# Impacts Of Capital Flight On Economic Growth In Nigeria

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## Abstract

*This study examines the impacts of capital flight on economic growth in Nigeria between 1980 and 2012. The study used co-integration, Ordinary Least Square (OLS) and Error Correction Mechanism (ECM) as its main estimation techniques. The evidence, however, shows that capital flight, foreign reserve, external debt, foreign direct investment and current account balance co-integrate with Gross Domestic Product (GDP) in Nigeria within the year under study. It was also discovered that capital flight had negative impact on the economy. Based on the empirical findings, it is recommended that the government should create an enabling environment for profitable investment and offer foreign investors attractive incentives as this will reduce the occurrence of capital flight from Nigeria and lead to sustainable growth and development.*

**Keywords:** Capital Flight, Gross Domestic Product, Economic Growth, Developing Countries, Foreign Direct Investment.

# CHAPTER ONE
## INTRODUCTION
### 1.1 BACKGROUND OF THE STUDY

Most African countries including Nigeria in time past have experienced massive outflows of capital towards developed countries. Indeed, these private assets surpass the continent's foreign liabilities, ironically making sub-Saharan Africa a 'net creditor' to the rest of the world (Boyce and Ndikumana, 2001). Investors from developed countries are seen as responding to investment opportunities while investors from developing countries are said to be escaping the high risks they perceive at home (Ajayi, 1997). Thus, according to Schneider (2003) as cited by Otene Samson and Richard Edeme (2012) the outflow of resident capital which is motivated by economic and political uncertainties in the home country is known as Capital flight. Economic resources lost through this medium do not contribute to the increase of domestic activities or to the enhancement of social welfare of resident. It implies forgone resources vital to sustaining economic growth and development. Investments in a country have a strong connection with economic growth in such country. Nevertheless, in countries with ill capital organization or poor investment policy by the government, capital absconds from such country. This irregular outflow of fund refers to Capital flight.

Illegal movement of capital from one country to another also connotes capital flight. This connotation implies that there may be normal or legal and abnormal or illegal flows. Abnormal capital flows are those which are not sanctioned by the government. Capital flight is the movement of money from investments in one country to another in order to avoid country-specific risks (such as hyperinflation, political turmoil and anticipated depreciation or devaluation of the currency), or in search of higher yield (Adekunle, 2011)

Capital flight can be done through the following means; declaring of non-existing foreign debts, illegal electronic fund transfers from private banking services, currency smuggling, over invoicing of imports and under invoicing of exports. Capital flight can also be caused by other factors such as speculation that any of the vehicle currencies will fall e.g. dollar, unfriendly investment climate facing both the local and foreign investors, inflation, repressive financial system etc. In economics, it occurs when assets and/or money rapidly flow out of a country, due to an economic event that disturbs investors and causes them to lower their valuation of the assets

in that country, or otherwise to lose confidence in its economic strength. This leads to a disappearance of wealth and is usually accompanied by a sharp drop in the exchange rate of the affected country.

The adverse effects of capital flight in the development of a country are enormous and severe. It reduces potential growth thereby causing a fall in investment. Also funds taken outside the country cannot be taxed thereby causing a loss of revenue for the government.

According to Otene Samson (2012:1) "*in order to improve domestic resources, most developing countries including Nigeria have opted for external borrowings which will eventually be diverted into private assets abroad, thus, the contradictory situation of accumulation of external debt by developing countries and the corresponding acquisition of external assets by resident has been an additional motivation behind the interest on capital flight. The recent global financial crisis and its generated problem of massive movement of funds out of the country has undoubtedly contributed to the growth of capital flight as well as the present consolidation crisis which is threatening the development of the banking subsector*".

Capital flight is seen as a major factor contributing to the mounting foreign debt and hindering development efforts in the third world countries. In the same vein, the outflow of capital may increase foreign finance problems of heavily indebted poor countries if potential creditors like IMF and other contributors are less motivated to give further assistance as a result of capital outflow. This study is therefore undertaken to investigate the impact of capital flight on Nigeria's economic growth.

## 1.2 STATEMENT OF THE PROBLEM

Capital flight in Nigeria is hindering growth and threatening economic development with negative consequences on the economy. It could also be seen as a threat to the growth prospects of the Nigerian economy. Proponents of this theoretical framework argue that capital flight has affected the economy by hindering potential growth because it involves the exportation of savings and foreign exchange. In a country like Nigeria with low income, capital flight will weaken growth potential. Where capital flight exists, the country experiences macroeconomic instability. This instability manifests itself in a number of ways which include rise in budget deficits, increase in current account deficits, overvaluation of exchange rate, increase in inflation and declining terms of trade. As a result, this will lead to a contraction in economic activity and lack of opportunities for profitable investment in the domestic economy. These variables affect investment climate and have a direct impact on expectations of risks and returns. In fact this will deter prospective investors from investing in Nigeria which in turn lowers economic growth and development.

In most developing nations such as Nigeria which is characterized by foreign exchange shortage, chronic poverty and heavy debt burden, capital flight constitute a large proportion of resources which are useful for financing economic growth and normalizing the adverse economic trends. Taking Nigeria as a case study, large percentage of people that engage in capital flight are economic and political groups who seize the opportunity of their position to acquire both legal and illegal funds and siphon them abroad. Such illegal funds consist of kickbacks on public and private sectors contracts, diversion of export revenue to private accounts and the likes. At this point, given the complex nature of capital flight and its effects on Nigerian economy this study will be undertaken to draw the line between what is and what is not capital flight and how it can be measured.

### 1.3 RESEARCH QUESTIONS
1. Does the variable that determines capital flight have any significant effect on economic growth as measured by GDP?
2. To what extent does capital flight actually pose a threat to national solvency and economic growth?
3. Does each explanatory variable under study significantly affect the volume of capital flight experienced in Nigeria?

## 1.4 JUSTIFICATION OF THE STUDY

In Nigeria, adequate researches have not been undertaken to establish the impact of capital flight itself on economic growth. Most studies on capital flight carried out in Nigeria focused on the determinants of capital flight

Therefore, this study will help in understanding the importance of capital flight and its possible relationship with foreign Direct Investment, External Debt, Foreign Reserve, Current account Balance and Gross Domestic Product

The knowledge gained through this study will be beneficial to the larger society and mainly policy makers in their choice of wide ranging measures to address the scourge of capital flight and also provide an added empirical knowledge in the study of capital flows.

## 1.5 OBJECTIVES OF THE STUDY

The central objective of this study is to examine the effects of capital flight on Nigerian economic growth. Specifically, the other objectives include;

1. To examine if the variables that determine capital flight also have any significant relationship with economic growth as measured by GDP.
2. To evaluate the extent to which capital flight pose a threat to national solvency and economic growth.
3. To determine if the volume of capital flight experienced in Nigeria have been significantly affected by each of the explanatory variables (External Debt, Foreign Reserve, Current account Balance and FDI ).
4. To provide policy recommendation drawn from the findings of the study.

## 1.6   RESEARCH HYPOTHESES

1. Ho - The determinants of capital flight have not significantly affected economic growth as measured by GDP.
   H1 - The determinants of capital flight have significantly affected economic growth as measured by GDP.
2. Ho - capital flight does not significantly pose a threat to national solvency and economic growth.
   H1 - capital flight significantly pose a threat to national solvency and economic growth.
3. Ho - The volume of capital flight experienced in Nigeria has not been significantly affected by each of the explanatory variables under study.
   H1 - The volume of capital flight experienced in Nigeria have been significantly affected by each of the explanatory variables under study

## 1.7 SCOPE OF THE STUDY

This study is centred on Nigeria and there is no comparison with the estimates of capital flight and its incidence with those of the Latin American countries, and a number of emerging economies of the world among those of South East Asia. This study covers 1980-2012 a period of thirty two years. This period of study is chosen because it is remarkable for its major economic thrusts in Nigeria economic and political development.

## 1.8 DEFINITION OF TERMS

1. **Capital flight**: the term capital flight as used in this study connotes illegal movement of capital or funds from one country to another usually from developing countries to developed countries. This connotation implies that there may be normal or legal and abnormal or illegal flows.

2. **Capital outflow**: It is used as a proxy for capital flight which implies movement of investible resources out of developing country such as Nigeria to develop country like Britain.

3. **Current account balance:** A measurement of a country's trade in which the value of goods and services it imports exceeds the value of goods and services it exports **or vice-versa.**

4. **External Debt:** It is the portion of a country's debt that was borrowed from foreign lenders including banks, governments or international financial institutions. These loans, including interest, must usually be paid in the currency in which the loan was made. In order to earn the needed currency, the borrowing country may sell and export goods to the lender's country.

5. **Foreign Direct Investment (FDI):** FDI usually involves participation in management, joint-venture, transfer of technology and expertise. There are two types of FDI: inward and outward, resulting in a net FDI inflow (positive or negative) and "stock of foreign direct investment", which is the cumulative number for a given period. For this research work outflow will be considered because of its negative relationship with economic growth.

6. **Foreign reserve:** It refers to the official public sector foreign assets that are readily available and controlled by the monetary authorities, for direct financing of payment imbalances, and directly regulating the magnitude of such imbalances, through intervention in the exchange markets to affect the currency exchange rate and for other purposes.

## 1.9 PLAN OF STUDY

For the purpose of this study, the work will be carefully organized and divided into five chapters to ensure clarity and easy comprehension.

The introductory chapter sets the scene for the actual work. It focuses on the background of capital flight in Nigeria, the problem statement, objective of the study, significance, hypotheses, research questions and plan of the work. Chapter two will be devoted to the critical review of some related literature. It will also present an overview of the historical and political background as well as the economic performance of the Nigerian economy.

Chapter three will deal with the research methodology outlining the research design, the sources and method of data collection and their analysis.

Chapter four will present the results of the study and the analysis. Chapter five will summarize the work, draw conclusions and make some recommendations.

# CHAPTER TWO
## LITERATURE REVIEW
## 2.1 INTRODUCTION

The concept of capital flight and the controversy behind the term will be discussed in this chapter. The theories in this area of work and empirical finding by other scholars will also be discussed in this chapter.

## 2.2 CONCEPTUAL FRAMEWORK

It is important to note that there is no generally accepted definition of capital flight, even though its activities have been identified for periods dating back to the seventeenth century.

Due to the fact that there are numerous definition of capital flight calculating it will yield different result

As earlier mentioned, the non-existence of a universally accepted definition of capital flight has brought about a controversy because of the way the term has been used interchangeably between developed and developing countries. Consequently, some schools of thought see outflows of capital from developed countries as foreign

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direct investment while the same activity is referred to as capital flight when it is undertaken by residents of a developing country (Ajayi, 1995). However, it must be clarified that what makes the difference is the use to which such inflow or outflow has been put.

The above dichotomy is premised on the belief that investors from the developed countries are responding to better opportunities abroad, while investors from developing countries are assumed to be escaping the perceived high risk for instance, expropriation, which is a part of the characteristics of some developing countries. In general, however, it is believed that all investors both from developed and developing countries are rational and will thus base their decisions on the relative returns and risks of investment at home and abroad.

Another subtle distinction being made in literature is between legal and illegal transactions as a means to try and distinguish between capital flight and normal capital outflow. Given the fact that illegal transactions by virtue of their activity are normally not reported to compilers of balance of payments (BOPs) statistics, it therefore becomes difficult to know the extent to which they constitute capital flight.

Cuddington (1986) refers to capital flight as short-term capital outflows involving hot money that responds to political or financial crises, burdensome taxes, a prospective tightening of capital controls or a major domestic currency devaluation as well as actual or developing hyperinflation. On the other hand, Morgan Guaranty Trust Company (1986) defines capital flight to constitute the reported and unreported acquisition of foreign assets by the non-bank private sector and elements of the public sector.

Bonilla (2004) argues that capital flight is a mechanism investors use to apply the 'discipline of the market' to national economic policies. Here capital flight is often a vehicle for tax evasion, or way rulers and their close associates sequester the proceeds of corruption.

Whereas Cooper and Hardt (2000) see capital flight as an abnormal flow of funds whose holder seeks safe havens from financial uncertainty and taxation or seeks to launder proceeds from illegal activities.

Murphy (2004) in his paper, "Fiscal Paradise or Tax on Development" defines capital flight as the movement of cash and investments out of one's country to a place in which they believe the assets will be safe for their use. Here the intention is to hide the capital from the prying eyes of the authority.

Schneider (2003) defines capital flight as that part of the outflow of resident capital which is motivated by economic and political uncertainty.

In his own contribution, Mahon (1996) argues that capital flight is a way of preserving savings against the depredations of bad politicians. Soesterberg (2000) explaining, said that capital flight is the movement of large sums of money from one country to another to escape political or economic turmoil or to seek higher rates of return. The problem here is that it is difficult to measure offshore holdings; estimates can only be made.

Capital flight according to Helleiner (2001) refers generally to an outflow of capital from a country where capital is relatively scarce and that is not part of normal commercial transactions.

McLeod (2002) in the Concise Encyclopaedia of Economics argues that there is no widely accepted definition of capital flight. To him the classic use of the term is to describe widespread currency speculation especially when it leads to cross-border movements of private funds that are large enough to affect national financial markets. He argues that the distinction between "flight" and normal capital outflows is thus a matter of degree, much like the difference between a "bank run" and normal withdrawals.

McLeod went further to observe that since the Third World debt crisis in the eighties, the term 'capital flight' has been applied more broadly to capital outflows from residents of developing countries. Chipalkatti and Rishi (2001) interpret capital flight as consisting of private capital outflows of any kind that result in the acquisition of foreign assets by the residents of a country. This definition is based on the motivations of the holders of capital. It rests on the assumption that an individual's control over capital is not complete, but it is subject to complex and alterable social control. According to Ramachanrann (2006) capital flight means the flight of financial and capital assets, and savings and wealth from a country.

Ragusett and Beja (2004) in their paper "The cost of capital flight: What Thailand Lost" defines capital flight as the "residual" capital outflow. It is measured as the difference between capital (money) inflows into a country

and the recorded money outflows. That is, they are looking at the missing money that has left the country without having been officially recorded as leaving.

The above survey of literature on capital flight testifies to the fact that there are different views amongst economists regarding the concept and definition of capital flight.

Nevertheless, it can be generally agreed that capital flight refers to capital that is running away from the domestic financial market in order to avoid losses and is in conflict with the interests, goals and objectives of the domestic society (Harrigan, 2007). To this end, this paper's working definition interprets capital flight as consisting of private capital outflows of any kind motivated by the residents' (of any country) desire to reduce the actual and potential level of government control (including risk of expropriation) over such capital, as well to acquire foreign assets.

To summaries the various thoughts on capital flight, Table 2.2.1 presents taxonomy of factors explaining international capital flows utilized by Lessard and Williamson (1987). Upper left quadrant of the table identifies various factors based on differences in economic returns across countries. The upper right quadrant constitutes those additional factors that deal with the two-way flows-'normal' portfolio diversification. Of important to this study is the fact that most of the theoretical and empirical studies of capital flight place emphasis on the lower left and right quadrants. The factors emphasized are those that create a 'wedge between economic and financial returns' regardless of 'whether they operate across the board or asymmetrically among residents or nonresidents' (Lessard and Williamson, 1987).

To this end, it can be argued that normal capital outflows are the ones that take place in order to maximize economic returns and opportunities between countries. Normal portfolio diversification takes place on the basis of differentials in economic returns.

Capital flight on the other hand as seen from this analysis is that subset of capital outflows that are propelled by source country policies (Lessard and Williamson 1987)

**Table 2.1: Taxonomy of factors explaining international capital flows**

|  | **One-way flows** | **Two-way flows** |
|---|---|---|
| **Economic risks and returns** | Natural resources endowments<br>Terms of trade<br>Technological changes<br>Demographic shifts General economic managements | Differences in absolute riskiness of economies<br>Low correlation of risky outcome across country<br>Differences in investor risk preferences |
| **Financial risks and returns** | Taxes (deviations form world levels)<br>Inflation Default on government obligations Devaluation<br>Financial repression<br>Taxes on financial intermediation<br>Political instability, potential confiscation | Differences in taxes and their incidence between residents and non-residents<br>Differences in nature and incidence of country<br>Asymmetric application of guarantees<br>Different interest ceilings for residents and non-residents Different access to foreign exchange denomination claims. |

**Source**: Lessard and Williamson, 1987

## 2.2.1 TYPES OF CAPITAL FLIGHT

Capital flight has both legal and illegal manifestations.

The legal component is generally after-tax money, properly documented and remaining on the books of the entity from which it is transferred. There is ample evidence that such flows broadly enhance economic growth. Such free market operations are accepted as largely beneficial to investment, trade and development leaving aside the question of the utility of short-term capital controls.

The illegal component is quite different. Almost always tax evading and therefore illegal out of the countries from which it comes. It is improperly documented or linked to preceding or following falsified transactions and it disappears from any record in the country of origin. The destructiveness of this cascade for both originating and receiving countries is now gaining long overdue action.

The motivations for these two forms of flight capital differ. The legal component is normally fleeing to safety and can be expected to return to the countries of origin when investment conditions are attractive. The illegal component is fleeing to secrecy to be accumulated in a hidden manner and as private bankers can attest rarely returns to the country of origin. The greater proportion, probably upwards of 90 per cent constitutes a permanent outward transfer as most private bankers will confide (Baker 2000). The little that does return home comes having acquired a foreign nationality as a company or partnership or trust fund and is recycled as foreign direct investment, intending to move abroad again in the form of interest, principal and dividends. Getting rich secretly while avoiding pressures to distribute gains locally is the overriding intent. This motivation is consistently demonstrated to be more important than tax evasion or protection from confiscation, convertibility or inflation risks. Hence the flow continues even after the government has liberalized exchange regimes, moderated tax codes, freed trade and attracted foreign investment.

## 2.2.2. THE MECHANISMS OF CAPITAL FLIGHT

There are many ways in which capital flight can occur. The conduits are many and it is almost impossible to develop an exhaustive inventory of channels. This section discusses the most significant channels for Nigeria.

Firstly, transfers can take place through cash or monetary instruments. These are usually in the form of either foreign or domestic currency, traveller's cheques or other cheques. In the early I 970s, stories abound about Nigerian currency being carried out of the country and exchanged in big financial centres like London and New York to be exchanged legally for other currencies at current market rates. Inspite of the present economic predicament, there are still some African countries where the naira is exchanged for other currencies in the course of trade.

Secondly, capital flight can take place through bank transfers from a local affiliate of a foreign institution to a designated recipient abroad. This is possible at the market rate where no constraints or restrictions are in place. Transfers can still be possible in the face of exchange controls but possibly at a less favourable rate. The history of the development of banking institutions in Nigeria shows the existence of local affiliates of foreign banks. That transfers of the type mentioned have been taking place in Nigeria cannot be in doubt. It is reasonable to claim, however, that such transfers may not be available for incomes that are illegally generated.

Another method of transfer is through precious metals and collectibles, including works of art. Local currency is converted into gold, silver or other precious metals, precious stones, jewellery and similar assets that cannot only be abroad but that will also be able to retain their value. The sale values of these are usually high in foreign currency. Usually, governments tend to restrict or prohibit imports and exports of any such items. Such international transfers therefore usually involve smuggling, with its inherent risks.

The fourth mechanism of transfer is through false invoicing of trade transactions, where export and import invoices are either issued that are either different from agreed prices or faked. The expectation in the case of capital flight is that exporters will systematically engage in under-invoicing while importers over-invoice and in the process derive foreign exchange that is outside the control of the foreign exchange authority. The procedure for doing this is that the foreign supplier issues an invoice that is greater than the agreed price of the product. The importer on receipt of the necessary foreign exchange remits it to the foreign supplier who then

keeps the difference in a bank for the use of the importer. On the export side, the invoice issued is for an amount in foreign currency that is less than the agreed price. The foreign buyer places the difference between the invoice price and the agreed price in a foreign bank account of the exporter and remits the invoice amount. It is this amount of money that is surrendered to the Central Bank for local currency at the prevailing official exchange rate. To measure the magnitude of invoice faking, partner country analysis is generally undertaken.

Capital flight through false trade invoicing is generally applicable to the local affiliates of multinational companies, and owners of business engaged in international trade. It is known in some cases that false invoicing can be multiplied through a practice called round tripping. The process is one in which foreign currency assets are accumulated abroad at the official exchange rate via trade mis-invoicing (via over - or under-invoicing).

Some of the assets are repatriated in the form of cash or other monetary instruments which are converted to local currency at a premium in the local parallel market. Whatever gain is made in local currency can then form the basis for further false-invoiced transactions. This in effect is arbitrating the official and parallel-market exchange rates (Walter, 1986, p. 113). This method is commonly referred to as round-tripping in Nigeria.

A fifth method of transferring money abroad is through the black market, until recently a thriving source of transferring funds abroad. The amount of money transferred this way is difficult to estimate.

A sixth vehicle through which capital can be transferred overseas is through commissions and agents' fees, which are paid by foreign contractors into the foreign bank accounts of residents.

## 2.2.3. DETERMINANTS OF CAPITAL FLIGHT

In summary capital flight is directly related to the behaviour of a risk-averse individual who diversifies his wealth in order to maximize asset returns. This emphasizes the decision to hold assets abroad as part of the process of portfolio diversification (Cuddington 1986; Gibson and Tsakalotos 1993; Lensink *et al.* 1998). Differences in rates of return between domestic and foreign asset holdings, the amount of wealth, and risk and uncertainty aspects normally influence this decision (Hermes et al. 2002). Although a multitude of determinants are found in literature, the following main factors will be discussed: (i) external debt; (ii) macroeconomic instability; (ii) political instability; (iii) rate of return differentials; (iv) capital inflows; (v) stock of capital flight; and (vi) public policy uncertainty. These determinants have a direct influence on portfolio decisions of individuals and most of them are closely interwoven.

**External Debt**

The causality between external debt and capital flight has many facets, though all the possible relationships results in capital flight. Ajayi (1995, p 21-22) and Boyce (1992, p. 337-338) distinguishes four possible linkages between the two: debt-driven capital flight, debt-fuelled capital flight, flight-driven external borrowing and flight fuelled external borrowing. Beja (2006, p.1) analysed the relationship between the two using what he termed 'revolving door model'. Beja's model posits direct and indirect linkages between external debt and capital flight. One of the linkages posits a direct causal effect, whereby external debt provides the fuel and/or motivation for capital flight, and vice versa. Thus, external borrowings are transformed sometimes instantaneously from capital inflow to capital flight, ultimately ending up abroad, usually in a private foreign account. Hence a positive relationship between the two variables is expected.

**Macroeconomic instability**

Macroeconomic instability occurs when there is a mismatch between aggregate domestic demand and aggregate domestic supply. The causes of this instability may be diverse, for example, political tensions and instability, wrong or lacking incentive structures and institutions to let markets efficiently coordinate demand and supply,

and heavy government involvement, which may put markets at the sideline. The symptoms of macroeconomic instability thus may become manifest in a number of ways: budget deficits will raise, current account deficits increase, exchange rate overvaluation occurs and inflation is growing. Variables describing such factors are often found in studies on the determinants of capital flight.

**Exchange rate overvaluation**

Overvalued exchange rate is often found to be an important variable in studies of capital flight and its underlying determinants. An overvalued exchange rate leads to increasing expectations of depreciation in the near future (Harrigan et al. 2007). Thus to avoid impending future welfare losses, residents will be motivated to hold at least part of their assets abroad. Another offshoot of exchange rate overvaluation is foreign exchange the black market premium. The presence of high black market premium is normally interpreted as a symptom of 'sick' economy. Nigeria is one of the countries whose domestic currency has been overvalued for nearly the whole duration since her independence in 1960 and black market premium has also been very high since 2000 to date.

**Inflation**

High inflation directly erodes the real value of domestic assets, stimulating residents to hold assets outside the country. Moreover, inflation rates and the exchange rate are closely connected, since high inflation may lead to increasing expectations of depreciation in the future. Inflation can also be perceived as a signal for how much the government has resorted to taxing domestic financial assets through money creation (inflation tax). For Nigeria, the higher inflation has also resulted in the vicious circle of money printing and further increase in inflation. In this case, higher inflation will result increased capital flight.

**GDP Growth rate**

GDP growth is normally used as a barometer for inferring economic performance as well as a measure for real rate of return of the economy (Mikkelsen, 1991). A negative correlation is therefore expected between capital flight and domestic GDP growth rate.

**Political instability**

Perceived ill institutional variables in any economy may give rise to capital flight. Public sector behaviour may have an impact on the risks and uncertainty regarding the policy environment and its outcomes. More specifically, residents may decide to hold their assets abroad based on lack of confidence in the domestic political situation, perceived high levels of corruption, and the consequences of these factors for the future value of the assets. In these cases, perceived political instability may generate capital flight (Hermes et al. 2002). In the Nigerian context, political instability has been very tense since September 1993 to date.

**Rate of return differentials**

Relatively low and unattractive domestic real interest rates can be a reflection of domestic financial repression that can stimulate outflows, especially when they are at levels that create significant interest rate differential (after making adjustments for exchange rate changes and taxes). In this case capital flight may occur simply because the returns on assets are higher abroad as compared to assets held domestically.

**Capital inflows/FDI**

The simultaneous occurrence of capital inflows and capital outflow has caused some authors to argue that capital inflows in the form of aid disbursements/FDI to developing countries are a major cause of capital flight (Ajay, 1995). If the case involves public sector borrowing, the availability of foreign exchange increases the potential for graft and corruption. Anecdotal evidence shows that over the years, significant proportions of aid inflows which were managed by Nigerian government ended up roughly half the aid amounts reaching the intended beneficiaries while the other portion was 'lost' within the government structures.

## Capital flight

Countries that have experienced high levels of capital flight in the recent past are likely to experience higher capital flight in subsequent years (Ndikumana et al 2002). This is mainly due in part to the momentum created by capital flight itself. In most cases, for a given level of government expenditure, the presence of high capital flight may lead private agents to expect higher tax rates by virtue of the resulting lower tax base. Thus in such a case the consequent decline in expected after-tax returns discourages domestic investment and induces private agents to seek higher returns abroad (Collier, Hoeffler and Pattillo 2001). Moreover, capital flight may be 'habit-forming,' making investors unlikely to respond rapidly to any improvements in the investment climate (Ndikumana et al 2002).

## Public policy uncertainty

An environment where the content and direction of current and future public policies are uncertain and/or unstable, domestic investors will be uncertain about the impact of these policies on the real value of domestically held assets in the future (Hermes et al 2002). This uncertainty may stimulate investors to sell their domestic and buy foreign assets. Sheets (1995) present a theoretical analysis of policy uncertainty and its influence on capital flight. The study argues that the shock therapy implemented by some transition economies led to substantial capital flight, since the policy reforms initially generated increased uncertainty about policies and their outcomes. Uncertainty has been the environment under which economic activities in Nigeria has been operating due to the fact that most government policies have been driven by some 'gimmicks' which have been intended to ameliorate the economic meltdown trend among other objectives.

### 2.2.4. MEASUREMENT OF CAPITAL FLIGHT

Several interpretations have been given of what exactly is meant by the term. Usually, capital flight is related to the existence of high uncertainty and risk with respect to returns on domestically held assets. Residents take their money and run in order to avoid extremely high-expected losses on their asset holdings. It is sometimes argued that capital outflows based on this consideration should be viewed as abnormal, and should therefore be distinguished from normal capital outflows, since normal outflows are based on considerations of portfolio diversification of residents, and / or activities of domestic commercial banks aiming at acquiring or extending foreign deposit holdings Williamson, (1987). Yet, when measuring capital flight it appears to be very difficult to empirically distinguish between normal and abnormal capital outflows.

Also, capital flight statistics are not readily available, instead they must be constructed. Capital flight by definition involves unrecorded transactions which make it difficult to measure. In fact there is no consensus among the profession on a universally accepted definition for capital flight. It is needless to say that a phenomenon that lacks a uniform definition is hard to measure.

In as much as there are a plethora of definitions of capital flight, the same is true with regards to its measurement. As such literature on the subject matter is abounding with several capital flight measurements. Not surprisingly, this leads to differences in capital flight estimates for the same country. For some, who emphasize the

speculative and short-term nature of capital flows, it means short term capital outflows. For others capital flight definitions should include trade mis-invoicing so as to include the illegal part of the capital flow into account. For still others, long-term movements should be included into the definition on the grounds that long term movements are also liquid.

In general it can be said that there are two approaches to measure capital flight: direct and indirect.

Under the direct approach, variables that constitute capital flight come from the balance of payment statistics and trade misinvoicing. This is the case with the Hot Money and Trade misinvoicing methods. The emphasis here is on the identified nature of the capital flows.

The indirect measures however view capital flight as a residual of four balance of payments components: increase in debt owed to foreign residents, net foreign direct investment, increase in foreign exchange reserves and the current account deficit. The World Bank (1985), Morgan Guaranty (1986), Erbe (1985), Cline (1987) are variations on this theme.

However, the following methods of measuring capital flight can be distinguished in the literature.

1. Residual (or broad) method
2. Morgan Guaranty
3. Dooley method
4. Hot money method
5. Trade mis-invoicing method

**Residual Method**

The residual approach was developed by the World Bank, (1985) and Erbe (1985). It was further modified by Morgan Guaranty Trust (1986). In the World Bank and Erbe version of the residual approach, capital flight is calculated as the difference between sources and uses of capital inflows. This measure uses balance of payments statistics to provide a link between the increase in gross external debt and the portfolio and spending decisions of the economy. It measures capital flight indirectly by comparing the sources of capital flowing into the country on the one hand (i.e. net increases in foreign indebtedness and net inflows of foreign direct investment) with the uses of finance on the other (i.e. current account deficit, building up of official foreign reserves, and private outflows of capital). Since the balance of payments statistics is not able to capture the true magnitude of the external debt flows, data on debt are taken from the World Bank statistics and are compared with the uses of these funds from the balance of payments statistics. If the sources, from the World Bank debt data, exceed the uses of capital inflows, this difference is often termed as capital flight. This method acknowledges the difficulty of separating normal from flight motivated flows of capital and therefore treats all outflows of resident capital as a capital flight.

-In essence, capital flight in this version of the residual approach is measured as:

CF = DEBT + FDI– (CA + RES)

Where:

DEBT = Change in total external debt outstanding

FDI = Net foreign direct investment

CA = Current account deficit

RES = Net additions to the stock of official foreign reserves

This is the broadest capital flight measurement that can be found in the literature.

It takes change in gross external debt (World Bank) and net foreign direct investment as the sources of finance and subtracts current account deficit and building up of foreign reserves from it. The resulting residual includes assets of both the banking and non-banking sector in the estimate of capital flight.

**The Morgan Guaranty Method**

Morgan Trust (1986) adjusted the World Bank (1985) measure for changes in foreign assets held by domestic agents other than the banking system. It takes into account an additional item, i.e. the change in the short-term foreign assets of the domestic banking system (ΔB). This modification is introduced to focus on non-bank capital flight. This method therefore implies that the banking system is not involved in capital flight. Thus, capital flight according to the Morgan Guaranty variant of the residual method (CF) can be calculated as:
CF = DEBT + FDI – (CA – RES – ΔB)

**The Dooley Method**

The Dooley (1986) method defines capital flight as illegal capital outflows, or all capital outflows based on the desire to place assets beyond the control of domestic authorities. Following this concept of capital flight, the Dooley method considers all outflows that do not receive register interest payment as illegal capital outflows. In this scenario, capital flight outflows refer to the increase in that part of the foreign stock that does not yield a recorded investment income. It also incorporates the net errors and omissions, as well as the difference between the World Bank data on the annual change in the stock of external debt and debt flows as reported in the balance of payments statistics. In its simplest form, capital flight magnitude is measure as the excess of total capital outflows over the stock of registered interest receipt external assets. According to Ajayi (1997) The Dooley method is calculated by cumulating the identified capital flows in the balance of payments and making three adjustments to capture unreported capital flows. First, errors and omission in the balance of payments are added. Secondly, the difference in the World Bank reported stock of external debt minus the cumulative recorded balance of payments liabilities is also added. The sum gives the total stock of external claims. Thirdly, the stock of external assets, which is needed to give the investment income reproted in the balance of payment, is calculated by utilizing an international interest rate. The difference between the total stock of external claims and the third adjustmant made is the stock of capital flight while capital flight is measured as the difference from year to year. This approach has been utilized by Khan (1989), and Deppler and Williamson (1987)

The total stock of external claims (TEC) is calculated as sum of the stocks of recorded and unrecorded claims on non-residents, and is given as:
TEC = (RCNR + EO) + (DEBT – EDBOP)
Where:
RNCR = stock of cumulative recorded non-FDI claims on non-residents
EO = stock of cumulative errors of omission
(DEBT – EDBOP) = difference in external debt stock from the World Bank's Global Development Finance and BOP cumulated.
The non-flight stock of external claims, NFEC, is simply the capitalized value of the non- FDI investment income, dINVINC, using a composite market interest rate, r.
NFEC = dINVINC/r
Now the stock of capital flight in t, KFI, can be derived as
KFD = TEC – NFEC

**The Hot money method**

Cuddington's (1986) "hot money" or "narrow measure" assumes that the typical meaning of capital flight is the running away of short-term capital rather than all private sector acquisition of external claims. Capital flight measured in this way refers to short-term movements of capital, whereas the residual method additionally takes into account capital outflows that are more long-term in nature. This method proposes that capital flight goes unrecorded due to the illegal nature of these capital movements. It is defined as the sum of net short-term capital outflows of the non-bank private sector plus recorded errors and omissions (statistical discrepancy) in the balance of payment statistics. Cuddington's capital flight is calculated by adding the errors and omissions to the selected short-term capital items and can be written as:

KFh = SKONB + EO……………..

Where:

*SKONB* = Short-term capital outflows by the non-bank public

*EO* = Errors and omissions, representing unrecorded capital outflow.


**The Trade Misinvoicing Method**

Capital flight is measured taking due account of trade-faking activity (over and under invoicing of both exports and imports, or the traditional under invoicing of exports and over-invoicing of imports).Capital flight under this methodology is determined by comparing trade data from both the importing and exporting country. The assumption is that importers are assumed to be involved in capital flight when they report higher values of imported goods as compared to the reported value of the same goods by exporters. In turn, exporters are involved in capital flight when they report lower values of exported goods as compared to the reported value of the same goods by importers. According to Hermes et al (2002) proponents of this measure stress the fact that abnormal capital outflows of residents may be included in export underinvoicing and/or import overinvoicing.

The usual method of calculating trade-faking is through partner country comparisons. The trade partner is referred to here as the world. Let there be a country Ci with the trading partner called world. Trade-faking is calculated as follows:

Xmis = Xctry – Mworld/ax

Mmis = Mctry/ax – Xworld

Where Xmis and Mmis represent export and import misinvoicing respectively.

The term Xctry is exports as reported by the county Ci, Mworld is the imports from country Ci as reported by the world, Mctry is the imports reported by country Ci, and Xworld is the exports sent to country Ci as reported by the world (that is, the world's imports from that country); and ax is the CIF/FOB correction factor - CIF is cost of insurance and FOB means free on board, that is without transaction.


Based on the theoretical and literature reviewed above, we adopt the Residual approach to capital flight by adopting the World Bank (1985) and Erbe (1985). This is because it encompasses Macro-Economic variables that determine the economic growth of Nigeria. These variables are the volatility in External Debt (EXDEBT) and External Reserve, current account balance (CAB) and Foreign Direct Investment (FDI). All these variables are capital flight estimate according to World Bank (1985) and Erbe (1985).


**2.3 THEORETICAL FRAMEWORK**

Ayayi (1992) and Pastor (1989) both identified four main theories in the area of capital flight. These include; the investment diversion thesis, Debt – driven capital flight thesis also called debt-overhang thesis, Tax – depressing thesis and Austerity generating thesis.

**The investment diversion theory:** This theory postulates that due to the macroeconomic and political uncertainty in developing country and the simultaneous existence of better investment opportunities in advanced countries like high foreign interest rate, wide array of financial instruments, political and economic stability, favourable tax climate and secrecy of accounts. Some, unscrupulous, corrupt leaders and bureaucrats usually siphon scarce capital resources from their countries to advanced countries. These funds are therefore, not available for investment at home leading to decline in aggregate investment, low economic growth, hence declining the employment, increase in dependency ratio and high death rate. These negative macroeconomic effects on these countries sometimes motivate the necessity to borrow from abroad to reactivate the domestic economy, which is sometimes further siphon thereby perpetrating external dependency and indebtedness. The liquidity constraint or crowding – out effect may result to depreciation of the domestic currency if the authorities are operating a floating exchange rate system (Ayayi, 1992). An attempt to defend the exchange rate at this time leads to loss of international reserves. The investment diversion thesis provides one of the well-known negative consequences of capital flight in the countries involved.

**The debt driven capital flight thesis:** This is the continuation of the investment diversion thesis. This thesis postulates that given the heavy external debt of a country, residents of these countries are motivated to move their resources outside the country to foreign countries. Borrowed money is sold to domestic economic agents who transfer these funds partly or completely abroad. According to this thesis, external debt is one of the propellants or fuel to capital flight. The debt-driven thesis also called debt overhang thesis states that capital flight reduces the incentive to save and invest. The assumption here is that with large foreign debt, there are the expectations of exchange rate devaluation, fiscal crisis, and the propensity of the crowding out of domestic capital and expropriation of assets to pay for the debt. The debt driven thesis and the investment driven thesis taken together suggest interdependency between capital flight, growth and external debt with the linkages being mutually reinforcing. Capital flight leads to poor growth, which calls for the necessity to borrow in order to promote growth. Further borrowing or indebtedness promotes capital flight, which in turns leads to poor economic growth, and the cycle continues.

**The Tax-Depressing Thesis**: this thesis postulates that capital flight leads to potential revenue loss because wealth held abroad are outside the control of the domestic government and cannot therefore be taxed. The fall in government revenue complicated the task of politico- economic engineering to promote growth and development. The outcome of this is the reduction in debt–servicing capacity of the government. This in turns increases the debt burden, which constrains economic growth and development. Thus, a direct resultant of capital flight is the reduction in revenue generating potential of government.

**The Austerity Thesis**: This thesis views the poor in severely indebted situation due to capital flight. They suffer more because they are exposed to excruciating austerity measures by government to pay for debt obligations to international banks that in turns pay interests to flight capital from residents in these countries (Pastor 1989). Poverty in developing countries reduces them to hewers of wood and drawers of water while perpetrating international inequality and dependency and, widening the gap between the rich countries and poor countries. Furthermore, the tax that the poor may pay is small, which again constrains the ability of government to muster enough resources to promote growth and development with poverty alleviation. Thus, a vicious circle of external debt, capital flight, poor growth, poverty and external debt is created.

From the above, capital flight destroys the domestic macroeconomic environment and enhances the absence of transparency and accountability. These distortions manifest themselves in weak governance, large government deficits, overvalued exchange rate, high and variable inflation coupled with financial repression (Ajayi, 1992).

## 2.4 EMPIRICAL FRAMEWORK

The empirical relationship between capital flight and macroeconomic variables has been the thrust of several studies which include Njimanted (2008), Mariana Cervena (2006) and Ajadi (2008). Ajayi (2003) found a link between capital flight and external debt in Nigeria. He particularly noted that outflow of capital persistently aggravates balance of payments deficits.

The empirical document of Ngeno (1994) has it that outflow of capital is the major cause of currency overvaluation, excessive fiscal deficit and high inflationary tendencies in the domestic economy. According to Dooley (1987), capital flight stimulates poor private domestic investment, it significantly exacerbate financial repression and risk premium.

Ajayi (1992, 2001) found that exchange rate misalignment is a critical determinant of capital flight. To them, if a currency were overvalued, economic agents would expect the currency to be devalued in future, and in order to protect their assets against exchange rate risk; domestic wealth holders would shift out the domestic assets into foreign assets to avoid potential capital loss. Ajayi (1992) examines the narrowness of the domestic money and capital markets in terms of their financial instruments and proclaims that narrow markets limit the availability of investment opportunities, which is further compounded by financial regression, which renders investment in domestic economy less attractive. Thus, holding assets in foreign financial instruments provide a viable and profitable alternative.

Kosarev (2000) identified capital export as a normal economic phenomenon which does not affect the economy significantly from global perspective, while capital flight presents a danger and leads to the impoverishment of the economy.

Ng'eno (2000) in his study analysed the magnitude of capital flight in Kenya using different methods of estimation. He empirically determined the causal factor of capital flight placing importance on macroeconomic variables. He concluded that capital flight peaked in the year of balance of payment crisis, meaning that capital flight was used to hedge against the poor economic conditions. It also suggests that without credible reforms growth in economy would lead to increase capital flight

Among the few studies carried out in Nigeria are, the study carried out by Onwioduokit (2002). He estimated the determinants of capital flight from Nigeria for the period of 1970-2000. The data were analyzed using ordinary least square (OLS). The results of the analysis revealed that domestic inflation, availability of capital, parallel market premium and competitive growth rate of the economy are the major determinants of capital flight in Nigeria.

Nyong (2003) observes that one of the factors in the capital flight literature is loan disbursement or debt service payment. Some economists have argued with him that loan disbursement is a major cause of capital flight in the sense that the availability of foreign exchange to pay for foreign debt obligations increases the potential for graft and corruption.

In the study carried out by Kadochnikov 2005, he examined the economic impact of capital flight from Russia within the institutional environment in which it occurs and whether capital flight was detrimental to the economy.

In the works of Mariana Cervena (2006) studying the impact of capital flight on long-term economic growth he found out that countries in which the ratio of capital flight is higher than that of GDP have experienced slower growth of GDP per capita, thus making less developed countries suffer more.

Beja et al (2006) measure capital flight from Thailand over the period 1980 to 2000 and analysed the relationship between capital flight and capital inflows, economic growth and crisis and financial liberation.

Agu (2006), in his work on capital flight and domestic macroeconomic policy in Nigeria, he tried to evaluate the concepts of risk and returns and presents a perspective on assessing their contributions to capital flight using micro portfolio management model. He also analyzes the impact of political risk and concludes that it is a central to capital flight. The second part of his work proposes a macroeconomic model with the intent of

empirically evaluating the place of risk in capital movements and thereafter to evaluate the effectiveness of domestic fiscal and monetary policies in combating capital flight. However, I did not find evidence to support indirect control of capital flight through using fiscal and monetary policies to control uncertainty.

Albert Makochekanwa (2007) in his paper investigates the causes of capital flight from Zimbabwe for the period 1980 to2005. The results show external debt, foreign direct investment inflows, and foreign reserves to be the major causes of capital flight.

Ajadi (2008) examined the econometrics analysis of capital flight in developing countries. The study investigated the linear determinants of capital flight (with a constraint to economic growth) in Nigeria utilizing the ordinary least squares (OLS) and the error correction method (ECM) for the period of 1972 to1989. The study also found among other things, the validity of the portfolio theory which postulates how risk –adverse investors can build portfolio in order to optimize or maximize expected returns given a level of market risk.

Njimanted (2008), estimated the determinants, measurement and impact of capital flight on real economic growth in Cameroon using two-stage least squares technique after the application of cointegration error correction mechanism of Engle and Granger (1987), using time series data from 1970 to 2005. The quantitative results reveal that large capital outflows from Cameroon is accounted for by political instability, fiscal deficit, interest rate inflation differential and external debt servicing GDP ratio.

In his study, (Gusarova, 2009) investigated the impact of capital flight on economic growth. He concentrated on 139 countries for the period of 2002-2006 and find that capital flight has a negative impact on GDP growth. (forgha, 2008) and Valeria Gusarova (2009) studying Cameroon and some developing nations respectively observed that capital flight adversely impact real economic growth.

(Micheal & Kolapo, 2011) In their study examined the effect of the determinants of capital flight on the Nigerian economic growth between 1985 and 2010. The indicator of economic growth used in the study was Gross Domestic Product (GDP) while the determinants of capital flight variables adopted were Foreign Direct Investment (FDI), Inflation Rate (INF), Exchange Rate (EXGR) and Fiscal Deficit (FISD). The ordinary least square (OLS) and the co-integrating analytical technique were used for analysis and the result shows that both the parameters and the model were significant. Specifically, the short run analysis shows that capital flight is mostly caused by inflation while the long run shows that both inflation rate and exchange rate significantly determine capital flight which in turn adversely affects economic growth.

(David & Umoru, 2013) explores empirically the relative effect of capital outflows on the growth rate of GDP in Nigeria. To accomplish this task, three models of GDP growth rate were specified with each model incorporating a different measure of capital flight from Nigeria. The variables in the models were examined for possible co-integration. Research findings shows that capital flight impacts adversely on the growth rate of GDP and such growth rate effect of capital outflow is significant, capital control is insignificant in stimulating GDP growth rate in Nigeria, exchange controls are weak, industrial output is a veritable resource of GDP growth rate in Nigeria, public expenditure has significant positive impact on GDP growth rate in Nigeria and that the growth effects of domestic investment is insignificant in Nigeria.

(Henry, 2013) Investigated the determinant, measurement and impact of capital flight on the economic growth in Nigeria using ordinary least square technique, multiple regression and descriptive statistics. Time series data from 1980 to 2011 were also employed. The quantitative results reveal that, large capital outflows from the Nigerian Niger Delta Region is accounted for by political instability, high fiscal deficits, high interest rate and high profile external debt servicing GDP ratio,

## 2.5 SUMMARY

In this literature review, care has been taken to examine the impacts of capital flight, the consequences, major players that participate in developing nations including Nigeria .The review also show several factors

responsible for capital flight and the means through which it manifest. The empirical study is composed of studies carried out several years ago and works done in recent years.

# CHAPTER THREE
## RESEARCH METHODOLOGY

### 3.1 INTRODUCTION

This chapter deals with the design, procedure adopted in gathering data**,** model specification**, a** priory expectation, and the sources of data collection. It also considers the instruments of data collection as well as the techniques to be adopted in testing the hypotheses formulated.

### 3.2. RESEARCH DESIGN

Data used in this study are predominantly secondary. The study covered 32 years (1980-2012). Co-integration is employed in the analysis of data being time series and for its appropriateness and avoidance of spurious regression results.

Majority of studies that have been carried out on Capital Flight and Nigerian economy focused only on the determinants of capital flight while others study the impact of these determinants on economic growth rather than the impact of capital flight itself. The model specified for this study thus focus on the impact of capital flight on economic growth. Capital flight is computed here using residual approach.

### 3.3. MODEL SPECIFICATION

The model is specified based on the theoretical and literature reviewed above, we adopt the Residual approach to capital flight as formulated by World Bank (1985) and Erbe (1985). This is because it encompasses Macro-Economic variables that determine the economic growth of Nigeria.

These variables are the change in External Debt (EXDEBT) and Change in Foreign Reserve (CFR), Current Account Balance (CAB) and Foreign Direct Investment (FDI). All these variables are capital flight estimates according to World Bank (1985) and Erbe (1985).

Stating the model in an implicit function

$\%\Delta GDP = f(KF, EXTDB, FDI, CAB, CFR)$ ----------------------------- (1)

Stating the model in an inexplicit function

$\%\Delta GDP = \alpha_0 + \alpha_1 KF + \alpha_2 \Delta EXTDB + \alpha_3 FDI + \alpha_4 CAB + \alpha_5 \Delta CFR + \mu$ ------------------- (2)

Stating the model in a log linear form

$Ln \%\Delta GDP = _0 + \alpha_1 lnKF + \alpha_2 ln\Delta EXDBT + \alpha_3 lnFDI + \alpha_{4l} lnCAB + \alpha_5 ln\Delta CFR + \mu$ --------- (3)

Where

$\%\Delta GDP$= Gross domestic product

KF= capital flight

$\Delta EXDBT$= change in external debt

FDI= foreign direct investment

CAB=current account balances

$\Delta CFR$= change in foreign reserves

U=stochastic variable (error term)

$\alpha$ =intercept

## 3.4 A PRIORI EXPECTATION

**Capital flight (KF)**

The a priory expectation in capital flight (KF) is negatively related and can be represented mathematically as

KF=$\frac{\partial gdp}{\partial KF}$>0

**Foreign Direct Investment (FDI)**

The a priory expectation is positively related and can be represented mathematically

FDI=$\frac{\partial gdp}{\partial fdi}$>0

**External Debt**

The apriori expectation is negatively related and it can be stated mathematically

EXTDB=$\frac{dgdp}{dextb}$=<0

**Current account balance**

The a priori expectation is positively related and it is stated mathematically

CAB =$\frac{d\%\Delta gdp}{dcab}$ > 0

**Foreign Reserve**

The a priori expectation of foreign reserve is positively related and it is stated mathematically

CFR=$\frac{d\%\Delta gdp}{dfcfr}$ > 0

## 3.5. METHOD OF DATA COLLECTION

The study focused on the impact of capital flight on the growth process of Nigerian economy. Time series data will be used for the analysis. The secondary data will be obtained from such publications as World Bank Digest of Statistics, Central Bank of Nigeria statistical bulletin and Annual Abstract of Statistic of the Bureau of Statistics (NBS).

## 3.6. METHOD OF DATA ANALYSIS

### 3.6.1 UNIT ROOT TEST

To avoid inappropriate model specification and to increase the confidence of the results, time series properties of the data are investigated. Although there are a number of methods used to test for stationarity and the presence of unit roots, the method used here is the Augmented Dickey-Fuller (ADF) test. By definition a series is stationary if it has a constant mean and a constant finite variance. On the contrary, a non-stationary series contains a clear time trend and has a variance that is not constant overtime. If a series is non-stationary, it will display a high degree of persistence

### 3.6.2. ORDINARY LEAST SQUARE

The Ordinary Least Square (OLS) technique will be used to investigate the link between capital flight and economic growth in Nigeria. Regression model will be adopted to know the effect of capital flight on growth in Nigeria within the period under study. Also, coefficient of determination ($R^2$), T-statistic, F-statistic, and the Durbin Watson test were employed to evaluate the significance of the estimated parameters of the regression model. This will be used to test hypothesis two which shows if capital flight significantly pose a threat to national solvency and economic growth.

### 3.6.3. COINTEGRATION TEST

Cointergration is a technique used in econometrics for testing the non-stationary of time series variables, the existence of cointergration relate to the existence of a long run equilibrium relationship among a set of non-stationary variables, in this analysis the Johansen test will be employed.

### 3.6.4 GRANGER CAUSALITY TEST

The granger causality is a statistical hypothesis that is used in ascertaining whether or not a time series data is important in evaluating another, he is of the view that causality in economics can be seen by carrying out a test. This will be used to test hypothesis three which will show the relationship between capital flight and its determinants.

### 3.6.5. ERROR CORRECTION MECHANISM

The Error Correction Mechanism (ECM) process helps to observe the convergence in the long run as earlier revealed by the cointegration test. The error correction term has the expected negative sign and is significant. It is based on the ordinary least squares coefficient of the lagged dependent variable in an autoregressive distributed lag model with leads of the regressors. The limit distributions of the standardized coefficient and *t*-ratio versions of the ECM tests are obtained and critical values are provided. These limit distributions do not depend on nuisance parameters but they depend on the number of regressors. Finally, we compare their power properties with those of other cointegration tests available in the literature and find the circumstances under which the ECM tests have a better performance. This technique will be used to test hypothesis one to examine if the determinants of capital flight have significantly affected economic growth as measured by GDP.

# CHAPTER FOUR
## ANALYSIS AND INTERPRETATION OF RESULTS

## 4.1 INTRODUCTION

This section of the study involves the presentation and interpretation of the empirical result. It starts with the verification of the time series properties of the variables used in the model. That is the unit root test. This is also known as the test of stationarity. The variables used in this study are: Gross domestic product (GDP), Change in Foreign reserve (CFR), Foreign Direct Investment (FDI), Change in External Debt (PEXTDB) and Current Account Balance (CAB). Augmented Dickey Fuller Unit root test was used to test for the stationarity of each variable. The result of the ordinary least square is reported next followed by the result of the cointegration test. The Johansen cointegration test was used in this study, followed by the Error correction model. After which the granger causality test was conducted to determine the direction of causality between the variables.

## 4.1 UNIT ROOT TEST

The test for stationarity is done using the augmented dickey fuller (ADF) unit root test. To determine whether there is a presence of unit root or the series are stationary we investigated the time series characteristics of the variables (GDP, KF, INF, PEXTDB, FDI, CAB, and CFR). A variable is said to be stationary when it has no unit root which is denoted in literature as 1(0). A non-stationary variable can have one or more unit root and it is denoted by I(d), d is the number of unit root that the variable possesses and by implication, the number of unit roots that the variable must be differenced in order to make it stationary

**Table 4.1. Summary of ADF Unit Root Test**

| Variables | ADF test statistics | Mackinnon critical value @ 5% | No of time differenced | Remark |
|-----------|---------------------|-------------------------------|------------------------|--------|
| PGDP | -4.350329 | -2.957110 | I(0) | STATIONARY |
| FDI | -4.020570 | -2.957110 | I(0) | STATIONARY |
| RES | -4.057368 | -2.957110 | I(0) | STATIONARY |
| CAB | -2.966457 | -2.957110 | I(0) | STATIONARY |
| KF | -5.373614 | -2.957110 | I(0) | STATIONARY |
| INFLTN | -3.194327 | -2.960411 | I(0) | STATIONARY |
| EXTDEBT | -3.938413 | -2.957110 | I(0) | STATIONARY |

Source: Author's Computation

As depicted above in table 4.1, all the variables are stationary at order I (0) respectively. This means that the variables are stationary at their respective level

## 4.2 COINTEGRATION TEST AND ERROR CORRECTION MODEL

Having established stationary of the variables, we determine the existence of a long-run equilibrium relationship among the variables in the model. To realize this, the study employed the Johansen cointegration technique. The cointegration results of the variables are presented

**Table 4.2: Johansen Cointegration Rank Test Result**

| Rank | Trace statistic | 5% Critical value |
|------|-----------------|-------------------|
| 0 | 126.6221 | 95.75366 |
| 1 | 80.11115 | 69.81889* |
| 2 | 49.80517 | 47.856138* |
| 3 | 27.53262 | 29.79707 |
| 5 | 13.94873 | 15.49471 |
| 5 | 4.569235 | 3.841466* |

Source: Extracted from E-view 7.

Trace test indicates 3 co-integrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

The result of the Johansen co-integration test presented above indicates at least three co-integration equations. The result therefore confirms the existence of Cointegration among the variables. Consequently we can conclude that there exist a long run relationship between capital flight and economic growth in Nigeria.

## 4.3 ORDINARY LEAST SQUARE REGRESSION RESULT

The result of ordinary least square estimation is presented below:

**Table 4.3: OLS Model**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| C | 1.035860 | 2.764618 | 0.374685 | 0.7108 |
| CAB | 0.318697 | 0.151987 | 2.096878 | 0.0455 |
| CFR | -1.056203 | 1.615106 | -0.653953 | 0.5187 |
| FDI | 2.623423 | 0.662667 | 3.958886 | 0.3461 |

| KF | -7.027888 | 1.510205 | 4.653599 | 0.5189 |
| PEXTDB | -3.494735 | 1.078042 | -3.241743 | 0.8108 |

$R^2$ = (0.671386) Adj $R^2$= (0.417939) F-statistic (9.116906) DW = (1.806792)

Recall that the specified model is

$\%\Delta GDP = a_0 + a_1 KF + a_2 \Delta PEXTDB + a_3 FDI + a_4 CAB + a_5 CFR + U_t$

Thus, using the absolute values of all the variables, the estimated parameters of the short run regression model is:

PGDP = 1.035860 - 7.027888KF - 3.494735PEXTDB + 2.623423FDI + 0.318697CAB -1.056203 CFR

The estimated model shows that there exist positive relationship between PGDP and Current account balance. This empirical evidence is in conformity with the theoretical expectation except change in foreign reserve which is expected to be growth retarding. The estimated result revealed that a unit change in foreign direct investment and Current account balance will boost economic activities in Nigeria by values of 2.623423 and 0.318697 percent respectively. Likewise, a one percent change in capital flight (KF) and external debt (PEXTDB) will retard growth by 7.027888 and 3.494735 percent respectively.

However, the t-statistic is used to test for individual significance of the estimated parameters. The result reveals that not all the parameters estimated are significant (e.g. change in foreign reserve), because its t-calculated values of 0.65 is less than the t-tabulated value of 2.04. This suggests that foreign reserve have not contributed to economic growth in Nigeria within the period under study. The f-statistic is used to test for a simultaneous significance of all the estimated parameters and the result showed that they are all simultaneously significant. This is so because the f-calculated (9.11) is greater than the f-tabulated (2.74). The Durbin-Watson test showed that there is little or no presence of serial correlation in the residual as its value (1.8) is approximately equal to 2. Overall, the Coefficient of Determination ($R^2$) which measures how well the sample regression line fits the data is considered high, about (0.671386) or 67 percent. This implies that about 67 percent of the regression model was explained by the explanatory power while 33 percent was unexplained.

## 4.4 ERROR CORRECTION MECHANISM

The error correction model measures the speed of adjustment to equilibrium. The error correction model (ECM) is significant if it has a negative sign. This implies that the present value of the dependent variable adjust rapidly to changes in the independent variable. A higher percentage of ECM indicates a feedback of that value or an adjustment of that value from the previous period disequilibrium of the present level of depend variable and the present and past level of the independent variables.

**Table 4.4: Error Correction Mechanism**

| Variables | Coefficient | Std. Error | t-Statistic |
|---|---|---|---|
| C | 4.543637 | 1.325054 | 3.429021 |
| D(PGDP(-1)) | -0.233519 | 0.20930 | 1.11570 |
| D(PEXTDB(-1)) | -0.367603 | 0.14485 | 2.53782 |
| D(CFR(-1)) | -1.416781 | 0.701454 | 2.019777 |
| D(CAB(-1)) | 0.262879 | 0.066152 | 3.973843 |
| D(FDI(-1)) | 0.295739 | 0.309376 | 0.955923 |
| D(KF(-1)) | 1.346605 | 6.580606 | 2.041509 |
| ECM-1 | -0.933734 | 0.085767 | 10.88690 |

Source: Extracted from E-view 7.

R-Squared (0.855360)          F-statistic (24.64056)

The table above shows the result of the ECM. The negative sign of ECM value in the model shows that the ECM is significant. This implies that the present value of GDP adjust rapidly to changes in EXDEBT, FDI, CAB and RES. The ECM value of 0.933734 shows a feedback of about 93% from the previous period disequilibrium of the present level of GDP. The coefficient of multiple determinations denoted as $R^2$ shows that 85.5% variation in GDP can be explained by EXDEBT, DFI, CAB, and RES while the remaining 13.33% is being included by the stochastic error term.

The models and the estimation techniques employed in this study are intended to reveal how capital flight has been able to affect the gross domestic product (GDP).

The empirical result of this study has revealed that capital flight is detrimental to development of any economy; this is consistent with the findings of De Boyrie (2011) and Ayadi (2008). This suggests that capital flight and external debt have not contributed to economic growth in Nigeria within the period under study.

## 4.5 PAIRWISE GRANGER CAUSALITY TEST

Table 4.5: Result of the granger causality test

| Null Hypothesis: | F-Statistic | Prob. |
|---|---|---|
| CFR does not Granger Cause PGDP | 0.24495 | 0.0045 |
| PGDP does not Granger Cause CFR | 0.58118 | 0.5663 |
| FDI does not Granger Cause PGDP | 1.03117 | 0.0207 |
| PGDP does not Granger Cause FDI | 0.58349 | 0.5651 |
| KF does not Granger Cause PGDP | 0.13105 | 0.0378 |
| PGDP does not Granger Cause KF | 0.49573 | 0.0018 |
| PEXTDB does not Granger Cause PGDP | 0.12240 | 0.8853 |
| KF does not Granger Cause CAB | 1.0055 | 0.3796 |
| CAB does not Granger Cause KF | 1.00550 | 0.3481 |
| KF does not Granger Cause PEXTDB | 0.34496 | 0.0114 |
| PEXTDB does not Granger Cause KF | 0.05517 | 0.9464 |
| FDI does not Granger Cause KF | 5.50207 | 0.0102 |
| KF does not Granger Cause FDI | 1.88393 | 0.0122 |
| KF does not Granger Cause CFR | 0.30342 | 0.7409 |
| CFR does not Granger Cause KF | 0.06944 | 0.0331 |

The result of the causality test in table 4.4 shows that capital flight will have a negative impact on economic growth. The result indicates that at least a unidirectional causality exists between PGDP, FDI, CFR and CAB. The implication is that FDI, CAB and CFR can all granger cause economic growth in Nigeria. There exist a bidirectional relationship between PEXTDB and PGDP which implies that change in Gross domestic product will affect external debt in the same vein a change in external debt will influence Gross domestic product in Nigeria.

## 4.4 TEST OF HYPOTHESIS

### HYPOTHESIS 1

H0 - The determinants of capital flight have not significantly affected economic growth as measured by GDP.
H1 - The determinants of capital flight have significantly affected economic growth as measured by GDP.

As shown in the result of the cointegration and Error correction mechanism the determinants of capital flight have significantly affected economic growth as measured by GDP. The null hypothesis should therefore be rejected and the alternative hypothesis should be accepted.

**HYPOTHESIS 2**

Ho - capital flight does not significantly pose a threat to national solvency and economic growth.

H1 - capital flight significantly pose a threat to national solvency and economic growth.

The result of the Ordinary Least Square shows that a percent change in capital flight (KF) will retard economic growth by 7.027888 % therefore; capital flight has significantly posed a threat to economic growth. The null hypothesis should therefore be rejected and the alternative hypothesis should be accepted.

**HYPOTHESIS 3**

Ho - The volume of capital flight experienced in Nigeria have not been significantly affected by each of the explanatory variables under study.

H1 - The volume of capital flight experienced in Nigeria have been significantly affected by each of the explanatory variables under study.

The result of the pairwise granger causality test shows that FDI, PEXTDB, CFR and CAB have a unidirectional relationship with KF. This indicates that all the variables are responsible for changes in the volume capital flight experienced in Nigeria. Therefore the null hypothesis should be rejected while the alternate hypothesis should be accepted.

# CHAPTER 5
## SUMMARY, FINDINGS, RECOMMENDATIONS AND CONCLUSION

## 5.1 SUMMARY

Our major task in this paper is to investigate the impact of capital flight on economic growth in Nigeria using recent econometric tool such as cointegration and Error Correction Mechanism (ECM). First, we begin with the analysis of time series with stochastic non-stationary components by analysing the unit root properties of the relevant series.

Given the stationary status of the series, the co-integration equation was estimated. The evidence, however, shows that capital flight, foreign reserve, external debt, foreign direct investment and current account balance co-integrate with the Gross Domestic Product (GDP) in Nigeria.

It was also evident that foreign reserve and external debt exert positively with the GDP, rather increase in external debt with regards to naira and foreign reserve depleting encourages capital flight, and consequently retard growth.

## 5.2 FINDINGS

### 5.2.1 THEORETICAL FINDING

Four theories have been identified in the area of capital flight and they include the following: The investment diversion thesis, Debt – driven capital flight thesis, Tax – depressing thesis and Austerity generating thesis.

The investment diversion theory postulates that as a result of macroeconomic and political instability in a developing country and the existence of better investment opportunities in other countries some corrupt leaders usually siphon scarce capital resources from their countries to such countries. The debt driven capital flight is the continuation of the investment diversion thesis. It postulates that given the heavy external debt of a country, residents of these countries are motivated to move their resources outside the country to foreign countries. The

Tax-Depressing Thesis postulates that capital flight leads to potential revenue loss because wealth held abroad are outside the control of the domestic government and cannot therefore be taxed. The Austerity thesis was postulated by Pastor (1989) he views the poor in severely indebted situation due to capital flight. They suffer more because they are exposed to excruciating austerity measures by government to pay for debt obligations to international banks that in turns pay interests to flight capital from residents in these countries.

These funds are therefore, not available for investment at home leading to decline in aggregate investment, low economic growth, These negative macroeconomic effects on these countries sometimes motivate the necessity to borrow from abroad to reactivate the domestic economy, which is sometimes further siphon thereby perpetrating external dependency and indebtedness.

## 5.2.2 EMPERICAL FINDINGS

Our findings revealed that capital flight has negative impact on economic growth and this is in line with most studies (see David 2012, Ajayi 2012 and De Boyrie 2011). Results of our study also revealed that capital flight has a significant negative impact on economic growth. This is in line with our a priori expectation.

The reason why developing countries venture into borrowing is to enhance economic development and this is done by bridging savings and investment gap. The empirical result shows that an increase in external debt will bring about a decrease in gross domestic product. When funds are borrowed and not utilized efficiently it leads to an increase in external debt. The negative relationship between external debt and economic development implies that increase in external borrowing by the Nigerian government fails to transform into increase in the level of economic development. This is an indication that the borrowed funds were diverted to other uses that do not translate to economic development. Previous studies revealed that most of these funds were diverted by corrupt government functionaries to their private use other countries. (Paul Collier et al 2004).

In the same vein, foreign direct investment is a reliable means of accelerating development in the third world counties. The negative relationship from our results confirms a continuous repatriation of funds/profits by the foreign investors to their countries while new investors are not forthcoming. This is especially so with the increasing unattractive business environment and high level of insecurity in Nigeria.

Lastly, our empirical results also show negative relationship between gross domestic product and change in reserve in both the short and long run. This also beats our expectation. The justification for which is rooted in accumulation of foreign debt which does not result into economic growth. For the payment of interest and repayment of principal, government often results to external reserve or better still take another loan for this purpose. Depletion of reserves worsens the gross domestic product.

These findings imply that debt relief strategies will bring long-term benefits to Nigeria only if accompanied by measures to prevent a new cycle of external borrowing and capital flight. This will require substantial reforms on the part of both creditors and debtors to promote responsible lending and accountable debt management. On the other hand, better management of foreign direct investment inflow transactions is needed to avoid possible leakages of the same money going out as capital flight. Lastly, the significance of economic growth suggests the need for policies, which stimulates economic growth, since economic growth reduce capital flight.

## 5.3 RECOMMENDATIONS

On this note, policy- makers and the relevant authorities should pay more attention than ever to the issue of capital flight in order to stem its counter-productive effects on economic growth. The study recommends a fiscal discipline so that deficit as a proportion of the gross domestic product is kept in check because this is crucial to the maintenance of macroeconomic stability and appropriation of interest rate. This should be high enough to attract funds but not too high to stifle investment initiatives. In addition, an integrated and unified tariff structure would be useful, as it will reduce the rewards of trade faking. The issue of the existence of and how to deal with

corruption is certainly more difficult to prescribe. It is part of the general problem of capital flight; one can only say that there is a need for change of attitude on the part of those who hold public offices that have access to foreign funds directly or indirectly through the contracts they award.

Since unproductive use of borrowed fund is reflected in embezzlement by political officeholders and subsequent transfer to foreign private account, effort should be made to ensure strict monitoring of execution of public projects, accountability and transparency.

This attitudinal change involves seriousness and commitment on the part of government and its functionaries. The study also recommend that government officials should place their public duties ahead of their personal gain, by so doing the economy will experience a boost as enough funds will be available to execute developmental projects such as power generation and opening of new vibrant sectors. Of paramount importance is the provision of enabling environment for business to thrive. It is more important to make the domestic economy more attractive for the investors by creating a wider menu of domestic financial assets on which domestic capital can be assessed and invested at lower rate comparable to foreign financial instruments.

Creation of enabling/friendly business environment is a way of encouraging foreign investors to come and invest in the country as well as re-investing the profits. Curbing of political crisis and provision of infrastructures to reduce operating cost will be a right step in a right direction. Capital outflows that finance importation of essential/capital goods that are necessary for developmental purposes should be encouraged because of its long run positive effects.

If the policy packages discussed are pursued rightly and with consistency, it should be possible to hope for the repatriation of capital flight from Nigeria back to Nigeria for investment and funds from foreign sources in form of loans, gifts, grants and aids should be judiciously used to facilitate economic growth and development of Nigeria.

## 5.4 CONCLUSION

Significant amount of capital flight in relation to external debt took place over the years covered by this study. A major culprit in the capital flight episode experienced in Nigeria is domestic macroeconomics policy distortion. Of significance in the area of policy errors are lack of opportunities for profitable investments within the domestic economy. A rational investor will prefer to venture into business in a foreign economy with attractive incentives and stable political environment.

## 5.4.1 LIMITATION OF STUDY

The only limitation to this study is mainly in the area of data availability. The underlying data situation is problematic; it is known for instance that Nigerian does not have reliable and adequate data on the economy. Even the little that are available are not on line or easily accessible. There is this "Information Hoarding Syndrome" in Nigeria.

# APPENDIX

**Unit root test**

*PGDP*

Null Hypothesis: PGDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

|  | t-Statistic | Prob.* |
|---|---|---|
| Augmented Dickey-Fuller test statistic | -4.350329 | 0.0017 |
| Test critical values:     1% level | -3.653730 |  |
| 5% level | -2.957110 |  |
| 10% level | -2.617434 |  |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(PGDP)
Method: Least Squares
Date: 05/14/14   Time: 17:15
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| PGDP(-1) | -0.774625 | 0.178061 | -4.350329 | 0.0001 |
| C | 3.690065 | 1.449718 | 2.545367 | 0.0163 |
| R-squared | 0.386821 | Mean dependent var | 0.132625 |
| Adjusted R-squared | 0.366382 | S.D. dependent var | 8.507107 |
| S.E. of regression | 6.771669 | Akaike info criterion | 6.723834 |
| Sum squared resid | 1375.665 | Schwarz criterion | 6.815442 |
| Log likelihood | -105.5813 | Hannan-Quinn criter. | 6.754199 |
| F-statistic | 18.92537 | Durbin-Watson stat | 1.747015 |
| Prob(F-statistic) | 0.000145 |  |  |

## *Change in External Debt*

Null Hypothesis: PEXTDB has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

|  | t-Statistic | Prob.* |
|---|---|---|
| Augmented Dickey-Fuller test statistic | -3.938413 | 0.0049 |
| Test critical values:     1% level | -3.653730 |  |
| 5% level | -2.957110 |  |
| 10% level | -2.617434 |  |

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(PEXTDB)
Method: Least Squares
Date: 05/14/14   Time: 17:17
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| PEXTDB(-1) | -0.679666 | 0.172573 | -3.938413 | 0.0005 |
| C | 3.114668 | 4.185810 | 0.744102 | 0.4626 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.340820 | Mean dependent var | | -0.122275 |
| Adjusted R-squared | 0.318847 | S.D. dependent var | | 28.13162 |
| S.E. of regression | 23.21758 | Akaike info criterion | | 9.188158 |
| Sum squared resid | 16171.68 | Schwarz criterion | | 9.279767 |
| Log likelihood | -145.0105 | Hannan-Quinn criter. | | 9.218524 |
| F-statistic | 15.51110 | Durbin-Watson stat | | 1.963928 |
| Prob(F-statistic) | 0.000452 | | | |

## Current account balance

Null Hypothesis: CAB has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -2.966457 | 0.0490 |
| Test critical values: | 1% level | -3.653730 | |
| | 5% level | -2.957110 | |
| | 10% level | -2.617434 | |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CAB)
Method: Least Squares
Date: 05/14/14   Time: 17:29
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| CAB(-1) | -0.453479 | 0.152869 | -2.966457 | 0.0059 |
| C | 3.042084 | 1.792149 | 1.697450 | 0.1000 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.226802 | Mean dependent var | | -0.009688 |
| Adjusted R-squared | 0.201028 | S.D. dependent var | | 9.287029 |

| | | | |
|---|---|---|---|
| S.E. of regression | 8.301232 | Akaike info criterion | 7.131146 |
| Sum squared resid | 2067.313 | Schwarz criterion | 7.222755 |
| Log likelihood | -112.0983 | Hannan-Quinn criter. | 7.161512 |
| F-statistic | 8.799869 | Durbin-Watson stat | 1.755066 |
| Prob(F-statistic) | 0.005863 | | |

## *Change in foreign reserve*

Null Hypothesis: CFR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -4.057368 | 0.0036 |
| Test critical values: | 1% level | -3.653730 | |
| | 5% level | -2.957110 | |
| | 10% level | -2.617434 | |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CFR)
Method: Least Squares
Date: 05/14/14   Time: 17:31
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| CFR(-1) | -0.699517 | 0.172407 | -4.057368 | 0.0003 |
| C | 0.253088 | 0.231163 | 1.094848 | 0.2823 |
| R-squared | 0.354314 | Mean dependent var | | 0.026114 |
| Adjusted R-squared | 0.332792 | S.D. dependent var | | 1.553308 |
| S.E. of regression | 1.268786 | Akaike info criterion | | 3.374460 |
| Sum squared resid | 48.29456 | Schwarz criterion | | 3.466069 |
| Log likelihood | -51.99136 | Hannan-Quinn criter. | | 3.404826 |
| F-statistic | 16.46224 | Durbin-Watson stat | | 1.985133 |
| Prob(F-statistic) | 0.000326 | | | |

## *Foreign direct investment*

Null Hypothesis: FDI has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

|  | t-Statistic | Prob.* |
|---|---|---|
| Augmented Dickey-Fuller test statistic | -4.020570 | 0.0040 |
| Test critical values: 1% level | -3.653730 |  |
| 5% level | -2.957110 |  |
| 10% level | -2.617434 |  |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FDI)
Method: Least Squares
Date: 05/14/14   Time: 17:33
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| FDI(-1) | -0.630758 | 0.156883 | -4.020570 | 0.0004 |
| C | 2.120500 | 0.568696 | 3.728703 | 0.0008 |
| R-squared | 0.350157 | Mean dependent var | 0.191563 |
| Adjusted R-squared | 0.328495 | S.D. dependent var | 2.107898 |
| S.E. of regression | 1.727325 | Akaike info criterion | 3.991486 |
| Sum squared resid | 89.50954 | Schwarz criterion | 4.083095 |
| Log likelihood | -61.86378 | Hannan-Quinn criter. | 4.021852 |
| F-statistic | 16.16499 | Durbin-Watson stat | 2.218270 |
| Prob(F-statistic) | 0.000361 | | |

## *Capital flight*

Null Hypothesis: KF has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

|  | t-Statistic | Prob.* |
|---|---|---|
| Augmented Dickey-Fuller test statistic | -5.373614 | 0.0001 |
| Test critical values: 1% level | -3.653730 |  |
| 5% level | -2.957110 |  |
| 10% level | -2.617434 |  |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(KF)
Method: Least Squares

Date: 05/14/14   Time: 17:44
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| KF(-1) | -0.982466 | 0.182831 | -5.373614 | 0.0000 |
| C | -7193.504 | 14481.72 | -0.496730 | 0.6230 |
| R-squared | 0.490452 | Mean dependent var | | 556.0000 |
| Adjusted R-squared | 0.473467 | S.D. dependent var | | 112335.8 |
| S.E. of regression | 81513.78 | Akaike info criterion | | 25.51539 |
| Sum squared resid | 1.99E+11 | Schwarz criterion | | 25.60700 |
| Log likelihood | -406.2463 | Hannan-Quinn criter. | | 25.54576 |
| F-statistic | 28.87573 | Durbin-Watson stat | | 1.996259 |
| Prob(F-statistic) | 0.000008 | | | |

## *Error Correction Mechanism*

Dependent Variable: PGDP
Method: Least Squares
Date: 05/21/14   Time: 05:27
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 4.543637 | 1.325054 | 3.429021 | 0.0021 |
| CAB | 0.262879 | 0.066152 | 3.973843 | 0.0005 |
| CFR | -1.416781 | 0.701454 | -2.019777 | 0.0542 |
| FDI | 0.295739 | 0.309376 | 0.955923 | 0.3483 |
| KF | 1.34E-05 | 6.58E-06 | 2.041509 | 0.0519 |
| PEXTDB | -0.046024 | 0.033939 | -1.356066 | 0.1872 |
| ECM-1 | -0.933734 | 0.085767 | 10.88690 | 0.0000 |
| R-squared | 0.855360 | Mean dependent var | | 4.725094 |
| Adjusted R-squared | 0.820647 | S.D. dependent var | | 6.837108 |
| S.E. of regression | 2.895522 | Akaike info criterion | | 5.154848 |
| Sum squared resid | 209.6012 | Schwarz criterion | | 5.475478 |
| Log likelihood | -75.47757 | Hannan-Quinn criter. | | 5.261128 |
| F-statistic | 24.64056 | Durbin-Watson stat | | 1.792291 |
| Prob(F-statistic) | 0.000000 | | | |

## *Ordinary Least Square*

Dependent Variable: PGDP
Method: Least Squares
Date: 05/21/14   Time: 05:29
Sample: 1980 2012
Included observations: 33

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.035860 | 2.764618 | 0.374685 | 0.7108 |
| CAB | 0.318697 | 0.151987 | 2.096878 | 0.0455 |
| CFR | -1.056203 | 1.615106 | -0.653953 | 0.5187 |
| FDI | 2.623423 | 0.662667 | 3.958886 | 0.3461 |
| KF | -7.027888 | 1.510205 | 4.653599 | 0.5189 |
| PEXTDB | -3.494735 | 1.078042 | -3.241743 | 0.8108 |

| | | | |
|---|---|---|---|
| R-squared | 0.671386 | Mean dependent var | 4.668939 |
| Adjusted R-squared | 0.417939 | S.D. dependent var | 6.737157 |
| S.E. of regression | 6.676455 | Akaike info criterion | 6.798017 |
| Sum squared resid | 1203.527 | Schwarz criterion | 7.070109 |
| Log likelihood | -106.1673 | Hannan-Quinn criter. | 6.889568 |
| F-statistic | 9.116906 | Durbin-Watson stat | 1.806792 |
| Prob(F-statistic) | 0.374920 | | |

## *Johansen Cointegration*

Date: 05/19/14   Time: 10:44
Sample (adjusted): 1982 2012
Included observations: 31 after adjustments
Trend assumption: Linear deterministic trend
Series: PGDP CAB CFR FDI KF PEXTDB
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.776948 | 126.6221 | 95.75366 | 0.0001 |
| At most 1 * | 0.623792 | 80.11115 | 69.81889 | 0.0060 |
| At most 2 * | 0.512502 | 49.80517 | 47.85613 | 0.0324 |
| At most 3 | 0.354797 | 27.53262 | 29.79707 | 0.0893 |
| At most 4 | 0.261079 | 13.94873 | 15.49471 | 0.0844 |
| At most 5 * | 0.137047 | 4.569235 | 3.841466 | 0.0325 |

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.776948 | 46.51092 | 40.07757 | 0.0083 |
| At most 1 | 0.623792 | 30.30598 | 33.87687 | 0.1259 |
| At most 2 | 0.512502 | 22.27255 | 27.58434 | 0.2067 |
| At most 3 | 0.354797 | 13.58389 | 21.13162 | 0.4001 |
| At most 4 | 0.261079 | 9.379497 | 14.26460 | 0.2559 |
| At most 5 * | 0.137047 | 4.569235 | 3.841466 | 0.0325 |

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

| PGDP | CAB | CFR | FDI | KF | PEXTDB |
|---|---|---|---|---|---|
| 0.166068 | -0.186310 | 2.474928 | -0.567533 | -9.19E-06 | 0.078390 |
| 0.130635 | -0.067899 | -1.133850 | -0.087342 | 1.06E-05 | -0.063042 |
| -0.020147 | -0.034259 | 1.231993 | 0.285920 | 7.43E-06 | 0.073870 |
| 0.067976 | 0.036747 | -0.211393 | 0.047638 | -5.14E-06 | 0.046163 |
| 0.080349 | 0.080009 | 0.175681 | 0.033498 | 5.48E-06 | 0.012053 |
| -0.053630 | -0.026428 | 0.306351 | -0.579443 | 9.76E-06 | 0.007395 |

Unrestricted Adjustment Coefficients (alpha):

| | | | | | | |
|---|---|---|---|---|---|---|
| D(PGDP) | -1.192265 | -1.514146 | 1.828190 | -1.421308 | -2.686080 | 0.653759 |
| D(CAB) | 2.934863 | 4.794796 | 1.211829 | 0.667980 | -2.652150 | 0.326993 |
| D(CFR) | -0.454959 | 0.220829 | 0.127457 | 0.582236 | -0.234012 | 0.012374 |
| D(FDI) | -0.110946 | -0.121063 | -0.847708 | 0.164616 | -0.114153 | 0.441757 |
| D(KF) | 14618.99 | -13178.39 | -38066.00 | 5733.632 | -23889.27 | -7943.884 |
| D(PEXTDB) | -1.954086 | 5.978904 | -6.248229 | -12.29993 | 3.422562 | -0.794000 |

1 Cointegrating Equation(s):   Log likelihood   -823.8260

Normalized cointegrating coefficients (standard error in parentheses)

| PGDP | CAB | CFR | FDI | KF | PEXTDB |
|---|---|---|---|---|---|
| 1.000000 | -1.121888 | 14.90307 | -3.417469 | -5.53005 | 0.472034 |
| | (0.12570) | (1.93438) | (0.54521) | (1.30005) | (0.08791) |

Adjustment coefficients (standard error in parentheses)

| | |
|---|---|
| D(PGDP) | -0.197998 |
| | (0.23753) |
| D(CAB) | 0.487388 |
| | (0.29213) |

| | | |
|---|---|---|
| D(CFR) | -0.075554 | |
| | (0.04002) | |
| D(FDI) | -0.018425 | |
| | (0.05977) | |
| D(KF) | 2427.751 | |
| | (2661.19) | |
| D(PEXTDB) | -0.324512 | |
| | (0.85556) | |

2 Cointegrating Equation(s):   Log likelihood     -808.6730

Normalized cointegrating coefficients (standard error in parentheses)

| PGDP | CAB | CFR | FDI | KF | PEXTDB |
|---|---|---|---|---|---|
| 1.000000 | 0.000000 | -29.03652 | 1.704282 | 0.000199 | -1.306626 |
| | | (5.49878) | (1.59441) | (4.7E-05) | (0.29823) |
| 0.000000 | 1.000000 | -39.16577 | 4.565298 | 0.000227 | -1.585417 |
| | | (5.40835) | (1.56819) | (4.6E-05) | (0.29333) |

Adjustment coefficients (standard error in parentheses)

| | | |
|---|---|---|
| D(PGDP) | -0.395797 | 0.324940 |
| | (0.29476) | (0.27663) |
| D(CAB) | 1.113754 | -0.872357 |
| | (0.30582) | (0.28701) |
| D(CFR) | -0.046706 | 0.069769 |
| | (0.04998) | (0.04691) |
| D(FDI) | -0.034240 | 0.028890 |
| | (0.07586) | (0.07119) |
| D(KF) | 706.1985 | -1828.863 |
| | (3335.72) | (3130.57) |
| D(PEXTDB) | 0.456540 | -0.041897 |
| | (1.05619) | (0.99123) |

3 Cointegrating Equation(s):   Log likelihood     -797.5368

Normalized cointegrating coefficients (standard error in parentheses)

| PGDP | CAB | CFR | FDI | KF | PEXTDB |
|---|---|---|---|---|---|
| 1.000000 | 0.000000 | 0.000000 | -18.21555 | -0.000604 | -1.023665 |
| | | | (6.02505) | (0.00017) | (0.48652) |
| 0.000000 | 1.000000 | 0.000000 | -22.30346 | -0.000856 | -1.203746 |
| | | | (8.32342) | (0.00023) | (0.67212) |
| 0.000000 | 0.000000 | 1.000000 | -0.686027 | -2.77E-05 | 0.009745 |
| | | | (0.23091) | (6.5E-06) | (0.01865) |

Adjustment coefficients (standard error in parentheses)

| | | | |
|---|---|---|---|
| D(PGDP) | -0.432631 | 0.262307 | 1.018361 |
| | (0.28482) | (0.27004) | (4.00981) |

| | | | |
|---|---|---|---|
| D(CAB) | 1.089339 | -0.913874 | 3.319961 |
| | (0.30249) | (0.28679) | (4.25849) |
| D(CFR) | -0.049274 | 0.065403 | -1.219353 |
| | (0.04989) | (0.04730) | (0.70233) |
| D(FDI) | -0.017161 | 0.057932 | -1.181687 |
| | (0.06633) | (0.06289) | (0.93380) |
| D(KF) | 1473.127 | -524.7419 | 4226.216 |
| | (2896.55) | (2746.23) | (40778.1) |
| D(PEXTDB) | 0.582425 | 0.172164 | -19.31318 |
| | (1.02431) | (0.97115) | (14.4204) |

4 Cointegrating Equation(s):　Log likelihood　-790.7448

Normalized cointegrating coefficients (standard error in parentheses)

| PGDP | CAB | CFR | FDI | KF | PEXTDB |
|---|---|---|---|---|---|
| 1.000000 | 0.000000 | 0.000000 | 0.000000 | -3.21E-05 | 0.481971 |
| | | | | (4.9E-05) | (0.13693) |
| 0.000000 | 1.000000 | 0.000000 | 0.000000 | -0.000156 | 0.639783 |
| | | | | (6.5E-05) | (0.17972) |
| 0.000000 | 0.000000 | 1.000000 | 0.000000 | -6.13E-06 | 0.066450 |
| | | | | (2.3E-06) | (0.00637) |
| 0.000000 | 0.000000 | 0.000000 | 1.000000 | 3.14E-05 | 0.082657 |
| | | | | (9.9E-06) | (0.02744) |

Adjustment coefficients (standard error in parentheses)

| | | | | |
|---|---|---|---|---|
| D(PGDP) | -0.529245 | 0.210079 | 1.318815 | 1.263906 |
| | (0.29169) | (0.26773) | (3.92057) | (0.84185) |
| D(CAB) | 1.134745 | -0.889328 | 3.178755 | -1.706113 |
| | (0.31610) | (0.29014) | (4.24870) | (0.91231) |
| D(CFR) | -0.009696 | 0.086798 | -1.342434 | 0.303096 |
| | (0.04485) | (0.04117) | (0.60289) | (0.12946) |
| D(FDI) | -0.005971 | 0.063982 | -1.216485 | -0.160995 |
| | (0.06923) | (0.06354) | (0.93047) | (0.19980) |
| D(KF) | 1862.877 | -314.0485 | 3014.168 | -17756.42 |
| | (3029.78) | (2780.91) | (40722.9) | (8744.31) |
| D(PEXTDB) | -0.253676 | -0.279821 | -16.71306 | -1.785633 |
| | (0.91110) | (0.83626) | (12.2460) | (2.62955) |

5 Cointegrating Equation(s):　Log likelihood　-786.0551

Normalized cointegrating coefficients (standard error in parentheses)

| PGDP | CAB | CFR | FDI | KF | PEXTDB |
|---|---|---|---|---|---|
| 1.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.338056 |
| | | | | | (0.10296) |
| 0.000000 | 1.000000 | 0.000000 | 0.000000 | 0.000000 | -0.060768 |
| | | | | | (0.14678) |

| 0.000000 | 0.000000 | 1.000000 | 0.000000 | 0.000000 | 0.038989 |
|          |          |          |          |          | (0.00673) |
| 0.000000 | 0.000000 | 0.000000 | 1.000000 | 0.000000 | 0.223335 |
|          |          |          |          |          | (0.05851) |
| 0.000000 | 0.000000 | 0.000000 | 0.000000 | 1.000000 | -4482.341 |
|          |          |          |          |          | (1524.98) |

Adjustment coefficients (standard error in parentheses)

| | | | | | |
|---|---|---|---|---|---|
| D(PGDP) | -0.745070 | -0.004831 | 0.846922 | 1.173927 | 1.02E-06 |
| | (0.28024) | (0.25983) | (3.54953) | (0.76190) | (2.1E-05) |
| D(CAB) | 0.921647 | -1.101523 | 2.712822 | -1.794955 | 1.50E-05 |
| | (0.30942) | (0.28688) | (3.91916) | (0.84124) | (2.3E-05) |
| D(CFR) | -0.028499 | 0.068075 | -1.383545 | 0.295257 | 3.20E-06 |
| | (0.04626) | (0.04289) | (0.58590) | (0.12576) | (3.4E-06) |
| D(FDI) | -0.015143 | 0.054848 | -1.236540 | -0.164819 | -8.03E-06 |
| | (0.07337) | (0.06803) | (0.92932) | (0.19948) | (5.4E-06) |
| D(KF) | -56.60633 | -2225.402 | -1182.720 | -18556.66 | -0.717479 |
| | (2996.67) | (2778.37) | (37955.7) | (8147.16) | (0.22230) |
| D(PEXTDB) | 0.021324 | -0.005985 | -16.11178 | -1.670983 | 0.000117 |
| | (0.95363) | (0.88416) | (12.0787) | (2.59268) | (7.1E-05) |

## *Pairwise Granger Causality Tests*

Pairwise Granger Causality Tests
Date: 05/23/14   Time: 01:36
Sample: 1980 2012
Lags: 2

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---|---|---|---|
| CFR does not Granger Cause PGDP | 31 | 0.24495 | 0.0045 |
| PGDP does not Granger Cause CFR | | 0.58118 | 0.5663 |
| FDI does not Granger Cause PGDP | 31 | 1.03117 | 0.0207 |
| PGDP does not Granger Cause FDI | | 0.58349 | 0.5651 |
| KF does not Granger Cause PGDP | 31 | 0.13105 | 0.0378 |
| PGDP does not Granger Cause KF | | 0.49573 | 0.0018 |
| PEXTDB does not Granger Cause PGDP | 31 | 0.12240 | 0.8853 |
| PGDP does not Granger Cause PEXTDB | | 0.33344 | 0.0195 |
| KF does not Granger Cause CFR | 31 | 0.30342 | 0.7409 |
| CFR does not Granger Cause KF | | 0.06944 | 0.0331 |
| PEXTDB does not Granger Cause CFR | 31 | 1.39968 | 0.2647 |

| | | | |
|---|---|---|---|
| CFR does not Granger Cause PEXTDB | | 0.97594 | 0.3902 |
| CAB does not Granger Cause CFR | 31 | 3.49229 | 0.0454 |
| CFR does not Granger Cause CAB | | 0.10150 | 0.9038 |
| KF does not Granger Cause FDI | 31 | 1.88393 | 0.0122 |
| FDI does not Granger Cause KF | | 5.50207 | 0.0102 |
| PEXTDB does not Granger Cause KF | 31 | 0.05517 | 0.9464 |
| KF does not Granger Cause PEXTDB | | 0.34496 | 0.0214 |
| CAB does not Granger Cause KF | 31 | 1.00550 | 0.3796 |
| KF does not Granger Cause CAB | | 1.09921 | 0.3481 |

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