Foreign Direct Investments and Economic Growth of African Regions: A Comparative Study

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Abstract
The paper examines the impact of Foreign Direct Investments (FDIs)on economic growth in the five regions of Africa, as well as identifies their respective drivers of growth. It employs the Ordinary Least Squares (OLS) multiple regression analysis to examine the relative impact of Foreign Direct Investments, balance of payments, trade openness, technology and quality of labour force on economic growth in each of the five regions between 1980 and 2012. The study finds that foreign Direct Investments (FDIs) have no significant impact on economic growth in the five regions of Africa. The impact of FDI on growth is positive in Eastern, Middle and Western Africa but negative in Northern and Southern Africa. Similarly, there are differentials in the drivers of growth in the five regions. While trade openness is a negative driver of growth in all regions of Africa except in Northern Africa, both balance of payments and quality of labour force have mixed impacts on economic growth in Africa. In addition, technological progress impacted growth in Middle, Southern Africa and Western Africa but it appears that lack of it retarded growth in Eastern and Northern Africa. The study calls for policy reform frameworks that encourage and boost foreign Direct Investment flows to all regions of Africa, particularly Direct Investments in critical sectors of the economies, as well as check the negative effects of foreign Direct Investments. Furthermore, it recommends that regional economic blocks in Africa should be resuscitated and supported to develop and promote intra-Africa trade and Investments.

Keywords: Foreign Direct Investments (FDIs), economic growth, African regions, and drivers of growth

Introduction

Foreign Direct Investment (FDI) is one major source of external finances that most countries, particularly developing ones, rely on to promote the growth of their economies. FDI flows into an economy are associated with more stable inflows of foreign capital, transfer of technology, lucrative jobs, entrepreneurial and work place skills, and new export opportunities (Prasad *et al*., 2003).

Foreign Direct Investment has become an important component of the long-run developmental strategies of most African countries. In recent times, most African countries have embarked on various reform programmes including economic restructuring involving liberalization of the financial system and privatization of public enterprises in a bid to boost trade and attract foreign capital. Indeed, since the early 1980's there has been a phenomenal rise in the inflows of FDI to many African countries. For example, as shown on table 1 below, from an inflow of US$1266.10m in the 1970, FDI to Africa countries fell to US$400.35m by 1980 but this rose astronomically to US$2846.23m by 1990 representing an increase of 711% within a decade. In the same vein, between 1990 and 2000, FDI to the continent rose by 338%. Similarly, FDI to Africa rose from US$9621.09m at the beginning of the new millennium in 2000 to US$43581.57m a decade after in 2010 by 453%.

FDI flows to Africa in 2012 were US$50041.06m (see table 1 below). Out of this amount, US$13297.24m which represents 26.57% of total FDI inflows for the year went to Eastern Africa; US$2940.95m representing 5.88% of total went to Middle Africa while US$11501.80m (22.98%) and US$5484.44m (10.96%) went to Northern and Southern Africa respectively. Western Africa received US$16816.64m about 33.61% of total FDI flows to the continent in the same year. Thus, as in most parts of the world, FDI flows to Africa are concentrated in some particular regions. For example, of the total FDI flows to Africa in 2012, about 60% of that went to Eastern and Western Africa regions while only 40% went to the other regions of the continent. In the same vein, compared to other developing economies of the world, Africa received only about 7% (US$50041.06m) of total FDI of US$702,825.6m to the developing world in 2012(see table 2) and the little that comes to Africa is concentrated in few regions. Given the avowed roll of FDI in the economic growth of nations and the fact that FDI is a major source of foreign capital to most regions, often in place of or complementary to domestic savings, and since Africa is one of the least developed or poorest regions of the world, there is the need to examine the impact of FDI on the economic growth of the five regions of the continent. This is crucial because with FDI comes not just foreign capital inflow but transfer of technology, managerial-know-how and employment generation that are critical to the growth of any economy.

Therefore, to what extent does FDI impact the economic growth of each of the five regions of Africa? This is the main question this study attempts to answer. The other question is - what are the main drivers of growth in each region of Africa?

Table 1: FDI FLOWS TO THE REGIONS OF AFRICA (MILLION US DOLLARS)

REGION	**1970**	**1980**	**1990**	**2000**	**2010**	**2012**
Eastern Africa	80.52	196.85	389.33	1467.53	7512.78	13297.24
Middle Africa	31.03	353.33	-344.61	1503.21	6118.57	2940.95
Northern Africa	435.68	152.37	1155.48	3249.84	15708.69	11501.8
Southern Africa	333.61	132.19	92.60	1269.12	2264.56	5484.44
Western Africa	385.26	-434.39	1553.43	2131.39	11976.97	16816.63
TOTAL	**1266.10**	**400.35**	**2846.23**	**9621.09**	**43581.57**	**50041.06**

Source: Author's compilation from UNCTAD, UNCTADstat

Table 2: FDI FLOWS TO DEVELOPING ECONOMIES(MILLION US DOLLARS)

CONTINENT	**1970**	**1980**	**1990**	**2000**	**2010**	**2012**
Africa	1266.10	400.35	2846.23	9621.09	43581.57	50041.06
The Americas	1598.70	6415.80	8924.92	98048.24	189855.20	243861
Asia	853.60	532.09	22657.67	156581.31	400687.3	406769.9
Oceania	-	-	333.47	292.12	2938.89	2153.68
TOTAL	**3854.46**	**7469.37**	**34762.29**	**264542.80**	**637063.0**	**702825.6**

Source: Author's compilation from UNCTAD, UNCTADstat

Therefore, the objective of this study is to examine comparatively the extent to which FDI impacts the economic growth of each of the five regions of Africa and to identify drivers of growth in each region of the continent. The remaining part of this paper is organised as follows. This introduction is immediately followed by a review of the literature in section 2. Section 3 specifies the model, presents and analyses the data. Discussions of results are contained in section 4. The summary, conclusion and recommendations are in the final section, 5

Literature Review

This section reviews the various theories of foreign Direct Investments and the empirical literature in two sub-sections that follow.

Theories of Foreign Direct Investments (FDI)

Many theories that explain the origin, pattern of development, the motivations for and the changing nature of FDI in the global world of today exist in the extant literature of international trade and finance. Some of the most influential theories are briefly examined below (for details, see for example, Denisia, 2010; Morgan & Katsikeas, 1997; and Shenkar, 2007).

International Product Life-Cycle Theory- the Production cycle theory was developed by Raymond Vernon to explain the form of manufacturing Investments made by US companies in Europe after the Second World War. The theory which provides justification for trade and FDI, explains that manufacturers shift from export markets to FDI in order to exploit a monopolistic advantage gained from product innovations developed in the home market. The aims are to exploit lower manufacturing costs and to prevent the loss of the export market to local producers in the host country. The theory is mostly applied to manufacturers making initial entries into foreign markets.

International Production Theory- the theory posits that the tendency for firms to engage in foreign production depends on the relative attractiveness of home country production compared with production in foreign locations in terms of comparative advantages, resource requirements, foreign government policies, and entry conditions for firms.

Monopolistic Advantage or Market Imperfections Theory- the monopolistic advantage or market imperfections theory suggests that multinational companies have monopolistic advantage or certain capabilities (Hymer, 1970) such as technological knowledge that they capitalize on to operate more profitably than competitors in foreign markets.

The Theory of Exchange Rates on Imperfect Capital Markets- the theory analyzes the influence of real exchange rate in USD (United States Dollar) on foreign Direct Investments. It asserts that a rise in real exchange rate stimulates FDI transacted in USD while an appreciation in foreign currency decreases the US FDI. However, the theory fails to explain FDIs in other currencies between countries.

Internalization Theory- Internalization theory posits that firms seek to create the needed market to achieve its objectives by providing internal markets through Investments in several foreign subsidiaries in which to profitably exploit its superior knowledge and productive resources. The aim is to create an intra-organizational market that overcomes competition in the foreign market and benefit from the advantages of an integrated intra-organizational network of markets.

The Eclectic Paradigm- The eclectic paradigm or **OLI framework** provides a more comprehensive approach for explaining international production. It consists of three variables: ownership-specific (O), location-specific (L), and internalization (I); which are major elements of earlier theories of FDI. The paradigm posits that all three factors (O-L-I) are important determinants of the extent and pattern of FDI. The *Ownership-specific (O) variables* are the tangible and intangible assets and characteristics that enable transnational firms to operate at reduced costs in foreign markets. These include natural endowments,

manpower, patents, trademarks and access to huge capital. Others are superior technology and economies of scales; managerial, marketing and entrepreneurial skills, and organizational systems. *Location-specific (or country-specific) (L) variables* refer to factor endowments in addition to market structure, government legislation and policies, legal and cultural environment of the host country in which FDI takes place. *Internalization (I)* is the capacity and flexibility of the firm to produce and market through its own internal subsidiaries and intra-organizational markets.

The Dynamic Capability Perspective- This perspective opines that success in international Investment and production depends largely on the efficiency in which the firm deploys and uses it ownership-specific resources or knowledge (dynamic capabilities). It notes that the mere possession of these resources is not enough to guarantee success in international operations.

The Evolutionary Perspective-This perspective sees international Investment as an 'on-going, evolutionary process shaped by a multinational's international experience, organizational capabilities, strategic objectives, and environmental dynamics' (Shenkar, 2007: 74). According to the perspective, international expansion involves an array of incremental decisions in which firms acquire experience in international production and markets in stages.

The Integration–Responsiveness Perspective-The global integration (I) and local responsiveness (R) paradigm (or the **I–R paradigm**) posits that players in international business adopt competitive strategies in two main dimensions: *global integration* -refers to the need to coordinate, integrate and build efficient operations in order to maximize the benefits of similarities across countries of operations; and *local responsiveness*- that refers to the necessity to respond to specific host country needs. The I-R perspective was expanded by Bruce Kogut to incorporate the strategic flexibility view. It comprises of two similar concepts- *operational flexibility* and *strategic options* that maximize the benefits of both scale and ownership advantages as well as allow for local adaptation.

As complex and encompassing some of these theories are, it appears that no single theory of FDI has successfully explained and captured the whole gamut of FDI in its current complex and divergent forms (Hosseini, 2005; Denisia, 2010).

Empirical Works on the Relationship between FDI and Economic Growth

Several studies have examined the role of foreign Direct Investment on the economic growth of national and regional economies. Borensztein, *et al.* (1995, 1998) note that FDI has a positive impact on economic growth given a level of human capital in the recipient nation. Similarly, Bengos and Sanchez-Robles (2003) reach a similar conclusion that FDI is positively related to economic growth given some minimum level of human capital, stable economic activities and market liberalization for long-run benefits. Generally, while several studies (Asiedu, 2002; Blomstrom et al., 1994; Eke, 2003; Lipsey, 2002; Obadan, 1989 and Roy & Berg, 2006) find positive relationship between FDI and economic growth, others (Carkovic & Levine, 2002; and Greenwood, 2002) report a negative one. At the regional level, Adams (2008) finds a positive impact of FDI on the economic growth of Sub-Saharan Africa (SSA). In a study of 36 SSA countries between 1980 and 2007, Ndambendia and Njoupouognigm (2010) find a strong positive link between FDI and growth. In a similar study, Alfaro *et al*. (2009) find that FDI induces higher growth at industrial level and promotes linkages to local firms. On the global sphere, Campos and Kinkshita (2002) find

that FDI has positive and statistically significant impact on growth in the economies of 25 central and Eastern Europe during the period 1990 to 1998. De Mello (1997) also finds a positive relationship between FDI and growth in his study of some selected Latin American countries. Similarly, Dees (1998) concludes that FDI is an important factor of economic growth.

Equally important, however, is the channel through which FDI impacts growth. This is crucial because the United Nations Conference on trade and Development (UNCTAD, 2005) has since called for a development conscious framework that takes into consideration the various channels through which FDI impacts economic performance. It notes such channels to include balance of payments, local financial markets, and market structure. Adams (2008) asserts that institutional factors such as education, basic physical infrastructure and appropriate institutions support the influences of FDI on growth. Several other works also note a number of country related drivers of FDI. These include: quality of infrastructure (Kumer, 1994; Loree & Guisinger, 1995), economic and social conditions (Zhang, 2001), trade openness (Hausmann & Fernandez-Arias, 2000; Liargovas & Skandalis, 2011), domestic market size and trade balance (Tsai, 1994) and human capital development (Adegbite & Ayadi, 2011; Borensztein, *et al*., 1995, 1998; Li & Liu, 2005; and Ozigbo, 2005) with some suggesting some minimum threshold level. Others suggest the level of financial development (Alfaro, *et al*., 2009). Similarly, Dunning (1973) suggests growth and size of domestic market, while a few others indicate market demand measured by GNP per capita (Root& Ahmed, 1979; Schneider &Frey, 1985). In the same vein, a few others posit that FDI's impact on growth might be period specific (Tsai, 1994; Zhang, 2001). Along the same line, some others also submit that the impact of FDI on growth vary across countries owing to differences in technological absorptive capacity (Borensztein, *et al*. 1998; and Ozigbo, 2005) while Lipsey (2002) concludes by saying that though positive effects exist but that no consistent relationship between FDI stock and economic growth can be expected.

Methodology

Model Specifications

In examining the impact of Foreign Direct Investment on the economic growth of the five regions of Africa, the study employs the Ordinary Least Squares (OLS) multiple regression analysis. Specifically, it analyzes the relative impact of Foreign Direct Investments (FDI), balance of payments (BOP), trade openness (TOPEN), technology (TECH) and quality of Labour Force (LABOF) on the economic growth of each of the five regions of Africa (namely Eastern Africa, Middle Africa, Northern Africa, Southern and Western Africa). The period of study is 1980 to 2012. All data were sourced from the website of United Nations Conference for Trade and Development (UNCTAD).

Accordingly, we formulate five econometric models, one for each region of Africa. Previous studies (Borensztein, *et al*., 1995, 1998; Kumer, 1994; Liargovas & Skandalis, 2011; Li & Liu, 2005; Tsai, 1994) identify balance of payments, trade openness, technological absorptive capacity or infrastructural development, and the quality of labour force as some important channels through which FDI impacts growth. Therefore, following previous studies, we formulate the general form of the regression model for each of the five African regions as follows:

$$GDP = \alpha_0 + \alpha_1 FDI_t + \alpha_2 BOP_t + \alpha_3 TOPEN_t + \alpha_4 TECH_t + \alpha_5 LABOF_t + \upsilon; \ldots..(1)$$

Where,

GDP – Nominal Gross Domestic Product, US Dollars at current prices and current exchange rates in millions, annual,

FDI – Inward Foreign Direct Investments, US Dollars at current prices and current exchange rates in millions, annual,

BOP – Balance of payments, Current account net, US Dollars at current prices and current exchange rates in millions, annual,

TOPEN – Trade openness – total trade in Goods and services, Percentage of Gross Domestic Product, annual,

TECH– Total ICT goods (exports), US Dollars at current prices and current exchange rates in millions, annual,

LABOF – Total labour force (all sectors), absolute Value in thousands, annual,

The variable – technology (TECH) has no data reported for the period 1980 to 1999 in the UNCTAD statistical data. We assume zero entries for those years. Countries that comprise each region of Africa are contained on table 6 in the appendix.

Data Presentation and Analyses

To determine the correct order of integration in order to avoid spurious regression, we first conduct the unit roots tests to verify the null hypothesis that the series have unit roots. Using both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests at 95% level of significance, the results show that we could not reject the null hypothesis that the variables have unit roots (that is, they were not stationary at levels) (as the ADF and PP test statistics were lower in one or two variables than the ADF and PP critical values at 95% level of significance). Details of the tests are contained in Table 3a.

TABLE 3A: UNIT ROOTS TESTS FOR FDI AND OTHER VARIABLES FOR EASTERN AFRICA REGION AT LEVELS

VARIABLE	ADF TEST STATISTIC	ADF CRITICAL VALUE @5% LEVEL	PP TEST STATISTIC	PP CRITICAL VALUE @5% LEVEL	REMARK
GDP	4.1616	-2.9678	14.8237	-2.9571	STATIONARY
FDI	4.8117	-2.9919	20.4311	-2.9571	STATIONARY
TOPEN	-0.6852	-2.9571	-0.7650	-2.9571	NON-STATIONARY
BOP	2.0320	-2.9571	4.8776	-2.9571	NON-STATIONARY
LABOF	9.0928	-2.9571	8.8740	-2.9571	STATIONARY
TECH	2-2498	2.9919	-1.3075	-2.9571	NON-STATIONARY

As we show on table 3a above, the variables were not stationary at levels. Thus, they are transformed to their first differences and the unit roots test are repeated thereafter on the first differenced values. Similar test procedures are conducted for the variables of the other four regions of Africa. Both the ADF and PP unit test results are on tables 3b, 3c, 3d and 3e in the appendix. The results also show non stationary variables at levels except for Southern and Western Africa data. Accordingly, only variables for Eastern, Middle and Northern Africa are

transformed to their first differenced values. Tables 4a, 4b and 4c below, and in the appendix, show the test results.

TABLE 4A: UNIT ROOTS TESTS FOR MIDDLE AFRICA VARIABLES AT FIRST DIFFERENCE

VARIABLE	ADF TEST STATISTIC	ADF CRITICAL VALUE @5% LEVEL	PP TEST STATISTIC	PP CRITICAL VALUE @5% LEVEL	STATUS	ORDER OF INTEGRATION
DGDP	-4.4561	-2.9719	-3.8465	-2.9640	STATIONARY	I(1)
DFDI	-6.0343	-2.9763	-6.9086	-2.9640	STATIONARY	I(1)
DTOPEN	-4.6543	-2.9719	-3.8754	-2.9640	STATIONARY	I(1)
DBOP	-5.2730	-2.9719	-11.6805	-2.9640	STATIONARY	I(1)
DLABOF	-3.9055	-2.9640	-3.8554	-2.9640	STATIONARY	I(1)
DTECH	-6.5057	-2.9981	-24.6158	-2.9640	STATIONARY	I(1)

Table 4a above shows that both the ADF and PP test statistics are greater than their respective 5% critical values for each variable at the first difference. These indicate that the Eastern Africa data series are stationary at first difference. Hence, we reject the hypothesis of the existence of unit roots (non-stationarity) for the data series. Thus, the variables are stationary at their first difference and they are integrated of order one [I(1)]. Therefore, the regression analysis on the transformed Eastern Africa data will produce non-spurious results.

Similar tests are also conducted for the transformed values of the data sets for the other two regions (Middle and Northern Africa) using Augmented Dickey-Fuller (ADF) and Phillips-Perron tests at 5% significant level. The results show that they were stationary at first difference and integrated of order one [I(1)]. Thus, the regression analysis results from the transformed data for the two regions will be non-spurious results. Meanwhile, variables of Southern and Northern Africa are stationary at levels and therefore, integrated of order zero [I(0)].

Next, we employ EViews 7.0 econometric package to analyze the ordinary least squares (OLS) regression equations for the five regional time series data of 33-year range, 1980 to 2012. Details of the OLS results are on tables 5a to 5e.

For Eastern Africa, the initial regression of DGDP on DFDI and the control variables (DBOP, DOPEN, DTECH and DLABOF) show the presence of autocorrelation with Durbin Watson statistic (DW) =1.21 and R^2 statistic of 0.89, thus, rendering the accuracy of the OLS regression results compromised and unreliable. To correct for autocorrelation, the Cochrane-Orcutt autoregressive technique is employed. Convergence is achieved after 39 iterations with 31 included observations after adjustments based on autoregressive one, AR(1) procedure. Following this correction, the following results which in summary have $R^2 = 0.91$ and DW = 2.03 were obtained. The detailed OLS regression results are contained on table 5a below.

Table 5A: Ordinary Least Squares Multiple Regression Analysis for Northern Africa Data

DEPENDENT VARIABLE: DGDP	**COEFFICIENT**	**T-STATISTIC**	**PROBABILITY**

C	-3153.16	-0.9238	0.3648
DFDI	1.0174	1.0597	0.2998
DTOPEN	-494.09	-3.0931	0.0050*****
DBOP	-2.4848	-7.0616	0.0000*****
DLABOF	2.4253	2.2986	0.0305******
DTECH	-6.4677	-0.6205	0.5408
AR(1)	0.5371	2.6494	
R^2	0.91		
Adj. R^2	0.89		
F-Statistic	43.02		
Prob(F-stat)	0.0000		
DW	2.03		

Source: Author's computation using EViews 7.0, June, 2014

***** Indicates statistical significance at 1% level; ****** Indicates 5% level of significance.

In table 5a above, the coefficient of determination (R^2) is 0.91 while the adjusted coefficient of determination (adj. R^2) is 0.89. The later indicates that the independent variables of the model explain about 89% of the systematic variations in nominal gross domestic product (DGDP) within the adjusted period of study, 1981 to 2012. The Durbin Watson statistic (DW) of 2.03 (approx. 2.0) also indicates the absence of autocorrelation among the explanatory variables of the model. Similarly, the F-statistic is 43.02 and it is significant at 1% level (0.0000).This confirms the linearity of the model. Thus, our model satisfies appropriate diagnostic and statistical criteria. Therefore, the results of the OLS regression for Eastern Africa are reliable and the influence of the explanatory variables on the dependent variable is significant. Other details of the OLS multiple regression results are contained in the table.

The final regression model for Eastern Africa is:

GDP = -3153.16+1.02 FDI-494.09TOPEN-2.48BOP+2.43LABOF-6.47TECH+υ ...(1)
(1.06) (-3.09) (-7.06) (2.30) (-0.62)

To analyze the second model, the Middle Africa's time series data of 33-year range, 1981 to 2012, the EViews 7.0 econometric package is employed to execute the OLS regression procedure. Initial results indicate the presence of autocorrelation with DW=1.23. This renders the accuracy of the OLS regression results compromised and unreliable. We correct for autocorrelation based on Cochrane-Orcutt autoregressive one, AR (1) procedure, after 54 iterations and 31 post-adjustment observations in sample, 1982 to 2012. The final results are on table 5b below:

Table 5B: Ordinary Least Square Multiple Regression Analysis for Middle Africa Data

DEPENDENT VARIABLE: DGDP	**COEFFICIENT**	**T-STATISTIC**	**PROBABILITY**
C	-4554.60	-0.4300	0.6710
DFDI	0.8513	0.8007	0.4311
DTOPEN	-361.04	-1.4971	0.1494
DBOP	1.3882	5.8422	0.0000*****
DLABOF	10.6536	1.1476	0.2624
DTECH	7353.13	4.5223	0.0001*****
AR(1)	0.6236	3.1511	0.0043
R^2	0.748		
Adj. R^2	0.68		
F-Statistic	11.85		
Prob(F-stat)	0.000004		
DW	2.05		

Source: Author's computation using EViews 7.0, June, 2014

***** Indicates statistical significance at 1% level.

Table 5b above shows that R^2 is 0.75 and the adjusted R^2 is 0.68. Thus, this implies that the independent variables explain about 68% of the systematic variations in nominal gross domestic product (DGDP) within the adjusted period of study, 1982 to 2012. The F-statistic, 11.85, is significant at 1% level (0.0000), showing the overall good fit of the model. The Durbin Watson statistic of 2.05 (approx. = 2.0) shows the absence of autocorrelation. These diagnostic and statistical criteria give good indications that the regression model is a good fit and that the OLS regression outputs for the Middle African data are reliable.

Thus, the final regression equation for Middle Africa becomes:

GDP=-4554.6+0.85FDI-361.04TOPEN+1.39BOP+10.65LABOF+7353.13TECH+υ ...(2)
(0.80) (-1.50) (5.84) (1.15) (4.52)

Similarly, the OLS regression analysis and EViews 7.0 econometric package are employed for Northern Africa's time series data of 32-year range, 1981 to 2012. We correct the initial results which indicate the presence of autocorrelation with Cochrane-Orcutt autoregressive, AR(1) procedure. The final results are in table 5c below:

Table 5C: Ordinary Least Square Multiple Regression Analysis for Northern Africa Data

DEPENDENT VARIABLE: DGDP	**COEFFICIENT**	**T-STATISTIC**	**PROBABILITY**
C	24994.67	1.4603	0.1572
DFDI	-1.7571	-1.0631	0.2983
DTOPEN	589.69	0.7343	0.4699
DBOP	1.5634	5.7097	0.0000*****
DLABOF	-1.4922	-0.2318	0.8187
DTECH	-3.1970	-0.2481	0.8062
AR(1)	-0.7794	5.7744	0.0000
R^2	0.72		
Adj. R^2	0.65		
F-Statistic	10.32		
Prob(F-stat)	0.000011		
DW	2.01		

Source: Author's computation using EViews 7.0, June, 2014

***** Indicates statistical significance at 1% level.

Given that R^2 is 0.72 and the adjusted R^2 is 0.65, we conclude that the independent variables explain about 65% of the systematic variations in nominal gross domestic product (GDP) within the adjusted period of study, 1982 to 2012. The F-statistic is 10.32 and it is significant at 1% level (0.000011), thus, showing the overall good fit of the model. The Durbin Watson statistic of 2.01 (approx. = 2.0) shows the absence of autocorrelation. These diagnostic and statistical criteria are good indications that the regression model is a good fit and that the OLS regression outputs are reliable and can be useful for policy Direction.

Thus, the final regression model for Northern Africa becomes:

GDP=24994.67-1.76FDI+589.69TOPEN+1.56BOP-1.49LABOF-3.20TECH+υ ...(3)
(-1.06) (0.73) (5.71) (-0.23) (-0.25)

In the same vein, we correct the initial regression results for Southern Africa for autocorrelation with Cochrane-Orcutt autoregressive technique, AR(4). Final results are on table 5d below:

Table 5D: Ordinary Least Square Multiple Regression Analysis for Southern Africa Data

DEPENDENT VARIABLE: GDP	**COEFFICIENT**	**T-STATISTIC**	**PROBABILITY**
C	380647.5	4.8559	0.0001
FDI	-1.5949	-0.6888	0.4981
TOPEN	-5948.95	-5.1964	0.0000*****
BOP	-8.8576	-6.7531	0.0000*****
LABOF	3.7714	1.6113	0.1214
TECH	157.08	3.6931	0.0013*****
AR(4)	-0.5924	-2.7602	0.0114
R^2	0.94		
Adj. R^2	0.92		
F-Statistic	55.37		
Prob(F-stat)	0.000000		
DW	1.76		

Source: Author's computation using EViews 7.0, June, 2014

***** Indicates statistical significance at 1% level.

Table 5d shows that the ordinary least squares (OLS) regression analysis for Southern Africa's time series data after correction for autocorrelation meets all diagnostic and statistical criteria (R^2 of 0.94 and adjusted R^2 of 0.92; F-statistic is 55.37 and significant at 1% level [0.0000] and Durbin Watson statistic of 1.76 [approx. = 2.0])and indicate that the regression model is a good fit and that the OLS regression outputs are reliable and useful for policy Direction.

The final regression model for Southern Africa becomes:

GDP=380647.5 - 1.59FDI - 5948.95TOPEN -8.86BOP +3.77LABOF +157.08TECH+υ ...(3)
(-0.69) (-5.20) (-6.75) (1.61) (3.69)

Finally, the ordinary least squares (OLS) regression analysis for Western Africa's time series data after correction for autocorrelation possesses good diagnostic and statistical criteria (R^2 of 0.92 and an adjusted R^2 of 0.91; F-statistic is 64.80 and significant at 1% level (0.0000) and DW=1.78) and indicate the regression model is a good fit and that the OLS regression outputs are reliable and useful for policy Direction.

The final results are as shown in table 5e below:

Table 5E: Ordinary Least Square Multiple Regression Analysis for Western Africa Data

DEPENDENT VARIABLE: GDP	**COEFFICIENT**	**T-STATISTIC**	**PROBABILITY**
C	152477.4	3.9758	0.0005
FDI	19.4436	7.8489	0.0000*****
TOPEN	-1172.86	-1.4620	0.1553
BOP	0.6153	0.6048	0.5504
LABOF	-0.3982	-0.4545	0.6531
TECH	469.43	0.8265	0.4157
R^2	0.92		
Adj. R^2	0.91		
F-Statistic	64.80		
Prob(F-stat)	0.000000		
DW	1.78		

Source: Author's computation using EViews 7.0, June, 2014

Thus, the final regression model for Western Africa becomes:

GDP=152477.4+19.44FDI –1172.86TOPEN +0.62BOP -0.40LABOF +469.43TECH+υ ...(3)
(7.85) (-1.46) (0.60) (-0.45) (0.83)

Discussions of Findings

The above tables (5a to 5e) show that Foreign Direct Investments (FDI)are not statistically significant with nominal gross domestic product at the 5% level in all the regions of Africa except Western Africa. The respective t-values with their associated probabilities are 1.06(0.30), 0.80(0.43), -1.06(0.30), -0.69(0.50) and 7.85(0.00) for Eastern Africa, Middle Africa, Northern Africa, Southern Africa and Western Africa respectively. These results imply that foreign Direct Investment flows to four of the regions of Africa (Eastern Africa, Middle Africa, Northern Africa, and Southern Africa) do not have significant impact on the Gross Domestic Product (GDP) of these regions. However, Foreign Direct Investment (FDI) flows to Western Africa have significant impact on the gross domestic product of the region. That is, foreign Direct Investments have no significant impact on regional economic growth in Africa except in Western Africa. In terms of Directional impact on GDP, while Foreign Direct Investments (FDI) are positively related to nominal Gross Domestic Product (GDP) in Eastern, Middle, and Western Africa, FDI are negatively related to GDP in Northern and Southern Africa. These imply that while FDI flows have positive impact on the economic growth of three of the five regions (Eastern, Middle and Western Africa), they negatively impact economic growth in Northern and Southern Africa. A possible explanation is that there are relatively more flows of FDI to the three regions where FDI positively impact economic progress while FDI flows to the other two regions are relatively low. The graph in Figure 2 in the appendix shows that since about 2010, there has been a sharp fall in FDI flows to Northern Africa while FDI flows to Southern Africa have remained largely low and below those of other regions since about the year 2000 except that of Middle Africa from the mid-2000s. Other explanation could be that the channels through which FDI impact growth are not favorable for the two regions.

In terms of the channels through which FDI impacts growth, trade openness (TOPEN) has negative impact on nominal gross domestic product in all the regions of Africa except in

Northern Africa. While the relationship is statistically significant at the 5% level in the case of Eastern and Southern Africa (with t-values and probabilities of -3.09[0.005] and -5.20[0.000] respectively), it is not in Middle and Western Africa. The implication is that trade openness has had negative impact on the economic growth of the regions of African except in Northern Africa where the positive impact is not significant. The negative impact of trade openness is particularly strong (significant) for Eastern and Southern Africa. Consequently, it appears that trade openness has failed to promote adequate flows of FDI to African regions.

Another channel through which FDIs impact growth is balance of payments in the capital accounts of the regions. Balance of payment (BOP) has a mixed impact on the gross domestic product of the five regions. It is positively related to GDP in Middle, Northern and Western Africa and the relationship is statistically significant at the 1% level for both Middle and Northern Africa but not for Western Africa (with t-values and probabilities of 5.84[0.000], 5.71[0.000] and 0.60[0.550] respectively). However, Balance of Payment (BOP) is negatively related to GDP in Eastern and Southern Africa and the relationships are statistically significant at the 1% level (with t-values and probabilities of -7.06[0.000] and -6.75[0.000] respectively).In other words, both results show that balance of payment contributes positively and significantly to economic growth in Middle and Northern Africa while at the same time it impacts negatively and significantly on economic growth in Eastern and Southern Africa. However, the impact of balance of payment on the economic growth of Western Africa is positive but not significant. In sum, balance of payment has strong positive or negative impacts on the economic growth of the economies of the regions of Africa. The implication is that FDI flows may have played mixed roles (positive or negative) in the balance of payment conditions and ultimately on the economic growth of African regions.

The quality of labour or workforce also plays a role in the FDI and growth nexus. The relationship between total Labour Force (LABOF) and Gross Domestic Product (GDP) is positive in Eastern, Middle, and Southern Africa while it is negative in Northern and Western Africa. With the exception of Eastern Africa, these relationships are not statistically significant at the 5% level (with t-values and probabilities of -7.06[0.031], 1.15[0.262], -0.23[0.82], 1.61[0.12] and -0.45[0.65] respectively).In other words, while the impact of total labour force on GDP is positive but not statistical significant in Middle and Southern Africa, the quality of total labour force in Eastern Africa has a positive and statistically significant impact on GDP of the region. In contrast, the impact of the quality of total labour force on GDP is negative but not statistically significant in Northern and Western Africa. Hence, we conclude that the quality of labour force has positively impacted economic growth in Middle, Southern and particularly in Eastern Africa, where the impact is significant; whereas the quality of labour force negatively impacts economic growth in Northern and Western Africa. Again, these results suggest that either FDI flows have not significantly impacted the quality of labour force or the quality of labour force has not encouraged the transmission of the impact of FDI on economic growth in all African regions except in Eastern Africa.

Similarly, technological progress is also a factor in FDI and growth channel. Technological progress (TECH) is positively related to GDP in Middle, Southern and Western Africa while it is negatively related in Eastern and Northern Africa. The relationships are positive and statistically significant at the 1% level in Middle and Southern Africa (with t-values and probabilities of 4.52 [0.000] and 3.69 [0.001] respectively)while it is not statistically significant in Western Africa (0.83 [0.42]). However, the negative relationship between technological progress (TECH) and GDP is not statistically significant in Eastern and Northern Africa (t-values and probabilities are -0.62 [0.54] and -0.25[0.81] respectively).

Thus, the level of technological progress has positive and significant impact on economic growth in Middle and Southern Africa except Western Africa where the impact is not significant. Contrariwise, the level of technological development in Eastern and Northern Africa has negative impact on economic growth. These results imply that either FDI flows have influenced technological progress or technological progress has helped to improve FDIs' impact on economic growth in Middle and Southern Africa. However, given the fact that FDIs have negative impact on economic growth in Southern Africa, the first proposition is particularly more doubtful. Nevertheless, we conclude that technological progress in Middle and Southern Africa has impacted economic growth in the two regions while it appears that lack of technological progress deteriorated growth in Eastern and Northern Africa.

Summary, Conclusion and Recommendations

The study examines the impact of Foreign Direct Investments (FDI) on the economic growth of the five regions of Africa. Based on the application of the Ordinary Least Squares (OLS) multiple regression analysis on aggregate regional data sourced from the UNCTAD website for an initial period of 33 years (1980 to 2012), the followings findings were made:

i. Foreign Direct Investment flows to all but one regions of Africa (Eastern Africa, Middle Africa, Northern Africa, and Southern Africa) have no significant impact on gross domestic product (GDP);
ii. In terms of Directional relationships, foreign Direct Investments (FDI) have positive but not statistically significant impact on gross domestic product (GDP) in Eastern and Middle Africa; while FDIs are have negative and non-statistically significant impact on GDP in Northern and Southern Africa;
iii. However, foreign Direct Investments (FDI) have positive and statistically significant impact on gross domestic product in Western Africa;
iv. Trade openness has negative impact on gross domestic product in all the regions of Africa except in Northern Africa and the negative impact is particularly Significant in Eastern and Southern Africa. However, trade openness has a positive non-significant impact on the GDP in North Africa;
v. Balance of Payment (BOP) has mixed impact on gross domestic product in the five regions of Africa. The impact is positive and statistically significant in Middle and Northern Africa but not statistically significant in Western Africa. However, Balance of Payment (BOP) has a negative and statistically significant impact on GDP in Eastern and Southern Africa;
vi. Labour force quality has positive impact on gross domestic product (GDP) in Eastern, Middle, and Southern Africa. With the exception of Eastern Africa, these relationships are not statistically significant. In contrast however, the impact of the quality of labour force on GDP is negative and not statistically significant in Northern and Western Africa; and finally,
vii. Technological progress (TECH) has a mixed impact on gross domestic product in the five African regions. The impact is positive and statistically significant in Middle and Southern Africa but not significantly related in Western Africa. In Eastern and Northern Africa, the impact of technological development on GDP is negative though not statistically significant.

The above findings lead us to the following conclusions. Foreign Direct Investments (FDIs) do not have significant impact on economic growth in the five regions of Africa. However, in terms of Directional relationships, foreign Direct Investments (FDI) have positive impact on economic growth in three of the five regions of Africa (Eastern, Middle and Western Africa).

This finding agrees with that of Adams (2008) who finds a positive impact of FDI on the economic growth of Sub-Saharan Africa (SSA), and De Mello (1997) who reached similar conclusion in his study of some selected Latin American countries. However, FDIs negatively impact economic growth in Northern and Southern Africa. This later finding contradicts Adams (2008), Alfaro *et al*. (2009) and De Mello (1997) but agrees with the findings of Carkovic & Levine, 2002 who finds a negative relationship between FDI and economic growth. These findings are not surprising because there has been a steady rise in FDI flows to the three regions since the early 1990; while from about 2010 there has been a sharp fall in FDI to Northern Africa. In the same vein, FDI flows to Southern Africa have remained largely low since about the year 2000 (see figure 2 in appendix). In addition, trade openness has failed to promote adequate flows of FDI to African regions. Indeed, trade openness has impacted negatively on economic growth in all the regions of African except in Northern Africa where the impact is positive but not significant. Balance of payments (BOP) have a mixed impact on economic growth in Africa. They contribute positively and significantly to economic growth in Middle and Northern Africa while the impact is negative and significant in Eastern and Southern Africa. In Western Africa, the impact of balance of payments on economic growth is positive but not significant. These agree with Tsai, 1994. We posit, therefore, that the balance of payments condition and its subsequent impact on economic growth in Africa may have been exacerbated one way or another by FDI flows to the regions. Similarly, the impact of labour force quality on economic growth in the five African regions is mixed. The quality of total labour force positively impacted economic growth in Middle, Southern and particularly in Eastern Africa (where the impact is significant) in agreement with the findings of Borensztein, *et al*., 1995, 1998; Li and Liu, 2005, and Ozigbo, 2005. However, labour force quality has negative impact on economic growth in Northern and Western Africa. Thus, we submit that either FDI flows did not significantly impact the quality of labour force or the quality of labour force did not encourage the transmission of the impact of FDI on economic growth in all regions of African except in Eastern Africa.

Meanwhile, we also conclude that technological progress in Middle and Southern Africa significantly impacted economic growth in the two regions; while it appears that lack of technological progress retarded the growth of the economies of Eastern and Northern Africa. Notwithstanding, technological development had positive but not significant impact on economic growth in Western Africa. These findings are in consonance with those of Borensztein, *et al*. 1998 and Ozigbo, 2005.

Finally, we submit that there exist differentials in the drivers of growth in the five regions of Africa. Indeed, there are positive and negative drivers of growth in each region of the Africa continent. In specific terms, FDIs are important positive driver of growth in Western Africa. In the same vein, balance of payment is a significant positive driver of growth in Middle and Northern Africa whereas it is an important negative driver of growth Eastern and Southern Africa. However, trade openness is a negative driver of growth in four out of the five regions of Africa and the negative impact is particularly strong in Eastern and Southern Africa contrary to the findings of Hausmann and Fernandez-Arias, 2000; Liargovas and Skandalis, 2011. Contrast, labour force quality is a positive and significant driver of growth in Eastern Africa while the level of technological development is an important catalyst for growth in Middle and Southern Africa.

Based on the above, we recommend that while regional economic planners and policy makers put necessary reforms in place to encourage, promote and boost foreign Direct Investment flows to all regions of Africa, particularly Direct Investments in critical sectors of the economies like manufacturing and power generation, appropriate regulatory frameworks must be put in place to check the negative effects of foreign Direct Investments. In addition, there should be purposeful regulation of foreign portfolio Investments and speculative capital to minimize the destabilization effect of sudden withdrawal of funds in times of economic crises in foreign investors' home economies (Igbinosa, 2012).

Similarly, African countries and/or regions should resist the temptation of entering into cooperation agreements or unions that open the doors of their economies to all kinds of imported goods from other parts of the world to avoid dumping which are not only harmful to domestic firms but also serves as drains to economic resources of Africa.

In particular, regional economic blocks in Africa should be resuscitated and supported to develop and promote intra-Africa trade and Investments among the regions of Africa. Currency matters, transportation and other infrastructures that aid trade should be developed across the regions of Africa.

References

Adams, S. (2008). Foreign Direct Investment, domestic saving and economic growth in Sub-Saharan Africa. *Journal of Policy Modeling.* doi:10.1016/j.jpolmod.2009.03.003.

Adegbite, E. O. & Ayadi, F. S. (2011). The role of foreign Direct Investment in economic development: A study of Nigeria. *World Journal of Entrepreneurship, Management and Sustainable Development*, 6(1/2): 133-147.

Alfaro, L.; Kalemli-Ozcan, S. & Sayek, S. (2009). FDI, productivity and financial development, *World Economy*, 32(1), 111-135.

Asiedu, E. (2002). On the determinants of foreign Direct Investment: Is Africa different? *World Development*, 30 (1).

Bengos, M.; and Sanchez-Robles (2003). Foreign Direct Investment, economic freedom and growth: New evidence from Latin America. *European Journal of Political Economy*, 19 (3), 529-45.

Blomstrom, M., Lipsey, R. & Zegan, M. (1994). What explains developing country growth? NBER Working Paper No. 4132. *National Bureau for Economic Research.* Massachusetts: Cambridge.

Borensztein, E.; De Gregorio, J. & Lee, J.W. (1995). How does foreign Direct Investment affect economic growth? NBER Working Paper 5057. Cambridge, MA: National Bureau of Economic Research.

Borensztein, E., De Gregorio, J. & Lee, J.W. (1998). How does foreign Direct Investment affect economic growth? *Journal of International Economics* 45, 115–135.

Carkovic, M. V. and Levine, R. (2002). Does foreign Direct Investment accelerate economic growth? *Social Science Research Network,* University of Minnesota. Department of Finance Working Paper. Available at SSRN: http://ssrn.com.

Campos, N.,& Kinoshita, Y. (2002). Foreign Direct Investment as technology transferred: Some panel evidence from the transition economies, *The Manchester School* 70: 398-419.

Dees, S. (1998). Foreign Direct Investment in China: Determinants and effects. *Economics of Planning*, 31, 175-94.

De Mello, L. R. Jr. (1997). Foreign Direct Investment in developing countries and growth: A selective survey. *The Journal of Development Studies* 34: 1-34.

Denisia, V. (2010). Foreign Direct Investment theories: An overview of the main FDI theories. *European Journal of Interdisciplinary Studies*, 2 (2): 104-110.

Dunning, J. H. (1973). Explaining the international Direct Investment position of countries. Oxford Economic Papers, 25, November.

Eke, N. A. (2003). Foreign Direct Investment and economic growth in Nigeria: A causality test. *Journal of Economic and Social Studies*, 3 (5): 75-89.

Hausmann, R. and Fernandez-Arias, E. (2000). Foreign Direct Investment: Good cholesterol? Paper prepared for the seminar "The new wave of capital flows: Sea change or just another tide?" March 26, New Orleans.

Hosseini, H. (2005). An economic theory of FDI: A behavioural economics and historical approach. *The Journal of Socio-Economics* 34: 530-531.

Hymer, S. (1970). The efficiency (contradictions) of multinational corporations. *American Economic Review*, 60, 441-8.

Igbinosa, S. O. (2012). Assessing the impact of financial policies on Nigeria's economic growth. *International Journal of Development and Management Review* 7(1): 173-86.

Kumar, N. (1994). Determinants of export orientation of foreign production by U.S. Multinationals: An inter-country analysis. *Journal of International Business*, 25 (1), 141- 156.

Li, X. & Liu, X. (2005). Foreign Direct Investment and economic growth: An increasingly endogenous relationship. *World Development Report*, 33, 339-407.

Liargovas, P. G. & Skandalis, K. S. (2011). Foreign Direct Investment and trade openness: The case of developing economies. *Springer Science and Business Media* 6: 323-331.

Lipsey, R. (2002). *Home and host country effects of FDI.* Sweden: Lidingo.

Loree, D. W. & Guisinger, S. (1995). Policy and non-policy determinants of U.S. equity foreign Direct Investment. *Journal of Business Studies*, 26 (2), 281-299.

Morgan, R. E. & Katsikeas, C. S. (1997). Theories of international trade, foreign Direct Investment and firm internationalization: A critique. *Management Decision* 35(1): 68–78.

Ndambendia, H. & Njoupouognigni, M. (2010). Foreign aid, foreign Direct Investment and economic growth in Sub-Saharan Africa: Evidence from pooled mean group estimator. *International Journal of Economics and Finance* 2(3): 39-45.

Obadan, M. I. (1989). Direct Investment in Nigeria: An Empirical Analysis, *African Studies Review* 25(1): 68-79.

Ozigbo, N. (2005). Constraints and determinants of FDI in Sub-Saharan Africa. *Journal of Business Administration & Management*, 1(1 & 2): 106-116.

Prasad, E. *et al*. (2003). Effects of financial globalisation on developing countries: Some empirical evidence. IMF occasional paper no. 220. Washington, DC: International Monetary Fund (IMF).

Root, F. & Ahmed, A. (1979). Empirical determinants of manufacturing Direct foreign Investment in developing countries. *Economic Development and Cultural Change* 27: 751-767.

Roy, G. A., & Berg, H. V. (2006). Foreign Direct Investment and economic growth: A time-series approach. *Global Economy Journal* 6(1): 1-19.

Schneider, F. & Frey, B. (1985).Economic and political determinants of foreign Direct Investment. *World Development*, 13(2): 161-175.

Shenkar (2007). Foreign Direct Investment: Theory and application. Shenkar- 45427.qxd 11/12/2007, 59-92.

Tsai, L. P. (1994). Determinant of foreign Direct Investment and its impact on economic growth. *Journal of Economic Development* 19(1): 137-163.

United Nations Conference on Trade and Development (UNCTAD) (2005). Rethinking the role of foreign Direct Investment. *Economic Development in Africa*, UNCTAD/ GDS/Africa/2005/Geneva. New York: United Nations.

United Nations Conference on Trade and Development (UNCTAD) (2013). *World Investment Report*. Available at http://www.unctad.org/en/

Zhang, K. H. (2001). How does foreign Investment affect economic in China? *Economics of Transition* 9: 679-693.

APPENDIX

TABLE 3B: UNIT ROOTS TEST FOR FDI AND OTHER VARIABLES FOR MIDDLE AFRICA REGION AT LEVEL

VARIABLE	ADF TEST STATISTIC	ADF CRITICAL VALUE @5% LEVEL	PP TEST STATISTIC	PP CRITICAL VALUE @5% LEVEL	REMARK
GDP	3.2929	-2.9571	-3.2399	-2.9571	STATIONARY
FDI	-1.5872	-2.9571	-1.4728	-2.9571	NON-STATIONARY
TOPEN	-0.8869	-2.9571	-0,8671	-2.9571	NON-STATIONARY
BOP	-3.0820	-2.9604	-3.1608	-2.9571	STATIONARY
LABOF	3.0912	-2.9571	12.5407	-2.9571	STATIONARY
TECH	-1.8235	2.9862	-1.6302	-2.9571	NON-STATIONARY

Source: Author's computation using EViews 7.0, June, 2014

TABLE 3C: UNIT ROOTS TEST FOR FDI AND OTHER VARIABLES FOR NORTHERN AFRICA REGION AT LEVEL

VARIABLE	ADF TEST STATISTIC	ADF CRITICAL VALUE @5% LEVEL	PP TEST STATISTIC	PP CRITICAL VALUE @5% LEVEL	REMARK
GDP	3.1348	-2.9571	3.4371	-2.9571	STATIONARY
FDI	3.2532	-2.9810	-1.1005	-2.9571	NON-STATIONARY
TOPEN	-1.4240	-2.9571	-1.6868	-2.9571	NON-STATIONARY
BOP	-2.3235	-2.9571	-2.3235	-2.9571	NON-STATIONARY
LABOF	-0.5010	-2.9571	0.4615	-2.9571	NON-STATIONARY
TECH	1.1725	2.9640	-1.2907	-2.9571	NON-STATIONARY

TABLE 3D: UNIT ROOTS TEST FOR FDI AND OTHER VARIABLES FOR SOUTHERN AFRICA REGION AT LEVEL

VARIABLE	ADF TEST STATISTIC	ADF CRITICAL VALUE @5% LEVEL	PP TEST STATISTIC	PP CRITICAL VALUE @5% LEVEL	STATUS	ORDER OF INTEGRATION
GDP	3.4243	-2.9640	3.6691	-2.9571	STATIONARY	I(0)
FDI	3.4547	-2.9763	-3.1558	-2.9571	STATIONARY	I(0)
TOPEN	-3.1135	-2.9571	-3.1449	-2.9571	STATIONARY	I(0)
BOP	3.7372	-2.9640	-3.1582	-2.9571	STATIONARY	I(0)
LABOF	-3.7651	-2.9571	-3.6820	-2.9571	STATIONARY	I(0)
TECH	3.2781	-2.9571	3.5149	-2.9571	STATIONARY	I(0)

TABLE 3E: UNIT ROOTS TEST FOR FDI AND OTHER VARIABLES FOR WESTERN AFRICA REGION AT LEVEL

VARIABLE	ADF TEST STATISTIC	ADF CRITICAL VALUE @5% LEVEL	PP TEST STATISTIC	PP CRITICAL VALUE @5% LEVEL	STATUS	ORDER OF INTEGRATION
GDP	3.4346	-2.9571	3.4406	-2.9571	STATIONARY	I(0)
FDI	3.8556	-2.9604	-3.6480	-2.9571	STATIONARY	I(0)
TOPEN	-3.2073	-2.9678	-3.0840	-2.9571	STATIONARY	I(0)

BOP	-3.9584	-3.9571	-3.9063	-2.9571	STATIONARY	I(0)
LABOF	4.7742	-2.9604	11.7794	-2.9571	STATIONARY	I(0)
TECH	-3.4126	2.9571	-3.3856	-2.9571	STATIONARY	I(0)

TABLE 4B: UNIT ROOTS TESTS FOR MIDDLE AFRICA VARIABLES AT FIRST DIFFERENCE

VARIABLE	ADF TEST STATISTIC	ADF CRITICAL VALUE @5% LEVEL	PP TEST STATISTIC	PP CRITICAL VALUE @5% LEVEL	STATUS	ORDER OF INTEGRATION
DGDP	-9.6465	-2.9678	-8.5093	-2.9640	STATIONARY	I(1)
DFDI	-4.6952	-2.9919	-15.8117	-2.9640	STATIONARY	I(1)
DTOPEN	-6.8981	-2.9640	-13.8324	2.9640	STATIONARY	I(1)
DBOP	-11.4244	-2.9981	-23.3039	-2.9640	STATIONARY	I(1)
DLABOF	-6.5993	-2.9640	-10.4198	-2.9640	STATIONARY	I(1)
DTECH	-7.4172	-2.9810	-11.4138	-2.9640	STATIONARY	I(1)

TABLE 4C: UNIT ROOTS TESTS FOR NORTHERN AFRICA VARIABLES AT FIRST DIFFERENCE

VARIABLE	ADF TEST STATISTIC	ADF CRITICAL VALUE @5% LEVEL	PP TEST STATISTIC	PP CRITICAL VALUE @5% LEVEL	STATUS	ORDER OF INTEGRATION
DGDP	-11.4957	-2.9640	-14.7450	-2.9640	STATIONARY	I(1)
DFDI	-4.1455	-2.9981	-8.9422	-2.9640	STATIONARY	I(1)
DTOPEN	-8.9413	2.9640	-11.8277	-2.9640	STATIONARY	I(1)
DBOP	-4.4096	-2.9862	-42.5100	-2.9640	STATIONARY	I(1)
DLABOF	-4.4116	-2.9640	-3.8211	-2.9640	STATIONARY	I(1)
DTECH	-6.9675	-2.9678	-5.0001	-2.9640	STATIONARY	I(1)

Table 5'a: OLS REGRESSION OUTPUT FOR EASTERN AFRICA DATA

Dependent Variable: DGDP
Method: Least Squares
Date: 06/16/14 Time: 13:48
Sample (adjusted): 1982 2012
Included observations: 31 after adjustments
Convergence achieved after 39 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3153.164	3413.076	-0.923848	0.3648
DFDI	1.017409	0.960122	1.059666	0.2998
DBOP	-2.484837	0.351879	-7.061633	0.0000
DTOPEN	-494.0864	159.7394	-3.093077	0.0050
DTECH	-6.467711	10.42272	-0.620540	0.5408
DLABOF	2.425320	1.055125	2.298610	0.0305
AR(1)	0.537084	0.202718	2.649412	0.0140

R-squared	0.914923	Mean dependent var	5778.000
Adjusted R-squared	0.893654	S.D. dependent var	10056.66
S.E. of regression	3279.550	Akaike info criterion	19.22448
Sum squared resid	2.58E+08	Schwarz criterion	19.54828
Log likelihood	-290.9794	Hannan-Quinn criter.	19.33003
F-statistic	43.01633	Durbin-Watson stat	2.027613
Prob(F-statistic)	0.000000		

Inverted AR Roots	.54

Table 5'b: OLS REGRESSION OUTPUT FOR MIDDLE AFRICAN DATA

Dependent Variable: DGDP
Method: Least Squares
Date: 06/09/14 Time: 03:37
Sample (adjusted): 1982 2012
Included observations: 31 after adjustments
Convergence achieved after 54 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4554.602	10591.98	-0.430005	0.6710
DFDI	0.851330	1.063194	0.800729	0.4311
DBOP	1.388176	0.237610	5.842248	0.0000
DTOPEN	-361.0352	241.1533	-1.497119	0.1474
DLABOF	10.65362	9.283008	1.147647	0.2624
DTECH	7353.130	1625.966	4.522316	0.0001
AR(1)	0.623576	0.197894	3.151066	0.0043

R-squared	0.747583	Mean dependent var	6333.500
Adjusted R-squared	0.684479	S.D. dependent var	12810.95
S.E. of regression	7196.073	Akaike info criterion	20.79614
Sum squared resid	1.24E+09	Schwarz criterion	21.11994
Log likelihood	-315.3401	Hannan-Quinn criter.	20.90169
F-statistic	11.84681	Durbin-Watson stat	2.053648
Prob(F-statistic)	0.000004		

Inverted AR Roots	.62

Table 5'c: OLS REGRESSION OUTPUT FOR NORTHERN AFRICAN DATA

Dependent Variable: DGDP
Method: Least Squares
Date: 06/26/14 Time: 23:19
Sample (adjusted): 1982 2012
Included observations: 31 after adjustments
Convergence achieved after 18 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24994.67	17116.34	1.460281	0.1572
DFDI	-1.757058	1.652711	-1.063137	0.2983
DBOP	1.563394	0.273815	5.709666	0.0000
DTOPEN	589.6939	803.0769	0.734293	0.4699
DTECH	-3.197004	12.88543	-0.248110	0.8062
DLABOF	-1.492163	6.437266	-0.231801	0.8187
AR(1)	0.779414	0.134979	5.774350	0.0000

R-squared	0.720583	Mean dependent var	20157.49
Adjusted R-squared	0.650729	S.D. dependent var	32288.71
S.E. of regression	19082.36	Akaike info criterion	22.74660
Sum squared resid	8.74E+09	Schwarz criterion	23.07040
Log likelihood	-345.5722	Hannan-Quinn criter.	22.85215
F-statistic	10.31553	Durbin-Watson stat	2.014930
Prob(F-statistic)	0.000011		

Inverted AR Roots	.78

Table 5'd: OLS REGRESSION OUTPUT FOR SOUTHERN AFRICA DATA

Dependent Variable: GDP
Method: Least Squares
Date: 06/27/14 Time: 00:09
Sample (adjusted): 1984 2012
Included observations: 29 after adjustments
Convergence achieved after 11 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	380647.5	78389.11	4.855872	0.0001
FDI	-1.594873	2.315329	-0.688832	0.4981
BOP	-8.857634	1.311635	-6.753123	0.0000
TOPEN	-5948.950	1144.817	-5.196422	0.0000
TECH	157.0814	42.53326	3.693143	0.0013
LABOF	3.771410	2.340539	1.611343	0.1214
AR(4)	-0.592446	0.214639	-2.760200	0.0114

R-squared	0.937892	Mean dependent var	188815.4
Adjusted R-squared	0.920954	S.D. dependent var	105911.5
S.E. of regression	29777.17	Akaike info criterion	23.64738
Sum squared resid	1.95E+10	Schwarz criterion	23.97741
Log likelihood	-335.8870	Hannan-Quinn criter.	23.75074
F-statistic	55.37060	Durbin-Watson stat	1.755871
Prob(F-statistic)	0.000000		

Inverted AR Roots	.62+.62i	.62+.62i	-.62-.62i	-.62-.62i

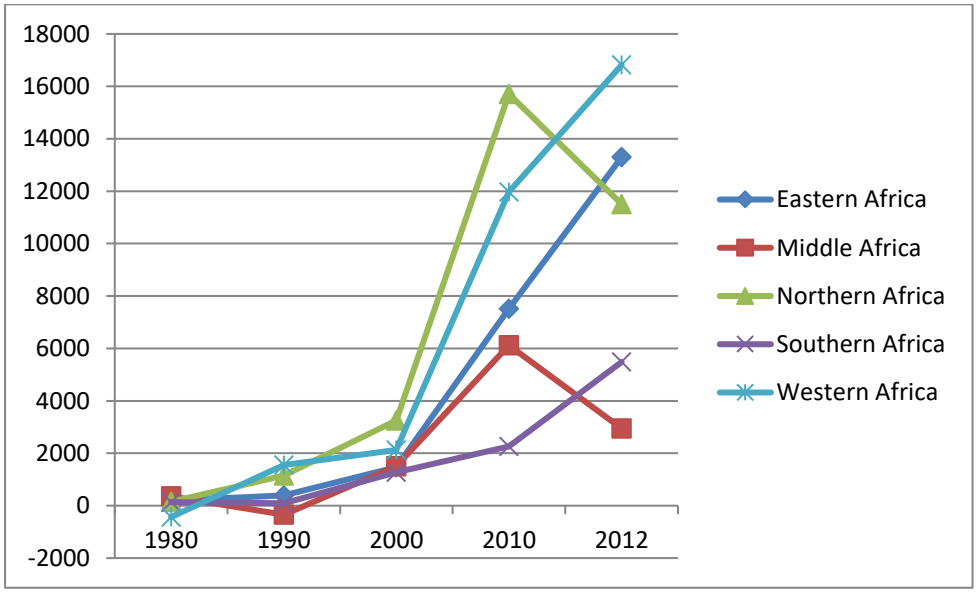
Table 5'e: OLS REGRESSION OUTPUT FOR WESTERN AFRICAN DATA

Dependent Variable: GDP
Method: Least Squares
Date: 06/27/14 Time: 01:03
Sample: 1980 2012
Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	152477.4	38351.17	3.975820	0.0005
FDI	19.44364	2.477240	7.848911	0.0000
BOP	0.615340	1.017443	0.604790	0.5504
TOPEN	-1172.860	802.2468	-1.461968	0.1553
TECH	469.4270	567.9409	0.826542	0.4157
LABOF	-0.398228	0.876183	-0.454503	0.6531

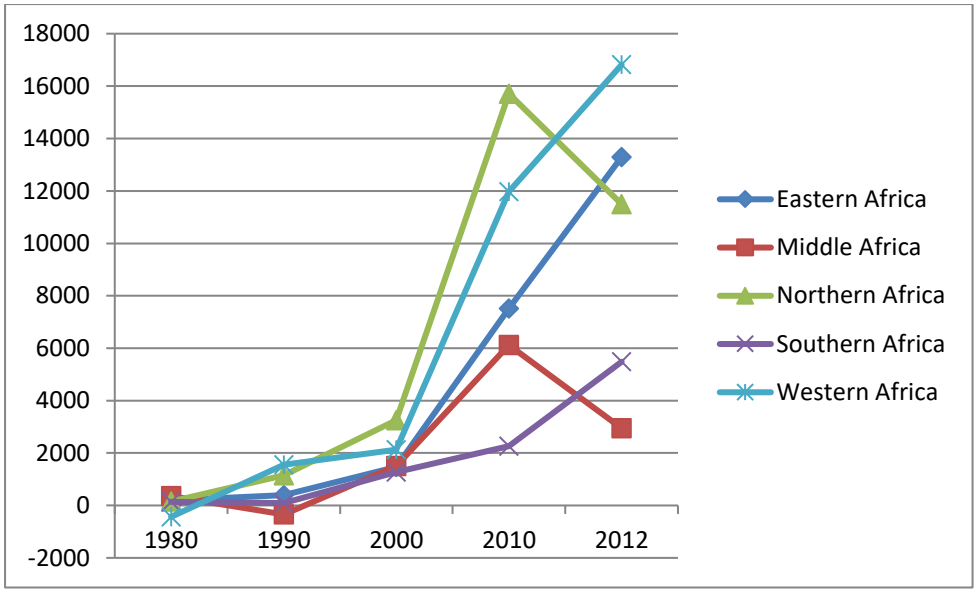
R-squared	0.923073	Mean dependent var	143750.2
Adjusted R-squared	0.908827	S.D. dependent var	98344.47
S.E. of regression	29694.99	Akaike info criterion	23.59831
Sum squared resid	2.38E+10	Schwarz criterion	23.87040
Log likelihood	-383.3721	Hannan-Quinn criter.	23.68986
F-statistic	64.79617	Durbin-Watson stat	1.782498
Prob(F-statistic)	0.000000		

Figure 1: FDI Flows to the Five Regions of Africa: 1980-2012



Source: Author's computation using EViews 7.0, June, 2014

Figure 2: FDI Flows to Developing Economies: 1980-2012


18000
16000
14000
12000
10000
8000
6000
4000
2000
0
-2000
1980
1990
2000
2010
2012
Eastern Africa
Middle Africa
Northern Africa
Southern Africa
Western Africa