4.3).

During the Zia period GDP growth rate increased, but this higher growth rate could not carried on due to continued poor performance of three strategic factors: (i) domestic savings rate required to be over 20 per cent but it remain below 10 per cent, (ii) exports as a percentage of GDP did not show any considerable increase and remain below 10 per cent (see table 4.2) and (iii) insufficient investment in social and economic infrastructure. Infrastructure projects funded through the Annual Development Program (ADP) start to get contracted, as defence and debt-servicing expenditure increased. Annual Development Program (ADP) expenditures as a percentage of GDP reduced to 6.2 per cent in the Zia period, as these were 7.4 per cent in the Z.A. Bhutto period (see table 4.4).

The fundamental structural restraints to GDP growth began to visible themselves surprisingly at the end of the Afghan War, when the support of debt relief and

foreign loans was withdrawn. Poor infrastructure and low export growth perpetuate high borrowings, low savings rates and balance of payments deficits, which escalate debt servicing pressures, joined together to flatten the GDP growth into a lingering economic recession in the 1990s.

4.6 Intensifying Crisis, Economic growth, Employment and Poverty in Benazir Bhutto and Nawaz Sharif (1989-1999) Regimes

Political instability, deteriorating law and order situation and use of public office for private gain probably had a significant unfavorable effect on private investment and GDP growth in the decade of the 1990s. However, these factors simply stressed the propensity for declining growth which was entrenched in structural factors apparent even in the 1980s.

The successive governments in this period not only failed to deal with the worsening infrastructure and the nascent financial crisis, but also further aggravated the adverse environment for investment. Total investment as a percentage of GDP reduced from 17.9 per cent in the period 1988-93 to 16.3 per cent in the period 1993-1998. Overall investment declined due to the sharp decline in the public sector investment from 8.7 per cent at the end of the 1980s to 5.3 per cent at the end of the 1990s, while the private sector investment did not increase and remained around 9 per cent (see table 4.1). Budgetary constraints of this period restrained to some extent the expansion of the public sector investment. Successive governments instead of reducing unproductive expenditures chose to reduce development expenditure, which reached to only 3.5 per cent of GDP in the last Nawaz Sharif regime 1997-1999 from an average of 7.4 per cent of GDP in the Z.A. Bhutto regime 1973-77 (see table 4.4).

The decline in the GDP growth and the investment for such a prolonged period in the 1990s had nevertheless been predicted and was exceptional in the history of

Pakistan. Slow export growth, low savings rates and worsening infrastructure resulting from structural constraints may not allow propagating the experience of high growth of the preceding three decades. There is stern possibility that high GDP growth may not be sustainable over the next five years if the present trend continued (Hussain, 1992).

GDP growth declined from 6.3 per cent in the 1980s to 4.2 per cent in the 1990s. The employment problem persisted during the 1990s, as employment growth has continued to remain at a low level of 2.4 per cent since the 1980s (see table 4.5). During the 1990s, labour productivity growth declined and both in agriculture and industry real wages of casual hired labour declined (Majid, 1997).

The employment elasticity in the manufacturing sector sharply reduced to minus 0.10 in the 1990s from 0.17 in the 1980s, while slight declined seemed in agriculture. In construction and trade industries employment elasticity significantly increased over the two decades (see table 4.6). The employment and poverty crisis during the 1990s[21] was due to the combined declining effect of output growth and employment elasticity in manufacturing and agriculture.

The increased in agricultural output variations is also important aspect of the dynamics of poverty creation in this period. The small farmers with fewer possessions are liable to experience a greater than average decline in yields compared to large farmers, when higher input per acre required to maintain yields. Due to lack of savings to gain support from, the small farmers are relatively more susceptible to bad harvests under conditions of unbalanced growth. Growing poverty and inequality, alongside appear with sluggish and more unbalanced

[21] Agriculture and manufacturing have historically engaged large number of employed labour force in Pakistan. In 1969-70, for example, 72.6 per cent of the total employed labour force was employed in these two sectors. This percentage fell by the mid-nineties, but was still over 60 per cent. See, Hussain (2004), Institution, Economic Structure and Poverty in Pakistan.

growth during the 1990s. The Gini coefficient used to measure the degree of inequality was 26.85 in 1992-93 and reached to 30.19 in 1998-99. Likewise the population below the poverty line was 26.6 per cent in 1992-93, and increased to 32 per cent in 1998-99 (see table 4.7).

According to ADB's poverty appraisal, in Pakistan the declining tendency in poverty during the 1970s and 1980s was reversed in the 1990s. The slow growths at the start of the period in the country encourage the incidence of poverty to increase significantly after 1997. More than 12 million people were added to poverty sphere during this period and the incidence of poverty increased from 26.6 percent in 1993 to 32.2 percent in 1999(Shah, October 2002).

Rural areas poverty in Pakistan has traditionally been higher than urban areas. In 1990s, rural areas poverty rose more sharply, and the incidence of rural poverty was considerably higher than urban poverty in 1999. Both in urban and rural areas of Pakistan during the 1990s, the increased inequality enhanced the negative impact of slowdown in growth on poverty during this period. More than 40 percent of the rural labor force depends exclusively on non-farm activities, while agriculture is the leading activity in rural society. Labor force non-farm activities sternly affected by decline in public sector development expenditure, low economic growth and slowdown of worker remittances during the 1990s (Statistical Yearbook of Pakistan, 1997).

A numbers of social and political factors explain the increase and existence of poverty in the last decade. With regard to social factors, poor governance has been acknowledged as the key fundamental cause of poverty in Pakistan. Private investors lost business confidence due to poor governance, which sequentially translates into lower investment levels and growth. With regard to economic factors, the immediate cause of the increase in poverty is the decline in GDP

growth over the last decade. All sectors show declined in growth, while growth in labor intensive sectors was slower than average in the 1990s. Short-term variations in poverty indices are primarily explain by economic factors. Social factors are considered more liable than economic factors for the existence of pervasive poverty over an extended period of time (Shah, January 2002).

4.7 Economic Growth, Employment and Poverty in Pervaiz Musharaf (1999-2005) Regime

Pervaiz Musharaf took the control of government in October 1999. His government inherited susceptible macroeconomic situation, tenuous reform performance by previous governments, and tricky relationships with lenders and donors. Fiscal extravagance in the 1990s caused serious macroeconomic imbalances. The trembling level of public debt caused a large fiscal deficit, which badly affecting the macroeconomic situation of the country. As a result, Pakistan compensated for its fiscal indiscipline in terms of slowing down of economic growth and investment coupled with rising levels of poverty. Over the last six years substantial efforts have been made to inspire financial discipline by following a sound fiscal policy. Fiscal discipline fortified the well-deserved macroeconomic stability in Pakistan. The world has been acknowledging over the past several decades, that financial regulation over a protracted period is indispensable for maintaining macroeconomic stability.

Employment link with economic growth, poverty, and improving the welfare of the population are so important and can hardly be over emphasized. Achieving higher economic growth and human development, enviable reduction in unemployment rate is essential, as it has strong linkages with the other ingredient of human welfare ultimately helps in reduction of poverty.

A rule-based fiscal policy can only propagate a protracted commitment to financial discipline, which effectively embody the restrictions and precludes governments from taking fiscally reckless route. Countries that have assumed elegant fiscal rules and executed effectual operational mechanism for putting into effect these, have made significant reliability in gains, reflected by easy admittance to financial markets.

One of the main indicators of development is the per capita income, which simply indicates the average standards of living of the people in a country or average level of prosperity in the country. Due to sluggish economic growth, rapid depreciating exchange rate and declining trend in workers' remittances are considered responsible for the growth of per capita income for a much slower pace of 1.4 percent per annum in the 1990s. During the last three years per capita income in dollar term grew an average rate of 13.5 percent per annum rising to $ 652 in 2003-04 from $ 582 in 2002-03, and further raised to $ 736 in 2004-05. Acceleration in real GDP growth, superb increase in the inflows of workers' remittances and stable appreciation in exchange rate are the main factors responsible for the sharp rise in per capita income (see table 4.8).

Pakistan faced a challenging year in 1999, with GDP growth reduced to 3.1 percent from 4.3 percent in 1998. The economy seriously affected due to the economic sanctions imposed by G7 countries, following the nuclear tests in late May 1998. Private capital inflows almost ceased, new official development assistance was suspended and economic growth declined sharply as investors lost confidence. Pakistan foreign exchange reserves declined to $415 million in November 1998, and faced a stern foreign exchange crisis. The government adopted short-term emergency policies included delaying servicing of foreign debt, implementing dual exchange rate system, and freezing foreign currency

deposits held in domestic banks by both residents and nonresidents (State Bank of Pakistan, 2001).

Over the last fifteen years due to the stagnation of fiscal efforts Pakistan sustained a large budget deficit throughout the 1990s. Comprehending the imperfection in tax structure, Pakistan initiated a concentrated tax reform effort in the early 2000. The government initiated wide range tax and tariff reforms and worked on fiscal transparency, in order to reduce tax rates, shifting the incidence of taxes from investment and imports to incomes and consumption and expanding the tax base to untaxed or under taxed sectors. Tax rates reduction was proposed to encourage voluntary tax payment and motivate investment and production, while fair distribution of tax burden among various sectors of the economy was proposed to be achieved through broadening of the tax base. Due to the prudent tax policy of the government, the rise in revenue becomes possible and total revenue increase from 13.3 percent of GDP in 2000-01 to 14.2 percent of GDP in 2001-02, while total expenditure continuously decreasing from 2000-01. Declining expenditures reduce the gap between revenue and expenditure and fiscal deficit reduced to 3.0 percent of GDP in 2004-2005 from 5.2 percent of GDP in 1999-00 (see table 4.9).

Slow economic growth and lost of investors' confidence in business slow down savings and investment rates. Gross domestic investment reduced to 14.8 percent in 1999 from 17.1 percent of GDP in 1998. The rising fixed investment in transportation, telecommunications and agriculture by the private sector is offset by the turn down in investment in construction, energy sectors and manufacturing. Although public sector investment increased by an average of 12.6 percent in nominal terms, but the slower growth in investment is attributed to poor performance of stock market. Gross national saving as percentage of GDP reduced to 11.1 percent in 1999 from 14.2 percent in 1998 (Economic Survey of Pakistan, 2000).

Pakistan is on the assenting frame of the demographic change. Around 60 million people would be in the working age group in the next few decades. The proportion of working age group has increased from 53 percent in 1986 to 56 percent in 2003. Total labour force also increased from 41.38 million in 2001 to 45.76 million in 2004. The government successful employment generation policies are apparent from the fact that the number of people employed increased by 2.87 million, whereas unemployed people increased by 0.3 million. Overall labour force participation rate in term of Crude Activity Rate (CAR) increased from 29 percent in 1999-00 to 30.4 percent in 2003-04. Similarly, labour force participation rate in term of Refined Activity Rate (RAR) increased from 42.8 percent in 1999-00 to 43.7 percent in 2003-04 (Labor Force Survey of Pakistan, 2004).

The employed labour force increased from 42.24 million in 2004 to 43.22 million in 2005. There is a consistent rise in the quantum of employment over the years for both rural and urban parts of Pakistan. Total rural employment increased from 28.98 million in 2004 to 29.65 million in 2005, similarly urban employment increased from 14.69 million in 2004 to 15.03 million in 2005. In 2004, rural employment increased by 1.98 million and urban employment increased by 0.89 million, whereas total employment increased significantly by .71 million from last year (ILO LIBORSTA).

Pakistan made considerable efforts to integrate its economy with rest of the world through foreign trade and investment. The dismal performance of the economy for a diversity of reasons in the 1990s caused the poverty to rise in the decade. The government of Pakistan realized the rising trends in poverty during the 1990s and adopted poverty reduction strategy in 2001 focuses mainly on the five areas: (i) sustain macroeconomic stability and quicken economic growth, (ii) human capital development, (iii) boost target intercessions, (iv) intensify social safety nets and (v) improve governance. Following this strategy, the country has achieved the

macroeconomic stability and enhanced economic growth. In 2005 real GDP grew by 8.4 %(see table 4.9), which seems to have made better the living standards of the people and, may help to trim down poverty among the lowest segment of population.

4.8 Summary

In this chapter growth, unemployment and poverty in historical perspective have been analyzed. The purpose was to comprehend the appearance of the process of escalating poverty, the tendency for loan dependence and slow GDP growth.

The Ayub regime was characterized by economic policies that encouraged severe social and regional economic differences. The rural poverty discernible today, was rooted in irregular agricultural markets and increased peasant dependency on the landlord during the Ayub period. State subsidies provided by the government confined the economy into an industrial structure which was dominated by low value added industries, incapable of generating adequate foreign exchange for the country.

Nationalization of industries in the Z.A. Bhutto period extended the sphere of power and support for the regime. Fiscal loss of the government resulted from the growing losses of nationalized units. Huge increase in expenditures on the state apparatus sharply, rising budget deficits during the Z.A. Bhutto period.

During the Zia period government funds were used for unproductive activities instead of urgently needed investment in the human development and maintenance of the irrigation system. After the end of Afghan war, when foreign financial assistance was withdrawn, growth and investment, budget deficits increased sharply and poverty intensified. Sharp declined in both capital and labour productivity together with declining elasticities of employment bring further

adverse changes in the structure of GDP growth. Reductions in capital productivity decelerate economic growth, while reduction in labour productivity declined real wages. Poverty tended to increase, due to both falling of GDP growth and real wages. Bad governance coupled with adverse changes in the structure of the economy, laid the foundation for a rapid increase in poverty and unemployment in this period.

During the democratic regimes of the 1990s, political instability, worsening law and order situation had a significant unfavorable effect on GDP growth, and on private investment. The rising financial crisis and the deteriorating infrastructure further intensified the adverse environment for investment. The sharp decline in the GDP growth and the investment in the 1990s generate employment problems. The increased incidence of poverty happened together with the slow economic growth in the country.

In the early part of Pervaiz Musharaf tenure economic growth declined sharply, private capital inflows almost stop, and the new official development support was suspended due to weak macroeconomic performance and appalling relationships with lenders and donors of previous government. Prudent reform policies of his government ensure rise in revenue. Total revenue increase while total expenditure decreases, reducing fiscal deficit gradually. The total number of employed persons both in the rural areas and the urban area increase.

Table 4.1
Gross Investment as a % of GDP (Period Averages)

Period	Total GFCF as % of GDP in current prices	Private GFCF as % of GDP in current prices	Public GFCF as % of GDP in current prices
1960-1973	15.28	8.21	7.26
1973-1978	15.50	4.79	10.71
1978-1988	16.77	7.10	9.66
1988-1993	17.95	9.22	8.73
1993-1998	16.31	9.32	7.36
1998-2000	13.26	8.10	5.31

Source: Economic Survey of Pakistan, Economic Advisor's Wing, Finance Division, Various issues.
Note: GFCF is Gross Fixed Capital Formation.

Table 4.2
Percentage Share of Selected Macro-Economic Indicators in the GDP of Pakistan (Period Averages)

Period	Percentage Growth Rate of Real GDP in Market Price	Domestic Savings as % of GDP	Average Growth Rate of Export (%)	Export as % of GDP	Trade Balance as % of GDP	Worker Remittances as % of GDP	Debt Servicing as % of GDP
1960-73	6.26	12.99	16.19	4.57	-5.11	--	1.28
1973-78	4.99	7.29	10.31	8.79	-7.27	--	2.04
1978-88	6.6	8.15	14.33	9.59	-8.66	7.71	2.44
1988-93	4.92	12.99	9.19	13.01	-5.00	4.54	3.02
1993-98	3.14	14.98	5.15	13.5	-3.99	2.55	3.48
1998-00	4.17	-	.16	13.69	-2.33	1.71	2.55

Source: Economic Survey of, Economic Advisor's Wing, Finance Division, Various issues.

Table 4.3
Manufacturing Sector's Growth Rates

Period	Large Scale Manufacturing	Small Scale Manufacturing	Total Manufacturing
1959-60 to 1969-70	12.43	2.85	9.24
1970-71 to 1979-80	4.84	7.21	5.50
1980-81 to 1989-90	8.16	8.40	8.21
1990-91 to 1995-96	4.40	7.88	5.59
1996-97 to 1999-00	2.21	5.31	1.29

Source: Federal Bureau of Statistics, and Economic Survey of Pakistan, Economic Advisor's Wing, Ministry of Finance, 2000-2001

Table 4.4
Period Average of ADP as a Percentage of GDP

Period	ADP as a % of GDP
1972-73 to 1976-77	7.4
1977-78 to 1986-87	6.24
1987-88 to 1996-97	4.26
1997-98 to 1999-00	3.5

Source: Economic Survey of Pakistan, Economic Advisor's Wing, Finance Division, Various Issues.

Table 4.5
Percentage Growth Rate of GDP, Employment and Productivity in Two Decades

Growth	1980s	1990s
1. Overall GDP Growth	6.3	4.2
2. Total Employment Growth	2.4	2.4
(i) Employment Growth in Agriculture	1.9	1.6
(ii) Employment Growth in Manufacturing	1.4	-0.4
3. Total Productivity Growth	3.9	1.8
(i) Productivity Growth in Agriculture	-2	1.7
(ii) Productivity Growth in Manufacturing	7	4.6

Source: Economic Survey of Pakistan various issues and An Employment Strategy, ILO/SAAT, December 1997

Table 4.6
Percentage Employment Elasticities of Output by Sectors in Two Decades

Employment Elasticity	1980s	1990s
Agriculture	0.49	0.48
Construction	1.05	1.81
Manufacturing	0.17	-0.10
Transport	0.48	0.14
Electricity & Gas	-0.39	0.32
Trade	0.37	1.22

Source: Economic Survey of Pakistan, various issues and An Employment Strategy, ILO/SAAT, December 1997

Table 4.7
Income Inequality and Incidence of Poverty during 1990s

HIES	Income Inequality			Poverty Index		
	Urban Area	Rural Area	Pakistan	Head Count	Poverty Gap	Severity of Poverty
1992-93	31.70	23.89	26.85	26.6	4.5	1.2
1993-94	30.70	23.45	27.09	29.3	5.5	1.5
1996-97	28.77	22.65	25.85	26.3	4.5	1.2
1998-99	35.96	25.21	30.19	32.2	6.9	2.2

Source: Federal Bureau of Statistics, April 2001, and author tabulation

Table 4.8
Per Capita Income 1999-2005

Years	Per Capita Income in US Dollar	Percentage Increase (Decrease) in per capita income
1999-2000	526.0	---
2000-2001	501.0	(4.75 %)
2001-2002	503.0	.339 %
2002-2003	582.0	15.71 %
2003-2004	652.0	10.74 %
2004-2005	736.0	12.88 %

Source: Economic Survey of Pakistan 2004-05 and author calculation
Note: Figure in parenthesis indicate decrease in per capita income

Table 4.9
Fiscal Indicators as a Percent of GDP

Years	GDP Real Growth	Total Revenue	Total Expenditure	Overall Fiscal Deficit
1998-99	4.2	15.9	22.0	6.1
1999-00	3.9	13.5	18.7	5.2
2000-01	1.8	13.3	17.2	3.9
2001-02	3.1	14.2	18.8	4.6
2002-03	5.1	14.9	18.6	3.7
2003-04	6.4	14.3	17.3	3.0
2004-05	8.4	13.0	16.0	3.0

Source: Economic Survey of Pakistan, 2005

Chapter 5

EVALUATION OF GOVERNMENT BUDGET DEFICIT AND PUBLIC DEBT

5.1 Introduction

The purpose of this chapter is to analyze different sources used for budget deficit financing in Pakistan. First, Keynesian brief idea about budget deficit in general and Pakistan experience with budget deficit using different sources and deficiency of each source is analyzed in particular. Second, various common problems attached to public debt, and different sources of financing fiscal budget deficit used in Pakistan in different times are explained in detail. Third, domestic public debt structure and composition of public debt is explained. Fourth, privatization process and their inflow utilization in budget deficit are studied. Fifth, external debt structure and share of each in total debt is assessed. Sixth, trend in budget deficit and public debt is explained.

5.2 Background of Budget Deficit Financing

Deficit financing of public expenditure lingered at the heart of policymaking and academic debate in less developed countries (LDCs) during the post-colonial era. The Keynesians and the socialists who dominated LDCs' policy sphere for most of the 1960s and 1970s provided the intellectual argument in favor of such a dynamic role for governments. In socialist countries, the main feature of the state intervention took control of the key sectors of the economy through nationalization, aimed for the ultimate replacement of the market by a centrally planned economic system. In contrast, Keynesian-style state intervention, in the capitalist-oriented LDCs, took the form of deficit financing (excess of government spending over revenue) aimed to reverse economic decline and accelerate economic growth and employment. On the other hand, in 1980s, neo-classical schools such as those of the McKinnon (1973) and Shaw (1973) tradition was

adopted to policy forums, which was followed by IMF-World Bank backed privatization and restructuring headed for the free-market system in almost all LDCs (Nafziger, 1997).

Pakistan, like all other developing countries also faced stern fiscal deficit from the very beginning. In the context of fiscal deficit, the basic feature of the problem is that the government has strict fiscal constraints to start major initiatives for improving the economy or directly attacking deficit either through reduction of government expenditures or increase taxes. In most of the previous decades Pakistan deeply relied on strictly bounded donor's conditionality foreign loan. These foreign loans further widened the burden of expenditure, instead to ease the way for boosting up of economy. In the last decade due to large foreign loan and disappointing relation with donor's agencies Pakistan was near to become defaulter. After 9/11 the sympathetic outside environment and prudent fiscal policies of present government smooth the way for decelerating fiscal deficit and improve economic growth. Pakistan fiscal deficit decreased constantly in last five years, but the earthquake in 2005 took the expenditure away from the plan target which increase budget deficit again (IDA, 2007).

In Pakistan national saving and investment remained low, due to persistent fiscal imbalances, deterring growth performance. Many developing countries have administered to sustain relatively large deficits, but such deficits are improbable to be sustainable because the economy grows faster than government debt in the long run. During the 1980's in Pakistan the fiscal deficit as a percentage of GDP averaged over 7% and financed largely through wide controls on financial markets, comparatively strong monetary growth and external borrowing, growth also averaged 6% in the 1980s. In the early 1990s unfavorable supply conditions increased the fiscal deficit to over 9% of GDP and the escalating external debt

burden ultimately led to a financial and exchange market crisis in 1993, followed by a quick turn down of growth to about 2.5%(Mangi, 1996).

Pakistan history is full of social and economic crisis, but the profound and the protracted recession, grave debt servicing burden and sharp increase in poverty seen in the last decades[22]. GDP growth was 6.1 per cent during 1980s and declined to 4.2 per cent during the 1990s. Large scale manufacturing sectors growth was 8.2 per cent during 1980s and declined to 4.4 per cent during 1990s. The percentage of population below the poverty line was 18 per cent in 1987 and increased to 34 per cent in 1999. Debt servicing as a percentage of foreign exchange earning was 18 per cent in 1980 and increased to about 40 per cent in the year 2000(Economic Survey of Pakistan, 2002).

The public debt issue has become an important among academicians, donors, multilateral organizations and policy makers. In Pakistan public debt constitutes an integral part of the government budget deficit financing. The government borrowed in the past, borrowing at present and most likely will carry on borrowing in the near future. Borrowing is sometimes essential to finance investment required for employment generation, poverty reduction and accelerating growth. However the queries are there concerning the quality of the use of government borrowing, expressly how the funds are being used, and whether the government is capable to pay back its debt.

The composition and level of public debt have a significant effect on a country's economic development and its ability to oppose shocks and calamity. If public debt impedes a large part of the savings of the economy, it escorts to crowding-out of private investment. Apart from rising the tax burden of future generations,

[22] The 1990s decades bear the most crises which not only slow down economic growth, but also show extended increase in unemployment and poverty.

excessive borrowing, can also raise interest rates, and making private investment more costly. If the cost of debt servicing comprises a large part of government revenue, funds available for enviable items like education, health, and infrastructure get shrink. Furthermore, sustainability of debt is also turn out to be a vital issue and a number of central banks guide the government on debt administration. An unsustainable debt level is probable to have a major impact on monetary policy objectives. It is, therefore, required to see how domestic public debt is being used and whether the government is placing a rising force of debt burden on to the future generations.

5.3 Public Debt Problems

Allowing unlimited government borrowing in Pakistan, there are some major lines of objections. Some of these problems are

5.3.1 Chain React Problems

Burdens of paying for current public spending through government borrowing transferred forward through time, and placed on the shoulders of those future generations who will be exposed to the taxes essential to serve and repay public debt. This goes ahead with grave systematic political shortfalls. The main trouble is the political agents, where authority uses up without taxing. Future period taxpayers have no power to effectively influence current period political settings.

The political leaders in Pakistan without a large increase in taxation, increased current expenditure which smooth the way for politicians to be reelected. So, due to the lack of incorporation of the present period interests of future period taxpayers, the incentives to generate fiscal deficits are higher for future generation. Furthermore, if a current period politician decrease borrowing (Clinton in the United States), there is no assurance that a future period politician (Bush in USA) will not go for deficit again (Buchanan, 1997).

5.3.2 Domestic Public Deficits, Interest Rate and Inflation

Domestic public deficits and inflation rates are not intimately linked. The available literature shows that inflation and deficits show no easy association. But in long-run the correlation between inflation and money creation used for deficit financing follows the typical "Laffer curve", where the average revenue from money creation(Seignorage) to the government first rises and then falls.

Most of the developing countries start rapidly money printing which lead to inflation, due to lack of planning prospect and revenue sources. High inflation tax revenue yield from this created inflation remain for a short period, and falls as soon as people reduce holdings of their money in return to higher inflation. Financing fiscal deficits through debt may or may not affect real interest rates. When external financing is not accessible, domestic debt used for financing higher fiscal deficits raise real interest rates in countries where financial markets are not repressed. On the other hand, higher domestic public borrowing leads to external capital inflows and higher foreign debt, without affecting real interest rates when domestic financial markets are assimilated with world capital markets.

Pakistan's story is different to some extent as the government represses financial markets through obligatory public debt placements, manipulating external capital flows and controls domestic interest rates. Fiscal deficits forced up inflation suppressed real interest rates, as the nominal interest rate is fixed. In Pakistan fiscal deficits has been financing, an all too common through such financial repression.

5.3.3 Crowding out

Government's bonds supply affects interest rates, ceteris paribus, the interest rate increases and the price of bonds decreases, if there are excessive supply of government bonds in the market. At the same time, given restricted capital to

investors, the interest rate of loans and enterprise bonds rises too, consequently, financing gets more costly, and have a pessimistic effect on private investment[23]. Both public investment and public deficits affect private investment. The crowding-out effect in financially repressed and high deficit economies can have bad effects than the unrepressed economies, as in the former types of economies the quality of investment suffers. However, the effect of public investment on private investment is positive in Pakistan. Private capital is expected to be formed, when public capital moves up the profitability of private project, on the other hand, formation of private capital is likely to fall, when public capital substitute private capital (Islam, 1998).

5.4 Domestic Public Debt Structure

Total public debt comprises domestic public debt. According to the specific laws and purposes of the government, domestic public debt created from the domestic market for consolidated fiscal deficits, includes the amounts advances for the time being from the surplus of the government accounts accumulated in the general account of the state coffers. Following is the structure of domestic public debt:

(1) Purposes

a. For financing and refinancing of consolidated budget deficits, government borrowing from the domestic market.

b. According to special laws government borrowing for bank reforming, recapitalization and other purposes

(2) Instruments

a. Treasury bills

b. Government bonds baptized in local currency

c. Government bonds baptized in foreign currency

[23] In the case of crowding out, the income of future generations reduced. The crowding out reduces private investment, and thus growth, or higher debt abroad leads to higher debt payments and thus to reduced domestic income.

d. Other government securities (NSD certificates)

(3) Maturity

a. Short term government securities (T<=1 year)

b. Medium term government securities (1<T<3)

c. Long term government securities (T>=3)

(4) Owner's classification

a. Domestic non-banking financing

b. Domestic Bank financing

- Commercial Banks
- State Bank of Pakistan

Domestic public debts restriction is vital for macroeconomic stability. Public sector stability is a good sign of macroeconomic strength. The most consistent indicator of entire macroeconomic stability is the size of the government deficit. Macroeconomic imbalance causing shortages of foreign exchange, the crowding-out of the private investment, foreign debt crisis and inflation due to high deficits. The type of macroeconomic imbalance depends on the sources of fiscal deficit financing, namely, running down of foreign exchange reserves, domestic borrowing, printing money and foreign borrowing.

The question arises when borrowing should be received, once it is acknowledged that debt shifts burdens on future generations who have to pay back it. According to the classical view, all expenditures are not unproductive and borrowing for public investment is necessary because a part of the benefits falls on future generations. Under the classical view concept, the financing of public investment should be matched to the time structure of its benefits. Though being a clear concept, in fact there are some problems in execution. First, clear definition of the boundaries of investment, and what amount of benefits received by which generation is difficult to estimate. On the other hand, every investment needs not

to be advantageous and to create profits in the future. Given the political pressures and interests of those engaged in decision making, such approximation can often be incorrect, if cost benefit analysis is launched.

5.5 Domestic Debt's Composition

In Pakistan domestic debt comprises floating debt (short-term), permanent debt (medium and long-term) and un-funded debt (medium and long-term, mostly national saving scheme related). In current decade, the increase in the domestic debt in absolute terms came mainly from a rise in the stock of floating debt, which counterbalances a decrease in stock in the other two debt divisions, permanent and unfunded. The share of floating debt experienced considerable decline, during the last five years, recovered and escalated to 34.3 percent in 2004-05. The stock of unfunded debt consecutively decline for three years, mainly because of the ban on institutional investments in NSS schemes, lowering of interest rates, the fall in stock of permanent debt and maintaining long term interest rate amiable to long term investment. Consequently, the government decided not to issue PIBs, though short term interest rates increased considerably, but long term interest rates did not rise to a great extent (Economic Survey of Pakistan, 2006).

5.5.1 Unfunded Debt

The unfunded debt stock has been consecutively sliding downward for last three years started since 2002-03. In the last three decades, the decline in 2002-03 was the first ever decline in stock of unfunded debt. The unfunded debt stock declined by Rs 10.2 billion during 2003-04, and declined further by Rs 55 billion during 2004-05. This type of debt instrument comprised National Savings Schemes (NSS) and net sales of NSS instruments turned down mainly due to reduction in rate of return on various NSS schemes and partial accessibility to other comparatively high yielding financial products in the market. The connection between rates of return on NSS instruments and the PIB yields facilitating to

reduce distortions of interest rate in the economy. To maintain control on long term interest rates in high inflation the government rejected all the bids in every auction during 2004-05, due to which the standard yield on PIBs remained unchanged. Consequently, the NSS instruments' rates of return were reserved unchanged as well. The unfunded character of this component of debt had sternly complicated the administration of domestic debt in the past and the persistent impact of extremely expensive long term debt taken in near past carry on to influence debt servicing liability on domestic debt (Economic Survey of Pakistan, 2005).

5.5.2 Floating Debt and Permanent Debt

The increase in floating debt stock continued in 2004-05, and reached to Rs 778.2 billion. For the last five years, the permanent debt increased steadily with an average annual increase of Rs. 56.0 billion, however declined by Rs. 25.0 billion in 2004-05. Apart from prize bonds, all main components of permanent debt declined. The outflow from maturing FIBs and PIBs was greater than the increase in the stock of the prize bonds by Rs. 3.3 billion. The government has not extracted money from further auction of PIBs, because of trepidation of rising interest rate and ambition to shut the gap between yield of treasury bill and PIB. When yield on PIB is smaller than yield on treasury bill, then issuance of corporate bonds can help to stabilize the secondary and long term paper market. Bank will be able to invest in papers giving good interest opportunities, when treasury bill yield decline, which help the government to raise long term funds at a better price. The auction of PIBs would increase debt servicing liabilities of the governments in a situation of high leveraged market (Economic Survey of Pakistan, 2006).

5.6 Privatization and Fiscal Deficit

Privatization concept is quite old to the policy makers in Pakistan. Perhaps it is traced back as in 50s, when Pakistan Industrial Development Corporation (PIDC) was formed in 1952 to encourage the industrial development in the country. The PIDC started over 50 industrial activities all over the country and after their successful administration and functioning, these industrial units were transferred from the public to the private sector. The process of nationalization, started in the first half of 70s, was reversed in 1977. The privatization of State Owned Enterprises (SOE) turned out to be a main tool of economic policy of the government in late 80s. However, the privatization process becomes effective during 1991 in Pakistan.

Privatization objectives have varied at different points in time. Privatization was followed to denude 14 loss making manufacturing units and raise funds by selling shares of profit making units for paying back public debt and thus decreasing debt servicing[24], during 1988-90. Privatization commission did not clearly explain the fundamental validation for privatization in 1991. However four major objectives apparent from different statements issued by the government are:

- Improved level of efficiency of production process
- Reduced fiscal deficit and debt burden of the government
- Broadened equity capital base
- Released resources for the social and physical infrastructures

Privatization commission of Pakistan in 1998, came up with a very clear mission statement contained: *"Privatization is envisaged to foster competition, ensuring greater capital investment, competitiveness, and modernization, resulting in*

[24] See Rothscheld, N.M. et al (1989): *"Privatization and public participation in Pakistan*, Islamabad, International Finance Corporation.

enhancement of employment and provision of improved quality of products and services to the consumers and reduction in the fiscal burden".

Fiscal deficit reduction is one of the main objectives of the privatization. Privatization was supposed to help in paying back the public debt, reducing the debt servicing obligations and at the same time to reduce the surplus of autonomous enterprises. Fiscal deficit tend to fall, when reduction in debt servicing surpasses the fall in surplus of autonomous bodies (Kemal, November 1999).

Privatization's idea caught impetus in 1990s, but did not capitalize due to unstable political governments. After 1999 this idea changed into reality, appreciated the significance of proceed from privatization to be utilized in deficit financing. Privatization proceeds applied for deficit financing showed consistent increase except in 2002-03, decreased by 29.7 percent from previous year. The proceeds from privatization were Rs. 11,212 billion in 2003-04 and reached to Rs.28, 327 billion in 2004-05. Privatization proceeds share in deficit financing increased consecutively for the last five years. In 2001-02, the privatization proceeds share in total domestic financing of budget deficit was 7.78 percent, and reached to 29.33 percent in 2004-05(see table 5.1)

5.7 Structure of External Debt and Liabilities

Pakistan heavily relied on external sources of financing to maintain its economic development. External debt and liabilities of Pakistan stayed high almost for the last three decades, but at the end of the 1990s decade it touched intolerable levels, posing a grave threat to the economic future of the country. The various reasons responsible for the quick increase in the external debt included:

i) Large fiscal deficit persist for an extended period of one decade

ii) Borrowed resources are not utilized prudently

Public and publicly guaranteed debt in Pakistan was the main kind of external debt for many decades. It was 87 per cent of total external debt in 2000. However, a significant change in the composition of external debt was observed in 2000s, as the share of private non-guaranteed debt turned down quickly from 9 per cent in 2000 to 3.8 per cent in 2005(see table 5.2).

5.8 Budget Deficit and Public Debt: Trends

"I place economy among the first and most important virtues, and public debt as the greatest of dangers. To preserve our independence, we must not let our rulers load us with perpetual debt" (Thomas, 1816).

Pakistan depends on foreign aid from the very beginning, because the resource consumption is not equaled with the resource generation. The main factors responsible for the mess during the many successive regimes in Pakistan include the inefficient utilization of the government resources, embezzlements by the political and administrative elite, mistaken and irregular economic policies of the government. Foreign aid is considered helpful for a country, provided it helps to overcome the obstruction in the way of economic development. In the 1950's and the 1960's about 70 percent of the foreign aid package of Pakistan was nonrefundable grants and only 30 percent were loans and credits. Of this, only 20 per cent were spent on non-development purposes and about 80 percent were spent on development expenditures. The situations reversed in the 1980's and the 1990's. Almost all of the foreign resources were in the form of loans, credits and direct investments were available at very strict conditionality and high interest rates, and about 80 per cent of the Pakistan's foreign aid package was spent on defence and other non-development expenditures. All of the foreign assistance was spent on debt servicing in the 1990's and in the 2000. In Pakistan the cost of debt servicing becomes so high, that foreign aid became a burden, instead of boosting up the economy (Aslam, 2001).

iii) Real cost of government borrowing rising

iv) Inflow of foreign exchange reserves declined and exports remain sluggish

Another reason at the back of the rising debt was the changing nature of debt from grant and soft term assistance to hard term loans. The feeble situation of public debt put pressure on the exchange rate, which further stress the problems of rising debt.

External debt of Pakistan is constricted from nonresidents on a well-defined settlement structure by resident private and public entities. It consists of (i) private non-guaranteed debts, (ii) public and publicly guaranteed debt and (iii) IMF loans. Residents mainly held foreign exchange liabilities with no structured settlement schedule. The present situation of total and external debts of Pakistan is different from the late 1990s and early 2000s, where both ratios were very high. Pakistan's public debt was 88.8 percent of GDP at the end of 2001, in which slightly over half was external debt. The Pakistan's economy remained under pressure, due to declining reserves, weak economic growth and a quickly depreciating exchange rate. However, the recent history of Pakistan has been characterized by a stable policy environment and auspicious exogenous factors. The declined in debt became possible, due to a sizeable increase in remittances and exports, stable real exchange rate policy, low real domestic and external interest rates and the increase economic growth rate. Pakistan's total stock of external debt and foreign exchange liabilities in US dollar terms grew at an average rate of 7.4 percent per annum during 1990-99. Total stock of external debt and foreign exchange liabilities were $ 20.5 billion in 1990 and increased to $ 38.8 billion by end 1999, but declined slightly to $ 37.8 billion in 2000. Thereafter, it showed a declining trend. On the other hand foreign exchange earnings either remained stagnant or increased at a very slow pace during the same period (see table 5.2).

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Pakistan again involved in war with India at the start of 1970s, this time East Pakistan separated, which remained big blow for Pakistan economy. Nationalization of heavy industries shook the confidence of private sector, cut down foreign capital inflow, and turned down export due to high production cost. Most of the investment in 1970s was made in unproductive sectors of defence and administration. The gap between revenue and expenditure remained widened due to all these factors. In 1970 the expenditure was 16.55 % of GDP, while revenue was 16.77 % of GDP, but after that the expenditure increased and revenue decreased. In 1973 the expenditure increased to 16.49% of GDP, while revenue dropped to 12.23% of GDP. The gap between revenue and expenditure existed throughout in 1970s. In 1979 the expenditure and revenue were 18.59% and 15.14% of GDP respectively. Average budget deficit in 1970s was 5.3% of GDP (see figure 5.1).

The slowing down of government revenues and quickly growing burden of debt in 1970s have placed severe fiscal pressure in 1980s, but the inflow of remittances from the Middle East and financial support from West relieved the budgetary pressure. In late1970s the nationalization process overturned, offered a number of stimuli to private sector. Economic growth rate increased in 1980s, but did not maintained later on due to low domestic saving rates, low export and public investment were directed towards inadequate economic infrastructure[25]. Debt servicing and defence expenditure increased. The average annual budget deficit was 7.1% of GDP in 1980s. Expenditure increased persistently after 1982. In 1989 the expenditure increased to 24.87% of GDP, while revenue also showed continuous increasing trend throughout 1980s except in 1982 and in 1985, where revenue decreased from previous level. Revenue was 16.27% of GDP in 1980 and increased to 18.63% in 1989 (see figure 5.1).

[25] See chapter 4, section 4.4

The return of democracy in Pakistan after the death of General Zia in 1988, had not gained it true shape, because of the dissolution of assemblies for four times in short period of eight years[26]. The unstable political circumstances, worsening law and order situation and the World Bank and IMF guided economic policies further brought calamity for overall economy. In order to reduce budget deficit additional taxes had been imposed without widening the tax base and public expenditure reduced in the area of development instead of defence, wasteful current and recurring expenditures. In 1990 the expenditure and revenue were 22.44% and 19.14% of GDP respectively. The expenditure increased to 24.63% of GDP in 1993, revenue first went down in 1991 and then moved up, reached to 18.10% of GDP in 1993. After 1996 both revenue and expenditure moved downward. The expenditure and revenue were 21.34% and 15.80% of GDP in 1999 respectively. Average annual budget deficit was 6.9% of GDP in 1990s (Economic Survey of Pakistan, 2001).

Pakistan faced grave macroeconomic imbalances in 1990s due to fiscal over spending. The persistent large fiscal deficit in 1990s, due to unsuited level of debt and craggy relationship with lenders and donors also gravely affected the economic performance of overall economy after 1999. But following sound fiscal policies and Pakistan's participation in war against the terrorism as a front line state flattened the relation and eased the rugged attitude of lenders and donors, which confiscated much of the anxiety faced in previous decade. In 1999 revenue and expenditure were 15.80% and 21.34% of GDP respectively. Both revenue and expenditure decreased in following year. Revenues continued to increase in 2002 and in 2003 then decreased, while expenditure increased in 2002 and decreased after that. In 2005 revenue and expenditure were 12.90% and 16.37% of GDP respectively. Overall fiscal deficit in 2000 was 5.4% of GDP, decreased to 3.0% of GDP in 2005(see figure 5.1).

[26] Between August 1988 and August 1997, Pakistan had four general elections.

5.8.2 Public Debt Trend in Pakistan

Public debt becomes a matter of concern for developing countries, because of its unbeneficial uses. There is great deal of hesitation about the implication and outcomes of large rising budget deficits responsible for accumulating public debts, due to increasing consciousness and concern regarding budget deficits and public debts. In developing countries the public debts are largely arising, due to the deviant and adverse level of fiscal deficit. Fiscal deficits in Pakistan are considered to be the source of almost all the evils together with debts facing Pakistan economy. Pakistan like many other developing countries considered to pursue budgetary strategies that decrease, preferably to eradicate the whole deficit, which is considered to be the fundamental reason of enormous public debts.

Debt crisis of Pakistan was propagated by a combination of factors. The most important one was the shaky economic performance in 1970s and in 1990s due to external border tension with India and internal political volatility. Pakistan lost its East Wing in war with India in early 1970s, and nationalization of industries shuddered the confidence of private sector hindered the growth performance. Political volatility in 1990s and the sanctions imposed by the donors, lenders agencies and international community on the country after its nuclear blasts were scratchy, and deteriorate the debt situation in Pakistan. The external shocks like rise in oil prices, the collapse of export commodity prices, higher interest rates and subsequent increased cost of loans were also responsible for the increasing burden of debts in Pakistan. These external shocks sternly affected Pakistan economy, due to a brittle productive base, structural deficiency, limited international buyers for its exports and high reliance on external sources (Aslam, 2001).

The World Bank and IMF were always approached for the rescue and embarked on making conditions that Pakistan had to fulfil in order to get further aid. Pakistan economy neither generated enough resources for investment purpose nor

improved the standard of living of its people and was declared weak. Pakistan's weak economy, low income and employment generating capacity and low investment meant that it was not in a position to lead towards self sufficiency or payback the loans taken from external and internal sources.

Pakistan had close connection with the donors and lending agencies from the very beginning. Apply for loans from the World Bank and IMF involved multi-tiered process. It started with a request for aid. The WB and IMF then appraised the country's economy and formulated recommendations for policy and structural changes. These programs were called Structural Adjustment Programs (SAPs), or Poverty Reduction Strategy Papers (PRSPs). These adjustments tightly pursued the capitalist model, under which the prerequisite for developing countries to qualify for a loan were: reduce public spending, integrate domestic market with international markets and privatize public enterprise. These changes commenced in the late 1970s and sustained through the 1990s, mainly because Pakistan was more in need of aid to pay back its creditors (Anwar, 2002).

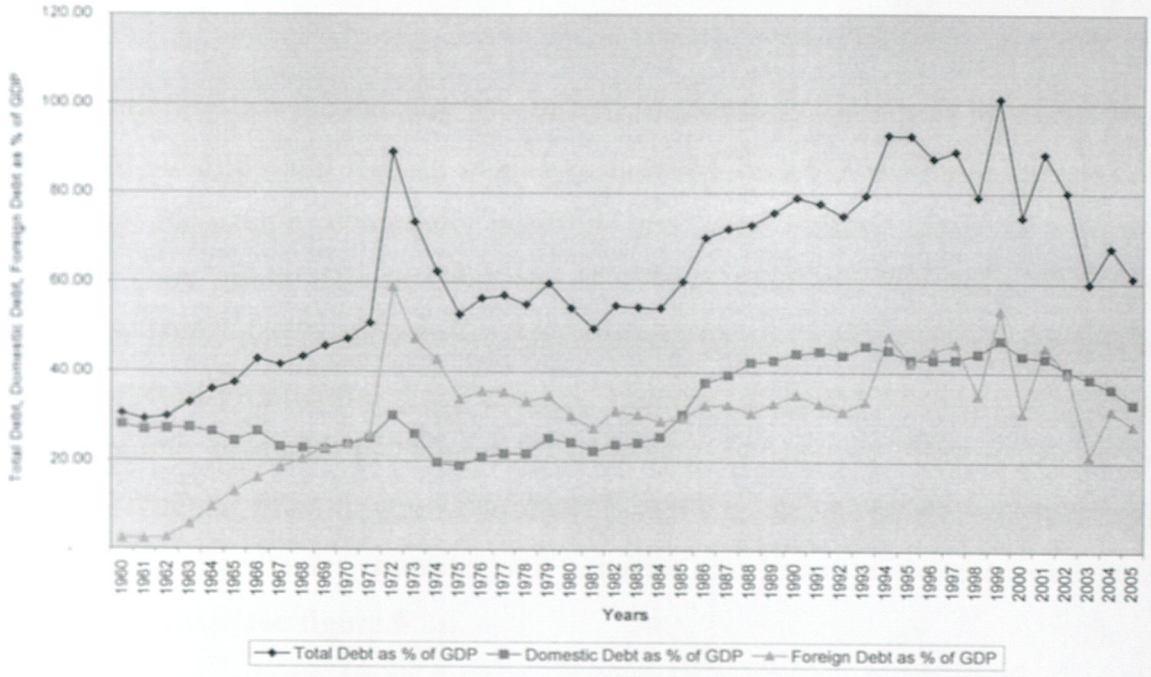
Structural adjustment programs were insolvably attached to the loan process. In order to launch structural adjustments programs, 10% of a requested loan is given in advance. If the government succeed to fulfil the prerequisite over an 18 month period, the remainder of the money is granted. These prerequisite are appraised by the WB and IMF on the basis of performance criteria (Barry, 2001).

The structural adjustment policies have negative impact in every way on Pakistan. Over the last three decades unemployment went up, GDP growth rate declined, external dependence increased and development public spending decreased enormously. The objective of SAPs was to make Pakistan capitalist in a global economy framework. Privatization of public industries method was applied for this purpose. The sectors included in privatization process were power,

telecommunications, steel, banking and financial services, construction and chemical industries. Previously all these areas were considered strategic and restricted to open for foreign investors. As private owners have different priorities than do governments, privatization leads to increase unemployment. Private owner's priorities include maximizing profits and minimizing expenses. Employees' remuneration is expense that can be easily slim down, and that is generally what occurs in 1990s.

Pakistan for the first time asked for loan from IMF in 1958. This was a standby arrangement for about ten months period, but the loan was cancelled before termination date and the whole loan went idle. Two more standby arrangements of one year duration were made in 1965 and 1968. Four standby loans were granted in 1970s, however structural adjustment and stabilization programs funded by IMF did play grave role in the economies of the third world countries before mid-1970s. The experience was same in Pakistan, but in late 1970s and in 1980s the IMF concerned character and scope radically changed. The arrangements made in 1980s were for more amounts and for longer period than pervious arrangement. Under IMF different arrangements programs, total thirteen arrangements were made in 1990s. Among these four were made under Standby and EFF each, three were made under ESAF, and two were made under CCFF arrangements. But, except one all other arrangements were suspended and never fulfilled. Up to 2005, two arrangements were made, one under Standby Arrangement and another under Poverty Reduction Growth Facility (PRGF). These arrangements were completed and fulfilled prior to termination date (State Bank of Pakistan, various issues).

Figure 5.2 Total Debt, Domestic Debt, Foreign Debt as % of GDP 1960-2005



Source: Author construction from data in Table 5.4

Public debt of Pakistan persistently show increasing trend from 1960 to 1972. In 1960 total debt of Pakistan were 30.5% of GDP and increased to 89.15% of GDP in 1972, almost 192% increase in public debt in these twelve years. The big increase incurred in 1972, pushed total public debt from 50.81% of GDP in 1971 to 89.15% of GDP in 1972. In total of 192% increase in twelve years, 75.46% increase incurred in one year, due to 1971 war and consequent separation of East Pakistan. Domestic debt was the dominant factor in total public debt up to 1970, but in 1972 the enormous increase in total public debt, came in the form of external debt. After 1972 total public debt got decreasing trend up to 1975, decrease from 89.15% of GDP in 1972 to 52.74% of GDP in 1975. External debt was the dominant component of total public debt till 1984, where total public debt was 54.26% of GDP in which external debt was 28.88% of GDP and domestic debt was 25.38% of GDP. From 1985 till 1993 public debt comprise most of the domestic debt. In 1993 total public debt was 79.43% of GDP, in which domestic

debt was approximately 45.97% of GDP and external debt was 33.47% of GDP (see figure 5.2).

Debt situation in last the decade, was one of the worst in history of Pakistan. Due to political volatility and foreign sanctions imposed after the nuclear blast in 1998, deteriorate Pakistan's economic position and was almost close to become defaulter. Total public debt in 1990 was 78.97% of GDP and reached to 101.12% of GDP in 1999, which shows that Pakistan had to pay more for debt retirement than the overall production of the country. External debt and domestic debt share in total public debts in 1999 were 53.84% and 47.28% of GDP respectively. Pakistan switched towards domestic debt to fulfil its development and recurring expenditures, after lender countries and agencies restricted their assistance due to foreign sanctions (see figure 5.2).

In 2000 a Debt Reduction and Management Committee (DRMC) was established, soon after Pervaiz Musharraf taking over power as a chief executive, to deal with the problems of external and domestic debt, which had grown in size more than that of the GDP. After 1999 total public debt show continuous decreasing trend except in 2001 and 2004 where it reflect slight increasing trend. Total public debt decrease from 101.12% of GDP in 1999 to 61.09% of GDP in 2005, showing total decrease of approximately 39.57% in six years (see figure 5.2).

5.9 Summary

In summary, this chapter extensively reviewed the existing available sources in order to meet the deficit, development expenditure, unexpected expenditure in emergencies and defray expenditure for social welfare. Two sources used to finance fiscal deficit specifically borrowing from domestic banking system and external sources have been analyzed. Public debts create with some lines of objections against unlimited government borrowing in Pakistan has been analyzed.

The main features of the composition and structure of domestic and external debt has been assessed. Types of instruments through which domestic debt are raised, various maturity periods, and classification of owners has been analyzed. The privatization proceeds used for deficit financing and it share in total domestic deficit financing has been analyzed. The continuous trend in budget deficit and public debt has also been analyzed in detail.

It is concluded that long-drawn-out recession, sharp increase in poverty, and critical debt servicing burden seen in the last decades. GDP growth declined from 6.1 per cent during 1980s to 4.2 per cent during the 1990s. Debt servicing as a percentage of foreign exchange earning has increased from 18 per cent in 1980 to about 40 per cent in the year 2000. External debt and foreign exchange liabilities rose from $ 20.5 billion in 1990 to $ 38.8 billion by end of June 1999, declined slightly to $ 37.8 billion in 1999-2000. The idea of privatization catches momentum in 1990s. Privatization proceeds share in deficit financing increase successively for the last five years. In 2001-02, the privatization proceeds share in total domestic financing of budget deficit was 7.78 percent, while it reached to 29.33 percent in 2004-05.

Table 5.1
Privatization Share in Total Domestic Deficit Financing (Rs. Billion)

Years	Fiscal Deficit	External Financing	Domestic Financing				Share of Privatization in total domestic Financing
			Non-Bank (i)	Bank (ii)	Privatization (iii)	Total (i+ii+iii)	
2001-02	190,450	83,100	85,000	14,000	8,350	107,350	7.78%
2002-03	180,600	113,000	119,500	-55,600	3,700	67,600	5.47% ↓
2003-04	134,532	-4,475	64,097	63,698	11,212	139,007	8.07% ↑
2004-05	217,004	120,432	8,056	60,189	28,327	96,572	29.33% ↑

Source: Economic survey of Pakistan 2005-06, and author calculation.
↓ Shows decrease from previous year
↑ Shows increase from previous level

Table 5.2
Structure of External Debt ($ billion) and % Share of each Component in Total External Debt

Item	1990	1999	2000	2001	2002	2003	2004	2005
Public and Publicly Guaranteed Debt	18.2 (95)*	28.3 (84)	27.8 (87)	28.2 (87)	29.2 (88)	29.2 (88)	29.8 (89)	31.1 (92)
Private Non-Guaranteed Debt	.3 (1.6)	3.4 (10)	2.8 (9)	2.4 (7)	2.2 (6.6)	2.0 (6)	1.7 (5.1)	1.3 (3.8)
IMF	.7 (3.4)	1.8 (6)	1.5 (4)	1.5 (6)	1.9 (5.4)	2.1 (6)	1.8 (5.9)	1.6 (4.2)
Total External Debt	19.2	33.5	32.1	32.1	33.3	33.3	33.3	34.0
Foreign Exchange Liabilities	1.3	5.3	5.7	5.0	3.1	2.1	1.9	1.8
Total External Debt & Liabilities	20.5	38.8	37.8	37.1	36.4	35.4	35.2	35.8

Source: Statistic Department, State bank of Pakistan and author calculation
*Figures in parenthesis are percentage of each component to total external debt.

Table 5.3

Total Revenue, Total Expenditure, and Total Fiscal Deficit in Million of Pak. Rupees (1960-2005)

Year	Total Revenue	Revenue as % of GDP	Total Expenditure	Expenditure as % of GDP	Surplus/ Deficit	Surplus/Deficit as % of GDP	Gross Domestic Product
1960	2353	13.18	3245	18.18	-892	5.00	17854
1961	2581	13.16	3591	18.31	-1010	5.15	19612
1962	2934	14.29	4142	20.18	-1208	5.89	20525
1963	2775	12.58	3503	15.89	-728	3.30	22052
1964	3847	15.52	4328	17.46	-481	1.94	24786
1965	4384	15.53	5003	17.72	-619	2.19	28235
1966	5457	17.47	7560	24.20	-2103	6.73	31244
1967	5957	16.76	6548	18.42	-591	1.66	35546
1968	6048	15.79	6841	17.86	-793	2.07	38296
1969	6977	16.87	7304	17.66	-327	0.79	41349
1970	8007	16.77	7904	16.55	103	0.22	47751
1971	7342	14.46	7987	15.73	-645	1.27	50791
1972	7053	12.90	8784	16.07	-1731	3.17	54673
1973	8256	12.23	11128	16.49	-2872	4.26	67492
1974	11794	13.39	14520	16.48	-2726	3.09	88102
1975	14259	12.82	19525	17.56	-5266	4.74	111183
1976	17737	13.61	22390	17.17	-4653	3.57	130364
1977	20439	13.65	24564	16.40	-4125	2.75	149748
1978	25171	14.27	30793	17.46	-5622	3.19	176334
1979	29502	15.14	36241	18.59	-6739	3.46	194915
1980	38102	16.27	41084	17.54	-2982	1.27	234179
1981	45359	16.30	53392	19.19	-8033	2.89	278196
1982	50370	15.54	55355	17.08	-4985	1.54	324159
1983	57750	15.85	70560	19.36	-12810	3.52	364387
1984	71042	16.92	82627	19.68	-11585	2.76	419802
1985	76351	16.17	93613	19.83	-17262	3.66	472157
1986	89716	17.44	120114	23.34	-30398	5.91	514532
1987	98976	17.29	127822	22.33	-28846	5.04	572479
1988	119844	17.74	158122	23.41	-38278	5.67	675389
1989	143370	18.63	191463	24.87	-48093	6.25	769745
1990	163825	19.14	192079	22.44	-28254	3.30	855943
1991	170642	16.72	237388	23.26	-66746	6.54	1020600
1992	216586	17.88	294370	24.30	-77784	6.42	1211385
1993	242812	18.10	330509	24.63	-87697	6.54	1341629
1994	273238	17.37	362891	23.07	-89653	5.70	1573097
1995	321323	17.07	425418	22.60	-104095	5.53	1882071
1996	370510	17.48	515219	24.30	-144709	6.83	2120173
1997	384263	15.82	547768	22.56	-163505	6.73	2428312
1998	433636	16.19	584624	21.83	-150988	5.64	2677656
1999	464372	15.80	627147	21.34	-162775	5.54	2938379
2000	531300	14.01	725642	19.13	-194342	5.12	3793437
2001	535091	12.85	739662	17.77	-204571	4.91	4162654
2002	619069	14.06	837396	19.02	-218327	4.96	4401699
2003	768662	15.94	882969	18.31	-114307	2.37	4822842
2004	815452	14.74	901244	16.29	-85792	1.55	5532663
2005	844873	12.90	1071620	16.37	-226747	3.46	6547560

Source: International Financial Statistics, Economic Survey of Pakistan (various issues) and author Calculation.

Table 5.4

Total debt, Total Domestic Debt, and Total Foreign Debt in Million of Pak. Rupees (1960-2005)

Year	Total Domestic Debt					T.Domestic Debt as % of GDP	Total Foreign Debt			T.Foreign Debt as % of GDP	Total Debt	Total Debt as % of GDP	Gross Domestic Product
	Held by State Bank	Deposit Money Banks	Other Fin. Insts.	Others	Total		Inter. Insts.	Foreign Gov. and Banks	Total				
1960	2825	1120	166	1290	5401	28.11	315	144	459	2.39	5860	30.50	17854
1961	2907	1147	196	1141	5391	26.88	302	175	477	2.38	5868	29.26	19612
1962	2942	1182	204	1362	5690	27.17	337	230	567	2.71	6257	29.87	20525
1963	2977	1208	211	1742	6138	27.33	381	893	1274	5.67	7412	33.01	22052
1964	3406	1350	228	1691	6675	26.50	423	1975	2398	9.52	9073	36.02	24786
1965	3474	1522	210	1791	6997	24.36	603	3162	3765	13.11	10762	37.47	28235
1966	4747	1519	239	1945	8450	26.62	821	4305	5126	16.15	13576	42.77	31244
1967	4726	1479	238	1917	8360	23.11	1183	5496	6679	18.46	15039	41.57	35546
1968	4819	1711	284	2085	8899	22.81	1601	6382	7983	20.47	16882	43.28	38296
1969	4757	2188	308	2231	9484	22.59	1826	7864	9690	23.09	19174	45.68	41349
1970	6518	2211	330	2367	11426	23.66	1996	9430	11426	23.66	22852	47.32	47751
1971	7492	2247	340	2794	12873	25.07	2130	11093	13223	25.75	26096	50.81	50791
1972	8597	3627	325	4118	16667	30.16	5535	27069	32604	58.99	49271	89.15	54673
1973	8812	4998	395	3613	17818	26.10	5624	26705	32329	47.35	50147	73.45	67492
1974	7875	4465	480	4606	17426	19.60	5968	32081	38049	42.79	55475	62.39	88102
1975	9273	5415	489	6068	21245	18.96	6250	31607	37857	33.78	59102	52.74	111183
1976	12053	8080	744	6543	27420	20.88	6977	39751	46728	35.58	74148	56.46	130364
1977	15529	9479	1015	6677	32700	21.65	7956	45623	53579	35.47	86279	57.12	149748
1978	16112	12678	1166	8574	38530	21.66	10324	49111	59435	33.41	97965	55.07	176334
1979	24342	14450	1449	9130	49371	25.13	11503	56480	67983	34.60	117354	59.73	194915
1980	25269	19000	1666	10819	56754	24.13	12477	58261	70738	30.08	127492	54.21	234179
1981	25740	19457	2514	12377	60088	22.24	13800	60124	73924	27.36	134012	49.60	278196
1982	34756	20812	3162	17926	76656	23.65	19407	81765	101172	31.21	177828	54.86	324159
1983	27127	25928	4007	30794	87856	24.09	28100	82626	110726	30.36	198582	54.45	364387
1984	35598	23152	4327	43475	106552	25.38	33529	87711	121240	28.88	227792	54.26	419802
1985	54704	30292	4103	54831	143930	30.48	41555	98600	140155	29.68	284085	60.17	472157
1986	59827	38979	5055	89524	193385	37.58	49649	117354	167003	32.46	360388	70.04	514532
1987	55694	45597	8630	115325	225246	39.35	57326	129704	187030	32.67	412276	72.02	572479

Table 5.4 Continue

Year	Total Domestic Debt					T.Domestic Debt as % of GDP	Total Foreign Debt			T.Foreign Debt as % of GDP	Total Debt	Total Debt as % of GDP	Gross Domestic Product
	Held by State Bank	Deposit Money Banks	Other Fin. Insts.	Others	Total		Inter. Insts.	Foreign Gov. and Banks	Total				
1988	81957	63281	9194	130060	284492	42.12	69786	137958	207744	30.76	492236	72.88	675389
1989	90038	61037	10527	165932	327534	42.60	92533	161125	253658	32.99	581192	75.60	769745
1990	110774	51177	10593	204052	376596	44.11	108635	189017	297652	34.86	674248	78.97	855943
1991	119846	83354	14810	223568	454580	44.71	137985	197018	335003	32.95	789583	77.66	1020600
1992	158354	134375	14067	220798	527595	43.78	158382	216851	375233	31.13	902828	74.91	1211385
1993	183054	170871	18996	239721	612642	45.97	199434	246606	446040	33.47	1058682	79.43	1341629
1994	173256	233912	39466	249338	702000	44.97	241135	282756	749400	48.00	1451400	92.97	1573097
1995	197097	239046	42922	321399	798600	42.80	249938	350145	785100	42.08	1731700	92.81	1882071
1996	217060	277146	44853	376121	908900	42.87	295800	362358	951000	44.85	1859900	87.72	2120173
1997	272265	310632	51643	415681	1041900	42.91	435030	378078	1127300	46.42	2169200	89.33	2428312
1998	236909	351173	54974	516611	1183230	44.19	536930	397454	934384	34.90	2117620	79.08	2677656
1999	358320	321688	56272	624714	1389300	47.28	630551	471486	1581900	53.84	2971200	101.12	2938379
2000	540169	242548	48461	486004	1659120	43.74	656157	517293	1173450	30.93	2832570	74.67	3793437
2001	614689	249761	63335	834454	1799200	43.22	772558	592503	1896200	45.55	3695400	88.78	4162654
2002	317577	416679	79453	901254	1777300	40.38	576066	408868	1750900	39.78	3528200	80.16	4401699
2003	109725	599323	98793	1009462	1858410	38.53	415954	612774	1028730	21.33	2887130	59.86	4822842
2004	133196	634213	33887	1087479	2012000	36.37	809193	779054	1742700	31.50	3754700	67.86	5532663
2005	-	-	-	-	2154900	32.91	-	-	1845100	28.18	4000000	61.09	6547560

Source: International Financial Statistics, Economic Survey of Pakistan (various issues) and author Calculation.

Chapter 6

RESULTS AND DISCUSSION

6.1 Introduction

This chapter presents the result of different tests operated for analysis of data, and results of economic and econometric model designed for the achievement of the objectives. First, a preliminary analysis of the data is conducted. The stationarity of the data are checked using Augmented Dickey-Fuller (ADF) test. The long run relationships among the variables of models are checked by using Johansen Likelihood Ratio (LR) test. Results of the simultaneous equation model are given to analyze the impact of budget deficit on macroeconomic variables (economic growth, unemployment and poverty) and the result of linear regression model has been given to analyze the relationship of budget deficit and its funding sources in long run. In order to ascertain the existence of short run disequilibrium in the models the Error Correction Mechanism (ECM) is used. Second, the Vector Autoregressive (VAR) model is used to analyze the causality among the four variables namely economic growth, budget deficits, unemployment and poverty. For this purpose the impulse response function (IRF), and the error variance decomposition analysis is used.

6.2 The Augmented Dickey-Fuller (ADF) Test Result

Augmented Dickey-Fuller (ADF) test is used to ascertain the time series properties of the sample data. Variables which are non-stationary at level make stationary after taking first difference. Variables that are stationary at level, make stationary after taking first difference, and make stationary after taking second difference are symbolized as I (0), I (1), and I (2) respectively. The regression results of ADF test are shown in table 6.1 and 6.2 respectively. The Akaike Information Criterion is used to select the optimum ADF lag[27]. Table 6.1 computes the ADF statistics for

[27] The maximum lag is set to be two, because at lag two the AIC value is minimum

model with an intercept term but no trend. Table 6.2 gives the ADF statistics for models with an intercept and a linear deterministic trend. The finding shows that demand for real money (M^d) becomes stationary when the trend is included in the test (see table 6.2). Demand for real money appears stationary around the trend and non stationary around the intercept. All the remaining variables in the tables are non-stationary around trend and intercept.

The calculated test statistics unambiguously show that twenty seven variables; namely, real money supply (M^s), real domestic government bank borrowing (GBB), real gross domestic product (y), interest rate (i), real interest rate (r), real bank credit to private sector (BCP), real government consumption expenditure (GC), real private investment (PINV), real public investment (PUINV), real reserves (RES), unemployment (UE), gross national product (GNP), net factor income from abroad (NFIA), per capita income (PCIC), real balance of trade (BT), real export (x), real import (m), foreign borrowing (fB), budget deficit (BD), exchange rate (ER), export price (Px), import price (Pm), relative prices of export (RPx), relative prices of import (RPm), economic growth (EG), government revenue (GR), and government expenditure (GE) are non-stationary I(1) whether a trend is included or not (see table 6.1 and 6.2 respectively).

The ADF results further indicate that domestic prices (P) is non-stationary I (2) when either trend is included or excluded, while demand for real money (M^d) is non-stationary I(1) when there is no trend included, but after inclusion of trend it becomes stationary I(0) (see table 6.1 and 6.2 respectively).

6.3 Johansen's Cointegration Test Result

Johansen Likelihood Ratio (LR) test is used to ascertain the cointegration in the regressions used for analysis. The results of the test are shown in tables' 6.3.1-6.3.10. Most of the time series variables included in this study are individually

non-stationary (see table 6.1 and 6.2 respectively), there is a possibility that their regression are spurious. But when performed Johansen's cointegration test, long run relationships were found even though all the variables involve in regression are non-stationary (see table 6.1 and 6.2).

In the money supply function, supply of money (M^s), Bank credit to private sector (BCP), domestic government bank borrowing (GBB), and reserves (RES) are all non stationary variables individually. The results of Johansen Likelihood Ratio (LR) test for the variables are given in table 6.3.1. As can be seen from the table, the null hypothesis of no cointegration is rejected. The test denotes the existence of three cointegrating equations as the calculated values of Likelihood Ratio (LR) are greater than the critical values at 5 percent as well as 1 percent. This indicates that money supply regression is a cointegrating regression and this regression is not spurious, even though all variables are non-stationary individually.

In money demand equation, demand for money (M^d), real output (y) and interest rate (i) are non-stationary variables. The results of Johansen Likelihood Ratio (LR) rejected the null hypothesis of no cointegration. The test results show the existence of two cointegrating equations as the calculated values of Likelihood Ratio (LR) are greater than the critical values at 1 percent. Test results are given in table 6.3.2. The result indicates that money demand function is not a spurious regression, but the variables have a long term relationship among them.

In the output supply equation, real output (y), government consumption (GC), private investment (PINV), public investment (PUINV), balance of trade (BT) and real rate of interest (r) are individually non-stationary variables. The results of Johansen Likelihood Ratio (LR) test for the variables are given in table 6.3.3. The results rejected the null hypothesis of no cointegration. Johansen Likelihood Ratio (LR) test denotes the existence of two cointegrating equations as the calculated

values of Likelihood Ratio (LR) are greater than the critical values at 5 percent as well as 1 percent. This indicates that output supply regression is a cointegrating regression and this regression is not spurious, and there exist long term relationship among the variables.

In private investment equation, private investment (PINV), real output (y), interest rate (i) and bank credit to private sector (BCP) are non-stationary variables. The results of Johansen Likelihood Ratio (LR) test for the variables are given in table 6.3.4. From the table it can be seen, that the null hypothesis of no cointegration is rejected. The test refers for existence of two cointegrating equations as the calculated values of Likelihood Ratio (LR) are greater than the critical values at 5 percent as well as 1 percent. The result concludes that the regression is cointegrating regression not a spurious regression.

In public investment equation, public investment (PUINV), output (y), reserves (RES), and real rate of interest (r) are individually non-stationary variables. The results of Johansen Likelihood Ratio (LR) rejected the null hypothesis of no cointegration. The test results show the existence of three cointegrating equations as the calculated values of Likelihood Ratio (LR) are greater than the critical values at 5 percent as well as 1 percent. Test results are given in table 6.3.5. The results indicate that the public investment regression is cointegrating regression, and there is long term relationship among the variables.

In the export supply function, export (x), real output (y), relative prices of export (RPx) and exchange rate (ER) are non-stationary variables. The results of Johansen Likelihood Ratio (LR) test for the variables are given in table 6.3.6. As can be seen from the table, the null hypothesis of no cointegration has been rejected by Likelihood Ratio (LR) statistics. The calculated value of Likelihood

Ratio (LR) statistics is greater than the critical values at 1 percent. The test result indicates that the variables are cointegrating and they have long term relationship.

In the import demand function, import (m), real output (y), relative prices of import (RPm), international reserves (RES) and exchange rate (ER) are individually non-stationary variables. The results of Johansen Likelihood Ratio (LR) test for the variables are given in table 6.3.7. As can be seen from the table, the null hypothesis of no cointegration is rejected. The test refers for the existence of three cointegrating equations as the calculated values of Likelihood Ratio (LR) are greater than the critical values at 5 percent as well as 1 percent. This result indicates that the regression is cointegrating not a spurious regression.

In the unemployment relationship with GDP equation, both unemployment (UE) and gross domestic product (GDP) are non-stationary individually. The results of Johansen Likelihood Ratio (LR) rejected the null hypothesis of no cointegration. The test denotes the existence of one cointegrating equation as the calculated value of Likelihood Ratio (LR) is greater than the critical values at 1 percent. Test results are given in table 6.3.8. The result of Likelihood Ratio (LR) shows that the regression variables have long term relationship.

In the budget deficit equation with its funding sources, budget deficit (BD), government domestic bank borrowing (GBB) and foreign borrowing (fB) are non-stationary individually. The results of Johansen Likelihood Ratio (LR) test for the variables are given in table 6.3.9. As can be seen from the table, the null hypothesis of no cointegration has been rejected by Likelihood Ratio (LR) statistics. The test result indicates the existence of one cointegrating equation as the calculated value of Likelihood Ratio (LR) is greater than the critical values at 1 percent. This result indicates that the linear regression showing the relationship of budget deficit with its funding sources is cointegrating not a spurious regression.

in VAR model equations (budget deficit equation, economic growth equation, unemployment equation and per capita income equation) budget deficit (BD), unemployment (UE), per capita income (PCIC), and economic growth (EG) are individually non-stationary. The results of Johansen Likelihood Ratio (LR) test for the variables are given in table 6.3.10. The results rejected the null hypothesis of no cointegration. Johansen Likelihood Ratio (LR) test results indicate the existence of three cointegrating equations as the calculated values of Likelihood Ratio (LR) are greater than the critical values at 1 percent. These results indicate that the regressions are cointegrating not spurious regressions.

6.4 Empirical Results of Simultaneous Models

A simultaneous equation model is estimated to examine the impact of budget deficit on money supply, private and public investment, output, economic growth, unemployment and per capita income. For this purpose annual data for the period 1960-2005 is compiled and 2SLS technique is used for estimation. The results of the simultaneous models are reported in table 6.4. In general the results are logical because the explanatory power, R^2 for each equation is fairly high except unemployment relationship with GDP equation and there is no serious autocorrelation problem for each equation as shown by Durbin Watson and H statistics[28].The linkages for each equation are discussed separately.

6.4.1 Money Supply Equation

The estimates of money supply signify that money supply is positively related to bank credit to private sectors (BCP), domestic borrowing from banking sector (GBB) i.e. domestic source of financing the budget deficit and foreign reserves (RES). The result indicate that about 1% increase in bank credit to private sector,

[28] When lagged value of dependent variable is used as an independent variable in regression equation then estimated DW statistic has no significance about the presence of autocorrelation. Thus, H test is used to check the existence of autocorrelation. If H statistic is significant, then we reject the hypothesis that there is no serial auto correlation other wise accept it. For further detail see J. Durbin (1970)

government borrowing to finance budget deficit and foreign reserves lead to increase money supply by an amount of .95%, .12% and .17% respectively. All the coefficients are statistically significance at 1% level of significance indicating no multicollinearity in the variables. The Durbin-Watson statistic value 2.11 lying close to 2 shows that there is no autocorrelation in the model and R^2 value indicate that about 95% variation in money supply is explained by bank credit to private sector, government borrowing from domestic banking system to finance budget deficit and foreign reserves.

Table 6.4 Results of Simultaneous Models

Money Supply Equation

M^s= -.294 + 0.952 BCP + 0.118 GBB + 0.170 RES

s.e 0.1321 0.0745 0.0443 0.0491

t (-2.22)** (12.78)* (2.68)* (3.47)*

R-sq = 94.7% R-sq (adj) = 94.3%

S.E of regression = .1271 Durbin-Watson statistic = 2.11

Money Demand Equation

M^d = - 1.76 + 1.09 y - 0.0645 I

s.e 0.3258 0.0306 0.0346

t-stat (-5.41)* (35.57)* (-1.87) ***

R-sq = 97.1% R-sq (adj) = 96.9%

S.E of regression = .1401 Durbin-Watson statistic = 1.81

Output Supply Equation

y = 0.484 + 0.634 GC + 0.0923 PINV + 0.0705 PUINV + 0.00889 BT - 0.00101 r + .210Ly

s.e 0.087 0.0613 0.0142 0.0159 0.0014 0.0006 0.0707

t.stat (5.54)* (10.35)* (6.50)* (4.42)* (6.16)* (-1.66) (2.96)*

R-sq = 99.9% R-sq (adj) = 99.9%

S.E of regression = .01835 h- statistic = -.43

Private Investment Equation

PINV = 0.139 + 1.52 y + 0.106 BCP - 0.0689 I + 0.897 LPINV

s.e 0.1679 0.4604 0.0419 0.0375 0.1405

t.stat (0.83) (3.29)* (2.52)* (-1.84)*** (6.38)*

R-sq = 98.5% R-sq (adj) = 98.3%

S.E of regression = .1123 h- statistic = .32

Public Investment Equation

PUINV = 0.998 + 0.943 y + 0.113 RES - 0.00274 r + 0.772 LPUINV

s.e 0.2626 0.4475 0.0469 0.0045 0.0666

t.stat (3.80)* (2.11)** (2.41)* (-0.61) (11.6)*

R-sq = 97.5% R-sq (adj) = 97.2%

S.E of regression = .1090 h- statistic = - .43

Export Supply Equation

X = - 1.21 + 0.302 y + 0.167 RPx + 0.358 ER + 0.763 LX

s.e 0.4671 0.1071 0.0453 0.099 0.0852

t.stat (-2.59)* (2.82)* (3.69)* (3.61)* (8.95)*

R-sq = 99.2% R-sq (adj) = 99.1%

S.E of regression = .08447 h- statistic = .54

Import Demand Equation

M = - .7523 + 0.838 y + 0.122 RES - 0.169 RPm - 0.412 ER + .756 LM

s.e 0.3715 0.1896 0.0622 0.0607 0.1915 0.1406

t.stat (-2.03)** (4.42)* (1.96)*** (-2.79)* (-2.15)** (5.37)*

R-sq = 92.2% R-sq (adj) = 91.8%

S.E of regression = .1772 h- statistic = .68

Unemployment relationship with GDP equation

ΔU_t = .698 - 0.217 Δ GDP

s.e = .3303 0.0691

t.stat = (2.11)** (-3.15)*

R-sq = 18.4% R-sq (adj) = 16.5%

S.E of regression = 1.930 Durbin-Watson statistic = 2.18

Foreign Reserves Identity $RES = R(_{-1}) + BT + fB$

Trade Balance Identity $BT = x-m$

Economic Growth Identity	$EG = \Delta y / y$
Per capita Income Identity	$PCIC = GNP/Tpop$

*Significant at 1%
** Significant at 5%
*** Significant at 10%
2SLS is used for estimation

6.4.2 Demand for Money Equation

The demand for money regression indicates that demand for money is positively related to output and negatively to interest rate. The result indicates that increase in output lead to increase in money demand and increase in interest rate lead to decrease in money demand. The empirical values of the regression show that 1% increase in output lead to increase in money demand by 1.09%, and 1% increase in interest rate reduce money demand by .06%. The coefficient of output is significant at 1% level of significance and coefficient of interest rate is significant at 10% level of significance. Durbin-Watson statistic value is close to 2 showing that autocorrelation is not present in the model. The R^2 value shows that about 97% variation in money demand is explained by output and interest rate.

The result showed that interest rates have negative relationship with money demand but significant at 10% level of significance only, indicating that in Pakistan other financial assets carry great momentum of profit margin, and public demand for money increases and this money are invested in financial assets as for as profit margin for these assets are greater than interest rate.

6.4.3 Output Supply Equation

The result of output supply equation indicate that all coefficient except coefficient of real interest rate are significant at 1% level of significance, h value -.43 indicate no autocorrelation and R^2 value indicate that explanatory variable are responsible for about 99.9% variation in output. The result indicate that output is positively related to government consumption (GC), private investment (PINV), public

investment (PUINV), trade balance (BT), lagged value of output and negatively related to real interest rate (see table 6.4). 1% change in government consumption, private investment and public investment bring .63%, .09% and .07% change in output respectively. The result also indicate that 1 unit change in trade balance bring .89% change in output. The interest rate is negatively related to output but is insignificant. The result of the output equation indicates that private investment, public investment and government consumption play important role in determining the level of output in Pakistan's economy.

6.4.4 Private Investment Equation

The result of the private investment equation indicates that private investment is positively related to output, bank credit to private sector, lagged value of private investment and negatively related to interest rate(see table 6.4). The result shows that 1% increase in output and bank credit to private sector brings increase in private investment by 1.5% and 0.11% respectively. The private investment relationship with interest rate indicate that 1% increase in interest rate reduce private investment by .07%. All the coefficients of explanatory variables except interest rate are significant at 1% level of significance. The coefficient of interest rate is significant at 10% level of significance only, indicating that interest rate is not significantly affect private investment because of the greater return than interest rate from investment to private investors. The value of R^2 indicates that almost 98% variation in private investment is explained by output, bank credit to private investment, interest rate and lagged value of private investment. The h statistics value is .32 indicating that there is no serious autocorrelation problem. The increase in bank credit to private sector leads to rise in investment level, which enhances the productive capacity of the economy, employment opportunities and reduce poverty level.

6.4.5 Public Investment Equation

The estimated result of public investment equation indicates that public investment is positively related to output, foreign reserves, lagged public investment and negatively to real interest rate as shown in table 6.4. The result shows that 1% increase in output and foreign reserves increase public investment by .94% and .11% respectively. The public investment relationship with real interest rate indicate that 1% increase in real interest rate reduce public investment by .003% but insignificant. The coefficient of output and foreign reserves are significant at 5% and 1% respectively. The R^2 value shows that about 97% of variation in public investment is explained by output, foreign reserves, real interest rate, and lagged value of public investment. H value (-.43) of the equation shows that there is no serious autocorrelation. The increase in foreign reserves leads to rise in public investment level, which enhances the productive capacity of the economy, and employment opportunities.

6.4.6 Export Supply Equation

The estimated result of export supply equation indicates that export are positively related to output, relative prices of export, nominal exchange rate and lagged value of export. The inclusion of nominal exchange rate will capture the effect of devaluation on export. The result indicates that 1% increase in domestic output, and relative prices of export, bring .30% and .17% increase in export respectively. The coefficient of exchange rate is positive and significant, showing that devaluation of domestic currency has strong impact on export. The positive effect of devaluation on exports is equal to 0.36. This implies that depreciation of domestic currency (devaluation) have substantial impact on export. When domestic demand for exportable goods decrease (increase) comparatively more than the proportionate decrease in income, which make the coefficient of income

positive (negative) and hence expand (trim down) export of output[29]. Income elasticity of export is well below one, indicating that supply of export rises less than proportionate increase in output. The production of exportable goods becomes more profitable as the export price rises relative to domestic price level and the positive sign of RPx indicates that the exporter will expand the production quickly[30]. All the coefficients are statistically significant at 1% level of significance. The R^2 value shows that about 99% of variation in export is explained output, relative prices of export and nominal exchange rate. The h value is .54 showing that there is no serious autocorrelation in the export supply equation.

6.4.7 Import Demand Equation

The results of import demand function indicate that the coefficients of output, relative prices of import and lagged value of import are significant at 1% level of significance. The coefficient of exchange rate is significant at 5% level of significance while coefficient of reserves is significant at 10% level of significance. The R^2 value indicate that about 92% of variation in import are explained by output, foreign reserves, relative prices of import, nominal exchange rate and lagged value of import. The h value .68 indicates that there is no serious autocorrelation problem.

The results also indicate that in Pakistan import are positively related to output, foreign reserves, lagged value of import and negatively related to relative prices of import and nominal exchange rate. The result show that 1% increase in output and foreign reserves increase in import by 0.84% and 0.12% respectively. The coefficient of exchange rate is negative and significant, showing that devaluation of domestic currency has firm impact on import. The negative effect of

[29] For further detail see, Sterin, Gold M. and Mohsin H. Khan (1978).
[30] For further detail see, Aghevli (1977).

devaluation on imports is equal to 0.41. This implies that besides other factors (strict commercial policies, availability of foreign aid, full capacity utilization of resources, and level of investment) exchange rate have considerable impact on import. Income elasticity of import is slightly less than one, indicating that demand for import rises almost equal to proportionate increase in output.

6.4.8 Unemployment Relationship with GDP

For the relationship of unemployment and GDP growth rate annual data for the period 1960-2005 is used. In this regression deviated value of GDP from long term normal growth and change in unemployment rate is used. The R^2 value shows that only 18.4% of variation in unemployment is explained by GDP, indicating that there are many other variables which are responsible for the variation in unemployment. The result indicates that in Pakistan each 1% increase in real GDP will reduce unemployment by.217%. The negative effect of GDP growth on unemployment is 0.217. This low negative effect implies that other factors i.e. lose employment policies and non availability of professional skills retard the employment generating capacity of GDP growth rate.

6.5 Empirical Result of Linear Regression Model

Linear regression model is used to analyze the relationship between budget deficit and its funding sources. Annual data for the period 1960-2005 is used and OLS technique is utilized for estimation. In this regression values of the variables are used as a percent of GDP, logarithmic transformation of budget deficit value are meaningless due to its negative values almost for the whole period. The regression result is given in table 6.5.

Table 6.5 Result of Linear Regression Model

BD =	- 0.095	- 0.976 GBB	- 1.01 fB
s.e	0.153	0.027	0.028
t- stat	(-0.62)	(-36.23)*	(-35.76)*

S.E of Regression = 0.3327 R^2 = 97.8% R^2 (adj) = 97.7%

Durbin-Watson statistic = 1.95

*Significance at 1% level, OLS is used for estimation

The estimated results of the linear regression indicate that budget deficit is negatively related to borrowing from domestic banking system and foreign borrowing to finance budget deficit. The coefficient of borrowing from domestic banking and foreign borrowing are statistically significant at 1% level of significance. The Durbin-Watson statistics value is close to 2 indicating that there is no serious autocorrelation problem. The R^2 value shows that about 98% variation in budget deficit is explained by domestic bank borrowing and foreign borrowing. The financing elasticity of foreign borrowing with respect to budget deficit is greater than one (1.01), which implies that relies on foreign borrowing in respect of deficit financing, is greater than other sources of deficit financing. The coefficient values of both sources indicate that 1 unit increase in foreign borrowing finance almost same level of budget deficit, while 1 unit increase in domestic bank borrowing finance less than 1unit of budget deficit.

6.6 Error Correction Mechanism (ECM) Results

It has been showed that all the regressions used are cointegrating regression, and there is equilibrium long term relationships among the variables (see table 6.4 and table 6.5). The existence of short run disequilibrium has been checked in this section. For this purpose Granger representation theorem is used. Since the regression variables are cointegrating, so the relationship among them can be

expressed as Error Correction Mechanism (ECM). The empirical results are presented in table 6.6.

In each Error Correction Mechanism (ECM) equation, dependent variable depends on the equilibrium error term (u_{t-1}) besides other independent variables. The parameter of equilibrium error term is expected to be negative. The positive/negative value of u_{t-1} acting with their respective parameter brings equilibrium in short term. If all other independent variables have positive short-term aggregate impact on dependent variables, then u_{t-1} must be positive, so that the negative parameter makes it negative and restored the equilibrium. In similar fashion if all other independent variables have negative short-term aggregate impact on dependent variables, then u_{t-1} must be negative, so that the negative parameter makes it positive and restored the equilibrium. The absolute value of parameter indicates how quickly the equilibrium will restore.

In the Error Correction Mechanism (ECM) money supply equation, first difference of money supply (ΔM^s_t) depend on first difference of bank credit to private sector (ΔBCP_t), first difference of government bank borrowing to finance budget deficit (ΔGBB_t), first difference of foreign exchange reserves (ΔRES_t) and on the equilibrium error term u_{t-1}. The regression result shows that short-run changes in bank credit to private sectors, government domestic bank borrowing to finance budget deficit have positive but insignificant impact on short term changes in money supply. The foreign exchange reserves have statistically significant positive impact on short run changes in money supply. The coefficient of error term is statistically insignificant, implies that statistically, the equilibrium error term is zero, suggesting that money supply adjusts to changes in the same time period (see table 6.6).

Table 6.6 Regression Results of Error Correction Model (ECM)

Money Supply equation

$\Delta M^s_t = 0.0445 + 0.132\Delta BCP_t + 0.0123\Delta GBB_t + 0.0691\Delta RES_t - 0.09365u_{t-1}$

t = (3.34) (1.47) (0.49) (2.29) (-1.26)

$R^2 = .131$ d = 1.64

Money demand equation

$\Delta M^d_t = - 0.0176 + 1.39\Delta y_t - 0.0358\Delta i_t - 0.959u_{t-1}$

t = (-0.46) (2.50) (-0.38) (-6.09)

$R^2 = .519$ d = 1.99

Output supply equation

$\Delta y_t = 0.01 + 0.62\Delta GC_t + 0.10\Delta PINV_t + 0.09\Delta PUINV_t + 0.009\Delta BT_t - 0.001\Delta r_t - 1.00\Delta u_{t-1}$

t = (2.24) (9.33) (4.90) (4.06) (6.19) (-2.28) (-6.04)

$R^2 = .81$ d = 1.94

Private investment equation

$\Delta PINV_t = - 0.0334 + 1.67\Delta y_t + 0.167\Delta BCP_t - 0.0147\Delta I_t - 0.186u_{t-1}$

t = (-1.07) (3.64) (1.34) (-.19) (-2.17)

$R^2 = .32$ d = 1.62

Public investment equation

$\Delta PUINV_t = 0.00862 + .879\Delta y_t - 0.0641\Delta RES_t + 0.00035\Delta r_t - 0.150u_{t-1}$

t = (.24) (1.68) (-1.19) (0.09) (-1.91)

$R^2 = .149$ d = 1.53

Export supply equation

$\Delta x_t = 0.0432 + 0.620\Delta y_t + 0.0967\Delta RPx_t + 0.346\Delta ER_t - 0.294\ u_{t-1}$

t = (1.75) (1.82) (2.05) (3.94) (-2.67)

$R^2 = .577$ d = 1.51

Import demand equation

$\Delta m_t = 0.0579 + 0.314\Delta y_t + 0.0704\ \Delta RPm_t - 0.220\ \Delta ER_t - 0.0718\ \Delta RES_t - 0.313\ u_{t-1}$

t = (1.75) (0.68) (1.28) (-1.71) (-1.52) (-2.51)

$R^2 = .289$ d = 1.71

Unemployment relationship with GDP equation

ΔUE_t = - 0.012 - 0.211 ΔGDP_t - 1.10 u_{t-1}

t = (-.04) (-4.04) (-7.04)

R^2 = .654 d = 2.09

Budget deficit and its funding source equation

ΔBD_t = - 0.0230 - 0.952 ΔGBB - 0.961 ΔfB - 1.08 u_{t-1}

t = (-0.56) (-43.50) (-36.98) (-8.37)

R^2 = .985 d = 1.90

Δ is the difference operator

u_{t-1} is the equilibrium error term

2SLS is used for estimation

Money demand equation of Error Correction Mechanism (ECM) indicates that first difference of real money demand (ΔM^d_t) depends on first difference of real output (Δy_t), first difference of nominal interest rate (Δi_t) and on the equilibrium error term u_{t-1}. The regression result shows that short-run changes in real output have statistically significant positive impact on the short-run changes in money demand while short-run change in nominal interest rate have statistically insignificant negative impact on the short-run changes in money demand. The result further indicates that short-run changes in money demand is more sensitive to short-run changes in output as the coefficient of output is 1.39. About .96 of discrepancy in previous year is eliminated this year.

In the Error Correction Mechanism (ECM) real output supply equation, first difference of real output (Δy_t) depend on first difference of government consumption (ΔGC_t), first difference of private investment ($\Delta PINV_t$), first difference of public investment ($\Delta PUINV_t$), first difference of balance of trade (ΔBT_t), first difference of real interest rate (Δr_t) and on the equilibrium error term u_{t-1}. The regression result show that short-run changes in government consumption, private investment, public investment and balance of trade have

positive impact on the short-run changes in output, while short-run change in real rate of interest have negative impact on the short-run changes in output. All the short-run changes are statistically significant. The coefficient of equilibrium error term is 1, indicating that about all the discrepancy in the previous year is eliminated this year.

Private investment equation of Error Correction Mechanism (ECM) indicate that first difference of private investment ($\Delta PINV_t$) depend on first difference of real output (Δy_t), first difference of interest rate (ΔI_t), first difference of bank credit to private sector (ΔBCP_t) and on the equilibrium error term u_{t-1}. The result indicates that short-run changes in real output have statistically significant positive impact on short-run changes in private investment. Bank credits to private sector in short-run have positive but statistically insignificant impact on the short-run changes in private investment. The short-run changes in interest rates have statistically insignificant negative impact on the short-run changes in private investment. The result also indicates that about .186 of discrepancy in previous year is eliminated this year.

The public investment equation of Error Correction Mechanism (ECM) indicates that first difference of public investment ($\Delta PUINV_t$) depends on first difference of output (Δyt), first difference of foreign exchange reserves (ΔRES_t), first difference of real interest rate (Δr_t), and on the equilibrium error term u_{t-1}. The results of ECM equation regression shows that short-run changes in output have statistically significant (at 10% level of significance) positive impact of short-run changes in public investment. Short-run changes in real interest rates have positive but statistically insignificant impact on the short-run changes in public investment. Short-run changes in foreign exchange reserves have statistically insignificant negative impact on short-run changes in public investment. Besides, the short-run

changes in output quickly reflected in public investment as the coefficient of output is .87. About .15 of discrepancy in previous year is eliminated this year.

In the Error Correction Mechanism (ECM) real export supply equation first difference of export (Δx_t) depend on first difference of real output (Δy_t) first difference of relative prices of export, first difference of exchange rate and on the equilibrium error term u_{t-1}. The result indicates that short-run changes in real output, relative prices of export and exchange rate have positive impact on the short-run changes in export. All the estimated coefficients are statistically significant. About .29 of discrepancy in previous year is corrected this year.

Import demand equation of Error Correction Mechanism (ECM) indicate that first difference of import (Δm_t) depend on first difference of real output (Δy_t), first difference of relative prices of import (ΔRPm_t), first difference of reserves (ΔRES_t), first difference of exchange rate (ΔER_t) and on the equilibrium error term u_{t-1}. The regression result indicates that short-run changes in real output and relative prices of import have positive but statistically insignificant impact on the short-run changes in import. Short-run changes in reserves have statistically insignificant negative impact on short-run changes in import. Short-run changes in exchange rates have statistically significant (significance at 10%) negative impact on the short-run changes in import. The result also shows that about .313 of discrepancy in previous year is corrected this year.

In the Error Correction Mechanism (ECM) unemployment relationship with GDP equation, first difference of change in unemployment rate (ΔUE_t) depend on first difference of percentage change in GDP (ΔGDP_t) and on the equilibrium error term u_{t-1}. The regression result shows that short-run changes in GDP have statistically significance negative impact on short-run changes in unemployment.

The coefficient of equilibrium error term is 1.1, indicating that about all the discrepancy in the previous year is eliminated this year.

Budget deficit and its funding source equation of Error Correction Mechanism (ECM) indicates that first difference of budget deficit (ΔBD_t) depends on first difference of government domestic bank borrowing (ΔGBB_t), first difference of foreign borrowing (ΔfB_t) and on the equilibrium error term u_{t-1}. The regression result indicates that short-run changes in government domestic bank borrowing and foreign borrowing have statistically significant negative impact on the short-run changes in budget deficit. The result shows that about all the discrepancy in previous year is corrected this year, as coefficient of equilibrium error term is greater than 1. The result further indicates that short-run changes in both government domestic bank borrowing and foreign borrowing promptly reflected in budget deficit as the coefficients of both are .952 and .961 respectively.

6.7 Estimates of the Autoregressive Vector Model (VAR)

The Vector Autoregressive (VAR) model is used here to analyze the causality among the four variables. For this purpose the impulse response function (IRF), and the error variance decomposition analysis is used. The impulse response function finds out the response of dependent variable in the VAR system to the shock in error terms. Before going to estimate Vector Autoregressive (VAR) models, the stationarity of the variables are checked by using Augmented Dickey-Fuller (ADF) test (see table 6.1 and 6.2), and Johansen Likelihood Ratio (LR) test is used for cointegration (see table 6.3.10). Budget deficit used in VAR model have negative values almost for the whole study period and could not be converted in logarithms. Due to this reason budget deficit (BD) are taken as a percent of GDP and all other three variables unemployment (UE), economic growth (EG) and per capita income (PCIC) are in percentage form. All the four variables economic growth, unemployment, per capita income and budget deficit are non-

stationary individually and make stationary after taking their first difference. Optimal lag is estimated, by using Akaike Information Criteria (AIC) statistics. The optimal lag that proved to be optimal (having minimum AIC value) was the number 2.

As indicated by the table 6.7 the estimated VAR model used to analyze the dynamic impact of the random errors on the variables has 36 parameters resulting from the fact of having 4 endogenous variables by the 8 pre-determined ones and 4 constant terms c in the predefined VAR model. The values found for these parameters translate the relation and interrelation network among the 4 variables.

6.7.1 Interpretation of the Results

The individual interpretation of VAR model coefficients are often complicated and most time conducts poor conclusion. Instead, generally this interpretation uses the impulse response function (IFR), and the error variance decomposition analysis.

6.7.1.1 Impulse Response Function – Graphical Analysis

Two types of IRF shape can be seen, one the response of the four variables to impulses of 1 standard deviation and another, the response of four variables to impulses of 1 standard deviation +/- 2 standard errors.

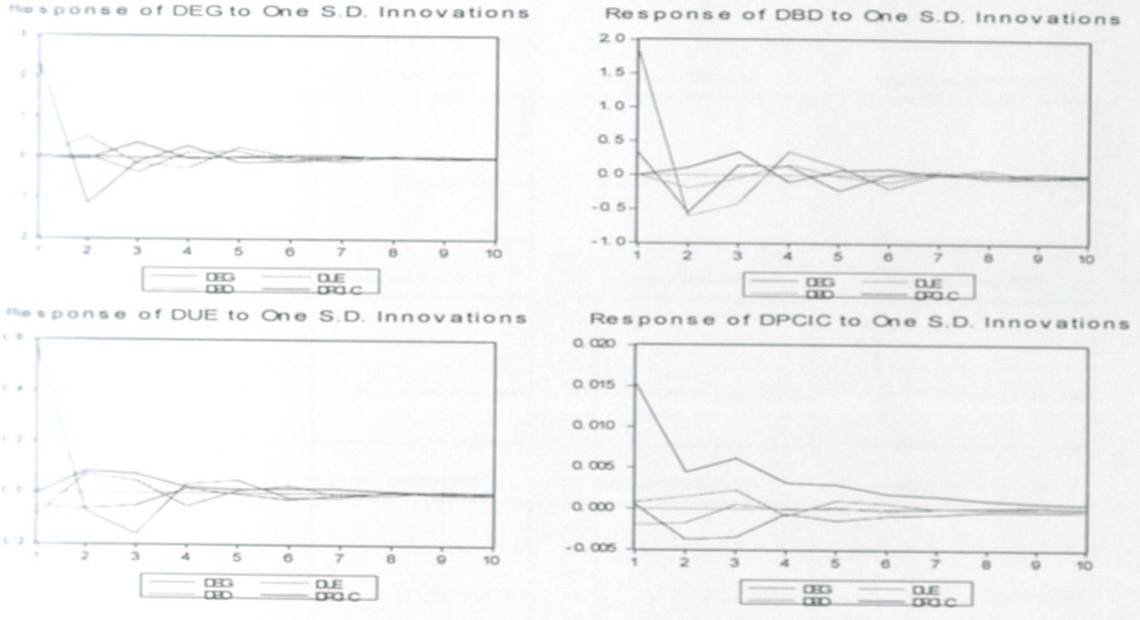
6.7.1.2 Response of Variables to Impulses of 1 S.D Innovation – Combines Graphics

The graphical illustration gives the evaluation of the four variables in IRF terms to variations, shocks or unitary innovation (of one standard deviation) in the error terms of the VAR Model.

From these graphics (figure 6.1) the convergence of these functions can be found, in some sense it translates the rapidity of absorption of the innovation by the four variables. It is found that the absorption takes 7 years for economic growth and

budget deficit, 8 years for unemployment and more than 10 years for per capita income (poverty).

Figure 6.1 Economical Responses to Impulses of 1 Standard Deviation (D.V) Innovations

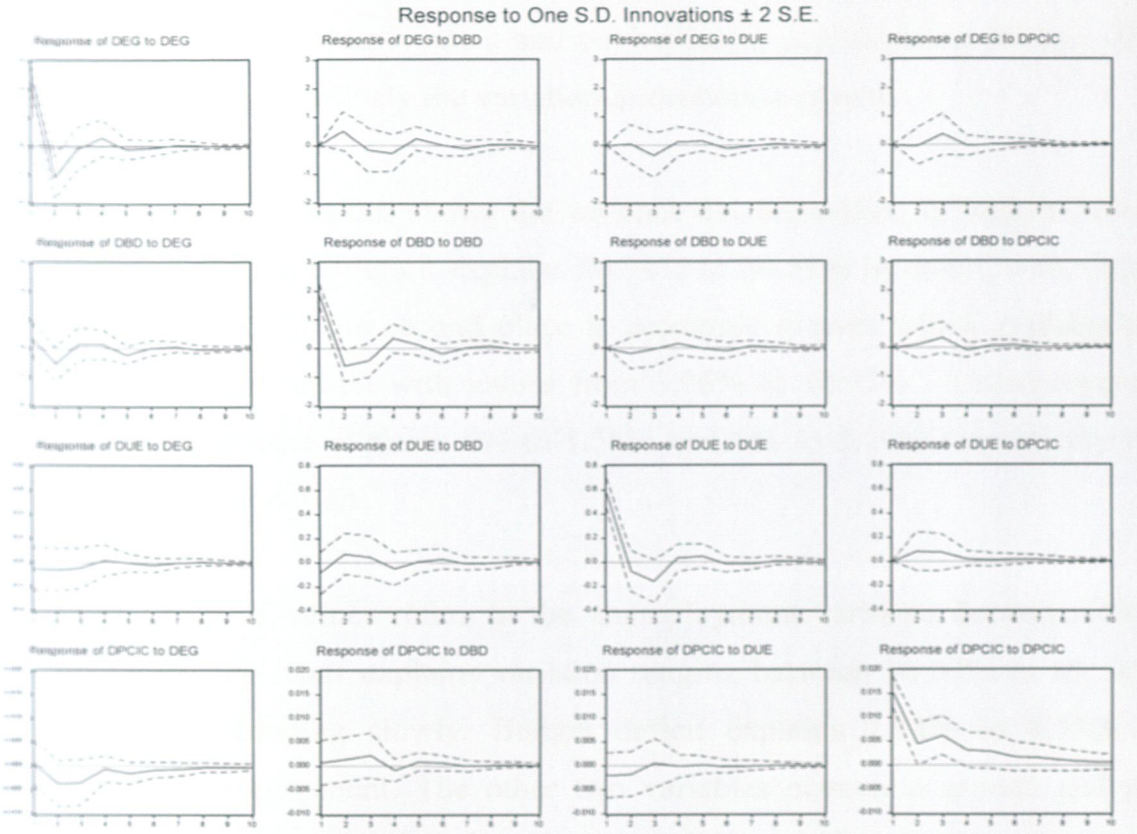


6.7.1.3 Economical Responses to Impulses of 1 Standard Deviation (D.V) +/- 2 Standard Errors – Multiple Response Graphics

The graph of response to impulses of 1 s.d +/- 2 s.e (figure 6.2) indicates the response or the absorption rhythm of each one of the four variables to innovation or impulses of size 1 s.d. +/- 2 s.e. The four graphics of the first line give the response of the economic growth to innovations or impulses introduced either in their own or the other variables.

In similar fashion the four graphics of second, third and fourth lines show the response of budget deficit, unemployment and per capita income(poverty) to innovations or impulses introduced either in their own or the other variables respectively.

Figure 6.2 Economical Responses to Impulses of 1 Standard Deviation (D.V) +/-2standardErrors



6.8 Impulse Response Functions - Numerical Analysis

In table 6.8 the numerical values that support the graphics referring the 4 variables responses to innovations introduced in the VAR model structure can be found.

6.9 Variance Decomposition

Table 6.9 and figure 6.3 depicted the values of variance decomposition of the four variables. This table explained how the variance of each one of the series is decomposed during a period of ten years. The first group of columns is referred to economic growth. These values show that the standard errors vary from 2.32 to 2.75. The first value of standard error (2.32) is explained only by economic growth. Those values of standard errors that economic growth explains lies

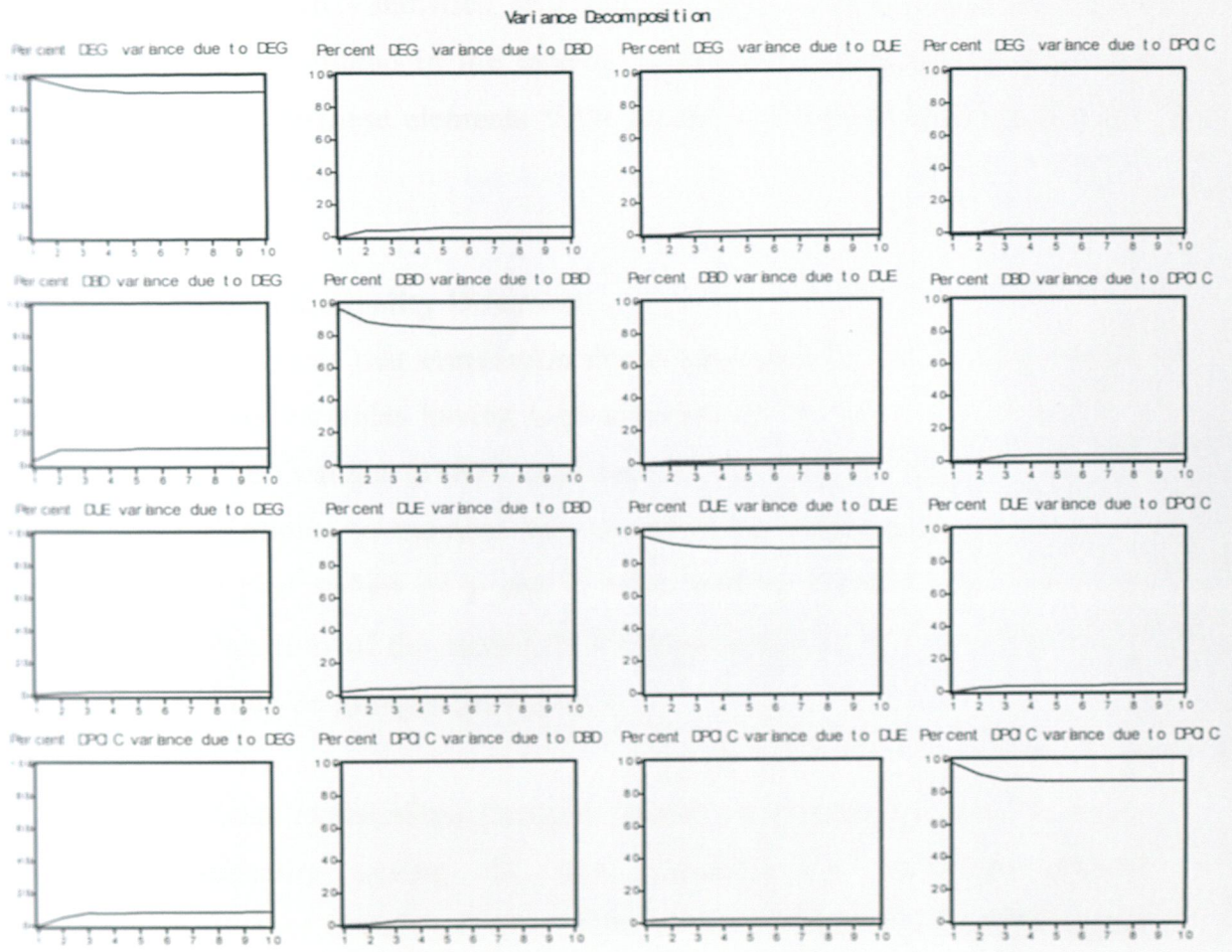
between 100% to 89.91%, with values descending slowly. Budget deficit is the second variable to explain most of the variation in economic growth with values from 0% to 5.65%. Unemployment and per capita income explains 0% to 2.47% and 0% to 1.97% respectively the variation in economic growth.

The second group of values shows the variance decomposition of budget deficit. The variation in budget deficit explains 96.94% to 84.58% by itself, with values descending slowly. In the second place is economic growth which explains the variation in budget deficit with values from 3.06% to 10.57%. Unemployment and per capita income explains 0% to 1.56% and 0% to 3.29% respectively the variation in budget deficit.

The third group of values refers to the unemployment variance decomposition. Unemployment by itself explains variation ranging between 96.93% to 89.24%, with values descending slowly. Budget deficit explains 2.24% to 4.73% of variation in unemployment. The other two variables economic growth and per capita income explain .83% to 2.44 and 0% to 3.59% variations in unemployment.

The fourth and last group of values refers to the variance decomposition of per capita income. The variation in per capita income explains 98% to 86.78% by itself, with values descending slowly. In other variables economic growth is the second variables which explain most variation in per capita income. Economic growth explains .09% to 8.40% variation in per capita income. Budget deficit explains .26% to 2.79% variation in per capita income, while unemployment explains 1.65% to 2.02% variation in per capita income.

Figure 6.3 Variance Decomposition



6.10 Causality Appreciation

First the VAR model of the Granger methodology is estimated and later the economical interpretation of the result is made.

6.10.1 Estimation of the Granger Causality VAR Model and other Considerations

To appreciate the Grangerian (non) causality, VAR model is estimated without independent terms with 4 variables i.e. economic growth, budget deficit, unemployment and per capita income. All the four variables which were non-stationary at level make stationary by taking first difference before VAR

estimation (see table 6.1 and 6.2). The lag length 2 minimizes the Akaike Information Criteria (AIC) statistics, so 2 lags are used in the VAR model. There is no constant term included in the model, so the total numbers of parameters estimated are 32. With these elements VAR model is estimated, whose elements can be seen in table 6.10.

6.11 Appreciation of Causality Direction

It is important to submit that correlation doesn't necessarily insinuate causality. There are numerous variables having high correlations but are either spurious or have no sense. The Granger (1969) approach to the question of knowing if "x Granger cause y" allows to examine how much of the current value of y can be described by the past values of y and if when adding lagged values of x can enhance the explanation of the model. If the lagged values of x are statistically significant then y can be granger caused by x.

On the basis of these explanations Granger causality test is used to investigate the direction of causality among the four variables i.e. economic growth, unemployment, budget deficit and per capita income. Granger causality implies the estimation of a bivariate regression. The values of bivariate regression are given in the table 6.11.

6.11.1 Interpretation of the Causality Results

The results of the regression in table 6.11 suggest that there are two unilateral causality. In economic growth and budget deficit relationship the direction of causality is from economic growth to budget deficit as the computed F value (2.88) is greater than the critical value (2.81) at 5% level of significance indicating that the coefficient of lagged economic growth as a group is statistically different from zero at 5% level of significance. The second unilateral causality is found in economic growth and per capita income relationship. The direction of causality is

from economic growth to per capita income. The result indicates that the coefficient of lagged economic growth as a group is statistically different from zero at 5% level of significance as the computed F value (4.04) is greater than the critical value (2.81) at 5% level of significance.

The result further indicates that no bilateral causality is found as in none of the regression set both of the coefficient found to be statistically significant. The following are one of the independent type relationships detected by the Granger causality analysis: unemployment – economic growth, unemployment – budget deficit, per capita income – budget deficit, and per capita income – unemployment. In these relationships all the coefficient of regression sets are found to be statistically insignificant.

6.12 Summary

In summary, this chapter extensively explained the result of different tests operated for analysis of data. The results of economic and econometric model designed for the achievement of the objectives have been explained.

It is concluded from the results of Augmented Dickey-Fuller (ADF) test, that twenty seven variables were non-stationary I (1) whether a trend is included or not. Demand for money was non-stationary I(1) around intercept and was stationary I(0) around trend. Prices remained non-stationary I (2) whether, a trend is included or not. The results of Johansen Likelihood Ratio (LR) test showed that long run relationships existed among the variables of models.

It is concluded from the simultaneous models that bank credit to private sector have positive impact on money supply and private investment. Foreign exchange reserves have positive impact on money supply, public investment and on import. Output has positive impact on money demand, private investment, public

investment, export and on import. Government consumption, private investment, public investment, and balance of trade have positive impact on output. Devaluation of domestic currency has positive impact on export and negative impact on import. Relative prices of export have positive impact on export and relative prices of import have negative impact on import. It is concluded from the result of linear regression model that relies on foreign borrowing in respect of deficit financing is greater than other sources of deficit financing.

Error Correction Mechanism (ECM) models showed that short-run changes in foreign exchange reserves has significant positive impact on short-run change in money supply. Short-run changes in output have significant positive impact on short-run change in money demand, private investment, public investment, and export. Short-run changes in government consumption, private investment, public investment and balance of trade have significant positive impact, while short-run changes in real interest rate has significant negative impact on short-run changes in output. Short-run changes in relative prices of export have significant positive impact on short-run changes in export. Short-run changes in currency devaluation have significant positive impact on short-run changes in export and have negative (significant at 10%) impact on short-run changes in import. Short-run changes in GDP have significant negative impact on short-run changes in unemployment. Short-run changes in government domestic bank borrowing and foreign borrowing have significant negative impact on short-run changes in budget deficit.

It is found from the Impulse Response Function (IRF) that impulses of one standard deviation innovation took seven years for economic growth and budget deficit, eight years for unemployment and more than ten years for poverty. Variance decomposition analysis showed that the response of the four macroeconomic variables to innovation or impulses introduced is mostly explained in their own. The results of causality indicated only two unilateral

causality, one directed from economic growth to budget deficit and another from economic growth to per capita income. Bilateral causality is not found, and mostly independent type relationships are detected.

Table 6.1
ADF Test for Stationarity (Includes Intercept but not a Trend)

Variables[1]	I(0)		I(1)		I(2)		Result
	Test statistics[2]	Critical value	Test statistics	Critical value	Test statistics	Critical value	
Real Money supply (M^s)	.0079[0]	-3.5814	-5.2760[0]	-3.5850			I(1)
Demand for Real money (M^d)	-0.6369[2]	-3.5814	-9.8811[1]	-3.5850			I(1)
Real Domestic govt. bank borrowing(GBB)	-1.4207[1]	-3.5814	-9.5202[2]	-3.5850			I(1)
Real Gross domestic Product (y)	0.0812[0]	-3.5814	-6.8740[1]	-3.5850			I(1)
Interest rate (i)	-1.4018[0]	-3.5814	-5.7430[0]	-3.5850			I(1)
Real interest rate (r)	-3.3145[0]	-3.5814	-6.8789[0]	-3.5850			I(1)
Real Bank Credit (BCP)	-2.4968[0]	-3.5814	-6.4620[0]	-3.5850			I(1)
Domestic prices (P)	.4780[1]	-3.5814	-3.0890[0]	-3.5850	-6.7071[1]	-3.5889	I(2)
Real Government consumption expenditure (GC)	0.2963[2]	-3.5814	-7.9223[2]	-3.5850			I(1)
Real Private Investment (PINV)	-0.5524[1]	-3.5814	-6.1102[0]	-3.5850			I(1)
Real Public investment (PUINV)	-2.6289[0]	-3.5814	-5.5205[1]	-3.5850			I(1)
Real Reserves (RES)	-0.5073[0]	-3.5814	-8.0077[0]	-3.5850			I(1)
Economic Growth (EG)	-2.3555[2]	-3.5814	-5.1552[0]	-3.5850			I(1)

Table 6.1 Continue

Variables[1]	I(0)		I(1)		I(2)		Result
	Test statistics	Critical value	Test statistics	Critical value	Test statistics	Critical value	
Unemployment (UE)	-0.8091[1]	-3.5814	-6.3643[2]	-3.5850			I(1)
Gross National Product (GNP)	-0.0806[0]	-3.5814	-7.2098[0]	-3.5850			I(1)
Net Factor Income from Abroad (NFIA)	-1.4571[1]	-3.5814	-5.1143[0]	-3.5850			I(1)
Per Capita Income (PCIC)	0.2681[1]	-3.5814	-6.8389[2]	-3.5850			I(1)
Real Balance of Trade (BT)	-1.2668[0]	-3.5814	-4.8138[0]	-3.5850			I(1)
Real Export (x)	-0.0031[2]	-3.5814	-5.3915[1]	-3.5850			I(1)
Real Import (m)	-0.4620[0]	-3.5814	-6.4383[1]	-3.5850			I(1)
Foreign borrowing (fB)	-3.3751[1]	-3.5814	-9.6155[0]	-3.5850			I(1)
Budget Deficit (BD)	-1.5428[2]	-3.5814	-7.4811[2]	-3.5850			I(1)
Exchange Rate (ER)	-2.2978[0]	-3.5814	-5.7804[0]	-3.5850			I(1)
Export Price (Px)	-.9724[0]	-3.5814	-5.9915[0]	-3.5850			I(1)
Import Price (Pm)	-1.3225[0]	-3.5814	-6.0663[0]	-3.5850			I(1)
Relative Prices of Export (RPX)	-1.7586[0]	-3.5814	-5.5176[0]	-3.5850			I(1)
Relative Prices of Import (RPm)	-1.9913[0]	-3.5814	-5.6023[0]	-3.5850			I(1)
Government Revenue (GR)	-0.7435[2]	-3.5814	-8.0442[2]	-3.5850			I(1)
Government Expenditure (GE)	-0.8612[1]	-3.5814	-9.2059[2]	-3.5850			I(1)

(1) All variables in the table in the log form except r, BD, and BT (2) Figures in square brackets besides each statistics represent optimum lags, selected using the minimum AIC value.

Table 6.2
ADF Test for Stationarity (Includes Intercept and a Trend)

Variables[1]	I(0)		I(1)		I(2)		Result
	Test statistics[2]	Critical value	Test statistics	Critical value	Test statistics	Critical value	
Real Money supply (M^s)	-1.8765[1]	-4.1728	-5.1948[0]	-4.1781			I(1)
Demand for Real money (M^d)	-5.4659[0]	-4.1728					I(0)
Real Domestic govt. bank borrowing(GBB)	-4.0627[0]	-4.1728	-9.4101[2]	-4.1781			I(1)
Real Gross domestic Product (y)	-2.7585[0]	-4.1728	-6.8051[1]	-4.1781			I(1)
Interest rate (i)	-0.0915[0]	-4.1728	-6.9744[0]	-4.1781			I(1)
Real interest rate (r)	-3.2602[0]	-4.1728	-5.8423[0]	-4.1781			I(1)
Real Bank Credit (BCP)	-4.0394[0]	-4.1728	-6.5287[0]	-4.1781			I(1)
Domestic prices (P)	-2.1224[1]	-4.1728	-3.0430[0]	-4.1781	-6.6556[1]	-4.1837	I(2)
Real Government consumption expenditure (GC)	-3.3077[0]	-4.1728	-7.8686[2]	-4.1781			I(1)
Real Private Investment (PINV)	-1.7584[1]	-4.1728	-6.0441[0]	-4.1781			I(1)
Real Public investment (PUINV)	-2.3017[0]	-4.1728	-5.6561[2]	-4.1781			I(1)
Real Reserves (RES)	-3.0511[0]	-4.1728	-8.0868[0]	-4.1781			I(1)
Economic Growth (EG)	-2.6314[2]	-4.1728	-4.9631[2]	-4.1781			I(1)

Table 6.2 Continue

Variables[1]	I(0)		I(1)		I(2)		Result
	Test statistics[2]	Critical value	Test statistics	Critical value	Test statistics	Critical value	
Unemployment (UE)	-3.5134[1]	-4.1728	-6.3048[2]	-4.1781			I(1)
Gross National Product (GNP)	-2.5536[0]	-4.1728	-7.1233[0]	-4.1781			I(1)
Net Factor Income from Abroad (NFIA)	-1.5172[1]	-4.1728	-5.0539[0]	-4.1781			I(1)
Per Capita Income (PCIC)	-2.1363[2]	-4.1728	-6.8160[2]	-4.1781			I(1)
Real Balance of Trade (BT)	-2.4228[0]	-4.1728	-4.8021[0]	-4.1781			I(1)
Real Export (x)	-2.9976[1]	-4.1728	-5.3240[1]	-4.1781			I(1)
Real Import (m)	-2.6071[0]	-4.1728	-6.3491[2]	-4.1781			I(1)
Foreign borrowing (fB)	-3.3980[1]	-4.1728	-9.8946[0]	-4.1781			I(1)
Budget Deficit (BD)	-3.3144[1]	-4.1728	-7.3596[2]	-4.1781			I(1)
Exchange Rate (ER)	-2.2978[1]	-4.1728	-5.7048[0]	-4.1781			I(1)
Export Price (Px)	-2.4212[0]	-4.1728	-5.9218[0]	-4.1781			I(1)
Import Price (Pm)	-2.3606[0]	-4.1728	-5.9218[0]	-4.1781			I(1)
Relative Prices of Export (RPX)	-.8526[0]	-4.1728	-5.7488[0]	-4.1781			I(1)
Relative Prices of Import (RPm)	-.8980[0]	-4.1728	-5.9277[0]	-4.1781			I(1)
Government Revenue (GR)	-3.1670[2]	-4.1728	-7.9583[2]	-4.1781			I(1)
Government Expenditure (GE)	-2.3856[1]	-4.1728	-9.1714[2]	-4.1781			I(1)

(1) All variables in the table in the log form except r, BD, and BT (2) Figures in square brackets besides each statistics represent optimum lags, selected using the minimum AIC value.

Table 6.3.1 Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. Equation (14) $\ln (M^s) = a_1 \ln (BCP) + a_2 \ln (GBB) + a_3 \ln (RES)$. (Variables included in the cointegrating vector: M^s, BCP, GBB and RES).

Test assumption: No deterministic trend in the data. Lag interval is 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.50318	77.34	53.12	60.16	None **
0.44056	46.56	34.91	41.07	At most 1 **
0.32234	21.00	19.96	24.60	At most 2 *
0.0844	3.88	9.24	12.97	At most 3

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 3 cointegrating equation(s) at 5% significance level

Table 6.3.2 Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. Equation (15) $\ln(M^d/p) = b_1 \ln (y) + b_2 \ln(i)$. (Variables included in the cointegrating vector: M^d, Y and I).

Test assumption: No deterministic trend in the data. Lag interval is 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.4717	58.65	34.91	41.07	None **
0.3856	30.58	19.96	24.60	At most 1 **
0.1876	9.14	9.24	12.97	At most 2

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 2 cointegrating equation(s) at 5% significance level

Table 6.3.3 Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. Equation (16) $\ln(y) = c_1\ln(GC) + c_2\ln(PINV) + c_3\ln(PUINV) + c_4\ln(BT) + c_5\ln(r)$. (Variables included in the cointegrating vector: Y, GC, PINV, PUINV, BT and r)
Test assumption: No deterministic trend in the data. Lag interval is 1 to 2

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.7413	137.15	102.14	111.01	None **
0.4988	79.01	76.07	84.45	At most 1 *
0.3865	49.30	53.12	60.16	At most 2
0.3063	28.29	34.91	41.07	At most 3
0.1500	12.57	19.96	24.60	At most 4
0.1217	5.58	9.24	12.97	At most 5

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 2 cointegrating equation(s) at 5% significance level

Table 6.3.4 Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. Equation (17) $\ln(PINV) = d_1\ln(y) + d_2\ln(BCP) + d_3\ln(i)$. (Variables included in the cointegrating vector: PINV, Y, BCP and i).
Test assumption: No deterministic trend in the data. Lag interval is 1 to 2

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.5304	72.81	53.12	60.16	None **
0.4516	40.30	34.91	41.07	At most 1 *
0.2025	14.47	19.96	24.60	At most 2
0.1045	4.74	9.24	12.97	At most 3

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 2 cointegrating equation(s) at 5% significance level

Table 6.3.5 Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. Equation (18) $\ln(PUINV) = e_1 \ln(y) + e_2 \ln(RES) + e_3 \ln(r)$. (Variables included in the cointegrating vector: PUINV, Y, RES and r).
Test assumption: No deterministic trend in the data. Lag interval is 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.5097	73.37	53.12	60.16	None **
0.3820	42.01	34.91	41.07	At most 1 **
0.2789	20.83	19.96	24.60	At most 2 *
0.1362	6.44	9.24	12.97	At most 3

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 3 cointegrating equation(s) at 5% significance level

Table 6.3.6 Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. Equation (19) $\ln(x) = f_1 \ln(y) + f_2 \ln(RPx) + f_3 \ln(ER)$. (Variables included in the cointegrating vector: x, Y, RPx and ER).
Test assumption: No deterministic trend in the data. Lag interval is 1 to 2

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.5644	66.29	53.12	60.16	None **
0.2509	30.56	34.91	41.07	At most 1
0.1981	18.14	19.96	24.60	At most 2
0.1821	8.65	9.24	12.97	At most 3

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 1 cointegrating equation(s) at 5% significance level

Table 6.3.7 Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. Equation (20) ln (m) = $g_1$ln (y) + g_2 ln (RES) + g_3 ln (RPm) + g_4 ln (ER). (Variables included in the cointegrating vector: m, y, RPm, RES and ER).

Test assumption: No deterministic trend in the data. Lag interval is 1 to 2

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.7035	123.62	76.07	84.45	None **
0.5573	71.35	53.12	60.16	At most 1 **
0.4261	36.31	34.91	41.07	At most 2 *
0.1771	12.43	19.96	24.60	At most 3
0.0898	4.05	9.24	12.97	At most 4

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 3 cointegrating equation(s) at 5% significance level

Table 6.3.8 Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. Equation (21) $\Delta UE = h_1 \Delta GDP$. (Variables included in the cointegrating vector: UE and GDP).

Test assumption: No deterministic trend in the data. Lag interval is 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.5513	39.54	19.96	24.60	None **
0.0925	4.27	9.24	12.97	At most 1

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 1 cointegrating equation(s) at 5% significance level
Δ is used to measure change

Table 6.3.9 Johansen cointegration test result with intercept (no trend) in CE and no intercept in VAR. Equation (28) BD = κ_1 GBB + κ_2 fB. (Variables included in the cointegrating vector: BD, GBB and fB).
Test assumption: No deterministic trend in the data. Lag interval is 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.4488	42.09	34.91	41.07	None **
0.2314	15.88	19.96	24.60	At most 1
0.0932	4.30	9.24	12.97	At most 2

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 1 cointegrating equation(s) at 5% significance level

Table 6.3.10 Johansen cointegration test result for VAR models (Equations 29, 30, 31 and 32) with intercept (no trend) in CE and no intercept in VAR. Variables included in the cointegrating vector: BD, EG, UE and PCIC).
Test assumption: No deterministic trend in the data. Lag interval is 2 to 2

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.5729	90.84	53.12	60.16	None **
0.4847	54.26	34.91	41.07	At most 1 **
0.3531	25.76	19.96	24.60	At most 2 **
0.1508	7.027	9.24	12.97	At most 3

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level
L.R. test indicates 3 cointegrating equation(s) at 5% significance level
Note: In VAR regression models the maximum number of lags of each endogenous variable included are 2, selected by using AIC minimum value

Table 6.7
Estimation of the VAR (2) with 4 Endogenous Variables

Sample(adjusted): 1963 2005
Included observations: 43 after adjusting endpoints
Standard errors & t-statistics in parentheses

	DEG	DBD	DUE	DPCIC
DEG(-1)	-0.533336	-0.197129	-0.034585	-0.001795
	(0.16775)	(0.13392)	(0.04197)	(0.00111)
	(-3.17938)	(-1.47194)	(-0.82398)	(-1.61508)
DEG(-2)	-0.274500	-0.078651	-0.034962	-0.002093
	(0.16942)	(0.13526)	(0.04239)	(0.00112)
	(-1.62027)	(-0.58150)	(-0.82476)	(-1.86504)
DBD(-1)	0.285206	-0.350792	0.032690	0.000576
	(0.20904)	(0.16689)	(0.05230)	(0.00138)
	(1.36435)	(-2.10193)	(0.62499)	(0.41603)
DBD(-2)	0.130058	-0.299454	0.033176	0.001800
	(0.21043)	(0.16800)	(0.05265)	(0.00139)
	(0.61806)	(-1.78247)	(0.63010)	(1.29130)
DUE(-1)	0.073646	-0.300874	-0.107193	-0.002074
	(0.65853)	(0.52574)	(0.16477)	(0.00436)
	(0.11183)	(-0.57228)	(-0.65055)	(-0.47545)
DUE(-2)	-0.417431	-0.099558	-0.251123	0.002974
	(0.65384)	(0.52200)	(0.16360)	(0.00433)
	(-0.63843)	(-0.19073)	(-1.53500)	(0.68672)
DPCIC(-1)	-2.392598	7.293901	5.644964	0.292955
	(23.7520)	(18.9627)	(5.94305)	(0.15732)
	(-0.10073)	(0.38464)	(0.94984)	(1.86211)
DPCIC(-2)	21.56493	24.36953	3.547876	0.324180
	(24.1163)	(19.2536)	(6.03422)	(0.15974)
	(0.89420)	(1.26571)	(0.58796)	(2.02946)
C	0.812397	1.223859	0.522146	-0.011777
	(0.99317)	(0.79291)	(0.24850)	(0.00658)
	(0.81798)	(1.54350)	(2.10115)	(-1.79018)
R-squared	0.294949	0.287152	0.172805	0.387022
Adj. R-square	0.129055	0.119424	-0.021829	0.242792
Sum sq. resids	231.1525	147.3327	14.47163	0.010141

Table 6.7 Continue				
S.E. equation	2.607413	2.081661	0.652408	0.017271
F-statistic	1.777935	1.712003	0.887844	2.683363
Log likelihood	-97.17472	-87.49146	-37.60064	118.5611
Akaike AIC	4.938359	4.487975	2.167472	-5.095865
Schwarz SC	5.306982	4.856598	2.536095	-4.727242
Mean dependent	0.054419	0.004884	0.147442	-0.033256
S.D. dependent	2.793923	2.218332	0.645402	0.019847
Determinant Residual Covariance		0.001346		
Log Likelihood		-101.9338		
Akaike Information Criteria		6.415527		
Schwarz Criteria		7.890021		

Table 6.8
Values of the Impulse Response Function (IRF)

Response of DEG:				
Period	DEG	DBD	DUE	DPCIC
1	2.318542	0.000000	0.000000	0.000000
	(0.25001)	(0.00000)	(0.00000)	(0.00000)
2	-1.149158	0.511511	0.046779	-0.036375
	(0.36925)	(0.33776)	(0.33555)	(0.32113)
3	-0.102551	-0.153961	-0.360093	0.374549
	(0.37853)	(0.38832)	(0.39214)	(0.36107)
4	0.290629	-0.257344	0.122816	-0.025902
	(0.32531)	(0.32440)	(0.26005)	(0.17996)
5	-0.123650	0.252269	0.152491	0.023027
	(0.18248)	(0.20750)	(0.17641)	(0.11862)
6	-0.080409	0.018517	-0.114981	0.052592
	(0.13686)	(0.18678)	(0.14771)	(0.08251)
7	0.021723	-0.098729	-0.030096	0.056101
	(0.11156)	(0.13302)	(0.09306)	(0.05643)
8	0.020405	0.029476	0.051185	-0.000248
	(0.06412)	(0.09454)	(0.07457)	(0.03764)
9	-0.033186	0.041348	0.001647	0.009437
	(0.04361)	(0.07285)	(0.05096)	(0.03074)
10	-0.009799	-0.022146	-0.024373	0.021290
	(0.03472)	(0.05066)	(0.03612)	(0.02084)
Response of DBD:				
Period	DEG	DBD	DUE	DPCIC
1	0.323872	1.822484	0.000000	0.000000
	(0.28011)	(0.19652)	(0.00000)	(0.00000)
2	-0.551494	-0.607459	-0.186221	0.110891
	(0.29394)	(0.27587)	(0.26911)	(0.25663)
3	0.148150	-0.417161	-0.039873	0.345433
	(0.29342)	(0.29739)	(0.30201)	(0.27382)
4	0.127900	0.348877	0.153225	-0.102746
	(0.25282)	(0.25606)	(0.20953)	(0.12034)
5	-0.229004	0.125524	-0.020958	0.067205
	(0.14934)	(0.18188)	(0.17099)	(0.09465)
6	0.016504	-0.189470	-0.098599	0.096280
	(0.13193)	(0.17349)	(0.13739)	(0.07853)
7	0.053743	0.023519	0.053520	0.011190
	(0.09445)	(0.11963)	(0.09646)	(0.06134)
8	-0.043475	0.081608	0.025787	-0.000478
	(0.06709)	(0.10121)	(0.08018)	(0.04293)
9	-0.026486	-0.029350	-0.034992	0.032481
	(0.05008)	(0.07272)	(0.04898)	(0.03167)
10	0.016954	-0.021846	-0.001612	0.014799
	(0.03456)	(0.05336)	(0.04190)	(0.02584)

Table 6.8 Continue

Response of DUE:				
Period	DEG	DBD	DUE	DPCIC
1	-0.052775	-0.086875	0.571154	0.000000
	(0.08829)	(0.08760)	(0.06159)	(0.00000)
2	-0.061395	0.073312	-0.072349	0.085822
	(0.08747)	(0.08545)	(0.08531)	(0.08088)
3	-0.048235	0.047891	-0.160318	0.074765
	(0.08474)	(0.08656)	(0.08941)	(0.07602)
4	0.017848	-0.051824	0.035275	0.024436
	(0.06567)	(0.06865)	(0.05689)	(0.03116)
5	-0.003188	0.008583	0.049631	0.014279
	(0.03663)	(0.04888)	(0.05068)	(0.02759)
6	-0.023818	0.030446	-0.019036	0.018959
	(0.03065)	(0.04258)	(0.03130)	(0.02094)
7	-0.006695	-0.009981	-0.016737	0.017630
	(0.01939)	(0.02663)	(0.02457)	(0.01717)
8	0.004103	-0.007060	0.008856	0.008012
	(0.01493)	(0.02409)	(0.01857)	(0.01355)
9	-0.004279	0.009904	0.005088	0.004189
	(0.01041)	(0.01420)	(0.01165)	(0.00996)
10	-0.005743	0.001967	-0.004804	0.005950
	(0.00744)	(0.01161)	(0.00897)	(0.00800)
Response of DPCIC:				
Period	DEG	DBD	DUE	DPCIC
1	0.000451	0.000783	-0.001971	0.015203
	(0.00234)	(0.00234)	(0.00233)	(0.00164)
2	-0.003732	0.001460	-0.001762	0.004454
	(0.00240)	(0.00233)	(0.00233)	(0.00218)
3	-0.003502	0.002283	0.000502	0.006185
	(0.00239)	(0.00237)	(0.00256)	(0.00205)
4	-0.000637	-0.000867	-0.000117	0.003158
	(0.00138)	(0.00118)	(0.00119)	(0.00186)
5	-0.001469	0.000970	0.000129	0.002927
	(0.00114)	(0.00095)	(0.00092)	(0.00185)
6	-0.000865	0.000617	-0.000265	0.001791
	(0.00082)	(0.00078)	(0.00067)	(0.00152)
7	-0.000689	1.34E-05	-5.63E-05	0.001511
	(0.00071)	(0.00059)	(0.00053)	(0.00139)
8	-0.000349	0.000126	2.37E-05	0.001012
	(0.00051)	(0.00037)	(0.00036)	(0.00113)
9	-0.000365	0.000269	2.88E-06	0.000725
	(0.00044)	(0.00031)	(0.00022)	(0.00097)
10	-0.000276	7.24E-05	-5.95E-05	0.000557
	(0.00034)	(0.00023)	(0.00018)	(0.00077)
Ordering: DEG DBD DUE DPCIC				

Table 6.9
Values of the Variance Decomposition

Variance Decomposition of DEG:					
Period	S.E.	DEG	DBD	DUE	DPCIC
1	2.318542	100.0000	0.000000	0.000000	0.000000
2	2.638438	96.19105	3.758508	0.031434	0.019007
3	2.695465	92.30871	3.927409	1.814809	1.949071
4	2.726165	91.37789	4.730545	1.977122	1.914447
5	2.744939	90.33514	5.510682	2.258788	1.895387
6	2.749088	90.14822	5.498598	2.426910	1.926269
7	2.751683	89.98453	5.616967	2.434298	1.964204
8	2.752392	89.94364	5.625540	2.467627	1.963193
9	2.752920	89.92372	5.645944	2.466717	1.963616
10	2.753216	89.90561	5.651198	2.474022	1.969172
Variance Decomposition of DBD:					
Period	S.E.	DEG	DBD	DUE	DPCIC
1	1.851038	3.061381	96.93862	0.000000	0.000000
2	2.036288	9.864760	89.00234	0.836332	0.296563
3	2.112665	9.656138	86.58237	0.812576	2.948918
4	2.153013	9.650516	85.99343	1.288887	3.067166
5	2.169935	10.61435	84.99203	1.278191	3.115434
6	2.182609	10.49715	84.76143	1.467466	3.273948
7	2.184082	10.54355	84.65875	1.525535	3.272160
8	2.186190	10.56277	84.63487	1.536507	3.265855
9	2.187069	10.56895	84.58489	1.560871	3.285288
10	2.187294	10.57278	84.57743	1.560604	3.289189
Variance Decomposition of DUE:					
Period	S.E.	DEG	DBD	DUE	DPCIC
1	0.580129	0.827575	2.242563	96.92986	0.000000
2	0.598576	1.829386	3.606528	92.50839	2.055698
3	0.627858	2.252931	3.859801	90.60085	3.286418
4	0.631705	2.305403	4.485967	89.81248	3.396149
5	0.633879	2.292148	4.473590	89.81062	3.423640
6	0.635624	2.419984	4.678485	89.40770	3.493827
7	0.636202	2.426660	4.694597	89.31447	3.564274
8	0.636367	2.429563	4.704478	89.28767	3.578284
9	0.636493	2.433125	4.726833	89.25884	3.581203
10	0.636567	2.440692	4.726676	89.24354	3.589096

Table 6.9 Continue

Variance Decomposition of DPCIC:					
Period	S.E.	DEG	DBD	DUE	DPCIC
1	0.015357	0.086331	0.260288	1.647098	98.00628
2	0.016578	5.142899	0.998393	2.542789	91.31592
3	0.018189	7.979322	2.405612	2.188818	87.42625
4	0.018492	7.837755	2.547037	2.121446	87.49376
5	0.018806	8.188840	2.729134	2.056034	87.02599
6	0.018922	8.297018	2.801985	2.050355	86.85064
7	0.018995	8.365203	2.780599	2.035547	86.81865
8	0.019026	8.372046	2.776072	2.029164	86.82272
9	0.019045	8.391821	2.790481	2.025077	86.79262
10	0.019055	8.403615	2.788889	2.023850	86.78365
Ordering: DEG DBD DUE DPCIC					

Table 6.10
Granger Causality VAR (2) Model with 4 Variables and without Independent Term

Sample(adjusted): 1963 2005
Included observations: 43 after adjusting endpoints
Standard errors & t-statistics in parentheses

	DEG	DBD	DUE	DPCIC
DEG(-1)	-0.534403	-0.198736	-0.035271	-0.001779
	(0.16695)	(0.13654)	(0.04397)	(0.00115)
	(-3.20100)	(-1.45552)	(-0.80212)	(-1.55304)
DEG(-2)	-0.268049	-0.068932	-0.030815	-0.002186
	(0.16843)	(0.13775)	(0.04436)	(0.00116)
	(-1.59144)	(-0.50041)	(-0.69464)	(-1.89182)
DBD(-1)	0.321878	-0.295546	0.056260	4.44E-05
	(0.20321)	(0.16619)	(0.05352)	(0.00139)
	(1.58398)	(-1.77831)	(1.05116)	(0.03186)
DBD(-2)	0.153545	-0.264072	0.048271	0.001459
	(0.20747)	(0.16968)	(0.05465)	(0.00142)
	(0.74007)	(-1.55627)	(0.88336)	(1.02513)
DUE(-1)	0.227985	-0.068364	-0.007995	-0.004311
	(0.62793)	(0.51355)	(0.16539)	(0.00431)
	(0.36308)	(-0.13312)	(-0.04834)	(-1.00059)
DUE(-2)	-0.285062	0.099853	-0.166047	0.001055
	(0.63049)	(0.51565)	(0.16606)	(0.00433)
	(-0.45213)	(0.19365)	(-0.99991)	(0.24391)
DPCIC(-1)	-10.58219	-5.043553	0.381327	0.411672
	(21.4367)	(17.5320)	(5.64605)	(0.14709)
	(-0.49365)	(-0.28768)	(0.06754)	(2.79879)
DPCIC(-2)	11.53680	9.262351	-2.897431	0.469549
	(20.6693)	(16.9044)	(5.44395)	(0.14182)
	(0.55816)	(0.54792)	(-0.53223)	(3.31078)
R-squared	0.281074	0.237203	0.065395	0.329245
Adj. R-squared	0.137289	0.084644	-0.121526	0.195093
Sum sq. resids	235.7014	157.6563	16.35074	0.011097
S.E. equation	2.595058	2.122373	0.683494	0.017806

Table 6.10 continue

F-statistic	1.954823	1.554825	0.349856	2.454281
Log likelihood	-97.59371	-88.94752	-40.22542	116.6245
Akaike AIC	4.911335	4.509187	2.243043	-5.052301
Schwarz SC	5.239001	4.836852	2.570708	-4.724636
Mean dependent	0.054419	0.004884	0.147442	-0.033256
S.D. dependent	2.793923	2.218332	0.645402	0.019847
Determinant Residual Covariance		0.001786		
Log Likelihood		-108.0130		
Akaike Information Criteria		6.512233		
Schwarz Criteria		7.822893		

Table 6.11
Appreciation of the Causality Direction in the Four Variables

Pairwise Granger Causality Tests			
Sample: 1960 2005			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
DBD does not Granger Cause DEG	43	0.69092	0.50730
DEG does not Granger Cause DBD		2.88346	0.06825
DUE does not Granger Cause DEG	43	0.99338	0.37973
DEG does not Granger Cause DUE		1.10684	0.34102
DPCIC does not Granger Cause DEG	43	1.06022	0.35640
DEG does not Granger Cause DPCIC		4.03822	0.02569
DUE does not Granger Cause DBD	43	0.03237	0.96818
DBD does not Granger Cause DUE		0.52139	0.59788
DPCIC does not Granger Cause DBD	43	1.27210	0.29191
DBD does not Granger Cause DPCIC		0.16150	0.85144
DPCIC does not Granger Cause DUE	43	1.52102	0.23149
DUE does not Granger Cause DPCIC		0.09362	0.91083

Chapter 7

CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

This chapter reviews the conclusion derived from the whole study. A brief conclusion of all chapters has been discussed. Major empirical findings from the present study are presented. Recommendations based on the empirical results of the study have been discussed. Suggestions for further research have also been discussed in this chapter.

7.2 Summary, Major Finding and Recommendations

This study started with three main objectives in the first chapter. First, the monetary impulse entered into the economy in the form of money supply due to an increase in government borrowing from the banking system to finance budget deficit. This exercise investigates the mechanism through which the monetary and fiscal impulses are channeled and then their effects are transmitted to other macroeconomic variables. The effects of increase in money supply due to borrowing from domestic banking system and foreign borrowing to finance budget deficit are channeled through private and public investment to other macroeconomic variables. In the second objective, the effect of deficit financing sources i.e. domestic bank borrowing and external borrowing on budget deficit is assessed. In third objective, the causality among the four variables has been assessed. Response of dependent variable to the shock in error terms is traced out. Direction of causality among the four variables i.e. economic growth, unemployment, budget deficit and per capita income (used to measure poverty level) was detected.

The aim of the second chapter was to review from the literature the significance of budget deficits for key macroeconomic variables. It is concluded from the

empirical studies presented in the second chapter that the impact of public investment on private investment and output growth, both the methods of financing and the components of government expenditure have different effects. Therefore, distinction between current and capital expenditure is crucial when evaluating the impact of fiscal policy on private investment and output growth. Overall results from the empirical literature with respect to the impact of public investment on private investment and output growth are ambiguous, but some empirical studies find a significantly negative effect of public consumption expenditures on output growth.

The major outcomes from the empirical studies of the second chapter, examining the relationship between the budget deficit and inflation, showed strong evidence that budget deficit, through monetization and rising money supply, leads to inflation. However, the inflationary effect of government budget deficits depends on the ways by which the deficit is financed and the impact of that on aggregate demand.

The evidence of the detailed literature studied in the second chapter, with respect to the impact of the budget deficit on the trade deficit reported was mixed. Overall results are inconclusive, the majority of studies found evidence supporting the twin deficits relationship arising through the exchange rate. The key outcomes from all these studies showed strong evidence suggesting that an increase in the budget deficit induced domestic absorption, which led to import expansion, causing current account deficit.

The theoretical arguments presented in the second chapter, showed inconclusive results with respect to the impact of budget deficit and exchange rate. The major conclusion from the empirical literature studies showed strong evidence, in both developed and developing countries suggesting that large deficits have adverse

effects on exchange rates. It is also observed from the empirical studies that the effects of budget deficits on exchange rates depend on the way the budget deficit is financed, whether through money growth or through taxation, each of these tools have different effects.

The evidence from the detailed literature studied in the second chapter, regarding the impact of budget deficit on interest rates is mixed. Parts of the conflicting results are due to difference in the choice of variables, sample period, and the empirical methodology. Most of the empirical studies results found a significance and positive relationship between budget deficits and interest rates.

The aim of third chapter was to develop analytical framework and design economic and econometric model. These designed models were used to examine the macroeconomic effects arising from budget deficits and its funding, and analyze, as well, the causality among the macroeconomic variables and budget deficits. Simultaneous equation model was used for estimation using 2SLS method. A simple linear regression model was selected to analyze the effect of each source of budget deficit financing on budget deficit with OLS technique. In order to encapsulate the causality among the four main variables of the study (budget deficit, economic growth, unemployment, and poverty) Vector Autoregression (VAR) model was used, which treated all the variables in the system as endogenous.

The aim of fourth chapter was to examine the overview of the economic performance of the Pakistan economy over the period 1960-2005. The economic strategy undertaken by the Ayub regime depicted accelerated GDP growth, rapidly accelerated inter-personal and inter-regional economic inequalities. The economic policies of the Ayub regime restricted Pakistan's economy into unproductive industrial base, sluggish export growth and growing loan dependence in the next

four decades. Gross foreign aid inflows increased from US$373 million in 1950-55 to US$2,701 million in 1965-70. The composition of foreign aid transformed from grants to higher interest loans. The debt-servicing as a percentage of foreign exchange earnings increased from 4.2 percent in 1960-1961 to 34.5 per cent by 1971-72. Most of Pakistan's population was suffering an absolute decline in their living standards.

Zulfiqar Ali Bhutto's regime important initiative was the nationalization of forty-three large industrial units. The nationalization of heavy industries shook the confidence of the private sector, and private investment as a percentage of GDP declined from 8.2 per cent in 1960-72 to 4.8 per cent in 1973-78. Defence and public administration were growing at the rate of 11.4 per cent, while the commodity producing sector was growing at only 2.21 per cent during the period. Budget deficits broadened as expenditures on defence and administration increased sharply. Defence expenditures as a percentage of GDP increased from 2.7 per cent in 1965 to 6.7 per cent in 1974-75, while expenditures on administration increased from 1.1 per cent in 1965 to 1.8 per cent in 1974-75. Investment undertaken were hardly finance from internally generated funds, thereby requiring heavy borrowing from foreign governments.

During General Zia ul Haq period, the inflow of remittances from the Middle East which increased from US$0.5 billion in 1978 to US$3.2 billion in 1984 relieved the quickly growing debt burden. GDP average growth reached to 6.6 per cent during the 1978-88, as it was about 5 per cent during the 1973-77. Private sector gross fixed investment as a percent of GDP was 4.8 per cent in the Bhutto period, and reached to 7.1 per cent in the Zia-ul-Haq regime. During the Zia-ul-Haq period GDP growth rate increased, but this higher growth rate could not carry on due to continued poor performance of domestic savings rate required to be over 20 per cent but it remain below 10 per cent, exports as a percentage of GDP did not

show any considerable increase and remain below 10 per cent and insufficient investment in social and economic infrastructure.

Over the politician period, political volatility, and deteriorating law and order situation probably had a significant unfavorable effect on private investment and GDP growth. The successive termination of elected government further aggravated the adverse environment for investment. Total investment as a percentage of GDP reduced from 17.9 per cent in the period 1988-93 to 16.3 per cent in the period 1993-1998. Development expenditure declined from an average of 7.4 per cent of GDP in 1973-77 to 3.5 per cent of GDP in 1997-98. GDP growth reduced from 6.3 per cent in the 1980s to 4.2 per cent in the 1990s, employment growth remains at a low level of 2.4 per cent. Population below the poverty line increased to 32 per cent in 1998-99, as it was 26.6 per cent in 1992-93.

The General Pervaiz Musharraf's government implemented prudent tax policy and raised revenue. Fiscal deficit reduced slowly from 5.2 percent of GDP in 1999-00 to 3.0 percent of GDP in 2004-2005. The real GDP grew by 8.4% during the fiscal year 2005.The employed labour force increase. Total rural employment increased from 28.98 million in 2004 to 29.65 million in 2005. Urban employment increased from 14.69 million in 2004 to 15.03 million in 2005. Government adopted poverty reduction strategy in 2001 focuses mainly on the five areas: (i) sustain macroeconomic stability and quicken economic growth, (ii) human capital development, (iii) boost target intercessions, (iv) intensify social safety nets and (v) improve governance.

The aim of fifth chapter was to review the existing available sources in order to meet the development expenditure, fiscal deficit, settle expenditure for social welfare, and unpredicted expenditure in emergencies. Public debt raised for deficit financing put up with some lines of objections, including chain react problems,

inflation and crowding out has been analyzed. Mainly in Pakistan domestic bank borrowing and foreign borrowing are raised to finance budget deficit. Privatization proceeds effectively applied for deficit financing after 1999. Privatization share in total domestic deficit financing increased from 5.47% in 2002-03 to 29.33% in 2004-05. The continuous trend in budget deficit observed was responsible for superseding public debt in Pakistan. Excessive non development expenditure and inefficient revenue generating system amplified budget deficit.

The aim of sixth chapter was to present the result of different tests operated for analysis of data, and results of economic and econometric model designed for the achievement of the objectives. The stationarity of the data was checked using Augmented Dickey-Fuller (ADF) test. The long run relationship among the variables of models was checked by using Johansen Likelihood Ratio (LR) test. Results of the simultaneous equation model selected to analyze the impact of budget deficit on macroeconomic variables (economic growth, unemployment and poverty) was estimated. Result of linear regression model selected to analyze the relationship of budget deficit and its funding sources was estimated. Error Correction Mechanism (ECM) was used to ascertain the existence of short run disequilibrium in the models. Results of Vector Autoregressive (VAR) model selected to analyze the causality among the four variables were estimated. The coefficients estimated from the simultaneous equations for long term relationship and coefficients estimated from Error Correction Mechanism (ECM) for short tern behavior will be used in recommendation portion of this section for policy analysis.

The empirical evidence leads to the conclusion that fiscal and monetary variables are vital to determine the macroeconomic stability in Pakistan. The finding from the results for the scenario of an expansion in government capital expenditure, through money supply for two cases (short term/long term), indicates that this

policy in short term have not favorable impacts upon Pakistan economic development in term of crowding-in effects. The rapidity of adjustment during the whole process towards long run steady state is found very low. In the long term this policy has favorable impacts on both private and public investment (crowding-in effects). It is recommended that, if the government gives priority to long term private/public investment policies, it can gain better results in economic growth, poverty alleviation and unemployment reduction.

The short term and long term policies both have favorable impact in terms of output development. It results in gain of better internal performance, in term of consumption expenditure, capital expenditures and balance of trade. It is noticeable that in short terms domestic output adjusts previous discrepancy in the same period, and hence has the capacity to gain competitiveness and a better external performance, in term of the trade and current accounts, as well as accumulation in foreign assets stocks and declining external borrowing.

The short-term policies for foreign sector were uncertain. The depreciation of domestic currency effects in short term raise export significantly, but the import fall insignificantly. This indicates that in short term devaluation's negative impacts on imports are not encouraging for Pakistan. To meet development requirements Pakistan import capital equipments besides consumption items. The empirical finding of short term results indicates that frequent devaluation will not improve trade balance but would increase the cost of production.

The long term policies have favorable impacts in term of foreign sector development. Domestic currency devaluations have significant effects both on rise of export and on fall of import in long term. Income elasticity of export is comparatively less than the income elasticity of import, indicating that export sector needs more attention in term of quality standard, price control, and

internationally adopted marketing strategies. In stead of having positive impact of devaluation on foreign sector, Pakistan trade balance worsens in a row with worsening in foreign assets stocks as of a current account deficit, and consequently the foreign debts increase. These results recommend that parallel and effective running of fiscal, monetary and exchange rate policies are needed to trim down balance of payment deficit.

Unemployment response to output growth (GDP) almost remains the same both in short term and in long term. The employment generating capacity of output growth is low, indicating that market based economy development is needed. Privatization which is believed to be depending on efficiency may help in this regard. Long term skill development and merit based recruitment policies may also accelerate employment generating capacity of output growth (i.e. reduce the unemployment intensity).

The results of budget deficit financing in term of borrowing from domestic banking system and foreign borrowing indicates almost the same capability of financing budget deficit, but the financing elasticity of foreign borrowing with respect to budget deficit is greater than one, indicating that Pakistan relies mostly on foreign borrowing for deficit financing, which result in foreign reserves outflows. These evidences recommend that domestic sources of deficit financing should encourage to deter foreign reserves outflows.

The finding from the causality results indicates that any innovation of one standard deviation taken place toward economic growth and budget deficit took seven years for each one to become effective, while for unemployment it took eight years and for poverty reduction it took more than ten years to become effective. This clearly indicates that in Pakistan either the policies are not objective oriented or took longer time in implementation. These empirical evidences recommend that fiscal

policy needs alteration in term of objective achievement and prolonged channels towards implementation.

The results of causality further indicate that response of the four macroeconomic variables (economic growth, budget deficit, unemployment and per capita income) to innovation or impulses introduced were mostly explained in their own. Only two unilateral causality were found, one directed from economic growth to budget deficit and another from economic growth to per capita income. Bilateral causality was not found, and mostly independent type relationship was detected in unemployment – economic growth, unemployment – budget deficit, per capita income – budget deficit, and per capita income – unemployment. These empirical evidences recommend that fiscal policies with single edge are not appropriate to combat all the macroeconomic evils, but multidimensional fiscal policies with coordination of monetary policy are suggested.

The main finding from the ECM and simultaneous equation dealing with the short term and long term effects of fiscal expansion policy of the government in order to improve the macroeconomic performance, recommends that government should adopt the policy of an expansion in capital expenditure through long term policy horizon, because it produces the most desirable outcomes in term of economic growth, poverty reduction and unemployment retardation. Further, the finding suggests that the government should reduce the gap between policy formation and implementation.

The main finding from the three distinct government policies in respect of budget deficit reduction indicates that the reduction in government expenditure (consumption or capital) exerts the most unfavorable effect on the overall macroeconomic performance, and domestic source financing policy produces favorable impact compared to foreign borrowing financing. Therefore, it is

advisable on the basis of the results presented in the study, that if the government of Pakistan chooses to implement government expenditure reduction approach, it should be conscious that the reduction in government expenditures in order to reduce the budget deficits is not the best approach and especially the policy of reducing government capital expenditure. If the government in Pakistan put into practice the expansionary monetary policy, so as to reduce the budget deficit, the present study results show that this policy would have some positive effects on Pakistan's economy, but the government has to be conscious about the inflationary effects of this policy.

7.3 Suggestions for Further Research

It is to mention that this study acknowledges the importance of other policy options such as privatization, and domestic non bank borrowing to finance budget deficit invites attention of government of Pakistan to ponder over the said options as they have the potential to be advantageous to improve future economic performance. Due to the non availability of data about privatization for complete study period on the one hand and complexity of the model to be incorporated in the domestic non bank borrowing on the other, these aspects are left for further research. The challenge is to incorporate these policy options within the context of the macroeconomic models used in this study, through means of further suitable expansion to it.

The following areas predominantly require further research

1. The issue of privatization is an important area for further research to be incorporated into the macroeconomic models used in this study. Privatization possibly will improve the economic efficiency and competitiveness of the entire economy. Sometimes the public sector suffers from a lack of managerial skill or the government may have complexities to administer these sectors due to political intervention or corruption. Therefore, these sectors may not remain advantageous

for the government, and it is better for them to privatize. However, before taking any decision relating to further privatization that could have unfavorable effects on the economy of Pakistan later on, the authority should consider this issue more cautiously.

2. Another important area for further research is the issue of considering the domestic non bank borrowing to finance budget deficit. The government of Pakistan is currently depending on domestic bank borrowing and external borrowing to finance budget deficit and accumulated debt services. Further research may include domestic non bank borrowing to finance budget deficit into the model used in this study in order to analyze the impact of this policy on key macroeconomic variables, and to draw the important lesson from the impact of such a development on the economy of Pakistan.

3. A further area for future research is to identify the impact of government revenue generated both through direct and indirect taxes to finance budget deficit, in order to identify how to introduce the tax raising and fair tax collection policy while minimizing its potentially unfavorable effects on the economy. This may provide a good analysis of the effectiveness of the tax reform policy required to minimize budget deficit by raising revenue.

4. Further research should pay attention to the role of private sector in employment generation by specifying the employment generating intensity of different private sectors, especially in some sectors which are important for employment generation such as service sectors. This could be considered by incorporating service sectors separately in the model. This could provide a good analysis of the effectiveness of different private sectors, which is urgently require for employment generation.

5. The two neighboring countries of South Asia, Pakistan and India, always remain in tension. There is a great need to cooperate, build up trust and confidence, and integrate with each other not only to create economic balance but to reduce the unnecessary defence expenditure. It would, therefore, be an important area for further research to examine the impact of such economic integration on budget deficit reduction and further their impact on other macroeconomic variables.

APPENDIX

Table A-1 Gross National Income and Population (1960-2005)

Years	Gross National Income (as a % of GDP)	Population (in Million)
1960	113.364	45.030
1961	115.440	46.200
1962	116.005	47.530
1963	114.502	48.900
1964	109.618	50.310
1965	105.968	51.760
1966	104.532	53.260
1967	106.257	54.790
1968	105.050	56.370
1969	106.363	58.000
1970	99.998	59.700
1971	99.250	61.490
1972	99.062	63.340
1973	99.775	65.890
1974	99.283	67.900
1975	101.032	69.980
1976	102.298	72.120
1977	103.661	74.330
1978	106.882	76.600
1979	107.457	78.940
1980	107.806	81.360
1981	108.158	83.840
1982	107.821	86.440
1983	110.811	89.120
1984	109.433	91.880
1985	108.114	94.730
1986	108.038	97.670

Table A-1 Continue

Years	Gross National Income (as a % of GDP)	Population (in Million)
1987	106.355	100.690
1988	104.307	103.820
1989	103.515	107.040
1990	104.061	110.360
1991	101.960	113.780
1992	100.521	117.310
1993	100.087	120.830
1994	99.492	124.450
1995	99.890	120.880
1996	99.662	123.870
1997	99.205	126.900
1998	99.090	129.970
1999	99.129	133.010
2000	98.736	137.900
2001	98.691	140.360
2002	100.538	143.170
2003	103.148	146.750
2004	102.250	149.650
2005	101.912	152.530

Source: Economic Survey of Pakistan various issues, International Financial Statistics, Population Census Organization of Pakistan and author calculation.

Table A-2 GDP and Per Capita Gross National Income (1960-2005)

Years	Gross Domestic Product(Million of Pk. Rupees)	Per Capita GNI(as a % of GDP)
1960	17854	2.52
1961	19612	2.50
1962	20525	2.44
1963	22052	2.34
1964	24786	2.18
1965	28235	2.05
1966	31244	1.96
1967	35546	1.94
1968	38296	1.86
1969	41349	1.83
1970	47751	1.68
1971	50791	1.61
1972	54673	1.56
1973	67492	1.51
1974	88102	1.46
1975	111183	1.44
1976	130364	1.42
1977	149748	1.39
1978	176334	1.40
1979	194915	1.36
1980	234179	1.33
1981	278196	1.29
1982	324159	1.25
1983	364387	1.24
1984	419802	1.19
1985	472157	1.14
1986	514532	1.11
1987	572479	1.06
1988	675389	1.00

Table A-2 Continue

Years	Gross Domestic Product(Million of Pk. Rupees)	Per Capita GNI(as a % of GDP)
1989	769745	0.97
1990	855943	0.94
1991	1020600	0.90
1992	1211385	0.86
1993	1341629	0.83
1994	1573097	0.80
1995	1882071	0.83
1996	2120173	0.80
1997	2428312	0.78
1998	2677656	0.76
1999	2938379	0.75
2000	3793436	0.72
2001	4162654	0.70
2002	4401699	0.70
2003	4822842	0.70
2004	5532663	0.68
2005	6547590	0.67

Source: Economic Survey of Pakistan various issues, International Financial Statistics and author calculation.

Table A-3 Exchange Rate, Relative prices of Import and Relative prices of Export (1960-2005)

Years	Exchange Rate	Relative prices of Import	Relative prices of Export
1960	4.762	14.67	11.00
1961	4.762	14.74	11.10
1962	4.762	14.36	11.22
1963	4.762	14.40	11.30
1964	4.762	13.78	10.49
1965	4.762	10.97	10.21
1966	4.762	8.62	8.48
1967	4.762	8.23	7.60
1968	4.762	7.82	7.52
1969	4.762	7.65	7.34
1970	4.762	7.85	6.96
1971	4.762	7.27	6.62
1972	8.681	9.04	7.58
1973	9.994	15.08	14.72
1974	9.900	16.78	18.23
1975	9.900	19.72	13.42
1976	9.900	16.75	12.05
1977	9.900	2.77	3.08
1978	9.900	2.81	3.02
1979	9.900	2.73	3.52
1980	9.900	3.02	3.43
1981	9.900	3.27	3.23
1982	11.848	1.79	1.63
1983	13.117	1.85	1.68
1984	14.046	1.81	1.75
1985	15.928	1.82	1.73
1986	16.648	1.73	1.58
1987	17.399	1.73	1.70

Table A-3 Continue

Years	Exchange Rate	Relative prices of Import	Relative prices of Export
1988	18.003	2.02	1.99
1989	20.542	2.02	1.84
1990	21.707	2.18	2.00
1991	23.801	2.28	1.81
1992	25.083	2.06	1.74
1993	28.107	1.98	1.63
1994	30.567	0.94	0.97
1995	31.643	0.97	1.01
1996	36.079	0.99	1.01
1997	41.112	0.96	1.00
1998	45.047	0.88	1.11
1999	49.501	0.93	1.10
2000	53.648	1.04	1.04
2001	61.927	1.15	1.07
2002	59.724	1.11	1.03
2003	57.752	1.12	0.94
2004	58.258	1.23	0.99
2005	59.515	1.22	0.93

Source: Economic Survey of Pakistan various issues, International Financial Statistics and author calculation.

Table A-4 **Spread in Interest Rate, Inflation Rate, Export Prices and Import Prices (1960-2005)**

Years	Spread in interest rate	Inflation Rate	Export Prices	Import Prices
1960	3.37	4.9	48.3	64.4
1961	3.16	3.0	50.2	66.6
1962	2.95	0.5	50.9	65.2
1963	3.18	2.1	51.1	65.1
1964	4.29	4.2	49.4	64.9
1965	3.63	4.8	50.3	54.1
1966	3.29	2.5	42.9	43.6
1967	3.46	8.6	41.7	45.2
1968	3.24	3.6	42.8	44.5
1969	3.85	1.6	42.4	44.2
1970	3.81	4.1	41.8	47.2
1971	4.24	5.7	42.1	46.2
1972	4.50	4.7	50.5	60.2
1973	5.47	9.7	107.4	110.1
1974	5.93	30.0	173.0	159.3
1975	6.53	26.7	161.5	237.2
1976	6.17	11.7	161.9	224.9
1977	6.25	11.8	46.2	41.6
1978	5.82	7.4	48.7	45.3
1979	5.95	7.1	60.6	47.1
1980	5.36	10.7	65.5	57.6
1981	5.46	12.4	69.4	70.1
1982	2.46	11.1	38.8	42.8
1983	2.26	4.7	41.8	46.1
1984	2.89	7.3	46.8	48.3
1985	-1.93	5.7	49.0	51.3
1986	-1.75	4.4	46.8	51.0
1987	-1.16	3.6	52.0	52.8

Table A-4 Continue

Years	Spread in interest rate	Inflation Rate	Export Prices	Import Prices
1988	-0.51	6.3	64.6	65.7
1989	0.91	10.4	66.2	72.4
1990	-1.95	6.0	76.0	83.0
1991	3.55	12.7	77.6	97.6
1992	6.17	10.6	82.6	97.8
1993	6.83	9.8	84.7	103.0
1994	5.98	11.3	56.3	54.5
1995	6.00	13.0	66.4	63.4
1996	8.72	10.8	73.0	71.6
1997	8.36	11.8	80.7	77.9
1998	8.67	7.8	96.8	76.8
1999	8.02	5.7	101.8	86.2
2000	7.79	3.6	100.0	100.0
2001	9.25	4.4	107.0	115.2
2002	9.97	3.5	106.9	115.3
2003	5.35	3.1	100.1	119.5
2004	5.97	4.6	110.2	137.2
2005	6.72	9.3	113.1	148.8

Source: Economic Survey of Pakistan various issues, International Financial Statistics and author calculation.

Table A-5 Government borrowing from the banking system and Foreign Borrowing as a percentage of GDP (1960-2005)

Years	Government borrowing from the banking system	Foreign Borrowing
1960	5.707	0.907
1961	2.631	0.719
1962	2.724	1.476
1963	2.807	2.598
1964	1.937	3.264
1965	2.826	2.780
1966	4.193	3.121
1967	1.424	9.537
1968	1.180	6.463
1969	2.184	4.808
1970	4.875	3.663
1971	1.969	3.384
1972	3.470	1.578
1973	1.591	4.891
1974	2.138	3.378
1975	3.662	7.012
1976	3.949	4.977
1977	3.473	3.441
1978	4.511	3.002
1979	5.907	3.224
1980	3.426	2.273
1981	3.528	2.273
1982	3.491	1.244
1983	5.658	1.144
1984	5.386	0.790
1985	6.746	0.409
1986	8.378	0.740
1987	7.128	1.394

Table A-5 Continue

Years	Government borrowing from the banking system	Foreign Borrowing
1988	4.518	1.764
1989	4.982	2.420
1990	3.093	2.308
1991	6.006	1.549
1992	6.035	1.842
1993	6.471	2.399
1994	4.961	2.252
1995	4.369	2.205
1996	6.071	1.922
1997	5.854	1.961
1998	4.829	1.592
1999	3.122	3.753
2000	3.780	0.757
2001	2.063	1.805
2002	3.232	0.772
2003	1.787	0.954
2004	2.505	0.735
2005	3.151	0.650

Source: Economic Survey of Pakistan various issues, International Financial Statistics and author calculation.

Table A-6 Private Investment and Public Investment as a percentage of GDP (1960-2005)

Years	Private Investment	Public Investment
1960	5.31	5.22
1961	6.59	6.49
1962	7.28	7.17
1963	8.70	8.56
1964	11.58	8.82
1965	11.44	10.04
1966	9.66	7.97
1967	8.88	7.69
1968	8.26	6.93
1969	7.27	6.51
1970	7.32	7.00
1971	6.95	6.92
1972	6.48	5.98
1973	5.52	5.81
1974	4.36	7.69
1975	4.68	9.90
1976	4.97	12.49
1977	5.19	12.45
1978	4.94	11.48
1979	5.00	11.21
1980	5.53	11.28
1981	7.77	9.38
1982	7.20	9.64
1983	7.34	9.61
1984	7.48	9.00
1985	7.59	8.91
1986	7.77	9.25
1987	7.75	9.73

Table A-6 Continue

Years	Private Investment	Public Investment
1988	7.67	8.81
1989	8.34	8.97
1990	8.94	8.35
1991	8.94	8.47
1992	9.81	8.79
1993	10.05	9.08
1994	9.56	8.30
1995	8.67	8.24
1996	9.11	8.27
1997	9.51	6.84
1998	9.76	5.28
1999	7.88	6.05
2000	10.41	5.61
2001	10.16	5.67
2002	11.28	4.18
2003	11.30	3.97
2004	10.80	4.83
2005	10.89	4.37

Source: Economic Survey of Pakistan various issues, International Financial Statistics, and author calculation.

Table A-7 Continue

Years	Export	Import	Trade Deficit/Surplus
1988	12.02	17.06	-5.04
1989	12.65	18.87	-6.23
1990	12.73	17.61	-4.87
1991	14.50	17.80	-3.30
1992	14.41	19.17	-4.76
1993	14.36	20.88	-6.52
1994	13.29	16.64	-3.35
1995	13.74	17.48	-3.74
1996	14.88	20.10	-5.21
1997	14.20	20.17	-5.96
1998	14.64	17.03	-2.39
1999	13.22	15.91	-2.69
2000	12.21	14.61	-2.39
2001	13.78	15.98	-2.20
2002	12.49	14.04	-1.55
2003	13.42	14.64	-1.22
2004	13.40	16.43	-3.03
2005	13.17	18.79	-5.62

Source: Economic Survey of Pakistan various issues, International Financial Statistics, and author calculation.

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