IMPACT OF CAPITAL FLOW, SUDDEN STOP AND REVERSAL ON ECONOMIC GROWTH IN NIGERIA

BY

MEDINAT AJOKE BELLO

DEPARTMENT OF ECONOMICS

AHMADU BELLO UNIVERSITY, ZARIA

NIGERIA

SEPTEMBER, 2014

IMPACT OF CAPITAL FLOW, SUDDEN STOP AND REVERSAL ON ECONOMIC GROWTH IN NIGERIA

BY

MEDINAT AJOKE BELLO, BSC (ABU, ZARIA) 2004
M.Sc / SOC.-SCI / 5335 / 2009-2010

A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A

MASTER OF SCIENCE (M.SC) DEGREE IN ECONOMICS.

DEPARTMENT OF ECONOMICS

FACULTY OF SOCIAL SCIENCE

AHMADU BELLO UNIVERSITY, ZARIA

NIGERIA

SEPTEMBER, 2014

DECLARATION

I declare that the work in this Thesis entitled IMPACT OF CAPITAL FLOW, SUDDEN STOP AND REVERSAL ON ECONOMIC GROWTH IN NIGERIA has been carried out by me in the Department of Economics. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at this or any other institution.

_____	_____	_____
Name of Student	Signature	Date

CERTIFICATION

This Thesis entitled IMPACT OF CAPITAL FLOW, SUDDEN STOP AND REVERSAL ON ECONOMIC GROWTH IN NIGERIA by MEDINA AJOKE BELLO meets the regulations governing the award of the degree of MASTER OF SCIENCE ECONOMICS of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

(Name)	(Signature)	Date
Chairman, Supervisory Committee (Name)	Signature	Date
Member, Supervisory Committee (Name)	Signature	Date
Head of Department (Name)	Signature	Date
Dean, School of Postgraduate Studies	Signature	Date

DEDICATION

This Thesis is dedicated to Almighty Allah, “The maker of heaven and earth”

ACKNOWLEDGEMENT

I praise the Almighty Allah at all times, His praises shall continue to be in my prayer, because, the struggle for my education started with prayer and it was granted by "The Most High" Almighty Allah, praise.

I humbly acknowledge the effort and assistance of my supervisor, Prof. Mrs P.S Aku who carefully took her time to go through the work efficiently and also guided me up to the final stage. This Thesis would be incomplete without applauding the efforts of my second supervisor in person of Dr. Aliyu Rafindadi Sanusi who, despite his very tight schedules created time to attend to me. I am quite elated to be one of your students.

I also appreciate the entire staff of the Department of Economics for their effort in organizing seminars where students are given opportunity to attend and in ensuring that the departmental library is well equipped with current materials to aid successful and smooth research exercise by both staff and students.

My special appreciation goes to my dear husband, Alh Ahmed Tijjani Ibrahim Bello for his moral and spiritual support throughout the programme. May God be with you always. My profound gratitude goes to my parents Mr. and Mrs T.I Yusuf who have sacrificed so much just to make sure I get sound education. Thank you and I love you very much.

And for others whom I have not mentioned by name, words cannot express my gratitude to you all. May God bless you all, Amin.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABSTRACT

Sudden stops and reversals of capital inflows or the withdrawal of international capital are often cited as the immediate causes or triggers of most financial and currency crises, including the recent global financial crisis. This research examines the structure and dynamics of the foreign private capital inflows to Nigeria, as well as its effects on Nigeria's economic growth. It also investigates the extent to which capital flows affect Nigeria's degree of vulnerability to external crises and the effects of sudden stops and reversals on the Nigerian economy. Using a vector autoregressive approach (VAR) model, results from this estimated VAR show that the effects of sudden stops and reversals on real GDP growth were negative; an episode of sudden stop would reduce real GDP growth by 0.105 percentage point, while an episode of reversal will reduce real growth by additional 0.118 percentage point. This finding is in line with the a priori expectations. From the Impulse Response Function analyses the effects of total private capital flows, FDI, and Portfolio flows on economic growth were all found to be positive, as expected. . The variance decomposition analysis, given the positive effect of FDI on growth, suggest that FDI has the highest potential for boosting economic activities relative to the other forms of capital flows in Nigeria. One policy implication of this finding is that policy makers should design policies that will enhance the flow of foreign direct investment rather than portfolio investment to Nigeria.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The financial crises of the second half of the 1990s Asian crisis have led to renewed interest in the causes and consequences of international capital flows. Sudden stops, defined as large drops in net capital flows, have received particular attention, given the collapses in output and investment commonly associated with these events Cowan, De Gregorio, Micco and Neilson (2007). "Sudden stops" and reversals of capital inflows or the subsequent withdrawal of international capital are considered to be the spark that set off several of the recent financial crises Iannariello, Morsy and Terada-Hagiwara (2006). Even the recent manifestation of the global financial crises in Nigeria could be attributed to sudden stop and reversals of capital flows. Though capital flows can have positive effects on the key real sector variables and contribute to the promotion of economic growth and development, the negative effect is evident in macroeconomic shocks that could undermine the stability of the real sector and impose high adjustment cost on the economy (Oyejide, 2005).The surge in capital inflows to emerging market economies in the early part of each of the past two decades was attributed initially to domestic development, such as sound policies and strong economic performance. The wide spread nature of the phenomenon became clearer over time, though, as most developing countries- whether they had improved, unchanged, or impaired macroeconomic fundamentals- found themselves as the destination of capital from global financial centers.

The single factor encouraging those flows was the sustained decline in interest rates in the industrial world (Reinhart, 2008).

In most economies however, domestic private investment has proven to be insufficient in giving the economy the required encouragement to enable it meet its growth target because of the mismatch between their capital requirement and saving capacity. Foreign private investment, thus augment domestic resources to enable the country carry out effectively her development programmes and raise the standard of living of her people (Osinubi, 2010).

Nigeria at independence was largely self–sufficient in terms of domestic food production. At that time, the foreign presence in the economy was significant. More than 25 percent of companies registered in Nigeria in 1956 were foreign-owned while in 1963 as much as 70 percent investment in the manufacturing sector was from foreign sources (Ohiorhenuan, 1990).

The first National Development Plan (1962-1968) sought to broaden the base of the economy and limit the risk of over-dependence on foreign trade (Okigbo, 1989). Manufacturing initially responded positively to the new policy but with foreign exchange and import licensing controls introduced in 1971-1972, the progress halted. The removal of the dominance of foreign entities in Nigerian economic and political life was the preoccupation of popular discourse then. (Biersteker, 1987).

The Second National Development Plan (1970 -1974) restricts the activities of investors with the first "indigenization decree" adopted in 1972. Many foreign investors divested during this period. Relaxation of these restrictions began in 1989, and by 1995 the

Nigerian Investment Promotion Commission Act opened all sectors to foreign participation except for a short negative list (including drugs and arms) (UNCTAD, 2009).

In order to restore economic prosperity and address external shocks such as the global recession of the early 1980s, the government initiated a series of austerity measures and stabilization initiates in 1981-1982. These, however, proved unsuccessful and a structural adjustment programme (SAP) followed. Following the return to democracy in May 1999, the reform process was re-energized, mainly through Nigerians home-grown poverty reduction strategy. The National Economic Empowerment and Development Strategy (NEEDS), adopted in 2003, were meant to guide public policies until 2007, and to free up resources for investment in infrastructure and social services. In contrast with the previous development plans, NEEDS made Foreign Direct Investment attraction an explicit goal for the government and paid particular attention to drawing investment from wealthy Nigerians abroad and from Africans (UNCTAD, 2009). As a result of this, they responded by investing in the stock market, encouraged by the banking and capital market reforms.

Apart from foreign financial aid, Nigeria has experienced different types of capital flow, foreign direct investment, portfolio investment, remittances and loans/ debt flows (Obadan, 2008). Foreign direct investment is often preferred as a means of boosting the economy. This is because foreign direct investment disseminates advanced technological and managerial practices through the host country and there by exhibits greater positive externalities compared with foreign portfolio investment (Osinubi, 2010). Up to the mid – 1980s, Nigeria did not record portfolio investment in the balance of payments, perhaps, partly because of the non-disclosure of information on portfolio investment abroad by

Nigerian investors. However, from the 1990s, the Nigerian government took measures to promote the internationalization of the domestic money and capital markets. Since 1999, net portfolio investment inflow has been positive, rising up to N375, 858.9 million in 2005. This positive trend is attributable not just to the internationalization of the capital market but also to the increased efforts of the government at investment promotion. The several questions that recent episode of the reforms and global financial crises raised are: Why the large inflow of portfolio investment in Nigeria? What is the implication of the composition of foreign investment during the surge period? Why did the sudden stop? Was there reversals? What are the implications of these events on the stability of the economy? What are the policy and regulatory implications of rising capital flows, sudden stops and reversals in Nigeria following the recent financial meltdown?

1.2 Problem Statement

Capital flows to emerging economies have a significant exogenous component, they are typically very large when scaled to the size of the domestic financial sectors of recipients and they potentially have large real macroeconomic effects. They also sow the seeds for the ensuing sudden stops, or capital flow reversals, observed in financial crises in emerging markets. One of the most important variables that account for sudden stops are the share of flow other than direct foreign investment i.e., foreign portfolio investment (Agosin and Huaita 2010).During sudden stop episodes, as foreign financing quickly dries up, consumption and investment contract, and output quickly slumps (Calvo et al, 2006).

In developing countries, however portfolio flows have been Volatile. Volatility in capital flows potentially comes with a high macroeconomic cost for the recipient economy

(Amaya and Rowland, 2005).For any economy, therefore the preferred capital flow is foreign direct investment due to its stable nature compared to portfolio investment that is termed hot money and has the potential of promoting economic crises during a period of capital reversal. However, of recent, Nigeria experienced substantial growth of portfolio investment inflow, chiefly following the series of reforms in both banking sector and the Nigerian Stock Exchange, as well as the series of deliberate foreign investment promotion campaigns. These efforts were intended to attract more of Foreign Private Investment, with emphasis on Nigerians in Diaspora. The response was however different from the intended outcome, as portfolio investment responded relatively more than direct investment. Nigeria through her financial links with other regions of the world was among the first that was hit, suffering falling equity market, sudden stop of capital inflows, capital flow reversals and pressures on the exchange rate (Sama, 2009). Theoretically, during sudden stop episodes, as foreign financing quickly dries up, consumption and investment also contract. During these reversals, asset prices, such as the value of the exchange rate and equity prices, also tend to experience large falls, wiping out wealth. The real exchange depreciation puts great strain on the domestic banking system. Historically, many countries going through sudden stops also experience credit crunch leading to banking crises (Calvo *et al*, 2006). This study, therefore, seeks to examine the theoretical and empirical nature, causes and consequences of the recent surge in capital flows, the sudden stop and reversal following the global financial crises in Nigeria, with the view of highlighting growth implications of capital flows.

1.3 Research Questions

The research questions are as follows.

1) What is the structure and dynamics of the foreign private capital inflows to Nigeria?
2) What is the effect of private capital flows on economic growth in Nigeria?
3) What is the extent to which capital flows affect Nigeria's degree of vulnerability to external crisis?
4) What is the effect of sudden stop and reversal of capital flows on the Nigerian economy?

1.4 Objectives of Study

1) To examine the structure and dynamics of the foreign private capital inflows to Nigeria
2) To examine the effects of private capital flows on economic growth in Nigeria.
3) To investigate the extent to which capital flows affect Nigeria's degree of vulnerability to external crises.
4) To examine the effect of sudden stop and reversal of capital flows on the Nigerian economy.

1.5 Research Hypotheses

1) H_o: The structure and dynamics of the foreign private capital inflows to Nigeria is constant.
2) H_o: Private capital flows has no effect on economic growth in Nigeria.
3) H_o: Capital flows do not affect Nigeria's degree of vulnerability to external crisis.

4) H_o: Sudden stop and reversal of capital flows do not have significant effect on economic growth in Nigeria.

1.6 Significance of the Study

Investment flows make up an important part of the balance of payments and the large fluctuations in such flows have among emerging economies, ignited a number of balance-of- payment crises over the past two decades (Amaya and Roland, 2005). This is due to the low importance attached to the type of capital flow into the country. The inflow of portfolio investment inform of mobile capital inflow flow across borders into different market in search of higher returns and can easily be reversed, which make a country susceptible to "sudden stop". Thus, understanding of the nature, causes and consequences of foreign capital inflows into the Nigerian economy is important for government, policy makers, central bank of Nigeria, Nigeria investment promotion commission (NIPC) and the Nigeria stock exchange (NSE).

It is believed that an evaluation of capital inflow and a systematic analysis of the effect of sudden stop and reversal of capital flows on the Nigerian economy will encourage the government to build a strong institution to handle problems arising from large capital inflows, and also control the type of capital inflow into the country. Further more if the large inflows of portfolio investment have a significant impact on the Nigerian economy, the Nigerian Investment Promotion Commission could focus their effort on how to attract more of foreign direct investment. The output of this study will also be useful for Central Bank of Nigeria to embark on reforms on regular basis to introduce measures to establish

financial stability in order to create a climate that will enhance increase in foreign direct investment in to Nigeria.

1.7 Scope of the Study

The scope of the study covers thirty one years (1980 - 2010). The period is wide enough to cover the episodes of sudden stop and reversal in Nigeria. Therefore, it will enable the study to highlight effects of sudden stop of capital inflow and its reversals in Nigeria.

1.8 Organization of the Study

This thesis is organized into five chapters. Chapter one is the general introduction which consists of background to the study, statement of research problem, objectives, hypothesis, scope and significance of the study. Chapter two focuses on the review of related literature; where both theoretical and empirical literature are reviewed. Chapter three describes the methodology used to achieve the objectives of the study. While chapter four presents and discusses the results of data analysis, chapter five summarizes and draws conclusions.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual Literature

Capital inflows are defined as changes in the stock of international liabilities owed by domestic residents. These liabilities include equity (foreign direct investment and portfolio), bonded debt held by nonresidents, and loans from nonresident banks. Since they are changes in stocks, can either be positive (a capital inflow) or negative (a reversal). Capital outflows, in turn, are changes in the foreign assets of domestic residents. Foreign assets include offshore foreign direct investment (FDI), foreign equity and bonds held by resident, and loans to non residents (or offshore deposits). (Cowan *et al*, 2007).

Capital flows make up an important part of the balance of payments, and the large fluctuations in such flows have, among emerging economies, ignited a number of balance of payments crises over the past two decades (Amaya and Rowland, 2005).

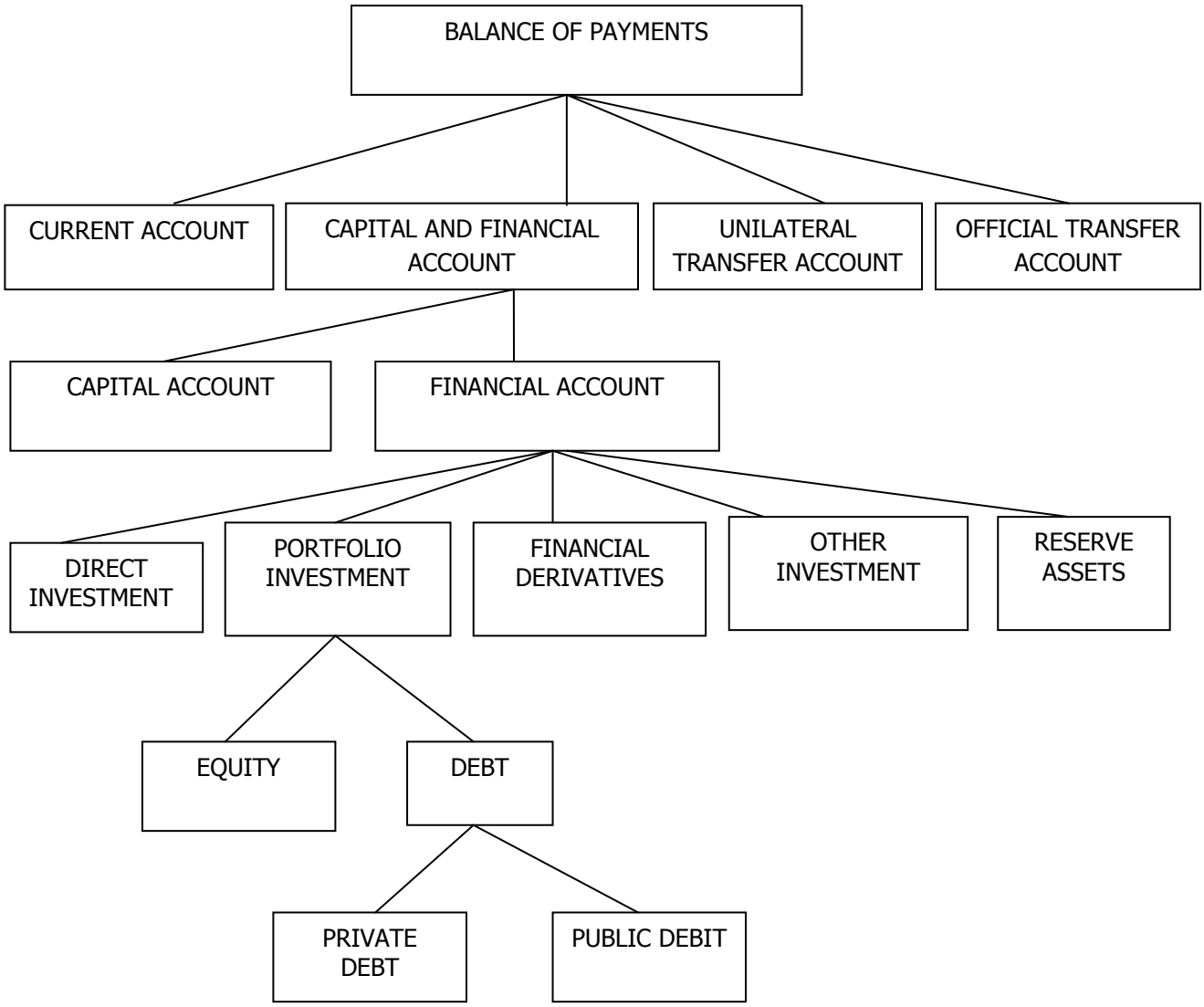


Figure: 2.1 Main Components of Balance of Payments

Source: (Amaya and Rowland, 2005)

Figure 2.1 shows the main components of the balance of payments. The two main groups of accounts are the current account, and the capital and financial account. The current account includes all the transactions different from financial ones that occur between

resident and non-resident entities. The capital account constitutes capital transfers and acquisition/disposal of non-produced, non-financial assets. The financial account has the following components: direct investment, portfolio investment, financial derivatives, other investment, and reserve assets. Direct investment covers all the transactions between direct investors and direct investment enterprises. Portfolio investment includes all the transactions in equity and debt securities and can be classified as bonds and notes, market instruments and financial derivatives that generate financial claims and liabilities. Financial derivatives cover financial instruments that are linked to other financial instruments, indicators or commodities. Other investments are classified as short and long-term trade credits, loans, currency and deposits, and other account receivables and payables. Finally, the reserve assets consist of those assets that are available for use in meeting balance of payments needs. Such items are usually monetary gold, SDRs, the reserve position in the Fund, foreign exchange assets and others.

Sudden Stop

The term "sudden stops" of international capital flows was first introduced in Dornbusch, Goldfajn and Valdes (1995). Then, the first analytical framework was developed in Calvo (1998). A sudden stop refers to an event in which the domestic economy loses access to international capital markets, since private foreign residents suddenly stop providing capital (Jeasakul, 2005). Sudden stop therefore refers to sudden and large drops in capital inflows, along with other measures of balance-of-payment crises (Currency crisis measures, capital account reversal). Forbes and Warnock (2010) define sudden stop episodes as periods when there are marked slowdowns in net capital inflows. According to

Calvo *et al* (2004), their definition of sudden stops is simply based on unusual reversals of capital flows that are associated with a contraction in output. A reversal of capital flows occurs, if year-in-year changes in a capital flows proxy (the trade balance minus changes in foreign reserves) fall at least two standard deviations below the mean of the country sample. In Hutchison and Noy (2002) their definition of sudden stops covers events in which a country simultaneously encounters a current account reversal (an improvement of more than 3 percent of GDP) and a currency crisis. Note they used current account reversals to capture reversals of capital flows. Guidotti *et al* (2003a) their definition of sudden stop stops is based on large reversals of the capital account (economic definition) that are associated with output contractions. According to them a reversal occurs if changes in the capital account fall at least two standard deviations below the mean of the country sample, and also exceeds 5 percent of GDP. In addition, they focused only on sudden stops that required adjustments in the current account of at least 2 percent of GDP. Edwards' (2007), definition of sudden stops requires that the country must receive capital inflows in its region's third quartile during the two years prior to the sudden stop, and net capital inflows must decline by at least 5 percent of GDP in one year.

According to Deb (2005) that in an economy, capital inflow equals the current account deficit (CAD) and net reserve accumulation. So, a slowdown in capital inflow can be met either by reducing the current account deficit and /or by releasing foreign reserves. Sebastian specifically, imposed the following requirement for an episode to qualify as a sudden stop. (a) that the country in question must have received an inflow of capital relative to gross domestic product (GDP) larger than its region's third quartile during the

two years prior to sudden stop. (b) The net capital inflows must have declined by at least 5 percent of GDP in one year.

A sudden stop of capital inflows is defined as a situation where the flow of capital coming into a country is reduced significantly in a very short period of time Edwards, (2005). Mendoza and Smith (2002) define three key features of sudden stops, "sharp reversals in capital inflow and current account deficit, large downward adjustments in domestic production and absorption, and collapses in assets prices and in the relative prices of non tradable goods relative to tradables"

2.2 Theoretical Literature

2.2.1 Theoretical Causes of Sudden Stops

The concept of sudden stops is based on drastic shifts of the supply curve of foreign funds driven by foreign residents' panic. Panic arises due to financial turmoil in the domestic economy, which can result from either a financial crisis in the domestic economy or contagion effects due to crises elsewhere. Therefore, the identification of sudden stops here should capture panic arising from all kinds of financial turmoil including contagion effects. Theoretically, a loss of access to international capital markets can generate a financial crisis. Based on self-fulfilling mechanisms, across-the-border bankruptcies tend to happen due to inevitable changes in relative prices. A banking crisis thus takes place, then, the government might have to bail out the financial system (Jeasakul, 2005).

Consequently, a massive fiscal burden can induce a debt crisis. The theoretical discussion here includes three possible channels that can trigger sudden stop, these are: the self fulfilling mechanisms, problem of external solvency and prospects of financial crises.

Self-fulfilling mechanisms

The self-fulfilling approach argues that sudden stops can occur in a well-run economy simply because of a drastic shift in people's expectations. The theoretical discussion in this section follows from models introduced in Calvo (1998) and Calvo *et al*. (2004). There are some factors that reflect weak fundamentals and make the economy more vulnerable to sudden stops through self-fulfilling mechanisms. For sudden stops to happen, susceptible countries must initially receive some foreign capital. Therefore, the following discussion focuses on countries that run current account deficits. Countries that run current account deficits need to borrow money to finance such deficits due to purchases of goods and services or interest payments on existing debt. If a sudden stop takes place, the country must undergo certain external adjustments. The balance of payments (BOP) consists of the current account(CA), the capital account (KA) and changes in foreign reserve accumulation (ARes), which all must add up to be zero:

BOP = CA + KA + Ares……(1)

Therefore, the country can either spend foreign reserves on financing its deficit or undertake a current account improvement.

Problems of external solvency

According to Beers and Chambers (2004), the framework that examines the country's solvency with respect to external debt is the conventional approach to evaluating foreign residents' decisions to lend money to the domestic economy. The framework consists of

two components: ability to repay and willingness to repay. The ability to repay debt concentrates on whether the country can create sufficient revenues in foreign currencies to meet its financial obligations. The country's ability to repay is a key factor that determines whether the country will receive foreign capital. Countries have the ability to meet financial obligations if they can satisfy a solvency condition.

A country is externally solvent if the existing level of its external liabilities is less than or equal to the present value of its trade surplus for an infinite horizon. As long as the solvency condition is satisfied, the country remains externally solvent. In addition, people might care about how external debt adjusts. In particular, the rate of external debt accumulation increases endogenously with the level of debt. Also, at a given level of external debt, a larger trade deficit implies a faster rate of debts accumulation Beers et al (2004).

In addition to dynamics of external debt, people might worry about how the country generates the revenues to repay debts. Since exports are the main source of revenues in foreign currencies, the ratio of external debts to exports is also important. It is worth mentioning that in reality, no countries declare defaults on the whole external debt. Therefore, the notion of solvency with respect to external debt reflects how foreign creditors worry that some domestic borrowers might not be able to fulfill financial obligations when the economy is heading into unfavorable circumstances, Bennell *et al*, (2006).

However, foreign creditors also concern about the country's willingness to repay, since Possessing ability to repay does not guarantee that such repayments will take place. A

country needs to demonstrate willingness to honor financial contracts in order to assure foreign creditors that their money will be repaid. If foreign creditors become doubtful about the country's willingness to repay, then the country loses access to any foreign capital. The assumption that economic agents are rational, domestic borrowers will default if the utility of defaulting on debt is greater than that of servicing debt. In particular, consider the following simple example.

Let u (m) be the monetary utility function. The country initially does not have capital. However, in order to produce output Y, the country needs to make investment, which requires capital, K. Therefore, the country engages in a financial contract in which it borrows the amount K and promises to repay R. Assume that Y > R > K. However, after producing output Y, the country has two options. One is to repay debts, thus consuming Y-R. Another is to default, thus consuming Y and encountering potential costs C. Hence, one can derive the following incentive-compatible constraint:

u(Y) - C *2* u(Y -R) . …….. (2)

Given values of Y and R, the lower the potential costs C are, the more likely the country defaults. Such costs due to defaulting tend to include international trade disruption and permanent loss of access to international capital markets (Jeasakul, 2005). Significant variables that can capture these costs are the degree of trade openness (the share of imports plus exports over GDP) and the extent of dependency on foreign capital (the amount of financial inflows relative to investment). Furthermore, the larger the amount of financial obligations, the more likely equation (2) holds. Therefore, the existing level of external debt is also important (Jeasakul, 2005).

Intuitively, given that other things are equal, benefits from defaulting are greater if the amount of debts is larger. In addition, the country that has incentives to honor its financial contracts must also demonstrate its willingness do to so. Hence, factors that are relevant in determining flexibility of the economy to adjust trade balance are important. Such factors include the diversification of international trade and the flexibility of the exchange rate regime. The variable makes the economy less vulnerable to terms of trade shocks. The latter variable reflects how well the economy can accommodate such adjustments, since a more flexible exchange rate regime can allow the currency to fall and thus stimulate exports. Moreover, any actions against norms of international capital markets such as control on capital outflows can be deemed as unwillingness to repay. Therefore, variables that capture the incidence of capital control might be also significant in determining willingness to repay, Bennel et al, (2006)

Prospects of financial crises

Sudden stops of international capital flows and financial crises tend to be inseparable events. Sudden stops together with financial mismatches can create all kinds of financial crises. Also, prospects of financial crises might generate sufficient panic, which in turn cause foreign residents to stop lending money to the domestic economy. It is undeniable that banking crises and debt crises always have negative impacts on the economy. Therefore, these two types of financial crises tend to induce sudden stops. Nevertheless, currency crises driven increasing debt burden can be favorable events. Therefore, these currency crises should not lead to sudden stops. Issues related to currency crises are thus more complicated, Mendoza and Durdu, (2004).

2.2.2 Theoretical Consequences of Sudden Stop

The study of causes of sudden stops suggests that various factors can induce sudden stops. Moreover, sudden stops look different across groups of countries as well as types of financial crises. Stylized facts of sudden stops also illustrate that sudden stops are associated with output costs, but adverse output performance varies substantially. The variation in output performance seems to depend on the degree of financial turmoil reflected by different forms of financial crises.

Therefore, the examination of output consequences of sudden stops seems necessary in order to understand the complete story of sudden stops. The study of output consequences should examine whether sudden stops generate output costs, as stylized facts and as theory suggest. Guidotti *et al* (2003b) and Jeasakul (2005) argue why sudden stops should induce output costs, and identified mechanism that could explain different output performance.

Sudden stops are events in which domestic economies lose their access to international capital markets. Hence, any economic activities financed by foreign funds must undergo certain adjustments such as cutting down these activities (e.g. reductions in investment).
The effects of sudden stops on production capacity can be illustrated in a simple aggregate growth model that allows a role of foreign funds to finance some domestic investment and a role of resource allocations. Suppose that the economy has two sectors. One produces tradable (T), while another produces non tradable (N). Capital is specific for each sector, but it can be reallocated with costs. Therefore, aggregate output is produced using two

kinds of capital, denoted KN for the non tradable sector and KT for the tradable sector. The aggregate production function can be written as:

Y =: L(KN, KT). ……. …….(1)

This model is developed from the model explaining effects of financial development on growth (Montiel, 2003). Basically, an economy grows as it improves total factor productivity (TFP) or accumulates productive factors in order to increase the production capacity. From this perspective, according to Jeasakul (2005) a sudden stop can lower production capacity in the domestic economy through four mechanisms:

i. The loss of access to international capital market implies that the domestic economy no longer have foreign funds to finance investment.

ii. As the sudden stop generates cross-the-board bankruptcies, returns on investments tend to decline. Therefore, net returns on savings also fall, implying less incentive to save.

iii. Changes in the relative price between non-tradable and tradable are likely to occur according to self-fulfilling mechanisms. Thus, the allocation of productive factors is no longer the most efficient, implying a lower productivity of capital stock.

iv. Given that the allocation of productive factors becomes inefficient, the domestic economy might want to undertake resource reallocation, which typically is associated with substantial costs.

2.2.3 Theoretical Framework

Conceptually, a "sudden stop" of international capital flows refers to an event in which the domestic economy loses access to international capital markets as private foreign residents suddenly stop lending to, or investing in the domestic economy (Jeasakul, 2005).

Therefore, a sudden stop can be attributed to a drastic shift of the supply curve of foreign funds. This movement in the supply curve can be driven by foreign creditors' panic, which arises due to financial turmoil in the domestic economy. While financial turmoil can be attributed to either domestic financial crisis or contagion effects due to crises elsewhere, financial crises can take the form of currency crises, banking crises or debt crises.

These movements therefore require a demand and supply framework of capital flows thus providing a solid foundation to develop the notion of sudden stops which incorporates the notion of panic to refine the conventional measure of large reversals of capital flows. According to Edwards' (2007), the equilibrium of private foreign capital flows in the demand and supply framework is determined by the confidence of domestic residents as well as foreign residents in the domestic economy. Generally the domestic economy often borrows capital from abroad in order to finance aggregate demand (consumption or investment), while foreign residents will be willing to lend their funds to the domestic economy if and if they can get higher returns.

Changes in the amount of foreign funds or even reversals of capital flows can also result from shifts in either the demand curve or the supply curve. There are various factors in Nigeria that are responsible for these shifts. With respect to the demand side, a domestic economy can suddenly decide not to import foreign funds.

However, on the supply side, foreign creditors might suddenly stop lending to the domestic economy for two main types of reasons: Typical factors that affect the supply of foreign funds in general and panic factors, which cause drastic shifts in the supply side as foreign residents become panicked. Typical factors include the economic prospects in lender/originating countries (e.g., economic growth). The recent global financial crises

that adversely affected economic activities in the developed countries, for instance, was thought to have triggered a chain of events that could have reduced the supply of capital to developing countries, thereby causing sudden stop or even reversal (Phakawa, 2005).

2.3 Empirical Literature

Uremadu (2008), used the ordinary least square (OLS) method to examine the relationship between capital formation and other macroeconomic indicators of interest in the pursuit of macroeconomic policies, to determine the impact of cumulative foreign private investment on capital formation and growth in Nigeria for the period 1980 to 2004. The study also highlighted the complementary role played by it to gross domestic savings towards filling the existing saving – investment gap in Nigeria. He discovered that foreign exchange rate leads capital formation in Nigeria, followed by the index of energy consumption and then debt service ratio.

Samuel (2009), studied the impact of global economic crisis on profit after tax of the 20 most capitalized companies on Nigeria stock market over a three-year's period. The findings of this study show that crisis affects the Nigerian stock market, but this happens, however, with lag. It also found out that although profit after tax plays an important role in determining market capitalization of companies, it does not appear that the impact of the current global economic crisis was felt in the Nigeria stock market at the end of 2007.

Given the likely simultaneity between foreign private investment (FPI), capital formation and growth, Orji and Mba (2010), examined the relationship between foreign private investment, capital formation and economic growth in Nigeria using the two-stage least

squares (2SLS) method of estimation. The study finds that the long run impact of capital formation and foreign private investment on economic growth is larger than their short-run impact. There is thus, a long-run equilibrium relationship among the variables as the error correction term is significant, but the speed of adjustment is small in both models. The two stage least squares estimates are very close to the OLS estimates suggesting that OLS estimates are consistent and unbiased. Hence, endogeneity was not a problem in the estimated models. There is therefore no simultaneity between GDP growth and capital formation model.

Hitchinson and Noy (2002) investigated the output effects of financial crises in emerging markets, by focusing on whether sudden-stop crises are unique phenomenon and whether they entail an especially large and abrupt pattern of output collapse ("Mexican Wave") during the period 1975-1997 covering 24 emerging market economies. Using Bench Mark model, findings shows that sudden-stop crises have a large negative but short-lived, impact on output growth over that found with currency crises also that currency crisis typically reduces output by about 2.3%, while a sudden stop reduces output by an additional 6.8% in the year or the crisis.

Caballero, Cowan and Kearns (2005), Investigated Latin American economies vulnerability to external shocks and how these shocks can be ameliorated. Their findings indicated that lack of country-trust and currency-trust which are investors' confidence are the root causes of sudden stops. They argue that developing sound structural fiscal policies and maintaining financial system stability with low track of inflationary records can help boost country and currency trust and in turn overcome the problems of sudden stops.

The understanding of foreign investment flows is important for emerging market policy makers, since such flows make up a considerable part of the balance of payments, and tend to be very volatile. Amaya and Rowland (2005) investigated emerging market investment flows and their determinants. Using first a relatively simple cross-country framework to study investment flows in the year 2000 and then a panel-data framework to study such flows for the time period 1980 to 1997, a number of variables emerge as significant in determining investment flows. In general, large open economies with a high growth rate attract more flows than small closed economies with a sluggish growth rate. In addition, the results also suggest that sound fiscal policies together with moderate debt levels results in higher levels of foreign investment.

Deb (2005) examined the effects of capital flow reversals and sudden stop crises on output growth and how these effects vary across regions and between emerging and industrial countries. They used the standard growth model; they found out that capital flow reversals are generally contractionary in the developing countries and particularly in Asia and Africa. But neither capital flow reversals nor sudden stop crises have any significant growth effect in the industrial countries. Their initial estimates for sudden stop crises support the widely held belief regarding the contractionary nature of such crises. Further robustness checks indicate that the estimated negative growth effects for such crises are mainly driven by the presence of the Asian countries in the sample. Moreover, when the turbulent years of the East Asian crises are excluded from the sample, no significant effect of sudden stop crises could be found. Their research reconfirms the contractionary nature of capital flow reversals in developing countries but raises doubt about the existence of contractionary sudden stop crises.

Bordo (2006) used descriptive statistics to compare capital flows, current account reversals and financial crises during this period with the recent experience. He analyzed the incidence of crises and measured their effects on real output losses. Furthermore, he considered the influence of openness to trade and currency mismatches on the pattern of sudden stops and financial crises. He found strikingly similar patterns across both eras of globalization. According to this study, the current pattern of sudden stops and financial crises in emerging markets has great resonance to events in the first era of globalization. The pre-1914 sudden stops were associated with significant output losses comparable with the recent events, and their effects differed considerably depending on a country's economic circumstances.

According to Edwards (2007), he focuses on two external crises that have received considerable attention during the last few years; Sudden stops of capital inflows and current account reversals. He examined the extent to which capital mobility affects countries degree of vulnerability to external crises and also does the extent of capital mobility determine the depth of external crises as measured by the decline in growth, once the crises occur. He found out that there is no evidence suggesting that countries with higher capital mobility tend to face a higher probability of having a crisis than countries with lower mobility. He further suggested that once crises occur, countries with higher capital mobility tend to face a higher cost in terms of growth decline.

Bonanzas are no blessing for advanced or emerging market economies. Using an encompassing approach with an algorithm cataloging capital inflow bonanzas in both advanced and emerging economies to investigate what happens before, during and after a capital flow bonanza during the periods 1980-2007 for 181 countries and 1960-2007 for a

subset of 66 economies from all regions. Findings show that global factors, such as commodity prices, international interest rates, and growth on the world's largest economies, have a systematic effect on the global capital flow cycle (Reinhart and Reinhart, 2008).

Efremidze *et al* (2009) examined empirical characteristics of commonly used measures of international financial crises, specifically "sudden stop" and currency crises measures. Sudden stop and currency crises measures were analyzed using the annual data of 25 emerging market countries from 1990 to 2003. According to the study, sudden stops are more likely to precede currency crises and the output costs are higher when both crises occur simultaneously. Less than half of the sudden stops occur simultaneously with currency crises. While less than 60 percent of currency crises are accompanied by sudden stops.

According to Forbes and Warnock (2010) in an attempt to better understand international waves in capital flows, they built on the literatures on "sudden stops" and "bonanzas" to develop a new methodology for identifying episodes of extreme movements in capital flows using quarterly data on gross inflows and gross outflows, disaggregated by the type of investor (foreign vs. domestic) and by the type of flow (banking, direct investment, equity and debt). They identify episodes of "surge", "stop", "flight" and "retrenchment" and show how their approach yields fundamentally different results on the identification of these episodes than in the previous literature that used more aggregate measures of net flows. Causes of these episodes include global factors (especially global risk and global growth), contagion, and domestic macroeconomic characteristics (especially related to the domestic financial system). They find little role for global interest rates, global liquidity

and domestic growth. The results have important implications for discerning between different theoretical approaches aimed at explaining crises and surges in capital flows.

Given the distribution of different types of sudden stop episodes over time and its different macroeconomic consequences, Calderón and Kubota (2011) argued that the determinants may not be alike. Using an effective sample of 82 countries with annual information over the period 1970–2007, the analysis finds that global investors are less likely to stop bringing their capital when their economy is growing and the world interest rate is lower. Domestic agents are more willing to invest abroad if the macroeconomic performance of the domestic economy is poor (high inflation), the financial system is weak, and there are high external savings (current account surpluses). Increasing financial openness makes the domestic country more vulnerable to sudden stops caused by either local or global investors. Finally, countries with higher shares of foreign direct investment are less prone to inflow-driven sudden stops, whereas the opposite holds for outflow-driven sudden stops.

Cavallo, Powell, Pedemonte, and Tavella (2013) explored the effects of sudden stops on economic performance. Using regression on the new taxonomy of sudden stops which comprised of seven categories with definitions depending on the behavior of gross and net capital flows; found that sudden stops in net flows associated with reductions in gross inflows are more destabilizing than those where surges in (only) gross outflows dominate. They further found that sudden stops in gross inflows that do not lead to a sharp contraction in Net Flows may also be disruptive, including sudden stops that are driven by "other flows"—which include banking flows.

From the stock of these literatures, the directions of the empirical discussions can be summarized into the following: First, most empirical discussions considered the effects of sudden stops and reversals on money market, capital market and output growth; and how these effects vary between the emerging and developed economies. While some studies maintained that sudden stops and reversals are problems of the developing economies only, others argued that the phenomena affect the developed economies but not as much as the latter. Second, a considerable number of studies looked at the determinants of sudden stops and the effects of the different types of sudden stops. And third, discussions tend to center on measures and policies to handle the episodes.

With many evidences revealing that sudden stops and reversals destabilize developing economies most, there are scanty studies on capital flows and sudden stops in Nigeria. Moreover, these studies unveiling this fact are cross country studies. Empirical studies that focus on individual countries for specific measures and policies are needed. This study takes the step, in this light, to investigate the impact of capital flows, sudden stops and reversals on economic growth in Nigeria.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology used in this study. It begins by stating the analytical techniques and the specifications of the models. This is followed by the expectations from the behavior of the variables of the model. The scope, data and their sources are identified and acknowledged.

3. 2 Analytical Techniques

Since a majority of economic variables exhibit non-stationary properties, the presence of unit roots for each variable was checked before estimating the VAR model. If unit root exists in any variable, then the corresponding series exhibits non-stationary properties. Thus, estimations based on non-stationary series may lead to spurious regressions (see, Granger and Newbold, 1974). The variables in the models are tested for stationarity using the Augmented Dicky-Fuller *(ADF)* and Philips-Perron *(PP)* tests. The ADF test is conducted using regression (3.5) which includes intercept and time trend:

$$\Delta X_t = a + bt + \rho X_{t-1} \sum_{i-1}^{k} \Delta X_{t-i} + \mu_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.5$$

Where ΔX_t is the first difference of the series X, k is the lag order, t is the time.

The *PP* test is computed using the following regression (3.6):

$$\Delta X_t = a + bX_{t-1} + c\left(t + \frac{T}{2}\right) + \mu_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.6$$

Where *a*, *b*, and *c* are the coefficients and *T* is the total number of observations. Therefore, the *ADF* and *PP* unit root tests posits a null hypothesis β = 0 versus an alternative hypothesis β< 0, where the *ADF* and *PP* statistics is compared with the observed Mackinnon critical values.

3.3 Model Specification

Our basic specification looks at the growth performance during these crises while relating this growth to some basic country's fundamentals. We adapted the model of Guidotti *et al* (2003) because it incorporates variables before the sudden stop and also captures variables after the reversal of capital inflow. Thus, the adapted model shall make use of a Vector Autoregressive Approach (VAR).

Many studies have used the VAR methodology to analyze the relationship between macroeconomic variables (Bernake and Getler, 1995; Taylor, 1995; Chuku, 2009) defines the VAR model as an empirical investigation that facilitates statistical analysis of relationships among variables and is not constrained by any theoretical economic relationship. Specifically we shall use the VAR to sort out contemporaneous links among variables with the standard practice being to report the impulse response functions and the variance decompositions because they give more understanding to the relationships.

The VAR model is specified thus;

$Y_t = A(L)Y_{t-1} + B(nL)Z_t + \mu_t$……………………………………………………….……………(3.1)

Where Y_t is an (n x 1) vector of endogenous variables. Y_{t-i} is the corresponding lag term for each of the variables, A_i is an (nxn) matrix of autoregressive coefficient vector of

Y_{t-i} ,$\forall$i = 1, 2..cv..k. Z_t is an (m × 1*)* vector of stationary variables. $\mu_t = \left(\mu_{1t}, \mu_{2t,} \dots \mu_{nt}\right)'$ is an (nx1) vector of structural shocks with the variance-covariance matrix: $E(\mu_t \mu_t') = \rho = \delta^2_{\varepsilon t}$.

The baseline model consists of a vector of endogenous variables (X):

$X = [RGDP_t, TPCF_t, PI_t, DI_t, EX_t, OPEN_t, Z_t]$……..……..…(3.2)

Where Z is a vector of dummies:

$Z_t = [DUM_1, DUM_2]$…….…… (3.3)

Representing the above variables in VAR model of order p gives the empirical VAR for estimation.

$$\begin{bmatrix} RGDP_t \\ TPCF_t \\ PI_t \\ DI_t \\ EX_t \\ OPEN_t \end{bmatrix} = A_1 \begin{bmatrix} RGDP_{t-1} \\ TPCF_{t-1} \\ PI_{t-1} \\ DI_{t-1} \\ EX_{t-1} \\ OPEN_{t-1} \end{bmatrix} + \cdots + A_p \begin{bmatrix} RGDP_{t-p} \\ TPCF_{t-p} \\ PI_{t-p} \\ DI_{t-p} \\ EX_{t-p} \\ OPEN_{t-p} \end{bmatrix} + \square \begin{bmatrix} DUM_1 \\ DUM_2 \end{bmatrix} + \begin{bmatrix} \mu_{1t} \\ \mu_{2t} \\ \mu_{3t} \\ \mu_{4t} \\ \mu_{5t} \\ \mu_{6t} \end{bmatrix} \dots\dots\dots\dots\dots\dots\dots\dots\dots (3.4)$$

Where RGDP measures the growth performance, TPCF is the total private capital flow, PI is the portfolio investment, DI is the foreign direct investment, EX is the exports , OPEN is the openness, $DUM_1$and DUM_2 are dummy variables that capture sudden stop and reversals. These are measured by assigning $\square \begin{bmatrix} DUM_1 \\ DUM_2 \end{bmatrix} = \begin{cases} 1, & periods\ of\ sudden\ stop\ and\ reversal \\ 0, & period\ other\ than\ the\ episodes \end{cases}$. This study in line with Guidotti *et al* (2003) marked episodes of sudden stop when capital inflows changes by at least 5 percent of GDP while reversal is marked when changes in the capital account fall at least two standard deviations below the mean of the sample, and also exceeds 5 percent of GDP. U_t is the error term.

3.4 A priori Expectations

According to above VAR specification (3.4), an increase in capital flow is expected to increase the growth performance of the economy. It is expected that an increase in portfolio investment, foreign direct investment and export will lead to an increase in the GDP. We also expect a positive relationship between GDP and openness. But the relationship between GDP and sudden stop and reversals are expected to be negative.

3.5 Data and Sources

Annual data from 1980 to 2010 on real gross domestic product (RGDP), total private capital flow (TPCF), portfolio investment (PI), foreign direct investment (FDI), export (EXP), and openness (OPEN) are used for this research work. These data are collected from the World Bank data to facilitate the enquiry of the study. Finally, dummy variables Dum1 and Dum2 were constructed to capture sudden stop and reversals.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

4.1 Introduction

This chapter presents the results and discussion of the results. The first section analyses the trend of the structure and dynamics of foreign private capital flows to Nigeria, the second section presents the result of the unit root test which showed the order of integration of the series, while the third section presents and discusses the results from the VAR model.

4.2 Descriptive Analysis of the Structure and Dynamics of Foreign Private Capital Flow to Nigeria

Figure 4.1 shows the different measures of capital flows made up of foreign direct investment, Portfolio investment and Remittances. A closer look at the diagram shows that before the data for remittances was available portfolio investment and direct investment were moving in the same proportion though foreign direct investment is more dominant. When the data for remittances became available in 1996 it dramatically surpassed other type of capital inflow to Nigeria. However in 2002 and 2003 foreign direct investment was above remittance inflow. Before the wake of global financial crisis of 2007 the gap between these three flows was not wide when compared with the gap of these inflows during the period of this crisis. From 2007 to 2010 foreign direct investment portfolio investment and remittances were far apart from each other showing that the structure of foreign private capital inflows has changed.

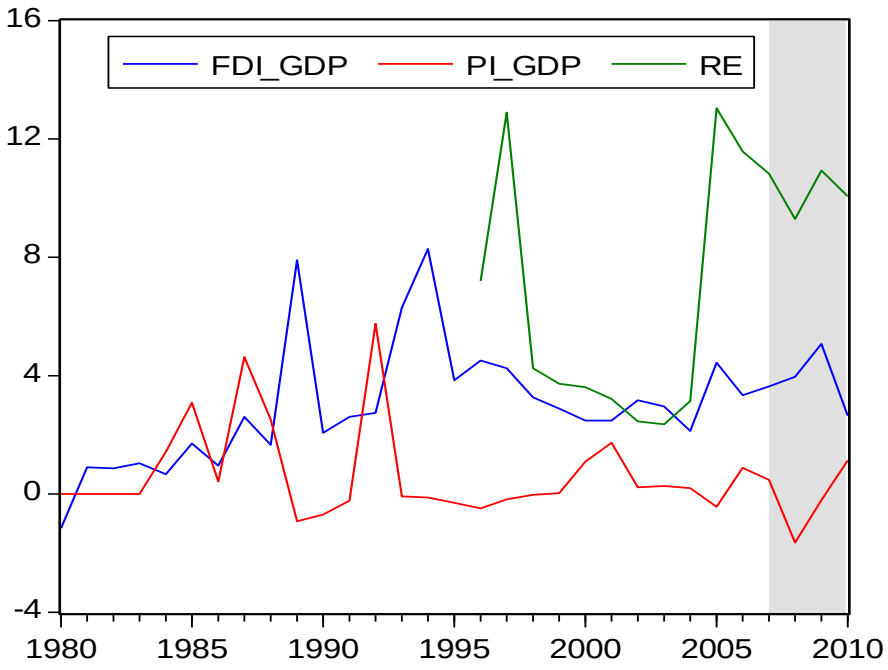


Figure 4.1: Structures and Composition of Foreign Direct Investment, Portfolio Investment and Remittances

Figure 4.1 also shows that portfolio investment flow has decreased significantly during the global financial crisis due to its volatility when compared with the other two inflows. Portfolio investment is generally considered more passive or speculative in nature and also it is highly sensitive to changes and may be withdrawn from the market at short notice. The effect of the global financial crisis on foreign direct investment is not immediate, the effect was delayed until 2010 when it appears to have decline. Foreign direct investment is expected to decline only with delay because this is a type of investment that cannot be easily reversed because the funds do invested are locked up in firms as working capital and plants. Changes in remittances are minor, probably due to the fact that remittances depend on family ties, which are also stable.

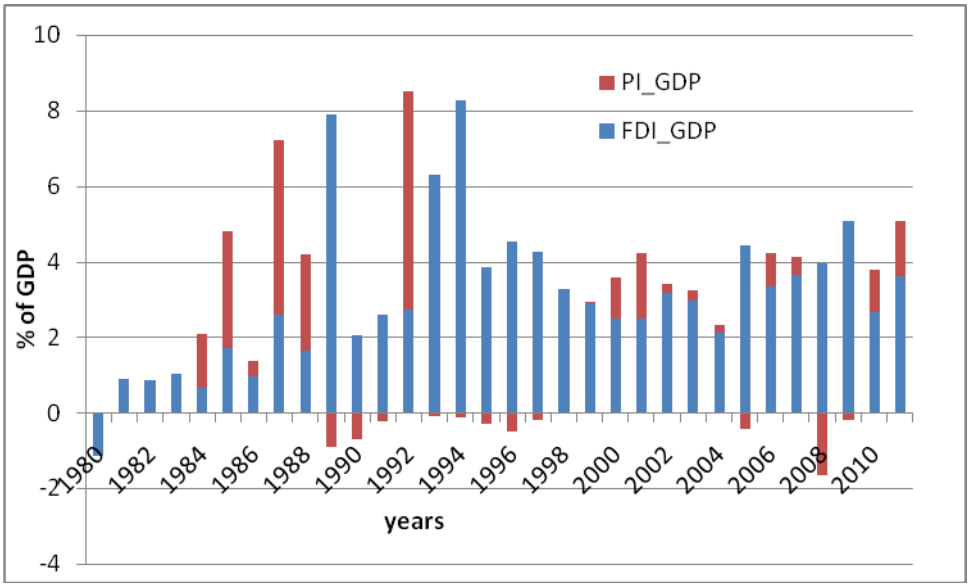


Figure 4.2: Structure and Composition of Foreign Private Investment (Decomposed into Portfolio Investment and Foreign Direct Investment) as Percentage of GDP

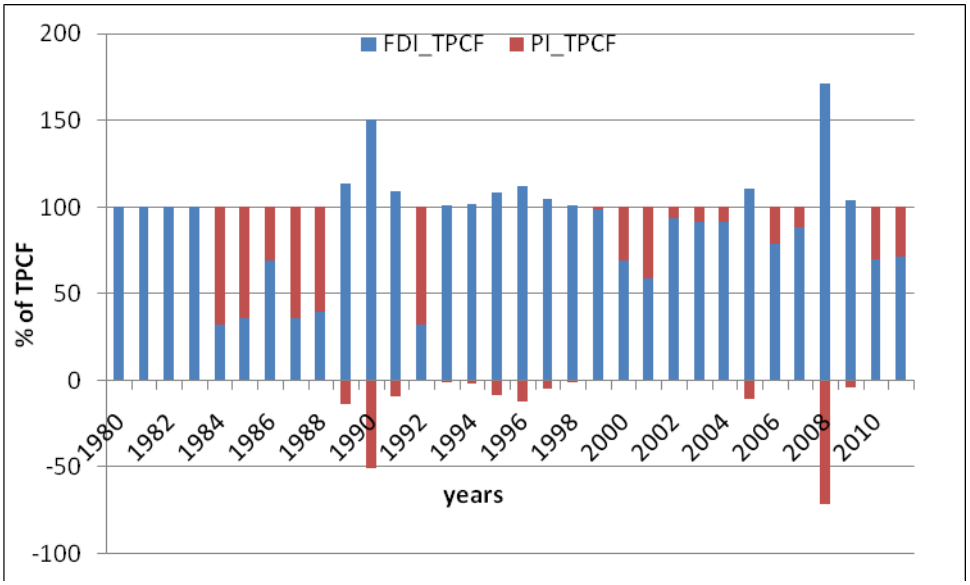


Figure 4.3: Structure and Composition of Foreign Private Investment (Decomposed into Portfolio Investment and Foreign Direct Investment) as Percentage of Total Private Capital Flows, TPCF)

In Figure 4.2 and 4.3 above we consider two inflows portfolio investment and foreign direct investment. A closer look at the stark bar in Figure 4.2 shows that foreign direct investment is more dominant when compared with portfolio investment, though foreign direct investment was only negative in 1980. Between 1984 and 1992, there was a change in the composition of private capital flow, portfolio flows took the centre stage and its

share of private capital flows to Nigeria was on the increase, by the end of 1992 it surpassed foreign direct investment inflows into Nigeria. In 1992 while foreign direct investment was about 32.24% of the total private capital flow, portfolio investment was 67.76%, as shown in figure 4.3.

The overall conclusion, however, from Figure 4.2 and 4.3 is that direct foreign investment constitutes the dominant form of foreign private investment in Nigeria. Tentatively, therefore, given this structure the economy is relatively less vulnerable to external shocks.

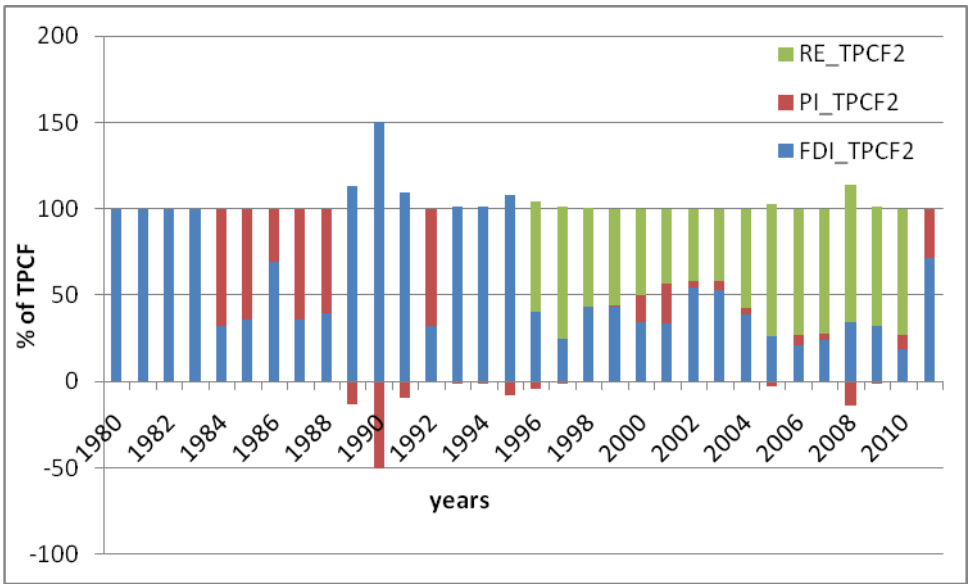


Figure 4.4: Structure and Composition of Shares of Portfolio Investment, Foreign Direct Investment and Remittances in Total Private Capital Flows.

From 1980 to 1995, before the data for remittances became available, foreign direct investment dominated the total private capital flow. Foreign direct investment has the largest part of its inflow in 1990 when portfolio flows were negative.

However between 1996 and 2010 when the data on remittances are available, foreign direct investment and remittances appear to dominate the capital flows. The changing

structure appears to be in favor of remittances and direct investment. These are less volatile type of capital flows and reduce Nigeria's degree of vulnerability to external crisis.

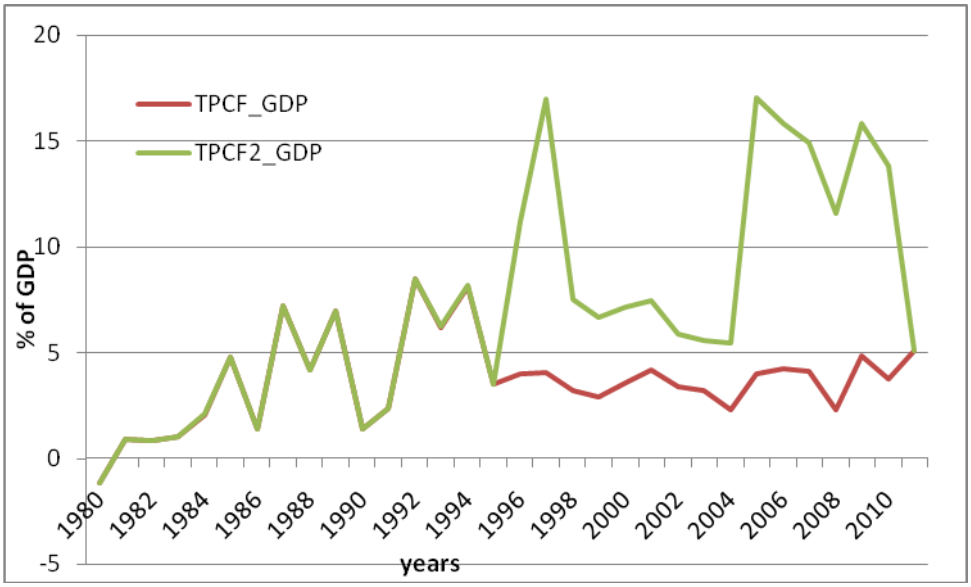


Figure 4.5 Trend Movement of Total Private Capital Flow

When expressed as percentage of GDP, total capital flows has increased over the sample period, negative in 1980 and increased to about 15% in 2006 – 2010 when remittances are included, (TPCF2_GDP).

Figure 4.1 to 4.5 above appear to suggest an increasing dominating role of remittance and foreign direct investment.

4.3 Unit Root Test

Before proceeding with the unit root test ,we plot the time series of the real GDP, total private capital flow, direct investment, portfolio investment, export and openness. Such plots assist to give clues about the nature of the variables. Over the period of this study, it

is revealed from Figure 4.6 that all the variables except for direct investment and portfolio investment have been upward trending; however, all the variables have intercepts.

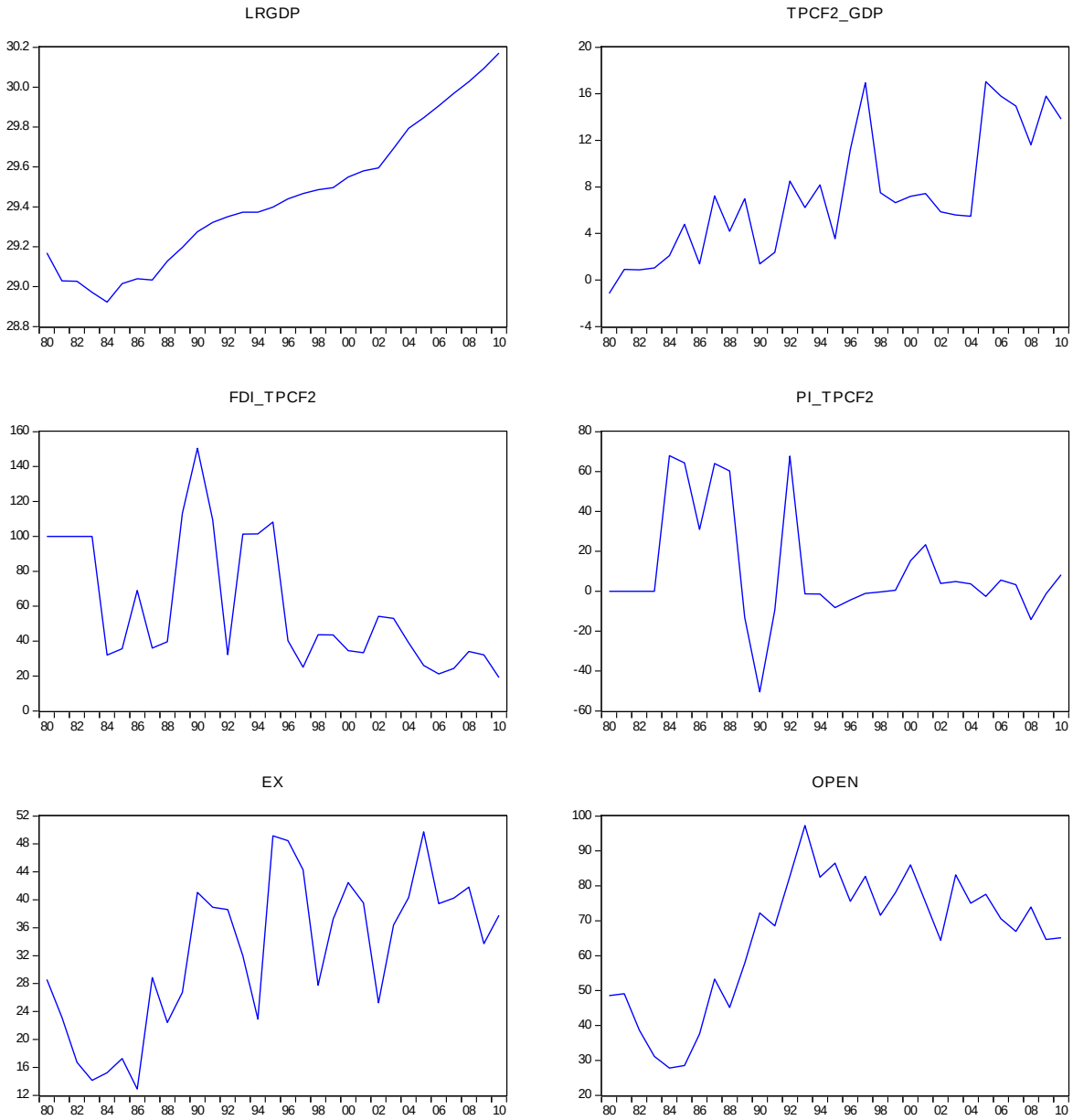


Figure 4.6: Line Plots of VAR Variables

Having examined the properties (trend and intercept) of the variables, we then proceed to carry out the unit root tests. Augmented Dickey-Fuller (ADF) and Phillip Perron (PP) tests

were used. The purpose of the test is primarily to get the order of integration of the series, and to evade a spurious regression. For levels, trend and intercept were included for both ADF and PP where their line graphs suggest so. While only the intercept is included at first difference. Table 4.1 shows that for ADF, total private capital flow, direct investment and portfolio investment are stationary at levels; RGDP, openness and export are integrated of order one. PP on the other hand suggests that while RGDP, total private capital flow and portfolio investment are stationary at levels; direct investment, export and openness are stationary at first difference.

TABLE 4.1 UNIT ROOT TEST RESULTS

VARIABLES	LEVEL		FIRST DIFFERENCE		REMARK
	ADF	PP	ADF	PP	
LRGDP	-1.6611	-9.0388*	-3.9879**	_	1(1)
	(-3.5731)	(-3.5670)	(-2.9705)	_	
TPCF2_GDP	-5.2029*	-4.2412*	_	_	1(0)
	(-3.6122)	(-3.5684)	_	_	
FDI_TPCF2	-3.9781*	-2.9952	_	-7.5523**	I(0)
	(-3.5742)	(-3.5684)	_	(-1.9529)	
PI_TPCF2	-3.9140*	-3.3075*	_	_	1(0)
	(-2.9678)	(-2.9640)	_	_	
EX	-2.1001	-3.5412	-5.3763**	-7.7553**	I(1)
	(-2.9665)	(-3.5670)	(-1.9535)	(-2.9655)	
OPEN	-1.1243	-1.6299	-6.5279**	-6.4698**	I(1)
	(-3.5742)	(-3.5684)	(-2.9678)	(-2.9678)	

*The figures without parenthesis are the test statistic while the ones in parenthesis are the 5% critical values. ** indicates significance at 5% critical value at which the variables are stationary.*

4.4 Estimated VAR

This study made use of a VAR model; this is estimated with an optimal lag length of two. The choice of two lags as the appropriate lag length is based on AIC, HQ, and FPE criteria. SC and LR however suggest zero and one respectively. While zero lag is precluded in VAR analysis, better and more plausible results were obtained when two lags were used compared to one lag.

Table 4.2: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-452.8469	NA	89335247	35.32199	36.47384*	35.66450
1	-401.6183	64.51003*	35621811	34.19395	37.07359	35.05022
2	-347.6069	44.00932	21883043*	32.85977*	37.46719	34.22979*

** indicates lag order selected by the criterion at 5% level of significance.LR: sequential modified LR test statistic (each test at 5% level). FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion HQ: Hannan-Quinn information criterion*

The computed estimate of the VAR is reported in the Appendix IB. the diagnostics tests suggest that the VAR is well-estimated. For instance, the modulus of all the roots of the characteristic polynomial are less than one suggesting that the roots lie within the unit root circle; thus the VAR is stable (Figure 4.7). This further implies that both the impulse response function and standard errors of this model are valid. The skewness, kurtosis and jarque-bera tests of the multivariate residuals could not reject the null hypothesis that the residuals from the VAR are normally distributed. This is true for both the individual equations and the joint test of the equations (Table 4.3). Therefore, the stability and normality tests of the estimated model suggest that the VAR is robust, hence a good fit for the data.

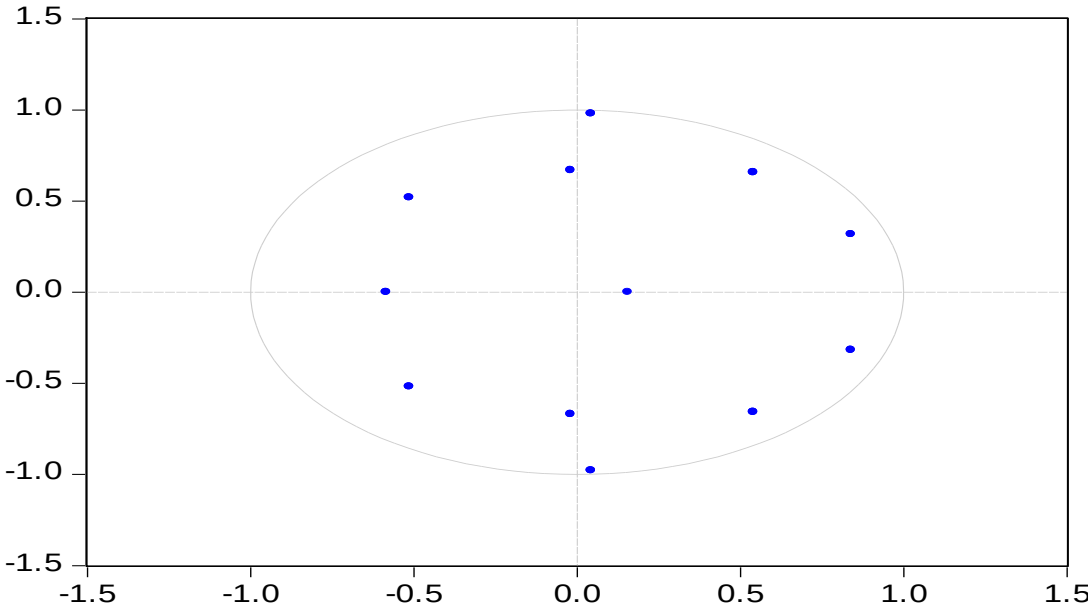


Figure 4.7: Inverse Roots of AR Characteristic Polynomial

Table 4.3: VAR Residual Normality Tests

component	Skewness	Prob.	Kurtosis	Prob.	Jarque-Bera	Prob.
1	0.3254	0.4901	2.7664	0.8043	0.3148	0.8544
2	-0.1190	0.8008	2.5276	0.6163	0.7632	0.6828
3	0.4052	0.3900	3.1470	0.8761	0.3743	0.8293
4	0.2161	0.6467	2.6180	0.6854	2.9956	0.2236
5	0.7359	0.1185	3.7045	0.4549	0.5249	0.7692
6	-0.0226	0.9618	2.3184	0.4697	0.3148	0.8544
Joint	3.9285	0.6864	1.5820	0.9539	5.5105	0.9387

Notes: The joint values for skewnness and kurtosis are chi-square values. Null hypothesis-residuals are multivariate normal

4.5 Impact of Sudden Stop and Reversals

In estimating the VAR, we added two dummy variables to capture the effects of sudden stop and reversal. The estimated coefficients suggest that both events have a negative effect on real GDP growth in Nigeria. Specifically, an episode of sudden stop would reduce real GDP growth by 0.105 percentage point, while and episode of reversal will reduce real growth by additional 0.118 percentage points (see Appendix I). This finding is consistent with our *apriori* expectations, and with the general literature.

4.6 Impulse Response Analysis

The impulse response function reported on fig. 4.8 is for a horizon of 12 quarters. This enables us to trace out the response of RGDP to a shock in the various components of capital flows. The shock is represented by one standard deviation of the error term in the underlying structural model for the variable. Since all variables are measured in logs, the impulse response functions trace out a growth rate relative to the base period when the shock occurred. We have reported the complete impulse response matrix in Appendix IB, and Figure 1 below reports the response of real GDP (our variable of interest) to the various components of Capital Flows.

The effects of capital flows are decomposed into the various components of foreign private capital. This is because, as indicated in chapter two, the effects of capital flows on the economy depend on the nature of such capital. For instance, as the result shows, the direct investment has a positive effect on real GDP. Panel B of figure B shows that as the ratio of FDI in the total capital flow rises, real GDP growth will also rise, given the shares of remittances and portfolio flows.

In panel C of Figure. 4.8, the effect of portfolio flows is also shown to be positive. Specifically, as the share of portfolio investment in total capital private capital flows rises, real GDP growth also rises. Because total private capital is made up of FDI, PI and remittances, the results panels B and C imply that GDP growth is likely to decline if the share of remittance in total capital flows rises. These results are consistent with the theoretical expectation. While both FDI and PI directly contribute to immediate investment and production, the bulk of remittances contribute to consumption. Rise in share of remittances in total private capital flows, which necessarily means reduction in the share of either FDI of PI should reduce the rate at which the economy grows.

Panel D of fig. 4.8 shows that the effect of total private capital flows on the economy is positive. Specifically, it shows that as the ratio of total private capital inflow to GDP rises, economic growth will rise. Although the increase remains positive, the peak is reached around the third year.

Panel A of Figure 4.8, shows the effect of openness to trade on real GDP. It suggests that the effect is initially positive but turns negative in the long run. Precisely, the effect is positive between the first quarter and the second; but as shown from the figure the effect begins to be negative from the third quarter.

Panel E of Figure 4.8 shows the effect of export on the economy. The result reveals that the effect is consistently positive; starting from the first quarter and accumulates to reach the full impact in the ninth quarter. This implies that as growth in export to other countries rises, economic growth also rises. This observed relationship agrees with the theoretical expectation of the study.

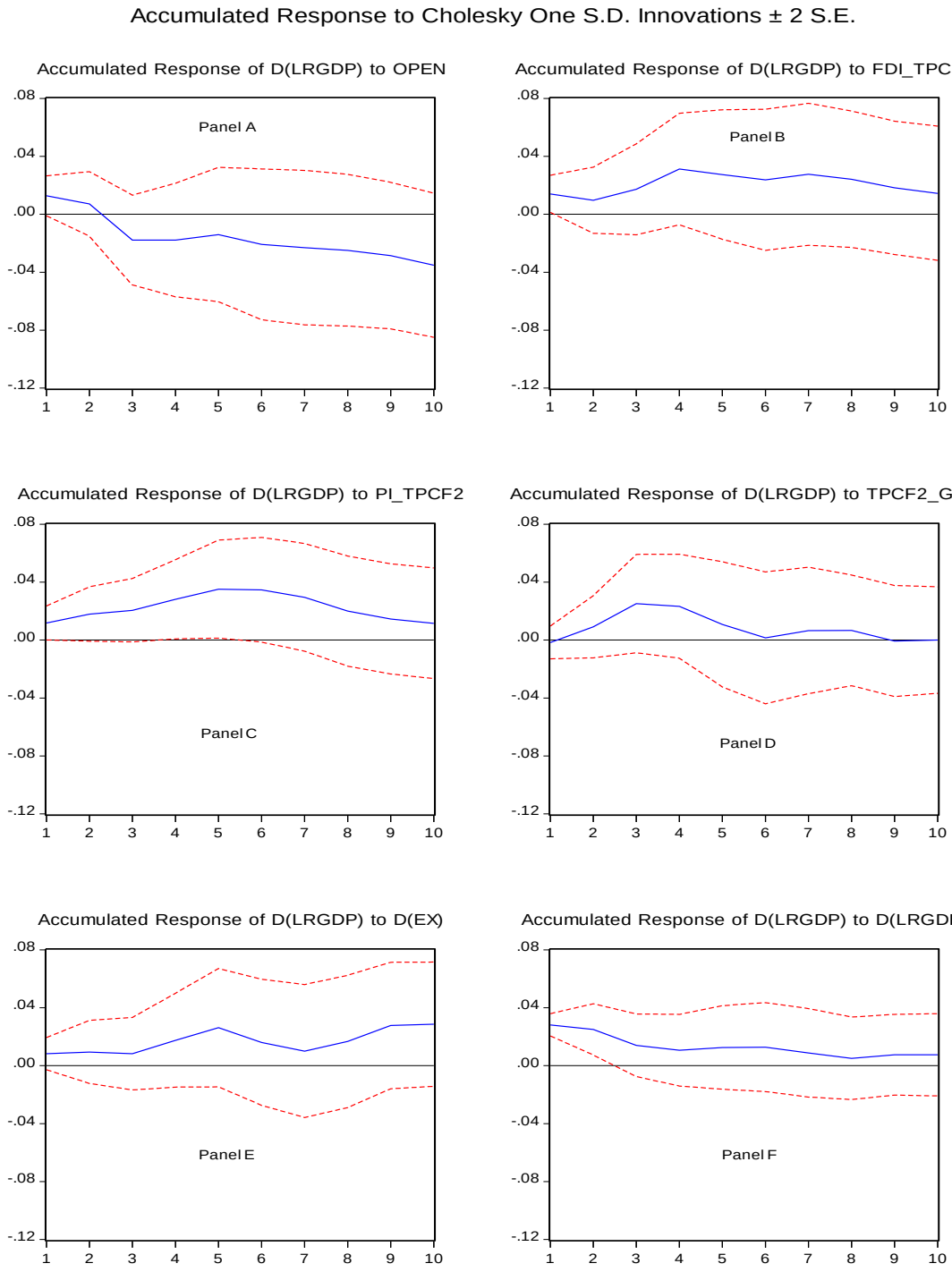


Figure 4.8: Impulse Response Function of real GDP Growth Rate to Capital Flows Components and other Macroeconomic Variables

4.7 Variance Decomposition of RGDP)

The relative strengths of the different capital flows that affect output were examined with the help of the variance decomposition at forecast horizons. Table 4.4 presents the variance decomposition of RGDP. Column one lists the quarters ahead, whereas column two refers to the standard error (SE), which is the forecast error of the variable for 12-quarter horizon and column three to column 8 are the variations of the RGDP attributable to the different shocks of the VAR. The first quarter is the short run which ends at four, eight and 12 quarters represent the medium term.

Among the capital flows as indicated in table 4.4, changes in RGDP are most accounted for by total private capital flow, especially from the fifth quarter. It represents 16.14% - 17.29% between the fifth and twelve quarters. Next in the list is direct investment; the tables shows that it explains changes in RGDP than the portfolio investment. In fact, it accounts for most variation in the first four quarters when even compared to the total private capital flow (direct investment, 14.49%-15.69%; total private capital flow, 0.21%-12.60%). But while portfolio investment, on average among the capital flows is the least contributor to RGDP, its contribution in the first and second quarter outweighs that of total private capital flows.

From Table 4.4 openness and export constitute significant sources of variation to RGDP. While openness accounts for 11.91%-22.53% variation in the RGDP, exports account 5.05%-13.00% variation. The table also reveals that own shocks is an important source of variation. It explains 58.23% and 50.79% in the first and second quarters respectively and

consistently declines from the third quarter to 23.17% in the twelve quarters. This suggests that variation in RGDP is persistent.

Table 4.4: Variance Decomposition of RGDP

Period	S.E.	OPEN	FDI_TPCF2	PI_TPCF2	TPCF2_GDP	D(EX)	D(LRGDP)
1	9.001293	11.90455	14.48818	10.12272	0.204075	5.049741	58.23073
2	12.01434	12.26647	13.70272	11.15821	7.654626	4.431383	50.78660
3	14.33633	30.80126	10.38818	6.939615	14.17070	2.708189	34.99205
4	15.54472	27.14618	15.68902	8.053749	12.59937	5.293653	31.21803
5	16.24095	25.01867	14.64971	8.766793	16.13940	7.053580	28.37185
6	17.36238	24.57161	13.99849	8.158118	17.44029	9.449108	26.38238
7	17.94889	23.87399	13.93266	8.617570	17.54569	10.10709	25.92301
8	18.45112	22.94545	13.65367	10.58567	16.80090	10.82965	25.18465
9	18.59970	21.82839	13.65259	10.63555	17.04441	13.08470	23.75436
10	18.79679	22.53162	13.76788	10.67662	16.77358	12.88730	23.36300
11	18.93394	22.26179	13.40041	10.66196	17.51352	12.93217	23.23015
12	19.24017	22.30797	13.60036	10.64823	17.28739	12.99082	23.16523

Cholesky Ordering: OPEN FDI_TPCF2 PI_TPCF2 TPCF2_GDP D(EX) D(LRGDP)

The conclusion is that of all the capital flows that is heaped into the country, only foreign direct investment has the highest potentials of boosting economic activities. However, from the variance decomposition, growth in export earnings contribute to growth in economic activities in the Country than the other capital flows.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Sudden stop and reversals of capital flows are considered to be the spark that has set off several of the recent financial crises, the Asian financial crises of the second half of the 1990s has led to renewed interest in the causes and consequences of international capital flows. The capital that flows into emerging market economies is large when compared to the size of their domestic financial sector, and they potentially have large real macroeconomic effects. One of the key variables that account for sudden stops are capital flow other than direct foreign investment, that is, foreign portfolio investment, chiefly flowing the reforms in both banking sector and the Nigeria stock exchange, as well as series of foreign investment promotion campaigns, Nigeria experienced substantial growth of portfolio investment inflow, this type of inflow are easily reversible. In this light the study seeks to examine the structure and dynamics of the foreign private capital inflows to Nigeria and to examine the effect of sudden stop and reversal of capital flows on economic growth in Nigeria. The order of integration of the data was determined by the use of unit root test, and in which Vector Autoregressive Approach (VAR) approach was used to model the relationship among variables.

Based on the empirical analysis conducted, the major findings of this study are that:

I. On the structure and dynamics of the foreign private capital inflows, it was found that the structure of foreign private capital inflows has changed.

II. On the effect of private capital flows on economic growth in Nigeria, it was found that, total capital flow has a positive effect on economic growth; as the total private capital inflow to GDP rises economic growth also rise.

III. On the extent to which capital flows affect Nigeria's degree of vulnerability to external crises, it was found that RGDP rely more on foreign direct investment than portfolio investment for growth, therefore the economy is less vulnerable to external shocks.

IV. On the effect of sudden stop and reversal of capital flows on the Nigerian economy, it was found that both sudden stop and reversal have a negative effect on real GDP growth in Nigeria. Both episodes reduce GDP growth rate.

5.2 Conclusion

The findings of this study reveal that the structure of foreign private capital inflows to Nigeria has significantly changed, when compared to the periods before the wake of the global financial crisis of 2007. During the sample period, direct investment constitutes the dominant form of foreign private investment thereby making the economy relatively less vulnerable to external shocks. This is because while portfolio investment is subjected to both sudden stop and reversals in the short run, direct investment is subject to only sudden stops. The effect of private capital flows on economic growth in Nigeria depend on the nature of such capital, direct investment has a positive effect on the economy, likewise portfolio investment. GDP growth is to decline if the share of remittance in total capital flows rises because the bulk of remittances contribute to consumption, while both foreign direct investment and portfolio investment contribute to immediate investment and production. One major conclusion that can be drawn from this study is that both sudden stop and reversals of capital flow have a negative effect on the real GDP growth rate.

5.3 Recommendations

I. Nigerian government should build strong institutions to handle the destabilizing role of sudden stop and reversal, and also should control the types of capital that flow into the country. This is because sudden stops that are driven by other investments are more disruptive than those driven by direct investment.

II. The Nigerian Investment Promotion Commission (MPC) should sustain efforts to create better investment climate to encourage greater flows of foreign direct investment rather than portfolio investment into Nigeria.

III. The Central Bank of Nigeria, during episodes of sudden stop, should embark on measures to control inflation and stabilize the financial sector in order to develop currency-trust and restore confidence on investors.

Reference

Agosin, Manuel R. and Franklin Huaita (2008), Why Should Emerging-Market Countries (still) Concern Themselves with Capital Flow?

Akanni, O. Lawanson (2007), "An Econometric Analysis of Capital Flight from Nigeria: A Portfolio Approach?

Alexandre, C et al (2009): "Requirements for Using Interest Rates as an Operating Target for Monetary Policy: The Case of Tunisia". International Monetary Fund, WP/09/149.

Amaya , Carlos Andres G and Peter Rowland (2005), "Determinant of Investment Flows into Emerging Markets". Banco de la Republica.

Angustime, Ujunwa, Salami Otaru Pius and Umar, Halidu Ahmed (2011). "The Global Financial Crisis: Realities and Implications for the Nigeria Capital Market"

Anyanwu, J.C. (1993), Monetary Economic Theory, Policy, and Institutions. Hybrid Publisher

Beers, David T., and John Chambers (2004). "Sovereign Defaults Set to Fall Again in 2005." Standard & Poor's (September).

Bernanke, B. and Gertler, M. (1995): "Inside the Black Box: The Credit Channel of Monetary Policy Transmission". *Journal of Economic Perspectives*-Volume 9, No 4-Fall 1995-Pages 27-48

Blersterker TJ (1987), Multinationals, the State and Control of the Nigeria Economy. Price ton. New Jersey.

Bordo, Micheal D. (2006), "Sudden Stops, Financial Crises and Original Sin in Emerging Countries .National Bureau of Economic Research 1050 Massachusett Avenue Cambridge, MA 02138: Working paper 11170 http://www.nber.org/paper/ w11170.

Caballero, R. J, Kevin Cowan and Jonathan Kearns (2005). Fear of Sudden Stops: Lessons from Australia and Chile. A paper presented at the Inter-American Development Bank Conference

Calderon, Cesar and Megumi Kubata (2011), Sudden Stops: Are Global and Local Investors Alike? The Word Bank Latin America and the Caribbean Region. *Policy Research Working Paper No.* 5569.

Calvo, Guillermo A., and Carmen M. Reinhart (1999). "When Capital Inflows Come to a Sudden Stop: Consequences and Policy Options." Mimeo, University of Maryland (June).

Cambridge University Press)."

Cavallo, Eduardo; Andrew Powell, Mathieu Pedemonte, and Tavella Pilar (2013). A New Taxonomy of Sudden Stops: Which Sudden Stops Should Countries Be Most Concerned About? Inter-American Development Bank (IDB) Working Paper Series No. IDB-WP-430

Chuku, A. (2009):**"**Measuring the Effects of Monetary Policy Innovations in Nigeria": A Structural Vector Autoregressive (SVAR) Approach. *African Journal of Accounting, Economics, Finance and Banking Research* Vol. 5, No.5.

Cowan, Kevin, Jose De Gregorio, Alejancho Micco and Christopher Neilson (2007). "Financial Diversification, Sudden Stops, and Sudden Starts."

Deb, Saubhik (2005), "Output Growth Capital Flow Reversals and Sudden Stop Crises."

Edwards, Sebastian (2005), "Capital Controls, Sudden Stops And Current Account Reversals." *National Bureau of Economic Research* 1050 Massachusetts avenue Cambridge, MsA 02138 Working Paper 11170 http://www.nber.org/paper.

Efremidze, Levan, Ozansula and Sam Schreyer (2009). "Sudden Stops and Currency Crises."

Forbes, Kristin J. and Francis E. Warnock (2010), "Capital Flow Waves: Surges, Stops, Flight and Retrenchment".

Ford, L (1997): '' Economic Development, Financial Development and Liberalization:

Guidotti, Pablo E., Federico Sturzenegger, and Agustin Villar (2003a). "Aftermaths of Current Account Reversals: Exports Growth or Import Compression," presented at the 8th LACEA Meeting, Puebla-Mexico, October, 2003.

Guidotti, Pablo E., Federico Sturzenegger, and Agustin Villar (2003b). "On Consequences of Sudden Stops." Mimeio, Universidad Torcuato Di Tella, Argentina.

Hutchison, Micheal M. and Ilan Noy (2002), "Sudden Stops and Mexican Wave: Currency Crises, Capital Flow Reversals and Output Loss in Emerging Markets."

Iannariello, Maria Pia, Hannan Morsy and Akiko Terada-Hagiwara (2006): "Role of Debt Maturity on Firms Fixed Assets during Sudden Stop Episodes: Evidence from Thailand."

Jeasakul, Phakawa (2005),"Sudden Stops of International Capital Flows: Causes and Consequwences"

Mendoza, Enrique G. (2004). "Sudden Stops in an Equilibrium Business Cycle Model with Credit Constraints: A Fisherian Deflation of Tobin's q." Mimeo, University of Maryland (April).

Mendoza, Enrique G., and Ceyhun Bora Durdu (2004). "Putting the Brakes on Sudden Stops: The Financial Frictions-Moral Hazard Tradeoff of Asset Price Guarantees." Mimeo, University of Maryland (May).

Montiel, Peter J. (2003). "Macroeconomic in Emerging Markets (Cambridge, UK:

Mordi, Charles N.O., Abwaku Englama, Banji s. Adebusuyi (2010), "The Changing Structure of the Nigeria Economy".

Obadan, Mike I. (2008), "Economic Globalization, Markets and National Development": how sensibly do the poor countries (Nigeria Included) stand?

Ohiorhenuan JFE (1990), "The industrialization of very late starters: Historical Experience, Prospects and Strategic Options for Nigeria". Institute of Development studies Discussion Paper No. 273.

Okigbo PNC (1989), "National Development Planning in Nigeria 1900-1992." London.

Oludoyi, Samuel Bayode (2009). "The Global Economic Crises As An Impetus To The Decline of the Nigerian Stock Market." A paper presented at the 50th Annual conference of the Nigerian economics society held at NICON Luxury hotel Abuja.

Omoyibo, Kinsley Ufuoma and Ajayi, Ben Ibukun (2011), The Impact of Global Capital on the Nigeria Economy.

Orji, Anthony and Mba, Peter. N (2010), "Foreign Private Investment, Capital Formation and Economic Growth in Nigeria: A two stage least square approach" *Journal of Economic Development* ISSN 2222-1700 (paper) ISSN 2222-2855.

Osinubi, Tokunbo S., Lioyda. Amachion Yeodiuse (2010), "Foreign Private Investment and Economic Growth in Nigeria."

Oyejide, T.Ademola (2005). "Capital Flows and Economic Transformation: A Conceptual Framework"

Reinhart , Carmen M. and Vincent R. Reiinhart (2008), Capital Flow Bonanza: An Encompassing View Of The Past And Present. Working paper 14321 http//www.nber.org/paper/ w14321.

Sanusi L.S (2009a), "Development in the Banking System in Nigeria" An address delivered on august 14th, 2009.

Sanusi, L.S (2009b), An Assessment of Current Development in the Nigerian Economy and the Central Bank of Nigeria (CBN) "Policy Action" Retrieved on 27th October,2009 from http://www. Cenbank.org.

Stock, J and Mark W (2001): " Vector Autoregressions," *Journal of Economic Perspectives*, Vol. 15 No.4 101-115.

Taiwan, 1960-1995 '', Discussion papers of the University of Birmingham, 97-25.

Taylor, J (2000): "Alternative Views of the Monetary Transmission Mechanism" What Difference Do They Make for Monetary Policy? Stanford University December.

UNCTAD," Investment Policy Review Nigeria" (New York and Geneva, 2009).

UNCTAD,World Investment Report 2008. "Transnational Corporations and the infrastructure Challenge "(New York and Geneva, 2008). E.08.11.d.23.

Uremadu, Sebastian Ofumbia (2008), "The Impact of Foreign Private Investment (FPI) On Capital Formation in Nigeria." An empirical Analysis.

APPENDICES

Appendix 1

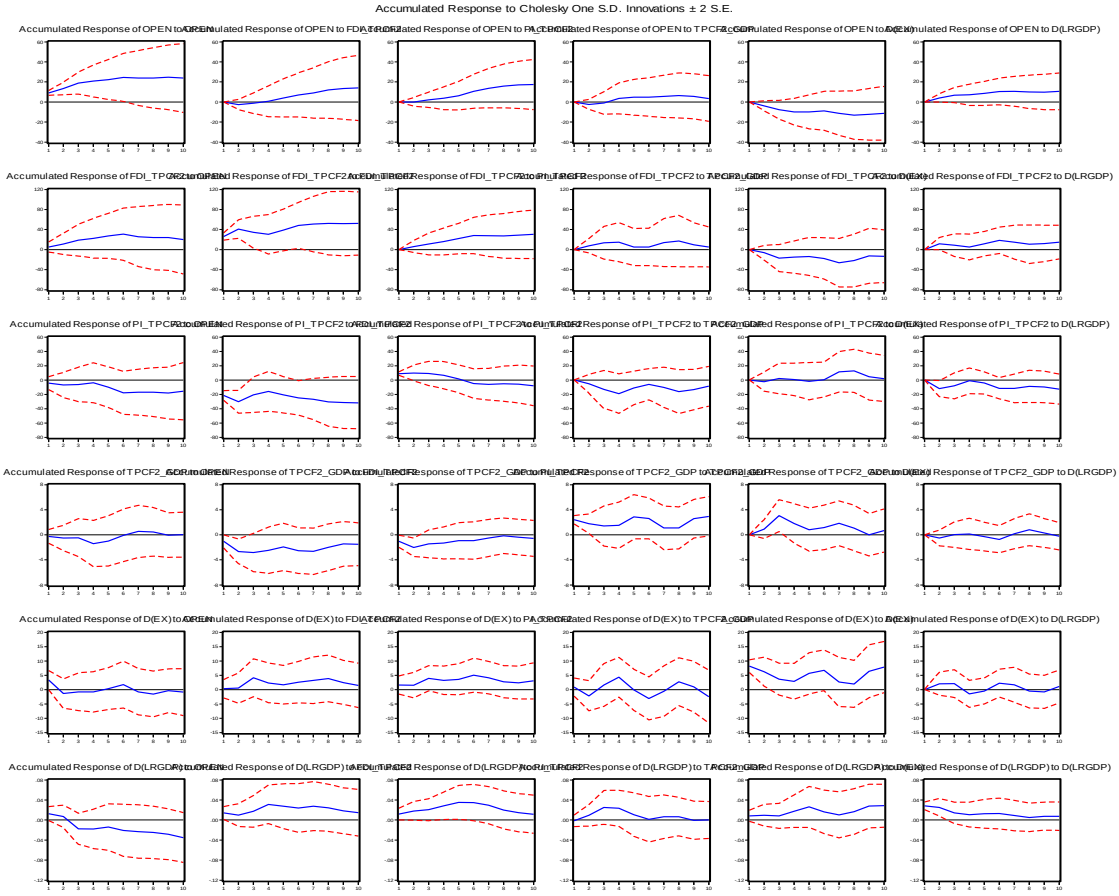
Vector Autoregression Estimates
Sample (adjusted): 1983 2009
Included observations: 27 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	OPEN	FDI_TPCF2	PI_TPCF2	TPCF2_GDP	D(EX)	D(LRGDP)
OPEN(-1)	0.602745	0.387164	0.312205	-0.024137	-0.508074	-0.000439
	(0.26311)	(0.77651)	(0.69556)	(0.08246)	(0.26320)	(0.00108)
	[2.29086]	[0.49860]	[0.44885]	[-0.29271]	[-1.93035]	[-0.40666]
OPEN(-2)	0.218661	0.297182	-0.958658	0.078987	0.421085	-0.002900
	(0.38796)	(1.14498)	(1.02562)	(0.12159)	(0.38810)	(0.00159)
	[0.56362]	[0.25955]	[-0.93471]	[0.64964]	[1.08499]	[-1.82365]
FDI_TPCF2(-1)	-0.326074	1.158459	0.069701	-0.188633	-0.216987	0.001136
	(0.28161)	(0.83112)	(0.74448)	(0.08826)	(0.28171)	(0.00115)
	[-1.15788]	[1.39385]	[0.09362]	[-2.13730]	[-0.77024]	[0.98386]
FDI_TPCF2(-2)	0.450159	-0.309528	-0.399222	0.153936	0.376124	0.001422
	(0.25343)	(0.74795)	(0.66998)	(0.07943)	(0.25352)	(0.00104)
	[1.77624]	[-0.41383]	[-0.59587]	[1.93810]	[1.48358]	[1.36869]
PI_TPCF2(-1)	-0.154861	0.785086	0.336615	-0.147560	-0.175428	0.001295
	(0.23840)	(0.70359)	(0.63025)	(0.07472)	(0.23849)	(0.00098)
	[-0.64958]	[1.11582]	[0.53410]	[-1.97496]	[-0.73558]	[1.32538]
PI_TPCF2(-2)	0.314453	-0.056254	-0.625297	0.161517	0.357839	0.000909
	(0.23103)	(0.68185)	(0.61077)	(0.07241)	(0.23112)	(0.00095)
	[1.36107]	[-0.08250]	[-1.02379]	[2.23070]	[1.54831]	[0.95999]
TPCF2_GDP(-1)	-0.721933	3.835460	-2.560886	-0.325071	-1.131858	0.004355
	(0.93453)	(2.75806)	(2.47055)	(0.29288)	(0.93486)	(0.00383)
	[-0.77251]	[1.39064]	[-1.03657]	[-1.10990]	[-1.21072]	[1.13667]
TPCF2_GDP(-2)	0.632540	-1.120570	-1.305869	0.224367	0.692179	0.007087
	(1.06464)	(3.14204)	(2.81451)	(0.33366)	(1.06502)	(0.00436)
	[0.59414]	[-0.35664]	[-0.46398]	[0.67245]	[0.64992]	[1.62373]
D(EX(-1))	-0.618270	-1.199425	0.148997	0.129317	-0.308463	0.000252
	(0.28754)	(0.84860)	(0.76014)	(0.09011)	(0.28764)	(0.00118)

	[-2.15024]	[-1.41342]	[0.19601]	[1.43504]	[-1.07239]	[0.21381]
D(EX(-2))	-0.711069	-0.642019	1.114697	0.111127	-0.837907	0.000691
	(0.36409)	(1.07454)	(0.96253)	(0.11411)	(0.36422)	(0.00149)
	[-1.95298]	[-0.59748]	[1.15809]	[0.97388]	[-2.30053]	[0.46317]
D(LRGDP(-1))	140.8457	415.4248	-429.2376	-18.73056	71.03454	-0.111563
	(70.8463)	(209.088)	(187.292)	(22.2033)	(70.8717)	(0.29044)
	[1.98805]	[1.98685]	[-2.29181]	[-0.84359]	[1.00230]	[-0.38411]
D(LRGDP(-2))	133.6464	-97.34754	106.6894	20.44316	97.28333	-0.192595
	(59.3795)	(175.246)	(156.977)	(18.6096)	(59.4008)	(0.24343)
	[2.25072]	[-0.55549]	[0.67965]	[1.09853]	[1.63774]	[-0.79117]
C	-2.453641	-43.71104	105.6134	3.255541	-11.95716	-0.212924
	(26.0023)	(76.7402)	(68.7405)	(8.14915)	(26.0116)	(0.10660)
	[-0.09436]	[-0.56960]	[1.53641]	[0.39949]	[-0.45969]	[-1.99742]
DUM1STOP	-4.387421	-13.37078	11.77134	5.844847	5.703181	-0.105969
	(17.8845)	(52.7823)	(47.2801)	(5.60503)	(17.8909)	(0.07332)
	[-0.24532]	[-0.25332]	[0.24897]	[1.04279]	[0.31877]	[-1.44531]
DUM2REV	-4.542471	13.20026	2.190527	3.809171	-7.465684	-0.118367
	(14.6710)	(43.2983)	(38.7847)	(4.59791)	(14.6763)	(0.06015)
	[-0.30962]	[0.30487]	[0.05648]	[0.82846]	[-0.50869]	[-1.96803]
@TREND	-0.127030	-2.132883	0.652080	0.158545	0.307687	0.014622
	(1.32141)	(3.89984)	(3.49331)	(0.41413)	(1.32188)	(0.00542)
	[-0.09613]	[-0.54692]	[0.18667]	[0.38284]	[0.23276]	[2.69908]
R-squared	0.902421	0.765871	0.723325	0.859796	0.626238	0.636764
Adj. R-squared	0.769358	0.446603	0.346042	0.668608	0.116561	0.141442
Sum sq. resids	891.2560	7762.911	6228.797	87.53945	891.8955	0.014979
S.E. equation	9.001293	26.56538	23.79610	2.821016	9.004522	0.036902
F-statistic	6.781919	2.398837	1.917192	4.497131	1.228697	1.285555
Log likelihood	-85.51807	-114.7386	-111.7662	-54.19075	-85.52775	62.89730
Akaike AIC	7.519857	9.684338	9.464164	5.199315	7.520574	-3.473874
Schwarz SC	8.287760	10.45224	10.23207	5.967218	8.288478	-2.705970
Mean dependent	67.28635	56.77320	11.39847	7.664251	0.628845	0.039564
S.D. dependent	18.74285	35.71064	29.42596	4.900435	9.580154	0.039826

Determinant resid covariance (dof adj.)	1341157.
Determinant resid covariance	6132.719
Log likelihood	-347.6069
Akaike information criterion	32.85977
Schwarz criterion	37.46719

APPENDIX I B


Accumulated Response to Cholesky One S.D. Innovations ± 2 S.E.
Accumulated Response of OPEN to OPEN
Accumulated Response of OPEN to FDI_TPCF2
Accumulated Response of OPEN to PI_TPCF2
Accumulated Response of OPEN to TPCF2_GDP
Accumulated Response of OPEN to D(EX)
Accumulated Response of OPEN to D(LRGDP)
Accumulated Response of FDI_TPCF2 to OPEN
Accumulated Response of FDI_TPCF2 to FDI_TPCF2
Accumulated Response of FDI_TPCF2 to PI_TPCF2
Accumulated Response of FDI_TPCF2 to TPCF2_GDP
Accumulated Response of FDI_TPCF2 to D(EX)
Accumulated Response of FDI_TPCF2 to D(LRGDP)
Accumulated Response of PI_TPCF2 to OPEN
Accumulated Response of PI_TPCF2 to FDI_TPCF2
Accumulated Response of PI_TPCF2 to PI_TPCF2
Accumulated Response of PI_TPCF2 to TPCF2_GDP
Accumulated Response of PI_TPCF2 to D(EX)
Accumulated Response of PI_TPCF2 to D(LRGDP)
Accumulated Response of TPCF2_GDP to OPEN
Accumulated Response of TPCF2_GDP to FDI_TPCF2
Accumulated Response of TPCF2_GDP to PI_TPCF2
Accumulated Response of TPCF2_GDP to TPCF2_GDP
Accumulated Response of TPCF2_GDP to D(EX)
Accumulated Response of TPCF2_GDP to D(LRGDP)
Accumulated Response of D(EX) to OPEN
Accumulated Response of D(EX) to FDI_TPCF2
Accumulated Response of D(EX) to PI_TPCF2
Accumulated Response of D(EX) to TPCF2_GDP
Accumulated Response of D(EX) to D(EX)
Accumulated Response of D(EX) to D(LRGDP)
Accumulated Response of D(LRGDP) to OPEN
Accumulated Response of D(LRGDP) to FDI_TPCF2
Accumulated Response of D(LRGDP) to PI_TPCF2
Accumulated Response of D(LRGDP) to TPCF2_GDP
Accumulated Response of D(LRGDP) to D(EX)
Accumulated Response of D(LRGDP) to D(LRGDP)

Appendix IC

VARIANCE DECOMPOSITION

Period	S.E.	OPEN	FDI_TPCF2	PI_TPCF2	TPCF2_GDP	D(EX)	D(LRGDP)
1	9.001293	11.90455	14.48818	10.12272	0.204075	5.049741	58.23073
2	12.01434	12.26647	13.70272	11.15821	7.654626	4.431383	50.78660
3	14.33633	30.80126	10.38818	6.939615	14.17070	2.708189	34.99205
4	15.54472	27.14618	15.68902	8.053749	12.59937	5.293653	31.21803
5	16.24095	25.01867	14.64971	8.766793	16.13940	7.053580	28.37185
6	17.36238	24.57161	13.99849	8.158118	17.44029	9.449108	26.38238
7	17.94889	23.87399	13.93266	8.617570	17.54569	10.10709	25.92301
8	18.45112	22.94545	13.65367	10.58567	16.80090	10.82965	25.18465
9	18.59970	21.82839	13.65259	10.63555	17.04441	13.08470	23.75436
10	18.79679	22.53162	13.76788	10.67662	16.77358	12.88730	23.36300

Cholesky Ordering: OPEN FDI_TPCF2 PI_TPCF2 TPCF2_GDP D(EX) D(LRGDP)

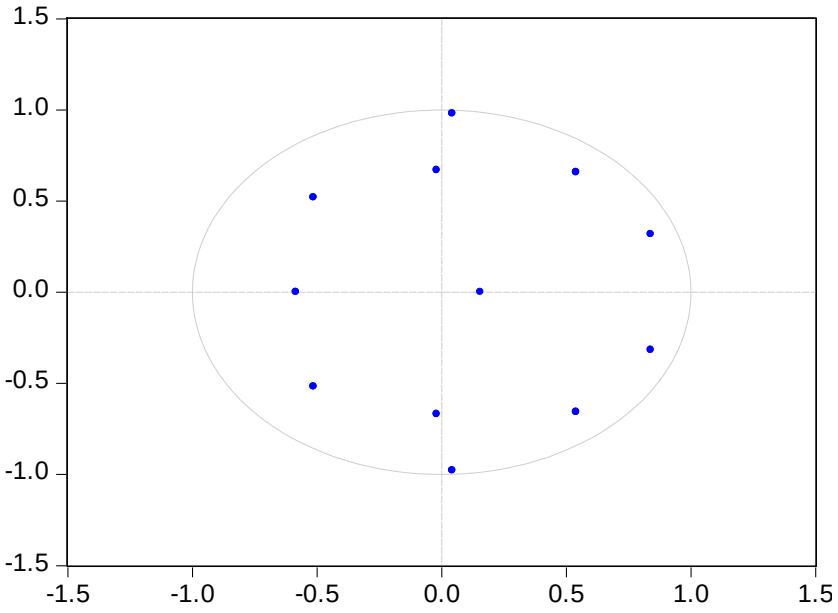


Figure 4.7: Inverse Roots of AR Characteristic Polynomial

Roots of Characteristic Polynomial
Endogenous variables: OPEN FDI_TPCF2 PI_TPCF2 TPCF2_GDP D(EX) D(LRGDP)
Exogenous variables: C DUM1STOP DUM2REV @TREND
Lag specification: 1 2
Date: 01/22/14 Time: 09:00

Root	Modulus
0.042979 - 0.978478i	0.979421
0.042979 + 0.978478i	0.979421
0.840098 - 0.317585i	0.898123
0.840098 + 0.317585i	0.898123
0.540216 - 0.657772i	0.851174
0.540216 + 0.657772i	0.851174
-0.513701 - 0.519052i	0.730276
-0.513701 + 0.519052i	0.730276
-0.019036 - 0.669468i	0.669739
-0.019036 + 0.669468i	0.669739
-0.584122	0.584122
0.155732	0.155732

No root lies outside the unit circle.
VAR satisfies the stability condition.

VAR Residual Normality Tests
Orthogonalization: Cholesky (Lutkepohl)
Null Hypothesis: residuals are multivariate normal
Date: 01/22/14 Time: 09:34
Sample: 1980 2009
Included observations: 27

Component	Skewness	Chi-sq	df	Prob.
1	0.325348	0.476332	1	0.4901
2	-0.118961	0.063683	1	0.8008
3	0.405209	0.738873	1	0.3900
4	0.216085	0.210117	1	0.6467
5	0.735935	2.437200	1	0.1185
6	-0.022605	0.002300	1	0.9618
Joint		3.928504	6	0.6864

Component	Kurtosis	Chi-sq	df	Prob.
1	2.766372	0.061405	1	0.8043
2	2.527576	0.251082	1	0.6163
3	3.146950	0.024294	1	0.8761

4	2.618024	0.164144	1	0.6854
5	3.704538	0.558421	1	0.4549
6	2.318422	0.522617	1	0.4697
Joint		1.581963	6	0.9539

Component	Jarque-Bera	df	Prob.
1	0.537737	2	0.7642
2	0.314765	2	0.8544
3	0.763167	2	0.6828
4	0.374261	2	0.8293
5	2.995621	2	0.2236
6	0.524917	2	0.7692
Joint	5.510467	12	0.9387

Period	OPEN	FDI_TPCF2	PI_TPCF2	TPCF2_GDP	D(EX)	D(LRGDP)
1	0.012732	0.014046	0.011741	-0.001667	0.008292	0.028159
	(0.00689)	(0.00639)	(0.00588)	(0.00565)	(0.00554)	(0.00383)
2	0.007093	0.009651	0.017949	0.009206	0.009426	0.025018
	(0.01116)	(0.01143)	(0.00938)	(0.01074)	(0.01090)	(0.00886)
3	-0.017782	0.017233	0.020541	0.025109	0.008241	0.014043
	(0.01549)	(0.01571)	(0.01096)	(0.01697)	(0.01253)	(0.01082)
4	-0.017821	0.031219	0.028157	0.023292	0.017569	0.010677
	(0.01958)	(0.01925)	(0.01368)	(0.01795)	(0.01618)	(0.01236)
5	-0.014013	0.027388	0.035139	0.010785	0.026214	0.012539
	(0.02322)	(0.02234)	(0.01692)	(0.02158)	(0.02045)	(0.01441)
6	-0.020836	0.023726	0.034651	0.001482	0.016076	0.012807
	(0.02603)	(0.02436)	(0.01807)	(0.02276)	(0.02176)	(0.01536)
7	-0.023085	0.027611	0.029444	0.006551	0.010072	0.008795
	(0.02664)	(0.02449)	(0.01858)	(0.02181)	(0.02295)	(0.01526)
8	-0.024893	0.024144	0.019971	0.006630	0.016726	0.005063
	(0.02619)	(0.02351)	(0.01902)	(0.01912)	(0.02281)	(0.01423)
9	-0.028527	0.018222	0.014561	-0.000664	0.027696	0.007537
	(0.02528)	(0.02302)	(0.01900)	(0.01916)	(0.02184)	(0.01394)
10	-0.035185	0.014455	0.011557	-1.77E-05	0.028568	0.007496
	(0.02488)	(0.02321)	(0.01909)	(0.01839)	(0.02144)	(0.01421)

Cholesky Ordering: OPEN FDI_TPCF2 PI_TPCF2 TPCF2_GDP D(EX) D(LRGDP)
Standard Errors: Analytic

Appendix 2: UNIT ROOT TEST

Augmented Dickey – Fuller Unit Root Test on Open (level)

Null Hypothesis: OPEN has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.124313	0.9072
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPEN)
Method: Least Squares
Date: 01/23/14 Time: 01:39
Sample (adjusted): 1982 2010
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPEN(-1)	-0.159113	0.141520	-1.124313	0.2716
D(OPEN(-1))	-0.145091	0.206824	-0.701520	0.4895
C	9.731689	7.098150	1.371018	0.1826
@TREND(1980)	0.084340	0.310001	0.272063	0.7878

R-squared	0.112405	Mean dependent var	0.551317
Adjusted R-squared	0.005893	S.D. dependent var	10.08011
S.E. of regression	10.05037	Akaike info criterion	7.580538
Sum squared resid	2525.248	Schwarz ncriterion	7.769130
Log likelihood	-105.9178	Hannan-Quinn criter.	7.639603
F-statistic	1.055329	Durbin-Watson stat	1.944271
Prob(F-statistic)	0.385646		

Augmented Dickey – Fuller Unit Root Test on D(Open) (first difference)

Null Hypothesis: D(OPEN) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.527939	0.0000
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPEN,2)
Method: Least Squares
Date: 01/23/14 Time: 01:44
Sample (adjusted): 1982 2010
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OPEN(-1))	-1.224296	0.187547	-6.527939	0.0000
C	0.675750	1.860523	0.363204	0.7193

R-squared	0.612147	Mean dependent var	-0.003456
Adjusted R-squared	0.597782	S.D. dependent var	15.77332
S.E. of regression	10.00354	Akaike info criterion	7.510228
Sum squared resid	2701.914	Schwarz criterion	7.604524
Log likelihood	-106.8983	Hannan-Quinn criter.	7.539760
F-statistic	42.61398	Durbin-Watson stat	1.972167

Phillips – Perron Unit Root Test on Open (level)
Null Hypothesis: OPEN has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.629897	0.7567
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	85.86193
HAC corrected variance (Bartlett kernel)	89.69343

Phillips-Perron Test Equation
Dependent Variable: D(OPEN)
Method: Least Squares
Date: 01/23/14 Time: 01:51
Sample (adjusted): 1981 2010
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPEN(-1)	-0.199557	0.125827	-1.585965	0.1244
C	10.95011	6.557442	1.669875	0.1065
@TREND(1980)	0.167252	0.271851	0.615233	0.5436

R-squared	0.094616	Mean dependent var	0.550921

Adjusted R-squared	0.027550	S.D. dependent var	9.904795
S.E. of regression	9.767402	Akaike info criterion	7.490618
Sum squared resid	2575.858	Schwarz criterion	7.630737
Log likelihood	-109.3593	Hannan-Quinn criter.	7.535443
F-statistic	1.410797	Durbin-Watson stat	2.208802
Prob(F-statistic)	0.261363		

Phillips – Perron Unit Root Test on D(Open) (first difference)

Null Hypothesis: D(OPEN) has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.469753	0.0000
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	93.16946
HAC corrected variance (Bartlett kernel)	103.4742

Phillips-Perron Test Equation
Dependent Variable: D(OPEN,2)
Method: Least Squares
Date: 01/23/14 Time: 01:59
Sample (adjusted): 1982 2010
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OPEN(-1))	-1.224296	0.187547	-6.527939	0.0000
C	0.675750	1.860523	0.363204	0.7193

R-squared	0.612147	Mean dependent var	-0.003456
Adjusted R-squared	0.597782	S.D. dependent var	15.77332
S.E. of regression	10.00354	Akaike info criterion	7.510228
Sum squared resid	2701.914	Schwarz criterion	7.604524
Log likelihood	-106.8983	Hannan-Quinn criter.	7.539760
F-statistic	42.61398	Durbin-Watson stat	1.972167
Prob(F-statistic)	0.000001		

Augmented Dickey-Fuller Unit Root Test on FDI_TPCF2 (level)

Null Hypothesis: FDI_TPCF2 has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.978046	0.0212
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FDI_TPCF2)
Method: Least Squares
Date: 01/21/14 Time: 16:23
Sample (adjusted): 1982 2010
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI_TPCF2(-1)	-0.814753	0.204812	-3.978046	0.0005
D(FDI_TPCF2(-1))	0.354361	0.187029	1.894686	0.0698
C	75.54773	22.78609	3.315519	0.0028
@TREND(1980)	-1.801400	0.773449	-2.329049	0.0282

R-squared	0.389329	Mean dependent var	-2.789213
Adjusted R-squared	0.316048	S.D. dependent var	33.94545
S.E. of regression	28.07335	Akaike info criterion	9.634961
Sum squared resid	19702.83	Schwarz criterion	9.823553
Log likelihood	-135.7069	Hannan-Quinn criter.	9.694026
F-statistic	5.312858	Durbin-Watson stat	1.897956
Prob(F-statistic)	0.005685		

Phillips- Perron Unit Root Test on FDI_TPCF2 (level)

Null Hypothesis: FDI_TPCF2 has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 11 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.995218	0.1500
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	752.6630
HAC corrected variance (Bartlett kernel)	270.5020

Phillips-Perron Test Equation
Dependent Variable: D(FDI_TPCF2)
Method: Least Squares
Date: 01/21/14 Time: 16:25
Sample (adjusted): 1981 2010
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI_TPCF2(-1)	-0.600736	0.176465	-3.404272	0.0021
C	54.96675	20.09451	2.735411	0.0109
@TREND(1980)	-1.352291	0.727529	-1.858746	0.0740

R-squared	0.300320	Mean dependent var	-2.696240
Adjusted R-squared	0.248492	S.D. dependent var	33.35894
S.E. of regression	28.91872	Akaike info criterion	9.661495
Sum squared resid	22579.89	Schwarz criterion	9.801614
Log likelihood	-141.9224	Hannan-Quinn criter.	9.706320
F-statistic	5.794542	Durbin-Watson stat	1.716019
Prob(F-statistic)	0.008056		

Phillips- Perron Unit Root Test on D(FDI_TPCF2) (first difference)

Null Hypothesis: D(FDI_TPCF2) has a unit root
Exogenous: None
Bandwidth: 15 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.552299	0.0000
Test critical values:	1% level	-2.647120	
	5% level	-1.952910	
	10% level	-1.610011	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	1117.939
HAC corrected variance (Bartlett kernel)	222.3670

Phillips-Perron Test Equation
Dependent Variable: D(FDI_TPCF2,2)
Method: Least Squares
Date: 01/21/14 Time: 17:50
Sample (adjusted): 1982 2010
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI_TPCF2(-1))	-1.046410	0.189273	-5.528580	0.0000

R-squared	0.521859	Mean dependent var	-0.448365
Adjusted R-squared	0.521859	S.D. dependent var	49.20974
S.E. of regression	34.02742	Akaike info criterion	9.926085

Sum squared resid	32420.23	Schwarz criterion	9.973233
Log likelihood	-142.9282	Hannan-Quinn criter.	9.940851
Durbin-Watson stat	2.037789		

Augmented Dickey-Fuller Unit Root Test on PI_TPCF2 (level)

Null Hypothesis: PI_TPCF2 has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.913950	0.0057
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(PI_TPCF2)
Method: Least Squares
Date: 01/21/14 Time: 16:30
Sample (adjusted): 1982 2010
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PI_TPCF2(-1)	-0.797729	0.203817	-3.913950	0.0006
D(PI_TPCF2(-1))	0.318629	0.185822	1.714699	0.0983
C	8.762900	5.241118	1.671953	0.1065

R-squared	0.374831	Mean dependent var	0.282868
Adjusted R-squared	0.326741	S.D. dependent var	31.31838
S.E. of regression	25.69748	Akaike info criterion	9.428360
Sum squared resid	17169.37	Schwarz criterion	9.569804
Log likelihood	-133.7112	Hannan-Quinn criter.	9.472658
F-statistic	7.794366	Durbin-Watson stat	1.874285
Prob(F-statistic)	0.002228		

Phillip - Perron Unit Root Test on PI_TPCF2 (level)

Null Hypothesis: PI_TPCF2 has a unit root
Exogenous: Constant
Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.307503	0.0235
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	638.4767
HAC corrected variance (Bartlett kernel)	485.0290

Phillips-Perron Test Equation
Dependent Variable: D(PI_TPCF2)
Method: Least Squares
Date: 01/21/14 Time: 16:31
Sample (adjusted): 1981 2010
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PI_TPCF2(-1)	-0.602848	0.172973	-3.485207	0.0016
C	6.457829	5.094259	1.267668	0.2154

R-squared	0.302557	Mean dependent var	0.273439
Adjusted R-squared	0.277649	S.D. dependent var	30.77371
S.E. of regression	26.15496	Akaike info criterion	9.430296
Sum squared resid	19154.30	Schwarz criterion	9.523709
Log likelihood	-139.4544	Hannan-Quinn criter.	9.460179
F-statistic	12.14667	Durbin-Watson stat	1.750941
Prob(F-statistic)	0.001638		

Augmented Dickey-Fuller Unit Root Test on TPCF2_ GDP (level)

Null Hypothesis: TPCF2_GDP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 6 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.202883	0.0017
Test critical values:	1% level	-4.394309	
	5% level	-3.612199	
	10% level	-3.243079	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TPCF2_GDP)
Method: Least Squares
Date: 01/21/14 Time: 16:34
Sample (adjusted): 1987 2010
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.

TPCF2_GDP(-1)	-3.386068	0.650806	-5.202883	0.0001
D(TPCF2_GDP(-1))	2.204401	0.534382	4.125140	0.0009
D(TPCF2_GDP(-2))	2.034933	0.494002	4.119280	0.0009
D(TPCF2_GDP(-3))	1.688321	0.440175	3.835571	0.0016
D(TPCF2_GDP(-4))	1.500520	0.362316	4.141468	0.0009
D(TPCF2_GDP(-5))	1.303336	0.303580	4.293215	0.0006
D(TPCF2_GDP(-6))	0.580254	0.246983	2.349364	0.0329
C	0.434101	1.662234	0.261155	0.7975
@TREND(1980)	1.264638	0.259955	4.864824	0.0002

R-squared	0.765977	Mean dependent var	0.519030
Adjusted R-squared	0.641165	S.D. dependent var	4.656327
S.E. of regression	2.789270	Akaike info criterion	5.169434
Sum squared resid	116.7004	Schwarz criterion	5.611204
Log likelihood	-53.03320	Hannan-Quinn criter.	5.286635
F-statistic	6.137049	Durbin-Watson stat	1.983299
Prob(F-statistic)	0.001317		

Phillips - perron Unit Root Test on TPCF2_ GDP (level)

Null Hypothesis: TPCF2_GDP has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.241225	0.0114
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	10.20546
HAC corrected variance (Bartlett kernel)	6.272688

Phillips-Perron Test Equation
Dependent Variable: D(TPCF2_GDP)
Method: Least Squares
Date: 01/21/14 Time: 16:38
Sample (adjusted): 1981 2010
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TPCF2_GDP(-1)	-0.821960	0.188562	-4.359105	0.0002
C	0.603061	1.261094	0.478204	0.6364
@TREND(1980)	0.360219	0.110892	3.248388	0.0031

R-squared	0.413372	Mean dependent var	0.499741
Adjusted R-squared	0.369918	S.D. dependent var	4.242251
S.E. of regression	3.367402	Akaike info criterion	5.360800

Sum squared resid	306.1638	Schwarz criterion	5.500920
Log likelihood	-77.41200	Hannan-Quinn criter.	5.405625
F-statistic	9.512862	Durbin-Watson stat	1.953035
Prob(F-statistic)	0.000746		

Augmented Dickey- Fuller Unit Root Test on Export (level)

ADF Test Statistic	-2.100047	1% Critical Value*	-3.6752
		5% Critical Value	-2.9665
		10% Critical Value	-2.6220

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EX)
Method: Least Squares
Date: 02/12/13 Time: 17:34
Sample(adjusted): 1982 2010
Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EX(-1)	-0.343079	0.163367	-2.100047	0.0456
D(EX(-1))	-0.056647	0.193708	-0.292434	0.7723
C	11.71493	5.560867	2.106672	0.0449
R-squared	0.189498	Mean dependent var		0.504748
Adjusted R-squared	0.127152	S.D. dependent var		9.349370
S.E. of regression	8.734774	Akaike info criterion		7.270199
Sum squared resid	1983.703	Schwarz criterion		7.411643
Log likelihood	-102.4179	F-statistic		3.039446
Durbin-Watson stat	2.032207	Prob(F-statistic)		0.065133

Augmented Dickey-Fuller Unit Root Test on D(Export) (first differencel)

ADF Test Statistic	-5.376333	1% Critical Value*	-2.6486
		5% Critical Value	-1.9535
		10% Critical Value	-1.6221

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EX,2)
Method: Least Squares
Date: 02/12/13 Time: 17:34
Sample(adjusted): 1983 2010
Included observations: 28 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EX(-1))	-1.570772	0.292164	-5.376333	0.0000
D(EX(-1),2)	0.269640	0.187987	1.434355	0.1634
R-squared	0.651424	Mean dependent var		0.375283

Adjusted R-squared	0.638017	S.D. dependent var	14.94854
S.E. of regression	8.993789	Akaike info criterion	7.299695
Sum squared resid	2103.094	Schwarz criterion	7.394852
Log likelihood	-100.1957	Durbin-Watson stat	2.221102

Phillips - Perron Unit Root Test on D(Export) (first difference)

PP Test Statistic	-7.755310	1% Critical Value*	-3.6752
		5% Critical Value	-2.9665
		10% Critical Value	-2.6220

*MacKinnon critical values for rejection of hypothesis of a unit root.

Lag truncation for Bartlett kernel: 3	(Newey-West suggests: 3)	
Residual variance with no correction		80.00638
Residual variance with correction		34.42983

Phillips-Perron Test Equation
Dependent Variable: D(EX,2)
Method: Least Squares
Date: 02/27/13 Time: 18:02
Sample(adjusted): 1982 2010
Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EX(-1))	-1.227179	0.186641	-6.575063	0.0000
C	0.544852	1.721710	0.316460	0.7541

R-squared	0.615557	Mean dependent var	0.328219
Adjusted R-squared	0.601318	S.D. dependent var	14.68136
S.E. of regression	9.269994	Akaike info criterion	7.357915
Sum squared resid	2320.185	Schwarz criterion	7.452211
Log likelihood	-104.6898	F-statistic	43.23145
Durbin-Watson stat	2.132681	Prob(F-statistic)	0.000000

Augmented Dickey-Fuller Unit Root Test on LRGDP (level)

ADF Test Statistic	-1.661096	1% Critical Value*	-4.3082
		5% Critical Value	-3.5731
		10% Critical Value	-3.2203

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRGDP)
Method: Least Squares
Date: 02/12/13 Time: 17:22
Sample(adjusted): 1982 2010
Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRGDP(-1)	-0.135264	0.081431	-1.661096	0.1092
D(LNRGDP(-1))	0.006983	0.028131	0.248230	0.8060

C	1.605450	0.966372	1.661317	0.1091
@TREND(1980)	0.009512	0.004102	2.319016	0.0289

R-squared	0.329110	Mean dependent var	0.045843
Adjusted R-squared	0.248603	S.D. dependent var	0.051926
S.E. of regression	0.045011	Akaike info criterion	-3.236373
Sum squared resid	0.050650	Schwarz criterion	-3.047780
Log likelihood	50.92741	F-statistic	4.087973
Durbin-Watson stat	1.289185	Prob(F-statistic)	0.017187

ADF Test Statistic	-1.661096	1% Critical Value*	-4.3082
		5% Critical Value	-3.5731
		10% Critical Value	-3.2203

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Unit Root Test on D(LRGDP) (first difference)

ADF Test Statistic	-3.987848	1% Critical Value*	-3.6852
		5% Critical Value	-2.9705
		10% Critical Value	-2.6242

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRGDP,2)
Method: Least Squares
Date: 02/12/13 Time: 17:23
Sample(adjusted): 1983 2010
Included observations: 28 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRGDP(-1))	-0.661559	0.165894	-3.987848	0.0005
D(LNRGDP(-1),2)	0.052246	0.023977	2.178978	0.0390
C	0.036672	0.011416	3.212215	0.0036

R-squared	0.400532	Mean dependent var	0.003681
Adjusted R-squared	0.352574	S.D. dependent var	0.053049
S.E. of regression	0.042685	Akaike info criterion	-3.368990
Sum squared resid	0.045550	Schwarz criterion	-3.226253
Log likelihood	50.16585	F-statistic	8.351806
Durbin-Watson stat	2.133201	Prob(F-statistic)	0.001668

Phillips - Perron Unit Root Test on LRGDP (level)

PP Test Statistic	-9.038787	1% Critical Value*	-4.2949
		5% Critical Value	-3.5670
		10% Critical Value	-3.2169

*MacKinnon critical values for rejection of hypothesis of a unit root.

Lag truncation for Bartlett kernel: 3	(Newey-West suggests: 3)	
Residual variance with no correction		0.013354
Residual variance with correction		0.040360

Phillips-Perron Test Equation
Dependent Variable: D(LNRGDP)
Method: Least Squares
Date: 02/27/13 Time: 17:47
Sample(adjusted): 1981 2010
Included observations: 30 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRGDP(-1)	-1.025803	0.075804	-13.53236	0.0000
C	12.23968	0.887407	13.79264	0.0000
@TREND(1980)	0.050057	0.005067	9.879280	0.0000

R-squared	0.878653	Mean dependent var	0.106736
Adjusted R-squared	0.869665	S.D. dependent var	0.337403
S.E. of regression	0.121809	Akaike info criterion	-1.278082
Sum squared resid	0.400612	Schwarz criterion	-1.137962
Log likelihood	22.17123	F-statistic	97.75135
Durbin-Watson stat	0.181267	Prob(F-statistic)	0.000000