

The Impact of AGOA Related Foreign Direct Investment Inflows on Employment in Sub-Saharan Africa: The Case Study of Ethiopia

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Abstract

African Growth and Opportunity Act (AGOA) is a United States trade preference act that was signed into law in May 2000 as Trade and Development Act of 2000. One of the objectives of AGOA is to promote investment in Sub-Saharan African countries (SSA) and it's believed that AGOA was able to create jobs through AGOA related foreign direct investment (FDI) in SSA (USITC, 2012). Therefore, the study primarily examines the employment effects of AGOA related FDI in Sub-Saharan African countries particularly in Ethiopia and to examine the extent to which FDI inflows under AGOA contribute to employment for SSA in general and Ethiopia in particular, the study applied linear regression model using time series data from 1990 to 2014. Consequently, the model result indicates that AGOA related FDI have negative effect on employment for SSA and it has insignificant effect on employment for Ethiopia at macro-level. It is suspected that AGOA related FDI may have engaged in more capital intensive and not in labor intensive investments. Thus, the study recommends extending the program more than 10 years and simplifying the rules in order to attract quality investments that could generate more and steady jobs in beneficiary SSA countries.

Key words: AGOA, FDI, Employment, Macro-level, SSA, Ethiopia

I. Introduction

1.1. Background of the Study

African Growth and Opportunity Act (AGOA) are a United States trade preference act that was signed into law on May 2000 as Trade and Development Act of 2000. The objective of the Act is to increase trade and investment between the United States (US) and Sub-Saharan African countries (SSA) by reducing and eliminating tariffs on selected export products (USITC, 2012). Requirement for AGOA preferences is based on a set of conditions contained in the AGOA legislation. In order to qualify and remain eligible for AGOA, each SSA country must be working to improve its economy as well as some of its socio-political issues like the rule of law, human rights and respect for core labor standards and the like (AGOA, 2016). The review of country eligibility is done annually by the President of the United States. The act has been amended and re-extended a number of times and as a result the trade legislation has been categorized by phases. AGOA IV was set to expire on September 30, 2015 but President Obama signed a ten-year extension on June 29, 2015 after the U.S. Congress passed new AGOA legislation (AGOA, 2016).

While there have been different discussions on issues like the diversity of exports, the products covered, duration of the Act, and most importantly factors determining country eligibility, AGOA's genuine intention and the detectable advantage the Act have brought to Sub-Saharan African countries also have been under question since the passing of this legislation (Karingi *et al*, 2010).

However, currently there are 39 Sub-Saharan African countries that have been designated as eligible by the United States government of which Nigeria, Angola and South Africa have been stated as countries that have better utilized the Opportunity Act whereas Democratic Republic of Congo (DRC), Mali, Central African Republic and South Sudan have lost their

eligibility due to failure to keep the conditionality set by the United State Government (USITC, 2016). On the other hand, countries like Ivory Coast, Gambia, Madagascar, Swaziland and Mauritania have been suspended due to failure to keep the conditionality set in order to stay beneficiary of the Act on different times but Swaziland and Mauritania later regained their status as beneficiaries.

Promoting foreign direct investment (FDI) is one of the objectives of AGOA as FDI can support economic growth of Sub-Saharan Africa through job creation, flow of capital, transfer of technology and know-how. The rise in inflow of FDI can change the unemployment condition of host countries in SSA both directly and indirectly. The direct effect occurs through enabling firms to generate jobs that were not there before and the indirect effect happens through the spillover effects that boost employment in secondary businesses like catering, construction rental and supplier of inputs (Arai *et al.*, 2010; Jude and Silaghi, 2010).

According to the 6th ordinary session of AU Ministers of Trade, at the beginning, AGOA was able to register more than US \$1 billion FDI flows directly from the U.S. and later from Southeast Asian AGOA driven export-oriented FDI especially in textile and garment manufacturing factories to SSA countries like Mauritius, Malawi and Kenya (AU, 2010). Correspondingly the multinational corporations (MNCs) mainly from Southeast Asian countries have been generating direct employment to SSA.

Ethiopia has been one of the beneficiary countries of this Act following the enacting of the Act since May 2000. As a result, Ethiopia has become one of the top ten African countries to export to the U.S. market in the last few years and one of the leading countries to form a National AGOA Response Strategy and established National AGOA Center to better utilize the Opportunity Act (NAGOAC, 2013). The leading sectors in Ethiopia's export to the US market include garment and textile, leather and leather products and horticulture and agro-processing (AGOA, 2016).

1.2. Statement of the Problem

The African Growth and Opportunity Act (AGOA) is believed to increase the economic growth of eligible SSA countries including Ethiopia as it provides market and investment opportunity with a preferential trade agreement (USITC, 2014). Most prior studies conducted on the subject are basically focused on the effect of AGOA on Sub-Saharan African countries export performance and also the effect of AGOA on different leading export sectors of SSA countries including Ethiopia.

Paez *et al.* (2010) noted that AGOA has had a measurable impact on Africa's trade although the trade performance under AGOA has been fluctuating over the years. They further noted that AGOA has helped to increase exports but has failed to bring about sustainable and competitive export sectors in SSA. The authors did not use any specific model to assess the impact of AGOA related FDI on job creation.

Furthermore, Obembe (2011) used gravity model to determine AGOA's effect on attracting FDI and enhancing export growth in Sub-Saharan African countries and concluded that the Act does not have a significant impact on either exports or foreign direct investment of eligible Sub-Saharan African countries. Similarly, a study by Addisalem (2013) used a gravity trade framework model to examine the impact of AGOA on agricultural exports in 35 eligible Sub-Saharan African countries. The author noted that the model results show that AGOA may have a positive effect on SSA agricultural exports but it does not have a

statistically significant impact on agricultural exports of SSA. These studies, therefore, appear to find insignificant but positive effect of AGOA on export sector and foreign direct investments.

On the other hand, Mulangu (2012) examined the impact of eligibility to AGOA and its apparel provision eligibility on firm-level productivity and employment on selected African firms using a difference- in-difference –in-differences approach. The author found out that while AGOA and its apparel provision have positive impacts on firm’s productivity and increased employment in very large firms only, the total impact on employment is weak. Thus, this study appears to find positive and significant effect of AGOA on employment particularly in large size firms.

Likewise, some studies on the employment effect of overall FDI to Liberia and Nigeria in agriculture, mining and service sectors found that FDI have significant impact on employment creation (Arai *et al.*, 2010; Inekwe, 2014).

However, Aryeetey and Boateng (2007) found out that FDI inflows have insignificant impact on employment creation in Ghana. They further noted that the employment response to all FDI flows depend more on the nature and distribution of overall investment than the value and volume of the inflows in the host SSA countries. Therefore, this shows that the results are inconclusive.

Although AGOA is believed to encourage investment between U.S. and eligible Sub-Saharan African countries, the empirical studies on AGOA and its contribution on investment suggests that much has not been registered on promoting foreign direct investment in SSA and very few studies have been conducted on the inflows of AGOA related FDI and its effect on employment creation to Sub-Saharan Africa and particularly to Ethiopia.

The purpose of this research is, therefore, to examine the employment effect of foreign direct investment inflows through AGOA to SSA in general and to Ethiopia in particular. The study analyzes the aggregate employment effect of FDI through AGOA in SSA and Ethiopia by using time series data.

1.3. Research Objective

The general objective of the study is to examine the employment effect of AGOA related FDI inflows to Sub-Saharan Africa in general and Ethiopia in particular.

The specific objectives of the study are to:-

- Assess the trend of foreign direct investment to SSA countries in general Ethiopia in particular.
- Analyze the employment effect of AGOA related FDI inflows in SSA countries in general Ethiopia in particular.

1.4. Significance of the Study

There are substantial numbers of studies on the issue of African Growth Opportunity Act and its role on the economy of Sub-Saharan African Countries and most of them are focused on sectoral effects, export share and generally on eligible SSA countries’ export performance and their utilization of the Opportunity. Thus, this study is important as it plans to examine how much AGOA has contributed to employment generation through foreign direct investments in SSA countries.

The topic is relevant and timely given the fact that the Opportunity Act has been extended for another ten years by the United States legislator body and there are issues that need to be recognized and addressed by all involved parties in order to better utilize the Opportunity for the coming ten years, particularly on investment and job creation. This study provides, based on an updated data, additional input on AGOA's contribution on employment through foreign direct investments.

1.5. Scope and Limitations of Study

The scope of this study is confined to examining the employment effect of foreign direct investment inflows under AGOA in SSA in general and Ethiopia in particular. For this purpose, Ethiopia's and other SSA beneficiary countries FDI inflows is assessed over the period 1990-2014. This study has limitation due to the lack of specific literature and data on AGOA related FDI inflow and its registered advantage on job creation in SSA countries particularly in Ethiopia that may support the findings of the study.

1.6. Definition of Terms

AGOA: The African Growth and Opportunity Act (AGOA) is a United States Trade Act, enacted on 18 May 2000 as Public Law 106 of the 200th Congress. It significantly enhances access to the United States market for qualifying Sub-Saharan African (SSA) countries (AGOA, 2016).

FDI: Foreign Direct Investment is an investment made to acquire lasting interest in enterprises operating outside of the economy of the investor (OECD, 2008).

GSP: Generalized System of Preferences (GSP) a concept developed within the United Nations Conference on Trade and Development to encourage the expansion of manufactured and semi- manufactured exports from developing countries by making such goods more competitive in developed country markets through tariff preferences (AGOA, 2016).

2. Research Method

2.1. Introduction

The study employs quantitative methods. The quantitative analysis follows descriptive and inferential statistics. It uses descriptive statistics to describe and interpret findings from secondary data. It uses inferential statistics in an attempt to indicate potential cause and effect relationships between employment creation through FDI and participation in AGOA.

The target population groups for the study are sub-Saharan African countries and the study used time series data from 1990-2014 for both other SSA countries and Ethiopia.

2.2. Data Sources

The study mainly used secondary sources of data. Secondary data are gathered from UNCATD, USBEA and ILO websites and these data are time series, i.e., the period 1990-2014. The data are used for aggregate analysis on trends of FDI inflows and employment in SSA from the period under consideration. Time series data from these websites are also used for country level analysis for Ethiopia on the trends of FDI flows and employment for the period 1990-2014. Other secondary sources include United States International Trade Commission (USTIC) and AGOA web sites. The data collection instrument is document review. Document review is used to collect all the required information from secondary sources (see Table 2.1).

Table 1 Links between specific objectives and method

Specific objectives	Variables/Indicators	Source of data	Data collection method	Data analysis method	Model
1. Assess the trend of FDI inflows to SSA and Ethiopia	-Value of direct investment per year in millions of US\$ to SSA -Value of direct investment per year in millions of US\$ to Ethiopia	-USBEA, UNCTAD reports - AGOA and USITC websites	-Review of reports and previous studies, Review of UNCATD Statistics	Descriptive statistics, Coefficient of Variation	
2. Assess the employment effect of AGOA related FDI inflows in SSA and Ethiopia	Dependent variable:- Total employment Explanatory variables:- AGOA program GDP FDI flows Inflation rate	-UNCATD database -ILO database	-Review of ILO and UNCATD statistics	Descriptive statistics, Regression	ET= $f(GDP, FDI, INFL, AGOAP)$ Where; ET= Total employment GDP= Annual GDP per capita (\$) FDI= Annual foreign domestic investment(\$) INFL= Annual inflation rate(CPI)

2.3. Methods of Data Analysis

2.3.1. Descriptive Analysis

Descriptive analysis is used to summarize the overall trends and variability in FDI flows and employment in SSA and Ethiopia. Percentage and graphic analysis are employed to describe the trends in FDI inflows and employment in both SSA and Ethiopia. In addition, Coefficient of variation is estimated for FDI and employment to discuss the variability in SSA and Ethiopia.

2.3.2. Econometric Analysis

2.3.2.1. Stationary

The study used time series data for aggregate level analysis of SSA and Ethiopia. Therefore a Unit Root Test is used to test the stationary of the data. In this study a Phillip-Perron (PP) test is used to test for stationary. The PP test can be estimate using the following formula;

$$\Delta Y_t = \beta_1 + \beta_t + \delta Y_t - 1 + \sum_{i=0}^n a \Delta Y_t - i + \mu_t \quad (1)$$

Where: μ_t is a pure white noise error term; and where $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$, $\Delta Y_{t-2} = (Y_{t-2} - Y_{t-3})$, $\Delta Y_{t-n} = (Y_{t-n} - Y_{t-(n+1)})$; $\Delta Y_{t-1} = \delta Y_t - 1$ is the log-length. The PP test uses non-parametric statistical methods to take care of the serial correlation in the error terms without adding lagged difference terms. The null hypothesis is that the variable has a unit root (non-stationary) i.e. $H_0: \rho = 1$ against the alternative hypothesis having no unit root (stationary). Thus, if null hypothesis is accepted, then Y_t series is non-stationary time series (Gujarati, 2004).

2.3.2.2. Structural Break

The study further applies a structural beak test to see the change in both FDI flows and employment in SSA and Ethiopia. Therefore a chow test is used to test the structural stability. Chow test was conducted using F-test two-sample for variances technique on

excel. Basically the F-test two-sample for variances can be estimated using the following formula;

$$\begin{aligned} y_t &= \beta_1 + \beta_2 x_t + u_{1t} \\ y_t &= \delta_1 + \delta_2 x_t + u_{2t} \end{aligned} \quad (2)$$

Where the first formula applies for before the break time at time t and the second formula applies for after the structural break at time t . The null hypothesis here is no structural break (Gujarati, 2004).

The equation for structural stability is estimated with data from total FDI inflows from 1990 to 2014 period and employment data from 1991 to 2014 period to see the change before and after the enactment of AGOA for total FDI inflows and employment in SSA and Ethiopia.

2.3.2.3. Regression Model Analysis

The aggregate analysis uses linear regression model based on time series data and included four variables namely GDP per capita, FDI, and inflation rate and AGOA dummy. The total employment equation is estimated as follows:

$$Et = \beta_1 * FDI_t + \beta_2 * GDP_t + \beta_3 * INFL_t + \beta_4 * AGOAP_t + \epsilon_t \quad (3)$$

Where in the equation (3) Et is total employment in a year t . FDI_t represents annual FDI inflows in a year t , GDP_t represents the annual growth of GDP per capita in a year t , $INFL_t$ represents annual inflation rate in a year t and $AGOAP_t$ represents the AGOA dummy such that $AGOAP=0$ before AGOA program or $AGOAP=1$ after AGOA program. ϵ_t stands for the error term.

Employment

To capture the before and after variation on the number of total employment in Sub-Saharan Africa and Ethiopia, annual number of employment from 1991-2014 was used. The data was extracted from International Labor Organization statistics.

African Growth and Opportunity Act (AGOA)

This explanatory variable is measured as 1 and 0 such that 1= the period before the introduction of AGOA and 0= the period after the introduction of AGOA. AGOA dummy is included in the model to capture its effect on total employment in SSA and Ethiopia. As indicated elsewhere, the time period covers between 1991 and 2014. According to USITC (2014) report AGOA has suspected to generate employment in SSA. The expected sign of coefficient is positive.

Growth Rate of Per Capita (GDP)

This variable is included in the model to capture the impact of growth rate of per capita GDP on total employment in SSA and Ethiopia. The data was extracted from the United Nation Conference on Trade and Development statistics. The expected sign of the coefficient is positive.

Foreign Direct Investment (FDI)

One of the benefits of FDI to host countries is employment generation. Therefore, to capture foreign direct investment effect on total employment, annual FDI inflows to Sub-Saharan Africa and Ethiopia is used (Ernst, 2005). The data was extracted from the United Nation

Conference on Trade and Development statistics. The expected sign of coefficient is positive.

Inflation Rate

Inflation rate shows the percentage change in consumer price index for both Sub-Saharan Africa and Ethiopia. This variable is included in the model to capture the effect of consumer price index on total employment. Vermeulen (2015) examined the relationship between inflation, growth and employment in South Africa and indicated that there is no economic theory on direct causal link between inflation and employment but argued that there was no strong evidence of inflation has positive effect on employment in the short-run; rather, there is negative impact on the long- run. The data was extracted from the United Nation Conference on Trade and Development statistics. The sign of coefficient is expected to be negative.

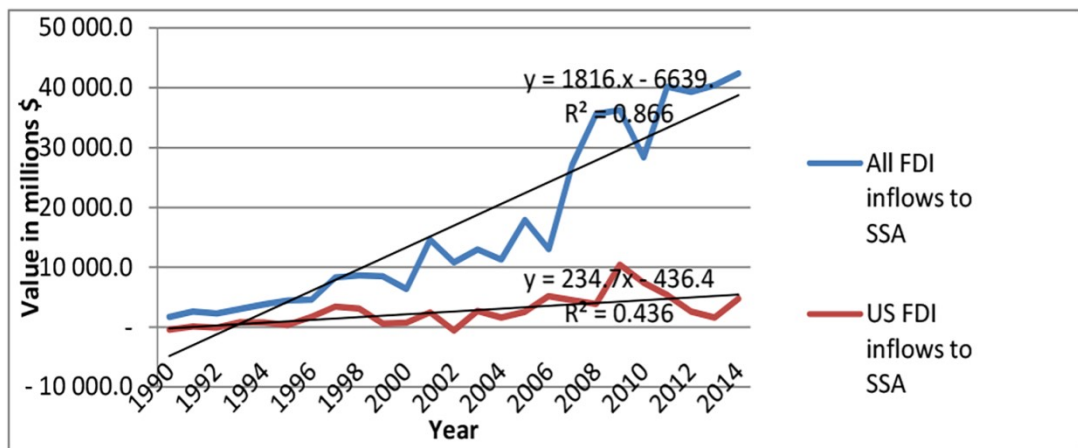
3. Findings and Discussion

This chapter discusses the results of the study based on the analysis of secondary data.

3.1. Trends and Variability of Foreign Direct Investment in Sub-Saharan Africa and Ethiopia

i) Trends of Foreign Direct Investment in Sub-Saharan Africa

According to UNCATD (2015) report, the historical level of foreign direct investment inflows to Africa is increasing even though globally FDI flows have been declining overall.



Source: UNCATD data-web and U.S. Bureau of Economic Analysis Data-web (U.S FDI inflows), 2016

Figure 1. FDI Inflows to SSA from 1990-2014

Note: FDI inflows are negative when more money is divested from a country than is invested in that year (USBEA, 2016).

Figure 3.1 shows that global FDI flows to Sub-Saharan Africa until 2001 was very small. Between the periods 1990 to 2001, the highest value registered was 8,488 million dollars in 1999. The value shows a decrease by two folds in 2000 and then increase to 14,595 million dollars in 2001. After 2001 the total value has been fluctuating until 2007 where it reached 27,192 million dollars. The value fails down gain after 2009 but starts to show an increase after 2012 and reached 42,371 million dollars in 2014. Thus, overall the total FDI flows to

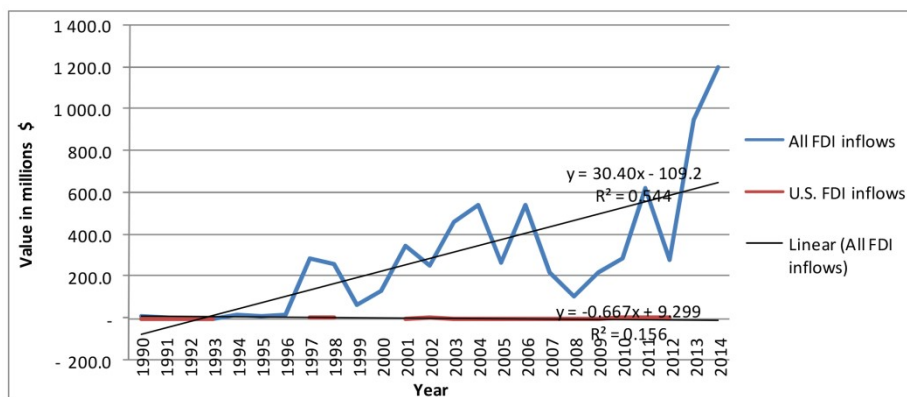
Africa after 2001 is higher than the 1990's but the value had shown high volatility and this is suspected due to unstable social and political conditions of the region and the financial crisis of the world after 2009 (UNCATD, 2015).

On the other hand the U.S. FDI inflows to SSA have been very small until 2000, the highest FDI inflows during that period was registered in 1997 with a value of 3,436 million dollars (see Figure 3.1). U.S. FDI inflows have been fluctuating from the year 2000 to 2014. While the minimum FDI inflow was in 2002 with an amount of -578 million dollars, the maximum FDI inflow was register in 2009 with an amount of 10,417 million dollars. Therefore, the financial inflows to SSA has continuously fail down from 10,417 million dollars in 2009 to 1,601 million dollars in 2013, the value then rise to 4,748 million dollars in 2014, showed increase by three fold.

Thus, consistent with the FDI theories on literature and suggestions with respect to foreign direct investment flows, the fluctuation of U.S. FDI inflows to SSA can be explained by different socio-economic and political factors in the continent ranging from regional conflicts to the increase of new partners like china and India investment in Africa.

ii) Trends of Foreign Direct Investment in Ethiopia

On the other hand, on historical level, FDI inflows to Ethiopia overall is increasing from the period 1990 to 2014 but the annual financial inflows has been fluctuating over the years (UNCATD, 2015). Figure 3.2 indicates the highest FDI inflows before 2000 was registered in 1997 with a value of 288 million dollars. After 2000 FDI inflows to Ethiopia have been fluctuating until it rose to 953 million dollars in 2013 and then reached 1200 million dollars in 2014.



Source: UNCATD data-web and U.S. Bureau of Economic Analysis data-web (U.S FDI inflows), 2016

Figure 2. FDI inflows to Ethiopia from 1990-2014

Note: FDI inflows are negative when more money is divested from a country than is invested in that year and data for some years are suppressed to avoid disclosure of data of individual companies (USBEA, 2016).

Complete data for all the specified years was not found for U.S. FDI inflows to Ethiopia due to confidentiality matters but for the years that are disclosed figure 3.2 indicates the values are very small over the years. In 2005 and 2014 negative FDI values have been registered, -5 and -48 million dollars respectively and according to U.S Bureau of Economic Analysis, FDI inflows are negative when more money is divested from Ethiopia than is invested in

that year. The highest U.S. FDI inflow was registered in 1995 with a value of 25 million dollars (USBEA, 2016).

Therefore, consistent with the literature, very small amount of U.S. FDI flows in Ethiopia has registered due to U.S. investors interest in primary and service industry in natural resource rich SSA countries while in Ethiopia the comparative advantage is textile and leather manufacturing industry which have largest FDI stocks by foreign firms with FDI sources from countries like Turkey, China and India attracted by factors like market size, cheap labor and social and political stability. The key–informant interview findings also suggest that one of the major reasons U.S. origin FDI do not invest in Ethiopia is due to inadequate institutional framework and physical infrastructure. They look good on paper but in practice there is still a lot to do; and most U.S. investors do not want go through all those troubles. As a result, they choose to take their businesses to other countries with much better physical and institutional infrastructures.

iii) Variability of Foreign Direct Investment to Sub-Saharan Africa and Ethiopia

Table 3.1 shows the coefficient of variation for 1st period (1990-1999) FDI inflows is 53.6% and the coefficient of variation for 2nd period (2000-2014) FDI inflows is 50.5%. This indicates there is more variation in FDI inflows to Sub-Saharan African in the first period of time than the second period of time. Overall, there is high variability on the total FDI inflows to SSA between the period 1990 and 2014 with a coefficient of variation of 82.9%. However, overall AGOA might have helped stabilized the fluctuation in FDI inflows to SSA (see Table 3.1).

Table 2 Coefficient of Variation for FDI Inflows to SSA and Ethiopia

Year	Sub-Saharan Africa					Ethiopia				
	FDI in millions(\$)	Mean	Std.	CV	N	FDI in millions(\$)	Mean	Std.	CV	N
1990-1999	47 825.6	4782.56	2561.6	53.6 %	10	694.1	69.10	104.4	151%	10
2000-2014	376506.8	25100.46	12672	50.5 %	15	6457.9	430.52	20.7	4.8%	15
1990-2014	424 332.4	16973.30	14073	82.9 %	25	7151.9	286.17	297.3	103.9 %	25

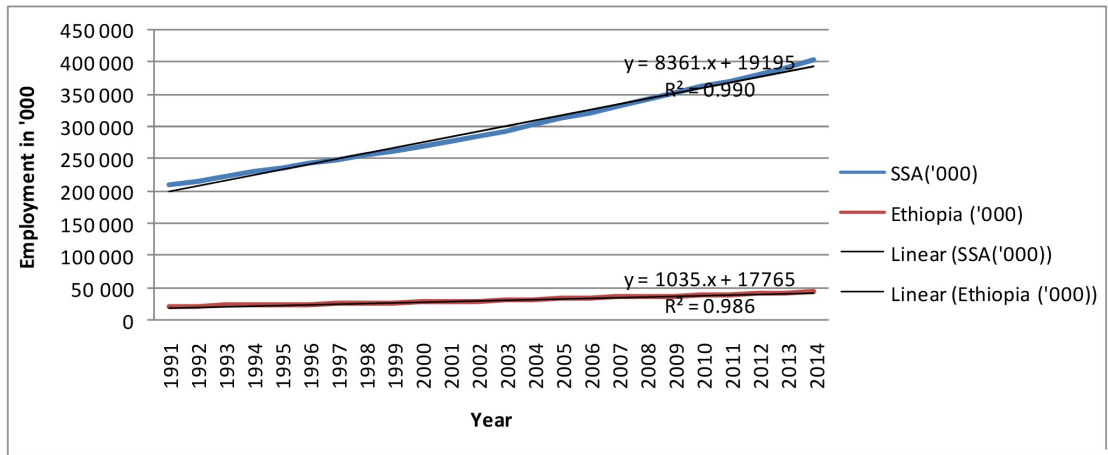
Source: author’s calculation based on UNCATD data web, 2016

Table 3.1 also shows the coefficient of variation for 1st period (1990-1999) FDI inflows to Ethiopia is 150% and the coefficient of variation for 2nd period (2000-2014) FDI inflows is 68.8%. Thus, there is high variation in the FDI inflows to Ethiopia in the first period (1990-1999). AGOA could have helped to stabilize the fluctuation in FDI inflows to Ethiopia in second period (2000-2014). However, overall, there is high variation in FDI inflows to Ethiopia over the years.

3.2. The Employment Effect of AGOA Associated Foreign Direct Investment Inflows in Sub-Saharan African and Ethiopia

i. Trends of Employment in Sub-Saharan Africa and Ethiopia

Figure 3.3 shows the trends of employment in SSA and Ethiopia. Exact data was not available for the whole Sub-Saharan African countries to each year. Thus the data shown on Figure 3.3 is the forecast of International Labor Organization (ILO, 2016).



Source: Author’s calculation based on data from ILO data web, 2016

Figure 3 Employment in SSA and Ethiopia from 1991-2014

Overall, the employment trend in SSA and also in Ethiopia is estimated to increase. In 1991 the total employment number in SSA was estimated to be 209,831 and the total employment estimation for Ethiopia was 20,296. In 2000 the estimate employment number in SSA was 270,330 and employment in Ethiopia was estimate to be 27,462. In 2014 Sub-Saharan Africa’s employment estimation number is 403,848 and the estimate number for employment in Ethiopia is 44,118 (see Figure 3.3).

ii. Variability of Employment in Sub-Saharan Africa and Ethiopia

Table 3.2 shows that the first period, i.e., the 1991-1999 coefficient of variation is 7.3% and the second period, i.e., the 2000-2014 coefficient of variation is 12.5%. This indicates there is high variation in employment in the second period from 2000 to 2014. Overall, the coefficient of variation for the total period is 19.6%.

Table 4. Coefficient of Variation for Employment in SSA and Ethiopia

Year	Sub-Saharan Africa					Ethiopia				
	Employment	Mean	Std.	CV	N	Employment	Mean	Std.	CV	N
1991 - 1999	2123946	235993.96	17118.78	7.3%	9	208305	23145	1729.7	7.4%	9
2000 - 2014	4991540	332769.32	41491.54	12.5%	15	528614	35240.9	5160.6	14.6%	15
1991 - 2014	7115486	296478.56	58145.46	19.6%	24	736919	30704.9	7215.1	23.5%	24

Source: Author's calculation based on ILO data web, 2016

Table 3.2 shows the coefficient of variation in total employment for the first period which is 7.4%. The second period's coefficient of variation is 14.6% which indicates again there is more variation in the second period, i.e., 2000-2014 than the first period, i.e., 1991-1999. Overall the total coefficient of variation is 23.5%.

Thus, there is higher variability in employment in the second period of time i.e. 2000-2014 than the 1991-1999 for both SSA and Ethiopia, while overall there is high variability in employment in Ethiopia than the total employment in SSA.

3.3 Model Estimation Results

3.3.1 Statistical Tests

i) Descriptive Statistics

The descriptive results for SSA are reported in Table 3.3. The average number of employment in Sub-Saharan Africa is 296,478.6. The average FDI inflow is 17,651.8 million USD and the average GDP per capita is 1,128,614.9 USD. The average inflation rate as measured by consumer price index is 83.7; and out of the total observation, 62.5% is after the introduction of AGOA program (see Table 3.3).

Table 5 Descriptive Statistics for SSA

Variable	Unit of measurement	Mini	Max	Mean	Std. Dev.	%
Total employment	Number of total employment	2089831	403848	296478.6	59396.1	-
Annual GDP	USD	522412.5	2426500.7	1128614.9	677861.9	-
Inflation rate	CPI/USD	0.31	190.9	83.7	60.4	-
FDI inflows	USD	2244	42371	17651.8	14289.3	-
AGOA program	0= before AGOA 1= after AGOA	-	-	-	-	62.5%

Source: Author's calculation based on UNCATD and ILO data web, 2016; N= 24

On the other hand, Table 3.4 indicates that the average number of employment in Ethiopia is 30,704.9. The average FDI inflow is 297.5 million USD and the average GDP per capita is

17364.12 USD. The average inflation, rate as measured by consumer price index, is 144.9; and out of the total observation, 62.5% is after the introduction of AGOA program (see Table 3.4).

Table 6 Descriptive Statistics for Ethiopia

Variable	Unit of measurement	Mini	Max	Mean	Std. Dev.	%
Total employment	Number of total employment	20296	44117	30704.92	7370.33	-
FDI inflows	USD	0.2	1200	297.52	304.34	-
Annual GDP	USD	7174.5	54254.8	17364.12	13780.69	-
Inflation rate	CPI	60	423.3	144.9	114.3	-
AGOA program	0= before AGOA 1=after AGOA	-	-	-	-	62.5%

Source: Author's calculation based on UNCATD and ILO data web, 2016; N=24

ii) Test for Stationarity

The study further conducted unit root test to see the stationarity status of the data for all variables of SSA and Ethiopia since the data is a time series. Thus, Table 3.5 shows that the variables FDI inflows, employment, GDP per capita and inflation rate are stationary at all level. That is, the null hypothesis of a unit root of all variables for SSA is tested against the alternative hypothesis of stationarity. Thus, the results indicate that all time-series are stationary.

Table 7 Unit Root Test for SSA using the Phillips-Perron Test

Variable	Phillips-Perron test	P>(t)	Stationarity Status
Log of FDI	143.75	0.000	Stationary
Log of employment	4235.69	0.000	Stationary
Log of GDP	846.34	0.000	Stationary
Inflation rate	95.48	0.000	Stationary

Critical value: 1% level: PP= -11.90, 5% level: PP= -7.30, 10% level: PP= -5.30; N=23

Similarly, Table 3.6 shows that the variables FDI inflows, employment, GDP per capita and inflation rate are stationary at all level. That is, the null hypothesis of a unit root of all variables for Ethiopia is tested against the alternative hypothesis of stationarity. Thus, the results indicate that all time-series are stationary.

Table 8 Unit Root Test for Ethiopia Using the Phillips-Perron Test

Variable	Phillips-Perron test	P>(t)	Stationarity Status
Log of FDI	17.25	0.000	Stationary
Log of employment	4301.25	0.000	Stationary
Log of GDP	291.09	0.000	Stationary
Inflation rate	51.43	0.000	Stationary

Critical value: 1% level: PP=-11.90, 5% level: PP= -7.30, 10% level: PP= -5.30; N=23

iii) Test for Structural Break

Test for structural break was conducted using the Chow test to see whether there is structural change in FDI inflows after the introduction of AGOA in SSA and Ethiopia. Therefore, Table 3.7 indicates that the change in FDI inflow to SSA is significant as it rejects the null hypothesis. This shows that there has been structural break in FDI inflows to SSA after the introduction of AGOA program. Thus, AGOA may have brought significance change in FDI flows to SSA.

Table 9 Chow Test for SSA and Ethiopia FDI inflows

	SSA		Ethiopia	
	Before AGOA	After AGOA	Before AGOA	After AGOA
Mean	5126.20646	26438.01851	75.78777778	451.6578571
Variance	6873912.057	156386453.7	13175.47144	94127.3948
Observations	9	14	9	14
DF	8	13	8	13
F	0.043954651		0.139974887	
P(F<=f) one-tail	7.02081E-05		0.004535531	
F Critical one-tail	0.306840779		0.306840779	

Source: Author's calculation based on UNCATD data web, 2016

Likewise Chow test was conducted to see the change before and after AGOA in FDI flows to Ethiopia. Table 3.7 indicates that the change is significant as it rejects the null hypothesis at 5% level. Thus, this shows there has been structural break in FDI flows to Ethiopia after AGOA program and therefore AGOA may have brought significance change in FDI flows to Ethiopia.

Moreover, the Chow test was conducted to see the change in employment before and after the enactment of AGOA in SSA and Ethiopia. The equation for structural stability is estimated with data from total employment based on ILO forecast for SSA and Ethiopia from 1991–2014 periods. Thus, the result presented in Table 3.8 indicates that the change is significant as it rejects the null hypothesis of no structural break. This shows that there has been structural break in employment in SSA after the enactment of AGOA and therefore AGOA may have generated significant change in total employment in SSA.

Table 10 Chow Test for Employment in SSA and Ethiopia

	SSA		Ethiopia	
	Before AGOA	After AGOA	Before AGOA	After AGOA
Mean	239264.293	337229.2612	23501.14502	35796.54381
Variance	266775592.7	1665085235	2542109.455	25742030.01
Observations	8	14	8	14
DF	7	13	7	13
F	0.160217379		0.098753263	
P(F<=f) one-tail	0.010803642		0.002517084	
F Critical one-tail	0.281662961		0.281662961	

Source: Author's calculation based on ILOSTAT data web, 2016

Table 3.8 also indicates the change in employment in Ethiopia is significant as it rejects the null hypothesis of no structural break. This shows that there has been structural break in employment in Ethiopia after the enactment of AGOA and, therefore, AGOA could have generated significant change in total employment in Ethiopia as well.

The results of the test for structural change, therefore, show that there has been structural change in both FDI flows and employment associated with AGOA program. However, whether this result holds when other variables affecting employment are controlled needs further analysis and this is further discussed in section 3.3.2.

3.3.2 Regression Results

The results of structural change test show that there has been structural change in employment associated with AGOA. However, in order to see whether this holds when other variables are included, a linear regression model was fitted. In order to examine the effect of AGOA on total employment in SSA and Ethiopia after other variables, like total FDI flows, annual per capita GDP and inflation rate were fitted. Table 3.9 indicates that AGOA program, annual per capita GDP, total FDI inflows and Inflation rate, all have positive and statistically significant (1% significance level) effect on employment in SSA (see Table 3.9).

Table 11. OLS estimates of total employment in SSA (Dep. variable= Total employment in SSA)

Variable	Coef.	Std. Err.
Log of FDI	0.0683113	(0.0148801)***
Inflation rate	0.0008699	(0.0001503)***
Log of GDP	0.107074	(0.030675)***
AGOA program	0.2970001	(0.0782525)***
Log of FDI after AGOA	-0.074187	(0.0199159)***
cons	4.486671	0.2019479
Variable	Coef.	Std. Err.
Log of FDI	0.0683113	(0.0148801)***
Inflation rate	0.0008699	(0.0001503)***
Log of GDP	0.107074	(0.030675)***
AGOA program	0.2970001	(0.0782525)***
Log of FDI after AGOA	-0.074187	(0.0199159)***
cons	4.486671	0.2019479

Source: Author's calculation using STATA based on UNCATD data web, 2016; N = 24; F (5, 18) = 759.62; Prob > F = 0.000; R-squared = 0.9953; Adj. R-squared = 0.994; ***P-value ≤ 0.01 **P-value ≤ 0.05 and *P-value ≤ 0.10

Further, the model estimation for employment in Ethiopia indicates that the AGOA program has positive and statistically significant (10% significance level) effect on employment. Annual FDI inflows and GDP per capita have positive and statistically significant (1% significance level) effect on employment.

However, FDI inflow after AGOA has negative coefficient and therefore, AGOA associated FDI inflows are found to have negative correlation with employment in Ethiopia. Thus, AGOA's positive and significant effect on total employment may be through domestic AGOA participant firms.

However, FDI inflow after AGOA has negative significant influence on total employment. This indicates that though the introduction of AGOA has positive and significant change in both employment and total FDI inflows, AGOA associated FDI inflows appear to have negative influence on total employment in SSA. This may be due to FDI inflows after AGOA are more capital intensive investment with high capital and technology like mining which does not need a lot of labor force.

Table 12. OLS Estimates of Total Employment in Ethiopia (Dep. variable= Total employment in Ethiopia)

Variable	Coef.	Std. Err.
Log of FDI	0.0316012	(0.0077621)***
Log of GDP	0.1278594	(0.0496719)***
INFLA	0.0001854	0.0001312
AGOA	0.1053941	(0.0574691)*
Log of FDI after AGOA	-0.012905	0.0238325
_cons	3.80883	0.1901436

Source: author's calculation using STATA based on UNCATD data web, 2016; N= 24; F (5, 18) =106.38; Prob> F= 0.000; R-squared=0.9673; Adj. R-squared= 0.9582; ***p-value \leq 0.01 **p-value \leq 0.05 and *p-value \leq 0.10

To sum up, after the introduction of AGOA there is a positive and significance change in both employment and total FDI inflows for Sub-Saharan Africa and Ethiopia, and overall FDI inflows have positive and significant effect on total employment. However, the model results suggest that AGOA associated FDI inflow has negative influences for employment generation in SSA and insignificant effect for Ethiopia when other variables affecting employment are controlled.

4. Conclusion

This study has assessed the trends of FDI inflows to SSA and Ethiopia using a time series data from the period 1990-2014. The study also analyzed the employment effect of FDI inflows in SSA and Ethiopia using a time series data from 1991-2014. OLS model estimation was used to analyze the FDI inflows effect on total employment.

The findings suggest that over all FDI inflows to SSA and Ethiopia are increasing at historical level and the total FDI inflows to Africa after 2001 are higher than the 1990's but the value had shown high volatility and this is suspected due to unstable social and political conditions of the region and the financial crisis of the world after 2009 (UNCATD, 2015). However the study found that AGOA has increased FDI inflows to SSA and Ethiopia and further could have stabilized the volatility in FDI inflows.

Moreover, although the trend in employment shows an increase in the total employment for SSA and Ethiopia and further there is a structural change in employment after the introduction of AGOA, the model estimation suggest AGOA associated FDI has negative influences on the total employment for SSA at macro-level. Thus, it is suspected that AGOA associated FDI inflows may be engaged in more capital intensive and not in labor intensive investments. Further, there is also a suspicion that FDI inflows may crowded out domestic firms which result in loss of jobs and an increase in total unemployment. The increase in total employment is rather explained by overall FDI inflows, GDP per capita and inflation rate which all have positive and significant effect on employment.

AGOA also has positive impact on employment in Ethiopia at macro-level but it is suspected that the impact is rather through domestic firms since AGOA associated FDI inflows have insignificant effect on employment. Therefore, the findings are not consistent with earlier empirical studies of FDI-employment link in the literature which found

insignificant effect of FDI on employment (Aryeetey, 2007; Aryeetey and Boateng, 2007; and Inekwe, 2014).

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