

The Impact of FDI Inflows, Exports and Domestic Investment on Economic Growth in Africa

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Abstract: The topic regarding the impact of foreign direct investment net inflows, exports and domestic investment on economic growth has resulted in mixed research findings across the globe. Literature related to the above variables in five selected African countries drawn from the five sub-regions is critically reviewed in this article. Furthermore, an econometric analysis of these variables is done to ascertain their impact on economic growth. The findings are compared to previous findings in other studies. The researcher found similar results in some variables when compared to previous researches in other countries. The study found that the independent statistical variables significantly predicted gross domestic product, with $F(3, 63) = 5.84$, $P > F 0.0014$, $R^2 = 0.2176$, $adjusted\ R^2 = 0.1804$ and $root\ mean\ squared\ error\ (RMSE) = 0.54976$. The independent variables added significantly to the prediction of $p < 0.05$. The researcher challenges the notion that the impact of foreign direct investment net inflows, exports and domestic investment on economic growth should always be positive and significant. This study provides a refreshed appreciation of the relationship between foreign direct investment net inflows, exports, domestic investment and economic growth in light of rapid socioeconomic changes in the sampled countries. The article also proposes some critical considerations regarding this relationship.

Keywords: *Gross Domestic Product; Exports; Foreign Direct Investment; Domestic Investment; Economic Growth*

1. Introduction

Research the world over has penned many different conclusions regarding the impact of FDI net inflows, exports and domestic investment on economic growth. The relationship between these variables has come in different forms. The research findings the world over have not been consistent over the years causing serious disagreements between various authors regarding the impact of these variables on economic growth. Research results range from positive, negative and to no relationship at all. Some dependent variables turned out to influence some explanatory variables in other instances.

After 10 years of high growth, an increasing number of countries in Africa will move into 'middle-income' status (at least USD1,000 per capita income) if current growth rates are maintained (WorldBank, 2012). According to August (2013), Africa is the world's fastest-growing continent at 5.6% a year with this growth trajectory expected to rise by an average of over 6% till 2023. African Development Bank (AfDB, 2018), however, argues that domestic and global shocks in 2016 slowed down the rate of economic growth in Africa, though economic recovery signs already manifested in 2017. To AfDB (2018) the real output growth increased by 3.6% in 2017, up from 2.2% in 2016, before an expected estimated acceleration growth of 4.1% in 2018 and 2019. This growth trajectory has been supported by not-resource-intensive countries thereby, underscoring Africa's economic resistance (AfDB, 2018). This study contrasted these economic developments with an assumption in mind that any combination of the three variables must have influenced this trend.

AfDB (2018) argues that economic resilience and fundamentals have enriched many African countries over the years with some countries' local resource enlistment exceeding that of some Latin American and Asian peers. These resources are, however, inadequate to finance human capital and infrastructure development (AfDB, 2018). Domestic resource mobilization has placed many African economies in a better position to curb the harsh external conditions than ever before. However, Africa's overreliance on primary exports has suffered a major blow due to commodity price fluctuations which negatively undermined planned investments. Natural resource-dependent economies suffered fiscal vulnerability exposure due to weaker external conditions. Because of all this, it is imperative to invest in innovation and high-technology industries to cushion economies against such eventualities. Internal and external factors are therefore critical for the economic growth trajectory of the continent.

United Nations Conference on Trade and Development (UNCTAD)(2017) forecasts an increase in global flows of almost USD0.05 trillion in 2018 from USD1.8 trillion in 2017 – though below the 2007 peak. (UNCTAD, 2017) argues that there is a likelihood of significant effect on cross-border investment that could hamper economic recovery due to (1) tax policy changes, (2) geopolitical risk and, (3) uncertainty in policy. UNCTAD(2017) further argues that there would be a push in FDI net inflows to Africa as a result of advances in regional integration and an anticipated rise in oil prices. UNCTAD (2017) states that foreign investment to North Africa has increased as a result of robust FDI net inflows to Egypt. However, the sluggishness of prices of commodities has reduced economic expectations in sub-Saharan Africa with the effect of scaring away investors in the sub-region. FDI net inflows to countries such as Angola were restrained (UNCTAD, 2017) with some diversified producers of East Africa such as Ethiopia registering strong FDI net inflows than ever before in 2016. AfDB (2018) argues that countries in Africa need to reinforce their economic pliability and vitality to boost their economies to new levels of growth steadiness through productivity and innovation supported by natural resource extraction and value addition.

However, with all that being said about Africa, this study seeks to examine the relationship that exists between FDI net inflows, exports and domestic investment and economic growth in five selected African countries spanning across Africa's five sub-regions. Furthermore, the study seeks to provide a better appreciation and understanding of this relationship from an African perspective. The study is going to examine the benefits and challenges faced by Africa in regard to these macroeconomic fundamentals. The study is therefore critical for economic growth and development in Africa. It also provides critical insights and trends that will help foster future economic growth. This study will go a long way towards influencing policy formulation and implementation. This study is being done whilst policymakers are being seized by the role of technology in economic development the world over. These technological developments at international level require policymakers in Africa to make an assessment of their implications for investment and services trade. More importantly, the study has come at an opportune time for governments, policy-makers, and researchers. The remainder of the article will be: Section 2 - literature review, Section 3 - methodology, Section 4–data analysis and interpretation, Section 5–conclusion and finally Section 6 - references.

2. Literature Review

The study examined the impact of exports, domestic investment and FDI net inflows on economic growth (GDP) in five selected African countries drawn from North Africa, Southern Africa, East Africa, West Africa and Central Africa. Economic growth was measured by gross domestic product. Why gross domestic product (GDP) was used? Jain, Nair, & Jian(2015) state that “GDP is a very strong measure to gauge the economic health of a country and it reflects the sum total of the production of a country and as such comprises all purchases of goods and services produced by a country and services used by individuals, firms, foreigners and the governing bodies.”However, other authorities such as (Qian, 2009) are calling for the adoption of the Gross National Happiness which is considered a more complete approach that is based on four pillars of preservation and promotion of cultural values, conservation of the natural environment, sustainable development, and good governance. GDP is used as an indicator of economic growth by most governments and economic planners and policy formulators. To Jain, Nair, & Jian(2015), “GDP enables one to judge whether the economy is contracting or expanding, whether it needs a boost or restraint, and if a threat such as a recession or inflation looms on the horizon.” Various economic sectors' contributions to GDP are considered for future planning. Simon Kuznets was the first to develop GDP in a US Congress report in 1934 (Jain, Nair, & Jian, 2015). GDP accounts for all domestic production, regardless of whether the income accrues to domestic or foreign institutions (Jain, Nair, & Jian, 2015).

Macroeconomic Performance Across Africa's Sub-Regions: GDP in Africa although growing in real terms since 1997, there have been some challenges that continue to affect this growth trajectory chief among them being the fluctuations in commodity prices such as the ones experienced in 2013–15. However, GDP growth in percentage terms shows some significant fluctuations as depicted in figure 3 below. Growth performance varied widely across countries in the sub-regions.

East Africa. With an estimated growth of 5.6% in 2017 up from 4.9% in 2016, East Africa remains the fastest-growing sub-region in Africa (AfDB, 2018). This trend is expected to remain resilient, reaching 5.9% in 2018 and is expected to reach 6.1% in 2019 (AfDB, 2018). AfDB (2018) further provides that the increased economic growth is prevalent in the sub-region, with a number of economies growing by 5% or more. This growth is being supported by construction activities, ICT and an expected rebound in agriculture. FDI net inflows have increased significantly in Ethiopia since 2013 (figure 1) as well as gross capital formation which increased from USD10 billion in 2011 to USD29 billion in 2016 (table 2). UNCTAD (2017) states that East Africa received USD7.1 billion in FDI in 2016, 13% more than in 2015. Infrastructural investments helped to propel flows to Ethiopia with an increase by 46% to USD3.2 billion (UNCTAD, 2017). UNCTAD (2017) further states that despite reforms in investment and a supportive domestic policy environment FDI into Kenya declined by 36% to USD394 million in 2016. These reforms in Kenya managed to sustain cross-border mergers and acquisitions (M & As), with the private equity fund Helios (United Kingdom) acquiring 70% of Telkom (Kenya) from Orange (France) (UNCTAD, 2017).

North Africa. According to AfDB (2018), North Africa recorded a GDP of 5% in 2017 is an increase from 3.3% in 2016 and was the second- highest. (AfDB, 2018) further projects the sub-region's growth to increase to 5.1% in 2018, before declining to 4.5% in 2019 underpinned by oil production recovery in Libya. Libya's GDP rose by 55.1% in 2017, after several declines in the previous years—though production never the less remains lower than before the Arab revolution in 2011 (AfDB, 2018). Egypt recorded a steady economic growth of 4.1% in 2017, a slight decline from 4.3% in 2016 (figure 3). The return of net exports together with positive FDI as well as the depreciation of the real exchange rate after its liberalization positively affect growth (AfDB, 2018). Robust FDI to Egypt in 2006, 2007, 2008 and its rebound in 2015 and 2016 continues to boost inflows to North Africa (figure 1). UNCTAD (2017) argues that reforms in foreign investment and discoveries in new gas have helped increase investment flows into North Africa which increased by 11%, to USD14.5 billion. Growth in 2015 was mainly as a result of investments in Egypt, which recorded an increase in FDI inflows of 17% to USD8.1 billion (UNCTAD, 2017). Furthermore, the discovery of gas reserves by Shell of the Netherlands in Egypt's the Western Desert has helped to drive investment into the hydrocarbons sector (UNCTAD, 2017). FDI flows to the rest of North Africa have remained subdued due to continued conflicts and low oil prices.

Southern Africa. According to AfDB (2018), the region's economy nearly folded in 2017 to 1.6%, an upward increase from 0.9% in 2016 as a result of better performance by South Africa and Zambia - two main commodity exporters (South Africa, which doubled its growth, though still low, at 0.9%); and Zambia, which grew 4.1%). Southern Africa's growth in 2018 and 2019 is forecasted to increase by 2% and 2.4% respectively (AfDB, 2018). This growth is reinforced by expansion in mining, services and agriculture in the sub-region. These figures are lower than the African average, mainly because of slow growth in South Africa. This had strong neighborhood spillover effects (through trade and revenues sharing) on the sub-region's customs union (AfDB, 2018). South Africa's policy uncertainty is becoming worrisome. Current developments in Zimbabwe point towards significant economic growth which might have positive effects in the sub-region with Mozambique, Mauritius, Lesotho and Malawi also expected to grow by 4% or more, though their contribution to the sub-region's GDP is small (AfDB, 2018). FDI inflows to the sub-region contracted by 18% to USD21.2 billion. Flows to Mozambique, however, declined by 20% though remains large at USD3 billion (AfDB, 2018). Mozambique's commodity sector's long-term value has caused investors to remain positive despite the serious financial crunch and this has seen Eni (Italy) approving a USD8 billion offshore gas exploration at the end of 2016 with ExxonMobil (United States) buying a multibillion-dollar stake in Eni (Italy) during the same period (AfDB, 2018).

According to (AfDB, 2018), "flows to Zambia fell sharply, dropping 70% to USD469 million, amid low commodity prices with South Africa, the economic powerhouse on the continent, continues to underperform, with a paltry FDI of USD2.3 billion in 2016; that was up 31% from a record low in 2015 but still well off its past average." Nonetheless, an investment of USD759 million into a vehicle-production facility by state-owned Beijing Automotive International Corporation (China) has become the largest investment in four decades in the country (AfDB, 2018).

West Africa. AfDB (2018) projects an accelerated growth of 3.6% in 2018 and 3.8% in 2019 for West Africa. This growth is reinforced by increased output growth in agriculture and oil production. Other large economies accounting for the growth include Ghana, Senegal and Cote d'Ivoire; while smaller economies (Togo, Sierra Leone, Benin and Burkina Faso) are anticipated to grow by 5% or more (AfDB, 2018). Ghana has recorded significant growth in GDP since 2005 (table 3).

In 2016 the country recorded a gross capital formation of USD10 billion from a low of USD2 billion in 1997. Ghana's GDP per capita increased from USD391.36 in 1997 to USD1 513.46 in 2016 though lower than that of Angola and Egypt at USD3 308.70 and USD3 477.85 respectively (table 1). The improving investment into Nigeria has helped to drive FDI net inflows into West Africa which has since increased by 12% to USD11.4 billion in 2016 (AfDB, 2018). On the other hand, FDI net inflows increased by 9% to USD3.5 billion in Ghana (UNCTAD, 2017). The partnership between Vitol Group (Netherlands), Eni (Italy) and Ghana's National Petroleum Corporation, has continued development on the offshore oil and natural gas project in West Ghana valued at USD7 billion (UNCTAD, 2017). The industrial policy efforts by Ghana and Côte d'Ivoire to combine cocoa processing bode well for future investments in the region (UNCTAD, 2017). However, Côte d'Ivoire experienced a minor decline (-3%) in FDI inflows in 2016 (UNCTAD, 2017).

Central Africa. AfDB (2018) argue that even with the recovery in oil prices, the region continued to underperform as output contracted sharply in Equatorial Guinea (-7.3%) and Republic of Congo (-4.0%), slowing down the region's overall 2017 economic growth to 0.9% (AfDB, 2018). The sub-region has experienced an economic decline due to (1) its fixed exchange rate, (2) its deep-seated dependence on oil, and (3) lack of independent monetary policy levers to adjust to changing economic conditions (as all five countries are members of the Central African Economic and Monetary Community [CEMAC]) (AfDB, 2018). Central Africa's FDI net inflows dropped by 15% in 2016, to USD5.1 billion (AfDB, 2018). DRC's FDI declined by 28% to USD1.2 billion in 2016, with investment trickling only into the country's mineral sector (UNCTAD, 2017). However, Equatorial Guinea suffered a considerable decrease in FDI inflows (-77% to USD54 million), with Chad remaining constant, while Gabon managed to increase its flows by 13% to USD703 million (UNCTAD, 2017). Inflows into the DRC have been due to continued investments by the Chinese firms working in copper and cobalt extraction (UNCTAD, 2017).

Improving domestic revenue mobilization is critical for African countries as they eye economic transformation. The upsurge in domestic savings for the past decade bodes very well with the domestic resource mobilization (AfDB, 2018). Developed economies such as the USA, UK and France remained the largest investors in Africa in 2015 (UNCTAD, 2017). However, half of the top ten major investors in Africa were from developing economies (UNCTAD, 2017). The period 2010 and 2015 saw China's FDI stock increasing in the region by almost threefold (UNCTAD, 2017). UNCTAD(2017) states that investors from developing economies have continued buying assets held by MNEs in Africa. Cross-border M&As declined by 54% to USD9.7 billion in 2016 in the continent (UNCTAD, 2017). MNEs from developing economies, especially in China acquired assets worth USD2 billion from developed countries' MNEs (UNCTAD, 2017). For example, Freeport-McMoRan DRC Holdings (United States) sold its entire share capital to Molybdenum (China) for USD2.8 billion to supply cobalt, which is critical for the production of Tesla batteries (UNCTAD, 2017). There has been a number of acquisitions by African MNEs located in Africa with Barclay's (United Kingdom), for example, selling its 150-year-old affiliate in Egypt to Morocco's Attijariwafa Bank for USD500 million (UNCTAD, 2017). Econet Wireless (Zimbabwe)'s Liquid Telecom also bought South Africa's fixed-line operator Neotel (where India's Tata Communications is the major shareholder) for USD430 million, in a deal that was deemed to create the continent's biggest broadband network (UNCTAD, 2017).

Africa's Economic Outlook Across Selected Countries: Africa's economic performance since 1997 has been marred with fluctuations due to a number of divergent reasons. Figure 1 below depicts FDI net inflows in United States dollars as a percentage of GDP from 1997 to 2016 for five selected African countries, which are, Angola, Egypt, Ethiopia, Ghana and Zimbabwe. Egypt recorded the highest FDI net inflows in 2006 (USD10 billion) and 2007 (USD12 billion) followed by Angola with USD9 billion in 2015. Zimbabwe recorded a high of USD473 million in 2014, being the lowest among the five countries due to the economic meltdown experienced since 2000 when the country embarked on her land reform program. Exports of goods and services are shown in figure 2. Angola topped the list since 2004 with the highest exports of USD72 billion

attained in 2012 followed by Egypt which recorded a high of USD54 billion in 2008. At the bottom is Zimbabwe with an average of USD3 billion per year from 1997 to 2016. In Table 1 GDP per capita is shown for the same period, 1997 to 2016. Angola recorded an average GDP per capita of USD2 373.40 per year for the period, followed by Egypt with an average of USD2 026.36, Ghana USD916.41, Zimbabwe USD660.06 and Ethiopia USD294.43. Table 2 also shows gross capital formation formerly known as the gross domestic investment.

Figure 1: FDI net Inflows

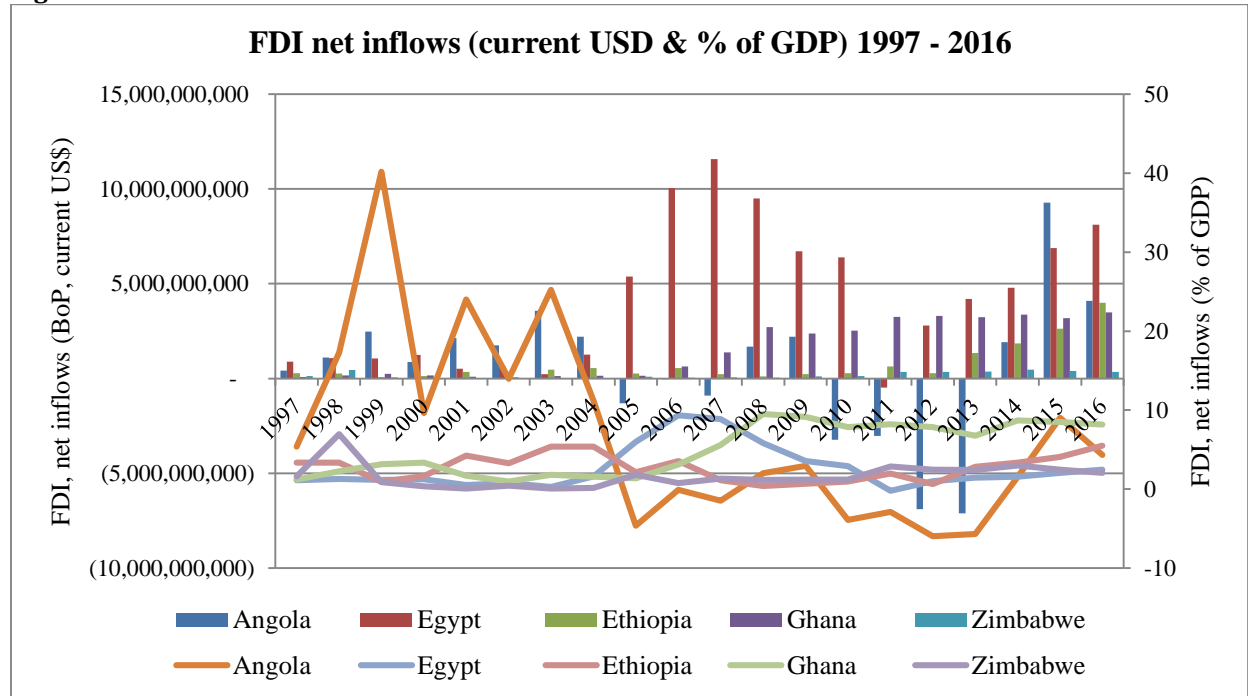


Figure 1: FDI, net inflows (current USD & % of GDP) from 1997 – 2016.
 Source: World Development Indicators updated 03/01/2018.

Table 1: GDP Per Capita (Current USD) From 1997 - 2016

Year	Angola	Egypt	Ethiopia	Ghana	Zimbabwe
1997	506.88	1,185.72	140.86	391.36	728.40
1998	415.69	1,259.00	124.51	414.77	538.28
1999	385.77	1,321.80	119.13	417.77	568.44
2000	555.30	1,428.18	123.88	263.11	547.36
2001	526.17	1,370.72	120.18	273.66	548.06
2002	711.18	1,210.23	111.36	309.48	507.35
2003	779.47	1,120.87	118.87	373.28	453.35
2004	1,041.09	1,045.94	135.76	423.19	454.36
2005	1,443.99	1,168.12	161.63	498.17	444.76
2006	2,062.42	1,375.20	193.79	922.94	414.80
2007	2,878.84	1,640.48	243.30	1,090.69	397.00
2008	3,868.58	2,011.25	325.38	1,224.40	325.68
2009	3,347.84	2,291.67	379.76	1,086.77	624.27
2010	3,529.05	2,602.48	341.31	1,312.61	719.98
2011	4,299.01	2,747.48	354.85	1,574.98	840.95
2012	4,598.25	3,181.44	468.51	1,629.80	968.16

2013	4,804.62	3,213.39	502.15	1,814.49	1,026.39
2014	4,709.31	3,327.75	571.16	1,432.23	1,031.10
2015	3,695.79	3,547.71	645.47	1,361.11	1,033.42
2016	3,308.70	3,477.85	706.76	1,513.46	1,029.08

Source: World Development Indicators updated 03/01/2018.

Table 2: Gross Capital Formation (Current USD) From 1997 To 2016

Year	Angola	Egypt	Ethiopia	Ghana	Zimbabwe
1997	1,947,257,412	13,775,811,209	-	1,709,472,656	1,546,744,200
1998	2,291,105,191	18,240,850,059	-	1,728,806,228	1,328,437,900
1999	1,771,594,609	19,610,734,297	-	1,621,105,776	987,298,800
2000	1,374,327,902	19,521,503,009	-	1,195,856,120	907,788,700
2001	1,217,840,320	17,827,980,403	-	1,413,735,306	695,798,400
2002	1,477,273,249	15,812,659,402	-	1,214,767,037	317,105,800
2003	1,822,285,786	14,002,820,426	-	1,750,639,594	458,207,300
2004	1,800,436,670	13,354,778,964	-	2,520,310,951	261,781,100
2005	2,478,708,477	16,121,779,391	-	3,112,403,619	87,777,200
2006	6,419,450,006	20,132,593,224	-	4,415,678,669	85,532,400
2007	8,163,614,106	27,206,474,896	-	4,978,445,252	376,244,600
2008	13,652,746,643	36,454,545,455	-	6,119,678,609	226,433,100
2009	11,496,781,725	36,266,047,726	-	5,369,791,170	1,232,079,529
2010	11,902,689,387	42,685,581,598	-	8,364,124,179	2,259,412,007
2011	13,436,930,123	40,363,529,959	10,259,286,600	10,461,362,614	2,453,419,093
2012	17,230,756,332	44,774,376,512	16,067,394,958	13,330,439,748	1,687,006,841
2013	18,359,875,796	41,013,867,775	16,239,043,212	13,257,368,047	1,758,183,494
2014	19,448,121,307	41,683,999,139	21,129,157,230	10,480,287,588	1,879,216,750
2015	9,834,745,136	47,538,015,438	26,218,552,261	9,246,164,759	2,003,427,020
2016	8,010,311,497	50,072,869,043	28,833,223,856	9,750,607,184	2,026,381,291

Source: World Development Indicators updated 03/01/2018.

Figure 2: Exports of Goods and Services

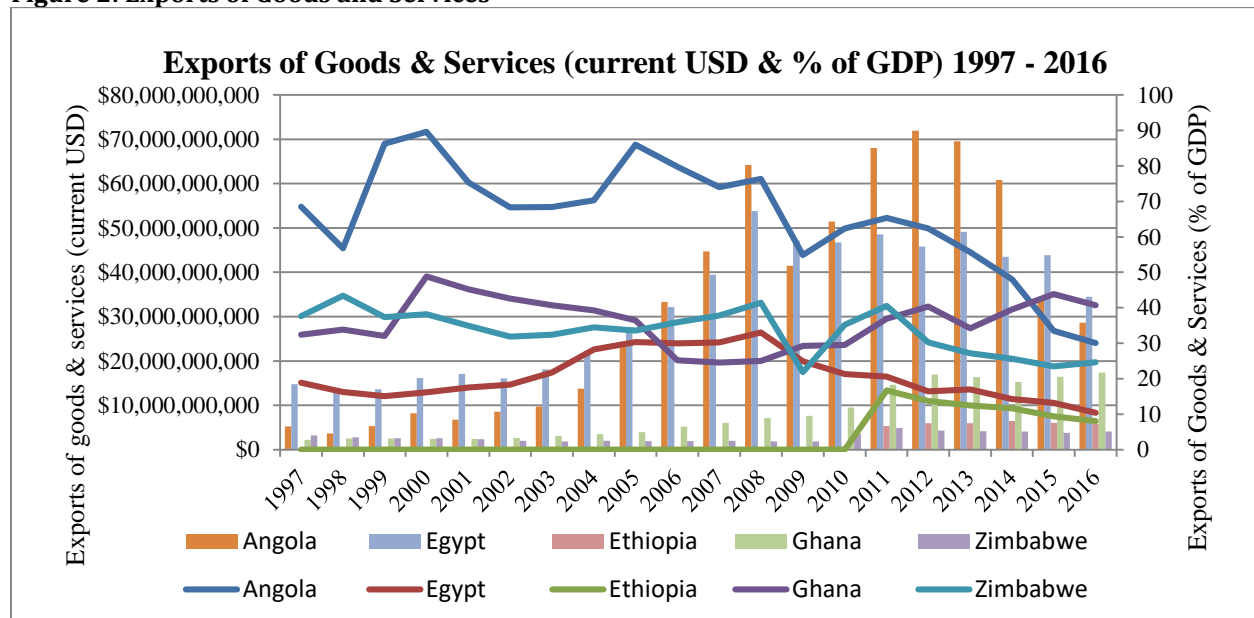


Figure 2: Exports of goods and services (current USD & % of GDP) from 1997 – 2016.

Source: World Development Indicators updated 03/01/2018.

Figure 3: GDP Growth

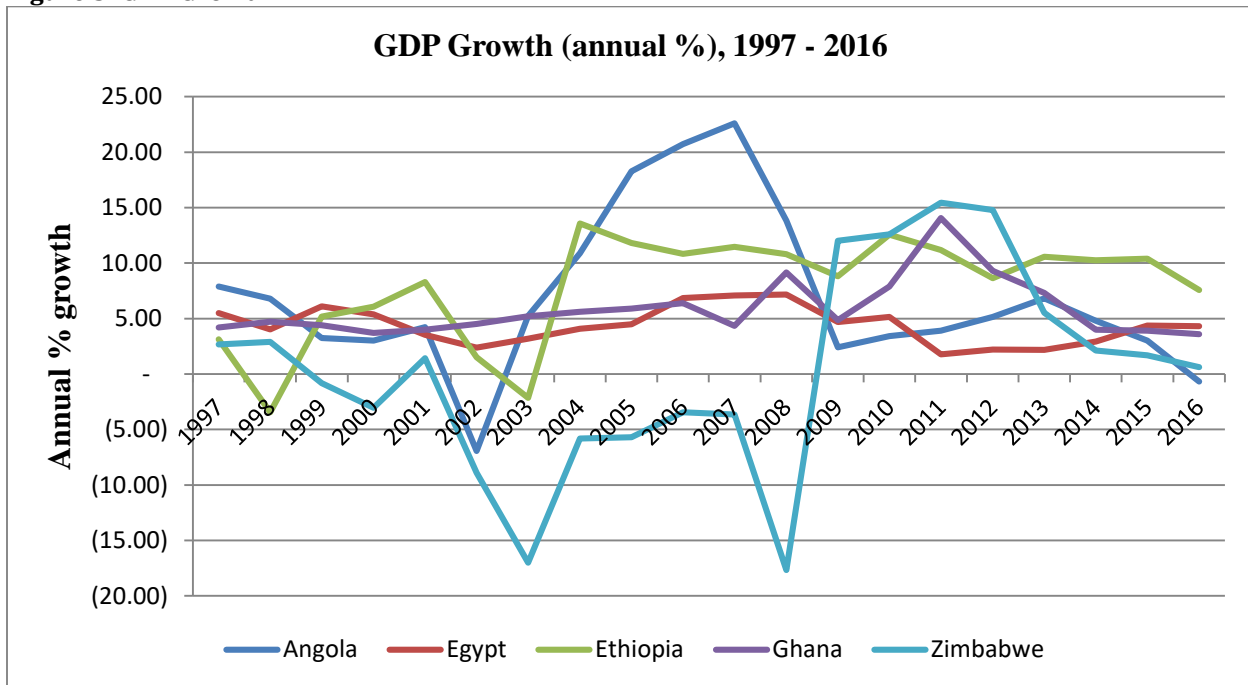


Figure 3: GDP growth (annual %) from 1997 – 2016.

Table 3: GDP (current USD) from 1997 to 2016

Year	Angola	Egypt	Ethiopia	Ghana	Zimbabwe
1997	7,648,377,412.83	78,436,578,171.09	8,589,211,390.50	6,891,308,593.75	8,529,571,600.00
1998	6,445,041,824.67	84,828,807,556.08	7,818,224,905.55	7,480,968,858.13	6,401,968,200.00
1999	6,152,922,942.98	90,710,704,806.84	7,700,833,482.01	7,719,354,838.71	6,858,013,100.00
2000	9,129,594,818.61	99,838,543,960.08	8,242,392,103.68	4,983,024,408.15	6,689,957,600.00
2001	8,936,063,723.20	97,632,008,709.85	8,231,326,016.47	5,314,909,953.93	6,777,384,700.00
2002	12,497,346,669.67	87,850,683,978.67	7,850,809,498.17	6,166,330,136.29	6,342,116,400.00
2003	14,188,949,190.62	82,924,503,942.64	8,623,691,300.04	7,632,406,552.84	5,727,591,800.00
2004	19,640,848,728.89	78,845,185,293.50	10,131,187,261.4	8,881,368,538.08	5,805,598,400.00
2005	28,233,712,830.90	89,685,725,230.25	12,401,139,453.9	10,731,634,116.7	5,755,215,200.00
2006	41,789,478,661.31	107,484,034,870.9	15,280,861,834.6	20,409,257,610.4	5,443,896,500.00
2007	60,448,921,272.23	130,478,960,092.5	19,707,616,772.8	24,758,819,717.7	5,291,950,100.00
2008	84,178,032,716.10	162,818,181,818.1	27,066,912,635.2	28,526,891,010.4	4,415,702,800.00
2009	75,492,384,801.37	188,982,374,700.8	32,437,389,116.0	25,977,847,813.7	8,621,573,608.35
2010	82,470,913,120.73	218,888,324,504.7	29,933,790,334.3	32,174,772,955.9	10,141,859,709.6
2011	104,115,923,082.7	236,001,858,960.0	31,952,763,089.3	39,566,292,432.8	12,098,450,748.8
2012	115,398,371,427.6	279,372,758,361.8	43,310,721,414.0	41,939,728,978.7	14,242,490,252.4
2013	124,912,063,308.2	288,586,231,501.8	47,648,211,133.2	47,805,069,494.9	15,451,768,658.5
2014	126,776,874,216.7	305,529,656,458.4	55,612,228,233.5	38,616,536,131.6	15,891,049,235.9
2015	102,962,245,246.7	332,698,041,030.8	64,464,547,915.2	37,543,361,203.5	16,304,667,807.0
2016	95,335,111,741.20	332,791,045,963.8	72,374,224,249.4	42,689,783,733.8	16,619,960,401.9

Source: World Development Indicators updated 03/01/2018

Empirical Overview: A number of studies have been carried out globally in relation to the impact of FDI, exports, domestic investment on economic growth with various results. However, a study by Tsaaurai & Odhiambo (2012) provides a paradigm shift regarding these relationships. Tsaaurai & Odhiambo (2012) drew some critical analysis regarding the relationship between FDI and economic growth and concluded that there are four views regarding the relationship. Their study went into detail explaining each view, the studies carried out under each view and the findings thereof. A study by Bakari (2017) provides empirical evidence regarding the impact of export, import and domestic investment on GDP. Bakari (2017) cites empirical evidence from researchers such as (Sumei, Selvanathan, & Selvanathan, 2008), (Andrews, 2015), (Saaed & Hussain, 2015), (Bader, 2016) and (Albiman & Suleiman, 2016) regarding the relationship that exists between the four variables. In the study, (Bakari, 2017) finds out that there was no correlation between imports, exports, domestic investment and economic growth. The empirical results on one hand indicate that imports, exports and domestic investment have no effect on GDP in Egypt. On the other hand, the results of the causality test show that domestic investment, exports and imports causes economic growth. These results assert that imports and domestic investment are the sources of economic growth in Egypt. Fotopoulos & Louri (2004) examine a model which consists of five variables, that is, GDP, FDI, labor force, and gross capital formation as a percentage of GDP, and found that Pakistan's capacity to progress on economic development depends on performance in attracting FDI.

Sumei, Selvanathan, & Selvana than (2008) cited by Jain, Nair, & Jian (2015) shows "that while there was a bi-directional causality between domestic investment and economic growth, there was only single-directional causality from FDI to domestic investment and to economic growth. Rather than crowding out domestic investment, FDI was found to be complementary with domestic investment. Thus, FDI had not only assisted in overcoming the shortage of capital, it had also stimulated economic growth through complementing domestic investment in China." Elboiashi (2002) investigates the causal relationships between domestic investment, FDI and economic growth in Tunisian, Egyptian, and Moroccan economies. The findings show that FDI negatively affected domestic investment and GDP in the short-run and had positive effects in the long-run. Additionally, the results show a uni-directional causality between GDP and FDI in Morocco and Egypt, and bi-directional causality between GDP and FDI in Tunisia. Domestic investment's role was greater than GDP in driving FDI into these countries. It was also noted that FDI was more effective in promoting growth than domestic investment. FDI was also found to be more influential for enhancing domestic investment than GDP. More so, the results showed that FDI has a crowd-out effect on domestic investment in the short-run and a crowd-in effect on domestic investment in the long-run. The study by Dreger & Herzer (2013) which used more sophisticated and detailed comparison techniques had quite interesting and very relevant findings to this article.

The two examined the impact of export-growth on economic growth in developing countries. The two reached three conclusions in their study; "i) in the short-run export growth does have an impact on GDP growth and vice-versa, for example, the two both have an effect on growing each other, ii) that in the long run the growth of exports tends to have a negative effect on the growth of a country's GDP and it also acknowledges that iii) there is a wide variation among the correlation in individual countries caused by a variety of different scenarios." Li, Chen, & San (2010) examined the impact of foreign trade on economic growth in East China. The study covered the period spanning from 1981 to 2008, during this time period economic growth rose from USD146.1 billion to USD 3,300 billion, while exports also rose from USD15.7 billion to USD 1,425 billion. Li, Chen, & San (2010) find that foreign trade was the long and short-term source of GDP growth in East China. They also found that there was a mutual causality between the two measures. East China experienced an increase in export trade from 10.74% to 43.17% over the course of 28 years. Li, Chen, & San (2010) believe that much of the period's economic growth was credited to rapid increases in exports. These authors adopted aco-integration analysis with vector error correction model to test time series data. Li, Chen, & San (2010) recommended that since the correlation between GDP and exports is not constant, the East Chinese government should focus on meeting international environmental standards, boosting emerging technologies, and ensuring a healthy trade environment so as to uphold a competitive environment that enhances exports thereby increasing the overall economic growth. Gross Capital Formation was used as a proxy for domestic investment.

3. Methodology

Data Sources and Research Approach: This article examined the impact of FDI net inflows, exports and domestic investment on economic growth in five selected African countries (Angola, Egypt, Ghana, Ethiopia and Zimbabwe) through an econometric regression model. Data was obtained from the World Bank official website, that is, the World Development Indicators 2018 database. The period 1997 to 2016 was selected due to the availability of data. The regression model was influenced by a growing interest in the use of econometric regression models for applied economic analysis. Multiple regression analysis models are useful for investigating the dynamic effects between variables. Econometric regression model fits well with the purpose of this article that seeks to examine the impact of FDI net inflows, exports and domestic investment on GDP as there is no *priori* theory regarding the relationship in the mentioned five African countries as drawn from the five sub-regions. FDI net inflows, exports and domestic investment were used as independent variables while GDP a proxy for economic growth was the dependent variable.

Natural Logarithms Transformation: Following Brooks (2008), the variables under consideration were first transformed into natural logarithms before they were used in the econometric model. The use of natural logarithms has become a standard in econometrics according to Brooks (2008). Durbin–Watson test (test for autocorrelation and lack of independence of residuals), test statistic (*t-test* & *f-test*), heteroscedasticity test factor analysis, skewness and kurtosis normality test and stepwise regression (to determine variables with the greatest effect on economic growth) were some of the tests performed before running the regression model in Stata/SE 12.0. Maune (2017) suggests the need to express the regression model equation in double logarithmic form. According to Brooks (2008), “this means that both the dependent and the independent variables are transformed into natural logarithms, thereby rendering the coefficient estimates elasticities.” Maune (2017) argues that the use of logarithms guards against compromising the regression model’s significance.

The econometric model: The econometric model took the following reduced form:

$$\ln Y_{it} = \alpha_t + \beta_1 \ln X_{it} + \beta_2 \ln X_{it} + \dots + \beta_k \ln X_{kt} + u_{it}, \quad i = 1, \dots, K; t = 1, \dots, T \quad (1)$$

Now let $\beta_1 = \ln \beta_1$, $Y_{it} = \ln Y_{it}$, $X_{it} = \ln X_{it}$, $X_{it} = \ln X_{it}$ and $X_{kt} = \ln X_{kt}$

$$Y_{it} = \alpha_t + \beta_1 X_{it} + \beta_2 X_{it} + \dots + \beta_k X_{kt} + u_{it}, \quad (2)$$

Where the variables X_{it} , X_{it} , . . . , X_{kt} are a set of $k - 1$ explanatory variables which influence y_{it} , and the coefficient estimates β_1 , β_2 , . . . , β_k are the parameters which quantify the effect of each of these explanatory variables on y_{it} and to make the model more realistic, a random disturbance term, denoted by u_{it} , is added to the equation to represent unobserved shocks in each time period. Each coefficient is known as a partial regression coefficient, interpreted as representing the partial effect of the given independent variable on the dependent variable, after holding constant, or eliminating the effect of, all other independent variables. The i subscript, therefore, denotes the cross-section dimension whereas t denotes the time-series dimension, α is a scalar and β is $K \times 1$ and X_{it} is the it^{th} observation on K explanatory variables. The presence of the parameters α_t , which represent different intercepts in each year, allows for aggregate economic growth to change over time.

The following multiple regression model was obtained after replacing the variables:

$$GDP_{it} = \alpha_t + \beta_1 FDI_{it} + \beta_2 EXP_{it} + \beta_3 GCF_{it} + u_{it} \quad (3)$$

Where GDP = Gross Domestic Product (annual %)

FDI = Foreign Direct Investment net inflows (% of GDP)

EXP = Exports of goods and services (% of GDP)

GCF = Gross Capital Formation (% of GDP)

4. Data Analysis and Interpretation

The study examined the impact of FDI net inflows, exports and domestic investment on GDP in five selected African countries through an econometric regression analysis. FDI net inflows, exports, domestic investment were used as independent variables while GDP was used as the dependent variable. The findings of the regression model are as shown in table 4 below. The independent variables statistically significantly predicted GDP, with $F(3, 63) = 5.84, P > F 0.0014, R^2 = 0.2176, Adjusted R^2 = 0.1804$ and *Root Mean Squared Error (RMSE)* = 0.54976. The study also found that the independent variables added statistically significantly to the prediction of $p < 0.05$. The independent variables accounted for 18.04% of the dependent variability in GDP in five selected African countries for the period 1997 to 2016 with the remaining 81.96% unexplained variation represented by other variables not included in the model. Prob > F of 0.0014 shows the reliability of the results of the model. Therefore, there are only 0.0014 chances that the regression output was merely a chance of occurrence. After inputting the coefficients, the multiple linear regression equation will be:

$$GDP_{it} = -0.5108 + 0.0933FDI_{it} - 0.0210EXP_{it} + 0.7003GCF_{it} + u_{it}(4)$$

The partial regression coefficients are interpreted as representing the partial effect of the given independent variable on the dependent variable, after holding constant, or eliminating the effect of, all other independent variables. For example, the coefficient of exports measures the effect of exports on GDP after eliminating the effects of other variables in the equation. In this case each coefficient measures the average change in the dependent variable per unit change in a given independent variable, holding all other independent variables constant at their average values. Results of the study show that gross capital formation or domestic investment has a positive significant influence on economic growth as denoted by a p-value of 0.001 that is less than 0.05 at 5% level of significance. However, the other variables are not significant as their p-values are greater than 0.05 at 5% level of significance. Of the three variables only exports has a negative influence on GDP which is in contrast with literature and other research findings.

The study findings further showed a significant positive impact of gross capital formation, that is, domestic investment on economic growth. The results are in line with literature and other empirical evidence by Sumei, Selvanathan, & Selvanathan(2008) among other prior studies. However, results by Bakari(2017) show that domestic investment had no effect on economic growth in Egypt. FDI net inflows show a positive coefficient that has an insignificant influence on GDP.

Tsaurai & Odhiambo (2012) drew some critical analysis regarding the relationship between FDI and economic growth and concluded that there are four views regarding this relationship. The study used an econometric regression statistical model to analyze data obtained from the World Bank official website, that is, the World Development Indicators 2018 database for the period 1997 to 2016. Some data tests were carried out before running the regression model. The current study used natural logarithms with the regression equation expressed in 'double logarithmic form' thereby translating the coefficient estimates elastic. This was done to guard against compromising the regression model's significance. Contrary to some of the previous studies, the current study shows that the independent variables statistically significantly predicted GDP, with $F(3, 63) = 5.84, P > F 0.0014, R^2 = 0.2176, Adjusted R^2 = 0.1804$ and *Root Mean Squared Error (RMSE)* = 0.54976. The independent variables added statistically significantly to the prediction of $p < 0.05$. The study findings further showed a significant positive impact of gross capital formation, that is, domestic investment on economic growth. The results are in line with literature and other empirical evidence by Sumei, Selvanathan, & Selvanathan(2008) among other prior studies. However, results by Bakari(2017) show that domestic investment had no effect on economic growth in Egypt. This study, however, recommends that African countries must pursue policies that promote economic growth, that is, policies that promote, the attraction of FDI, exports and domestic investment as these play a critical role towards economic development. The study further recommends that African countries must promote innovation, creativity and talent building as these have become critical in the Fourth Industrial Revolution era as having natural resources alone is proving inadequate.

Table 4: Regression analysis, impact of FDI net inflows, exports and domestic investment on GDP in Africa, 1997-2016

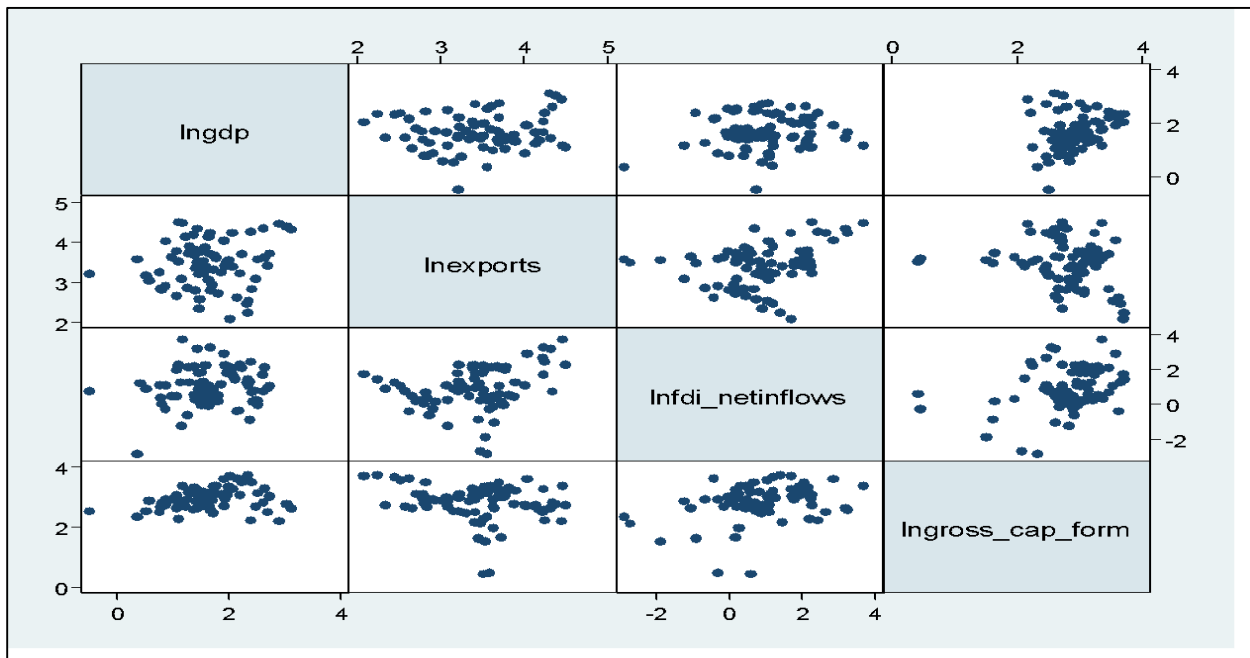
. reg lngdp lnexports lnfdi_netinflows lngross_cap_form						
Source	SS	df	MS	Number of obs = 67		
Model	5.29609164	3	1.76536388	F(3, 63) =	5.84	
Residual	19.0406314	63	.302232244	Prob > F =	0.0014	
				R-squared =	0.2176	
				Adj R-squared =	0.1804	
Total	24.336723	66	.368738227	Root MSE =	.54976	

lngdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnexports	-.0209728	.1409375	-0.15	0.882	-.3026138	.2606682
lnfdi_netinflows	.0932515	.0704579	1.32	0.190	-.0475474	.2340503
lngross_cap_form	.7002572	.2021395	3.46	0.001	.2963137	1.104201
_cons	-.51075	.8381081	-0.61	0.544	-2.185575	1.164075

Source: Multiple linear regression analysis output from Stata/SE 12.0

Figure 4 below is a scatter graph showing the correlation between the variables, FDI net inflows, exports, domestic investment and GDP.

Figure 4: Scatter graph showing the relationship between FDI, exports and domestic investment on GDP



Source: Multiple linear regression analysis output from Stata/SE 12.0.

5. Conclusion

This study has examined the impact of FDI net inflows, exports and domestic investment on economic growth in five selected African countries for the period 1997-2016. Previous researches have spurred an unending debate due to irresolute findings and the frequent changes in the socioeconomic context. Research the world over has penned many different conclusions regarding the impact of FDI net inflows, exports and domestic investment on economic growth. Literature shows that although economic growth in Africa has been growing in real terms since 1997, there have been some challenges that continue to affect this growth trajectory chief among them being the fluctuations in commodity prices such as the ones experienced in 2013–15. However, GDP growth in percentage terms has shown some significant fluctuations. Growth performance varied widely across many African countries in the sub-regions. Improving domestic revenue mobilization is critical for African countries as they eye economic transformation. Africa's economic performance since 1997 has been marred with fluctuations due to a number of divergent reasons. A number of studies have been carried out globally in relation to the impact of FDI, exports, domestic investment on economic growth with various results with a study by Tsaourai & Odhiambo (2012) providing a paradigm shift regarding these relationships.

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