

Can trade openness stimulate output performance? A case of selected African countries

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Abstract: This paper investigates the impact of trade openness on national productivity for selected African countries over the period 1980 – 2014. In order to test whether trade openness affect different sectors differently, disaggregate data was used. Applying a pooled ordinary least square technique and STATA software version 13, the results point to depict an overall positive impact of trade openness on manufacturing and service value added.

When it comes to other variables the study find that capital also contributes positively to both overall and sectoral value added while labour productivity is negative for all except service value added. The negative relationship between labour and output can be explained by decreasing returns to scale and poor managerial services. Most developing countries are capital constrained hence they end up using a lot of labour to an extent of causing diminishing marginal productivity of labour. Based on these results the research reveals that greater trade openness can stimulate output in developing countries. In view of the above it is therefore recommended that African countries should implement progressive and sectoral trade liberalization.

Keywords: panel data analysis; trade openness; value added

JEL Classification: F1, F4

1. Introduction

Trade liberalization has been used as a key component by most countries in their development agendas as well as stimulating economic growth and overall economic well-being. During the past 2 (two) decades researching on the relationship between trade openness and economic growth has long been a major subject of concern for most trade economists. Proponents of the trade liberalization concept argue that liberalization brings in new technology and attracts foreign direct investment (FDI) resulting in efficient resource allocation and increased consumer welfare. According to Shaheen et al. (2013) trade liberalization can lead to increased capital inflows which in turn enable the free movement of investment hence reducing inefficiency. A 2015 research by the International Monetary Fund (IMF) also pointed to the fact that further trade liberalization can help developing countries to benefit from technology transfer as well as integrating them into the global value chains system. This can further create more jobs in the economy. Similarly Behrman, Duryea and Székely (1999) highlighted that countries that have a more open trade regime are likely to have less unemployment and higher savings. However this is subject to their level of competitiveness.

There is overwhelming evidence that more open economies experience high economic growth rates than less open ones. Mazhikeyev, Edwards and Rizov (2015) also pointed out that countries that are more open and connected to the external world attract substantial investments and businesses than the isolated ones. As cited by Balanika (2003), evidence suggest that Latin

American (LA) countries that followed import substitution industrialization (ISI) strategy experienced insignificant economic growth rates while the East Asia Tigers which embraced export promotion strategy realised substantial growth rates. The poor performance by most developing countries as a result of ISI led to the adoption of outward trade policy in developing countries (Babatunde, (2009). This positive link between trade openness and economic growth intertwined with the debt crisis that rocked developing countries in the early 1980s saw the rolling out of the Structural Adjustment Programs (SAPs) in 1990s by IMF and the World Bank. Their target group for SAPs was African countries. In the same period IMF (2015, p.47) reported that most SSA countries recorded strong and sustained growth which was attributed to good political and economic policies and among them was trade liberalization.

The contribution of trade openness cannot be underscored as this is evidenced by 4.3 per cent GDP per capita growth rate of SSA between 1990 and 2000 as compared to 2.9 per cent between 1980 and 1990 (IMF, 2015, p.52). Of the 4.3 per cent of growth rate that was realised by SSA, trade openness contributed 0.6 percentage point to the 4.3 per cent compared to a 0.2 percentage point contributed by terms of trade. It is in this context that, this paper attempts to investigate the impact of trade openness on national productivity of selected African countries. The selection of the countries is based on availability of data. Specifically it examines if trade openness has managed to stimulate national output of the 21¹ African countries for the period 1980 – 2014. This paper takes a stride in connecting the gap between theory and evidence by investigating the link between trade openness and total value added in 3 sectors for selected African countries.

Most researches on the impact of trade liberalization on economic growth analyse the relationship in a broader sense without dismantling economic growth by sector. Here the investigation is on whether trade openness affects different sectors similarly or not. Unlike other existing literature and studies which used aggregated output, this paper is different in the sense that it uses disintegrated economic output to a sector level. These sectors are annualized agriculture value added (AVA), manufacturing value added (MVA) and services value added (SVA) as percentages of GDP. Given that there are various measurements of trade openness, for the purpose of this study trade openness is measured as the sum of exports and imports as a percentage of GDP. However, according to Ackah and Morrissey (2005) using the above approach as a measure of trade openness does not capture trade policy reforms and also the level of trade maybe influenced by gravity variables and other factors which are not related to trade policy. Looi, Nicita and Olarreaga (2009) also argue that trade openness measured using the above formula has some weaknesses since it accounts for tastes, economic shocks and other factors which do not measure trade policy.

The rest of the paper is organized as follows; Section 2 will look at theoretical literature concerning the impact of trade openness and economic growth and/or other variables while Sections 3, 4, 5 and 6 will focus on trade liberalization in Africa and Sub-Saharan Africa (SSA), empirical model and methodology, discussion of results and concluding remarks in that order.

¹The countries included in the analysis are Algeria, Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of Congo, Egypt, Ghana, Kenya, Madagascar, Malawi, Mali, Morocco, Mozambique, Niger, Nigeria, Senegal, South Africa, Sudan, Tunisia, Uganda and Zimbabwe.

2. Literature Review

Empirical work on the relationship between trade liberalization and economic growth using various techniques for many countries produced different results. In some instances other studies find a positive relationship between the two variables while in other circumstances a negative association is depicted. Empirical studies that analyzed the impact of trade liberalization on economic growth sometimes differ from what is predicted by theoretical evidence. Greenway et al. (1998) in Mouelhi (2007), in their extensive studies they establish a positive relationship while in other cases there is either negative or a no relationship at all between trade liberalization and economic growth.

Theoretical evidence suggest that trade liberalization has a positive influence on economic performance. Studies that find a positive relationship between trade openness and economic growth or firm performance is vast. This is posit from scholars such as Edwards (1992), Krugman (1994), Frankel and Romer (1999), Dollar and Kraay (2001), Weisbrot and Baker (2003) and Gries and Redlin (2012) to mention a few. A study by Mouelhi (2007) on Tunisia's manufacturing firms confirms that trade liberalization in the form of reduced tariffs and non-tariffs had no significant effect on employment and manufacturing growth. In addition to the above for a sample of 159 countries Gries and Redlin (2012), establish a positive causal relationship between trade openness and per capita GDP growth rate. A study by Wacziarg and Welch (2008) reveals that countries that relaxed their trade regimes realised an increase in growth rates to levels of around 1.5% higher than before embarking on liberalization. At a continental level Tran, Cadoret, and Rondeau (2014) conclude that trade liberalization promotes economic performance for other continents save for Africa.

Also analyzing a sample of developing countries using cross-section and panel econometric approach, Mbabazi, Milner and Morrissey (2006) find consistent evidence that openness is positively related to economic growth. Results from a study by Onafowora and Owoye (1998) further support the need for African countries to embark on trade liberalization as a way to spur economic growth. Alesina, Spolaore, and Wacziarg (2005) also establish that trade openness stimulates economic growth. Within the context of SSA, Hussien, Ahmed and Yousaf (2012) find trade liberalization to be a contributing factor to the increase of both per capita GDP and trade share. In the same vein Topalova and Khandelwal (2010) also find a positive link between productivity and lower tariffs on final goods and input tariffs for Indian firms. Given the positive benefits of trade openness on economic performance there has been a rise in the number of bilateral and regional agreements since 1975 (Chalkual et al. 2013, p. 35).

Despite this broad evidence on the positive impact on economic growth of trade liberalization, on a contrariwise note, Rodriguez and Rodrik (2001) argue that trade liberalization alone does not translate to higher economic growth but has to be backed by sound social, economic, political and other institutional reforms. However, according to Rash (2012) trade liberalization is blamed by a section of some scholars for fuelling high income inequality, poverty, foreign debt and continued underdevelopment of developing countries. During the implementation of SAPs in Zimbabwe, a study by Durevall and Bjurek (1998) reveals no evidence of the contribution of trade liberalization on the growth of total factor productivity (TFP) in the manufacturing sector. However they establish that only few sub-sectors experienced TFP growth. In addition to the above Shafaeddin (1995) could not find a strong signal on the impact of trade liberalization to economic performance for least developed countries. Studying on the same topic for countries that are integrated with other economies Rodríguez (2006) also find no clear evidence on the influence of trade liberalization.

Differences regarding the correlation between trade liberalization and economic growth are suggested by authors as emanating from misspecification errors and proxy for trade openness. Despite theory suggesting a positive relationship between trade liberalization and economic growth Mouelhi (2007) suggested that the positive impact of trade liberalization on economic growth is sometimes questionable especially in the case of developing countries.

Melitz (2003) and Melitz and Ottaviano (2007) argue that open economies allow the movement of technology, investment and goods beyond national boundaries there by resulting in trade creation through reallocation of resources from less efficient producers to efficient ones.

Since most of the literature has examined the causal relationship between trade openness and economic growth, and less studied the impact of trade openness on gross domestic output, particularly value added within the context of Africa, this paper attempts to fill the gap. Also results from the few literature centering on the relationship between trade openness and economic growth or GDP are inconclusive with some results in concession while others are in contention depending on the country sample size. The other motive to do this paper is premised from the argument by Ulasan (2012) in Tahir et al. (2014, p.137) who stressed that relying only on theoretical framework to guide policy makers on the relationship between economic growth and trade openness is tantamount to leading to deceptive results hence the need to confront the relationship empirically. Given the conflicting results on the nature of the relationship between these two variables as argued by Rodrik (1998) it is in this framework that this paper tries to contribute to existing scant literature by analyzing the impact of trade openness on value added for selected African countries.

3. Trade Liberalization in Sub-Saharan Africa

Trade liberalization involves the removal of barriers that restrict the free movement of goods, services, capital and labour across borders. According to online information² from Jandhyala, Nikolov and Weiner (2009) there was a wave of trade regulations in the early 1990s where majority of emerging economies protected their economies through a cocoon of measures which include high tariffs, high license fees, state involvement and closed business relationship. These were followed by successive rounds of multi-lateral trade negotiations under the auspices of the General Agreement on Tariff and Trade (GATT) and the now World Trade Organization (WTO). This saw tariffs reduced from levels of 20 – 30% to a figure of less than 10% during the past six decades.

While other regions managed to perform well economically between 1985 and 2005, according to Ackah and Morrissey (2005, p. 2) Africa's performance in the global economy has been weak. Lawrence et al. (2008) in the 2008 Global Enabling Trade Report also reported that SSA was among the regions that have been left behind in terms of globalization as evidenced by the fall in their share of world trade during the past half century. This is also supported by the fall in Africa's share of merchandise trade from a 3 per cent level in 1990 to 2.3 per cent level in 2000.

Spence and Karingi (2011) in Siyakiya (2016, p. 464) indicated that most African countries constitute an insignificant share of world market when compared to other continents. He further highlighted that their contribution to trade can be improved if they (African countries) embrace trade reforms in the form of trade facilitation which encompass the removal of trade bottlenecks

² http://www.people.fas.harvard.edu/~pnikolov/presentations/bit_oil.pdf.

off and at the border. Given the importance of trade facilitation in influencing trade it therefore entails that trade liberalization alone without investment in trade related infrastructure may not promote economic growth. In this regard trade liberalization not backed by a strong domestic investment in infrastructure may be erroneous as well as groundless. This is very crucial for developing countries since they may end up being victims of their own circumstances. Winters, McCulloch and McKay (2004) argued that trade policy measures should not be treated separate from other factors that can enable their positive influence. A study by Decreux and Spies (2012) also substantiate the need for African countries, particularly SSA, to invest in trade related infrastructure. They further stressed that SSA countries can increase their trade growth potential by diversifying export markets, export commodities to emerging markets and adopt value addition and beneficiation strategies so that they can minimise their dependency on primary commodities which are susceptible to price shocks.

According to Kassim (2014), most SSA countries were adopting a protectionist approach before 1980 and later liberalized in 1990s in the context of SAPs. This is also evidenced in Rodrik (2006) who highlighted that the Washington Consensus brought a wave of reforms in LA and SSA through its concepts for developing countries to ‘Stabilize, Privatize and Liberalize’.

Contrary to the above, advocates of protectionism argue that more liberalization has a detrimental effect on the performance of domestic firms. This is because less competitive infant industry are displaced if they fail to withstand the competition hence undermining the local industrialisation of the country. The idea in favour of protectionism saw most African countries being motivated to protect their domestic industries from foreign ones. Another argument in favour of restrictive trade is that for the case of developing countries they rely on revenue generated from tariffs and if they do not have other strong sources of revenue liberalization in the form of tariff reduction could have an effect on their growth. Perez-Batres and Eden (2008) also argue that radical liberalization adversely affect domestic firms due to their unfamiliarity into the new system. In view of the above, economic growth driven by trade liberalization affects economies in a different way due to different trade and logistic patterns. As an example Muendler (2004)’s findings concluded that competition from foreign firms raised domestic firms’ productivity and at the same time foreign inputs do not contribute insignificant to productivity for the case of Brazilian firms.

While the general consensus is that trade liberalization is beneficial to economic growth it is recommended to implement progressive liberalization. At the onset of SAPs other SSA countries experienced low economic growth rates which perhaps represent the greatest failure of liberalization. In a nutshell trade liberalization presents both gains and costs depending on the level of economic development, quality and volume of exports as well as strength of the manufacturing base of an economy. This was highlighted by Huchet-Bourdon et al. (2011) who find that trade liberalization is more beneficial to a country that has high quality and a well-diversified export base.

Ackah and Morrissey (2005) also underlined that in the late 1980s and early 1990s majority of African countries began the implementation of sustained and substantial reduction of trade barriers particularly tariffs. Mbabazi, Milner and Morrissey (2006) attributed the poor performance of SSA not only limited to high dependence on export of primary commodities but also to low levels of trade openness. The establishment of the World Trade Organization in 1995 ushered in a new dispensation since most African countries put trade openness in their

agenda and made commitments to open up. A comparative analysis of SSA's trade liberalization and its share of world trade is illustrated in Figure 1 and 2 in the appendix below.

As can be seen from Figure 1 since the early 1970s, when compared to other continents, on average SSA has been more open than any other regional groupings. North America has been the least open economy on average followed by LA. It is also pleasing to note that trade openness for SSA has been always above that of the world average. Unfortunately the openness of LA and North America (NA) remained below the world average. Beginning the year 1974 SSA and Europe and Central Asia's openness has been above 50% as opposed to LA and NA which were below 50%. The LA countries for the period before 1994 were using restrictive policies within the context of the ISI.

Against this backdrop as shown in Figure 2 in the appendix, SSA's percentage share of world trade has been falling over time since. A closer look at the trend between trade openness and share of world trade for SSA reveal that the more SSA opens up to the world the more it loses its share of world trade. Beginning 1948 the percentage share was above 5% but with time it nose-dived to a percentage below 2% with the worst year being 1997. Despite accounting for an insignificant percentage in global trade, according to Schmieg (2016), SSA play an important role since its trade contributes more than 50% to its GDP. Given the little contribution in world trade SSA should diversify its exports by including manufactured exports.

4. Empirical Model and Data Sources

Borrowing from a model developed by Topalova and Khandelwal (2010, p. 11), an econometric model is generated as follows:

$$\ln PR_{it} = \alpha + \beta \ln PR_{it-1} + \beta_1 \ln LP_{it} + \beta_2 \ln KF_{it} + \beta_3 FDI_GDP_{it} + \varepsilon_{it} \quad (1)$$

Next trade openness is incorporated into equation 1 to form equation 2.

$$\ln PR_{it} = \alpha + \beta \ln PR_{it-1} + \beta_1 \ln TOP_{it} + \beta_2 \ln LP_{it} + \beta_3 \ln KF_{it} + \beta_4 FDI_GDP_{it} + \varepsilon_{it} \quad (2)$$

where PR denotes national output namely average total value added (ATVA), agriculture value added as a percentage of GDP (AVA), manufacturing value added as percentages of GDP (MVA) and services value added as percentages of GDP (SVA) (these are proxies for output), PR_{t-1} is the lagged value of PR_t this is included to control for the potential problem of serial correlation. TOP is a measure of trade openness which is the sum of exports and imports as a percentage of GDP. LP is labor productivity per person employed in 1990 US\$. KF denotes gross fixed capital formation as percentage of GDP, FDI_GDP_{it} is foreign direct investment as a proportion of GDP and ε is the error term. α and β s are parameters to be estimated, and of interest is β_1 which captures the impact of trade openness on productivity. This parameter will enable us to examine the response of our policy variable trade liberalization to each sector. The inclusion of trade openness in equation (2) is motivated from the fact that a country does not entirely produce using its own resource but has to import from other countries. The empirical model above is inspired from a study by Mouelhi (2007, p. 103) and Topalova and Khandelwal (2010, p. 11) who establish the causal link between trade liberalization and

productivity of the manufacturing sector for Tunisian and Indian firms respectively. Unlike the above authors who used firm level data, this study is using sectoral national data as dependent variables. To improve the goodness of fit of the model lagged variables of each dependent variable were included as explanatory variables in each case. This is because each dependent variable is heavily determined by its past levels. However according to Achen (2001) and, Keele and Kelly (2006) it should be noted that other explanatory variables can be suppressed by the inclusion of the lagged variable.

Data for all the dependent variables, gross fixed capital formation as percentage of GDP and trade openness were downloaded from the World Development Indicator (WDI) database while that of labor productivity was retrieved from the Total Economy Database. To establish the impact of trade openness on growth of the three sectors namely agriculture, manufacturing and service the research applied the pooled ordinary least square (OLS) technique. If historical data for all the variables and for all African countries was available, the panel could have included all the countries but due to data gaps the analysis of this research is restricted to the period 1980 – 2014 and a sample of 21 African countries. In certain circumstances where there were missing values a 1 was added and where MVA was missing it was replaced by industrial value added.

5. Discussion of Results

STATA 13 software is herewith used to test the significance of trade liberalization on value added for the three sectors as well as the average of their aggregate. Using a pooled OLS technique on a panel data of 21 selected African countries for the period 1980 - 2014, the research shows that greater trade openness has a positive causal relationship with manufacturing and services value added. On the other hand, trade openness as measured by trade as a percentage of GDP, impacted negatively and insignificantly on agriculture value added. The overall impression is that greater trade openness can stimulate productivity in developing countries though insignificant on the total value added for the 21 economies. The variable gross fixed capital formation has the expected sign (positive) in all the 4 columns in Table 1 in the appendix below. Column 1 presents regression results of average total value added, column 2 show results of agriculture value added, column 3 and 4 are results of value added in manufacturing and service respectively.

The regression results in columns 1, 3 and 4 do suggest that trade openness indeed on average impacted positively on total value added, manufacturing value added and service value added. This study finds that for every 1% increase in the level of openness a 1.5%, 2.37% and 2.89% rise in total value added, manufacturing value added and service value added is realized in that order. In all the cases trade openness is not significant. The reason behind the positive impact of trade openness and manufacturing and service value added may be linked to the fact that most developing countries particularly African countries lack capacity in producing industrial and service products so the moment they open up to the world they tend to benefit a lot. It can also be noted that capital formation is significant in the manufacturing sector than any other sector. The study also unravels that SVA when compared to other sectors is more responsive to trade liberalization. When it comes to agriculture value added, it is negatively affected by trade openness because developing countries compete with developed countries in producing these products hence opening up hurts developing countries' economies due to their poor mechanization.

The lagged variables are positively related to the dependent variables. As for gross fixed capital formation, it has a positive influence on all the dependent variables while the explanatory

variable labour productivity has a negative influence for columns 1, 2 and 3 and positive for service value added. This might be due to the fact that developing countries in general have abundance of labour which they overuse resulting in decreasing marginal productivity.

The highest influence of gross fixed capital formation is on service value added followed by manufacturing and agriculture value added respectively. When it comes to FDI as a ratio of GDP it has a positive impact on agricultural value added. Most developing countries' economies are agro-based and they have comparative advantage in that sector than in other sectors. A detailed presentation of the results is shown in Table 1 below.

6. Summary and Conclusion

Applying a pooled OLS model and STATA software version 13, this paper examined the impact on value added of trade openness for the period 1980-2014 for 21 selected countries. Results from the regression point that trade openness affect sectors differently. In particular trade openness contributes to the fall of agriculture value added while at the same time have a positive effect on the manufacturing and services value added. Besides trade openness affecting value added, the research also unravel that gross fixed capital formation has a positive influence on all the dependent variables. Also fixed capital formation is highly significant for the manufacturing value added as opposed to other sectors where it is insignificant. In addition to the above, the research also unpacks that as countries have more capital formation they are likely to experience high levels of value added. Given the results from the regression the research therefore recommends that trade liberalization policies should be done on a sectoral and progressive basis unlike using a one size fits all approach since different sectors are affected differently. For instance trade openness affects the service and manufacturing value added positive while agricultural value added is affected negatively.

The conclusion that can be drawn from the results is that since developing countries do not have strong base to produce and supply manufacturing products and services they tend to benefit from opening up their economies. While this is true for the 2 sectors it is not the case for agriculture value added where trade openness impact negatively. The reason maybe that both developed and developing countries produce agriculture commodities hence developing tend to face stiff competition from well-established economies and lose out when they implement trade openness. This calls for African countries to do value addition and beneficiation of their agricultural products so that they can realize the benefits of trade liberalization.

The research further recommends that developing countries, particularly African, should also increase their capital formation since it leverages more to manufacturing and service value added than agriculture value added. In order to have a positive relationship between trade openness and value added there is need for more capital to augment the intended or desired results. Since the research used a restricted period and measurement of openness future researches can focus on a wider period as well as employing other measurements of trade openness.

Endnotes

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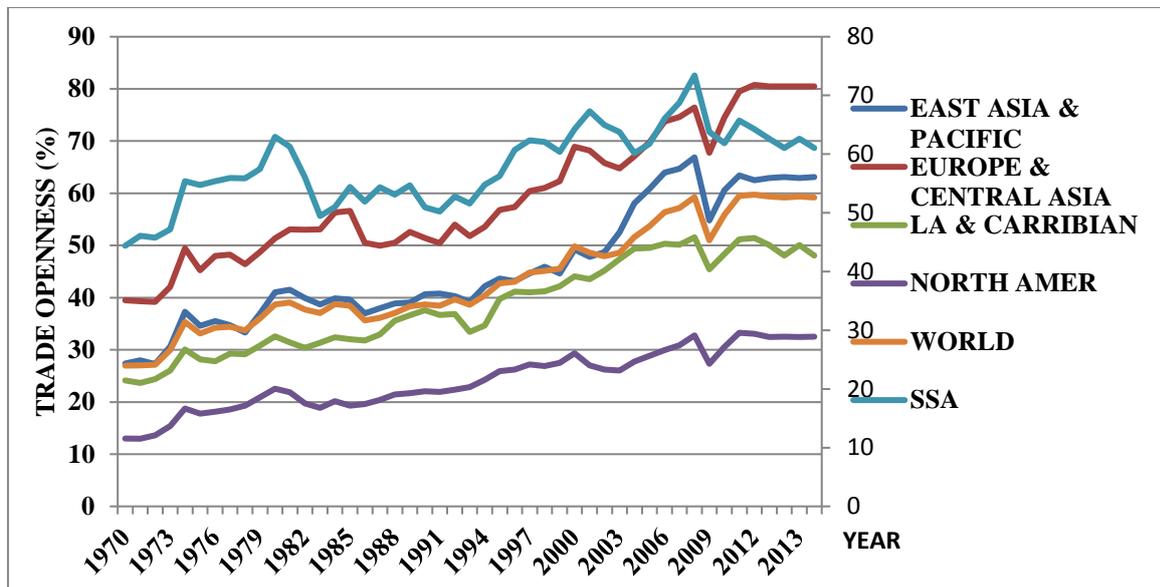
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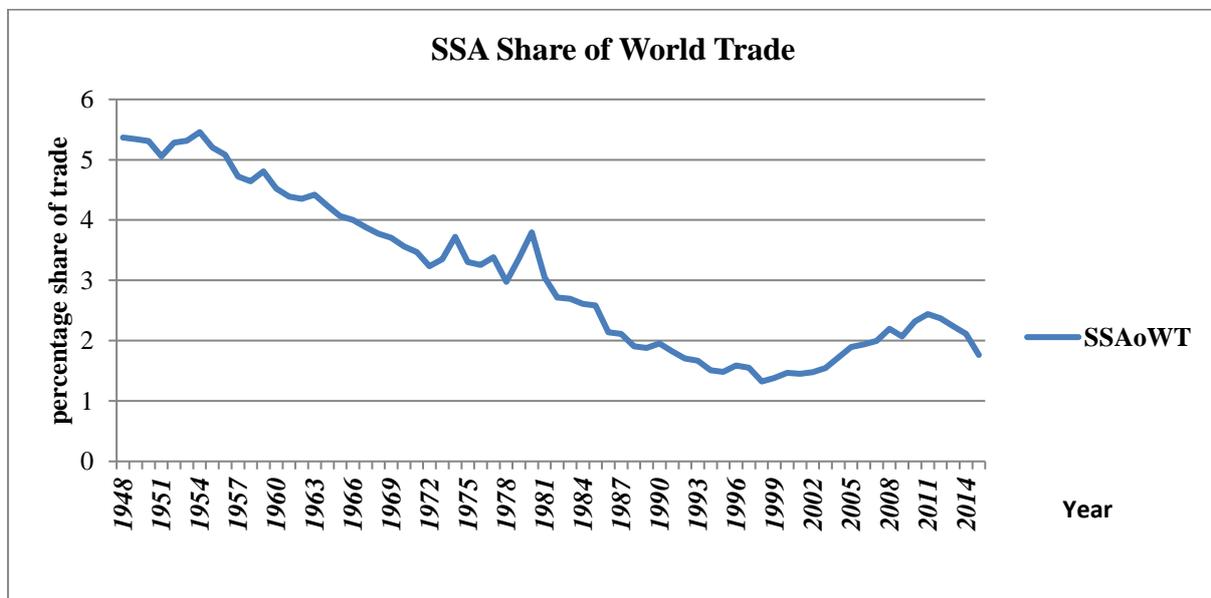
Appendix

Figure 1: Trade Openness of Sub-Saharan Africa other economies, 1970 – 2014



Source: Author's calculations based on data from WDI

Figure 2: SSA's Share of World Trade 1948 – 2015



Source: Author's calculations based on data from UNCTAD

Table 1. Regression results

VARIABLES	(1) ATVA	(2) AVA	(3) MVA	(4) SVA
lnLPit	-0.0315*** (0.00933)	-0.141** (0.0621)	-0.00123 (0.00884)	0.0171 (0.0141)
lnKFit	0.0412 (0.0260)	0.0217 (0.0347)	0.0501** (0.0219)	0.0522 (0.0358)
lnTOPit	0.0150 (0.0440)	-0.0556 (0.0695)	0.0237 (0.0237)	0.0289 (0.0574)
lnATVAit	0.295** (0.137)			
FDI_GDPit	-0.00233 (0.00201)	0.00269 (0.00291)	-0.00391** (0.00197)	-0.000442 (0.00216)
lnAVAit		0.752*** (0.111)		
lnMVAit			0.922*** (0.0371)	
lnSVAit				0.616*** (0.150)
Constant	2.487*** (0.539)	2.098** (1.035)	-0.00581 (0.119)	1.063** (0.500)
Observations	714	714	714	714
R-squared	0.160	0.828	0.914	0.472

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1