

## CHAPTER ONE:

### INTRODUCTION

#### 1.0 Background to the Study

It is both widely recognised and accepted that most LDCs operate in the low-level equilibrium trap that is, low savings rate, followed by low investment rate and therefore, low per capita income growth rate. Like most developing countries, WAEMU countries share many issues in common that have to be addressed namely: major structural challenges and constraints where productive capacities are limited by weaknesses in terms of human capital, agricultural inefficiency and infrastructure (transport, buildings such as schools, hospitals, electricity, communication systems, water and sanitation). The proportion of educated people in these countries is low (World Bank, 2010). The purchasing power, which Todaro & Smith (2012) defines as the number of units of a foreign country's currency required to purchase the identical quantity of goods and services in the local developing country market as \$1 would buy in the United States, is also low due to the low level of per capita income. All these issues, which affect (directly and indirectly) economic growth and development, can be addressed to improve the standard of living. To do so, it will necessitate heavy and steady investment in some key sectors (if not in all) of the economy and in human capital particularly. Such investment requires bountiful savings which, if provided, will contribute to generate sufficient spillovers in the economy which in turn will boost economic growth, *ceteris paribus*. But the issue is that most LDCs in general and WAEMU member countries' internal savings are low, meaning that there is an existence of saving gap in these countries (the value of desired investment is greater than the available internal savings). So, there is need to fill that gap. To fill such a gap, foreign capital is needed since one of the indirect thrusts of this study is to focus on the need to reduce the upward trend of poverty so as to maximise the benefits attached to FDI which

accompany the economic integration efforts and to improve the socio-economic well-being within WAEMU.

But WAEMU economies experience a situation of poor performance that can be attributed to many factors including bad economic and political environment, low level of investment, non-implementation of FDI protocols, lack of awareness and political will. This undesired and unpleasant situation and the trap of poverty could be avoided if capital from abroad in the form of FDI is injected to fill the saving gap (Hayami, 2001; Mottaleb and Kalirajan, 2010; Khan and Khan, 2011). In the FDI literature, it is well known and largely accepted in theory that FDI produces economic benefits to the recipient countries by providing capital, foreign exchange, technology, competition and by enhancing access to foreign markets (UNCTAD, 1998; Albuлесcu et al., 2010). Even more, it is argued that FDI can also enhance domestic investment and innovation (Brooks et al., 2004; Adofu, 2010). So, like most LDCs, WAEMU countries are aware of the benefits of FDI. In fact, all of them are developing strategies to attract bountiful amount of it. This justifies their different promotional policies, such as liberalizing trade regimes, establishing special economic zones and offering incentives to the foreign investors with the aim of improving these economies. The trade relationship of these countries with the developed ones since the colonial period suffers a little (Knell and Radosevic, 2000; OECD, 2007). Therefore, in order to be relevant in the international market and to avoid wastage of scarce resources, and financial loss in international financial markets in addition to have more benefits and advantages from their bilateral trade, WAEMU countries succeeded in harmonising their strategies and policies toward investments, especially toward FDI. In this regard, these strategies gave rise to many agreements and policies such as: the Lome Convention, the “Organisation pour l’Harmonisation en Afrique du Droit des Affaires (OHADA)”, the Africa Growth and Opportunity Act (AGOA) and many numerous meetings

and conferences on trade agreements in Uruguay Rounds. These are some of the reasons for the connectedness of WAEMU countries.

### **1.1 Statement of the Problem**

It is well known that developing countries need more of investment in the form of FDI for their development process and reduction of poverty. According to Todaro and Smith (2012), the majority of FDI goes from one developed country to another, and flows to LDCs are heavily concentrated in just a few destinations. This is not surprising given the fact that private capital gravitates toward countries and regions with the highest financial returns and the greatest perceived safety; but LDCs are countries where debt problems are severe, governments are unstable, and economic reforms remain incomplete with the high risks of capital loss; this tends to deter investors i.e. MNCs which are not in the development business but they seek out the best profit opportunities (with minimum costs and risks) and are largely unconcerned with issues such as poverty, inequality, employment conditions, and environmental problems. Nevertheless, the inflows of FDI to LDCs (including WAEMU) have not been reduced to nought. This leads to enquire the reasons of the downfall (in relative term) of FDI inflows.

Many studies and researches have been undertaken with the aim of identifying either the FDI determinants or to estimate its impact on economic growth both in developed and developing countries using different methods. FDI is generally recognised to be beneficial to countries in many ways as summarised by OECD report (2007): “FDI triggers technology spillovers, assists human capital formation, contributes to international trade integration, helps create a more competitive business environment and enhances enterprise development”. And arguing that FDI will benefit LDCs, Asiedu (2002; 2004), uses cross-sectional data of 71 developing countries, in an attempt to identify what factors drive FDI to these countries. Most of the works are done on English speaking countries in Africa (Ekpo, 1995; Eke, 2003; Akinlo,

2004; Obwona, 2004; Aremu, 2005; Ayanwale, 2007; Mottaleb and Kalirajan, 2010; Yabi, 2010). This could be justified by the fact that African French countries are limited by being tied to France and with their fixed exchange rate regime with her. Also, in most of the studies that have been carried out, only a limited number of WAEMU countries are included. For example, Gastanaga et al. (1998) consider a total of 49 countries, of which only 6 of them are in Sub-Saharan Africa (SSA) and specifically 2 WAEMU countries are included (Côte d'Ivoire and Senegal); while Schneider and Frey (1985) consider 51 countries, of which 13 are in SSA with three WAEMU countries (Côte d'Ivoire, Mali and Senegal). One of the worst cases is that of Moura and Forte (2010) which considers 51 countries (10 developed countries and 41 developing countries) in the world and none of the WAEMU countries is included. Above this, the fact that researches on FDI (either determinants or impact) are not conclusive, this justifies why undertake the current study on WAEMU. To the Researcher's best knowledge, studies on WAEMU as a whole are very scanty meaning that there is a dearth of empirical work entirely devoted to the study on the determinants and impact of FDI in WAEMU. Therefore, this study attempts to fill this gap.

In the WAEMU economy however, domestic investment (both private and public) has proven to be insufficient (IMF, 2009). Therefore, FDI is required to compensate the low level of domestic saving which is brought into being by a vicious circle of poverty that emerges from a low level of real income, reflecting low productivity, which in turn is due to the lack of capital. This, in return, is a result of the small capacity for saving and consequently investment that goes back to a low rate of real per income (Nurkse, 1955). So, FDI is able to provide additional resources and to complete domestic capital deficits. Therefore, national resources, combined with external resources (in the form of FDI) can break up the vicious circle of poverty and facilitate development, raise real income, favour a socially appropriate distribution of incomes and bring about a high level of employment. Therefore, FDI plays a

complementary role for domestic resources. This implies that FDI may have the capacity to augment domestic resources to enable each WAEMU member country carry out her development programmes effectively and raise the standard of her people.

Furthermore, if not all, most of the eight WAEMU countries face infrastructure deficiency (lack of good roads, lack of buildings, good telecommunication systems, etc.) and poor human capital through lack of training and human capital formation (this justifies the fact that many MNCs and investors used to bring their experts when making some investments in LDCs, etc.). Hence, the needs to invest in social infrastructure and in human capital justify FDI inflows in WAEMU; and there are some economists who argue that to stimulate growth in LDCs it is necessary for governments to invest in infrastructure (Musila and Sique, 2006; Dupasquier and Osakwe, 2006). It is only with adequate infrastructure that a country will develop since power, water, transport (and others) will form the channels that facilitate growth. After that, it is the turn of entrepreneurs to create businesses in order to make and sell goods. The infrastructure projects will provide some tax revenues, local employment and the businesses will provide employment which will enable the employees to buy things from other businesses which in turn allows those businesses to grow (i.e. interactions within enterprises). From there, it can be inferred that where there is economic growth and improvement in infrastructure and human capital, FDI may be attracted. Or in another word, it seems like economic growth also leads to FDI inflows. This justifies the need for this study to check it out through Granger causality test.

In terms of population and space, WAEMU constitutes an important market. According to the literature on FDI, market size is one of the key determinants of FDI (Dunning, 1993). Besides, this study considers WAEMU, which is a panel of eight countries (with more than 98 millions of people; See Appendix II, Page 193), as an important market for this study.

The state of financial development in a country is very important. That is why it is increasingly recognized that the financial system plays a crucial role in the process of economic development. In line with this view, many researchers argue that financial development enhances growth at the start of modern development even though once the financial system is established it mainly follows the real sector. Most likely, the causality runs in both directions (Nwokoma, 2004 and Saibu et al., 2011). To the question “What is so important about finance?”, answer is provided by Hugh (2004) in Todaro and Smith (2010) that the financial sector provides six major functions that are important both at the firm level and at the economic level as a whole, namely: (i) provision of payment services, (ii) matching savers and investors, (iii) generating and distributing information, (iv) efficient allocation of credit, (v) pricing, pooling, and trading risks, and (vi) increasing asset liquidity. Therefore, it can be admitted that there is a link between FDI and financial development. Based on the fact that there is a dearth on the issue of FDI related to financial development in WAEMU in the literature, the current study aims at filling such gap by checking whether FDI is determined by financial development or not.

The exchange rate impacts FDI inflows. Exchange rate can be defined as the rate at which a domestic currency can be converted into (sold for) a foreign currency (such as the U.S. dollar). Its behaviour is viewed as one of the factors that influence FDI flows. It can influence both the total amount of FDI that takes place and the allocation of this investment spending across a range of countries (Alfaro et al., 2009). A depreciation of a currency has two implications for FDI: First, the wages and production costs of that country will fall relatively to those of its foreign counterparts. Secondly, through this relative wage channel, the exchange rate depreciation improves the overall rate of return to foreigners contemplating an overseas investment project in this country. *All things being equal*, the country experiencing real currency depreciation has enhanced ‘location advantage’ or attractiveness as a location for

receiving productive capacity investments, (Klein & Rosengren, 1994). If exchange rates are highly volatile, the expected values of investment projects are reduced, and FDI is reduced accordingly. This study also is interested in filling the potential gap not only on the impact of FDI on economic growth in WAEMU, but also the impact of exchange rate on FDI.

The political instability's impact on FDI comes in because of some reasons, such as: most investors would not like to invest in countries and regions where the rate of political instability (or risk) is high. Also, some enquiries have been made on the impact of political instability on economic growth; however few studies relate them to FDI. More so, there is a vacuum in WAEMU. This study attempts to fill such gap by examining how political instability determines FDI inflows in WAEMU and its member countries. In Dunning (1980), the location advantages of different countries are the key factors that determine which countries will be the host countries for the activities of the transnational corporations (TNCs). One of the specific advantages for each country is the political advantages: common and specific government policies that affect FDI inflows such as political instability which is expected to deter FDI in a host economy.

## **1.2 Objectives of Study**

The aim of this study is to assess the trends and the macroeconomic determinants of FDI and to estimate its impact on economic growth, using WAEMU and its member countries as a case study. And specifically, the study sets out to:

- i. Assessment of trends of inflows and contributions of FDI to economic growth in WAEMU countries over the sample period,
- ii. Examine the country specific and regional macroeconomic determinants of FDI inflows in WAEMU countries,
- iii. Determine the relative effects of socio-political instability on FDI inflows in the WAEMU countries,

iv. Analyse the country specific and regional relative effects of FDI inflows on economic growth in WAEMJU countries and the direction of the causality.

### **1.3 Research Questions**

From the objectives above, the foregoing developments have thrown up a number of research questions, which include:

i. What are the trends of inflows and contributions of FDI to economic growth in WAEMU countries?

ii. What are the country specific and regional macroeconomic determinants of FDI inflows in WAEMU countries?

iii. Does socio-political instability relatively affect FDI inflows in the WAEMU countries?

iv. Do country specific and regional relative effects of FDI inflows affect economic growth and does FDI cause growth in WAEMU countries?

### **1.4 Statement of Hypotheses**

The following hypotheses, which will be tested, are derived from the same objectives of this study:

i.  $H_0$ : There is no trends of FDI inflows and contributions to economic growth in WAEMU countries over the sample period.

$H_1$ : Assessment of trends of inflows and contributions of FDI to economic growth in WAEMU countries over the sample period.

ii.  $H_0$ : There are no country specific and regional macroeconomic determinants of FDI inflows in WAEMU countries,

$H_1$ : There are country specific and regional macroeconomic determinants of FDI inflows in WAEMU countries.



iii.  $H_0$ : Socio-political instability does not determine FDI inflows in the WAEMU countries.

$H_1$ : Socio-political instability does affect FDI inflows in the WAEMU countries.

iv.  $H_0$ : The country specific and regional effects of FDI inflows do not affect economic growth and FDI does not Granger cause growth in WAEMJU countries.

$H_1$ : The country specific and regional effects of FDI inflows do affect economic growth and FDI Granger causes growth in WAEMJU countries.

### **1.5 Significance of the Study**

Most studies on FDI have demonstrated the importance of FDI inflows into developing countries. This study is significant for many reasons based the meaningful contributions to knowledge in the area of research and methodology. This significance can be summarized as:

A lot of study had been conducted on FDI in West African countries. But most of them were carried out mainly for English-speaking countries; the current study happens to be one of the few to provide empirical evidences not only on the determinants of FDI on the West African francophone countries but also on the FDI's impact on economic growth in WAEMU as a whole and on the economic growth of each one of the WAEMU member countries.

Relatively to some key variables related to FDI, the following significances are found useful:

This study demonstrates the importance of exchange rate as well as that of financial development on the inflows of FDI in WAEMU economy as a whole and on each one of WAEMU member countries. These variable which are cardinal factors that were never considered by previous studies in influencing FDI inflows in WAEMU countries except for West African English speaking countries.

This study also establishes the important role of trade openness, market size, infrastructure development, political and macroeconomic stability on FDI inflows both in WAEMU region and its member economies. Based on the fact that many economists conclude that in order to stimulate economic growth in developing countries it is necessary for governments to invest in infrastructure since it is only with adequate infrastructure that a country will develop because power, water, transport (and others) will form the channels that facilitate growth. After that, it is the turn of entrepreneurs to create businesses in order to make and sell goods. The infrastructure projects will provide some tax revenues, local employment and the businesses will provide employment which will enable the employees to buy things from other businesses which in turn allows those businesses to grow (i.e. interactions within enterprises). For the best of our knowledge, these combined were missing in most studies on WAEMU. This study also has proven that the effect of trade openness, even though positive in WAEMU, deters FDI in some countries like Burkina Faso, Guinea Bissau, Mali for the period under study. From this finding, adequate policy recommendation is made.

Contrary to previous study which employed either time series or panel data analysis, this study employs the panel cointegration approach, an uncommon method of analysis while investigating determinants and impact of FDI inflows in WAEMU countries based on the examination of existing literature on WAEMU FDI inflows. The study establishes that most of the determinants of FDI and data on FDI and growth all suffered from unit root problem which faulted the results of these studies.

The present study demonstrates after resolving the issue of the unit root problem associated with the data a cointegration between FDI and growth in WAEMU. It further shows a significant role of FDI on growth.

Finally, this study contributes to the ongoing debate (which is not conclusive) concerning the determinants and impact of FDI on economic growth for developing countries, especially the West African Economic and Monetary Union countries.

## **1.6 Organisation of The Study**

It is imperative, in view of the foregoing, to examine the relationship between the variables which impact inflows of FDI and economic development in WAEMU. Apart from this introductory chapter, which treats the introduction, objectives, research questions and hypotheses, the remaining part of this study is divided into five chapters namely: Chapter two discusses the trends of FDI and economic growth in WAEMU and its member countries. This chapter also includes graphs which show the relationship between GDP and FDI growth rates. The third chapter starts with the major theories that deal with FDI and it also provides a review of the theoretical and empirical literature which highlights first the determinants of FDI and secondly its impact of FDI on economic growth in both LDCs and developed countries. Chapter four titled “Theoretical framework and methodology” appraises the inter-relationship between FDI and economic growth and provides the methodology used in the data analysis. The results are then presented and analysed in the fifth chapter titled “Presentation and discussion of the results”. And finally chapter six deals with findings, contribution to knowledge, policy implications, and finally this last chapter concludes with recommendations and limitations.

## CHAPTER TWO

### TREND OF FDI IN WAEMU AND ITS MEMBER COUNTRIES

#### 2.0 Introduction

Formerly known as the West African Monetary Union (WAMU), the West African Economic and Monetary Union (WAEMU) is founded without Guinea-Bissau on 10 January 1994 in response to the devaluation of the common currency, the CFA Franc, on 11 January 1994. It is later on 1997 that Guinea-Bissau joins the Community. The Treaty establishing WAEMU (Dakar Treaty of 10 January 1994) theoretically came into effect on 1<sup>st</sup> August 1994 after ratification by the seven member countries, thereby also replacing the since then dissolved West African Economic Union (WAEU). The WAEMU where there is a common currency (CFA Franc) with a common official language (French) represents a market of almost 100 million consumers in 2010 (See Appendix II, Page 193). WAEMU community is constituted of: Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo. These countries are working toward greater regional integration with unified external tariffs.

Located at the crossroads between North and Sub-Saharan Africa, the WAEMU is a hub of trans-Saharan exchanges. Each country of WAEMU faces major structural challenges and constraints. Productive capacities are limited by weaknesses in terms of human capital and infrastructure (transport, electricity, water and sanitation). The region has undergone progressive economic liberalization and given the private sector a larger role in economic and social development. New investment codes have been established to attract more FDI.

An increasing number of governments (especially the WAEMU ones) want to attract FDI because the benefits associated with FDI increasingly fit the government's development objectives (which can be summarised as follows: economic growth, poverty reduction, job

opportunities, etc.). This is based on a perception that the potential positive effects of FDI (economic growth, transfer of technology, skill upgrading, and increase of the level of capital) generally outweigh its negative effects (income inequality, environmental degradation, profit repatriation). Under this sub-section, this study will show the trend of FDI inflows in WAEMU and its member countries.

## **2.1 Trend of FDI in Absolute Term**

Since early 1980s, governments of LDCs, especially the WAEMU ones, have been supporting and implementing strategies of encouraging competitive free markets, privatisation of state owned enterprises, moving from closed (no trade) to open (trading) economies and opening up the domestic economy through free trade and attracting FDI. This is done as a way of recognising the lead role that private sector plays in economic development. This justifies why it is important to analyse the trend of FDI inflows in WAEMU.

### ***2.1.1 Trend of FDI Inflows in WAEMU in Absolute Term***

WAEMU region has attracted little amounts of inward FDI in the past two decades comparing to other regions in the world, especially the developing ones and also comparing to the total amount of FDI that flows into Africa continent. WAEMU has received 8.19% of Africa's inward FDI in 1980 and 3.11% in 2010. Even though inward FDI stock in the region rose considerably in the beginning of year 2000, its proportion to other regions in the world is low with 3% (UNCTAD, 2006). But comparing to other regions in the world, FDI inflows to WAEMU is very small. In some countries like Benin, Burkina Faso and Cote d'Ivoire, inflows rose mainly in the primary and services sectors, partly through the existence of vast natural resources and a wide range of national privatization schemes. The profile of the foreign investors and their destinations in the region has varied over the years. Investors have invested in a wide range of industries including, among others, oil exploration, in which there have been many new exploration activities. Nevertheless, the region's share in global FDI has declined,

partly because of lower inflows to the manufacturing sector in the 1990s, before a slow recovery from 2000 to 2006. In terms of prospects, high commodity prices and continued liberalization of the national markets are likely to attract more FDI to the primary and services sectors of WAEMU economies.

**Table 2.0: Stock of FDI in WAEMU (1980-2010)**

	Benin Rep	Burkina F	Cote d'Ivoire	Guinea-Bissau	Mali	Niger Rep	Senegal	Togo	Total
FDI	5203.71	2588.35	55912.66	572.05	11087.41	5500.9	9536.43	4053.5	94455.01
%	5.51	2.74	59.20	0.61	11.74	5.82	10.10	4.29	100

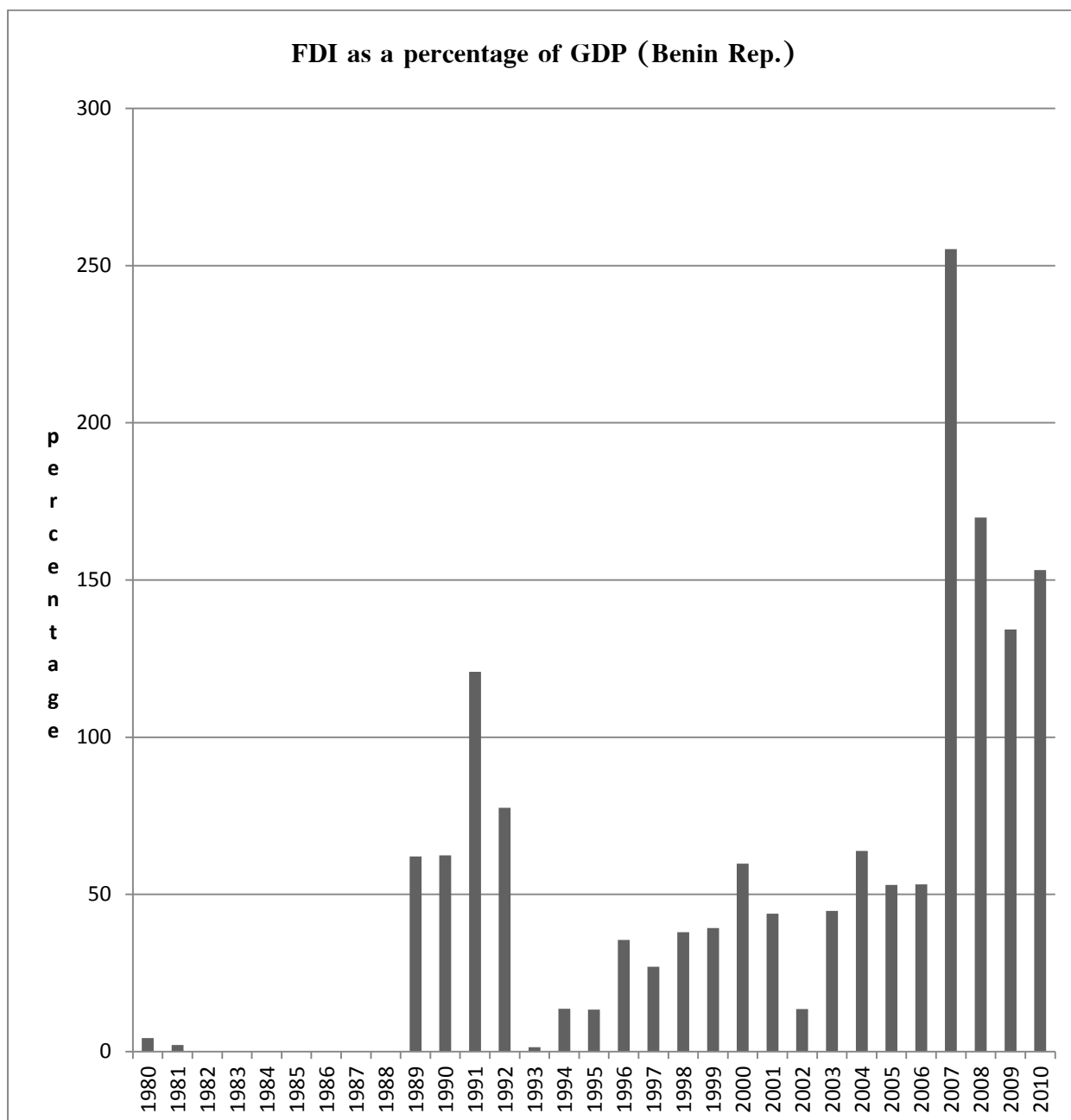
Source: BCEAO, 2012.

The third line in Table 2.0 (share of each WAEMU member country compared to WAEMU as a whole for the period 1980-2010) is derived from line 2 (of the same table) as percentage of cumulative FDI. It shows that, in WAEMU region, Cote d'Ivoire and Mali Republics are the most beneficiaries of FDI with 59% and 12% respectively. Cote d'Ivoire alone gets more than half of the total inflows of FDI within the period under study with 59%. The three countries which benefited less of the inflows of FDI are Guinea-Bissau, Burkina Faso and Togo Republics with 1%, 3% and 4% respectively during the same period.

### ***2.1.2 Trend of FDI Inflows in Absolute term in WAEMU Member Countries***

Table 2.1 reports total FDI as a percentage of GDP over the 1980-2010 period for the country of Benin Republic. A number of points need to be mentioned in connection with the FDI series. The criterion used in defining direct investment is that the investor is capable of exercising significant influence over the activities of the enterprise in which he has invested. In a brochure of the Ministry of Finance of the Republic of Benin (2001), investment by

Figure 2.1: FDI as a Percentage of GDP for Benin Republic (1980-2010)



Source: Computed by the Author, 2015.

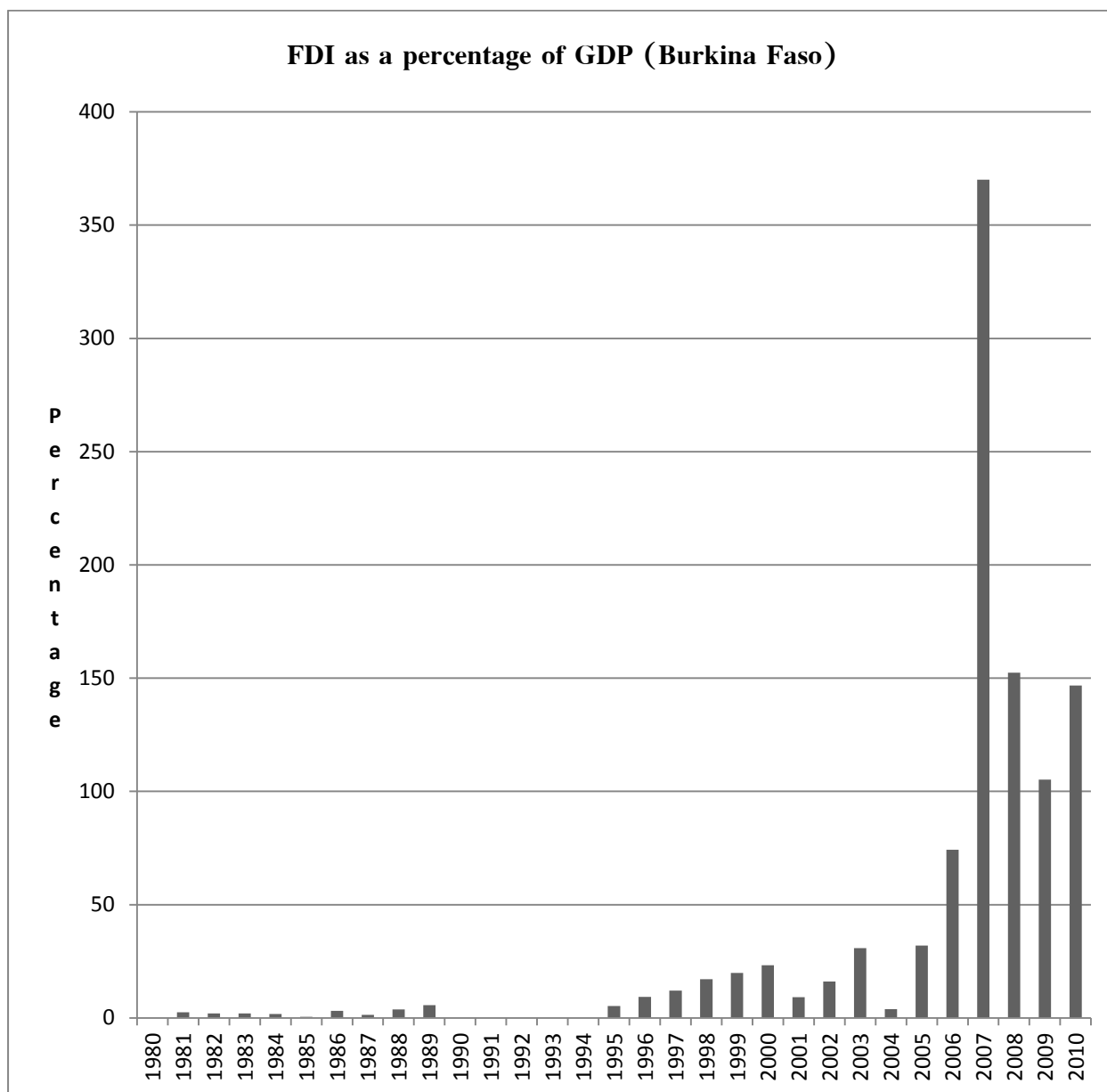
foreigners in Benin Republic is considered direct investment if it comprises ownership of a branch or participation in a partnership in Benin Republic; ownership of at least 10% of voting rights in an organization in Benin Republic; ownership of less than 10% of the voting rights, provided the foreigner is able to exercise effective influence over the policies of the organization, for example, in terms of royalty and management agreements. By contrast, portfolio investment, which consists of international equity and debt securities, is not classified as direct investment (viz. by the above definition).

The above Figure 2.1 illustrates the trend of FDI inflows into Benin Republic from 1980 to 2010 as a percentage of GDP. This figure reveals two features of the data series. First, there is a long-term rising up in FDI in Benin Republic (as defined above) as a percentage of GDP from 1.67 in 1980 to 7.69% in 1984 and from 3.54 in 1997 to 22.25% of GDP in 2009. Second, it is noted a slow fall after 1984 to 1989, from 7.69% to 5.76% of GDP, and a very sharp once-off decline between 2000 and 2001 approximately from 12.69% to 8.13% of GDP. The sharp decline in 2001 is a reflection of the political riots and crises that the country has faced during the presidential election of that period.

Globally, it can be seen that this rate of FDI in GDP rises between 1980-1990 from 1.67% to 11.62% and also between 1997 and 2009 from 3.54% to 22.25%. The ratio FDI/GDP falls between 1984 and 1989 from 7.69% to 5.76% and between 1990-1997 from 11.62% to 3.54%.



**Figure 2.2: FDI as a Percentage of GDP for Burkina Faso Republic (1980-2010)**



Source: Computed by the Author, 2015.

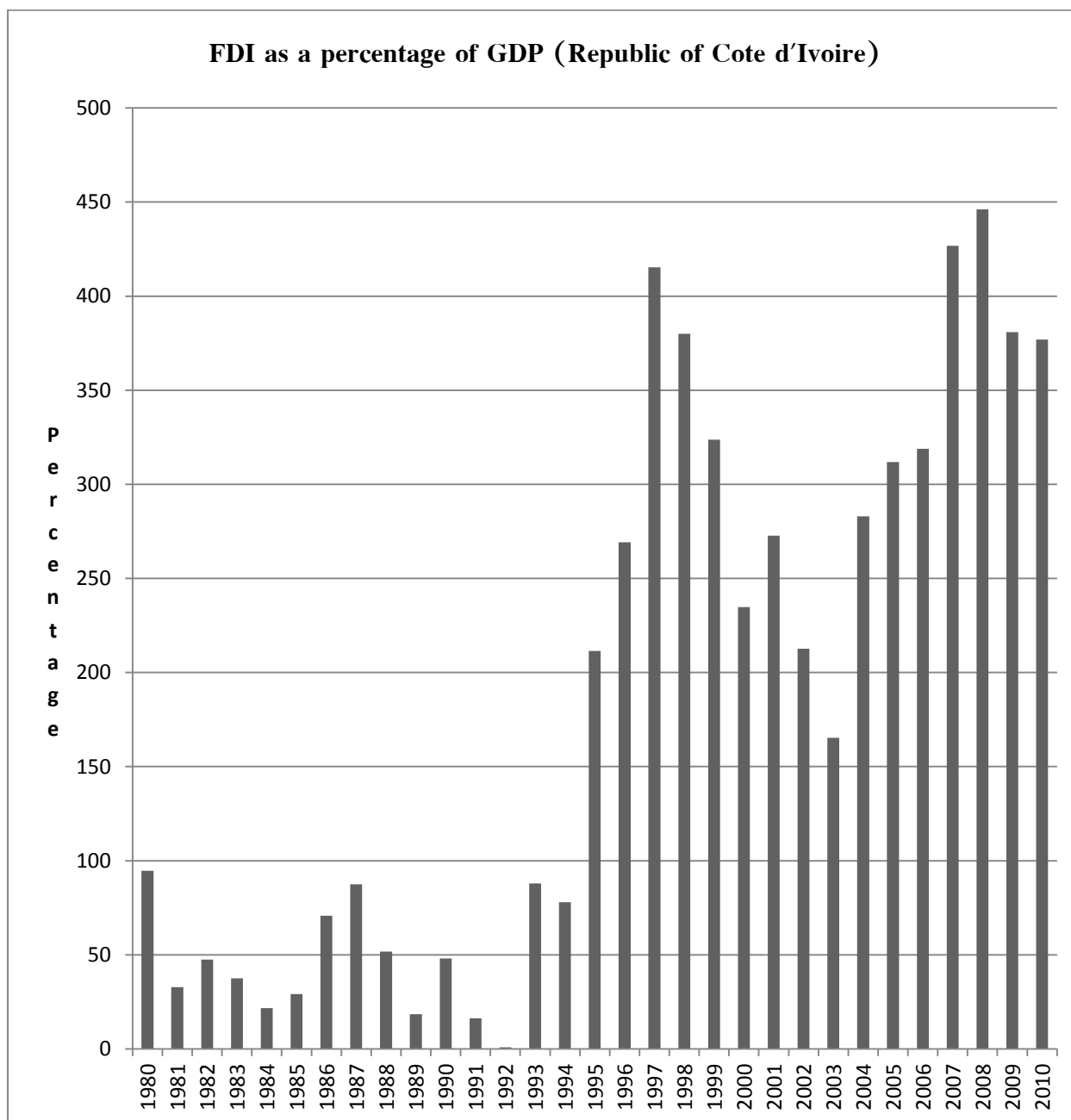
In the case of Burkina Faso, the Figure 2.2 (page 20) presents a graph where the trend of FDI is almost constant between 1980 and 1991 around USD 1 million. It can be inferred that there is a weak relationship between FDI and GDP for the period of 1980 and 1995. From 2007 to 2008, FDI has dropped from USD 559.47 millions to USD 325.55 millions which represents 71.85% when the GDP grows consistently at a rate of 12.11% meaning that it may be inferred that there is a positive relationship between FDI and GDP.

This falling of the trend of FDI during the period 2007-2008 has an answer in the history of that country: the negative influence of political risk on FDI. And truly, Burkina Faso faced political tensions and unrest within that period.

Coming to the case of Cote d'Ivoire, it can be said that globally, its FDI inflows have grown between 1980 and 2010 (See Figure 2.3 below, page 22). Only from 1981 to 1991 that FDI inflow has decreased. One of the main reasons that justify such decrease is political instability (riot, political assassinations, strikes, etc.).

This FDI decreased also 2009 due to civilian war which led to the fall and change of the President Laurent Gbagbo. During the civilian war, FDI overpasses GDP. This is due to the fact that economic activities decrease (industrial productions, agricultural activities and trade are blocked or destroyed) and FDI increase because of high incentives given to foreign investors during the period of crisis in order to attract more of FDI. Globally and from 1980, the trend of FDI in the country of Cote d'Ivoire has been consistently risen due to the openness of the economy, the macroeconomic and political stability during the years, good governance.

**Figure 2.3: FDI as a Percentage of GDP for Cote d'Ivoire (1980-2010)**



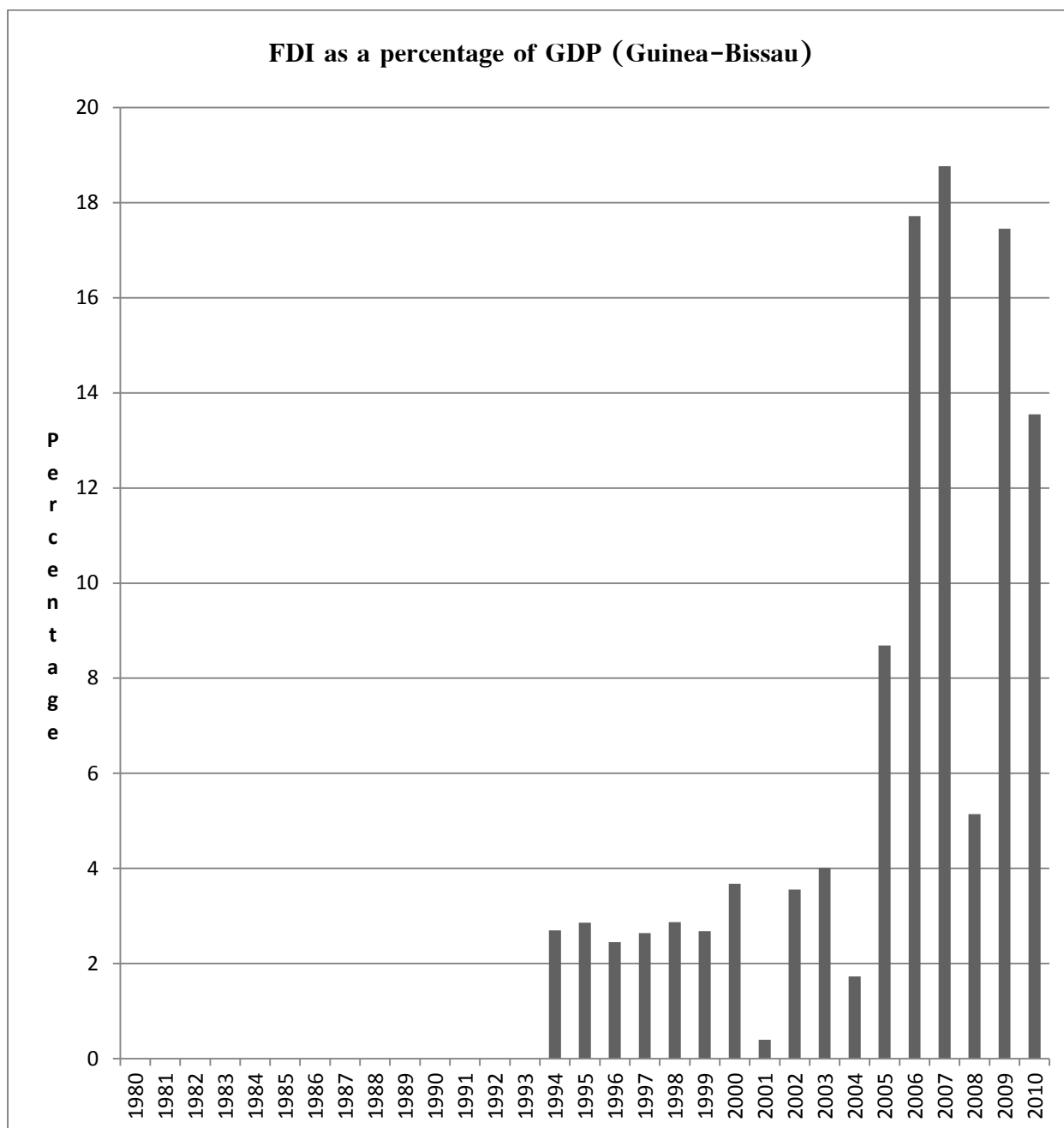
Source: Computed by the Author, 2015.

Guinea-Bissau remains one of the poorest recipients of FDI among the eight WAEMU countries (Figure 2.4, page24). During 1980s cumulative inflows of FDI is about USD 39.62 million or 1.39% of gross domestic product and 7.51% of gross fixed capital formation (GFCF) of the same period. Many factors contribute to a lower level of FDI in that country.

Although, the value of FDI is almost constant between 1980 and 2005 around an average of USD 1.5 millions, Guinea-Bissau experienced a lot of political instabilities which led to the little inflows of FDI. This political instability is also accompanied by not only the low level of GDP but also many up and down in its trend. It is only between 2005 and 2007 and also between 2008 to the end of 2010 that Guinea-Bissau experiences a significant inflow of foreign direct investment. This corresponds to a period of absolute political stability.

This abrupt increase in FDI inflows appears to be due to the opening up of the Bissau Guinean economy, especially since 1995, year which this country joined WAEMU region. However, investment climate in Guinea-Bissau is far less than satisfactory as reflected by a huge difference between the approved and actual inflows of FDI.

Figure 2.4: FDI as a Percentage of GDP for Guinea-Bissau (1980-2010)



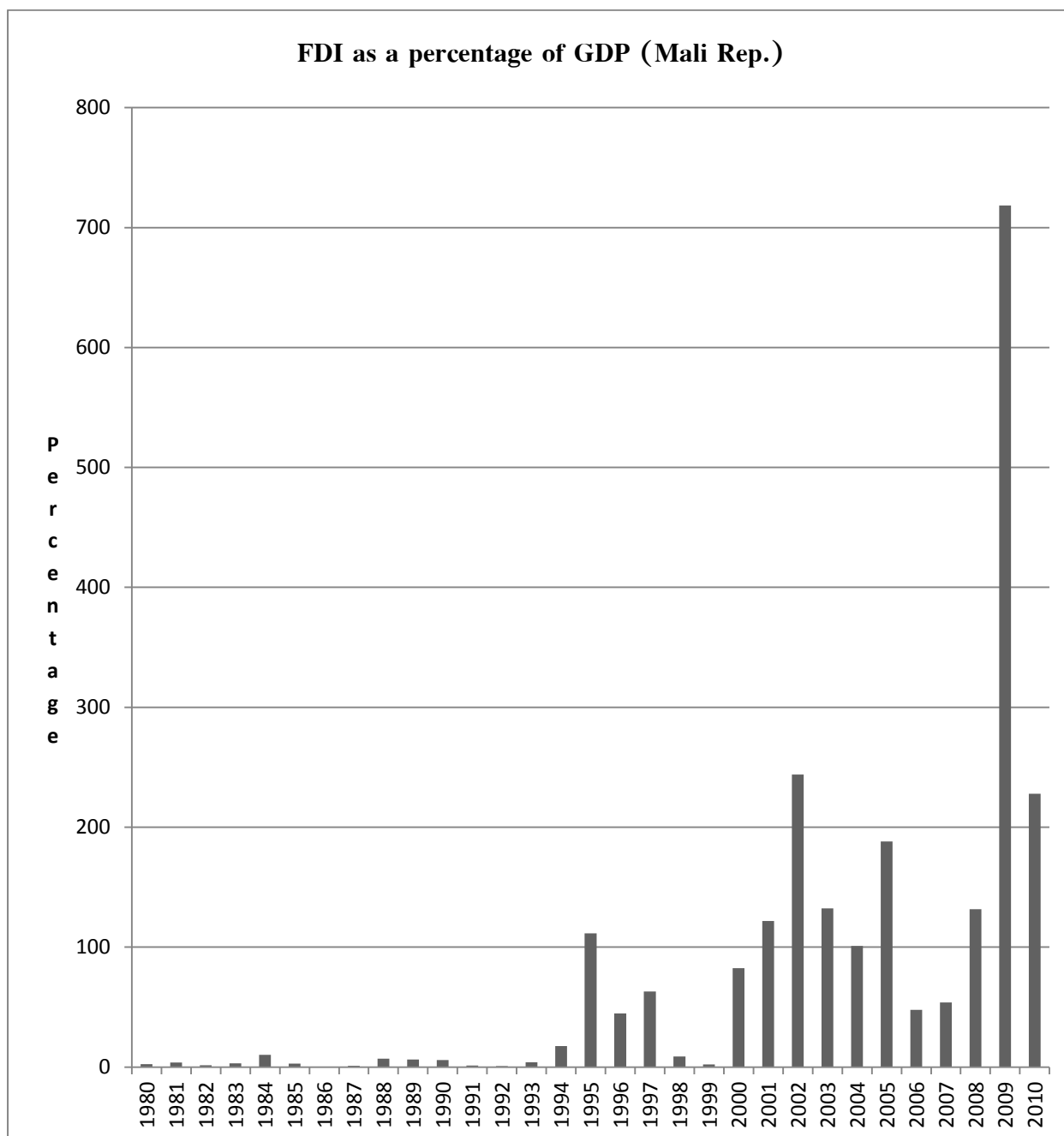
Source: Computed by the Author, 2015.

Also, Figure 2.5 (page26) below shows the trend of FDI inflows into Mali from 1980 to 2010 as a percentage of GDP. In this figure, Mali's trend of FDI can be divided into three periods; the first period goes from 1980 to 1995, whereby the trend of FDI is constant at the average amount of US\$4.53 million per year.

The second period goes from 1995 to 2000 with an increase to the pick of US\$ 454.85 millions of inflows of FDI. The last period goes from 2001 to 2010 with a consistent increase in the inflows of FDI. The first period is a dictatorial period under some military governments. Such regimes don't attract FDI; even more such political regimes deter FDI inflows. The second period is associated with the openness of the country coupled with more liberalism and laissez-faire economic strategy. In this period, Mali experienced peace and political and economic stabilities.

This situation leads to democratic elections with changes of political leaders (Presidents Alphar Oumar Konare, Amadou Toumani Toure respectively). But the last period is a period where Mali has experienced riots, rebellion in the North. Nevertheless, many natural resources and mining are discovered in this country.

Figure 2.5: FDI as Percentage of GDP in Mali (1980-2010)



Source: Computed by the Author, 2015.

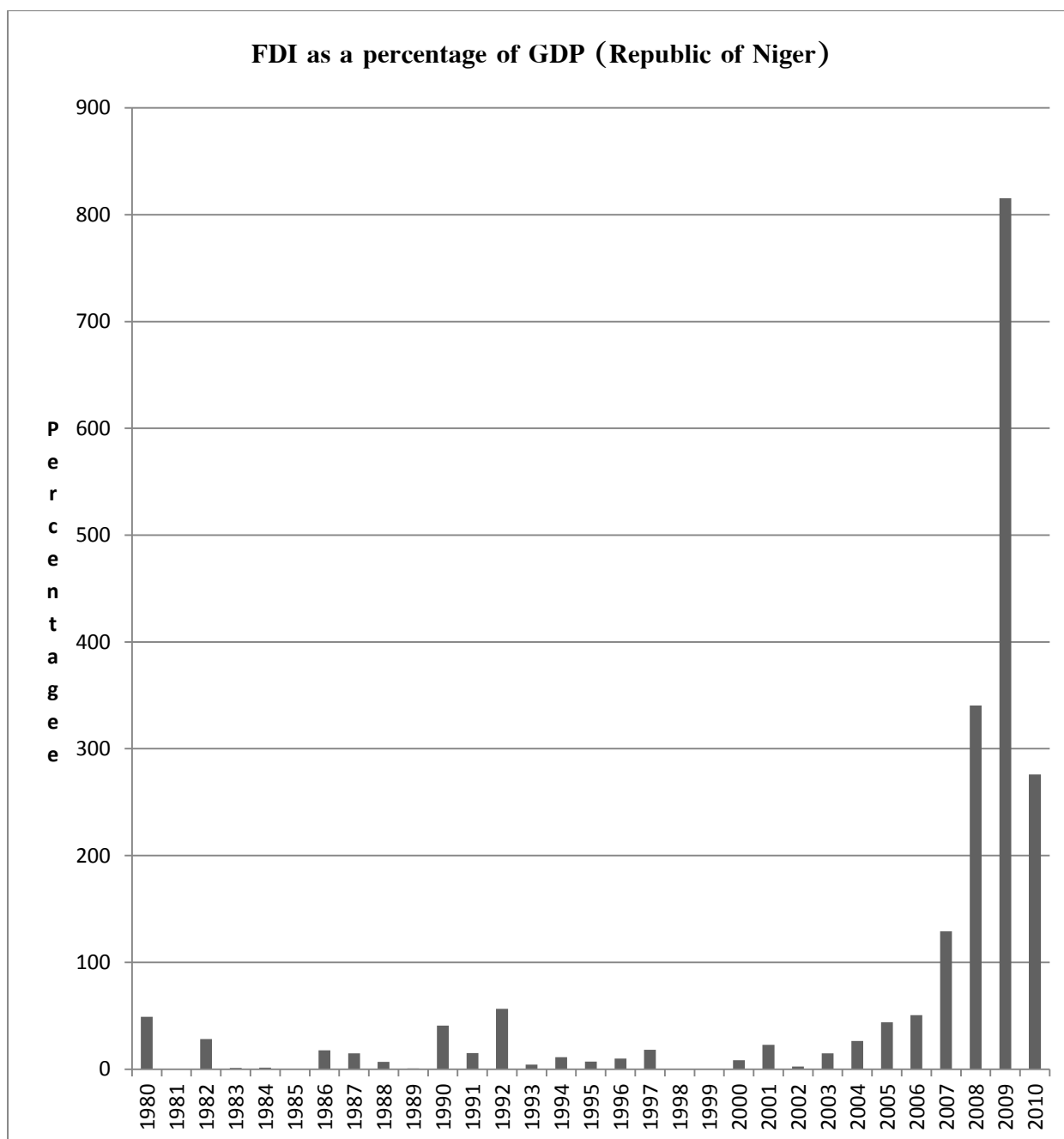
The next is the case of Niger Republic which, like many other developing countries, starts benefiting the inflows of FDI in the 1990s after the contagious democratic experience which started in Benin Republic. All this time along, the country is not widely opened to abroad and there is a high level of political instability with change of regimes and political assassinations (this is the case of President B. Mainassara in 1999).

Niger Republic became more opened from year 2005. This justifies the increase in FDI inflows in this country from that year. This can be observed in Table 2.6, page 28 of the current study.

This openness which can be linked to discovery of new natural resources (uranium) in Niger Republic affects the inflows of foreign capital which get increased. The injection of more of FDI in the Niger economy changes slope ( $dY/dx$ ) from 34.81 in 2005 to 270.11 in 2010) of the curve of FDI is high from 2006 in comparison to previous years.



**Figure 2.6: FDI as Percentage of GDP for Niger Republic (1980-2010)**



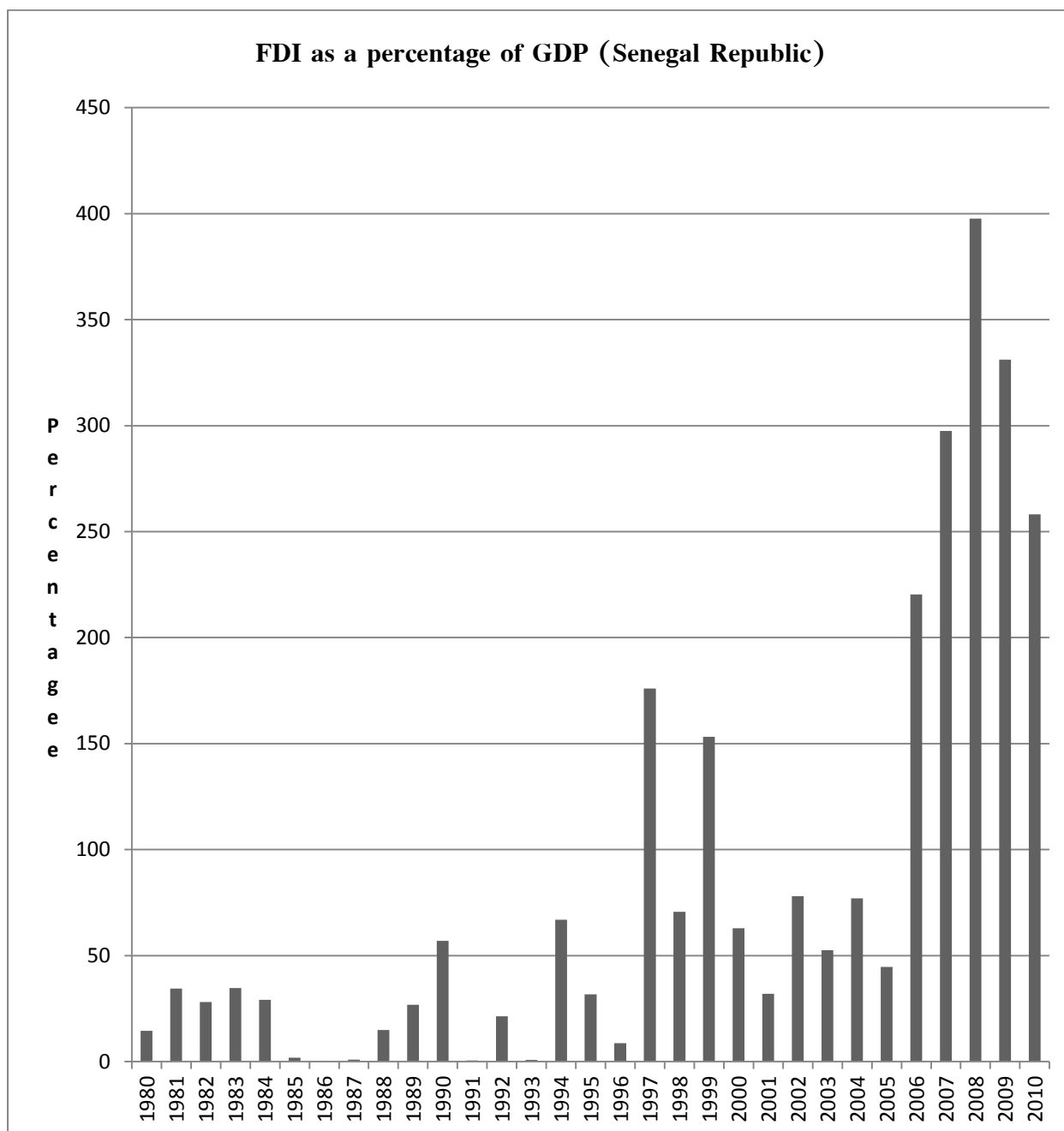
Source: Computed by the Author, 2015.

A global look at the trend of FDI in Senegal from 1980 to 1996, it fluctuates around an average annual amount of USD 50 million (Figure 8 below). The growth rate of FDI mounted up to 30% between 1986 and 1988 and between 2000 and 2010. This performance in the inflows of FDI in Senegal is due to many factors namely: change of political regime (promoters of liberalism, through President Wade, have overthrown President Abdou Diouf and the Socialists and have taken from them), more of democracy symbolising political stability and security for foreign business men, trade openness of Senegal and more of good governance.

Under the reign of President Wade, many changes such as macroeconomic instability and corruption become so visible that the country and its populations have to face another political crisis (riots, unrest). This unpleasant situation, coupled with the international financial crisis, deters FDI inflows in Senegal after 2010. These agitations forced the trend of FDI to go down between the period of 1998 to 2002 and between 2004 and 2005.

Table 2.7, page 30, depicts the relationship between FDI and economic growth in the Republic of Senegal during the period under study.

**Figure 2.7: FDI as Percentage of GDP for Senegal Republic (1980-2010)**

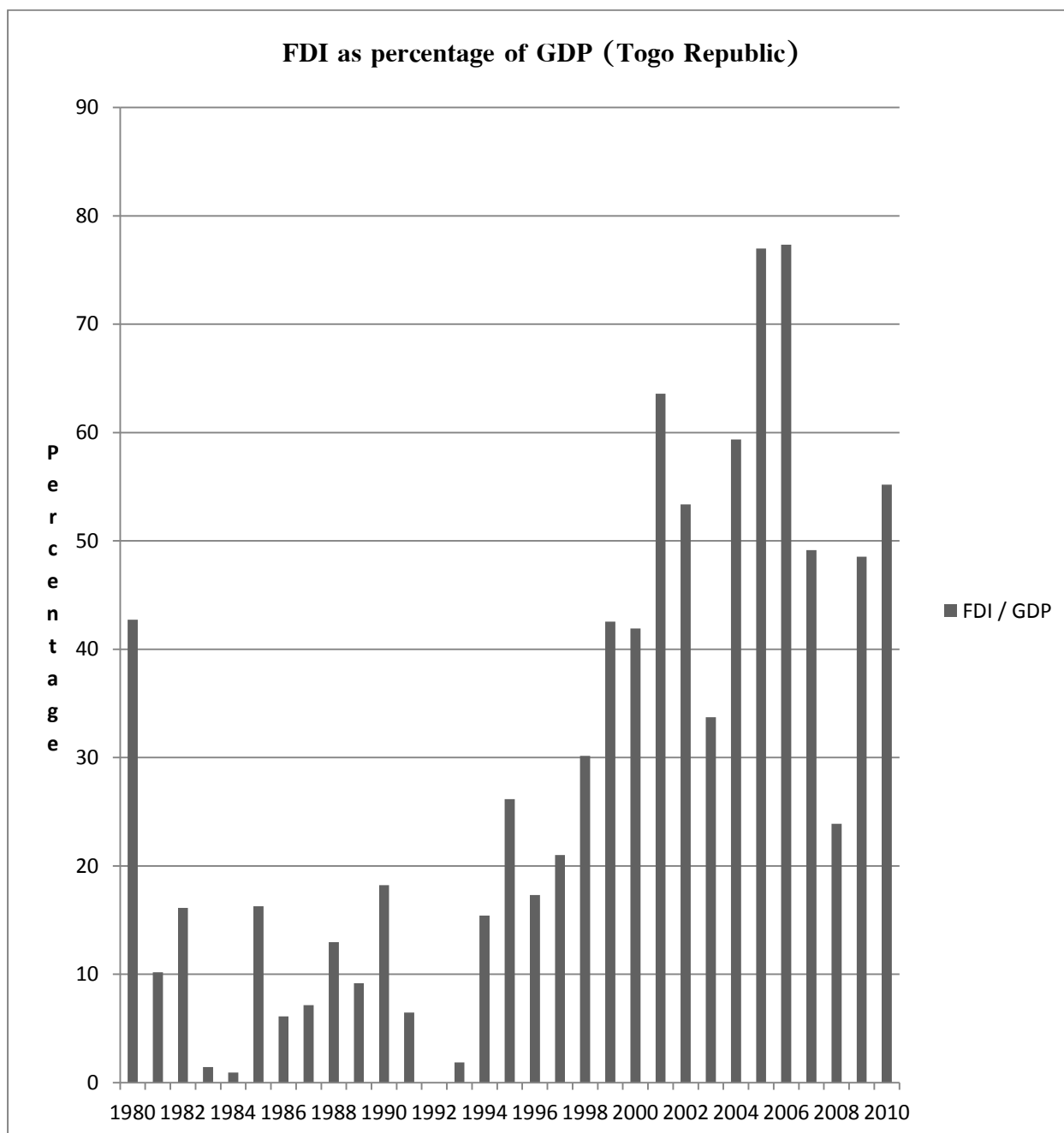


Source: Computed by the Author, 2015.

The commercial policy of trade openness favours the Republic of Togo. This country (under the presidency of late Etienne Gnassingbe Eyadema) was able to attract enough inflows of FDI since 1980 (Figure 2.8, page 32 of the current study) in comparison to other countries of the region. With the wind of democracy of 1990, the level of FDI has started to increase moderately till 2000. Between 2000 and 2002, the slope of FDI curve becomes greater at 2.26. Nevertheless, FDI trend decreases during the four quarters of 2003 (i.e. from 2003 to 2003) due to a war that follows political elections.

This drop of FDI in 2003 can be linked to the inflows of foreign capitals which are sensible to the political and economic environments. During the period of 1999 and 2010, this first drop of this FDI ratio corresponds to the economies recession that befalls Togo. In the case of Togo, there is a long run decline in FDI as a percentage of GDP between 1980 and 1999 apart from two picks in 1982 and 1993. This slowdown in the world economy is the major factor to decrease FDI in 1983. All this time along, GDP is higher than FDI and is growing consistently.

Figure 2.8: FDI as Percentage of GDP for Togo (1980-2010)



Source: Computed by the Author, 2015.

## **2.2 Trend of Change in FDI a GDP Growth**

### ***2.2.1 Trend of Change in FDI and GDP Growth in WAEMU***

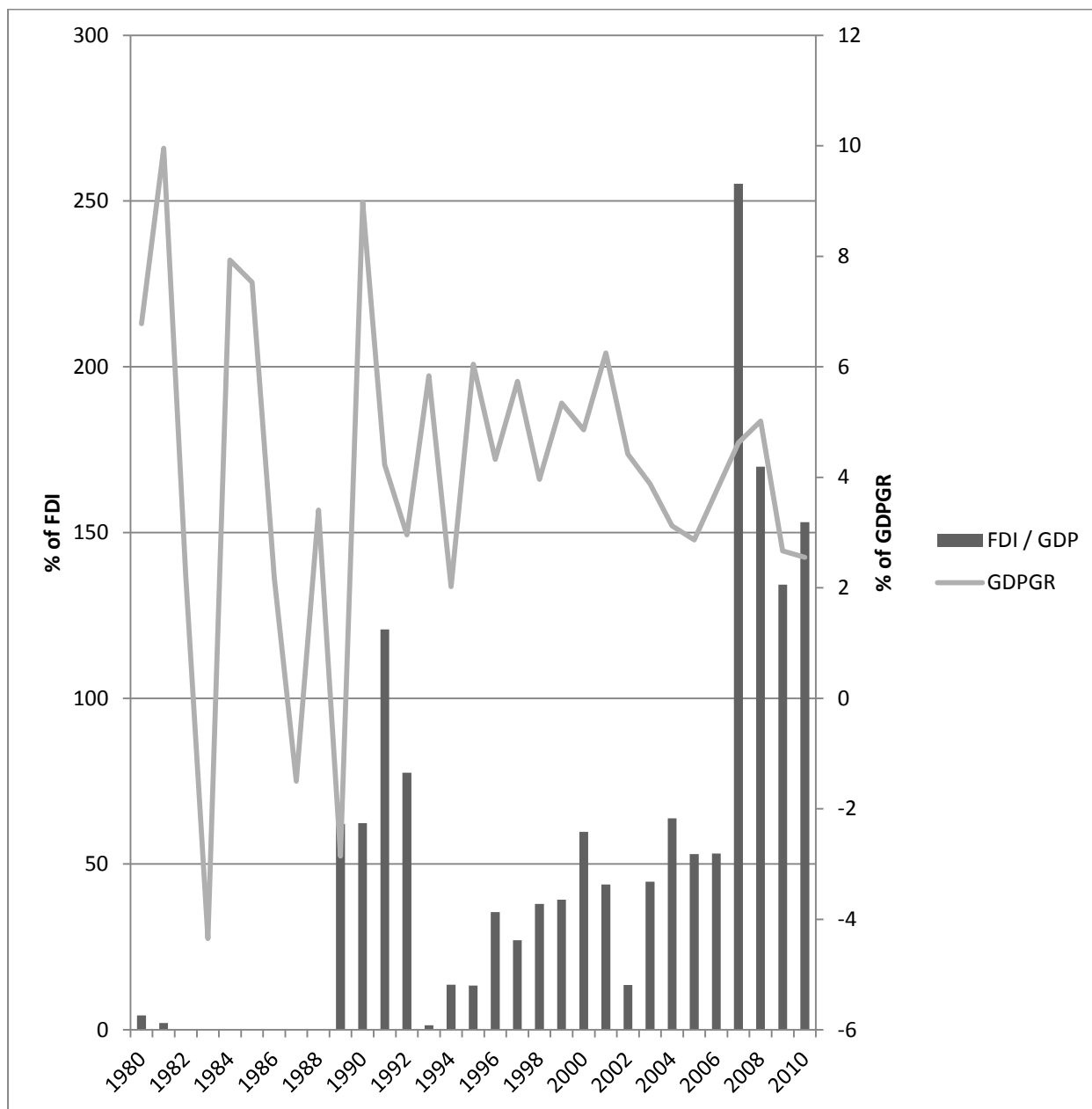
Like many other LDCs, most of WAEMU countries have since 1980 been steadily reversing their centrally planned policies of the 1970s and early 1980s towards market determined economy, thus giving unprecedented emphasis on the role of private investment. The economic recovery programme announced at the end of 1980s has generated notable changes in all sectors of the economy. This contributes to the attractiveness of financial support from bilateral and multilateral donors. Besides, the World Bank and the IMF through various programmes have provided funds to rehabilitate the then very weak economic structures and infrastructures. On the political front, WAEMU countries have become gradually politically stable even after some multiparty elections that took place. Since then, WAEMU countries have invigorated their efforts towards development of a stable macroeconomic environment, privatisation and promotion of good governance, support of multiparty democracy, development of civil societies and elimination of institutionalised corruption. These efforts have resulted in achieving their developmental objectives and have accorded these countries better reputation among the international circles. At this junction, let's analyse the change in FDI coupled with the growth rate of GDP in WAEMU member countries.

In observing the Figure 2.9 below, one can see that the figures show the two variables (GDP growth and change in the flows of FDI) which are not moving at the same rate in the Beninese economy during the period under study. The vertical axis by the left is for FDI trend while the one at the right is for GDP growth. The trend of FDI is very volatile comparing to the one of GDP (almost 400% against 18% in 2006).

## 2.2.2 Trend of Change in FDI and GDP Growth in WAEMU Member Countries

### 2.2.2.1 Change in FDI and GDP Growth in the Case of Benin Republic

Figure 2.9: GDP Growth and Change in FDI in Benin Republic (1980-2010)



Source: Computed by the Author, 2015.

This might suggest that FDI inflow is not the main determinant of growth in this country. A closer look at the graphs in Figure 2.9 shows that the rate of change of GDP is not so volatile. At any time during the period under study, the GDP growth rate is not more than 35%. But for FDI, the rate of change is almost constant during 1982-2006 and became so volatile between 2006 and 2008 and it reached the top of 380% in Benin Republic. This situation is due to the government's efforts to increase FDI for political reasons (presidential campaign for the palace). Again, this confirms that the FDI line is not moving in the same proportion as that of GDP but the trend can be compared to be the same if the two graphs are been well observed. This is to say that there seem to have a link between the growth of FDI and the growth of GDP.

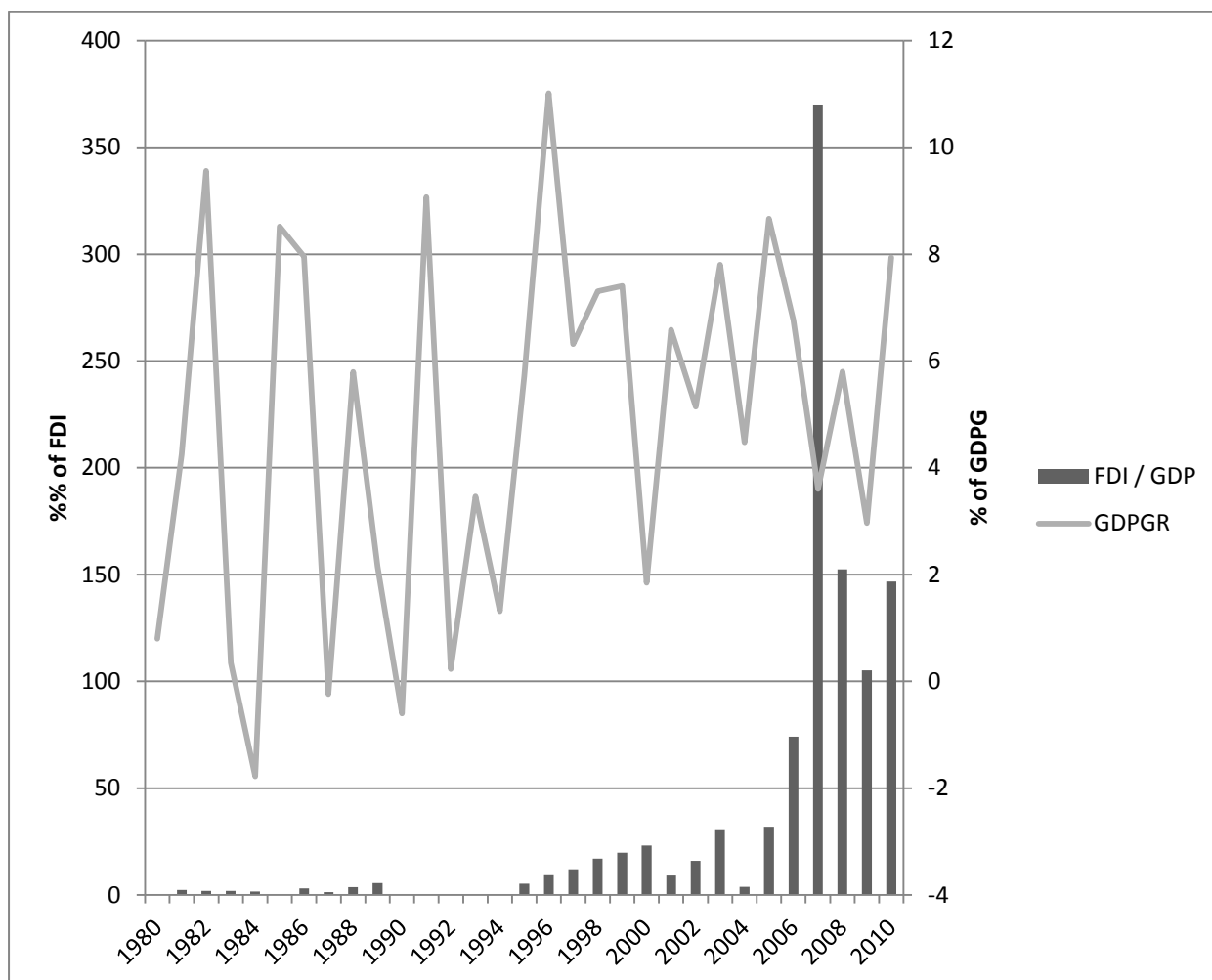
It can also be observed that this does not show properly the contribution of FDI to growth, it only shows the relationship between the growth rates of the two variables (i.e. GDP growth and change in FDI) in Benin Republic.

#### **2.2.2.2 Change in FDI and GDP Growth in the Case of Burkina Faso Republic**

In observing the Figure 2.10 below, one can see that the figures show the two variables (GDP growth and change in the flows of FDI) which here also are not moving sometime at the same rate. For instance, GDP growth rate was fluctuating during 1994-2006 between -40% and 30% while FDI movement was almost constant at 0.2%. Once again, it can be said that FDI inflow may not be the main determinant of growth in Burkina Faso or it can be inferred that there is a weak relationship between the two variables in this country. Here also, a closer look at the graphs (in Figure 2.10) shows that the rate of change of GDP is not so volatile. At any time during the period under study, the GDP growth rate is not more than 32%. But for FDI, the rate of change is very volatile. For instance the rate of change between one year and the next could be as high as 2000% (Figure 2.10 at page 36 in 1982 and in 1991).



**Figure 1: GDP Growth and FDI Change in Burkina Faso (1980-2010)**



Source: Computed by the Author, 2015.

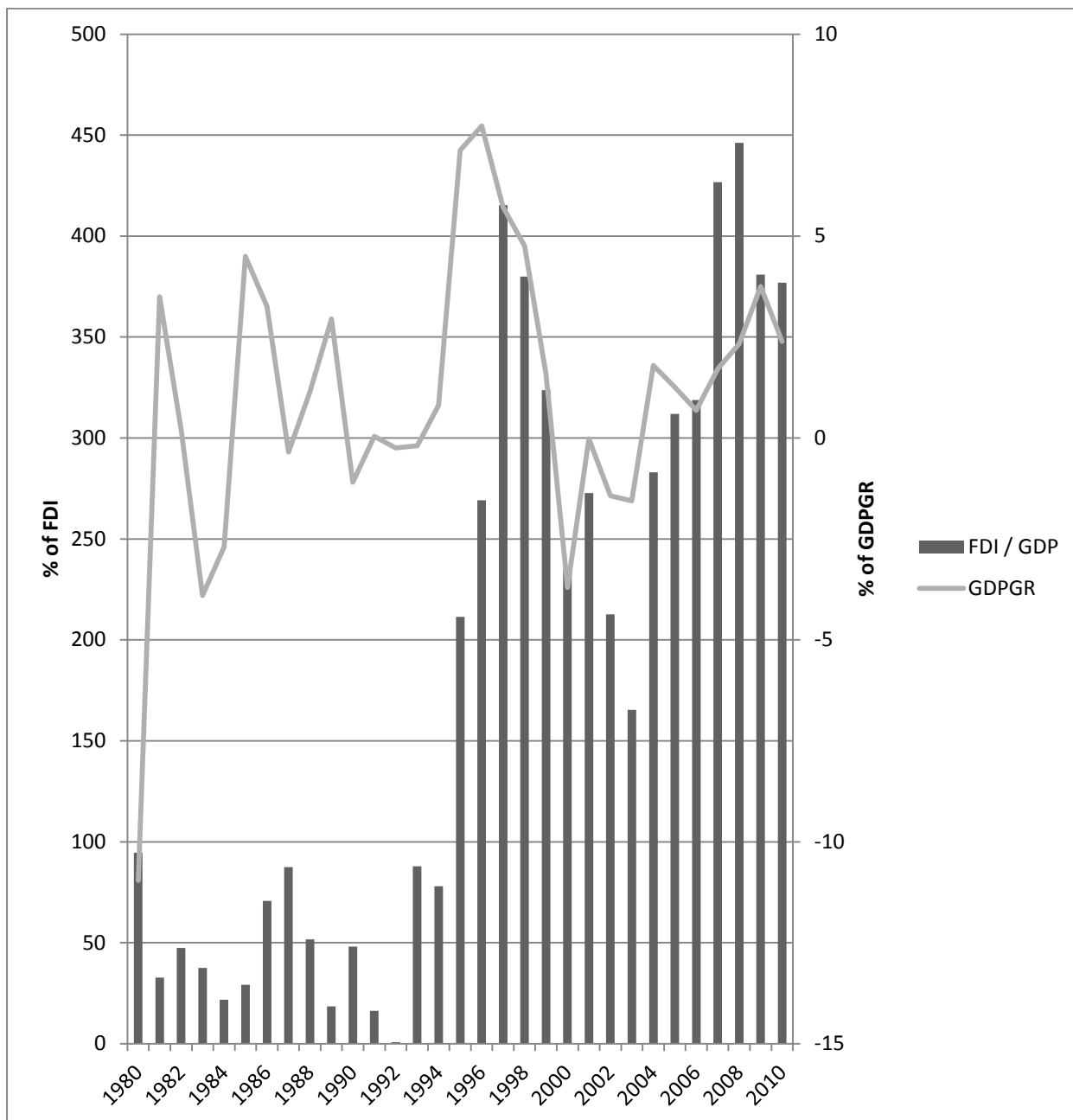
Even more, GDP has dropped in 1984, 1989, 1994, 1997, 2000 and 2009 while FDI is quite constant along the line for the same country. In 1982, FDI inflow increased by almost 2000% and a little more than 2000% in 1991 yet GDP growth is less than 0%. In the same Figure, it can also be observed that it does not show the contribution of FDI to growth, it only shows the relationship between the growth rates of the two variables that is GDP growth and change in FDI inflows in the economy of Burkina Faso for the period 1980 and 2010. Growth of FDI seems to precede that of GDP in the case of Burkina Faso.

### **2.2.2.3 Change in FDI and GDP Growth in the Case of Cote d'Ivoire Republic**

The Figure 2.11 also two graphs: that of GDP growth and change in the flows of FDI respectively). These graphs are not moving at the same slope. This might suggest that FDI inflow may determine weakly the growth of GDP in the Ivoirian economy. A closer look at the graphs (in Figure 2.11 below in the page 38 of the current study) shows that the rate of change of GDP is not as volatile as that of FDI during the period of 1980 and 2010. At any time during the period under study, the GDP growth rate is not more than 35%. But for FDI, the rate of change is very volatile with 550%.

Specifically, the rate of change of FDI between one year and the next in Cote d'Ivoire could be as high as 200% and 480% (in 1987 and 2001 respectively). Again, this confirms that the FDI line is not moving in the same proportion as that of GDP. Even more, FDI is decreasing between 1981 and 1986 while GDP growth is increasing during the same period. The same tendency is confirmed between 2002 and 2003 and also between 2009-2010.

**Figure 2.11: GDP Growth and Change in FDI in Cote d'Ivoire Republic (1980-2010)**



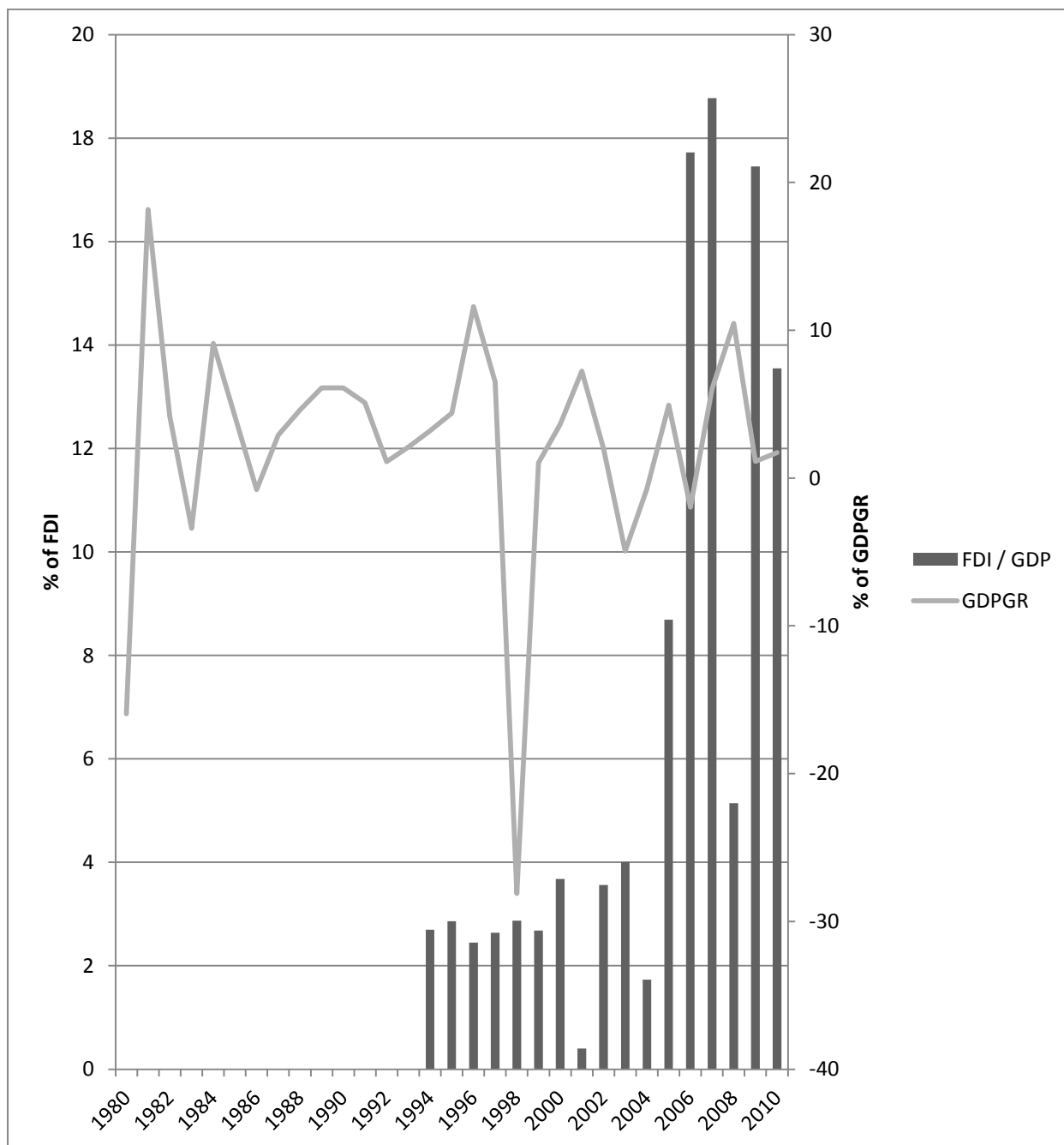
Source: Computed by the Author, 2015.

Here also and like in the case of Benin Republic and Burkina Faso, it can also be easily observed that this does not show the contribution of FDI to growth, but it only shows the relationship between the growth rates of the two variables that is GDP growth and change in FDI inflows in the Ivoirian economy under the period of this study.

The Figure 2.12 below (See it in the next page 40) shows the two variables (GDP growth and change in the flows of FDI) which are not moving at the same rate and during many sub-periods. This might suggest that FDI inflow is not the main determinant of economic growth in the economy of Guinea-Bissau during 1980-2010. A closer look at the graphs in Figure 2.12 shows that (apart from the periods 1987-1988 and 1997-1998 whereby FDI growth and GDP growth move in the opposite way) there is a same trend for both GDP growth and FDI growth in Guinea-Bissau. It appears like the increase of FDI comes before the increase of GDP growth. This suggests that FDI growth may cause GDP growth. Comparing to GDP growth, the rate of change FDI is very volatile. For instance the rate of change between one year and the next could be as high as 200% (this is the case of FDI growth in 1983 in the Bissau-Guinean economy). Again, even though FDI and GDP trends are likely moving in the same direction, this confirms that the FDI line is not moving in the same rate as that of GDP during the period under study.

For the Bissau-Guinean economy, one can see that this does not show the contribution of FDI to growth, but it only shows the potential positive relationship between the growth rates of the two variables (GDP growth and change in FDI inflows in Guinea Bissau).

### 2.2.2.4 Change in FDI and GDP Growth in the Case of Guinea-Bissau



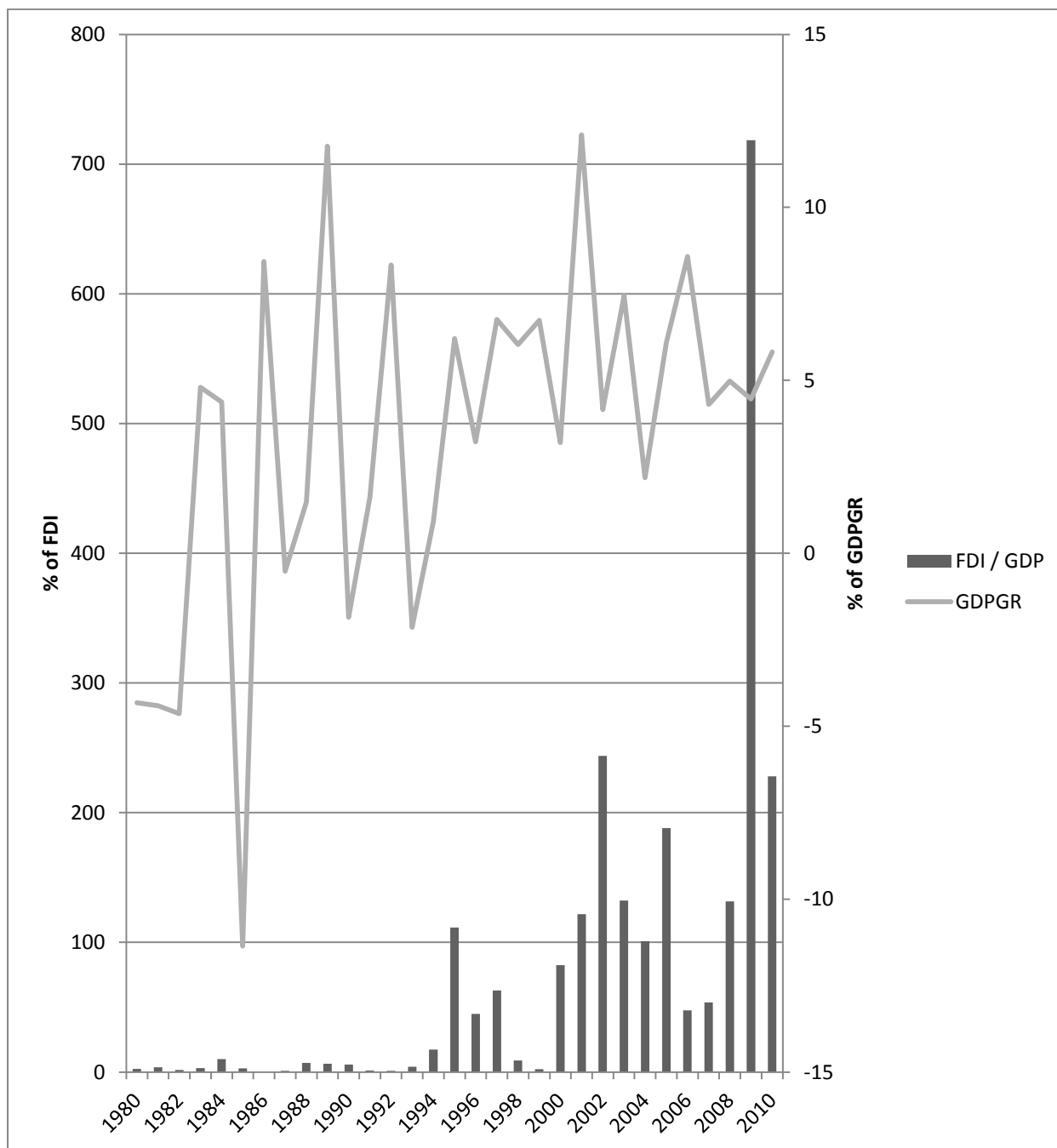
Source: Computed by the Author, 2015.

The case of Mali as presented in the above Figure 2.13 (See the figure in Page 42 of the current study) is special even though it presents a special relationship between the two graphs. In observing carefully the Figure 2.13, one can see that (in most sub-periods) FDI growth and GDP growth are moving in opposite direction i.e. when FDI growth increases, the GDP one decreases (1980-1988, 1990-1991, 1994-1995, 1998-1999, 2000-2005). This could lead to conclude that it appears that there is an adverse relationship between the two variables for the Malian economy during 1980-2010. In this case, FDI may not be one of the determinants of economic growth.

Also, a closer look at the figures (Figure 2.13) shows that the rate of change of GDP is not so volatile (it varies between -30% and 40%). At any time during the period under study, the GDP growth rate is not more than 40%. But for FDI, the rate of change is less volatile than the previous countries of Benin, Burkina Faso, Cote d'Ivoire and Guinea-Bissau. For instance the rate of change between one year and the next could be as high as almost 80%. Again, this confirms that the FDI is not moving in the same rate as that of GDP in all the figures. Even more, FDI has been reduced in 1985 to -19% while GDP growth is little bit more than 40%. Between 1981 and 1983, FDI inflow increased by more than 75% and yet GDP went down by 25%.

It can also be observed that this does not show the impact or contribution of FDI to growth, it simply shows the relationship between the growth rates of the two variables that is GDP growth and change in FDI inflows in the Malian economy during the period 1980 and 2010. To conclude in the Malian case, this study discovers that FDI is more stable.

### 2.2.2.5 Change in FDI and GDP Growth in the Case of Mali Republic



Source: Computed by the Author, 2015.

The Figure 2.14 below (in page 44 of the current study) depicts the relationship and the trend of the growth rates of FDI and GDP during the period running from 1980 to 2010 in the Niger republic economy. A careful observation of the Figures shows that the two variables (the growth rates of GDP and of FDI) have the same trend but are at different rates.

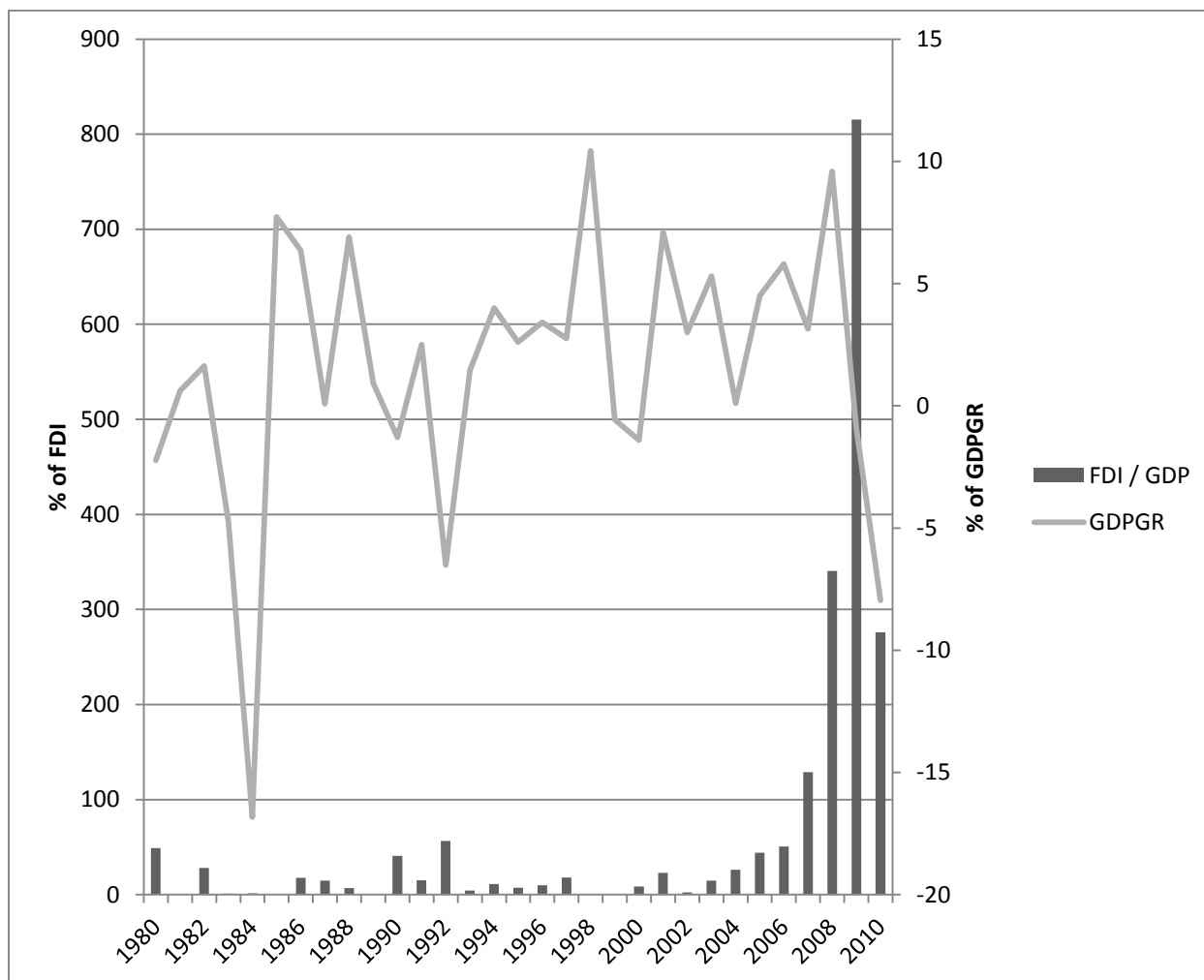
This connotes the existence of a positive correlation between them that is the existence of a causality relationship between the two variables in the case of Niger Republic. If this is confirmed, the second hypothesis of this study will then be confirmed. Here also, a closer look at the figures shows that the rate of change of GDP is not so volatile even though it fluctuates between -45% and 30% while the GDP growth rate is about 27%.

But for FDI, the rate of change is highly volatile. For instance the rate of change between one year and the next could be as high as 380% (between year 2000 and 2002, it approximates 100% and almost 250% between 2006 and 2008). Again, this confirms that the FDI line is not moving in the same rate with that of GDP in Figure 2.14. Even more, FDI has been reduced in 1980 by almost 73% compared to 1979 figure whereas the aggregate GDP for the same WAEMU region has increased by 27% in the same period (and it is the same trend for Benin, Burkina Faso, and Cote d'Ivoire). In 2008, FDI inflow increased by almost 350% and yet GDP is about 27%.

Moreover, it can also be observed here also that this does not show the contribution of FDI to growth, it only shows the relationship between the growth rates of the two variables that is GDP growth and change in FDI inflows in the economies under study (Benin, Burkina Faso, Cote d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo).



### 2.2.2.6 Change in FDI and GDP Growth in the Case of Niger Republic



Source: Computed by the Author, 2015.

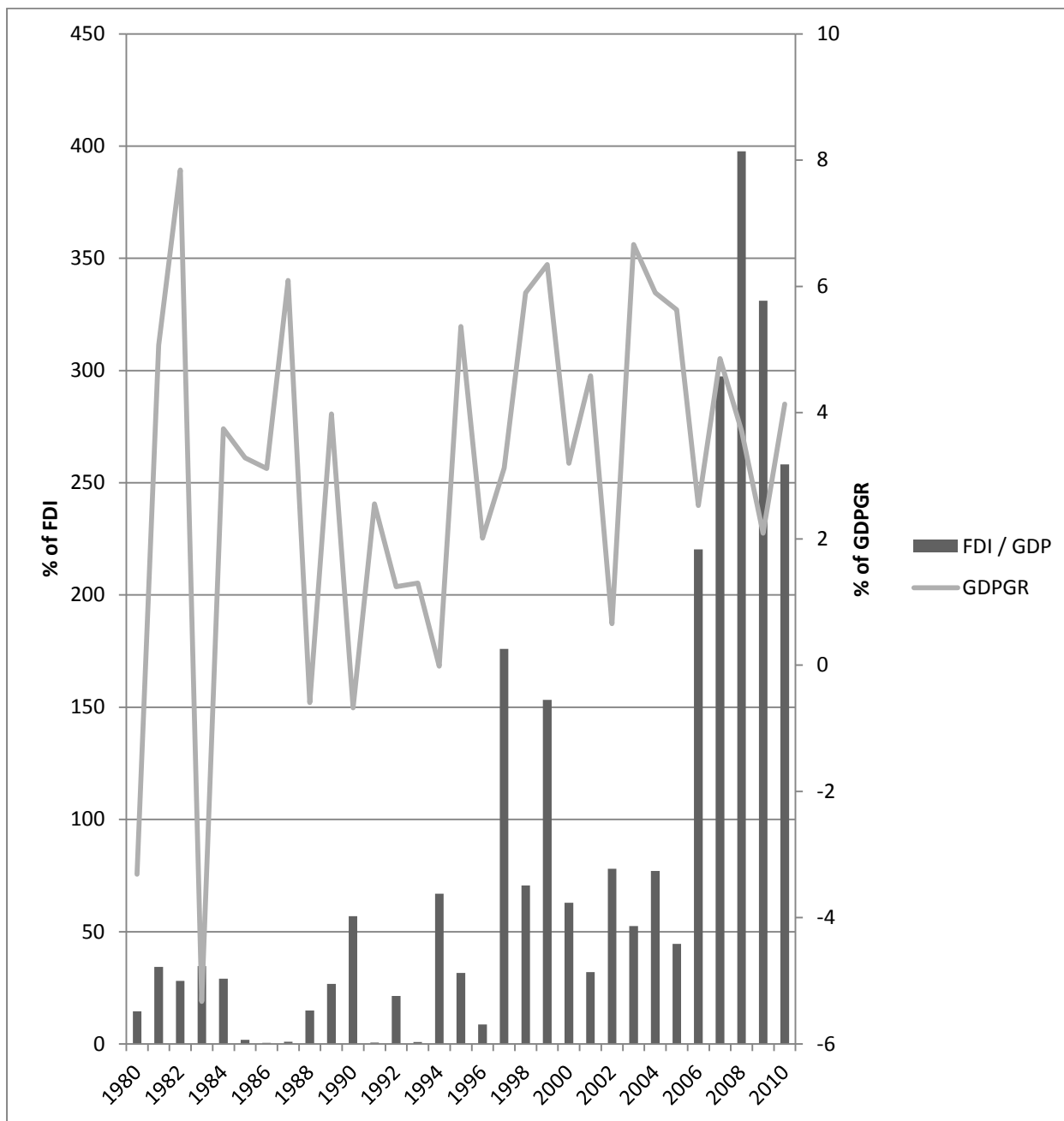
### **2.2.2.7 Change in FDI and GDP Growth in the Case of Senegal Republic**

In observing the Figure 2.15 below (page 46 of the current study), this study has been able to show the two variables (GDP growth and change in the flows of FDI) which are not moving at the same rates. This might suggest that FDI inflow is not the main determinant of growth not only in Senegal. A closer look at that figure (Figure 2.15) shows that the rate of change of GDP is not so volatile with the GDP growth rate fluctuating between -27% and 42%. But for FDI, its growth rate of change is very volatile by fluctuating between -22% and 100% that is to say that the rate of change between one year and the next could reach the pick of 100% (Figure 2.15 during 1982-84 and 2002-2003 for country Senegal).

Again, this confirms that the FDI line is not moving in the same proportion as that of GDP in Senegal. Even more, FDI has been reduced in 2009 by almost 23% compared to 2008 figure whereas the aggregate GDP for the same WAEMU region has increased by 25% in the same period (and it is the same trend for Benin and Cote d'Ivoire). In 1984, FDI inflow increased by 80% and yet GDP is around 0%.

Here also this study observes that Figure 2.15 does not show the contribution of FDI to growth, it only shows the relationship between the growth rates of the two variables that is GDP growth and change in FDI inflows in the Senegalese economy).

**Figure 2.15: GDP Growth and Change in FDI in Senegal Republic (1980-2010)**



Source: Computed by the Author, 2015.

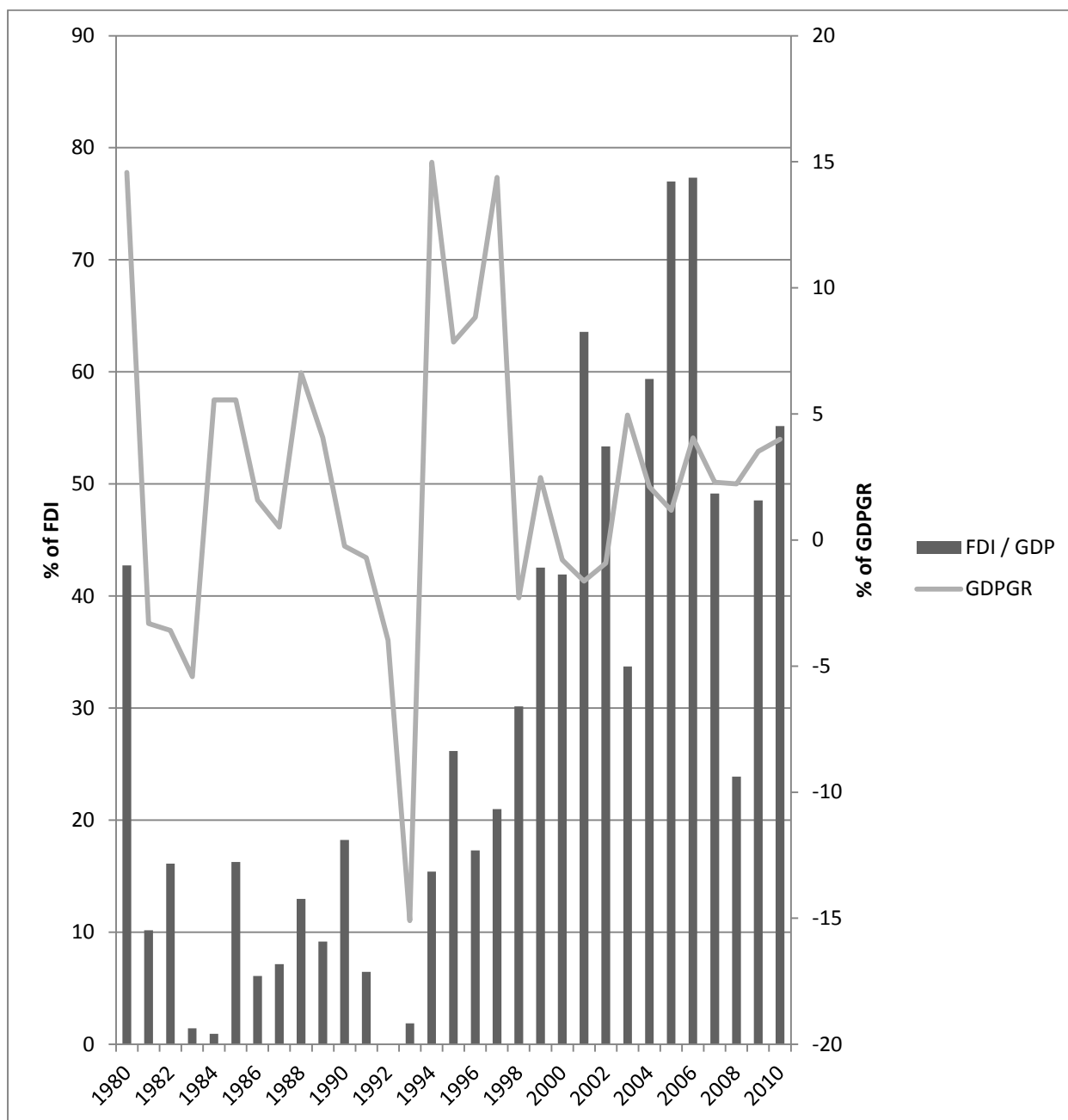
### **2.2.2.8 Change in FDI and GDP Growth in the Case of Togo Republic**

In observing the Figure 2.16 below (See page 48 of the current study), one can see that the figures show the two variables (GDP growth and change in the flows of FDI) which are not moving at the same rates. This might suggest that FDI inflow is not the main determinant of growth not only in WAEMU but in each one of its member countries. A closer look at that figures (Figure 2.16) shows that the rate of change of GDP is volatile. At any time during the period under study, the GDP growth rate is not more than 57%. But for FDI, the rate of change is very volatile. For instance the rate of change between one year and the next could be as high as 120% in 1994-1995 and 2008-2009.

Again, this confirms that the FDI line is not moving in the same proportion as that of GDP in all the figures. Even more, FDI has been reduced in 1985 by almost 25% compared to 1985 figure whereas the aggregate GDP for the same country is increased by 0.5% and FDI was about -50% while GDP is about 27% in 2007 for Togo.

Once again, it can also be observed that this does not show the contribution of FDI to growth, it only shows the relationship between the growth rates of the two variables that is GDP growth and change in FDI inflows in Togo for the period starting from 1980 and 2010.

**Figure 2.16: GDP Growth and Change in FDI in Togo Republic (1980-2010)**



Source: Computed by the Author, 2015.

Achievements made in the macroeconomic environment in WAEMU countries can be summarised by the macroeconomic indicators that are presented in Appendix I (Page 191). This Table indicates that the macroeconomic environment has stabilised after a long period of struggle. The economy grew at a rising GDP growth rate in each one of the 8 WAEMU countries during the period under study. There are some periods where this growth rate of

some of these indicators slow: the case (in Benin Republic) where FD and DMC slow down from 25.12% to 22.87% and 19.13% and 7.43% respectively between 1990 and 1995. Through BCEAO policy to stabilise the macroeconomic environment, inflation and exchange rate were mastered in the region during the period. This is relatively acceptable achievement that WAEMU and its member countries have recorded for more than 30 years.

In addition to the improved macroeconomic and political environment, the WAEMU governments pursue specific purposeful measures aimed at reducing the degree of intervention in private business. As a result, FDI has performed very well in the past ten years in most countries. During this period, FDI increases in absolute term in each one of the countries of the region. However, the increase has not benefited all WAEMU countries at the same rate. FDI has been concentrated in the Cote d'Ivoire, Mali, Senegal, Niger, Benin, Togo, Burkina Faso and Guinea-Bissau that are endowed most with natural resources (diamond, gold, cocoa, and natural attractions; See Appendix II, Page 193) and with stable macroeconomic and political environment.

Given the size of the task and due to the unavailability of data, it has not been possible to provide a detailed review of foreign investments in all sectors of the WAEMU region and in its member countries.

## CHAPTER THREE

### LITERATURE REVIEW

#### **3.0 Introduction**

In this chapter, various theoretical studies both on FDI determinants and on its impact on economic growth in developing and in developed countries are examined and reviewed. These various studies are reviewed with a view of gaining insight into the theoretical constructs that have influenced the current state of knowledge in the area of FDI (its determinants and impact on economic growth). Moreover, previous empirical studies are examined to determine their adequacy and to serve as guide (or input) into this study. In respect of this, this chapter is divided into four sections. It starts with the major theories that deal with FDI while Section 3.2 examines and reviews empirical studies that investigate the determinants and impact of FDI on economic growth in developed and developing countries. The Section 3.3 highlights the ongoing debates on FDI in the literature. And finally Section 3.4 presents the gaps which this study stands to fill.

#### **3.1 Theoretical Review**

##### ***3.1.1 Theories Reviewed***

This subsection reviews the theories that deal with the relationship between FDI and relevant variables including economic growth in a country; for economic theory offers various approaches that try to depict not only the determinants of FDI but also the relationship between FDI and economic growth in an economy. At this juncture, it will outline the variables identified in the literature that are correlated with the inflows of FDI. This will be followed by some researches that address the issue of FDI's impact on economic growth. Before taking the findings/discoveries to make econometric regressions in this study, an appropriate theory will be chosen for the current study. In order to realize advances in FDI thinking, it is important to

review the major theories that are related to FDI. The view of Agarwal (1980) cited in Moosa (2002) is considered. It states that FDI theories should be regarded as hypotheses, due to the fact that there are a plethora of competing theories with differing degrees of power. The major theories of FDI are: (1) Strategic behaviours, (2) Product life cycle model, (3) Industrial organization, (4) Internalisation paradigm, and (5) Eclectic Paradigm

### **3.1.1.1 Theory of Strategic Behaviour**

Knickerbocker (1973) developed a behaviour related approach to explain FDI in foreign markets. This author asserts that firms that operate within oligopolistic industries tend to follow the FDI moves of one another. This behaviour is an oligopolistic reaction where, ‘the decision of one firm to invest overseas raises competing firms’ incentives to invest in the same country’. FDI by one firm into a foreign country triggers other firms to follow suit. In this follow-the-leader type behaviour, the follower is fighting to minimize the first mover’s overall competitive advantage. When conducting FDI in new foreign markets, oligopolistic firms are not only fighting to be better than their rivals, they are also searching for how to increase their own profitability by exploring new opportunities. Knickerbocker states that investment in overseas markets can be characterized in one or more of the following ways: movement to supply the native market, investment to gain resources, and investment to gain a strategic export platform.

The reason one firm follows another is certainly logical, however Knickerbocker does not explain the triggers behind the initial investment by the first firm to move. Therefore, it is difficult to use Knickerbocker’s theory to correctly predict what actually motivated the first firm’s investment decision and why exporting or licensing are disregarded as alternatives.



### **3.1.1.2 Product Life Cycle Theory**

This concept is developed by Vernon (1966) in an effort to explain the overseas expansion behaviour of American MNEs after the Second World War. In this theory, the justification for FDI and expansion is due to the stage in the product's life, not the country where the FDI takes place.

Vernon (1966) proposes three stages in a product's life namely: first, the new product: Production happens at home due to the need for synthesis between the production and research and development teams, and close proximity to potential buyers. Price at home is inelastic at this stage because of increased demand, and innovative products can command a higher price. Here, the product can be advanced with the help of feedback from home customers. Secondly the maturing product: The product has become more established and export is taking place to developed countries as demand emerges. With an increase in demand, competition appears and innovative firms resort to FDI in developed countries to meet the needs of the demand. This action is taken to support sales and profits as the market and competition increases. At present, the country where the innovation is born is the net exporter and the foreign countries are net importers. And thirdly the product standardization: The product and the producing processes are no longer monopolized by the innovating firm. Competition on the basis of price pressures the innovating firm, and the decision is made to invest in developing countries in an effort to take back a cost advantage.

### **3.1.1.3 Industrial Organisation Theory**

One of the first persons to highlight the makeup of the market and the characteristics of inward investing firms when explaining FDI is Hymer (1976). He claims that if incoming foreign MNEs are the same as their already established domestic counterparts, they will not gain from entering the domestic market. This is because the incoming MNE will be hit by higher costs, including communication and transport, bringing in staff, cultural barriers,

language and the lack of an established network with the government and local businesses. Therefore, Hymer proposes incoming firms must have some specific advantages which will counter the associated challenges of entering a new country (Moosa 2002).

Kindleberger (1969) suggests the advantage possessed by a firm needs to be firm specific for FDI to be suitable and appropriate for transfer, and powerful enough to overcome the foreign disadvantages. Licensing such an advantage to a foreign firm could result in unwanted transfer of knowledge. As with any theory in the field of FDI, the time and location where it is conceptualized features heavily on its usefulness thereafter.

Critics point out that one of the main downfalls of this theory is that it does not clearly consider why expanding firms choose not to make the most of their advantages by increasing production in their home countries and exporting to foreign markets, which could be a substitute for FDI. The theory does explain why firms choose to invest in foreign countries, but it does not explain why investing firms choose country A over country B, and credit must be given here to Vernon's theory for addressing that (Moosa, 2002). Despite crucial limitations, Hymer's theory is powerful nonetheless and provides a pioneering foundation (Pitelis, 2006).

#### **3.1.1.4 Internalisation Theory**

Internalisation has been conceptualized by Coase (1937) who finds that FDI and associated internalisation take place when transaction costs (i.e. the costs of negotiating, enforcing and overseeing a contract) are high, and in such cases firms internally can be a suitable substitute for markets. Alternatively, when these costs are low, this positively supports the case for working in partnership with other firms, being part of the market, and using mutually beneficial licensing and franchising agreements. The firm is left to decide if it is more cost effective to own and run a facility overseas (internalize) or if it is better to establish a contract with a foreign firm to run, license or franchise it on their behalf (Wall & Rees, 2004).

The internalisation theory is developed from the imperfections in the market. Internalisation can be seen as a form of vertical integration, where the firm takes ownership of duties or goods that it formerly relied on a third party to provide. Transactions with other firms take time and costs can be incurred in tracking firms and uncontrollable events, therefore replacing these market inherent obstacles with internal processes can reduce insecurity. The internalisation argument provides reasons why firms prefer FDI in some circumstances over importing and exporting, and why they may refrain from licensing or franchising (Moosa 2002). The internalisation argument, which promotes centralisation, does not appear to have any theoretical foundations. Krugman (1995) supports this by stating that, ‘due to its generality, internalisation is seen as more of an approach than a theory’. This may not be beneficial in all firms, especially the innovative ones.

#### **3.1.1.5 Eclectic Paradigm**

In economics, the eclectic paradigm is a theory known as the OLI-Model or OLI-Framework. It is a further development of the theory of internalisation and published by Dunning in 1980. The theory of internalisation itself is based on the transaction cost theory. This theory says that transactions are made within an institution if the transaction costs on the free market are higher than the internal costs. This process is called internalisation.

For Dunning, not only the structure of organization is important but he added three more factors to the theory: (a) Ownership advantages (trademark, production technique, entrepreneurial skills, returns to scale). Ownership advantages refer to the competitive advantages of the enterprises seeking to engage in FDI. (b) Location advantage (advantages acquired from a particular location).

**Table 5.3.1.1: OLI Advantages and Forms of Market Entry**

		Categories of Advantages		
		Ownership Advantage	Internalisation Advantages	Location Advantages
Forms of market entry	Licensing	Yes	No	No
	Exports	Yes	Yes	No
	FDI	Yes	Yes	Yes

Source: Extracted from Dunning (1981).

The more the immobile, natural or created resources, which firms need to use jointly with their own competitive advantages, favour a presence in a foreign location, the more firms will choose to augment or exploit their ownership specific advantages by engaging in FDI; and (c) Internalisation advantages (advantages by own production rather than producing through a partnership arrangement such as licensing or a joint venture). Firms may organize the creation and exploitation of their core competencies. The greater the net benefits of internalizing cross-border intermediate product markets, the more likely a firm will prefer to engage in foreign production itself rather than license the right to do so.

### 3.1.1.6 Classical Theory of International Capital Flows

The existence of substantial international capital mobility in the real world has various implications for the output of the countries involved, for world output, and for rates of return to capital and other factors of production. A straightforward microeconomic apparatus is used to examine these effects as the analytical approach is presented in this section.

The figure below (Figure 3.1) portrays the marginal physical product of capital ( $MPP_K$ ) schedules for countries I and II. The analysis assumes that they are the only two countries in the world, that there are only the two factors of production (capital and labour) and that both countries produce a single, homogeneous good that represents the aggregate of all goods produced in the countries. In Microeconomic theory, a marginal physical product of capital schedule plots the additions to output that result from adding 1 more unit of capital to production when all other inputs are held constant. With constant prices, this schedule

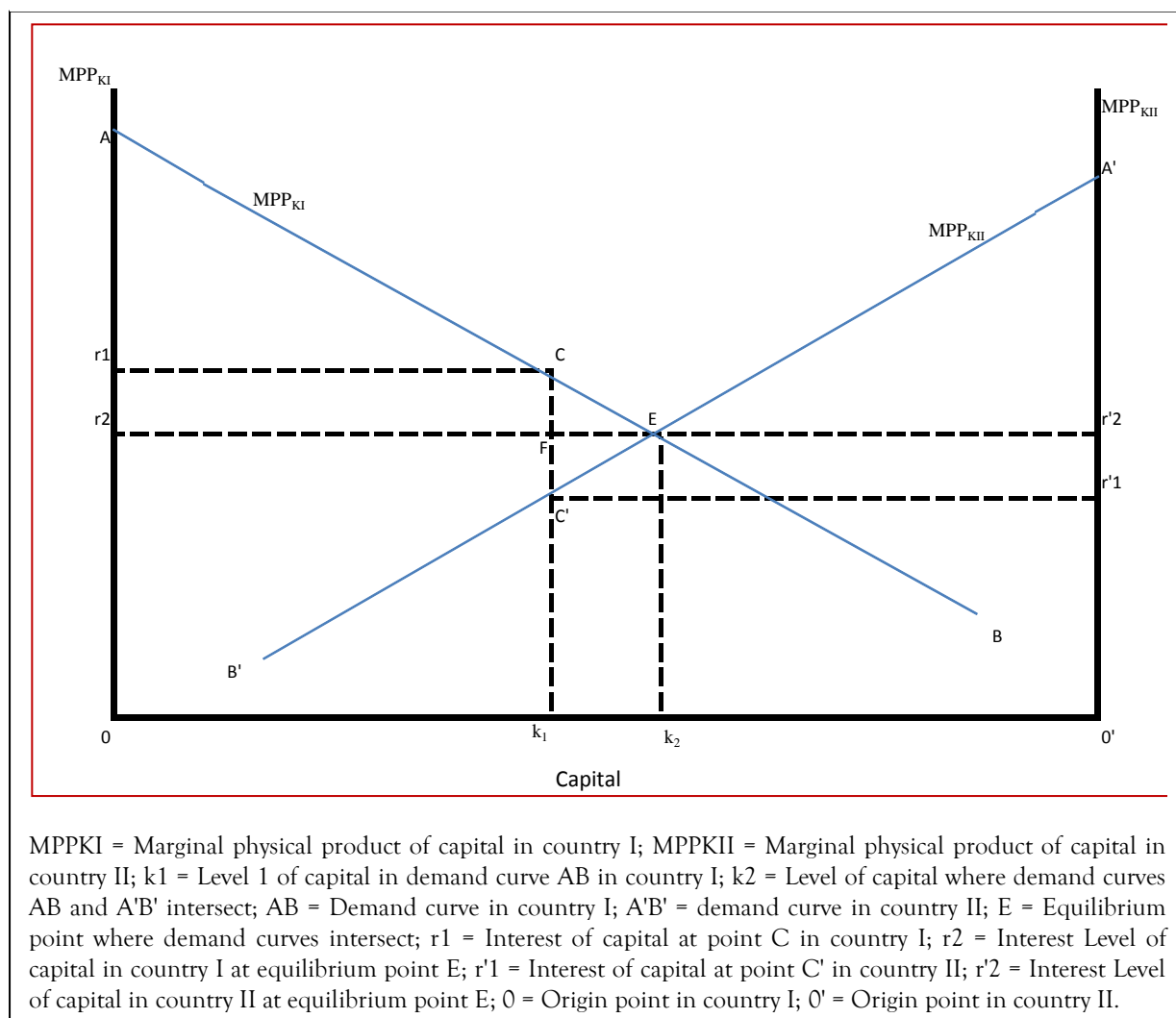
constitutes the demand for capital inputs derived from the demand for the product. Schedule AB shows the MPPK in country I ( $MPP_{KI}$ ) for various levels of capital stock measured in a rightward direction from origin 0. Analogously, schedule A'B' indicates the MPPK in country II ( $MPP_{KII}$ ), with the levels of capital stock measured leftward from origin 0'.

The demand ( $MPP_{KI}$ ) for capital in country I is plotted from the left, and the demand for capital in country II ( $MPP_{KII}$ ) is plotted from the right. The total available supply of capital in the two countries is demonstrated by the length of the horizontal axis from 0 to 0'; if markets are working properly, the productivity of capital (and thus the return) should be equal in both countries. Otherwise, there will be an incentive to shift capital from lower to higher-productivity uses. The equality condition occurs where the two demand curves intersect (point E). If E is attained, the return to capital is the same in both countries ( $0r_2 = 0'r'_2$ ) and  $0k_2$  capital is employed in country I and  $0'k_2$  capital is employed in country II, exhausting the total supply of capital jointly available.

Assume in the initial (pre-international-capital-flow) situation that the capital stock in country I is measured by the distance  $0k_1$  and capital in country II is measured (in the left-ward direction) by the distance  $0'k_1$ . The total world capital stock is fixed and equals to the distance  $00'$ , or the sum of  $0k_1$  and  $0'k_1$ . With the standard assumption of perfect competition, capital in country I will be paid at the rate equal to its marginal product ( $0r_1$ ), which is associated with point C on schedule AB. Similarly, capital in country II will be paid at the rate equal to its marginal product  $0'r'_1$ , which is associated with point C' on schedule A'B'. Remembering that total product that total product is equal to the area under the marginal product curve at the relevant size of capital stock, the total output (or GDP) in country I is equal to area  $0ACK_1$  and the total output (GDP) in country II is equal to area  $0'A'C'k_1$  (World output is of course equal to the sum of these two area). The total output in country I is divided between the two factors

such that the rectangle  $0r_1Ck_1$  is the total return (or profit) of capital (that is the rate of return  $0r_1$  multiplied by the amount of capital  $0k_1$ ), and workers receive the remaining output (or income) consisting of triangle  $r_1AC$ . In country II, by similar reasoning, capital receives total return (or profit) of area  $0'r'_1C'k_1$  and labour receives the area of triangle  $r'_1A'C'$ .

**Figure 3.2: Capital Market Equilibrium - The Two-Country Case**



This situation will change if capital is permitted to move between countries because the rate of return to capital in country I ( $0r_1$ ) exceeds that in country II ( $0'r'_1$ ). If capital mobility exists between the two countries, then capital will move from country II to country I as long as the return to capital is greater in country I than in country II. (It is assumed that the same

degree of risk attached to investments in each country or that the rates of return have been adjusted for risk. It is also assumed that there is no international movement of labour). In Figure 4.1, the amount of capital  $k_2k_1$  in country II moves to country I to take advantage of higher rate of return. This FDI from country II to country I bids down the rate of return in country I or  $0r_2$ . On the other hand, because capital is leaving country II, the rate of return in country II rises from  $0'r_1$  to  $0'r_2$ . In equilibrium, the  $MPP_K$  in the two countries is equal, and this is represented by point E, where the two  $MPP_K$  schedules intersect.

At this equilibrium, the rate of return to capital is equalized between the countries (at  $0r_2 = 0'r_2$ ), and there is no further incentive for capital to move between the countries.

What has been the effect of capital flow  $k_2k_1$  from country II to country I on output in the two countries and on total world output? As expected, total output has risen in country I because additional capital has come into the country to be used in the production process. Before the capital flow, output in country I is area  $0ACK_1$ , but output has now increased to area  $0AEk_2$ . Thus, output in country I has gone up by the area  $k_1CEk_2$ . In country II, there has been a decline in output. The before-capital-flow output of  $0'A'C'k_1$  has been reduced to the after-capital-flow output of  $0'A'Ek_2$ , a decrease by the amount  $k_1C'Ek_2$ . However, world output and thus efficiency of world resource use has increased because of the free movement of capital. World output has increased because the increase in output in country I (area  $k_1CEk_2$ ) is greater than the decrease in output in country II (area  $k_1C'Ek_2$ ). The extent to which world output has increased is indicated by the triangular shaded area  $CEC'$ . Thus, just as free international trade in goods and services increases the efficiency of resource use in the world economy, so does the free movement of capital – and of factor of production in general. In addition, free movement of factors can equalize returns to factors in the two countries, just as free international trade in the Hecksher-Ohlin model could lead to factor price equalization between

the countries. In recognition of these parallel implications of trade and factor mobility for efficiency of resource use and return to factors, Economists often stress that free trade and free factor mobility are substitutes for each other.

Finally, unambiguous statements can be made about the impact of the capital flow on national income [or gross national product (GNP) – the product of a country’s nationals or citizens] in both countries. The income of country I’s citizens consists of total wages plus total profits. Again capital flow has increased total wages by area  $r_2r_1CE$  and has decreased the returns to the owners of capital by area  $r_2r_1SEE$ . Comparison of these two areas indicates that the income of workers rises by more than the income of capital owners falls in country I: the conclusion is that national income or GNP – the income of the factors of production – in country I increases because of the capital inflow (by triangular area  $FCE$ ), (GDP – the total output produced within the country – for country I has risen by  $k_1CEk_2$ . However, area  $k_1FEk_2$  of that amount accrues to country II’s investors). Analogously, the capital outflows in country II causes total wages to fall by area  $r'_1r'_2EC'$  and the total returns to owners of capital to by area  $r'_1r'_2FC'$ . National income (GNP) in country II increases by amount  $C'FE$ . Country II thus has higher income (GNP) despite the fact the output produced in II (its GDP) has fallen from  $0'A'C'k_1$  to area  $0'A'Ek_2$ . Hence both countries gain from international capital mobility. Restrictions on the flow of FDI have an economic cost of lost efficiency in the world economy and lost income in each of the countries. Thus, according to the classical theory of international capital flow, FDI is a function of international differences in the rates of return on capital. But the existing empirical work does not provide any conclusive evidence for this hypothesis.



### 3.1.1.7 Neoclassical Theory of International Capital Flows

According to some researchers (Lanha, 2006), it is important to investigate the precise nature of the relationship between FDI and economic growth; the preconditions for FDI to promote growth and the identification of the mechanisms through which growth can be achieved. One of the first approaches is the Neoclassical Growth Theory.

Frequently and over the years, most developing countries' balances of payments are imbalanced. Therefore, the necessity for external financing becomes evident from the relationship between national income analysis and balance of payments analysis. Most the time, there is an internal macro imbalance between national expenditure and national saving in these LDCs. In such cases and according to Meier (1995) there will be an external imbalance in the balance of payments. Based on this, the relations set forth below have, in fact, general validity. They hold for neoclassical and Keynesian analyses. The analysis of this section is in the view of Samuelson's neoclassical synthesis, combining neoclassical and Keynesian elements.

The starting point is a simple macroeconomic equation picturing the composition of the gross social product Q:

$$Q = C + I + G + (X - M) \dots\dots\dots (3.1.1)$$

In this definitional relation, C is consumption; I gross investment, G government expenditure, X exports, and M imports. The disposal of national income is given then by:

$$Y = C + S + T \dots\dots\dots (3.1.2)$$

Where Y is national income, S gross saving, and T taxes.

Now, in a macro-economic supply-and-demand equilibrium the social product Q must equal national income and its spending Y (Meier, 1995). This leads to a relationship between national-income analysis and balance of payments analysis:

$$(I + G) - (S + T) = (M - X) \dots\dots\dots (3.1.3)$$

This fundamental relationship shows how a country is spending on investment and government expenditure and how the required resources are released through private savings and taxation, given a certain state of the balance on current account. If domestic demand exceeds supply, there will be a resource gap within the economy, and then imports will be greater than exports and vice versa. Therefore, the domestic resource gap spills over into the balance of payments and creates a foreign-exchange gap. The way to validate investment and government expenditures in real terms when insufficient resources are being released at home by savings and taxes is by importing goods and services. For a country with a developing economy, it is assumed to have low private savings, negative financial government balance and a deficits on current national account that could be shown by relations such as,  $I > S$  and  $G > T$ , and  $M > X$ . In real conditions, when imports exceed exports, the country confronts a foreign exchange gap that has to be filled. The financial inflow to fill the foreign-exchange gap allows the real capital transfer to proceed. This can be done by losing foreign-exchange reserves or through external financing. For a country with a developing economy, the sources of external financing are foreign aid, foreign loans by government to government, the World Bank, the IMF and commercial banks, or private foreign investment, portfolio investment and foreign direct investment (Meier, 1995). If Keynesian perspective is considered, the amount of capital inflow depends on the target level of GNP.

In order to support the target GNP, the gross capital inflow must cover the balance of trade deficit  $(M - X)$  generated at that level of GNP, plus any servicing of external debt,

outflow of interest, dividends, and profits on private foreign investment, capital flight, and the desired build up of foreign- exchange reserves. If domestic investment is then to be high, the inflow of foreign capital will have to be large (Meier, 1995). This process can be pictured differently, for example by the two-gap analysis of capital (Chenery and Bruno, 1962; Chenery and Strout, 1966). Foreign capital resources could fill both, the savings gap and the foreign-exchange gap. In filling the savings gap, foreign capital provides an equivalent additional to the capital stock. If, however, the foreign-exchange constraint prevents the country from importing goods and services that are required to complement domestic capital in production, then the inflow of foreign capital will not only add additional capital but will also allow domestic capital that, would otherwise be redundant to be utilized in production (Chenery and Bruno, 1962).

But an increase in domestic savings ( $S$ ) should also relax the foreign-exchange constraint through the release of resources for import-substitute industries or for exports. According to Gordon (1994), neoclassical economists believe that investment and capital market operations can be used to obtain desirable macro-economic outcomes. This belief is, however, based on certainty about future, self-regulating market, free competition, rational and self interested behaviour, which all represent the main characteristics of neoclassical economics. If size and structure of GDP per head are important criteria in economic development literature, neoclassical macro-economists analyse the level and the growth in national income or output. “The level of output is determined in the labour market and the growth in output is determined in capital market, both under condition which guarantee full employment and economic security. The assumption which produced this ideal state of affairs is certain knowledge of the future and perfectly competitive markets for producers, labour and capital” (Gordon, 1994). This in fact implies, in a Walrasian vein, a real exchange model

where Say's Law holds and involuntary unemployment cannot occur; nor does money play any role.

If the neoclassical equilibrium model is to provide the basis for development plans, exogenous elements are required to bring about changes, for example economic growth and development. In fact, the Walrasian equilibrium implies a maximum level of production and full employment of all resources, including of course labour; moreover the rates of interest and profits are zero in a long-run equilibrium position.

In a Schumpeterian vein, these elements could be discoveries of new raw material reserves, innovations leading on to improve methods of production (technical progress), new products, and foreign resources such as aid, loans or FDI. All these elements would counter the diminishing returns occurring in production which bring about the Walrasian equilibrium (Gordon, 1994). Thus Schumpeter dynamic entrepreneur and foreign resources are the crucial factors bringing about economic development. At present, neoclassical economists consider FDI as particularly important.

However, in the two-gap analysis, development may be hampered for structural reasons: there may not be sufficient domestic substitutes for necessary imports, there may be a fixed coefficient between imports and domestic output, and exports may face a highly inelastic demand. Again, FDI might be helpful in these cases since bottlenecks could be relieved.

The analysis of this section shows how fragile neoclassical analysis is because of its very problematic assumptions. It also indicates why FDI emerges as more preferred in countries with a developing economy. Given this, the next section is presented, a rather robust alternative to the neoclassical model that is the classical-Keynesian model. This model will enable this study to take a more differentiated view on the impact of FDI on LDCs.

### **3.1.1.8 New Trade Theory of International Capital Flows**

The new trade theory emerging during the early 1980s generated more realistic general equilibrium trade models which could handle increasing returns to scale, imperfect competition and differentiated products. These models are based on the ideas of ownership and location advantages presented in the OLI paradigm. The new trade theory has been able to incorporate the relationship between FDI and trade. However, early models are not very helpful in handling MNEs and FDI due to the assumption of single-plant national firms, excluding the existence of MNEs, but more recent models allow for MNEs to arise endogenously.

New trade theory models distinguish between horizontal and vertical FDI. In the case of vertical FDI, the MNE decomposes the production process into stages according to factor intensity. Production activities are located in order to exploit differences in factor cost and therefore minimise production costs. Horizontal FDI, on the other hand, implies that the MNE is locating production close to the final market. The production process is duplicated and demand in foreign markets is served by local production, reducing trade costs.

Helpman (1984) and Markusen (1984) are among the first trade models that incorporate MNEs. As for Helpman, he presents a model of vertical MNEs and FDI. The paper develops a general equilibrium trade model based on differences in factor endowments. Firms are modelled as having one labour-intensive activity and one capital-intensive activity. Factor intensities differ between the two activities and they can be separated geographically. MNEs only arise if the differences in factor endowments are large enough. Markusen also provides a general equilibrium model but incorporating horizontal MNEs. The model is based on firm-level scale economies. The firm possesses a technical advantage, possibly in the form of an innovation, which can be used in several production facilities simultaneously without reducing its marginal productivity. The MNE therefore has an incentive to duplicate the production process, resulting in horizontal FDI.

The distinction between horizontal and vertical FDI as modelled in Helpman (1984) and Markusen (1984) and similar papers has important implications for the relationship between FDI and trade. In the case of horizontal FDI, a substitutional relationship is expected. The MNE produces the good locally instead of exporting it from the home country. In the case of vertical FDI, it is expected that FDI has a complementary relationship to trade. Vertical FDI does not substitute for exports. Instead, demand for intermediate goods from the MNE affiliate can result in an increase in exports to the host country.

Brainard (1993) shows how including intermediate goods into a trade model allows for the possibility of a complementary relationship between FDI and trade. He develops a 2-country, 2-sector general equilibrium model with a three-stage production process where firms choose between exporting and cross-border investment. The decision depends on the tradeoffs between proximity to the market and concentration advantages due to scale economies at the plant level. These tradeoffs differ according to production stages and FDI and trade can exist simultaneously. One of the equilibrium outcomes implies that FDI stimulates intra-firm trade in intermediate goods while at the same time reducing trade in final goods.

The model in Markusen & Venables (1999) is similar to Brainard (1993) in the sense that MNEs tend to arise when firm-level scale economies and transport costs are large compared to plant-level scale economies. However, since the Markusen & Venables model has asymmetries in size and endowment between economies, the model is more in line with observations of actual flows of trade and investment than Brainard (1993). Suppressing MNEs in the model makes it possible to find the effect of FDI on trade. Starting from a situation with only national firms and introducing MNEs reduces the volume of trade as affiliate sales substitute for trade.

The distinction between horizontal and vertical FDI has been extended in recent term called knowledge-capital models. These models, developed by Carr et al. (2001) and Markusen & Maskus (2002) and others, add more realism since they allow combinations of horizontal MNEs, vertical MNEs and national firms to arise endogenously. Knowledge-capital models consequently succeed in incorporating both a complementary and a substitutional relationship between FDI and trade.

The probability of this type of FDI emerging in the model is determined by the interaction of shipping costs and cost advantages between the countries. An export-platform model consequently predicts a complementary relationship between inward FDI and host country exports. Barry & Bradley (1997) argue that Ireland has functioned as an export-platform for U.S. MNEs. It is possible that export-platform FDI is important for WAEMU and its member countries due to the importance of exports for these economies.

### **3.2 Debates on FDI Inflows in Developing Countries**

Over the time, there are debates among scholars and researchers on FDI, especially on its impacts and benefits towards developing countries. In terms of the contribution of FDI to a national economy, three schools of thought emerged: the Pro-foreign investment advocates, the anti-foreign investment advocates and those who defend that there is no statistically significant relation between FDI and economic growth.

#### ***3.2.1 The Pro-Foreign Investment Advocates***

This first group believes that FDI is an important tool for economic growth and that many benefits of FDI are provided both to the host and home countries (Romer, 1993; Anyanwu, 1998; Alfaro et al., 2003). For instance, Alfaro (2003) says that in addition to the direct capital financing it supplies, FDI can serve as a source of valuable technology and know-how to the host developing countries by fostering linkages with local firms. These

technological innovations by MNEs play a central role in the economy and they are some of the most important areas where MNEs serve as catalyst to growth in developing countries. And these benefits from FDI also include filling saving resources gap, foreign exchange gap and balance of payments.

It is widely recognized that FDI produces economic benefits; and the well known classical benefits of FDI include transfer of technology, higher productivity, higher incomes, more revenue for government through taxes, enhancement of balance of payments ability, employment generation, diversification of the industrial base and expansion, modernization and development of related industries, foreign exchange, competition and by enhancing access to foreign markets (Romer, 1993; Brooks, 2006;). So, there are many benefits of FDI both to the host country and the home country, these benefits are noted by different authors. For instance, Alfaro (2003) argues that in addition to the direct capital financing it supplies, FDI can serve as a source of valuable technology and know-how to the host developing countries by fostering linkages with local firms. Through FDI, “scarce” capital can be made available to the developing countries. This is very crucial to economic growth. Foreign capital, through FDI, allows for the transfer of technology (particularly in the form of new varieties of capital inputs) that cannot be achieved through financial investments or trade in goods and services. That is why Jones (1996) notes that the transfer of capital by multinational enterprises can supplement domestic savings and contribute to domestic capital formation for countries that are capital constrained and this can increase domestic investment. Therefore, it is argued that FDI can also enhance domestic investment and innovation (Brooks, 2006). Unlike the microeconomic evidence, macroeconomic studies (using aggregates FDI flows) generally suggest a positive role for FDI in generating economic growth, especially in particular conditions. Borensztein et al. (1998) argue that FDI has a positive growth effect when the country has a highly educated workforce that allows it to exploit FDI spillovers. While before them, Blömstrom et al. (1994) finding no evidence that education is critical, argue that FDI has



a positive growth effect when the country is sufficiently wealthy. Later, Alfaro et al. (2004) find also that FDI promotes economic growth in economies with sufficiently developed financial markets. Balasubramanyam et al. (1996) stress that openness is crucial for obtaining the growth effects of FDI. According to Mottaleb (2007), countries with larger GDP and high GDP growth rate which maintain business friendly environment with abundant modern infrastructural facilities (such as internet) can successfully attract FDI and FDI on the other hand significantly affect economic growth of the host country.

At times FDI could be provided in form of technology. Else, the amount of money that comes into a country through FDI can be utilised to buy or to import technology from other countries (Wang, 1990). This is an indirect way in which FDI plays an important part in the context of economic development (Wang). FDI also can be helpful in assisting the host countries to set up mass educational programs that help to educate the disadvantaged sections of the society. Such assistance is often provided by the non-governmental organizations in the form of subsidies. The countries that get FDI from another country can also develop the human capital resources by getting their employees to receive training on the operations of a particular business.

Other researchers find that FDI helps in the creation of new jobs in some particular countries and it also enables them to get access to a better lifestyle and more facilities in life (Hayami, 2001; UNCTAD, 2004). They therefore argue that by bring in advanced technology and skill set in a country, FDI assists in increasing the income that is generated through revenue realized through taxation. For them, FDI also plays a crucial role in the context of rise in the productivity of the host countries. Moreover, they believe FDI to be able to improve the infrastructural condition of a country (Asiedu, 2002, 2004). The standard of living of the general public of the host country could be improved as a result of the FDI made in a country. The health sector of many a recipient country has been benefited by the FDI.

Thus for the advocates of FDI, it plays an important role in the overall economic and social development: increased output, increased employment, increased exports, increased tax revenues, realization of scale economies, provision of technical and managerial skills and of new technology, weakening of power of domestic monopoly, the international capital mobility can operate as a form of antitrust policy.

Moreover and according to Feldstein (2000), international flows of capital reduce the risk faced by owners of capital by allowing them to diversify their lending and investment. Also, the global integration of capital markets can contribute to the spread of best practices in corporate governance, accounting rules, and legal traditions. And finally, the global mobility of capital limits the ability of governments to pursue bad policies.

Those who support FDI policy in developing consider that inflows of FDI are accompanied by many advantages to the host countries. For instance, multinational operations can stimulate host country production in additional industries through creating a demand for intermediate goods. If host country firms can supply these intermediate goods the result can be an increase in domestic investment. In the FDI literature that supports FDI inflows (Anwara and Nguyenb, 2010), it is discovered the following advantages or benefits that inflows of foreign capital can bring in a host country: increased output; increased wages; increased employment; increased exports; increased tax revenues; realization of scale economies; provision of technical and managerial skills and of new technology; weakening of power of domestic monopoly. Lipsey and Sjöholm (2004) take a more favourable view from reviewing the micro literature and argue that there is evidence of positive effects. Alfaro (2003) finds little support for FDI having an exogenous positive effect on economic growth, echoing previous work by Borensztein, De Gregorio, & Lee (1998) and Carkovic & Levine (2002).

### ***3.2.2 The Anti-Foreign Investment Advocates***

Despite the benefits that can be derived from FDI, it should be noted that it can also bring about some negative impacts. So, the second group associate themselves with the cost of FDI to host countries and assert that FDI damages host countries' economies by suppressing domestic entrepreneurship, introduction of unsuitable products and technology, subjecting host countries to exploitation and stimulating class conflict leading to negative contribution (Haddad & Harrison, 1993; Aitken & Harrison, 1999). For instance activities of MNEs can displace local firms that cannot cope with the competition from foreign firms, thereby reducing the growth of the local firms (Jones, 1996). Also if proper regulation is not in place in the host country, FDI can serve as a source of capital flight from the developing countries to the developed ones. Also, due to MNEs' higher production capacity, FDI can cause large scale environmental damage which sometimes is not well taken care of especially in the mining sector (Bora, 2002). In contrast to the studies that find a positive effect of FDI on economic growth, others argue that (theoretically) FDI can exert a negative effect on the host country's economy. In line with this view, some research works have claimed that the contribution of FDI to growth is not positive. That is why Carkovic & Levine (2002), who employ two models for the empirical work and used data for 75 countries, conclude that FDI inflows do not have a robust independent influence on growth. Therefore, if multinational finances its investment through borrowing in the host country financial market it can result in an increase in the interest rate causing domestic investment to be crowded out. This is an example of how FDI can have a negative effect on economic growth. In line with this view, Akinlo (2004) reports that the effect of FDI on the Nigerian economy is not significant; this is supported by a recent study by Ayanwale (2007). Likewise, De Mello (1999) finds that FDI has a negative growth effect in non-OECD countries, which might be due to the fact that FDI reduces total factor productivity growth. The name "Foreign Direct Investment" usually brings to mind a significant contribution of FDI to domestic investment. However, there has been a lot of

scepticism concerning the contribution of inward FDI to domestic investment, especially the anti FDI advocates. The arguments against FDI are that it may cause capital flight which may lead to net capital outflow and thus create balance of payment difficulties; it also creates income distribution problems when it competes with home investment. FDI may also actually be capital intensive, which may not fit in the factor proportions of the recipient country.

Also if proper regulations are not in place in the host country, FDI can serve as a source of capital flight from the developing countries to the developed ones. For instance due to some specific risks in the host country (economic and political risks), there could be large flow of capital from the host country to the home country if there is no legislation against such practice. This can have adverse effect on the host economy especially if such capital is sourced for within the host country. Also, due to multinationals' higher production capacity, FDI can cause large scale environmental damage which sometimes is not well taken care of especially in the mining sector (Brooks, 1998). It should be noted that the net contribution of FDI to growth can only be measured empirically. One of the most indirect disadvantages of FDI is that the economically backward section of the host country is always inconvenienced when the stream of FDI is negatively affected.

FDI can cause an adverse impact on the host country's commodity terms of trade: a country's Commodity Term of Trade is defined as the price of a country's exports divided by the price of imports ( $P_X/P_M$ ). Because increased exports drive down the price of exports relative to the price of imports. It has been observed that FDI, sometimes, cause what is called Transfer Pricing: This is another way by which country commodity terms of trade could deteriorate. If a subsidiary in developing country is prevented from sending profit to home-country directly or is subject to high taxes on profits, then the subsidiary can reduce its recorded profits in the developing country by understating the values of its exports to other

subsidiaries in other countries and by overstating the value of its imports from other subsidiaries. What happens is that the country's recorded terms of trade is worse than they would have been if a true market price is used for these transactions.

Carkovic & Levine (2005) use the GMM dynamic panel data estimator with data averaged over seven 5-year periods between 1960 and 1995 for a sample of 68 countries. Using econometric specifications that allow FDI to influence growth differently depending on national income, trade openness, education and domestic financial development, they find that FDI does not exert a robust and positive impact on economic growth. While Noormamode (2008), examining the causality between FDI and economic growth A panel VAR model that relies on the GMM estimator for the period 1980-2004, finds no clear evidence on the growth-effects of FDI. Rather, he argues that the factors that cause GDP and FDI depend on income. He also comes to the conclusion that, on the basis of simple scatter plots, there is no clear association between FDI and economic growth.

In a review of micro data on spillovers from foreign-owned to domestically owned firms, Gorg and Greenaway (2002) conclude that the effects are mostly negative. In line with this and through an empirical research on the effects of FDI on economic growth mainly focuses on the US and the western European countries, Carkovic and Levine (2002) investigate the causal relationship between FDI and economic growth on the panel of 72 countries with the method of OLS and the GMM for the period 1970-1995. Their results show that there is no robust in the relationship between FDI and economic growth.

In contrast, the dependency theories suggest that dependency on foreign investment is expected to produce negative impact on growth and income distribution because FDI creates monopolies in industrial sector, which in turn leads to underutilisation of domestic resources (Bornschieer & Chase-Dunn, 1985). This implies that the economy is controlled by foreigners

and rather than developing organically, it grows in a disarticulated manner. Therefore, the multiplier effect is weak and leads to stagnant growth in developing countries (Adams, 2009).

However, the existence of some FDI's costs should not prevent of moving forward in the quest of foreign capital to fill the gap between national low savings and the desired investment in LDCs. In reconciling the pros and cons of the role of MNCs who provide FDI capital, Todaro & Smith (2012) assert that the real debate ultimately centers on different ideological and value judgements about the nature and meaning of economic growth and development, and the principal sources from which it springs. However, the valid conclusion is that foreign private investment may be an important stimulus to economic growth and social development as long as the interest of MNCs and host countries government coincide and that MNCs who provide FDI capital adopt a long-run perspective by adapting their technologies of production to the resources of developing nations.

### ***3.2.3 The Inconclusive Case***

And finally (in these debates) the third group is that of those who argue that there is no match (Lall, 2002). They find no statistically significant relationship between FDI and economic growth in any country. For the advocates of this third view on FDI growth impact, the relationship between FDI and economic growth is not clear. For some of them the impact of FDI on a host economy either positive or negative is not clear meaning that it is ambiguous.

In line with this view, Alfaro (2003) suggests, in an empirical analysis using cross-country data for the period 1981-1999, that total FDI exerts an ambiguous effect on growth. From the results, FDI in the primary sector tend to have a negative effect on growth, while investment in manufacturing has positive effect while evidence from the service sector is ambiguous.

Noormamode (2008) provides no evidence on the growth-effects of FDI. By using Arellano-Bond methodology, he comes to the conclusion that FDI ratio does not Granger-cause GDP per capita. Also, in the literature, the consensus seems to be that FDI increases growth through productivity and efficiency gains from FDI. However, empirical evidences are not unanimous. For developed countries, concrete and available evidence supports that growth is positively related to the presence of foreign firms (Kawai, 1994 and Kinda, 2010). But in the case of developing countries, the results are not so clear. Some researchers find positive spillovers (Blomström & Sjöholm, 1999; Nuno and Fontoura, 2007) and others such as Aitken et al. (1997) report limited evidence. Many reasons can justify these mixed results: the expected forward and backward linkages may not necessarily be there (Aitken et.al., 1997 and Pangestu, 1997).

The review shows that the debate on the impact of FDI on economic growth is far from being conclusive. Further, the empirical linkage between FDI and economic growth in Nigeria (for instance) is yet unclear, despite numerous studies that have examined the influence of FDI on Nigeria's economic growth with varying outcomes (Odozi, 1995; Adelegan, 2000; Akinlo, 2004; Ayanwale, 2007). The role of FDI seems to be country specific, and can be positive, negative or insignificant, depending on the economic, institutional and technological conditions in the recipient countries (Ayanwale, 2007). Most studies on FDI and growth are cross-country evidences, while the role of FDI in economic growth can be country specific (Ogiogio, 1995; Ariyo, 1998; Adelegan, 2000; Akinlo, 2004). Further, only a few of the country specific studies actually took conscious note of the endogenous nature of the relationship between FDI and growth in their analyses, thereby raising some questions on the robustness of their findings. Finally, the relationship between FDI and growth is conditional on the macroeconomic dispensation the country in question is passing through.

To sum up the ongoing debates on inflows of FDI in developing countries, it can be said that scholars and economic researchers' points of view on the effects of FDI on growth are not unanimous. For some economists, FDI has a positive impact on growth (Brooks, 2006; World Bank, 1998); for others, FDI has an adverse impact on growth (Jones, 1996; Aitken and Harrison, 1999) and for the last group of these researchers, this impact is inconclusive (Nunnenkamp and Spatz, 2002; Blalock and Gertler, 2008; and Kimura and Todol, 2010). Even though there is discordance in points of view of economic researchers on the impacts of FDI on economic growth, the majority of these researchers argues that many benefits are associated to the inflows of FDI, specifically, it enhances growth. In essence, the impact of FDI on growth of an economy may be country and period specific, and as such there is the need for country specific studies.

Carkovic & Levine (2002) took another look at the effects of FDI on economic growth in a large sample of countries. After using a battery of tests and techniques to control for these problems, they conclude that growth and a good macroeconomic environment are what drive FDI, rather than the other way around. They also argue that the exogenous component of FDI does not exert a robust, independent influence on growth. This is confirmed by Lipsey when surveying the macro empirical research where he concludes that there is no consistent relation between the size of inward FDI stocks or flows relative to GDP and growth.

### ***3.2.4 Summary of The Debates on FDI***

In sum, the literature reveals the existence of diversity in terms of data coverage and empirical methodology. The above-mentioned studies suggest that the FDI-growth relationship is not unique. Likewise, the investigation by UNCTAD (1999) finds that FDI has both positive and negative impacts on economic growth depending on the variables that are entered in the equation. So, FDI contributes to economic growth directly by creating employment and indirectly through the creation of employment opportunities. Indirect employment created by



foreign affiliates in host countries can be large, probably larger than that created directly. With the growth of international production, the share of employment creation by foreign affiliates is growing and this is conditioned by a number of other factors, such as trade openness, financial depth, human capital, macroeconomic stability, political stability, lagged values of FDI and of GDP, and others that deserve to be included in the empirical setting of this current study. FDI inflows could bring important benefits to the recipient economies in the form of capital inflows, technology spillovers, human capital formation, international trade integration, enhancement of enterprise development and good governance. However, FDI could have negative effects in such areas as market structure and balance of payments and could lead to crowding-out of domestic enterprises, as well as other social impacts. Government policies are therefore needed to enhance benefits and minimize negative effects. Eregba (2012) draw a similar conclusion when saying that two main points can be made. First, FDI can contribute to economic development of host country in two main ways, augmentation of domestic capital and enhancement of efficiency through the transfer of new technology. Second, FDI has both benefits and costs and its impact is determined by the country specific conditions in general and the policy environment in particular in terms of the ability to diversify, the level of absorption capacity, targeting of FDI and opportunities for linkages between FDI and domestic investment. Therefore, the discussion on the impact of FDI in an economy is not conclusive, however, what is clear is that FDI has both benefits and costs and that FDI is necessary but not a sufficient condition for economic growth. The next step in the quest of the nature of relationship between FDI and growth and other relevant variables included in the models used in this study will necessitate an empirical action.

Based on these mixed theoretical views, many empirical studies have been carried out to examine the relationship between FDI not only with economic growth but also with other variables.

### **3.3 Empirical Review**

Many researchers undertake empirical studies in order to establish robust results in regard to the causal relationship of FDI to economic growth, its determinants and impact. The FDI growth empirical literature like the theoretical literature gives ambiguous findings. The results of these studies show varied evidence with some indicating that FDI causes economic growth by filling gap between desired investments and internal mobilized savings (Hayami, 2001; Todaro & Smith, 2003), others suggest either a non-significant or a negative effect of FDI on economic growth (De Mello, 1999; Brooks et al., 2003; Akinlo, 2004; Anwara & Nguyenb, 2010) and in some cases there is no reported relationship (Ayanwale, 2007). The related literature can be broadly divided in two branches: the first one focuses on the determinants of FDI while the second branch examines the impact of FDI in economic growth.

#### ***3.3.1 Empirical Review on FDI Determinants***

The purpose of this section is to provide a survey of the possible variables, identified as potential factors that influence FDI decision, assuming *a priori* homogenous economic consideration, so as to identify gaps related to FDI in WAEMU because the determinants of FDI in one region may not be the same in another (Asiedu, 2002). Likewise, the determinants of FDI in countries within a region may be different from one to another during the same period. Therefore, empirical studies that attempt to estimate the importance of the different determinants of FDI concentrate more on attraction factors, i.e., locational factors, since available data make it difficult to identify which countries the investments come from. The next first set of studies various factors that determine FDI in a country.

Nunnenkamp and Spatz (2002), studying a sample of 28 developing countries during the 1987-2000 period, find significant Spearman correlations between FDI flows and per capita GNP, risk factors, years of schooling, foreign trade restrictions, complementary production factors, administrative bottlenecks and cost factors. Moreover, population, GNP

growth, firm entry restrictions, post-entry restrictions, and technology regulation are proved to be non-significant.

However, when regressions are performed separately for the non-traditional factors, in which traditional factors are controls (population and per capita GNP), only factor costs produce significant results and, even so, only for the 1997-2000 period. As for Tsai (1994), he analyses the decades of 1970 and 1980 and addresses the endogeneity problem between FDI and growth by developing a system of simultaneous equations. Also, FDI is alternately measured as a flow, and as a stock. Market size turns out to be more important for FDI flows than growth. The trade surplus presents a negative sign and is significant for FDI, while the flow of FDI decreases as the nominal wage decreases.

Campos and Kinoshita (2003) use panel data to analyse 25 transition economies between 1990 and 1998. They reach the conclusion that for said set of countries FDI is influenced by economy clusters, market size, the low cost of labour, and abundant natural resources. Besides all these factors, the following variables presented significant results: sound institutions, trade openness, and lower restrictions to FDI inflows.

While Garibaldi et al. (2001), based on a dynamic panel of 26 transition economies between 1990 and 1999, analyse a large set of variables that are divided into macroeconomic factors, structural reforms, institutional and legal frameworks, initial conditions, and risk analyses. Their results indicate that macroeconomic variables, such as market size, fiscal deficit, inflation and exchange regime, risk analysis, economic reforms, trade openness, availability of natural resources, barriers to investment and bureaucracy all have the expected signs and are significant.

Also, Nonnemberg and de Mendonça (2005) emphasise on the fact that empirical studies that estimate the importance of the determinants of FDI focus more on attraction

factors, i.e., locational factors, because it is difficult to get with accurate precision the sources of some investments, unless a large set of countries and years is analysed. In their quest to shed light on the determinants of FDI in LDCs, these authors undertake a study where they perform an econometric model based in panel data analysis for 38 developing countries (including transition economies) for the period of 1975-2000. Among their major conclusions, they find that FDI is correlated to level of schooling, economy's degree of openness, risk and variables related to macroeconomic performance like inflation, risk and average rate of economic growth. Their results also show that FDI has been closely associated with stock market performance. Their causality test proves that GDP leads to FDI, but not vice versa.

Loungani, Mody, Razin & Sadka (2003) employ a gravity model of bilateral FDI and portfolio capital flows in order to explain determinants of the mobility of financial capital across countries. These authors identify three main categories of variables that significantly explain FDI inflows in the data. First, a positive correlation between the industry specialization in the source countries and FDI flows into the destination countries is shown to exist. Second, the ease of communications between the source country and the destination country (as measured by telephone densities in each country) is found to have positive effects on the size of FDI flows. Thirdly, they found that countries with higher debt-equity ratios of publicly traded companies attract less FDI flows.

### **3.3.1.1 FDI and Economic Growth**

Chang et al. (2005), studying economic determinants of FDI in LDCs, examines the determinants of private FDI by using a single-equation econometric model for 36 LDCs for the year 1983. He finds that the market size of the host country as measured by per capita GDP is found to be the most important factor attracting FDI with cost of factor (such as wage cost) and investment climate in the host country are other important variables which influence FDI.

According to him, the inflows of per capita public aid and economic instability, proxied by the volatility of prices, are other important factors affecting the flow of FDI. While larger market size and increased inflow of public aid attract FDI, the higher wage cost, poor investment climate, and economic instability in the host country reduce FDI. The model used to obtain these results is found to be structurally stable across the countries.

In a previous study, Root & Ahmed (1979) analyse empirically through a panel data analysis the determinants of non-extractive FDI for 70 LDCs for the period 1966-70. They focus on testing the significance of the economic, social and political variables in explaining the determinants of FDI. Their conclusion is that LDCs that attract the most non-extractive FDI are those that have substantial urbanisation, a relatively advanced infrastructure, comparatively high growth rates in per capita GDP, and political stability. These two authors did not look at the impact of neither financial development nor exchange rate on the inflows of FDI in these countries even though exchange rates are not constant for the period.

Chete (1998) and Anyanwu (1998) separately examine, with a time series analysis, the determinants of FDI in Nigeria using error correction model. Chete concludes that the growth of the economy (proxied by GDP growth rate) exerts positive effect on FDI but becomes significant only at the third lag. At the same time, Anyanwu finds that the size of the domestic market, trade openness and exchange rate as the core determinants of FDI flows into the same country, Nigeria. The latter concludes that there is a positive relationship between the growth of the Nigerian economy and FDI. But both of them do not look at the reverse effect of FDI on growth. Even though Anyanwu considers exchange rate in his study, he as previous studies, uses time series method and its properties.

### **3.3.1.2 FDI and Natural Resources**

The availability of natural resources might be a major determinant of FDI to host country. FDI takes place when a country richly endowed with natural resources lack the amount of capital

or technical skill needed to extract or/and sale to the world market. Foreign firms embark on vertical FDI in the host country to produce raw materials or/and inputs for their production processes at home. This means that certain FDI may be less related to profitability or market size of host country than natural resources which are unavailable to domestic economy of the foreign firms (De Gregorio, 1992; Sachs and Warner, 1995).

The works of Dupasquier & Osakwe (2006), Aseidu (2002), and Deichmann et al. (2003), for example, report that the availability of natural resources has a positive and significant effect on FDI inflows. Also, Mohamed and Sidiropoulos (2010), using a panel of 36 countries (12 Middle East and North Africa (MENA) countries and other 24 developing countries), conclude that the key determinants of FDI inflows in MENA countries are the natural resources, the size of the host economy, the government size, and institutional variables. Asiedu (2006), using a panel data for 22 countries in Sub-Saharan Africa (SSA) over the period 1984-2000, find that countries that are endowed with natural resources or have large markets attract more FDI. In addition, as for Hailu (2010) conducts an empirical analysis of the demand side determinants of the inflow of FDI to African nations and concludes that natural resources, labour quality, trade openness, market accession and infrastructure condition positively and significantly affect FDI inflows but the availability of stock market has positive but insignificant effect.

According to Astatike & Asefa (2005) most studies argue that FDI inflow is attracted largely by natural resource endowments. In his study that uses panel data analysis, he discovers that countries like Angola, Botswana, Namibia and Nigeria have received FDI targeted at the oil and minerals sectors. This view is confirmed by many other researchers (Basu & Srinivasan, 2002; Asiedu, 2002; Aremu, 2005; Mottaleb & Kalirajan, 2010). That is why Morisset (2000) reports that, on a survey conducted of 29 African countries, there is a high correlation between FDI inflows and total value of natural resources in each country.

There are also studies that deal with trade openness linked to FDI. Therefore, Lemi & Asefa (2003) argue that most African countries, in their attempt to attract FDI, have liberalised trade and create enabling environment in recent decades. These authors observe that Ethiopia, like many African countries, take some steps towards liberalising trade and the macroeconomic regime as well as introducing some measures aimed at improving the FDI regulatory framework. Their study which first deals with the nature and determinants of FDI in Ethiopia over the period 1974-2001 also gives an extensive account of the theoretical explanation of FDI as well as reviewing the policy regimes, the FDI regulatory framework and institutional set up in the country over the study period. The same study also undertakes empirical analysis to establish the determining factors of FDI. Their findings show that growth rate of real GDP, export orientation, and liberalisation, among others, have positive impact on FDI. On the other hand, macroeconomic instability and poor infrastructure have negative impact on FDI. They conclude that liberalisation of the trade and regulatory regimes, stable macroeconomic and political environment, and major improvements in infrastructure are essential to attract FDI to Ethiopia.

Asiedu (2002) has also expressed a similar view when analysing through a panel data method the impact of natural resources, infrastructure and openness to trade on FDI flows to SSA. Her findings indicate that FDI in Africa is not solely determined by availability of natural resources and that governments can play an important role in directing FDI through trade reform, macroeconomic and political stability, efficient institutions and improvement in infrastructure.

Another important variable for explaining the geographical distribution of FDI is agglomeration economies. When agglomeration economies are present, new investors mimic past investment decisions made by other investors in choosing the location. By co-locating next to other firms, they benefit from positive spillovers from investors already in place. The

usual sources for these positive externalities are knowledge spillovers, specialized labour and intermediate inputs.

Above all, there is a recurrent question that many FDI researchers want to address i.e. “what are the host country characteristics that attract FDI?”. The emerging consensus is that the answer crucially depends on the motives of foreign investors in undertaking those investment projects. Accordingly, three types of FDI are found in the literature. The first is market-Seeking FDI which purpose is to serve local and regional markets. This type of FDI is also called horizontal FDI as it involves replication of production facilities in the host country. Second, when firms invest abroad to acquire resources not available in the home country, FDI is said to be resource or asset-Seeking. Resources may be natural resources, raw materials or low-cost inputs such as labour. Especially in the manufacturing sector, when multinationals directly invest in order to export, factor cost considerations become important. Third, foreign investment is said to be efficiency-seeking when the firm can gain from the common governance of geographically dispersed activities in the presence of economies of scale and scope. Bevan & Estrin (2000) find the evidence that this is the case for the first wave of European Union accession countries.

FDI would thus go to countries with favourable initial conditions. On the basis of a survey of Western manufacturing companies, Lankes & Venables (1996) find that the main purposes of FDI in transition economies before 1995 varied substantially across countries. They find that there had been a noticeable shift from the region’s projects to serve local markets to those to serve export markets.

To sum up this sub-section, it can be inferred that all these suggest that countries that possess a large market, low-cost labour, abundant natural resources, economic and political stability and close proximity to major Western markets would attract large amounts of FDI inflows.



### 3.3.1.3 FDI and Exchange rate

High exchange rate value relative to the US dollar, which implies a depreciated currency, will *ceteris paribus* attract higher FDI while the reverse ultimately dissuades foreign investment. This is because exchange rate allows determining the effect of relative wealth and relative labour costs on FDI inflows. Thus, a depreciation of a country's exchange rate will increase the relative wealth of foreign firms and lead to an increase in foreign purchases of domestic assets. In addition, a depreciation of a country's foreign exchange will lead to capital inflows as foreign countries try to take advantage of relatively cheaper domestic labour. Raman-Raju & Gokhale (2012) try to establish a causal relationship between the nominal exchange rate and FDI in India using a time series data between 1992 and 2010. They check whether the fluctuation in the exchange rate in turn causes the change in the quantum of FDI inflows and vice-versa which is of importance in the wake of unprecedented depreciation of Indian Rupee against US dollar. Their analysis uses unit root test and Johenson cointegration test to show whether the variables under consideration exhibit stationarity and a long run association respectively. The test indicates absence of any long term association between the two variables under consideration. In that context, it appears that the data is not stationary at level and is stationary at first difference. The Vector Auto regressive (VAR) model depicts that the coefficients do not have any long run association.

Through this study, the impact of exchange rate and inflation rate will be tested in order to find out to which extent these factors are relevant for FDI inflows in WAEMU and its member countries. In this study, inflation is a proxy of macroeconomic stability.

Also, exchange rate policy plays a vital role in the economic growth of LDCs. Countries that pursue major and appropriate exchange rate reform to eliminate real exchange rate misalignment are very likely to record gains in real per capita GDP. As Agarwala (1983)

has shown, although there are many forms of distortion that can affect macroeconomic performance, real exchange rate misalignment is by far the single most important of these.

Studies examining the macroeconomic effects of exchange rate on FDI centered on the positive effects of an exchange rate depreciation of the host country on FDI inflows, because it lowers the cost of production and investment in the host countries, raising the profitability of foreign direct investment. The wealth effect is another channel through which a depreciation of the real exchange rate could raise FDI. By raising the relative wealth of foreign firms, a depreciation of the real exchange rate could make it easier for those firms to use retained profits to finance investment abroad and to post collateral in borrowing from domestic lenders in the host country capital market (Froot, 1991 and Loungani & Razin, 2001). There is a large literature on different forms of spillovers from inward investors in the form of new technologies, ideas and capital (Blomstrom, Kokko & Globerman, 2001).

#### **3.3.1.4 FDI and Financial Development**

The theoretical impact of FDI on the economy has been proved to be ambiguous. The effect of FDI on the economy may crucially depend on the absorptive capacities of the home country. While various types of absorptive capacities have been discussed in the literature (human capital, trade regime, infrastructure, etc.), one of these capacities that has gained increasing attention is the development of local financial markets (Hermes and Lensink, 2003; Omran & Bolbol, 2003; Alfaro *et al.*, 2004; Durham, 2004). In the literature, there are several ways in which a higher level of financial development allows the host country to exploit FDI more efficiently. Firstly, the provision of more credit facilities enables entrepreneurs who lack internal funds to purchase new machines, adopt new technology, and hire better skilled managers and labours (Omran & Bolbol, 2003; Alfaro *et al.*, 2004). Secondly, the development of domestic financial markets also relaxes credit constraints faced by foreign firms, allowing them to extend their innovative activities to the domestic economy (Hermes and Lensink,

2003). Finally, the presence of an efficient financial system facilitates FDI to create backward linkages, which are beneficial to the local suppliers in the form of improved production efficiency (Alfaro *et al.*, 2004; Ang, 2008). Therefore, development of the financial systems plays a crucial role in allowing the host country to absorb the spillovers associated with FDI. In other words, the level of financial development in the host country affects its ability to absorb the benefits of FDI. In this way, finance enters into the growth equation through the interaction with FDI. Many empirical studies have been undertaken in this regard among which the followings:

Saibu et al. (2011) examine the effects of financial development and FDI on economic growth in Nigeria. They modify the standard endogenous model to incorporate FDI and financial development as the determinants of growth in the long run. Using time-series data from 1970 to 2009, they test for the time-series properties of the variable and adopt the Autoregressive Distributed Lag (ARDL) technique to estimate the model. Their results show that financial development and FDI have negative effects on economic growth in Nigeria during the period under study. Their results, further, show that the effect of FDI differs significantly when different measures of financial market are used. Specifically FDI is only significant when combined with stock market indices. Finally, their results also show that financial market liquidity matters for economic growth in Nigeria.

Nwokoma (2004) provides evidence that financial development has contributed positively to economic growth. Therefore, in his study, the author looks empirically at the relationship between FDI and growth. Finally, he concludes that there is a relationship between FDI and financial development.

As Nasser & Gomez (2009) observe, financial development is important in FDI decisions because it affects the cost structure of investment projects. Confirming this, Kinda (2010) observes that financial development is an engine of economic growth, providing better

business opportunities for customers and firms. This is proxied by the ratio of domestic credit to the private sector to GDP. This is an indicator of domestic financial development, potentially an important factor in driving international finance. High domestic credit to the private sector also implies abundance of domestic capital and as such, foreign capital in the form of FDI would not be needed. Indeed, a high level of "credit to the private sector" is an indication of the abundance of domestic capital. As such, foreign capital in the form of FDI would not be needed as much hence a negative relationship between private credit and FDI inflows. Another possible explanation is that such negative relation is another manifestation of the negative relationship that exists between FDI and other types of flows, mainly bank loans (Fernandez-Arias & Hausmann, 2000).

Albulescu et al. (2010) point out a new FDI determinant, financial stability, and they confirm that financial system stability represents an attractive factor for the foreign investors and can be considered as a FDI determinant, alongside the categories mentioned above. Using a large sample of Central and Eastern European countries and panel data techniques, they investigate the impact of the financial stability on the FDI flows. The financial stability's measure is based on a financial stability aggregate index and they use as control variables the number of inhabitants, the trade openness, the labour productivity, and the landing rate. Their results show that the stability of the financial systems played a significant role in attracting FDI inflows in Central and Eastern Europe during the period 1998-2008.

Alfaro (2003), using cross-section data, finds that poorly developed financial infrastructure can adversely affect an economy's ability to take advantage of the potential benefits of FDI. These authors, examining the roles of FDI and financial development in the process of economic development (using Thailand as case study), argue that better developed financial systems allow an economy to exploit the benefits of FDI more efficiently. The estimation draws upon an unrestricted error-correction model to avoid omitted lagged variable

bias, and an instrumental variable estimator to correct for endogeneity bias. Using annual time-series data from 1970 to 2004, their results show that financial development (FD) stimulates economic growth whereas FDI impacts negatively on output expansion in the long run. However, an increased level of FD enables Thailand to gain more from FDI, suggesting that the impact of FDI on growth can be enhanced through financial development.

Hermes and Lensink (2003) argue that the development of the financial system of the recipient country is an important precondition for FDI to have a positive impact on economic growth. For these authors, a more developed financial system contributes positively to the process of technological diffusion associated with FDI. They investigate (empirically) the role the development of the financial system plays in enhancing the positive relationship between FDI and economic growth. Their empirical investigation strongly suggests that this is the case. Of the 67 countries in data set, 37 have a sufficiently developed financial system in order to let FDI contribute positively to economic growth.

In another study, Alfaro et al. (2004) examine the various links among FDI, financial markets, and economic growth. They explore whether countries with better financial systems can exploit FDI more efficiently. In this empirical analysis, they use cross-country data for the period 1975-1995, and show that FDI alone plays an ambiguous role in contributing to economic growth. However, they argue that countries with well-developed financial markets gain significantly from FDI. Their results are robust.

Omran & Bolbol (2003) find that the emerging literature on FDI stipulates that FDI's positive impact on growth depends on absorptive capacities, especially on the financial development. Their study finds that Arab FDI have a favourable effect on growth when interacted with financial variables at a given threshold level of development. It also finds that FDI Granger causes financial development. So, their conclusions that emerge are that domestic

financial reforms should precede policies promoting FDI, investment measures should enhance the environment for all foreign-investors and domestic alike.

### **3.3.1.5 FDI and Human Capital**

Human capital, both in terms of quantity and quality, is another important factor that promotes labour intensive and export oriented FDI in particular. Noorbakhsh et al. (2001), using secondary school enrolment ratio and the number of accumulated years of secondary and tertiary education in the working age population as a proxy to human capital, find human capital to be a significant determinant of FDI inflows for 36 developing countries. Before him, Lewis (1999) provides support to the proposition that human capital in host countries is a key determinant of FDI in LDCs. This author notes that education, especially in technical discipline, provides least developed countries with the skills that are required by the MNCs. Salisu (2003) through a time series data analysis and its properties finds that the low level of human capital, as measured by the illiteracy rate, has a discouraging effect on FDI in Nigeria.

To the question “what explains the differential response to FDI at different levels of income?” the prime suspect is human capital, a variable that is positively correlated with the level of income per capita (Lewis,1999). It may take a well-educated population to spread the benefits of newly introduced technologies to the whole economy. This is the idea explored by Borensztein, De Gregorio, & Lee (1998) who analyze the growth effect of FDI in a panel data set of 69 developing countries during the period 1970-89. In an initial analysis, FDI is found to have a positive effect on growth beyond the direct investment effect, but not in general a statistically significant effect. However, when the authors construct a new variable (the FDI variable multiplied by a measure of human capital) the effect turns out to be both positive and significant. This finding shows that the interaction of FDI and human capital has an important impact on growth. But this effect is observed only when the level of human capital, as measured by years of secondary school enrolment of the male population, is sufficiently high.

This result infers that, for a country to take advantage of technological diffusion due to FDI, it must have a high level of human capital. Before Borensztein et al. (1998), Balasubramanyam et al. (1996) confirm the positive interaction between human capital and FDI. They also find that more open economies experience greater benefits from FDI.

Also, Nonnemberg & de Mendonça (2005) perform an econometric model based in panel data analysis for 38 developing countries for the 1975-2000 period. Among their major conclusions, FDI is correlated to the level of schooling, economy's degree of openness, risk and variables related to macroeconomic performance like inflation, risk and average rate of economic growth. Also, their results show that FDI has been closely associated with stock market performance. Finally, a causality test between FDI and GDP is performed. They discover that GDP leads to FDI. A final issue of robustness is the interaction of FDI with human capital, this having been shown to have a significant positive effect on economic growth as suggested in Borensztein et al. (1998).

The study by Reiter et al (2010) shows that FDI inflows are more strongly positively related to improvement in human development when FDI policy restricts foreign investors from entering some economic sectors and when it discriminates against foreign investors relative to domestic investors. In addition, it finds that the relationship between FDI and improvement in human development is also more strongly positive when corruption is low. Markusen (2002) finds that knowledge capital is important for FDI inflows while Rodriguez and Pallas (2008) find that human capital is the most important determinants of inward FDI. Nonnemberg & Cardoso de Mendon Fica (2004), in a panel data analysis for 38 developing countries (including transition economies) for the 1975-2000 period, conclude that FDI is correlated to level of schooling, the economy's degree of openness, risk and variables related to macroeconomic performance like Inflation, risk and average rate of economic growth. Alsan et al (2006) in a panel data analysis of 74 industrialized and developing countries over 1980-

2000, find that gross inflows of FDI are strongly and positively influenced by population health (life expectancy) as a proxy of human capital development in low and middle-income countries. Noorbakhsh et al. (2001) and Miyamoto (2008) show the positive effect of human capital generally on FDI inflows while Tarzi (2005) and Baeka & Okawa (2001) cite workers' productivity and Khair-UZ-Zaman et al. (2006) and Jeon & Rhee (2008) cite labour cost.

Since the presence of skilled human capital is usually felt as a relevant pull factor for foreign MNCs, the level of human capital is measured by gross secondary school enrolment. Secondary school attainment of the host country represents accumulated stock of human capital, which is a measure of labour quality and indicative of the level of education and skills of the workers within a country. This variable is expected to be positively related to FDI inflows. Finally, human capital is found, in the literature, to be statistically significant determinant of FDI. This variable is one of the most important determinants which, with time, bring FDI to get more importance in the host country.

### **3.3.1.6 FDI and Infrastructure Development**

It has been observed that foreign affiliates depend on the host country's infrastructure in several aspects: they wish to ship their manufactures or exploited products which require a good transport infrastructure. Also, they have a need for communication with high technology media and thus require a well functioning telecommunication and internet network.

Loree and Guisinger (1995), studying the determinants of FDI by the United States in 1977 and 1982 (both towards developed countries as well as toward developing countries), conclude that variables related to host country policy are significant in developed countries only when infrastructure is an important determinant in all regions.

Easterly (2003) finds that infrastructure promotes FDI; more specifically, Campos and Kinoshita (2002) show that telecommunication is important for FDI in Asia and Bellak et al.



(2010) conclude that Information Computer Technologies (ICT) is an essential factor for FDI in the enlarged EU.

Studies by Musila & Sique (2006) and Dupasquier & Osakwe (2006) on FDI show that FDI in Africa is dependent on the development of infrastructure. Also, other studies on developing countries (Cotton and Ramachandran, 2001; Mengistu and Adams, 2007), emerging economies (Zhang, 2001), Western Balkan Countries (Kersan-Skabic and Orlic, 2007) and Southeast European Countries (Botric & Skuic, 2006) show the significant role of infrastructure development in attracting the inflow of FDI. However, the results of a study on US FDI flow to Africa by Nnadozie & Osili (2004) find less robust evidence on the role of infrastructure on FDI. Results from Anyanwu & Erhijakpor (2004) indicate that telecommunications infrastructures, economic growth, openness significantly increase FDI inflows to Africa while credit to the private sector, export processing zones, and capital gains tax have significantly negative effect.

Gholami et al (2006) use a sample of 23 developed and developing countries observed for the period 1976-99 based on ICT data availability to show that in developed countries, existing ICT infrastructure attracts FDI; a higher level of ICT investment leads to a higher level of FDI inflows but in developing countries the direction of causality goes instead from FDI to ICT. Findings by Sekkat & Veganzones-Varoudakis (2007) indicate that infrastructure availability, openness, and sound economic and political conditions are important for South Asia, Africa, and the Middle East in attracting FDI. In a study of South East European Countries, Dauti (2008) identifies ICT infrastructure market as the major factor positively influencing FDI inflows while Seeking factors (GDP growth, GDP per capita, GDP level) have perverse signs, showing significantly negative effects on FDI inflows.

### **3.3.1.7 FDI and Macroeconomic and Political Stability**

Economic and political stability are other variables that are found to impact the movement of FDI. Obwona (2001) notes, in his study on the determinants of FDI and their impact on growth in Uganda, that macroeconomic and political stability and policy consistency are important parameters that determine the flows of FDI into Uganda. He also argues that FDI affects growth positively but insignificantly. Ekpo (1995) reports that political regime, real income per capita, and other variables explain the variance of FDI in Nigeria. For non-oil FDI, however, Nigeria's credit rating is very important in drawing the needed FDI into the country.

Some researchers point out the fact that high inflation and volatile inflation increase uncertainty and thus, lead to higher investment risk. Consequently, FDI will be discouraged in such conditions. Asiedu (2004), Campos and Kinoshita (2003) as well as Trevino et al. (2002) stress that the inflation level is an important factor for FDI inflows. Serven and Salimano (1992) prove that exchange rate uncertainty, i.e. volatility, discourages private investment, precisely FDI into developing countries. In line with this view, it can be inferred that inflation is used as an indicator of macroeconomic instability. A stable macroeconomic environment promotes FDI by showing less investment risk.

It is widely acknowledged that when a country is politically unstable its economic growth is hindered. Political risk is usually measured by the probability of a change of government, as well as political violence as measured by the sum of frequency of political assassinations, violent riots and politically motivated strikes. Asiedu (2002) uses average number of assassinations and revolutions to measure political instability. Easterly and Levine (1997) and Anyanwu (1998) used the number of coups d'état a country suffers to measure political instability. Number of coups d'état and other forms of political violence are used in this study. Based on the paucity of data, a dummy variable is used in this study. It is expected an indirect relationship between both the political and economic instability and FDI inflows.

Wheeler & Mody (1992) and Singh and Jun (1995) find that political risk and administrative efficiency are insignificant determinants of FDI. On the other hand, Root & Ahmed (1979) and Schneider and Frey (1985) find that political strikes and riots and regular constitutional changes in government significantly determine FDI inflows. The mixed result might stem from the problems of getting reliable proxies for the qualitative phenomena, such as political instability (Lim, 2001). It has been argued that macroeconomic stability, government policies and political variables are more important determinants of FDI in Africa than the market variables. Schneider & Frey (1985) used politico-economic model which simultaneously includes economic and political determinants of FDI in explaining the flow of FDI in 80 less developed countries. They find that the most important determinant of FDI is a country's level of development, measured by real per capita GNP and the balance of payments. The higher the per capita income and the lower the balance of payments deficit, the higher the amount of FDI attracted.

Social and political instability are variables that are hard to define and to measure in a way that can be used for econometric work even though it impacts economic growth. According to Saibu et al. (2011), the general opinion as supported by many of the reviewed literature shows that democracy is generally supportive of positive macroeconomic performance. For Alesina & Dani (1994), political instability can be viewed in two ways: the first one emphasises executive instability where political instability is defined as the "propensity to observe government changes". These changes can be constitutional (that is take place within the law) or unconstitutional (through coup d'état); while the second one is based upon indicators of social unrest and political violence.

Regarding the political determinants of FDI, Schneider and Frey, in alignment with the view of Asiedu (2004), conclude that political instability significantly reduces the inflow of

FDI. Alesina & Dani (1994) and Asiedu (2004) also arrive at similar conclusions when examining the impact of economic and political uncertainty on FDI.

### **3.3.1.8 FDI and Technology Transfer**

There are studies that have been conducted in order to identify the link between FDI and transfer of technology. Borensztein, De Gregorio & Lee (1998) test the effect of FDI on economic growth in a cross-country regression framework, utilizing data on FDI flows from industrial countries to 69 developing countries over the last two decades. Their results suggest that FDI is an important vehicle for the transfer of technology, contributing relatively more to growth than domestic investment. However, the higher productivity of FDI holds only when the host country has a minimum threshold stock of human capital. Thus, FDI contributes to economic growth only when a sufficient absorptive capability of the advanced technologies is available in the host economy. So, these authors see FDI as an important vehicle for the transfer of technology, contributing to growth in larger measure than domestic investment. In this regard, Findlay (1978) postulates that FDI increases the rate of technical progress in the host country through a 'contagion' effect from the more advanced technology, management practices used by foreign firms.

In line with Findlay (1978) and Borensztein et al. (1998), Falki (2009) highlights that FDI is viewed as important catalyst for economic growth in the developing countries. According to him, FDI affects economic growth by stimulating domestic investment, increasing human capital formation and by facilitating the technology transfer in the host countries. The main purpose of his study was to investigate the impact of FDI on economic growth in Pakistan, for the period 1990-2006. The relationship between FDI and economic growth is analyzed by using the production function based on the endogenous growth theory, other variables that affect economic growth such as Trade, domestic capital, labour and human

capital are also used. His results show a positive and statistically significant relation between the real per-capita GDP and FDI.

### **3.3.1.9 FDI and Trade Openness**

A lot of studies have found that countries that are opened will attract more FDI (Asiedu, 2002; Noorbakhsh *et al*, 2001; Morisset, 2000). In the FDI empirical literature, the most widely used measure of openness is the share of trade in GDP. Thus, the positive relationship between trade volumes and FDI implies that countries that wish to attract more FDI should increase trade. In the literature, other measures have been used including indicators like the ratio of export and/or import to GDP such as: Singh & Jun (1995), Dees (1998); average tariffs by Brainard (1997). Wheeler & Mody (1992) use an index which covers a broad range of factors besides import/export restriction, including local content requirement, expropriation risk, currency convertibility, and profit repatriation controls. Not surprisingly, conflicting results occur, although more studies show a positive correlation between FDI and trade openness.

Trade openness is considered as one of the external sources of financial resources that can boost economic growth. From this angle, there is a possible link (that is long run relationship) between FDI and trade openness. Several other studies find that countries that have a higher degree of openness<sup>1</sup> attract more FDI. Albuлесcu *et al*, (2010) find export orientation (export as percentage of GDP) to be the strongest factor explaining why a country attracts FDI. Chakrabarti (2001) finds openness to trade being positively correlated with FDI. Morisset (2000) finds a positive and significant correlation between trade openness and the investment climate for 29 African countries. Studying factors that significantly influence the long-run investment decision-making process of investors in 19 Sub-Saharan African countries, Bende-Nabende *et al*. (2002) find market growth, export-orientation policy and

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<sup>1</sup> In most studies openness is measured by the ratio of trade (or exports and imports) to GDP.

liberalisation as the most dominant long-run determinants of FDI. A year after, Razin et al. (2002) finds openness to trade having positive and significant effect on FDI while other researchers on the matter, analysing the impact of openness on FDI in 51 African countries, find that FDI responds significantly to increased openness in the whole economy. Also before this one, Tsikata et al. (2000) find export-orientation as a significant determinant of FDI inflows to Ghana while Asiedu (2002), using exports and imports as a percentage of GDP to proxy openness, comes to a similar conclusion for Sub-Saharan African host countries.

In the same context, several studies find that countries that are opened attract more FDI (Morisset, 2000; Noorbakhsh et al., 2001). Singh and Jun (1995) expand on earlier studies of the determinants of FDI by empirically analyzing various factors (including political risk, business conditions and macroeconomic variables) that influence FDI flows to LDCs. They try to fill a gap in the literature by examining qualitative factors. Using a pooled model of developing countries, they test three groups of hypotheses on what influences FDI - that political risk, business conditions and macroeconomic variables matter. Export orientation is the strongest variable for explaining why a country attracts FDI. This finding is in line with the secular trend toward increasing complementarity between trade and FDI.

UNCTAD (in its World Investment report 1998, 2000) emphasizes on the fact that some of foreign investors invest to developing countries mainly to serve the host countries' market. Domestic market size and market potentials might be the major determinants in attracting such type of foreign investors. Empirical literature often finds the size of the market and the market potentiality, typically proxied by the level of GDP and GDP growth rate, significantly affect FDI inflows (Nunnenkamp & Spatz, 2002; Bandera & White, 1968; Root & Ahmed, 1979; Wheeler and Mody, 1992; Singh & Jun, 1995).

As for Johnson (2006), he investigates the flows of FDI and trade in eight high performing East Asian economies with a focus on the relationship between FDI and host

country exports. The development and importance of FDI and trade for the region is described. The empirical part of his study examines the relationship between FDI and host country exports, using data for the period 1980 to 2003. Time-series regressions for individual economies as well as panel data estimation indicate that FDI inflows have a significant and positive effect on host country exports, suggesting that export-platform FDI may be important for the East Asian economies. Moreover, Granger causality tests find indications of FDI causing exports, providing further evidence that the export-platform FDI strategy applies for the East Asian economies.

Further, the role of FDI in export promotion remains controversial and depends crucially on the motive for such investment (World Bank, 2003). This leads Shamsuddin (1994) to conclude that the impact of openness is mixed, depending on whether the FDI is mostly horizontal (catering to the host market) and tariff-hopping, or vertical (catering to export). Nevertheless, the consensus in the literature appears to be that FDI spillovers depend on the host country's capacity to absorb the foreign technology and the type of investment climate (Obwona, 2004).

Contrary to previous studies, however, it is expected that the sign of the coefficient on trade openness to be indeterminate *a priori*. While a positive sign is the norm, a negative sign would suggest that FDI in a country is tariff-jumping, as foreign investors seek to locate in the host economy to avoid high tariffs.

### ***3.3.2 Empirical Review on FDI Growth Impact***

Generally, GDP growth is the parameter used to measure the economic growth of a country even though it is not the only parameter. GDP includes all the production within the country for the given period (the year in most cases). Many research works which have been undertaken in order to uncover the relationship between FDI and growth show that the

contribution of FDI to growth is positive. The following studies sought to determine the influence of FDI on GDP growth.

Using different data and methodologies, many researchers have concluded that FDI has positive impact on growth. For instance, in a paper by Loungani & Razin (2001), it is reported that of the three sources of capital flow to the developing countries (FDI, portfolio investment and primary bank loans), FDI is discovered to be the most resilient during the global financial crises from 1997-1998 and also during the Latin American financial crises in the 1980s.

Lim (2001) summarises recent arguments findings on two aspects of FDI: its correlation with economic growth and its determinants. The first part focuses on recent literature regarding positive spillovers from FDI while the second deals with the determinants of FDI. In this study, Lim finds that while substantial support exists for positive spillovers from FDI, there is no consensus on causality. On determinants, his study finds that market size, infrastructure quality, politic/economic stability, and free trade zones are important for FDI, while his results are mixed regarding the importance of fiscal incentives, the business / investment climate, labour costs, and openness. Many economists and researchers recognized that FDI produces economic benefits to the recipient countries by providing capital, foreign exchange, technology, competition and by enhancing access to foreign markets (Caves, 1996; Romer, 1993; UNCTAD, 1999; World Bank, 2002; Brooks, 2006; Nuno and Fontoura, 2007). It is argued that FDI also enhances domestic investment and innovation.

Borensztein and others (1995) use data for the 1970 – 1989 period involving flows from developed countries to developing ones. The main conclusions are, in the first place, that FDI has a positive effect on economic growth, depending on the human capital stock available in the host economy. However, when the level of human capital is low, the effect is negative. Secondly, FDI has an indirect effect on growth by attracting supplementary activities. De Mello (1999) considers that FDI affects growth through the accumulation of capital as well as



by the transfer of knowledge. These hypotheses are tested with time series and panel data. The time series results are not conclusive. The panel data show that FDI has a positive effect upon growth as a result of the transfer of knowledge in OECD countries, but not in the rest. The effect upon the accumulation of capital is only manifested in the non-OECD countries. This indicates that the end result depends on the complementarity or substitution of foreign and domestic investment.

Borensztein, De Gregorio & Lee (1998) test the effect of FDI on economic growth in a cross-country regression framework, utilizing data on FDI flows from industrial countries to 69 developing countries. Their results suggest that FDI is an important vehicle for contributing relatively more to growth than domestic investment but only when the host country has a minimum threshold stock of human capital that is FDI contributes to economic growth only when a sufficient absorptive capability of the advanced technologies is available in a host economy. Another one (Bende-Nabende & Ford, 1998) investigates the data from 5 South East Asian countries, and found a positive direct link between FDI and economic growth. In his study, he found that FDI for Indonesia, Malaysia and the Philippines are positively correlated with growth, while that for Singapore and Thailand are negatively related. Moreover, the result revealed that FDI stimulated economic growth in those ASEAN countries mostly through human capital and employment. Borensztein et al. (1998) used data for the 1970-1989 period involving flows from developed countries to developing ones. The main conclusions were, in the first place, that FDI had a positive effect on economic growth, depending on the human capital stock available in the host economy. However, when the level of human capital is low, the effect is negative. Secondly, FDI had an indirect effect on growth by attracting supplementary activities. De Mello (1999) considered that FDI affects growth through the accumulation of capital as well as by the transfer of knowledge. The results obtained by Lipsey (2000) allows to infer that the effect of FDI on growth is positive, but reduced, and depends strongly on the interaction with the level of schooling in the host country while Soto (2000),

working with panel data for developing countries for the 1986-97 period, concluded that FDI contributes positively to growth through the accumulation of capital and the transfer of technology.

Ayadi (2011) observes that economic rationale for granting special incentives for attracting FDI is based on the belief that FDI bridges the 'gaps' between rich and the poor nations in addition to the generation of technological transfers and spillovers. His study contributes to the existing literature by applying the rho's rank correlation and causality test in exploring the possible links between FDI and economic growth in Nigeria. He determines the contributory factors to FDI and empirically tested the endogeneity theory of FDI. The author concludes that FDI enhances weakly economic growth in Nigeria. In alignment with the view of Egbo et al. (2011) which adopt Granger causality test and find that there is a causality relationship running from FDI to GDP and not from GDP to FDI, Zhang (2001) and Choe (2003) finding shows that there is a positive relationship between FDI and GDP which implies that FDI stimulates economic growth in Nigeria. Zhang (2001) and Choe (2003) analyses the causality between FDI and economic growth. Zhang uses data for 11 developing countries in East Asia and Latin America. Using cointegration and Granger causality tests, Zhang (2001) finds that in five cases economic growth is enhanced by FDI but that host country conditions such as trade regime and macroeconomic stability are important. According to the findings of Choe (2003), causality between economic growth and FDI runs in either direction but with a tendency towards growth causing FDI; there is little evidence that FDI causes host country growth. Rapid economic growth could result in an increase in FDI inflows.

But contrary to this view, De Mello (1999) and Ayanwale (2007) defend a negative impact of FDI on growth. In the line with de Mello (1999) and Ayanwale, Badeji and Abayomi (2011) examine the impact of FDI on economic growth in Nigeria and the locational choice of foreign investors and the viability of FDI to Nigeria. They use a two Stage-Least Squares

method of simultaneous equations. Their result confirms that there exists a negative relationship between economic growth, proxied by real GDP and FDI in Nigeria. More so, size of exports, exchange rate and political stability are found to be very relevant in the locational choice of foreign investment in Nigeria.

Khan and Khan (2011) establish an empirical relationship between industry-specific FDI and output under the framework of Granger causality and panel co-integration for Pakistan over the period 1981-2008. Their result supports the evidence of panel co-integration between FDI and output. FDI is found to have a positive effect on output in the long run. Their result also supports the evidence of long-run causality running from GDP to FDI, while in the short run, the evidence of two-way causality between FDI and GDP is identified. At the sectoral level, the effects of FDI on growth vary significantly across sectors. Their most striking result is that FDI causes growth in the primary and services sectors, while growth causes FDI in the manufacturing sector.

In their paper, Ogunmuyiwa & Ogunleye (2011) investigate the impact of FDI on Nigeria's economic growth. In an attempt to do this, they test the validity of the modernization or depending hypothesis by employing various econometric tools such as Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests, Johansen Co-integration test, the Error Correction Mechanism (ECM) and Granger Causality test on time-series data from 1970-2008. Their results reveal that a long run relationship exists between the variables and a unidirectional causality from FDI to growth is also established. Their empirical findings support the modernization hypothesis that FDI is growth promoting in Nigeria.

Hadiji et al. (1995) examine the impact of foreign capital inflows on economic growth in a cross sample of 33 developing countries between 1986 and 1992. Their results indicate that foreign capital inflows stimulates growth initially beyond a certain threshold, however, the impact on growth appeared negative. The study concludes that too much foreign capital

inflows could retard growth. Despite the benefits that can be derived from FDI, it should be noted that it can also bring about some negative impacts. For instance activities of multinationals can displace local firms that cannot cope with the competition from foreign firms, thereby reducing the growth of the local firms (Jones, 1996).

Others consider FDI as a major stimulus to economic growth in developing countries. This has made it the center of attention for policymakers in developing countries such as WAEMU. In a very recent study, Lederman et al. (2010) recognise that the causes and consequences of FDI in developing countries remains a subject of debate among researchers and policymakers alike. They use international data and a new micro-data set of firms in thirteen Southern African Developing Countries (SADCs) to investigate the benefits and determinants of FDI in this region. Then, FDI appears to have facilitated local development in the SADC regions and foreign firms tend to perform better than domestic ones. The factors that explain SADC's low FDI inflows are economic fundamentals such as previous growth rates, average income, phone density, and adult share of population.

Adofu (2010) examines the impact of FDI on economic growth in Nigeria. Using FDI, exchange rate and total domestic savings as the explanatory variables, this author examines the effect of FDI on GDP (his proxy for economic growth and the dependent variable). Employing the OLS regression technique, his result proves that FDI has a significant impact on economic growth. He therefore concludes that FDI performs a role in accelerating economic growth.

Khaliq & Noy (2007) investigate the impact of FDI on economic growth by using detailed sectoral data for FDI inflows to Indonesia over the period 1997-2006. In the aggregate level, they observe that FDI inflows have a positive effect on economic growth. However, when accounting for the different average growth performance across sectors, the beneficial impact of FDI is no longer apparent. When examining different impacts across sectors, estimation results show that the composition of FDI matters for its effect on economic growth

with very few sectors which show positive impact of FDI and one sector even showing a robust negative impact of FDI inflows.

Ayanwale (2007) postulates that most countries strive to attract FDI because of its acknowledged advantages as a tool of economic development. Developing countries in Africa (including WAEMU member countries) have joined the rest of the world in Seeking FDI as evidenced by the formation of the New Partnership for Africa's Development (NEPAD), which has the attraction of foreign investment to Africa as a major component. His study investigates the empirical relationship between non-extractive FDI and economic growth in Nigeria. Also, he examines the determinants of FDI into the Nigerian economy. Secondary data from the Central Bank of Nigeria, International Monetary Fund and the Federal Office of Statistics for the period 1970–2002 was gathered. In order to ascertain the relationship between FDI and growth, Ayanwale (2007) uses an augmented growth model via the ordinary least squares and the 2SLS. His results suggest that the determinants of FDI in Nigeria are market size, infrastructure development and stable macroeconomic policy while openness to trade and available human capital are not FDI inducing. Furthermore, he concludes that FDI in Nigeria contributes positively to economic growth although the overall effect of FDI on economic growth is not significant.

Johnson (2006) models the potential of FDI inflows to affect host country economic growth. This analysis is performed with both cross-section and panel data for 90 countries during the period 1980 to 2002. The empirical part of the study finds that FDI inflows enhance economic growth in developing countries but not in developed economies. Likewise Roy and Van den Berg (2006) come to the same conclusion by applying another method (time-series data to a simultaneous-equation model i.e. SEM) examine whether FDI inflows have stimulated growth of the U.S. economy. FDI is found to have a significant, positive, and economically important impact on U.S. growth. Also, their SEM estimates reveal that FDI

growth is income inelastic. Overall, their results suggest that FDI has a significant impact on economic growth.

Moreover, FDI can boost domestic investment. For instance, some recent empirical works indicate a strong link between the volume of FDI and domestic investment. Bosworth and Collins (1999) and Mody & Murshid (2002) find that a dollar of FDI results in an almost one dollar increase in investment. In addition to the impact of FDI on the volume of investment, the presence of foreign firms can generate important benefits for domestic firms by increasing their knowledge of, and access to, advanced technology, by improving the overall skills of the work force (through valuable training opportunities to workers), and by increasing demand for domestic firms' products and the supply of inputs.

Carkovic and Levine (2002) take another look at the effects of FDI on economic growth in a large sample of countries. After using a battery of tests and techniques to control for these problems, they conclude that growth and a good macroeconomic environment are what drive FDI, rather than the other way around. They conclude that the exogenous component of FDI does not exert a robust, independent influence on growth. This is quite different from the finding of Alfaro et al. (2009). Through an empirical analysis using cross-country data for the period 1981-1999, Alfaro suggests that total FDI exerts an ambiguous effect on growth. FDI in the primary sector, however, tend to have a negative effect on growth, while investment in manufacturing has a positive one. Evidence from the service sector is ambiguous.

According to Hayami (2001) and Todaro and Smith (2012), the contributions of FDI to the economic growth of a country are widely recognized as filling the gap between desired investment and domestically mobilized saving, increasing the tax revenues, and improving management, technology, as well as labour skills in host countries. These could help the country to break the vicious cycle of underdevelopment (Hayami, 2001). Therefore, empirical

studies suggest that FDI is very important because it provides a source of capital, complements domestic private investment, and generates new job opportunities as well as transfers technologies and boosts economic growth in host countries. FDI can have direct and indirect impacts on poverty reduction in a host country. The indirect impact of FDI on the reduction of poverty is through economic growth which results in the improvement of living standards due to the increase in GDP, improvement of technology and productivity, as well as the economic environment. The direct impact of FDI on poverty can be seen through the increase in employment and the reduction of people living below the poverty line resulting from the increase in the demand for employment, and the improvement of workforce and safety nets.

Also, Mottaleb & Kalirajan (2010) develop similar idea. They argue that by bridging the gap between domestic savings and investment and by bringing the latest technology and management know-how from developed countries, FDI play an important role in achieving rapid economic growth in developing countries. The fact is that these countries have not been considered as favourable destinations for FDI, as FDI mostly goes to developed countries. Moreover, among the developing countries, few of them such as China, India, Nigeria and Sudan are the major FDI recipient countries. The rest of the developing countries are simply 'fighting' for the scraps. Using panel data from 68 low-income and lower-middle income developing countries, their study strives to identify the factors that determine FDI inflow to the developing countries. Based on a comparative discussion focusing on why some countries are successful in attracting FDI while others are not, they demonstrate that countries with larger GDP and high GDP growth rate, higher proportion of international trade and with more business friendly environment are more successful in attracting FDI.

In the 1980s and 1990s emerged some studies which have introduced other concerns to the theory of growth. These studies (Dollar, 1992; Alesina & Perotti, 1994; Rodrik, 1998; Frankel & Romer, 1999) introduce new determinants of economic growth and FDI, the degree

of openness of economies, technology, globalization and immigration. In this section, researches on growth-led FDI can be divided into two categories: those who found that FDI enhances economic growth and studies which believe that FDI enhances growth but under some conditions. Along similar lines, and for a broader sample of countries, Blomström, Lipsey, & Zejan (1994) found that FDI has a positive effect on growth under certain circumstances. Comparing samples of low and high-income countries, they found a positive effect of FDI only in the second group, suggesting that there is a threshold level of income above which FDI has extra effects on economic growth, and below which it does not. This study is consistent with the idea that only those countries that have reached a certain level of income can absorb new technologies and benefit from technological diffusion, and thus reap the extra advantages that FDI can offer.

Balasubramanyam et al. (1996) use cross-country data averaged over the period 1970-1985 for a sample of 46 developing countries and find that trade openness is crucial for acquiring the potential growth impact of FDI. Moreover, their estimates indicate that FDI has stronger effects on growth than domestic investment, which may be viewed as a confirmation of the hypothesis that FDI acts as a vehicle of international technology transfer. While Borensztein et al. (1998), who test the correlation between FDI and GDP in a cross-country regression framework with 69 developing countries over two separate time-periods 1970-1979 and 1980-1989, find that the effect of FDI on growth depends on the level of human capital in the host country and that FDI has positive growth effects.

In a recent study, Anwara & Nguyenb (2010) make use of a recently released panel dataset that covers 61 provinces of Vietnam from 1996–2005. This study examines the link between FDI and economic growth. Their analysis, which is based on a simultaneous equations model, reveals that in overall terms a mutually reinforcing two-way linkage between FDI and economic growth exists in Vietnam. However, this is not the case for each and every



region of Vietnam. Their results suggest that the impact of FDI on economic growth in Vietnam will be larger if more resources are invested in education and training, financial market development and in reducing the technology gap between the foreign and local firms.

The several results obtained by Lipsey (2000) allows us to infer that the effect of FDI on growth is positive, but reduced, and depends strongly on the interaction with the level of schooling in the host country. In line with Lipsey, Soto (2000), working with panel data for developing countries for the 1986-97 period, concludes that FDI contributes positively to growth through the accumulation of capital and the transfer of technology. Also, Alfaro et al. (2009) examine the links among FDI, financial markets and economic growth using cross-country data from 71 developing and developed countries averaged over the period 1975-1995. Their empirical evidence suggests that FDI plays an important role in contributing to economic growth but the level of development of local financial markets is crucial for these positive effects to be realised.

In order to investigate the potential relationship between FDI and dispersion of technology, Borenztein *et al.* (1998), employ a data set of FDI flow from the Organization for Economic Co-Operation and Development (OECD) member countries to 69 LDCs. Hence, the data set is specifically focused on FDI flows from developed countries to LDCs, which would allow adequate technology gaps diffusions to occur. The results indicate that FDI is an effective conductor for technology diffusion to LDCs when there is a sufficient amount of human capital. Borenztein *et al.* (1998) concludes that FDI positively correlates with growth. Similarly, Campos et al (2008) investigates the effects of FDI on 25 transitional economies of the former Soviet Block. Focusing on these LDCs the study uses aggregate FDI flows. The author argues that the level of human capital and infrastructure in the transitional economies is similar to those in developed countries, that their data set provides a more informative

assessment of FDI as an engine for the diffusion of technology. Their results approximate Borenztein *et al.* (1998) that FDI is a significant factor in economic growth.

Lastly, Buckley and others (2002) uses panel data for several regions in China for the 1989-98 period. In the first place, the author points out that if the rate of growth of FDI has positive effect upon GDP growth, the reverse does not hold true. Secondly, no evidence is found to support the hypothesis according to which the efficiency of FDI depends on a minimum level of human capital. Contrastingly, human capital is more significant in less developed provinces, while FDI stimulates growth notably in the more developed provinces.

In sum, although diverse in terms of data coverage and empirical methodology, the above-mentioned studies suggest that the FDI-growth relationship is not unique. Likewise, the investigation by UNCTAD (1999a) finds FDI has both positive and negative impacts on economic growth depending on the variables that are entered in the equation. So, FDI contributes to economic growth directly by creating employment and indirectly through the creation of employment opportunities. Indirect employment created by foreign affiliates in host countries can be large, probably larger than that created directly. With the growth of international production, the share of employment creation by foreign affiliates is growing and this is conditioned by a number of other factors, such as trade openness, financial depth, human capital, macroeconomic stability, political stability, lagged values of FDI and of GDP, and others that deserve to be included in the empirical setting. The findings of the review (for an important number of researchers on the subject of FDI and economic growth) suggest that FDI is necessary but not a sufficient condition for economic growth.

### **3.3.2.1 FDI impacts Economic Growth under Some Conditions**

There are some research works which agree that the FDI contribution to growth is positive but depends on some factors in the host country. This is what the current study tries to set out in this sub-section

Alfaro (2003) concludes that the contribution of FDI to growth depends on the sector of the economy where the FDI operates. Further, Alfaro claims that FDI inflows to the manufacturing sector have a positive effect on growth while FDI inflows to the primary sector have a negative effect on growth. For the service sector, the effect of FDI inflows is not so clear. However, an economy with a well-developed financial sector gains more from FDI (Alfaro et al, 2003). So, the impact of FDI on growth depends on the local condition of the host country. Chowdhury & Mavrotas (2003) argue that FDI's contribution to growth depends on factors such as human capital base in the host country and the degree of openness in the economy, and even when FDI is contributing to the economy, its impact might not be easily noticed in the short run. Lall (2002) points that FDI inflows affect many factors in the economy and these factors in turn affect economic growth. Therefore FDI's impact on growth cannot be measured directly since the impact is through its contributions to these other factors.

However, many other studies suggest that FDI does not have an independent effect on economic growth in a country. The effect of FDI is dependent on the initial country conditions that allow exploiting FDI spillovers. Carkovic and Levine, 2002; and Adams, 2009 find that FDI is more likely to have a positive effect on economic growth in more an open economy and Alfaro et al. (2004) argue that the growth enhancing effect of FDI is only real in countries where the financial systems are developed. On the other hand, dependency theorists consider that dependence on FDI is expected to have a negative effect on economic growth and the distribution of income. Based on this, it can be claimed that FDI creates an industrial structure in which monopoly is predominant leading to what Ajayi (2006) refers to as an enclave economy in which local investors are excluded. As a result, countries that are wholly dependent on FDI will experience stagnation, unemployment and increasing inequality.

Also, Oti-Prempeh & Wilner (2003) looking at "U.S. investment in developing countries: a case study of Malaysia, Mexico and South Africa", argue that there is existence of

an upsurge for FDI in LDCs. Their results show a strong direct impact of FDI on economic growth in LDCs, as well as an indirect impact through the interaction of FDI with human capital. Additionally, their results suggest that the impact of FDI on economic growth is greater among technological leaders. Therefore, they conclude that absorptive capacity in the host country is important in allowing FDI to impact positively and fully economic growth.

### **3.3.2.2 Causality Studies**

There are some facts concerning the relation between FDI and economic growth. First, it is discovered that economic growth is a strong stimulant to the inflow of FDI. At the same time, an increase in FDI (since this would mean an increase in the existing capital stock i.e. Greenfield investment) would also be one of the factors responsible for economic growth, meaning that there is a problem of an endogeneity. Based on these two facts, it can be inferred that there is causality issue to be dealt with which many studies undertake.

Many researchers have proved that countries with high growth can attract FDI better than countries where the economy is not in good shape. This view confirms the fact that even though FDI contributes to growth, growth in return affects the level of FDI in a country. Chowdhury & Mavrotas (2006) conduct a Toda-Yamamoto test of causality on three countries (Malaysia, Chile and Thailand) from 1969-2000 to explore the degree of causation between FDI and growth. These researchers discover that it is GDP that causes FDI in Chile and not the other way, that there is bi-directional causality in the other two countries, Malaysia and Thailand. Kumar & Pradhan (2002) conclude that in most cases, the direction of causation between growth and FDI is not pronounced. Furthermore, in poor or developing countries the direction seems to be running from growth to FDI in an equal number of cases as from FDI to growth. This conclusion is similar to that of Hansen & Rand (2006), which finds that FDI and growth have a positive relationship, but the direction of causality is not clear. And knowing this direction of causality is very important for the formulation of economic policy.

Ogundipe & Aworinde (2011) explore the causality between FDI and economic growth in Nigeria. They employ Granger causality analysis to test the hypotheses about the presence of causality between FDI and economic growth. By using annual data covering the period between 1970-1985, 1986-2007 and 1970-2007, their study shows causality relationship from economic growth (GDP) to FDI in the pre-deregulation era, which implies that there is causality relationship from economic growth to FDI. They found that in the post-deregulation era there is no casual relationship between GDP and FDI. However, in the whole period 1970-2007 economic growth (GDP) is the cause of FDI in the pre-deregulation era, which implies that there is causality relationship from economic growth to FDI meaning that there is a one-way relationship between FDI and economic growth.

Choe (2003) analyses the causal relationships between economic growth and FDI in 80 countries over the period 1971-1995, by using a panel VAR model. The results show that FDI Granger-causes economic growth, and vice-versa. However, the effects are rather more apparent from growth to FDI than from FDI to growth. While on the basis of Toda-Yamamoto no-causality test, Chowdhury & Mavrotas (2006) find that GDP causes FDI in Chile but not vice-versa. Regarding Malaysia and Thailand, their study suggests that there is bi-directional causality. Frimpong & Oteng-Abayie (2006) also use Toda-Yamamoto no-causality methodology and find in the case of Ghana a causality relationship from FDI to GDP growth only during the post-structural adjustment program period.

Eke et al. (2003) use causality test to analyze the impact of FDI on economic growth in Nigeria. They investigate the causal test from FDI to GDP and vice versa. Their results indicate that causality runs in both directions. They conclude that FDI is relevant and also a significant determinant of real development in Nigeria; however, foreign capital inflow is growth-path dependent.

The above studies are examples of pure causality analysis that do not take into account any additional host country indicators. Apart from these extreme cases, some studies include additional dimensions by comparing results across countries with different characteristics or by splitting the sample according to various economic criteria. However, they fall short of a systematic analysis of the impact of host country characteristics as they do not explicitly include additional control variables into the empirical framework. One of the earliest studies of this second group is Zhang (2001) which examines co-integration and causality between FDI and growth for 11 developing countries in East Asia and Latin America covering the period 1970-1995. Tests indicate co-integration and long-run Granger-causality from FDI to GDP for five countries. Furthermore, the study finds that the role of FDI in host economies seems to be sensitive to host economic conditions.

Basu et al. (2003) examine the two-way link between FDI and growth for a panel of 23 developing countries and the study period spans from 1978 through 1996. They analyse the co-integrating relationship between these two variables and they find the existence of a long-run relationship between FDI and GDP. They find that there is a long-run causality from growth to FDI in relatively closed economies and that there is bidirectional causality in both the long-run and the short-run in the relatively open countries. Hansen and Rand (2006) analyze the Granger-causal relationship between FDI and GDP in a sample of 31 developing countries for the period 1970-2000. Using estimators for heterogeneous panel data they find co-integration between FDI and GDP as well as between the share of FDI in gross fixed capital formation and in GDP. Their empirical evidence indicates that FDI has a lasting impact on GDP, whereas GDP has no long-run impact on FDI. Through VAR model, they also find that a higher ratio of FDI in gross capital formation has positive effects on GDP.

According to the proponents of FDI, the higher amount of foreign investment a country can attract the bigger portion it can take from global production and income, therefore; its

national wealth can increase. A lot of empirical studies have been done so far on the effects of foreign investment on economic growth. Even though these studies sometimes present conflicting results, most of them show that FDI mostly affects economic growth positively.

### **3.4 Gaps Identified From The Literature**

A close look at the empirical literature shows the discovery of some gaps, specifically:

- i. To the best of our knowledge, studies on FDI in WAEMU are very few in the literature;
- ii. Even though there are studies conducted on financial development related to FDI, it seems to be like none of them is done on WAEMU community as a whole; they were specific countries based studies.
- iii. Also, very few studies linking FDI to growth rate have been conducted on WAEMU. However, these studies never considered WAEMU as a whole.
- iv. In terms of methodology, panel-based studies dominated, followed by time series approach. However, the unit root issue has been identified as a problem associated with panel data studies, meaning that there is a need for panel cointegration methodology. To the researcher's best knowledge only few of these studies examined the unit root status of their data and adopted panel cointegration, namely Apergis et al. (2006), Arndt et al. (2007). These studies, however, consider a shorter time series period and experts argue that the use of panel cointegration is more appropriate for a longer time dimension in panel studies (Baltagi, 2008). Hence the present study intends to bridge that gap.

## CHAPTER FOUR

### THEORETICAL FRAMEWORK AND METHODOLOGY

#### 4.0 Introduction

This chapter discusses the theoretical framework and the research methods that are used in the process of carrying out this study. So first, the theoretical framework for this study is presented and where the main issues involve discussing the main theories that have been applied in the literature. Different models are reviewed with a view to gaining insight into various theoretical that have influenced the current state of knowledge in the area of FDI which will be followed by the model specification. The theoretical and empirical literature on the determinants of FDI and on the impact of FDI have identified a large number of variables as being correlated with FDI. One of the findings in the literature is that not all determinants in the theoretical models are found significant. Thus, this analysis of FDI determinants and its impact should be explained more broadly by a combination of factors from a variety of theoretical models.

Contrary to most previous studies, the current one uses another method. For a closer look at the econometric methodology applied in these inconclusive and controversial issues, it could be deduced that time series and panel data methods are widely applied; but panel data has been proven to have unit root problems hence the need for panel co-integration (Baltagi, 2008). To the best of the author's knowledge there is very little studies that have examined the unit root status of their panel data, hence the possibility of spurious results in those studies (Kao, 1999). In fact, African specific studies on this connection of the unit root status of their panel data are scanty. Consequently, the present study is at variance with these previous studies as it contributes to the literature methodologically by employing the recent panel co-integration approach.



#### 4.1 Theoretical Framework on FDI Determinant

The theoretical framework on the FDI determinants in WAEMU based on the reviewed theories in section 3.1.1 is provided here. There are shortcomings of the existing theories in such that no theory explains alone and fully FDI movements. But the current study will apply the OLI paradigm put forward by Dunning (1993). According to the “eclectic” theory of FDI, countries that have a “locational advantage” will attract more FDI (Dunning 1980). Location-specific advantage includes any characteristic (economic, institutional and political) that makes a country attractive for FDI. This includes large domestic markets, availability of natural resources, an educated labour force, good infrastructure, low labour cost and reliable institutions, to mention a few.

Discussion on the determinants of FDI in WAEMU which draws from Mottaleb and Kalirajan (2010) starts with the search for answer to the question “what drives FDI to LDCs?”. The decision to invest in a foreign country by a foreigner depends mainly on the return on investment, which is profit (Kinda, 2010).

Profit ( $\Pi$ ) is the difference between total revenue (TR) and total cost (TC). In functional form,  $\Pi$  can then be written as:

$$\Pi = f(P, Q, TC) \text{ ----- (4.1.1)}$$

$$TC = IC + OC + HC,$$

$$\text{With } \frac{d\Pi}{dP} > 0, \frac{d\Pi}{dQ} > 0; \frac{d\Pi}{dIC} < 0, \frac{d\Pi}{dOC} < 0 \text{ and } \frac{d\Pi}{dHC} < 0.$$

P = Price of the output which is mainly determined in the competitive market;

Q = Output, and TC = Total cost

IC = Input cost (i.e. cost of labour, land, interest rate, raw materials, electricity, gas, water, ...).

OC = Operation costs. It includes both financial and time costs, such as money and time required to get export-import license, money and time required to get gas, water, electricity, land and transaction costs.

HC = Hidden cost. It is the difference between the time and money costs declared by the government and time and money actually paid by the investors. It also includes hassle costs.

Profit will be higher in a country where foreign investors can operate their business at a low cost and can produce at full scale in a competitive price and where there is good business friendly environment. It means the variables that determine profit can equivalently determine FDI inflows in a particular country. It allows us in writing the following reduced form function:

$$FDI_{it} = f(P, Q, TC, E) \text{ ----- (4.1.2)}$$

Where  $E$  is business friendly environment (i.e. political and macroeconomic stability).

Substituting the  $TC = IC + OC + HC$  into equation (4.1.2) we can re-write it as follows:

$$FDI_{it} = f(P, Q, IC, OC, HC, E) \text{ ----- (4.1.3)}$$

Subscripts  $i$  and  $t$  stands for the individual country and time respectively.

The reduced form version of the FDI function in equation (4.1.3) clearly shows the factors that influence the inflow of FDI to the host countries. According to equation (4.1.3) foreign investors will prefer to invest in countries where they can produce large amount of production at a lower cost. The size of the economy and its growth rate are seen to critically affect the inflow of FDI to a particular country. Large and fast growing economy can offer economies of scale and also can reduce the transportation and product marketing cost as products will be mostly sold in the host economy. In fact, the market-seeking investors prefer to invest in countries with large domestic market and in countries which are growing at a faster rate i.e. GDP per capita, and GDP growth rate (UNCTAD, 1998). It is however, difficult to imagine that market seeking foreign investors will invest in foreign countries completely to serve the host economies. Rather it might be the case that foreign investors might also export a

portion of their product to other countries as well besides selling in the host economy. It means a country with small domestic market, but well-linked and open to the global market through international trade (trade openness, OPN) can also provide scale economies similar to the countries with large domestic market, to the foreign investors. Thus, trade openness might significantly determine the FDI inflow (UNCTAD, 2009).

Foreign investors prefer to invest in the countries where costs are low, because it ensures higher profit. Countries with abundant cheap and skilled labour (human capital, HC), electricity and energy and countries with improved infrastructure, such as road, port facilities, telephone and internet (infrastructure development, InfD) might significantly and negatively affect the cost of doing business (exchange rate, Exr). Thus the availability of cheap and skilled labour, electricity and energy and infrastructure significantly affect FDI inflow (UNCTAD, 1998; Kinda, 2010). According to the discovery in the literature, macroeconomic instability is captured by the inflation rate (based on the consumer price index).

Therefore, the equation derived from this theoretical framework on the determinants of FDI is:

$$FDI_{it} = f(GDPPC_{it}, OPN_{it}, HC_{it}, INF_{it}, INFD_{it}, FD_{it}, EXR_{it}, PRK_{it}) \dots\dots\dots (4.1.4)$$

Linearly, equation (4.1.4) can be rewritten as follows:

$$FDI_{it} = \lambda_0 + \lambda_1 GDPPC_{it} + \lambda_2 OPN_{it} + \lambda_3 HC_{it} + \lambda_4 INF_{it} + \lambda_5 INFD_{it} + \lambda_6 FD_{it} + \lambda_7 EXR_{it} + \lambda_8 PRK_{it} + \epsilon_{it} \dots\dots\dots (4.1.5)$$

Where:

- FDI = Stock of foreign direct investment divided by GDP i.e. FDI/GDP;
- GDPPC = Gross domestic product divided by population i.e. GDP/POP;
- OPN = The sum of exports (X) and imports (M) divided by GDP, i.e. (X+M)/GDP;
- HC = Ratio of workers divided by population;
- INF = Total of investment divided by GDP
- INF = Rate of inflation;
- FD = Ratio of M<sub>2</sub> divided by GDP, i.e. M<sub>2</sub>/GDP;

EXR = Exchange rate;

PRK = Political risk (a dummy variable; PRK = 1 if there is risk and 0 otherwise).

#### **4.2 Theoretical Framework on The Growth Impact of FDI**

According to the classical theory of international capital flow, FDI is a function of international differences in the rates of return on capital. But the existing empirical work does not provide any conclusive evidence for this hypothesis. The classical trade theories of Ricardo and Heckscher-Ohlin, in their strict form, do not allow for any conclusions about the relationship between FDI and trade since production factors are assumed to be immobile internationally. However, if the immobility assumption is relaxed, it becomes possible to analyse FDI in a Heckscher-Ohlin framework. One of the earliest examples of a study relaxing the assumption of internationally immobile production factors is done by Mundell (1957) which develops a standard two-good, two-factor, two-country Heckscher-Ohlin trade model. Capital mobility between two countries is introduced; the Heckscher-Ohlin assumption of identical production functions is relaxed. In this setting, capital movement becomes a perfect substitute for trade. The equalisation of capital endowments removes the basis for trade. Trade barriers largely explain international capital movement in this framework.

As for the Neo-classical researchers, they regard FDI and international capital flows as closing the gaps in LDCs (Chenery & Stout, 1966). Which gaps are respectively: gap between targeted investment and locally mobilized savings, gap between targeted foreign-exchange requirements and those derived from net export-earnings plus net public foreign aid, gap between targeted governmental tax revenues and locally raised taxes, gap in management entrepreneurship, technology and skill presumed to be partly or wholly filled by the local operations of private foreign firms. It is expected that capital should flow from capital rich to capital poor countries, as is suggested by developments in the Heckscher-Ohlin approach to

trade by Mundell, because capital is scarce in LDCs which should lead to profitable investment opportunities.

Another view is the new trade theory which has been able to incorporate the relationship between FDI and trade. New trade theory models distinguish between horizontal and vertical FDI. In the case of vertical FDI, the MNE decomposes the production process into stages according to factor intensity. Production activities are located in order to exploit differences in factor cost and therefore minimise production costs. But horizontal FDI implies that the MNE is locating production close to the final market. The production process is duplicated and demand in foreign markets is served by local production, reducing trade costs.

Howbeit, the literature has identified an impact of FDI through a differentiated impact of FDI on productivity of both domestic labour and domestic capital, through the transmission of superior technology. The theoretical structure is therefore in the spirit of Romer (1986). The importance of FDI can then be understood as closing the gap identified by Romer (1989) as the main obstacle facing LDCs trying to keep up with or advance on more advanced countries: the gap in knowledge (human capital), rather than the gap in physical capital. For De Mello (1997) and Ramirez (2000) this models the externality associated with the stock of FDI via an augmented Cobb-Douglas production function:

$$Y = Af[L, K_p, E] = AL^\alpha K^\beta E^{(1-\alpha-\beta)} \dots \dots \dots (4.2.1)$$

Where  $Y$  is real output,  $K_p$  is the capital stock,  $L$  is labour, and  $E$  refers to the externality (< or >1) generated by additions to the stock of FDI.  $\alpha$  and  $\beta$  are the shares of domestic labour and private capital respectively, and  $A$  captures the efficiency of production. Assume  $\alpha + \beta < 1$ . For simplicity, let the externality,  $E$ , be represented by a Cobb-Douglas function of the type:

$$E = [L, K_p K_f^\gamma]^\theta \dots \dots \dots (4.2.2)$$

Where  $K_f$  denotes the foreign-owned capital. Combining equations (4.2.1) and (4.2.2), it gives

$$Y = AL^{\alpha+\theta(1-\alpha-\beta)} K_p^{\beta+(1-\alpha-\beta)} K_f^{\gamma\theta(1-\alpha-\beta)} \dots \dots \dots (4.2.3)$$

Note that from (4.2.2) this study have  $(\partial K_p / \partial K_f) \cdot (K_f / K_p) = -\gamma$ , such that  $\gamma > 0$  or  $\gamma < 0$  implies domestic and foreign capital to be substitutes and complements respectively (corresponding to crowd-out and crowd-in respectively). Under  $\gamma > 0$ , FDI crowds-out domestic investment at least in the first instance. By contrast,  $\theta$  captures the spill-over of foreign investment on the productivity of capital and labour - given  $(\partial Y / \partial L) / (L / Y) = \alpha + \theta(1 - \alpha - \beta)$ ,  $(\partial Y / \partial K_p) / (K_p / Y) = \beta + \theta(1 - \alpha - \beta)$ . Note that  $\theta > 0$  or  $\theta < 0$  implies positive and negative spillovers from FDI respectively, such that whichever of  $\gamma > 0$  or  $\gamma < 0$  prevails, the long run effect of FDI on output may remain positive. It is therefore possible to interpret  $\gamma$  as the instantaneous (or marginal),  $\theta$  as the long-term (or inter-temporal) elasticity of substitution between domestic and foreign capital. Finally the study can generate the dynamic production function by taking logarithms and time derivatives of equation (4.2.3):

$$= g_A + [\alpha + \theta(1 - \alpha - \beta)]g_L + [\beta + \theta(1 - \alpha - \beta)]g_{K_p} + [\gamma\theta(1 - \alpha - \beta)]g_{K_f} \dots \dots (4.2.4)$$

Where  $g_i$  is the growth rate of  $i = Y, A, L, K_p$  and  $K_f$ .

The specification carries two peculiarities in empirical implementation. First, under (4.2.3), for:

$K_f \rightarrow 0, Y \rightarrow 0$ . While this is implausible in the general case, this study may consider the framework under (4.2.1) through (4.2.3) for the widespread case under which  $K_f > 0$ . Second, note that both (4.2.3) and (4.2.4) are under-identified, such that  $\gamma\theta(1 - \alpha - \beta) > 0$  is consistent both with  $\gamma > 0, \theta > 0$ , and with  $\gamma < 0, \theta < 0$ , given  $\alpha + \beta < 1$ . This leaves undecided the question of whether foreign capital is a complement to domestic capital in the short or the long run. Further,

$\gamma\theta(1 - \alpha - \beta) < 0$  is similarly consistent both with  $\gamma > 0, \theta < 0$ , and with  $\gamma < 0, \theta > 0$ , leaving indeterminate whether domestic and foreign capital are substitutes or complements.

A final point relates to the interpretation of the coefficients of any estimation of equations (4.2.3) and (4.2.4) define  $M \equiv \alpha + \theta(1 - \alpha - \beta)$ ,  $N \equiv \beta + \theta(1 - \alpha - \beta)$ . Provided that  $\alpha + \beta < 1$ , under  $M + N < \alpha + \beta$ ,  $\theta < 0$ , and  $\theta \rightarrow 0$  as  $M + N \rightarrow \alpha + \beta$ . Conversely, under  $M + N > \alpha + \beta$ ,  $\theta > 0$ , and  $\theta \rightarrow 0$  as  $M + N \rightarrow \alpha + \beta$ .

## **4.3 Methodology of The Research**

### **4.3.1 Analytic Techniques**

To achieve the objectives of this study, a sample of 8 countries using quarterly panel data from 1980:1 to 2010:4 is employed. The goals are achieved in three steps. First, this study ascertains the integrational properties of the data series. To do so, this study applies the Levin et al. (2002), Im et al. (2003) and Maddala and Wu (1999) panel unit root tests. In the second step, the study tests for panel cointegration relationships between the variables involved. This is achieved by using the Kao (1999) and Maddala and Wu (1999) Fisher Panel cointegration tests. In the third step, this study sets out to estimate the long-run elasticities of the FDI determinants and its impact on economic growth. After finding the existence of a long-run relationship between the variables and knowing that there are two Models in panel data approach (fixed effect model FEM and random effect model REM), this study moves forward by applying the Hausman test. The latter enables to choose between FEM and REM for the models of this study. After all this, the panel error correction model is applied based on the order of cointegration.

#### **4.3.1.1 Overview of Estimation Procedure**

Before estimating the equations (4.1.5) on FDI determinants and (4.2.6) on FDI growth impact, this study needs to determine the order of integration of all the series involved in the

panel. An integrated series needs to be differentiated in order to achieve stationarity. For a regression of  $Y_{it}$  on  $X_{it}$  will encounter a spurious regression issue, if the residual is  $I(1)$  violating the underlying assumptions of ordinary least squares (OLS). That is why it is important to determine that the series of interest have the same order of integration before proceeding into further estimation.

The next step of the current study leads to apply panel cointegration approach to test for a long run equilibrium relationship among variables. As shown by Engle and Granger (1987), there must be a vector error correction representation governing the co-movements of these series over time. This leads to the intuitive interpretation of a cointegrated system as one that represents long-run steady state equilibrium.

Generally, if variables are cointegrated, there is a long-term equilibrium relationship between them. To investigate the long-run relationship between the variables under study, this study will adopt panel estimation method instead of standard OLS regression. With non-stationary variables, an OLS regression suffers from serial correlation. The advantage of panel estimators over standard time-series regressions is that each estimator is super-consistent. Asymptotically, the OLS estimator is normal with a non-zero mean.

#### **4.3.1.2 Panel Unit Root Test**

The methods applied to the estimation of the two models are based on the combination of panel techniques and cointegration tests. The first step to take, as in the time series context, is to analyze the order of integration of the variables. The study employs several panel data unit root tests in order to exploit the extra power in the cross-sectional dimension of the data. Specifically, the study utilizes the panel unit root tests of Levin et al., (2002), Im et al. (2003), Maddala (1999) and Hadri (2000).



Levin et al., (2002) test assumes that there is a common unit root process so that  $\rho_i$  is identical across cross-sections. This test employs a null hypothesis of a unit root. Also, Levin et al. (2002) considers panel versions of the Augmented Dickey-Fuller (ADF) unit root test. These tests restrict  $\alpha$  to be identical across cross-sectional units, but allow the lag order for the first difference terms to vary across countries.

$$\Delta y_{it} = \kappa_i + \alpha y_{it-1} + \sum_{j=1}^{\kappa} \psi_{ij} \Delta y_{it-j} + \epsilon_{it} \dots \dots \dots (4.3.1)$$

$$\Delta y_{it} = \kappa_i + \alpha y_{it} + \beta_i t + \sum_{j=1}^{\kappa} \psi_{ij} \Delta y_{it-j} + \epsilon_{it} \dots \dots \dots (4.3.2)$$

The subscript  $i=1, \dots, N$  indexes the countries. Equations (4.3.1) and (4.3.2) are estimated using pooled ordinary least squares (OLS). Levin et al. (2002) tabulate critical values for  $t_a$  by performing Monte Carlo simulations for various combinations of  $N$  and  $T$  commonly employed in applied work. The null and the alternate hypotheses are:  $H_0: \alpha=0$  and  $H_1: \alpha<0$ . Under the null hypothesis there is a unit root, while under the alternative hypothesis, there is no unit root. The difference between the Levin et al. (2002) test and the Breitung (2000) test is that while the former requires bias correction factors to correct for cross-sectionally heterogeneous variances in order to ensure efficient pooled OLS estimation, the Breitung (2000) test achieves the same result by appropriate variable transformations.

#### 4.3.1.3 Panel Cointegration Test

In the second step, the study tests the presence of cointegration between the variables and utilises the panel cointegration tests due to Kao (1999) and Maddala and Wu (1999) Fisher. The tests proposed in Kao (1999) test follows the same basic approach as the Pedroni (1998) tests that are residual-based tests and which allow for heterogeneity among individual members of the panel, including heterogeneity in both the long-run cointegrating vectors and in the dynamics. The panel tests are based on the within dimension approach which includes

four statistics: panel  $v$ -statistic, panel  $\rho$ -statistic, panel PP-statistic, and panel ADF-statistic. These statistics pool the autoregressive coefficients across different countries for the unit root tests on the estimated residuals, and take into account common time factors and heterogeneity across countries. All four tests are distributed asymptotically as standard normal. Of these tests, the panel  $v$ -statistic is a one-sided test where large positive values reject the null hypothesis of no cointegration whereas large negative values for the remaining test statistics reject the null hypothesis of no cointegration. But even though Kao (1999) test follows the same basic approach as the Pedroni (1998) test, it specifies cross-section specific intercepts and homogeneous coefficients on the first-stage regressors. In the null hypothesis, the residuals are non-stationary (i.e., there is no cointegration) while in the alternative hypothesis, the residuals are stationary.

The 2<sup>nd</sup> test is the one developed by Johansen Fisher. The test uses Fisher's result to propose an alternative approach to testing for cointegration in panel data by combining tests from individual cross-sections to obtain a test statistic for the full panel. The test results are based on  $p$ -values for Johansen's cointegration trace test and maximum Eigen value test. Evidence of cointegration between FDI and other variables using this test is obtained if the null hypothesis of *none* ( $r = 0$ ) cointegration variables is rejected and the null of *at most 1* ( $r \leq 1$ ) cointegrating variables is accepted.

#### **4.3.1.4 Error Correction based Panel Cointegration Tests**

In this second step, the study applies the panel cointegration tests developed by Westerlund (2007) and Persyn & Westerlund (2008). The rationale here is to test for the absence of cointegration by determining whether Error Correction exists for individual panel members or for the panel as a whole.

Consider the Error Correction Models described by equation, in which all variables in levels are assumed to be  $I(1)$ :

$$\Delta F_{i,t} = \alpha_i^F + \lambda_i^F (F_{i,t-1} - \beta_i^F X_{i,t-1}) + \sum_{j=1}^n \theta_{i,j}^F \Delta F_{i,t-j} + \sum_{j=1}^p \phi_{i,j}^F \Delta X_{i,t-j} + u_{i,t} \dots 4.3.4$$

Where  $X_i$  are the different included variables identified as FDI determinants and growth determining variables;  $F$  represents the FDI inflows. Here, the parameters  $\lambda_i^k$ ,  $k = X_i$  (i.e. different included variables such as per capita GDP, trade openness, exchange rate, inflation, infrastructure development, political instability) are the parameters of the Error Correction (EC) term and provide estimates of the speed of error-correction towards the long run equilibrium for country  $i$ , while  $u_{i,t}$  are white noise random disturbances.

This study focuses on  $F$  (i.e. FDI) and its relation to other variables; therefore, equation (4.3.4) is the equation of interest. Two different classes of tests can be used to evaluate the null hypothesis of no cointegration and the alternative hypothesis: group-mean tests and panel tests. By applying an Error-Correction Model in which all variables are assumed to be  $I(1)$ , the tests examine whether cointegration is present or not by determining whether error-correction is present for individual panel members and for the panel as a whole. This study is mainly interested in the long-run behaviour of our models so the next step is to determine the coefficients of the conditional long-run relationships between the variables through the panel cointegration tests.

However, the current literature on panel cointegration tests and estimation usually assumes that the number of cross-sectional units is large and does not allow for: (i) cross-sectional dependence in the error terms, (ii) the interaction of short-run dynamics between cross-sections, (iii) the difference in cointegration ranks across cross-sections, or (iv) the possibility that long-run equilibrium relationships exist between different cross-sections (hereafter referred to as between-cointegration).

#### **4.3.1.5 Hausman Test**

Cointegration panel data estimation methods are employed and models of both fixed and random effects are tested. The Hausman test is run twice: first in Table 7 for the first model which deals with the FDI determinants; and in the second model i.e. Table 8, when estimating the impact of FDI on economic growth.

#### **4.4 Model Specification**

The main objective of the empirical investigation is first to determine main factors that determine FDI in WAEMU community and secondly to estimate the impact of FDI on economic growth. Based on the two previous theoretical frameworks respectively on FDI determinant and on FDI growth link, two models are derived and will be used to identify both the determinants and the impact of FDI in that African region. These are as follow: This section is devoted to develop empirical models to identify the factors that affect FDI inflows in WAEMU. For this current study to test all the hypotheses, the following models will be estimated.

##### ***4.4.1 Model 1: FDI Determinants Equation***

Based on the eclectic paradigm (one of the theories that deal with FDI) which contrasts a country's resource endowment and geographical position (providing locational advantages) with firm resources (ownership advantages), and considering the variables identified in the literature review as determining the inflows of FDI in a country, the framework of this study suggests a list of factors that may be important in affecting FDI such as: per capita GDP, GDP growth rate, inflation rate, exchange rate, business friendly environment, trade openness, human resources, availability of natural resources, gross fixed capital formation, financial development, infrastructure development, and political and macroeconomic stability. These factors affect differently FDI in a country and the impact of each determinant on FDI is expected to be different from one country to another. Therefore, the first regression of this

study derives from Cobb-Douglas production function. This method was used by many economists when studying the determinants of FDI (Astatike & Assefa, 2005; Mottaleb & Kalirajan, 2010). The equation of FDI determinants is then given by equation (4.1.5) as follow:

$$FDI_{it} = \lambda_0 + \lambda_1 GDP_{it} + \lambda_2 OPN_{it} + \lambda_3 HC_{it} + \lambda_4 INFD_{it} + \lambda_5 INF_{it} + \lambda_6 FD_{it} + \lambda_7 EXR_{it} + \lambda_8 PRK_{it} + u_{it}$$

Where:  $i$  and  $t$  are for country and year respectively.

With  $i$  for country ( $i = 1, 2, \dots, 8$ ) and  $t$  for the time (1980Q<sub>1</sub>, 1980Q<sub>2</sub>, ..., 2010Q<sub>4</sub>) and  $\lambda_i$  are the slopes.

- $GDP_{it} = 100 * \frac{GDP}{POP}$  per capita GDP (where POP stands for population);
- $FD = \frac{M2}{GDP} * 100$  financial development (with M<sub>2</sub> as total credit to private sector);
- $FDI = 100 * \frac{FDI}{GDP}$ ;
- $OPN = \frac{(X+M)}{GDP} * 100$  trade openness (where X stands for exports and M for imports);
- HC = Labour force participation rate, total (% of total population ages 15-54);
- INFD = Infrastructure development (telephone line per 100 people);
- INF = Inflation rate (base on the consumer price index obtained from WDI);
- EXR = Exchange rate; –  $u_{it}$  = Error term.
- PRK = Political instability (Dummy variable; 1 if there is political instability and 0 otherwise);

#### 4.4.2 Model 2: FDI Growth Equation

Following the work done on the theoretical framework related to growth impact of FDI and by drawing on de Mello (1996) who used the Augmented Cobb-Douglas production function, this study models the effect of FDI on economic growth. First, let's recall the growth equation (4.2.4) derived from the theoretical framework of the previous section.

$$g_y = g_A + [\alpha + \theta(1 - \alpha - \beta)]g_L + [\beta + \theta(1 - \alpha - \beta)]g_{Kp} + [\gamma\theta(1 - \alpha - \beta)]g_{Kf} \dots (4.2.4)$$

By assuming that:

$$\delta_0 = g_A; \quad \delta_1 = [\alpha + \theta(1 - \alpha - \beta)]; \quad \delta_2 = [\beta + \theta(1 - \alpha - \beta)]; \quad \delta_3 = [\gamma\theta(1 - \alpha - \beta)]$$

The output growth equation (4.2.4) becomes:

$$g_y = \delta_0 + \delta_1 g_L + \delta_2 g_{Kp} + \delta_3 g_{Kf} \dots \dots \dots (4.2.5)$$

Where:

- $g_y$  = Economic growth rate
- $g_L$  = Growth rate of human capital
- $g_{Kp}$  = Growth rate of capital to private sector
- $g_{Kf}$  = Growth rate of foreign capital i.e. FDI
- $\delta_i$  = Coefficients or elasticities.

Equation (4.2.5) states that economic growth ( $g_y$ ) is a function of labour productivity ( $g_L$ ) and private capital (i.e. domestic capital,  $g_{Kp}$ ) the productivity of foreign capital in FDI form,  $g_{Kf}$ ).

Thus, the second model to be run is given as:

$$gdpgr_{it} = \delta_0 + \delta_1 hc_{it} + \delta_2 dmc_{it} + \delta_3 fdi_{it} + \varepsilon_{it} \dots \dots \dots (4.2.6)$$

With  $i$  for country ( $i = 1, 2, \dots, 8$ ) and  $t$  for the time (1980Q<sub>1</sub>, ..., 2010Q<sub>4</sub>) and  $\delta_i$  are the slopes.

$$gdpgr_{it} = \frac{GDP_{it} - GDP_{it-1}}{GDP_{it-1}}; \quad hc_{it} = \frac{W_{it}}{POP_{it}}; \quad dmc_{it} = \frac{DMC_{it}}{GDP_{it}}; \quad fdi_{it} = \frac{FDI_{it}}{GDP_{it}}$$

POP stand for population, W stands for workers (human resources); DMC = domestic capital.

## 4.5 Scope and Source of Data, and Data Adjustment

### 4.5.1 Scope of Study

This study, in terms of scope, covers the period from 1980 to 2010 using quarterly data. Most variables are differenced because they are stationary at first level. Also, this study covers

the eight French countries constituting WAEMU specifically: Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo.

#### ***4.5.2 Source of Data***

Secondary and quarterly data are employed in the present study. And the data from UNCTAD which collects regularly published and unpublished national official FDI data flows directly from central banks, statistical offices or national authorities on an aggregated and disaggregated basis ([www.unctad.org/fdistatistics](http://www.unctad.org/fdistatistics)). These data constitute the main source for the reported data on FDI. These data are further completed by data obtained from: (i) other international organizations such as the International Monetary Fund (IMF) with her International Financial Statistics (2012 IFS Software), the World Bank and the Organisation for Economic Cooperation and Development (OECD); (ii) regional organization such as Banque Centrale des Etas de l'Afrique de l'Ouest (BCEAO),

For those economies for which data are not available from national official sources and the IMF, or for those for which data are not available for the entire period of 1980–2010, data from the World Bank's *World Development Indicators Online* are used.

#### ***4.5.3 Data Adjustment: Quarterisation***

These data come as annual figures that have been converted to quarterly data. Many techniques of quarterisation and benchmarking are in use. These techniques include the Pro Rata Distribution Techniques, the basic extrapolation with an indicator technique and the Proportional Denton Method of interpolation of annual flows of time-series (the one used because it) is recommended by both International Monetary Fund and World Bank (2010).

The basic version of the Proportional Denton Method keeps the benchmarked series as proportional to the indicator as possible by minimising (in the least square sense) the difference in relative adjustment to neighbouring quarters subject to the constraints by the

annual benchmarks. This method which is preferred and described by the International Monetary Found in its publications as “relatively simple, robust and well-suitable for large-scale application” uses an associated ‘indicator series’ imposing the constraint that the interpolated series obeys the annual totals (IMF, 2012). Thus, the sum of the interpolated quarterly figures must equal to the annual figure, which serves as benchmark for each year.

The basic version of the Proportional Denton Method is expressed as follow:

$$(X, \dots X^{\min}_{4,\beta} \dots X_t) \sum_{t=2}^T \left( \frac{X_t}{I_t} - \frac{X_{t-1}}{I_{t-1}} \right)^2 \dots \dots \dots (4.5.1)$$

$$t \in \{1 \dots (4\beta) \dots T\}$$

Under the restriction that, for flow series.

$$\sum_{t=2}^T X_t = A_y, y \in \{1, \dots, \beta\} \dots \dots \dots (4.5.2)$$

That is, the sum of the quarters should be equal to the annual data for each benchmark year.

Where:

- $t$  is time (example:  $t = 4y - 3$  is the first quarter of the year, and  $t = 4y$  is the fourth quarter of the year  $y$ );
- $X_t$  is the derived QNA estimate for the quarter  $t$ ,
- $I_t$  is the level of the indicator of quarter  $t$ ,
- $A_y$  is the annual data for the year  $y$ ,
- $\beta$  is the last year for which an annual benchmark is available, and
- $T$  is the last quarter for which quarterly for which quarterly source data are available.

The proportional Denton technique implicitly constructs from the annual observed  $B_t$  ratios a time-series of quarterly benchmarked QNA estimates to indicator (quarterly  $B_t$ ) ratios that are as smooth as possible and, in the case of the flow series.

- For the back series,  $(y - \{1 \dots \beta\})$  are averages to the annual  $B_1$  ratios for each year  $y$ .



- For the forward series,  $(y - \{\beta + I \dots\})$  are kept constant and equal to the ratio for the last quarter of the last benchmark year.

After the interpolation of the annual series in order to generate the quarterly series using the Lisman & Sandee (1964) approach, the FDI series and the GDP series required for the analysis are measured on a quarterly basis.

## CHAPTER FIVE

### PRESENTATION AND DISCUSSION OF RESULTS

#### 5.0 Introduction

This section presents the results of some important tests which are performed before doing the regression of the two models of this study: the first model is the one dealing with the FDI determinants in WAEMU and its member countries; the second model is the one through which the impact of FDI on economic growth is estimated. These models and equations are used to capture some objectives of this study. The results are presented in Table 5.6, Table 5.7, Table 5.8 and Table 5.9 as estimated through 7.0 E-view computer packages.

#### 5.1 Different Tests in The Panel Cointegration Approach

##### 5.1.1 Unit Root Tests

In order to avoid spurious regression that might result from running regressions with non-stationary variables, this study analyses the time series characteristics of all the included variables. A spurious regression will indicate a statistically significant relationship between variables in the models, when in fact this is just evidence of contemporaneous correlation. The Im, Pesaran & Shin, and ADF-Fisher Chi-square tests are used for this investigation. The results presented in Table 5.1 show that most of this study's variables were non-stationary at levels, but became stationary after the first difference.

##### 5.1.1.1 Panel Unit Root Tests for WAEMU

This Table reports the panel unit root tests for all countries in a pooled model. There are two different null hypotheses for the panel unit root tests. First, the last test in columns 6 (as indicated in Table 5.1) is the Levin et al. (2002) test where the null hypothesis is the unit root (with the assumption that the cross-sectional units share a common unit root process). The

second group includes three tests namely: Im et al. (2003), ADF Fisher Chi Square and PP Fisher Chi Square; here, the null of unit root assumes that the cross-sectional units have individual unit root process. All test results are based on the inclusion of an intercept and trend.

The fact that some of the variables are non-stationary implies that a regression with such variables may produce spurious results unless they are co-integrated. If two or more variables can be linked together to form an equilibrium relationship spanning the long run, then even though the variables themselves may contain stochastic trends they will nevertheless move closer over time and the difference between them will be stable. To test for cointegration, this study runs regressions and applies the Im, Pesaran & Shin, and ADF-Fisher Chi-square tests to the residuals. If the residuals are stationary, then we conclude for cointegration of the variables in the regression. It is clear that FDI and GDPGR are  $I(1)$  series for panel of eight countries. For these eight countries, each of the five tests suggests stationarity in first difference at 1% level of significance. As for infrastructure development, all other four tests provide evidence of stationarity at 1% level of significance at first difference. At levels, the LLC test shows stationarity at 5% level of significance for the variables economic growth (GDPGR), domestic credit to private sector (DMC) and inflation (INFL). The Im, Pesaran & Shin, and ADF-Fisher Chi-square tests however suggest that all the variables are stationary in first difference at 1% level of significance for the panel of eight WAEMU countries. In all the cases, PP-Fisher Chi-square rejects the null of stationarity. To sum up, the results indicate that there is stationarity in first difference and each one of the variables can be regarded as  $I(1)$ . In what follows, the study will proceed on the assumption that all variables are  $I(1)$  and differenced variables are  $I(0)$ . In this case cointegration methods would be preferable and appropriate.

**Table 5.1: Panel Unit Root Test Results**

<b>Table 5.1a: Panel unit Root Test Result (At Levels)</b>						
Series	Individual Unit Root Process				Common unit Root Process	
	IPS	ADF Fisher	PP-F Sqr	Rmk	LLC	Rmk
<i>fdi/gdp</i>	0.07)	13.18	30.52**	I(0)	-0.57	
<i>Gdpgr</i>	-87**	99.95**	169.29**	I(0)	-4.1**	I(0)
<i>Gdppc</i>	1.19	23.57***	28.78***	I(0)	0.3	
<i>Dmc</i>	-0.41	14.26	14.56		-1.5**	I(0)
<i>Opn</i>	-0.56	16.81	21.35		-0.05	
<i>Hc</i>	3.23	10.88	21.59		4.299	
<i>Infld</i>	4.46	4.3	10.12		3.99	
<i>Infl</i>	-5.6**	62.13**	98.42**	I(0)	-6.1**	I(0)
<i>Fd</i>	1.49	10.99	18.23		2.98	
<i>Exr</i>	-0.07	11.95	15.05		-0.9	

Note: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%;

<b>Table 5.1b: Panel unit Root Test Result (First Difference)</b>						
Series	Individual Unit Root Process				Common unit Root Process	
	IPS	ADF Fisher	PP Fisher	Rmk	LLC	Rmk
<i>fdi/gdp</i>	-9.04*	104.99*	223.98*	I(1)	-6783*	I(1)
<i>Gdpgr</i>	-18.64*	215.66*	195.93*	I(1)	-14.30*	I(1)
<i>Gdppc</i>	-8.07*	91.71*	145.12*	I(1)	-4.40*	I(1)
<i>Dmc</i>	-6.21*	70.75*	136.96*	I(1)	-5.27*	I(1)
<i>Opn</i>	-9.10*	105.74*	193.96*	I(1)	-6.98*	I(1)
<i>Hc</i>	-6.30*	75.32*	101.61*	I(1)	7.03	I(1)
<i>Infld</i>	-6.86*	78.39*	116.07*	I(1)	-6.37*	I(1)
<i>Infl</i>	-12.35*	147.06*	225.90*	I(1)	-12.62*	I(1)
<i>Fd</i>	-7.36*	83.65*	169.54*	I(1)	-2.17*	I(1)
<i>Exr</i>	-6.21*	68.25*	126.76*	I(1)	-4.45*	I(1)

Note: \* significant at 1%;

*IPS* = Im, Peseran and Shim W-test; *LLC* = Levin, Lin and Chu;

*ADFFisher* = ADF-Fisher; *PP-F Chi Sqr* = PP-F Sqr

Source: Computed by the Researcher, 2015.

Since the variables are all integrated of order one  $I(1)$ , it means there is a long-run relationship between the dependent and independent variables. It is therefore necessary to treat the error term as the equilibrium error term that is used to adjust short-run behaviour of FDI to its long-run value and the result is shown in Table 5.6.

### 5.1.1.2 Unit Root Tests for WAEMU Member Countries

The Tables of unit root tests for each one of the 8 WAEMU countries are presented in Appendix III in Page 194 (from Table A.3.1a to A.3.4b). Each one of the tables presents two different null hypotheses for the unit root tests. First, the last two tests in columns 6 (as indicated in Table A.3.1a in Appendix III) are the Levin et al. (2002) tests where the null hypothesis is the unit root (with the assumption that the cross-sectional units share a common unit root process). The second group includes three tests namely: Im et al. (2003), ADF Fisher Chi Square and PP Fisher Chi Square; here, the null of unit root assumes that the cross-sectional units have individual unit root process. All test results are based on the inclusion of an intercept and trend.

The fact that some of the variables are non-stationary implies that a regression with such variables may produce spurious results unless they are co-integrated. If two or more variables can be linked together to form an equilibrium relationship spanning the long run, then even though the variables themselves may contain stochastic trends they will nevertheless move closer over time and the difference between them will be stable. To test for cointegration, this study runs regressions and applies the Im, Pesaran & Shin, and ADF-Fisher Chi-square tests to the residuals. If the residuals are stationary, then the study concludes for cointegration of the variables in the regression. It is clear that FDI and GDPGR are  $I(1)$  series for panel of eight countries. For these eight countries, each of the five tests suggests stationarity in first difference at different levels of significance. At levels, the LLC test shows stationarity at 1% level of significance for the variables economic growth (GDPGR), inflation (INFL) and political risk (PRK) for Benin Republic while Im, Pesaran & Shin, and ADF-Fisher Chi-square and PPF Chi Square test show stationarity at level for GDPGR and INF at 1% and 5% levels respectively for Burkina Faso. The Im, Pesaran & Shin, and ADF-Fisher Chi-square tests however suggest that all the variables are stationary in first difference at 1% level of significance for the panel of eight WAEMU countries. In all the cases, PP-Fisher Chi-

square rejects the null of stationarity. To sum up, the results indicate that there is stationarity in first difference and each one of the variables can be regarded as  $I(1)$ . In what follows, the study will proceed on the assumption that all variables are  $I(1)$  and differenced variables are  $I(0)$ . In this case cointegration methods would be preferable and appropriate.

To sum up, the results in Table 5.1b indicate that there is stationarity in first differences and each of the variables can be regarded as  $I(1)$ . In what follows, the study will proceed on the assumption that all variables are  $I(1)$  and differenced variables are  $I(0)$ . In this case cointegration methods would be preferable and appropriate.

### 5.1.2 Cointegration Test

#### 5.1.2.1 Panel Cointegration Test for WAEMU

Table 5.2 reports the results for the cointegration test that is performed to test the existence of a long-run relationship between the groups of series through the Kao (1999) cointegration test. There is an evidence of cointegrating relationship between the variables obtained from Kao (1999) test.

The null hypothesis of no cointegrating relationship is rejected at 1% level for panel of eight WAEMU countries. So, the study has strong evidence in favour of the hypothesis of one cointegrating vector. In other words, for all country groupings the study examines a unique cointegrating vector seems to be a reasonable hypothesis.

**Table 5.2: Kao (1999) Residual Cointegration Test**

Series: FDI GDPPC GDPGR OPN HC INFD INF FD EXR PRK GFCF  
 User-specified lag length: 1

	t-Statistic	Prob.
ADF	-14.237	<b>0.0000</b>
Residual variance	81.344	
HAC variance	34.124	

Source: Computed by The Researcher, 2015

**Table 5.3: Panel Cointegration Test for the 8 WAEMU countries**

Series: FDI GDPPC GDPGR OPN HC INFD INF FD EXR PRK GFCF

Hypothesised	Fisher Stat		Fisher Stat	
No. of CE(s)	From Trace Stat	Prob	From max-eigen test	Prob
None	60.27	<b>0.0000</b>	29.04	<b>0.0237</b>
At most 1	34.22	<b>0.0051</b>	11.23	0.7951
At most 2	24.7	0.753	10.63	0.8318

Source: The Author, 2015

Therefore, looking at Table 5.2 (Kao residual cointegration test is performed), evidence from that test seems to suggest there is a long run equilibrium relationship between real FDI and the other variables used in this study which therefore continues with econometric techniques that take into account this long-run relationship between the variables. Moreover, this result is significant at 1% level of significance.

Evidence of cointegrating relationship between the variables are obtained from Kao (1999) and Maddala & Wu (1999) tests. The null hypothesis of no cointegrating relationship is rejected at 1% level or lower for panel of eight countries when using Kao (1999) tests. Similarly, results from the Maddala & Wu (1999) panel cointegration test provide evidence of cointegration between the variables. From the results in Table 5.1b, the null hypothesis of no co-integration ( $r = 0$ ) can be decisively rejected at 1% level of significance for all sampled countries. The null hypothesis of one cointegrating vector ( $r \leq 1$ ) given that ( $r \leq 0$  was rejected) cannot be rejected. Therefore, this study has strong evidence in favour of the hypothesis of one cointegrating vector. In other words, for all country groupings the study examines a unique cointegrating vector.

### 5.1.2.2 Cointegration Test for WAEMU Member Countries

In looking at the Kao (1999) residual cointegration tests that are performed and which results are presented in Appendix IV (Page 202) for each one of the eight WAEMU member

countries, the results show that there is a long run equilibrium relationship between FDI and the other variables used for each one of the eight WAEMU countries of this study. Therefore the study continues with econometric technique that takes into account this long-run relationship found between the included variables.

The null hypothesis of no cointegrating relationship is rejected at 5% level for Benin Republic, Niger Republic, Senegal and Togo; this same hypothesis is rejected at 10% level for the remaining four countries (Burkina Faso, Cote d'Ivoire, Guinea Bissau, Mali). Therefore, the study has strong evidence in favour of the hypothesis of one cointegrating vector at each cross-sectional level. In other words, for each one of the countries, this study examines a unique cointegrating vector.

### 5.1.3 Hausman Tests

#### 5.1.3.1 Hausman Test for FDI Determinants Equation

##### 5.1.3.1.1 Hausman Test for FDI Determinants Equation for WAEMU

Cointegration panel data estimation methods are employed and models of both fixed and random effects are tested. The choice of either FEM or REM is determined by the Hausman test. In Table 5.4, column 4 shows that the differences exist and are statistically significant.

**Table 5.4: Hausman Test on FDI Determinants (WAEMU)**

Test Summary		Chi-Sq. Stat	Chi-Sq. d.f.	Prob.
Cross-section random		232.539848	8	0
Variable	Fixed	Random	Var(Diff.)	Prob.
D(GDPPC)_WAEMU	0.029565	0.040843	0.000011***	0.0006
D(OPN)_WAEMU	0.039789	0.017884	0.000036***	0.0003
D(HC)_WAEMU	0.024813	-0.070876	0.000394***	0
D(INFD)_WAEMU	1.77015	2.205497	0.016916***	0.0008
D(INFL)_WAEMU	-0.000114	-0.044663	0.00001***	0
D(FD)_WAEMU	0.035709	0.006414	0.000028***	0
D(EXR)_WAEMU	0.001258	0.000176	0***	0.0002
PRK_WAEMU	-0.230114	-0.193511	0.023176**	0.00128

Notes: \*\*\* = significant at 1% level of significance  
 \*\* = significant at 5% level of significance

Source: Computed by the Researcher, 2015



Therefore, this leads this study to conclude that the FEM fits the model 1 (on FDI determinants) for WAEMU.

#### **5.1.3.1.2 Hausman Test on FDI Determinants for Cross Section Units**

There are some requirements before applying the Hausman test. This test cannot be made when there is no panel data or pooled analysis. Because random effect estimations require that the number of cross section (n) be greater than the number of coefficients (m) for between estimators for estimate of random effect innovation variance.

Here, in the case of this study and for each WAEMU country, the number of coefficients ( $m = 4$ ) is greater than the number of cross section unit ( $n = 01$ ). This means that there is no possibility to run the random effect model. So, the only choice available is the fixed effect model (FEM) not only for FDI determinants but also for FDI growth impact for each WAEMU country. This is to say that at cross sectional level, only the FEM fits each one of the two models.

#### **5.1.5.2 Hausman Test for FDI Growth Impact**

##### **5.1.5.2.1 Hausman Test for FDI Growth Impact for WAEMU**

Again, the null hypothesis underlying the Hausman test is that the FEM and REM estimators do not differ substantially. But considering column 4 of Table 5.5 page 141, that is  $Var.(diff.)$ , the differences between the results of each variable are different from 0; and these results are statistically significant at 1% and 5% level of significance. This means that because the FEM and REM estimators differ substantially this study concludes that for the 2<sup>nd</sup> model (4.2.6), the random effect approach is appropriate.

**Table 5.5: Hausman Test for WAEMU (on FDI Growth Impact)**

Test cross-section random effects				
Test Summary		$\chi^2$ Stat	$\chi^2$ d.f.	Prob.
Cross-section random		15.0675	3	0.0018
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
D(HC)_WAEMU	-1.99049	-1.875	0.0083**	0.0283
D(DMC)_WAEMU	5.65288	5.82712	0.025***	0.0005
D(FDI)_WAEMU	0.25981	0.26758	0.005***	0.0003

Notes: \*\*\* = significant at 1% level of significance

\*\* = significant at 5% level of significance

Source: Computed by the Researcher, 2015

## 5.2 Equation for FDI Determinants

### 5.2.1 WAEMU Equation for FDI Determinants

In the third step, having found that a cointegrating relationship holds among FDI, per capita GDP, GDP growth rate, trade openness, human capital, infrastructure development, financial development, exchange rate, and political instability of the panel of 8 countries, the study proceeds with the estimation of the long-run elasticities on the FDI determinants in WAEMU and on the impact of FDI on economic growth rate. The estimation of FDI determinants is based on panel cointegration approach. The main advantage of panel data for the analysis of FDI determinants and impact on economic growth is that the country-specific effects can be controlled for. The first general pooled equation (for FDI determinants) for WAEMU is given in equation (4.1.5) as follows: the FEM is applied.

$$D(FDI_{it}) = \lambda_0 + \lambda_1 D(GDPPC_{it}) + \lambda_2 D(OPN_{it}) + \lambda_3 D(HC_{it}) + \lambda_4 D(INFD_{it}) + \lambda_5 D(INF_{it}) + \lambda_6 D(FD_{it}) + \lambda_7 D(EXR_{it}) + \lambda_8 D(PRK_{it}) + \lambda_9 PECM(-I)_{it} + u_{it}$$

The a priori expectation patterns of the behaviours of the independent variables in terms of their parameters to be estimated are:

$$\lambda_0 > 0 \text{ or } < 0, \quad \lambda_1 > 0, \quad \lambda_2 > 0, \quad \lambda_3 > 0, \quad \lambda_4 > 0, \quad \lambda_5 < 0, \quad \lambda_6 > 0, \quad \lambda_7 > 0 \text{ or } < 0, \quad \lambda_8 < 0, \quad \lambda_9 < 0.$$

**Table 5.6: FDI Determinants in WAEMU**

Dependent Variable: D(FDI)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.7038*	1.5275	1.7701	0.0780
D(GDPPC)	0.2957*	0.1530	1.9327	0.0545
D(OPN)	0.3979***	0.0745	5.3445	0.0000
D(HC)	-0.2481***	0.0215	11.5245	0.0000
D(INFD)	-0.7702***	0.0887	-8.4742	0.0000
D(INFL)	-0.1140***	0.0154	-7.3882	0.0000
D(FD)	0.0357**	0.0126	2.8247	0.0051
D(EXR)	0.0126**	0.0041	3.0440	0.0026
D(PRK)	-0.1935**	0.0410	-4.7250	0.0012
PECM(-1)	-2.1198***	0.4238	-5.0014	0.0000

Effects Specification			
Cross-section fixed (dummy variables)			
R-Squared	0.7563	Mean Dependent Var	3.9302
Adjusted R <sup>2</sup>	0.7417	S.D. Dependent Var	2.2810
S.E. of Regress.	1.1593	Akaike Info Criterion	3.1921
Sum sqrd Resid.	313.1390	Schwarz Criterion	3.4046
Log Likelihood	-380.8159	Hannan-Quinn Criter.	3.2776
F-Statistic	51.6589***	Durbin-Watson Stat	1.3846
Prob(F-Statistic)	0		

Notes: \*\*\* = significant at 1% level of significance

\*\* = significant at 5% level of significance

\* = significant at 10% level of significance

Source: Computed by the Researcher, 2015

In Table 5.6, the coefficient of determination ( $R^2$ ) from this result is given as 0.7563. This implies that 75.63% of the variations in the FDI of WAEMU are accounted for by the included explanatory variables of per capita GDP, trade openness, human capital, infrastructure development, inflation (proxied for macroeconomic environment), financial development, exchange rate and political instability. With the value of 0.7563 for  $R^2$ , the result is therefore of good fit. The adjusted coefficient of determination (adjusted  $R^2$ ) is given as 0.7417. This means that precisely 74.17% of the variations of FDI inflows in WAEMU are accounted for by the included variables, after the coefficient of determination has been adjusted to make it insensitive to the number of included variables. The probability value of the F-statistics further revealed that there is joint significance of the explanatory variable at 1% level.

The WAEMU regression result above is in line with the *a priori* expectations, that is, apart from two variables (human capital management and infrastructure development) which coefficients are negative (instead of being positive) all the other independent variables maintain their expected signs. Moreover, all the explanatory variables are significant at different levels (1%, 5% and 10% level of significance). The constant term's value is 2.704. This implies that the model passes through 2.704 in the vertical axis meaning that if all the variables are held constant at zero, FDI inflows within WAEMU community will be 2.704 millions of US dollar. And this result is statistically significant at 10% level of significance.

The results suggest that per capita GDP rises with FDI inflows. The coefficient of market size (GDPPC) is positive i.e. +0.2957. First, this variable (market size) has its expected sign and is significant. Secondly, it implies that there is a positive and direct relationship between FDI and market size in WAEMU in the short run such that an increase in per capita GDP by 100% leads FDI inflows to rise by 29.57%, all other variables held constant. To test  $H_{02}$ , this study uses simple regression analysis which is found not to be spurious by the rule of thumb. The result of the regression analysis is presented in Table 5.6 (FDI determinants in WAEMU). It is evident from the above table that the probability value 0.0545 is greater than 0.05 which suggests the acceptance of the null hypothesis for a two tailed test at 5% but rejected at 10% level of significance level. It can also be seen that the calculated t-value of 1.9327 for GDPPC is equally significant at the 10% level of significance. By this, the null hypothesis that growth in GDPPC does not exert significant impact on FDI in WAEMU is rejected, thereby accepting the alternate hypothesis that the growth in GDPPC significantly influences economic growth in WAEMU. This implies that FDI flows which have been received by WAEMU community for the period under review have a lot to do with the growth rate of market size strategy adopted in the region. Third, this finding is significant at 10% level of significance. Furthermore, This finding is consistent with the empirical findings in the literature whereby a growing market size attracts FDI, in another word that market size is an

important determinant of FDI in LDCs (Dunning, 1993; Fedderke and Romm, 2006; Ayanwale, 2007; Busse and Nunnenkamp, 2007; and Trevino et al., 2008). This is understandable because MNCs and capital owners are only after their own interests and profits, not for the development of any country. At WAEMU level, this study confirms the 2<sup>nd</sup> hypothesis that that market size (GDPPC) determines FDI.

The coefficient of D(OPN) is 0.3979 implying that, in WAEMU, there is a positive relationship between FDI and trade openness in the short run such that a total openness to trade causes FDI inflows to rise weakly by 39.79%, all other variables being held constant. To test  $H_{02}$ , this study uses simple regression analysis which is found not to be spurious by the rule of thumb. The result of the regression analysis is presented in Table 5.6 (FDI determinants in WAEMU). It is evident from the above table that the probability value 0.0000 is lower than 0.05 which suggests the rejection of the null hypothesis for a two tailed test at 5% significance level. It can also be seen that the calculated t-value of 5.3445 for OPN is equally significant at the 5% level of significance. By this, the null hypothesis that growth in OPN does not exert significant impact on FDI in WAEMU is rejected, thereby accepting the alternate hypothesis that the growth in OPN significantly influences economic growth in WAEMU. This implies that FDI flows which have been injected into WAEMU region for the period under review have a lot to do with the trade openness policy in WAEMU. So, this result is statistically significant at 1% level of significance. This finding confirms the 2<sup>nd</sup> hypothesis of this study and gives an adequate answer to the 2<sup>nd</sup> question that that trade openness positively determines FDI (Albulescu et al., 2010; Bende-Nabende, 2002; Asiedu, 2002; Chakrabarti, 2001; Tsikata et al., 2000; Morisset, 2000; and Singh & Jun, 1995). Also, Campos and Kinoshita (2008) and Trevino et al. (2008) find that openness of the host country is an important factor explaining FDI inflows. Balasubramanyam *et al.*, 1996 and UNCTAD, 2005) conclude that the positive effects of FDI also depend on openness to trade.

The coefficient of human capital management is negative (-0.2481). Human Capital has a negative and statistically significant relationship with FDI. First, this finding signifies that there is a negative relationship between FDI and human capital management in WAEMU. It implies that a unit increase in the number of workers rate brings about a decrease in the inflows of FDI in WAEMU by 0.2481, all other variables being held constant. This result is not only consistent and statistically significant at 1% level of significance, but it is also contrary to the expected one. However, it had been posited that efficiency Seeking FDI will tend to locate in destinations that are able to supply skilled and disciplined labour force. Fung et al. (2000) report that labour quality is an important determinant of FDI, but raw labour costs are insignificant determinants of FDI. The result obtained in this study is largely consistent and agrees with the findings of Otepola (2002), who in a work on FDI and economic growth in Nigeria reported a low level of existing human capital. The implication of this result is that the quality of human capital in WAEMU is low and it indicates that the human capital (labour) available in WAEMU is not FDI inducing. Specifically, this finding means that the state of human capital is not favouring FDI inflows in WAEMU. More training and investment in education will be required for human resource management to affect positively FDI inflows in that community.

The coefficient of D(INFD) i.e. infrastructure development is -0.7202. This implies that there is an adverse relationship between FDI and infrastructure development so that an increase of infrastructure development by 100% will cause FDI flows within WAEMU to fall by 72.02% all other variables held constant. This result is statistically significant at 1% level of significance. This finding implies that the state of infrastructure development needs to be improved in WAEMU. This finding also means that improvement in infrastructure development through construction of roads, buildings, schools, hospitals, and tele-communication systems will provide job opportunity which has an indirect growing effect on GDP and its growth. All these together will enhance FDI inflows in the WAEMU community.

This finding is in line with the literature (UNCTAD, 1998; Basu et al., 2003; Kinda, 2010). The absence of adequate supporting infrastructure: telecommunication; transport; power supply; skilled labour, discourage foreign investment because it increases transaction costs. Furthermore poor infrastructure reduces the productivity of investments thereby discouraging inflows. Asiedu (2002) and Morisset (2000) provide evidence that good infrastructure has a positive impact on FDI flows to Africa. However, Onyeiwu & Shrestha (2004) find no evidence that infrastructure has any impact on FDI flows to Africa.

Due to the fact that the sign of variable infrastructure is negative in WAEMU, it can be said that the variable 'infrastructure development' needs constructive attention if infrastructure is to enhance economic growth. A better road network and availability of sufficient electricity supply and a good communication system will facilitate and reduce the cost of doing business in WAEMU, and thus attract FDI inflows.

Inflation is a proxy for macroeconomic stability or macroeconomic environment. Its coefficient, in the case of this study, is -0.114 implying that there is an indirect relationship between FDI and inflation rate in the short run such that an increase of inflation by 100% will cause FDI inflows to fall by 11.4%, all other variables being held constant. This result is statistically significant at 1% level of significance. The implication of this finding is that any macroeconomic instability leads FDI inflows to fall in WAEMU. This finding confirms the findings in the literature that "better business friendly environment impacts positively FDI inflows". And it is well known in economics that high and volatile inflation increases uncertainty and thus, leads to higher investment risk. Consequently, FDI will be discouraged in such conditions. Busse & Nunnenkamp (2007), Asiedu (2006), Campos & Kinoshita (2008) as well as Trevino et al. (2008) stress that the inflation level is one of the important factors that affect inflows FDI in developing countries.

The coefficient of financial development is 0.0357. Here also, it means that there is a direct, positive and weak relationship between FDI and financial development in the short run such that an improvement of the financial development system in WAEMU causes FDI inflows to increase; specifically, any strategy that improves the financial development policy by a unit causes, in return, an increase of FDI inflows by 0.0357, all other variables held constant. To test  $H_{01}$ , this study uses simple regression analysis which is found not to be spurious by the rule of thumb. The result of the regression analysis is presented in Table 9 (FDI determinants in WAEMU). It is evident from the above table that the probability value 0.0051 is lower than 0.05 which suggests the rejection of the null hypothesis for a two tailed test at 5% significance level. It can also be seen that the calculated t-value of 2.8247 for FD is equally significant at the 5% level of significance. By this, the null hypothesis that growth in FD does not exert significant impact on FDI in WAEMU is rejected, thereby accepting the alternate hypothesis that the growth in FD significantly influences economic growth in WAEMU. This implies that FDI inflows which have been injected into WAEMU for the period under review have a lot to do with the FD policy in the community. The finding that financial development plays a catalyst role on FDI expansion is not only statistically significant at 5% level of significance, but is in line with the literature on finance and development (Saibu et al., 2011; Kinda, 2010; Albuлесcu et al., 2010; Alfaro et al., 2003; Levine *et al.*, 2000). Also, this finding is in line with the belief which says that improvement in financial development policy enhances economic activities and then enhances inflows of FDI, *ceteris paribus*. Therefore, this finding means that financial development determines FDI, confirming the first hypothesis of this study and giving also an accurate answer to the first research question of the same current study.

The coefficient of exchange rate D(EXR) is positive (with +0.0126). This finding implies that there is a direct and weak relationship between FDI and exchange rate in the short run such that a 100% increase in exchange rate causes total FDI inflows in WAEMU to rise by



1.26%, all other variables being held constant. Also from the same Table 9, it is evident from the above table that the probability value 0.0026 is lower than 0.05 which suggests the rejection of the null hypothesis for a two tailed test at 5% significance level. It can also be seen that the calculated t-value of 3.0440 for EXR is equally significant at the 5% level of significance. By this, the null hypothesis that growth in EXR does not exert significant impact on FDI in WAEMU is rejected, thereby accepting the alternate hypothesis that EXR significantly influences FDI inflows in WAEMU. This implies that FDI flows which have been received in WAEMU for the period under review have a lot to do with the EXR policy in the region. However, this finding (even though weak) is statistically significant at 5% level of significance. In other words, appreciation of the foreign investor's currency will contribute positively FDI inflows in WAEMU. This discovery is in line with the literature (Asiedu, 2006; Busse and Nunnenkamp, 2007), and it confirms the study of Campos and Kinoshita (2008) which shows that FDI flows are greatest to countries with weaker currencies. Also, this finding confirms the first hypothesis of this study that exchange rate determines FDI inflows within WAEMU and it has also brought answer to the first research question. The positive relationship between FDI and exchange rate shows that appreciation of the foreign currency (US dollar) to the CFA F is a catalyst to investment in the WAEMU.

The coefficient of political instability (PRK) is -0.1935. This implies that there is an indirect relationship between FDI and political instability so that an increase of political instability or political instability by 100% causes FDI flows within WAEMU to fall by 19.35% all other variables held constant. The political instability dummy variable has the expected sign by being negative and is even statistically significant at 1% level of significance. This finding is understandable because most businessmen prefer to invest where political environment is stable. This finding is in line with the literature (UNCTAD, 1998; Kinda, 2010). In a recent cross-country study on FDI, Edwards (1991) concludes that "... political considerations have been the least important of all the considered factors in determining FDI". The study of

Campos & Kinoshita (2008) is more precise that countries with less political instability and better physical infrastructure attract more FDI flows.

The error correction model of this regression represented by the variable PECM(-1) because of the first difference of the panel of the eight WAEMU countries gives the value -2.6161 which is not only negative but statistically significant at 1% level of significance. This result shows that the error correction model fits very well the model 1. The calculated Durbin-Watson statistic (D-W stat.) from the results presented in Table 8 gives the value of 1.38; this value of Durbin-Watson statistics shows that autocorrelation may exist in the regression equation. But this value is acceptable in a panel regression analysis. F-stat is useful for joint significance of the parameter estimates. In the case of this study and at this junction, the F-statistic (i.e. is 51.6589) shows that the model is useful in determining whether any relationship exists between FDI and other included variables in the regression. The F-stat. also shows that the coefficients are jointly statistically significant at 1% level of significance.

### ***5.2.2 Equation of FDI Determinants of Each WAEMU Member Country***

In line with the sub-section 5.2.1, after evidence of cointegrating relationship proved (See Appendix IV, Page 202), among the included variables of FDI, per capita GDP, GDP growth rate, trade openness, human capital, infrastructure development, financial development, exchange rate, and political instability of each one of the 8 WAEMU countries, this study moves forward in estimating the long-run elasticities on the FDI determinants for each cross-section unit. The equation (for FDI determinants) which is applied for each one of the 8 WAEMU countries is the one given in equation (4.1.5) as follows: the FEM is applied.

$$D(FDI_{it}) = \lambda_0 + \lambda_1 D(GDPPC_{it}) + \lambda_2 D(OPN_{it}) + \lambda_3 D(HC_{it}) + \lambda_4 D(INFD_{it}) + \lambda_5 D(INF_{it}) + \lambda_6 D(FD_{it}) + \lambda_7 D(EXR_{it}) + \lambda_8 D(PRK_{it}) + u_{it}$$

The a priori expectation patterns of the behaviours of the independent variables in terms of their parameters to be estimated remain the same and are as follows:

$\lambda_0 > 0$  or  $< 0$ ,  $\lambda_1 > 0$ ,  $\lambda_2 > 0$ ,  $\lambda_3 > 0$ ,  $\lambda_4 > 0$ ,  $\lambda_5 < 0$ ,  $\lambda_6 > 0$ ,  $\lambda_7 > 0$  or  $< 0$   $\lambda_8 < 0$ .

The Table 5.7 below presents the FDI determinants in each one of the eight WAEMU countries during the period 1980-2010. All the parameters are good in term of fitness. Looking at the R-squared coefficients, it can be said that changes in FDI inflows in each one of the WAEMU countries are explained by the changes in the explanatory variables to the level between 60% and 88% during the period under study. Most of the explanatory variables are significant in the case of each cross section apart from few which are not specifically trade openness and exchange rate in Burkina Faso, inflation in Guinea-Bissau, and inflation and exchange rate in Togo.

**Table 5.7: Summary of FDI Determinants in WAEMU Countries**

Variables	Benin	Burkina Faso	Cote d'Ivoire	Guinea-Bissau	Mali	Niger	Senegal	Togo
C	539***	-391***	871.2***	-195***	-748***	70.01*	-302***	328.6**
D(GDPPC)	-2.1***	0.69**	0.37***	0.01**	1.02**	0.40*	0.85***	0.20***
D(OPN)	2.46***	-1.51	3.53***	-0.05**	-5.69***	1.18***	1.21**	1.44***
D(HC)	-6.4***	4.56***	4.89***	2.80***	13.44***	-6.47**	3.91***	-6.2***
D(INFD)	3.02***	20.60*	7.58**	-12.5***	-4.01**	13.1***	-17.2***	-6.24**
D(INF)	-2.1***	2.01**	-4.26***	-0.02	2.25**	-1.73**	-1.77**	0.15
D(FD)	3.37***	3.24**	1.26**	0.07***	8.52**	0.11*	5.37**	1.48***
D(EXR)	-0.1***	0.05	-3.05***	0.01***	0.45***	-0.38**	0.15**	-0.01
D(PRK)	-18***	-23.9**	-24.80*	-1.10*	1.80***	5.00**	-26.7**	9.93***
Effects Specification								
Cross-section fixed (Dummy Variables)								
R-sqrd	0.80	0.60	0.72	0.75	0.67	0.79	0.88	0.77
Adjst R-sqrd.	0.79	0.57	0.70	0.73	0.65	0.76	0.86	0.76
S.E. of regres.	27.29	48.17	80.68	2.87	80.80	76.74	51.60	11.14
Sum sqrd. res.	783.20	138.10	151.00	215.65	90.00	384.00	820.20	813.75
Log likelihood	-116.65	-130.56	-143.47	-605.40	-232.84	-140.05	-92.64	-941.54
F-stat.	63.24	22.85	39.25	45.83	31.60	53.19	53.61	52.72
Prob(F-stat.)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mean dpdt var	49.74	33.86	185.56	3.58	75.70	64.98	84.65	28.56
S.D. dpdt var	59.66	73.48	147.07	5.54	136.61	156.69	105.69	22.68
Akaike inf crit.	9.51	10.65	11.68	5.01	11.68	11.58	10.79	7.72
Schwarz criter.	9.74	10.88	11.91	5.24	11.91	11.81	11.01	7.95
Han.-Quin crit.	9.60	10.74	11.77	5.10	11.78	11.67	10.88	7.81
Durbin-W. stat	1.84	1.92	1.77	2.25	1.63	2.65	1.83	1.88

Notes: \*\*\* = significant at 1% level of significance

\*\* = significant at 5% level of significance

\* = significant at 10% level of significance

Source: Computed by the Author, 2015.

Contrary to the WAEMU region which benefits most from trade openness, it is observed that 3 WAEMU countries are adversely affected by this variable; these countries are Burkina Faso, Guinea-Bissau and Mali (Table 5.7). This is contrary to some literature on FDI, especially the results of Asiedu (2001), who works on determinants of FDI at the regional level (Africa). However, this finding is in line with Anyanwu (1998), who gives the reason for such observation as the antithetical SAP policy measures in place (in Nigeria) that led to the capital flight experience. This situation can also be explained by the fact that the international community put these countries under embargo (for a long period) after some political coups and this affects negatively their commercial activities of import and export.

The expectation of the variable ‘political risk’ is to be negatively related to FDI inflows. But this study finds that it is positively related to FDI inflows in three countries during 1980-2010 (Mali, Niger and Togo). However, the reason often adduced for such an observation is that private returns to investments obtainable from investments either in the mining sector or in the oil industry, after adjusting for risk, encourage investors. This argument finds an advocate in Asiedu (2001) and is supported by the findings in this study. According to Appendix II (Page 193), these three countries possess some mining sectors (gold, uranium, diamond, phosphate, bauxite, etc.) where MNCs and developed countries continue to invest heavily even during some political crises and riots. This is done under the military protection guaranteed by the governments.

Coming to the coefficient of the variable ‘inflation’, it can be observed (in Table 5.7) that it is positively related to FDI inflows in Benin, Cote d’Ivoire, Guinea Bissau, Niger and Senegal. This means that the expected sign is confirmed for ‘Inflation’ in these countries. It can be inferred that any macroeconomic instability discourages growth. Borensztein et al. (1998) and Li & Liu (2004) also report an indirect relationship between inflation and growth.

The coefficient of the variable ‘Infrastructure development, instead of being positive, is negative in WAEMU, Guinea Bissau, Mali, Senegal and Togo. The negative sign of the variable *Infrastructure* indicates the need for constructive attention to be given to provision of needed infrastructure, especially power generation and distribution, road construction, buildings and telecommunications to enhance FDI inflows.

To sum up this sub-section, it can be inferred that globally, this study finds that the major factors that determine FDI inflows in the WAEMU region are: per capita GDP, trade openness, human capital resources, infrastructure development, macroeconomic stability (i.e. moderate inflation), financial development, exchange rate and political stability.

### **5.3 Equations for FDI Growth Impact**

#### ***5.3.1 WAEMU Equation for FDI Growth Impact***

Let’s recall that Hausman test (in Table 5.5, Page 141) confirms the REM is the one that fits best the second model. The a priori expectation patterns of the behaviours of the independent variables in terms of their parameters estimated are:

$$\delta_0 > 0 \text{ or } < 0, \quad \delta_1 > 0, \quad \delta_2 > 0, \quad \delta_3 > 0.$$

The purpose of this section is to check whether FDI impacts or not economic growth in the WAEMU; and if it does, to what extent? The result presented in Table 5.8 (page 153), which is for the entire WAEMU, presents a constant term mean C with the value of 2.18. This means that holding the value of FDI and all other variables of this regression constant, the rate of economic growth in WAEMU will be about 2.18%. This result is statistically significant at 1% level of significance.

Also in the Table 5.8, Human capital resources comes up with a negative sign (i.e. – 0.6735). This finding shows a weak negative relationship between the state of human capital

resources and economic growth in the WAEMU community. Specifically, an increase of human capital resources by 100% leads economic growth to fall by 6.7%. This means that the human capital management within WAEMU needs to be improved in order to contribute to boost economic growth. The fact that the coefficient of human capital resources is contrary to the expected one and is statistically significant at 1% level of significance infers that more improvement needs to be brought to this variable.

**Table 5.8: Impact of FDI on Economic Growth in WAEMU**

Dependent Variable: D(GDPGR)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C_WAEMU	2.1798***	0.15368	14.1841	0.0000
D(HC)_WAEMU	-0.06735**	0.02173	-3.0994	0.0022
D(DMC)_WAEMU	0.2897**	0.1211	2.3926	0.038
D(FDI)_WAEMU	0.3907***	0.0819	4.7709	0.0000
PECM(-1)_WAEMU	-2.7929***	0.52127	-5.3579	0.0000
Effects Specification				
	Benin Rep.	0.0683		
	Burkina F.	-0.2467		
	Cote d'Ivoire	0.7154		
	Guinea B.	0.0402		
	Mali Rep	-0.3139		
	Niger Rep.	-0.4678		
	Senegal Rep.	0.4092		
	Togo Rep.	-0.2047		
Cross-section fixed (dummy variables)				
R-Squared	0.927963	Mean Dependent Var		6.1512
Adjusted R <sup>2</sup>	0.924923	S.D. Dependent Var		0.4253
S.E. of Regrs.	0.116533	Akaike Info Criterion		-1.41795
Sum Sqrd Res.	3.218437	Schwarz Criterion		-1.26211
Log Likelihood	186.8253	Hannan-Quinn Criter.		-1.35521
F-Statistic	305.30***	Durbin-Watson Stat		1.24083
Prob(F-Statistic)	0.0000			

Notes: \*\*\* = significant at 1% level of significance,  
 \*\* = significant at 5% level of significance,

Source: Computed by the Researcher, 2015

The regression coefficient for domestic credit to private sector is 0.2897 implying the existence of a direct and positive relationship between this variable D(DMC) and economic growth in the WAEMU community. So, this relationship is expressed in a way that any

increase of domestic credit to private sector by one unit will cause economic growth to increase by 0.2897%, all other things being equal within the period under study. This finding is statistically significant at 5% level of significance. So, good monetary management favours economic growth (Akinleye & Fakiyesi, 2011; Balogun, 2012).

The direct effect of FDI on economic growth is represented by the coefficient of  $D(\text{FDI})$  which is 0.39074. There is a direct and positive relationship between FDI inflows and economic growth in WAEMU within the period 1980Q<sub>1</sub>-2010Q<sub>4</sub>. To test  $H_{03}$ , this study uses simple regression analysis which is found not to be spurious by the rule of thumb. The result of the regression analysis is presented in Table 5.8 (Impact of FDI on economic growth in WAEMU). It is evident from the above table that the probability value 0.0000 is lower than 0.01 which suggests the rejection of the null hypothesis for a two tailed test at 1% significance level. It can also be seen that the calculated t-value of 4.7709 for FDI is equally significant at the 1% level of significance. By this, the null hypothesis that growth in FDI does not exert significant impact on economic growth in WAEMU is rejected, thereby accepting the alternate hypothesis that the growth in FDI significantly influences economic growth in WAEMU. This implies that economic growth which has been experienced in WAEMU for the period under review is caused by the FDI policy in that region. This finding is in line with the findings in the literature: Borensztein et al. (1998), Dauda (2008). By having a positive value for the coefficient of FDI, it can be said that this finding confirms the postulated 3<sup>rd</sup> hypothesis of this study i.e. "FDI inflows impact positively economic growth" and it brings an accurate answer to the 3<sup>rd</sup> research question of this study.

According to Gilmore, O's Donnel, Carson and Cummins (2003), size and growth of the foreign market are among the key factors that influence the choice of host market. This justifies the positive relationship between FDI and economic growth in WAEMU.

The coefficient of determination ( $R^2$ ) is 0.928. It shows that 92.8% of variation in GDP growth rate (proxy for economic growth) is caused by variations of the explanatory variables (FDI, human capital management and domestic credit to private sector). The adjusted R-squared, which is used to measure the goodness-of-fit of the estimated model, indicates that the model is accurate in prediction as it shows that 92.5% of variation in the economic growth [here,  $D(\text{GDPGR})$ ] is accounted for by the included explanatory variables. The probability value of the F-statistics further revealed that there is joint significance of the explanatory variables at 1% level of significance.

The D-W statistics is weak with its value of 1.24; this value does not signify the presence of an issue of positive autocorrelation in the estimated model, because we are in the presence of a panel co-integration.

F-statistic is useful for joint significance of the parameter estimates. In the case of this study, the F-statistic (with its value of 305.67) shows that the model is very useful in determining whether any relationship exists between economic growth and other variables (human capital management, domestic credit to private sector and foreign direct investment) in WAEMU community. The F-statistic also shows that the overall model is statistically significant at 1% level of significance.

The error correction model of this regression represented by the variable  $\text{PECM}(-1)$  because of the first difference gives the value -2.793 which is not only negative but statistically significant at 1% level of significance. This result shows that the correction fits the model.

### ***5.3.2 Equation of FDI Growth Impact of Each WAEMU Member Country***

Let's recall that Hausman test (in Table 5.5) confirms the REM is the one that fits best the second model. The a priori expectation patterns of the behaviours of the independent variables in terms of their parameters estimated are:



$$\delta_0 > 0 \text{ or } < 0, \quad \delta_1 > 0, \quad \delta_2 > 0, \quad \delta_3 > 0.$$

In this sub-section, the aim is to run the equation on FDI's impact on economic growth (model 2) for each individual WAEMU countries for the period 1980-2010. This will permit to verify if FDI enhances or not economic growth at individual level in the region of WAEMU; and if it does, to what extent? The result presented in Table 5.9 below.

**Table 5.9: FDI Growth Impact in WAEMU Countries**

Variable	Benin	Burkina Faso	Cote d'Ivoire	Guinea-Bissau	Mali	Niger	Senegal	Togo
C	19.73***	31.98***	2.33***	22.80***	-2.92	17.94***	-4.49	29.38***
HC	0.02**	-3.50***	0.00	-0.04	0.47***	0.06***	0.14***	-0.13***
DMC	-0.06**	0.06*	0.01**	-0.02**	0.04*	0.01*	0.01***	-0.05*
FDI	0.12***	0.03***	0.57***	0.14*	0.06*	0.22**	0.18**	0.67*
Effects Specification								
Cross-section fixed (dummy variables)								
R-squared	0.94	0.77	0.91	0.55	0.68	0.94	0.76	0.88
Adjstd R-sqrd	0.93	0.75	0.90	0.50	0.64	0.93	0.73	0.86
S.E. of regress.	0.24	0.22	0.04	0.14	0.22	0.05	0.03	0.07
Sum sqrd resid	13.30	1.31	0.05	0.55	1.31	0.08	0.03	0.15
Log likelihood	10.91	5.00	54.79	18.38	5.00	48.09	63.40	39.08
F-statistic	445.07	80.93	90.48	70.93	69.12	131.75	88.31	64.40
Prob(F-stat.)	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000
Mean dpdt var	19.83	21.90	23.39	20.05	21.96	21.72	6.57	21.28
S.D. depdt var	5.10	0.44	0.14	0.20	0.37	0.21	0.06	0.20
Akaike info crit.	0.00	-0.06	-3.28	-0.93	-0.06	-2.84	-3.83	-2.26
Schwarz crit.	0.16	0.12	-3.09	-0.74	0.12	-2.66	-3.65	-2.08
Hann.-Quin. crit.	0.06	0.00	-3.22	-0.87	0.00	-2.78	-3.77	-2.20
Durbin-Wat. stat	1.24	1.75	1.60	1.84	1.25	1.13	1.91	1.85

Notes: \*\*\* = significant at 1% level of significance

\*\* = significant at 5% level of significance

\* = significant at 10% level of significance

Source: Computed by the Author, 2015.

In the above Table (Table 5.9, in page 156), the coefficients of FDI for all the eight WAEMU countries are positive meaning that for each one of these countries, there is a positive and direct relationship between FDI and economic growth. In another word, FDI is found to impact positively the economic growth of each one of the West African francophone countries

(Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo). And these findings are statistically significant.

For WAEMU: To test the hypothesis of the impact of FDI on economic growth, this study uses simple regression analysis which is found not to be spurious by the rule of thumb. The result of the simple regression analysis is presented in table as follow. It is evident from Table 5.8 (page 153) that the probability value 0.0000 is lower than 0.5 which suggests the rejection of the null hypothesis for a two tailed test at 5% significance level. It can also be seen that the calculated t-value of 4.7709 for FDI is equally significant at the 5% level of significance. By this, the null hypothesis that growth in foreign direct investment does not exert significant impact on economic growth in WAEMU is rejected, thereby accepting the alternate hypothesis that the growth in FDI significantly influences economic growth in WAEMU. This implies that economic growth which has been experienced in WAEMU for the period under review has a lot to do with the inflow of foreign direct investment into the region. The Granger Causality Tests are presented in Table 5.10 bellow.

## **5.4 Causality Tests**

### ***5.4.1 Causality Test between Variables for WAEMU***

From the above Table 5.10, column 2 (page 155), the F-statistic and the probability values indicate that FDI Granger causes GDP with no reverse or feedback effect. From the above observation, the null hypothesis that FDI does not Granger cause GDP is rejected. This shows that the null hypothesis that there is a bidirectional relationship between FDI and economic growth in WAEMU is rejected thereby accepting the alternate hypothesis that there is a unidirectional relationship between FDI and economic growth in WAEMU. The result shows that there is causality between foreign direct investment and economic growth in WAEMU for the period under review and the causality runs from FDI to economic growth and not from economic growth to FDI indicating a unidirectional relationship.

**Table 5.10: Causality Test between the variables and FDI in WAEMU and its Member Countries**

<b>Null Hypothesis:</b>	<b>WAE</b>	<b>Ben</b>	<b>Bur</b>	<b>Civ</b>	<b>Gub</b>	<b>Mal</b>	<b>Nig</b>	<b>Sen</b>	<b>Tog</b>
FDI_WAE does not Granger Cause GDPGR_WAE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GDPGR_WAE does not Granger Cause FDI_WAE	No	No	No	No	No	Yes	No	No	No
INFD_WAE does not Granger Cause FDI_WAE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FDI_WAE does not Granger Cause INFD_WAE	Yes	Yes	No	Yes	No	No	Yes	Yes	No
INFL_WAE does not Granger Cause FDI_WAE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FDI_WAE does not Granger Cause INFL_WAE	No	No	No	No	No	No	No	No	No
FD_WAE does not Granger Cause FDI_WAE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FDI_WAE does not Granger Cause FD_WAE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EXR_WAE does not Granger Cause FDI_WAE	-	-	-	-	-	-	-	-	-
FDI_WAE does not Granger Cause EXR_WAE	No	No	No	No	No	No	No	No	No
OPN_WAE does not Granger Cause FDI_WAE	Yes	Yes	No	Yes	No	No	Yes	Yes	No
FDI_WAE does not Granger Cause OPN_WAE	Yes	Yes	No	Yes	No	No	No	Yes	No
GDPPC_WAE does not Granger Cause FDI_WAE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FDI_WAE does not Granger Cause GDPPC_WAE	No	No	No	No	No	No	No	No	No
PRK_WAE does not Granger Cause FDI_WAE	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
FDI_WAE does not Granger Cause PRK_WAE	No	No	No	No	No	No	No	No	No

Source: Computed by the Author, 2015.

This implies that any policy that enhances FDI inflows leads to increase economic growth in WAEMU during the period. Also, there is causality running from FDI to infrastructure development, meaning that FDI inflows lead to increase infrastructure development in WAEMU during the period.

Moreover, there is also no causality between (GDP & FDI), (INFD & FDI), (FDI & INFL), (FDI & EXR), (FDI & GDPPC, the proxy of market size), (FDI & PRK).

But, there is bidirectional causality between (FDI & FD) and between (FDI & OPN). It means that FDI inflows enhance a development of financial tools while financial development, in return encourages more of FDI inflows in the region during the period. And that it can be inferred that trade openness favours more of FDI and in return, FDI leads to more of FDI inflows in WAEMU during the period.

At the cross-sectional level (i.e. country level), this study finds that five countries present the same trend in the results for Granger causality tests and these countries are: Benin Republic, Cote d'Ivoire, Mali, Niger Republic and Senegal. Therefore, their Granger causality analysis, which is globally the same, goes like this: The tables of Causality test between the variables for five countries which present the same characteristics are presented below (Benin, Cote d'Ivoire, Mali, Niger and Senegal).

#### ***5.4.2 Causality Test Between the Variables for WAEMU Member Countries***

From the Tables 5.10 above (Page 155) three tendencies can be observed: first the unidirectional causality between some variables and FDI; secondly, the no causality relationship between other variables and FDI inflows in each one of the mentioned five countries and thirdly, the case of bidirectional causality between the FDI variable and some variables.

The first one is that of unidirectional causality between FDI and economic growth: Three variables possess this type of relationship with FDI within the period under study for the five countries mentioned above and they are: economic growth, macroeconomic stability and market size. FDI Granger causes economic growth, meaning that FDI leads to economic growth during the period. But in the case of INFL (i.e. macroeconomic stability) and GDPPC (i.e. market size), they Granger cause FDI which means that they determine increase of FDI in each one of the five mentioned countries.

The second type of unidirectional causality is that of “No causality link” between some variables and FDI, specifically, FDI does not Granger cause PRK and does not also Granger cause market size in these five countries. Moreover, FDI does not Granger cause EXR and GDPGR and macroeconomic stability during the period 1980-2010. It means that during the period, inflows of FDI in these five countries do not affect political stability, exchange rate (surely because of the fixed regime of exchange rate in the region) and economic growth.

The third category of causality is the bidirectional causality between FDI and two variables: infrastructure development and financial development. This implies that FDI is attracted by good infrastructure and good development of financial system and tools within the period in the five countries namely: Benin, Cote d’Ivoire, Mali, Niger and Senegal) and in return, these variables also cause FDI inflows to increase.

The same Granger causality test presents the same trend for the three countries i.e. Burkina Faso, Guinea Bissau and Togo. Their figures are in the above Table 5.10, columns 4, 5 and 9 (page 155). These three columns present their granger Causality Tests and their results present the same tendencies. In that Table 5.10, one can observe that there are variables which do not have any causality relationship with FDI in the case of these three countries such as trade openness. It means that for the period, FDI does not Granger cause trade openness does not cause FDI inflows and the latter also does not cause trade openness during the period of

1980 and 2010. But, as for the variable 'financial development', it Granger cause FDI, while in return, FDI inflows Granger cause financial development. It means that the development of financial system causes FDI inflows while FDI inflows also leads to the development of some financial tools and financial system. Lastly, it is the case of the variables which possess a unidirectional relationship with FDI during the period of 1980-2010. This category of variables includes GDPGR, INF. It can therefore be inferred that FDI enhances economic growth in WAEMU and in each one of its member countries during the period 1980-2010.

## CHAPTER SIX

### SUMMARY – CONCLUSION – RECOMMENDATIONS

#### 6.0 Introduction

What determines why FDI inflows go to where they do in WAEMU countries? To shed light on the potential drivers of FDI to the West African Francophone countries, this study performs panel cointegration estimations for the cross-sectional time-series linear model, using level data. The empirical model attempts to predict the level of FDI inflows (as percent of GDP) as a function of market size (GDP per capita), trade openness, financial development, macroeconomic stability, exchange rate, infrastructure development, human capital, economic track records (i.e. GDP growth rate), political risk, and natural resource endowment.

The major estimation results can be summarized as follows: The empirical findings have important key policy implications for WAEMU and its member countries.

#### 6.1 Summary of Findings

Below is the articulation of some of the key outcomes of the current study titled: “Determinants and growth impact of FDI in WAEMU”:

(i) Financial development determines FDI inflows and then enhances economic activities in WAEMU and in the majority of its member countries. In return, it constitutes a catalyst to economic growth in WAEMU. Also, this result is found to be statistically significant at 5% level of significance.

(ii) Exchange rate appreciation enhances FDI inflows and favours economic growth in WAEMU. In other words, a moderate devaluation of the CFA Franc will improve economic growth through the direct and indirect effects of FDI on the economy. Even more, this result is statistically significant at 5% level of significance at WAEMU level.

These two findings bring a positive answer to the first research question and confirm the first hypothesis of this study i.e. “Financial development and exchange rate determine FDI inflows in WAEMU”.

(iii) Trade openness contributes to more of inflows of FDI within the WAEMU community. Also, this result is found to be statistically significant at 1% level of significance. But out of eight (08) WAEMU countries, only three (03) have their trade openness to be adversely related to FDI: Burkina Faso, Guinea-Bissau and Mali.

(iv) Market size is found to play an important role in FDI inflows (Nigh, 1986; Barrell & Pain, 1996; Anyanwu, 1998; Zhang, 2001; Tarzi, 2005; Fedderke and Romm, 2006) though the results of Kyereboah-Coleman and Agyire-Tettey (2008) indicate that most foreign investors do not consider this factor in making a decision abroad. This variable not only determines FDI in WAEMU as a whole, it also determines positively FDI inflows in all the West African Francophone countries minus Benin Republic. And this finding is statistically significant (See Table 5.7).

These two latter findings not only confirm the second hypothesis of this study but they prove that the second objective also of this study is reached by providing a positive answer to the second research question.

(v) The impact of FDI on economic growth in WAEMU is positive. This result is found to be statistically significant at 1% level of significance. This result proves that FDI is one of the variables that boost economic growth in the WAEMU community. At individual level, this finding is also confirmed because FDI is found to impact positively economic growth in all the eight WAEMU member countries. This finding, by confirming the 3<sup>rd</sup> hypothesis of this study and by bringing a positive answer to the 3<sup>rd</sup> research question proves that the 3<sup>rd</sup> objective is reached: that is FDI impacts positively economic growth in WAEMU



and its member countries during 1980-2010. Even more, the direction of causation in WAEMU is unidirectional; and it goes from economic growth to FDI. This implies that this study finds that economic growth is enhanced by FDI but that WAEMU conditions such as trade regime, infrastructure development, financial development, macroeconomic and political stability and the regime of exchange rate are important. In line with some findings in the literature (Choe, 2003), causality between economic growth and FDI runs in either direction but with a tendency towards FDI causing growth; there is little evidence that growth causes host country FDI.

(vi) Through Granger causality test that was applied, this study also finds that there is a causality relationship between FDI and economic growth and specifically, the causality runs from FDI to economic growth and not from economic growth to FDI

(vii) Moreover, because of the weakness of the WAEMU economy, human capital suffers due to lack of training and education. The majority of rural population is illiterate at 65% (IMF, 2009). This is why human capital deters both FDI inflows and economic growth in WAEMU. More so, this finding is statistically significant at 5% level of significance.

(viii) Even more, FDI, human capital management and domestic credit to private sector are statistically significant in explaining variations of WAEMU's economic growth at the level of 92.8% within 1980-2010.

## **6.2 Major Conclusions of the Study**

The study has explored the link between FDI and the macroeconomic factors and monetary variables for WAEMU region and its eight member countries. Very recent tests for unit root and cointegration in panel data have been applied based on the simple model of Fedderke and Romm (2006) to unravel evidence for any long run relationship among economic growth, per capita GDP, trade openness, human capital management, infrastructure development, inflation, financial development, exchange rate, political instability and FDI. The

use of these methods, quite recent in the applied literature, avoids the problems found in panel data analysis when the variables are non-stationary, and adds the cross-country dimension to the traditional time series analysis. The inclusion of these explanatory variables (human capital, domestic credit to private sector and FDI) as the determinants of the equilibrium economic growth seems to provide a reasonable model to explain the behaviour of the economic growth.

From the analysis, it is clear that the inflows of foreign direct investment cause economic growth in WAEMU within the period under review. Also, from the result of the Granger causality test, it is ascertained that the causality runs from FDI to GDP and not from GDP to FDI. The positive relationship implies that FDI stimulates economic growth in WAEMU. The result can be put forward as a guide for policy makers to take the advantage of FDI spillover effects. The positive relationship also indicates that FDI has really contributed to the growth of the WAEMU region economy for the period 1980-2010. Moreover, strong evidence emerging from this study shows that economic growth as measured by GDP in WAEMU is Granger caused by FDI, which shows that region's capacity to progress on economic development will depend largely on the country's performance in attracting FDI. This study supports the impact of FDI on GDP growth in WAEMU. These findings confirm the relevance of the economic reform programmes in WAEMU to reduce macro-economic instability, remove economic distortions, promote exports and restore sustainable domestic investment for economic growth. The study also reveals that there is no significant positive spillover from FDI and exchange rate (FDI-EXR). This implies that they do not have a direct effect on each other, no causality exists between them. Finally from the findings of this study, the conservative view that the direction of causality runs from FDI to economic growth is confirmed in the case of WAEMU and to its member countries of Benin Republic, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger Republic, Senegal and Togo. This supports the validity of policy guidelines which stipulates the importance of FDI for the growth and

stability of developing countries under the assumption of FDI led growth. From the foregoing, it becomes useful that improving the image of the region by training human capital and formation is one of the keys to enhance both economic growth and economic development in WAEMU and its member countries. This will necessitate an increase in political stability, macroeconomic stability and a strategic investment in infrastructure. It is suggested that in order to attract greater inflows of FDI in the future, WAEMU region and each one of its member countries in particular, need to accelerate progress towards more open economies, greater economic freedom to the level that it should not jeopardize the economy of the region and that of each member country. Finally, governmental authorities in the region should make sure that their populations are well trained and formed with a sound health. Since we were unable to get data till 2013, this study suggests that a robust and efficient mechanism of monitoring and recording data, especially FDI inflows should be established. This will enable policy makers, academics and stakeholders make accurate decisions, forecasts and also undertake studies.

### **6.3 Policy Recommendations**

In term of recommendations, the following points should be considered:

- i. WAEMU government policies should also continue to promote domestic linkages within all the sectors of the economy in order to attract more FDI.
- ii. Both governments and monetary authorities in WAEMU should harmonise their views and policies to maintain macroeconomic and political stability for financial development strategy.
- iii. A sound policy should be adopted within the WAEMU countries to form human capital which will not only attract more of FDI, but will increase economic growth

which spillovers will cover all the sectors of economic activity in the region and in each of its member country.

- iv. It is important that the enabling environment should always be provided in WAEMU in order to attract more foreign investment and further stimulate the region's economic growth.
- v. For FDI to contribute fully to economic and social progress in WAEMU, host-country governments need to create a policy environment that enables them to maximize development returns on investment. Governments should thus develop a set of policies that are not only focused on investment promotion but also address issues such as human capital (through training and formation), infrastructure development, and are likely to increase FDI spillover effects and contribute to economic diversification.
- vi. Transactions on money should be well managed to avoid foreign exchange gap; because to fill such gap will necessitate a cost while there are many other things to do within each country to enhance economic growth.
- vii. Knowing that infrastructure development is one of the major determinants of FDI of this study, adequate policy in that area should be implemented by constructing more roads, more buildings, schools, hospitals, telecommunications, etc. Specifically more cooperation in infrastructure development projects (for example, in telecommunication, transportation, power generation, and the provision of water) at the regional level should be initiated and encouraged. This will increase access to WAEMU and reduce the cost of provision of the facilities, thereby lowering transactions costs, boosting trade, and increasing the attraction of the region to foreign investors.

- viii. WAEMU country members should encourage and facilitate more trade openness; but they should be cautious that too much openness can deter not only economic growth but FDI inflows. Therefore, sound monetary strategies should be set up to avoid money fly which can bring more financial trouble within the community such as that experienced in Mexico in the last decade and the recent international financial crisis had in developed countries (USA, Europe, etc.).
- ix. Strengthen domestic financial systems, in order to make domestic financial resources available to supplement and complement foreign investment. A priority area is the development of capital markets and financial instruments to promote savings and provide long-term credit efficiently.

#### **6.4 Contribution to Knowledge**

This study has made some meaningful contributions to knowledge in the area of research and methodology, and some of these are as follow:

- i. Most studies on FDI in West Africa were carried out mainly in English-speaking countries; however, this present study happens to be one of the few to provide empirical evidence on the determinants of FDI on the West African francophone countries.
- ii. This study demonstrates the importance of exchange rate as well as that of financial development on the inflows of FDI in WAEMU economy which are cardinal factors that were never considered by previous studies in influencing FDI inflows in WAEMU countries except for West African English speaking countries.
- iii. This study also establishes the role of trade openness, market size, infrastructure development, political and macroeconomic stability on FDI inflows in WAEMU

economy. For the best of our knowledge, these combined were missing in most studies on WAEMU.

- iv. This study employs panel cointegration approach, an uncommon method of analysis in investigating the factors influencing FDI inflows and well as FDI-growth link in WAEMU countries based on the examination of existing literature on WAEMU FDI inflows. The study establishes that most of the determinants of FDI and data on FDI and growth all suffered from unit root problem which faulted the results of previous studies.
- v. The present study demonstrates after resolving the issue of the unit root problem associated with the data a cointegration between FDI and growth in WAEMU. It further shows a significant role of FDI on growth.

### **6.5 Limitations of Study**

The following three points constitute the limitations that the current study points out:

- i. FDI flows to different sectors in each WAEMU country and therefore examining the effect of sectoral FDI on growth is key. However, this present study was constrained by data availability to consider this important aspect. Hence, further studies should endeavour to consider this aspect.
- ii. In the same vein, analysing the determinants of FDI inflows should best be done by analysing the effect of each of the determinants on sectoral FDI inflows. In this way, one can analyse the severity each factor on each sectoral FDI flows and establish their peculiarity to each sector. However, this was not considered in this present study as a result of data availability and time. Therefore, further studies should look at these areas also.

iii. Country specific policy environment is key to influencing FDI inflows and as well FDI impact on the growth of recipient countries. This present study uses inflation and a dummy to capture macroeconomic and political stability which is an aspect. It is therefore advised that further studies capture the aspect of specific policy environment on this link.

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## APPENDICES

### Appendix I: Some Macroeconomic Indicators in WAEMU Countries

#### A.1.1: Some Macroeconomic Indicators of Benin Republic

Year	GDPPC	GDPGR	INFD	INF	FD	EXR	DMC	OPN	GFCF	HC
1980	448.06	6.78	0.24	10.19	20.44	211.28	28.63	53.14	16.23	72.16
1985	484.89	7.53	0.26	-4.88	23.76	449.26	30.96	60.30	12.84	72.17
1990	457.94	8.98	0.31	2.18	25.12	272.26	19.13	45.72	12.96	72.10
1995	470.14	6.05	0.50	15.10	22.87	499.15	7.43	63.80	16.34	72.60
2000	512.96	4.86	0.79	4.53	28.56	711.98	11.55	55.19	18.22	72.20
2005	532.61	2.87	1.00	4.42	26.75	527.47	16.32	50.12	19.55	72.10
2010	550.04	2.55	1.51	1.86	39.19	495.28	23.33	39.76	17.64	72.60

#### A.1.2: Some Macroeconomic Indicators of Burkina Faso Republic

Year	GDPPC	GDPGR	INFD	INF	FD	EXR	DMC	OPN	GFCF	HC
1980	265.43	8.52	0.10	0.76	13.38	449.26	13.34	40.95	19.14	85.34
1985	269.32	-0.60	0.17	1.81	18.18	272.26	16.91	35.42	17.74	85.34
1990	284.92	5.72	0.28	6.77	23.97	499.15	6.79	40.75	22.48	85.40
1995	343.11	1.85	0.43	-1.66	21.13	711.98	11.72	34.26	18.69	85.20
2000	407.00	8.66	0.64	3.74	19.39	527.47	16.46	35.54	19.69	85.10
2005	457.23	7.94	0.87	7.20	27.42	495.28	16.87	41.93	19.86	85.20
2010	457.23	7.94	0.87	7.20	27.42	495.28	16.87	41.93	19.86	85.30

#### A.1.3: Some Macroeconomic Indicators of Cote d'Ivoire

Year	GDPPC	GDPGR	INFD	INF	FD	EXR	DMC	OPN	GFCF	HC
1980	1468.62	-10.96	0.44	24.14	27.06	132.67	40.76	76.18	24.35	14.40
1985	1210.98	4.50	0.54	0.34	29.97	96.71	34.05	79.17	11.77	66.40
1990	1075.84	-1.10	0.58	-4.52	28.76	125.84	36.50	58.80	8.50	67.90
1995	986.18	7.13	0.79	11.04	26.04	88.38	18.50	76.20	13.69	67.20
2000	1014.43	-3.70	1.59	-0.38	22.20	86.41	15.50	73.75	11.19	66.60
2005	940.75	1.26	1.43	4.23	24.11	100.00	13.78	94.64	9.74	67.20
2010	959.99	2.39	1.44	1.90	36.58	99.57	18.01	90.32	9.41	67.50

#### A.1.4: Some Macroeconomic Indicators of Guinea Bissau

Year	GDPPC	GDPGR	INFD	INF	FD	EXR	DMC	OPN	GFCF	HC
1980	380.45	-15.95	0.36	11.54	19.57	0.68	17.85	54.53	28.18	70.61
1985	462.32	4.17	0.57	32.31	23.49	2.98	19.44	67.47	35.10	70.61
1990	497.25	6.10	0.61	30.25	16.12	54.91	13.33	46.97	29.93	70.70
1995	518.85	4.40	0.65	44.73	24.09	501.49	6.69	46.81	22.30	70.60
2000	415.52	3.64	0.87	7.10	60.85	918.49	3.04	83.35	11.30	72.00
2005	402.99	4.92	0.32	4.30	20.81	794.73	2.09	84.43	14.56	73.50
2010	426.37	1.72	0.32	3.47	35.52	756.02	11.85	80.84	15.19	74.40

A.1.5: Some Macroeconomic Indicators of Mali

Year	GDPPC	GDPGR	INFD	INF	FD	EXR	DMC	OPN	GFCF	HC
1980	367.29	-4.33	0.07	16.30	16.63	287.99	21.71	43.80	15.47	52.71
1985	295.25	-11.36	0.09	16.20	21.62	415.26	14.16	60.73	15.77	52.72
1990	329.66	-1.85	0.13	4.86	20.49	364.84	12.80	50.88	22.97	52.70
1995	337.24	6.21	0.17	18.43	20.68	728.38	10.71	57.35	22.90	52.60
2000	380.25	3.20	0.35	5.60	23.68	918.49	16.50	66.17	24.56	52.60
2005	444.28	6.08	0.58	2.45	30.03	794.73	17.23	62.93	22.65	53.30
2010	498.48	5.82	0.75	4.18	27.54	756.02	18.04	65.88	21.13	54.40

A.1.6: Some Macroeconomic Indicators of Niger Republic

Year	GDPPC	GDPGR	INFD	INF	FD	EXR	DMC	OPN	GFCF	HC
1980	406.89	-2.23	0.10	20.82	14.70	287.99	17.11	62.71	136.70	57.80
1985	308.91	7.72	0.12	-5.90	16.70	415.26	15.63	53.53	92.43	57.85
1990	302.85	-1.28	0.12	-1.60	19.81	364.84	12.29	36.41	87.40	57.30
1995	265.75	2.61	0.15	5.42	14.26	728.38	4.47	42.48	98.40	59.90
2000	254.99	-1.41	0.18	4.52	8.16	918.49	4.80	43.49	186.14	63.20
2005	258.28	4.50	0.18	6.57	13.84	794.73	6.75	47.40	384.62	65.20
2010	233.68	-7.96	0.54	17.35	21.45	756.02	12.95	71.67	576.46	65.40

A.1.7: Some Macroeconomic Indicators of Senegal

Year	GDPPC	GDPGR	INFD	INF	FD	EXR	DMC	OPN	GFCF	HC
1980	711.14	-3.31	0.33	11.53	24.01	287.99	36.43	62.25	14.64	75.77
1985	707.10	3.28	0.36	8.99	22.55	415.26	29.82	67.06	18.82	75.80
1990	680.41	-0.68	0.61	-0.02	22.56	364.84	26.44	57.60	17.99	76.10
1995	650.29	5.36	0.98	7.37	20.59	728.38	14.69	68.19	18.93	76.30
2000	702.35	3.20	2.17	1.94	23.72	918.49	18.68	65.14	22.39	76.60
2005	771.82	5.63	2.45	2.40	34.04	794.73	23.25	69.36	29.64	76.85
2010	796.15	4.13	2.75	1.41	39.90	756.02	25.87	67.80	29.00	60.94

A.1.8: Some Macroeconomic Indicators of Togo Republic

Year	GDPPC	GDPGR	INFD	INF	FD	EXR	DMC	OPN	GFCF	HC
1980	533.54	14.58	0.25	10.47	20.16	287.99	27.46	18.00	82.30	60.94
1985	438.42	5.56	0.26	3.40	18.85	415.26	20.83	25.21	91.80	60.94
1990	425.61	-0.24	0.31	2.98	19.90	364.84	22.57	25.50	71.90	60.90
1995	377.70	7.85	0.22	11.08	19.38	728.38	20.08	35.03	97.20	60.80
2000	411.36	-0.78	0.22	-4.29	15.37	918.49	16.04	36.50	139.10	58.90
2005	381.78	1.18	0.23	7.75	27.37	794.73	17.51	62.18	200.67	58.90
2010	392.86	4.00	0.25	1.18	31.48	756.02	22.83	53.88	212.83	57.70

Source: Computed by the Author, 2015.

## Appendix II: Populations and Natural Resources in WAEMU Countries

No.	Countries	Population (2010)	% of WAEMU	Total land area (Sq Km)	% of WAEMU	Natural resources
1	Benin Republic	9,210,000	8.28	112,600	3.21	Offshore oil, iron ore, Cotton, Cocoa, marble, cement & marble...
2	Burkina Faso	16,290,000	14.65	274,200	7.82	Manganese, cotton, Phosphate, salt, gold, diamond, etc.
3	Cote d'Ivoire	21,570,000	22.11	322,460	9.20	Cocoa, Oil, bauxite, hydropower, iron, diamond, nickel, cobalt, copper, rubber, timber, gold, etc.
4	Guinea Bissau	1,650,000	1.69	36,125	1.03	Diamonds, fish, bauxite, phosphate, gold, etc.
5	Mali	13,320,000	13.65	1,240,190	35.37	Gold, salt, cattle, etc.
6	Niger Republic	15,890,000	16.29	1,267,000	36.14	Uranium, gold, salt, cattle, etc.
7	Senegal	12,860,000	13.18	196,722	5.61	Peanuts, fish, cattle, etc.
8	Togo	6,780,000	6.95	56,785	1.62	Diamond, gold, phosphate, etc.
9	WAEMU	97,570,000	100.00	3,506,082	100.00	All the goods mentioned in this column.

Source: Computed (from 2012 IFS) by the Author, 2015



### Appendix III: Unit Root Tests at Cross Section Level

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	0.915	7.941	22.16		0.052	
Gdpgr	-8.66***	99.95***	169.3***	I(0)	-4.10***	I(0)
Gdppc	1.191	23.570*	28.78**	I(0)	0.304	
Dmc	-0.407	14.264	14.56		-1.476*	I(0)
Opn	-0.281	15.95	18.52		-0.021	
Hc <sub>1</sub>	3.229	10.885	21.59		4.30	
Infid	4.459	4.302	10.12		3.81	
Infl	-5.59***	62.13***	98.42***	I(0)	-6.05***	I(0)
Fd	1.493	10.99	18.23		2.082	
Exr	-0.072	11.948	15.045		-0.90	
Prk	-4.48***	42.42***	58.81***	I(0)	-3.20**	I(0)
Gfcf	-1.010	27.10**	26.88**	I(0)	-1.80**	I(0)
Hc <sub>2</sub>	7.882	2.123	4.156		7.79	

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	-9.05***	105.04***	227.27***	I(1)	-6.84***	I(1)
Gdpgr	-18.64***	215.6***	195.9***	I(1)	-14.3***	I(1)
Gdppc	-8.07***	91.70***	145.1***	I(1)	-4.40***	I(1)
Dmc	-6.21***	70.75***	1370***	I(1)	-5.27***	I(1)
Opn	-8.88***	103.2***	184.8***	I(1)	-6.87***	I(1)
Hc <sub>1</sub>	-6.3***	75.32***	101.6***	I(1)	7.033**	I(1)
Infid	-6.86***	78.39***	116.1***	I(1)	-6.37***	I(1)
Infl	-12.36***	147.1***	225.9***	I(1)	-12.62***	I(1)
Fd	-7.36***	83.65***	169.5***	I(1)	-2.17**	I(1)
Exr	-6.21***	68.25***	126.8***	I(1)	-4.45***	I(1)
Prk	-12.08***	136.1**	187.8***	I(1)	-8.35***	I(1)
Gfcf	-9.14***	105.6***	206.9***	I(1)	-3.69***	I(1)
Hc <sub>2</sub>	-5.74***	65.65***	156.7***	I(1)	-4.80***	I(1)

Notes: \*\*\* significant at 1%; \*\* significant at 5% and \* significant at 10%, I(0)

IPS = Im, Peseran & Shim. W. Test; LLC = Levin, Lee & Chu

ADF Fisher = ADF-Fisher; PPF Chi Square = PPF Sqr

Source: Author Computation's, 2015.

#### Remark:

- Hc<sub>1</sub> means: Labour force participation rate, total (% of total population ages 15-64)
- Hc<sub>2</sub> means: Labour force with secondary education (% of total).

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	-0.414	2.222	-4.10718		-1.252	
Gdpgr	-3.43**	14.10***	21.70***	I(0)	1.825	
Gdppc	3.463	0.0014	0.013		2.51	
Dmc	0.007	1.332	1.378		0.205	
Opn	-1.310*	4.970*	4.74*	I(0)	-0.404	
Hc <sub>1</sub>	0.21	1.010	1.326		-0.051	
Infid	1.863	0.067	0.004		0.963	
Infl	-2.96***	11.88**	10.22**	I(0)	-3.51***	I(0)
Fd	0.314	0.870	1.19		0.13	
Exr	-0.288	1.926	2.297		-0.39	
Prk	-1.640*	6.190**	10.24**	I(0)	-0.25	
Gfcf	-1.249	4.740*	5.980*	I(0)	-0.785	
Hc <sub>2</sub>	3.60	0.001	0.002		3.32	

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	-4.40***	18.60***	28.51***	I(1)	-4.57***	I(1)
Gdpgr	-7.59***	31.4***	18.42***	I(1)	6.03***	I(1)
Gdppc	-2.30**	8.91**	18.73***	I(1)	2.770	
Dmc	-1.86**	7.08**	12.5***	I(1)	-1.81**	I(1)
Opn	-3.81***	15.81***	20.64***	I(1)	-4.57***	I(1)
Hc <sub>1</sub>	-2.58**	10.14**	21.45***	I(1)	2.85	
Infid	-3.88**	16.14**	5.520*	I(1)	-3.79***	
Infl	-4.63***	19.70***	36.07***	I(1)	-4.83***	I(1)
Fd	-4.35***	18.42***	24.23***	I(1)	1.48	
Exr	-2.37**	9.216**	12.27***	I(1)	-1.64*	I(1)
Prk	-5.14***	22.05***	29.86***	I(1)	-2.8**	I(1)
Gfcf	-3.41***	13.92***	28.43***	I(1)	-1.05	
Hc <sub>2</sub>	-1.43*	-5.400*	13.00**	I(1)	-0.95	

Notes: \*\*\* significant at 1%; \*\* significant at 5% and \* significant at 10%, I(0)

IPS = Im, Peseran & Shim. W. Test; LLC = Levin, Lee & Chu

ADF Fisher = ADF-Fisher; PPF Chi Square = PPF Sqr

Source: The Author, 2015.

**Remark:**

- Hc<sub>1</sub> means: Labour force participation rate, total (% of total population ages 15-64)
- Hc<sub>2</sub> means: Labour force with secondary education (% of total)

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	0.469	0.695	0.545		0.172	
Gdpgr	-1.56*	5.892*	17.33***	I(0)	-0.483	
Gdppc	-2.27**	8.80**	7.56**	I(0)	-3.055**	I(0)
Dmc	0.0013	1.342	0.923		-0.998	
Opn	0.586	0.585	0.537		0.464	
Hc <sub>1</sub>	-1.36*	5.1300*	18.42***	I(0)	-21.5***	I(0)
Infid	0.69	0.504	0.633		0.013	
Infl	-1.92**	7.322**	13.86***	I(0)	-2.32**	I(0)
Fd	0.884	0.375	0.71		2.007	
Exr	-0.731	3.075	4.756*	I(0)	-0.008	
Prk	-2.14**	8.25**	20.52***	I(0)	-0.984	
Gfcf	-2.89**	11.6***	7.08**	I(0)	-3.07**	I(0)
Hc <sub>2</sub>	0.886	0.37	0.53		0.046	

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	-1.90**	7.25**	15.78***	I(1)	-1.44*	I(1)
Gdpgr	-4.95***	21.16***	32.92***	I(1)	-3.60***	I(1)
Gdppc	-1.92**	7.32**	5.030*	I(1)	-2.33**	I(1)
Dmc	1.49*	5.65*	12.62**	I(1)	-1.82**	I(1)
Opn	-2.48**	9.72**	15.19***	I(1)	-3.16***	I(1)
Hc <sub>1</sub>	-7.77***	31.9***	18.42***	I(1)	18.67	
Infid	-1.97**	7.55**	25.78***	I(1)	-1.86**	I(1)
Infl	-4.20***	17.67***	22.46***	I(1)	-4.29***	I(1)
Fd	-2.11**	8.12**	22.23***	I(1)	-0.94	
Exr	-2.77**	11.02**	18.42***	I(1)	-1.143	
Prk	-5.40***	23.06***	18.42***	I(1)	-1.08	
Gfcf	-1.54*	5.81*	13.53**	I(1)	-0.09*	I(1)
Hc <sub>2</sub>	-2.74**	10.87**	21.9***	I(1)	-3.11**	I(1)

Notes: \*\*\* significant at 1%; \*\* significant at 5% and \* significant at 10%, I(0)

IPS = Im, Peseran & Shim. W. Test; LLC = Levin, Lee & Chu

ADF Fisher = ADF-Fisher; PPF Chi Square = PPF Sqr

Source: The Author, 2015.

#### Remark:

- Hc<sub>1</sub> means: Labour force participation rate, total (% of total population ages 15-64)
- Hc<sub>2</sub> means: Labour force with secondary education (% of total)

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	0.813	0.42	1.217		0.2224	
Gdpgr	-4.09***	17.24***	27.2***	I(0)	-3.331**	I(0)
Gdppc	-0.608	2.73	4.035		-0.54	
Dmc	0.095	1.183	1.219		-0.403	
Opn	0.138	1.116	1.302		-0.113	
Hc <sub>1</sub>	2.110	0.040	0.026		1.333	
Infid	0.421	0.745	1.87		0.978	
Infl	-0.543	2.551	7.263**	I(0)	-0.113	
Fd	-1.65**	6.259**	13.15**	I(0)	-1.93**	I(0)
Exr	-0.449	0.715	0.54		-0.42	
Prk	-1.072	1.14	5.20*	I(0)	-1.25	
Gfcf	0.14	1.319	2.299		-0.745	
Hc <sub>2</sub>	0.8	0.43	0.24		0.17	

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	-4.68***	19.93***	35.62***	I(1)	-4.72***	I(1)
Gdpgr	-6.15***	26.37***	18.42***	I(1)	-3.76***	I(1)
Gdppc	-3.74***	15.49***	26.93***	I(1)	-4.20***	I(1)
Dmc	-2.87**	11.46**	18.42***	I(1)	-2.00**	I(1)
Opn	-5.22***	22.38***	29.79***	I(1)	-1.32*	I(1)
Hc <sub>1</sub>	-3.37***	13.74***	18.98***	I(1)	-3.81***	I(1)
Infid	-1.91**	7.28**	23.79***	I(1)	-2.35**	I(1)
Infl	-4.42***	18.72***	34.72***	I(1)	-3.71***	I(1)
Fd	-4.07***	17.07***	35.06***	I(1)	-4.54***	I(1)
Exr	-1.188	4.539	6.110**	I(1)	-2.03**	I(1)
Prk	-3.34***	13.61**	25.89***	I(1)	-2.84**	I(1)
Gfcf	-5.52***	23.80***	35.02***	I(1)	-5.62***	I(1)
Hc <sub>2</sub>	-3.30**	13.46***	14.84***	I(1)	-3.72**	I(1)

Notes: \*\*\* significant at 1%; \*\* significant at 5% and \* significant at 10%, I(0)

IPS = Im, Peseran & Shim. W. Test; LLC = Levin, Lee & Chu

ADF Fisher = ADF-Fisher; PPF Chi Square = PPF Sqr

Source: The Author, 2015.

#### Remark:

- Hc<sub>1</sub> means: Labour force participation rate, total (% of total population ages 15-64)
- Hc<sub>2</sub> means: Labour force with secondary education (% of total)

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	0.514)	0.650	7.630**	I(0)	0.887	
Gdpgr	-2.52)**	9.92***	19.6***	I(0)	-2.39**	I(0)
Gdppc	2.948)	0.0056	0.01		2.437	
Dmc	-0.865)	3.4764	3.109		-0.794	
Opn	-0.505)	2.453	4.473		-1.65**	I(0)
Hc <sub>1</sub>	3.682)	0.0078	0.003		4.565	
Inf <sub>d</sub>	3.229)	0.003	0.0045		2.388	
Infl	-1.970)**	7.529**	11.48**	I(0)	-2.40**	I(0)
Fd	-0.377)	2.1336	1.6267		-0.81	
Exr	0.164)	1.077	1.289		-0.358	
Prk	N. A.)	N. A.	N. A.	N. A.	N. A.	(N. A.)
Gfcf	-0.68	2.923	5.8200*	I(0)	-1.480*	I(0)
Hc <sub>2</sub>	6.682	0.0007	0.0001		6.594	

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	-2.91**	11.65**	34.01***	I(1)	0.5325	
Gdpgr	9.70***	35.28***	18.42***	I(1)	-7.84***	I(1)
Gdppc	-3.55**	14.62***	22.38***	I(1)	-3.12**	I(1)
Dmc	-3.73***	15.45***	18.9***	I(1)	-4.23***	I(1)
Opn	-3.83***	15.9***	34.5***	I(1)	-3.87***	I(1)
Hc <sub>1</sub>	0.606	0.567	2.232		0.468	
Inf <sub>d</sub>	-0.855	3.45	1.115		1.692	
Infl	-3.79***	15.73***	31.22***	I(1)	-4.37***	I(1)
Fd	-2.300**	8.91**	24.27***	I(1)	-0.0026	
Exr	-2.216**	8.56**	18.42***	I(1)	1.56*	I(1)
Prk	-4.50***	19.06***	33.13***	I(1)	-3.06**	I(1)
Gfcf	-3.48***	14.29***	36.01***	I(1)	-3.20**	I(1)
Hc <sub>2</sub>	-0.52	2.48	15.16**	I(1)	-1.33*	I(1)

Notes: \*\*\* significant at 1%; \*\* significant at 5% and \* significant at 10%, I(0)

IPS = Im, Peseran & Shim. W. Test; LLC = Levin, Lee & Chu

ADF Fisher = ADF-Fisher; PPF Chi Square = PPF Sqr

Source: The Author, 2015.

### Remark:

- Hc<sub>1</sub> means: Labour force participation rate, total (% of total population ages 15-64).
- Hc<sub>2</sub> means: Labour force with secondary education (% of total).
- The variable infrastructure development (*Inf<sub>d</sub>*) is not stationary after the first difference. Therefore, it has been replaced by the variable *Gfcf* which is stationary at the first difference.

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	0.444	0.721	3.88		4.90	
Gdpgr	-2.780**	11.06**	15.14***	I(0)	0.40	
Gdppc	-1.2693	4.820*	8.283**	I(0)	-1.72**	I(0)
Dmc	-0.0097	1.362	1.054		-0.594	
Opn	0.84	0.401	0.705		1.652	
Hc <sub>1</sub>	1.285	0.196	0.088		0.214	
Infid	1.295	0.193	0.0002		2.595	
Infl	-1.630*	6.167**	13.6***	I(0)	-0.331	
Fd	0.384	0.787	0.907		0.672	
Exr	0.164	1.077	1.289		-0.358	
Prk	-1.71**	6.460*	3.12	I(0)	-0.63	
Gfcf	1.47	0.142	0.067		1.51	
Hc <sub>2</sub>	3.62	.0001	0.0005		3.02	

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	-1.68**	6.35**	21.18***	I(1)	-6.21	
Gdpgr	-5.70***	24.51***	34.80***	I(1)	-4.29***	I(1)
Gdppc	-2.75**	10.925**	14.37***	I(1)	1.406	
Dmc	-0.107	1.545*	9.09**	I(1)	-0.068*	I(1)
Opn	-1.18	4.52*	17.67**	I(1)	-1.50*	I(1)
Hc <sub>1</sub>	-0.19	1.72*	4.860*	I(1)	-0.05	
Infid	-1.12*	4.305	3.121	I(1)	-2.14**	I(1)
Infl	-3.88***	16.15***	35.43***	I(1)	-3.73***	I(1)
Fd	-1.65**	6.25**	12.36***	I(1)	-2.11**	I(1)
Exr	-2.216**	8.56**	18.42***	I(1)	-1.559*	I(1)
Prk	N.A.	N.A.	N.A.		N.A.	N.A.
Gfcf	-0.50**	2.41**	5.970**	I(1)	-0.006	
Hc <sub>2</sub>	-2.46**	9.63**	10.21**	I(1)	-0.12	

Notes: \*\*\* significant at 1%; \*\* significant at 5% and \* significant at 10%, I(0)

IPS = Im, Peseran & Shim. W. Test; LLC = Levin, Lee & Chu

ADF Fisher = ADF-Fisher; PPF Chi Square = PPF Sqr

Source: The Author, 2015.

#### Remark:

- Hc<sub>1</sub> means: Labour force participation rate, total (% of total population ages 15-64)
- Hc<sub>2</sub> means: Labour force with secondary education (% of total)

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	0.840	0.401	1.096		0.616	
Gdpgr	-3.04**	12.27**	26.35***	I(0)	-2.73**	I(0)
Gdppc	1.44	0.15	0.220		1.237	
Dmc	-0.857	3.451	2.279		-1.447*	I(0)
Opn	-0.972	3.814	4.214		-0.438	
Hc <sub>1</sub>	2.722	0.01	0.02		1.930	
Infid	1.646	0.103	0.056		0.660	
Infl	-2.033**	7.798**	12.13**	I(0)	-2.87**	I(0)
Fd	2.512	0.016	0.018		2.318	
Exr	0.164	1.077	1.289		-0.358	
Prk	N. A.	N. A.	N. A.	(N. A.)	N. A.	(N. A.)
Gfcf	0.539	0.627	0.884		-0.092	
Hc <sub>2</sub>	5.675	0.0002	0.0002		6.032	

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	-1.90**	7.24**	25.30***	I(1)	-1.570*	I(1)
Gdpgr	-8.49***	33.63***	18.42***	I(1)	-8.10***	I(1)
Gdppc	-2.37**	9.24**	20.78***	I(1)	-2.88**	I(1)
Dmc	-2.56**	10.15**	14.17***	I(1)	-2.89**	I(1)
Opn	-2.43**	9.48**	27.06***	I(1)	-0.0834	
Hc <sub>1</sub>	-1.313*	4.98*	16.38***	I(1)	-0.088	
Infid	-2.98**	11.95**	1.747	I(1)	-3.24***	I(1)
Infl	-4.16***	17.48***	18.42***	I(1)	-4.52***	I(1)
Fd	-1.55*	5.85*	14.44***	I(1)	1.930	
Exr	-2.216**	8.56**	18.41***	I(1)	-1.559*	I(1)
Prk	-5.01***	21.45***	18.42***	I(1)	-4.67***	I(1)
Gfcf	-3.51	14.42***	28.7***	I(1)	-2.89**	I(1)
Hc <sub>2</sub>	-1.44*	5.46*	36.07***	I(1)	2.89	

Notes: \*\*\* significant at 1%; \*\* significant at 5% and \* significant at 10%, I(0)

IPS = Im, Peseran & Shim. W. Test; LLC = Levin, Lee & Chu

ADF Fisher = ADF-Fisher; PPF Chi Square = PPF Sqr

Source: The Author, 2015.

### Remark:

- Hc<sub>1</sub> means: Labour force participation rate, total (% of total population ages 15-64)
- Hc<sub>2</sub> means: Labour force with secondary education (% of total)

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	0.001	(1.34	1.495		-0.627	
Gdpgr	-2.41**	9.431**	18.4***	I(0)	0.016	
Gdppc	-1.82**	6.930**	8.390**	I(0)	-1.5800*	I(0)
Dmc	-0.093	1.517	3.367		-0.121	
Opn	0.840	0.401	0.369		-0.057	
Hc <sub>1</sub>	1.626	0.107	0.083		1.05	
Infid	-0.593	2.686	7.560**	I(0)	-1.332	
Infl	-3.185**	12.95**	20.2***	I(0)	-3.97***	I(0)
Fd	1.061	0.284	0.36		1.021	
Exr	0.164	1.077	1.289		-0.358	
Prk	-1.575*	5.9600*	12.84**	I(0)	-1.22	
Gfcf	1.434	0.152	0.197		0.901	
Hc <sub>2</sub>	0.385	0.786	2.438		-1.18	

Series	Individual unit root Process				Common unit root process	
	IPS	ADF Fisher	PP-F Sqr	Remark	LLC	Remark
Fdi	-3.99***	16.68***	34.14***	I(1)	-4.16***	I(1)
Gdpgr	-4.53***	19.22***	36.12***	I(1)	-2.43**	I(1)
Gdppc	-2.17**	8.364*	12.53**	I(1)	-0.44*	I(1)
Dmc	-3.01**	12.08**	30.91***	I(1)	-2.58**	I(1)
Opn	-1.79**	6.80**	18.42***	I(1)	-1.93**	I(1)
Hc	-2.02**	7.720**	14.87***	I(1)	-1.99**	I(1)
Infid	-4.78***	20.37***	35.55***	I(1)	-4.61***	I(1)
Infl	-6.23***	26.68***	18.42***	I(1)	-6.52***	I(1)
Fd	-3.30**	13.42**	20.54***	I(1)	1.93	
Exr	-2.216**	8.56**	18.42***	I(1)	-1.559*	I(1)
Prk	-4.33***	18.42***	25.96***	I(1)	-3.46***	I(1)
Gfcf	-3.09**	12.45**	25.91***	I(1)	3.27	
Hc	-3.48**	14.29***	30.22***	I(1)	-2.91**	I(1)

Notes: \*\*\* significant at 1%; \*\* significant at 5% and \* significant at 10%, I(0)

IPS = Im, Peseran & Shim. W. Test; LLC = Levin, Lee & Chu

ADF Fisher = ADF-Fisher; PPF Chi Square = PPF Sqr

Source: The Author, 2015.

#### Remark:

- Hc<sub>1</sub> means: Labour force participation rate, total (% of total population ages 15-64)
- Hc<sub>2</sub> means: Labour force with secondary education (% of total)



## Appendix IV: Cointegration Tests for each Cross-section

### A.4.1. Kao Residual Cointegration Test / Benin Rep.

Series: FDI GDPGR GDPPC DMC OPN HC INFD INF FD

EXR GFCF

User-specified lag length: 1

	t-Stat.	Prob.
ADF	-2.01	0.02
Resid. variance	6053.40	
HAC var.	2301.18	

### A.4.2. Kao Residual Cointegration Test / Burkina Faso

Series: FDI GDPGR GDPPC DMC OPN HC INFD INF FD

EXR GFCF

User-specified lag length: 1

	t-Stat.	Prob.
ADF	-1.56	0.06
Resid. variance	3259.48	
HAC var.	2546.99	

### A.4.3. Kao Residual Cointegration Test / Cote d'Ivoire

Series: FDI GDPGR GDPPC DMC OPN HC INFD INF FD

EXR GFCF

User-specified lag length: 1

	t-Stat.	Prob.
ADF	-1.64	0.05
Resid. variance	2884.08	
HAC var.	2177.90	

### A.4.4. Kao Resid. Cointegration Test / Guinea-Bissau

Series: Log(FDI) GDPGR GDPPC DMC OPN HC INFD INF FD

EXR GFCF

User-specified lag length: 1

	t-Stat.	Prob.
ADF	-2.47	0.07
Resid. variance	65.24	
HAC var.	25.83	

### A.4.5. Kao Residual Cointegration Test / Mali Rep.

Series: FDI GDPGR GDPPC DMC OPN HC INFD INF FD

EXR GFCF

User-specified lag length: 1

	t-Stat.	Prob.
ADF	1.42	0.08
Resid variance	1372.00	
HAC var.	1822.50	

### A.4.6. Kao Residual Cointegration Test / Niger Rep.

Series: Log(FDI) GDPGR GDPPC DMC OPN HC INFD INF FD

EXR GFCF

User-specified lag length: 1

	t-Stat.	Prob.
ADF	-2.30	0.01
Resid variance	23.84	
HAC var.	17.59	

### A.4.7. Kao Residual Cointegration Test / Senegal Rep.

Series: Log(FDI) GDPGR GDPPC DMC OPN HC INFD INF FD

EXR GFCF

User-specified lag length: 1

	t-Stat.	Prob.
ADF	-3.16	0.01
Resid variance	5.56	
HAC var.	5.16	

### A.4.8. Kao Residual Cointegration Test / Togo Rep.

Series: FDI GDPGR GDPPC DMC OPN HC INFD INF FD

EXR GFCF

User-specified lag length: 1

	t-Stat.	Prob.
ADF	-1.79	0.04
Resid variance	177.05	
HAC var.	152.27	

Notes: Resid. Variance = Residual variance;

HAC var. = HAC variance

Source: The Author, 2015.