Trade Policy and Manufacturing Performances in the Sub-Saharan Africa

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ABSTRACT: *The Study examined the impact of trade policies on manufacturing export performance of countries in Sub-Saharan Africa (SSA) region. The motivation for this study is the fact that despite the strong wave of liberalization reform across the globe, the SSA region yet remained small player in the world trade. Thus, the report of United Nations conference on trade and development(UNCTAD),2003 revealed that the share of trade performance and manufacturing exports in the Africa continent's total merchandize export was around thirty percent in year 2000.That is, the share had increased only by ten(10) percent compared to 1980 shares. In order to understand the performance of manufacturing exports before and after the introduction of trade liberalization policy, this study explored static panel estimators namely, fixed effect and random effect models to examine the impact of trade policies on manufacturing export performance of countries in SSA. Empirically, the result revealed evidence of negative relationship between tariff rates and manufacturing exports thus confirming the assertion that trade protection measures are still very much favoured in some SSA countries. On the other hand however, our findings of positive and significant relationship between manufacturing exports and trade liberalization support the view that openness of trade via trade liberalization is effective for stimulating manufacturing export performance.*

KEY WORDS: Trade Policy; Manufacturing Export; Panel Model; SSA

INTRODUCTION

Many countries in the Sub-Saharan Africa (SSA) have adopted various forms of trade policies and policy reforms to their manufacturing sector performance after their political independence. This effort may not be unconnected with the fact that many developing economies believed that the attainment of sustained economic growth, full employment and accelerated technological progress depends on effective performance of the manufacturing sector of their economies. However, despite the strong wave of liberalization reform across the globe, the SSA sub region of Africa continent yet remains a small player in the world trade. The United Nations Conference on Trade and Development (UNCTAD) 2003 report for example, suggests that Africa hardly benefited from the boom in manufactured exports. The state of performance and manufactured exports in the Africa Continent's total merchandize exports was around 30 percent in the year 2000. This implies that the share had increased by 10 percent since 1980.

The above indication of Africa in the international trade particularly in manufactured exports is not without some explanations. Morrissey and Mold (2006) for instance put it that limited access to market and declining terms of trade for SSA exports mainly agricultural goods, continues to act

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as a constraint on the performance of Africa's exports. For Wood and Berge (1997) as well as Elbadawi et al (2006), the limitation of Africa's capacity for increasing their manufactured export is due to geography and endowment factors. The third explanation as offered by the World Bank (2006), blamed poor implementation of trade liberalization policies for Africa's disappointing trade performance. The fourth argument as put up by some observer claimed that the decline in SSA's share of world trade is due to the region's poor state of economic growth over the last thirty years. The rational for this fourth line of argument is informed by reversing the orthodox causal link from trade liberalization to economic growth, which centered on the need to focus on policies that sees growth as an essential driver of trade performance (Hausmann, Pritchett and Rodrik, 2005).

In addition to the above range of arguments, the poor participation of Africa in the world trade particularly in manufacture export may not be unconnected with the fact that export trade in SSA is dominated by primary commodities, which are by nature extremely vulnerable to unstable weather conditions, world demand and prices. Also, while identifying enabling environment as an important condition for market-led economic growth, World Bank (2004) shown on comparative basis that SSA has been lagging behind other regions in the provision of investment and business environment that is conducive for private sector development (Eifert, Gelb and Ramachandran, 2005). Relating this to trade performance in SSA sub region of Africa, it is argued that the SSA countries and Africa at large are characterized with high cost and high risk environment and this is said to have constrained private sector investment and tradable production. This constraint according to Collier and Gunning (1997) is more severe in manufacturing exports; while Elbadawi, Mengistae and Zeufack (2006) also believes that the constraint can be held responsible for reducing Africa's international competitiveness.

The aforementioned notwithstanding, the advocates of trade liberalization will never stop insisting that opening up of local markets to foreign competition and foreign direct investment (FDI) is all that is required for a more efficient allocation of resources that will result in productivity improvements in domestic industries and higher overall manufacturing export performance. To this end therefore, evaluating the empirical reality or otherwise of this view has important implications for trade policies and manufacturing export performance in the context Sub-Sahara Africa countries. The central question at this juncture would then be; to what extent has trade openness or trade liberalization policy impacted on the manufacturing export performance of SSA countries.

Although, correlation between trade policies and manufacturing export performance is one of the many relationships that have been extensively explored in the literature, yet there has not been any definitive conclusion on the issue. This may not be unconnected to the fact that factors explaining the expansion of manufacturing exports tend to vary across countries and regions; depending on the export behaviour, commitment, and the priorities of the exporting nation or region. This among other explains while the assertion of liberalization trade policy being the most effective motivation factor for enhancing manufacturing exports performance has remained largely unresolved in the literature. For some, there are positive association between trade liberalization policy and manufacturing exports performance [Weiss (1992), Arthurkorala (2011), Bas (2013), Odoji (2015)]. Others such as Paulino (2002), Ackah and Morrisey (2005), Fernades (2007), Babatunde

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(2009), Ghani (2011), and Ratnaike (2012), have also argued that openness of trade does not imply efficient manufacturing exports in the absolute sense of it. It therefore, imperative under this circumstance to evaluate the extent to which adoption and implementation of trade policies has helped in promoting manufacturing exports in SSA.

Thus, this study has the potency to unfold the current trend of growth and global competitiveness of manufacturing sectors in the countries of SSA. The study will provide a useful empirical framework for SSA's economic reformers and regulators; who are striving to improve the performance of manufacturing exports in the region. More so, the study would expand the frontier of knowledge on the issue of trade policies and manufacturing exports performance. If the outcome from each tool (i.e. the response of manufacturing exports to trade policy reforms) is known on the basis of the empirical evidence to be provided by this study, such would assist the policy makers in the region in choosing appropriate trade measures that could significantly enhance manufacturing exports activities in the region.

Following this introductory section, the rest of the paper is structured as follows: some stylized facts on trade policy reforms in SSA were considered in the second section. Section three dwells on the findings of previous studies. Data description and preliminary analysis are presented in Section four. Section 5 is the model specifications with empirical results presented discussed in section six. Conclusion and policy implications are presented in section 7.

Some Stylized Facts on Trade Policy Reforms in SSA
Following the failure of import–substitution trade policy as well as the debt crisis in the early 1980s then, emerged the new consensus on the importance of trade liberalization as catalyst of manufacturing exports. This development which centered on openness of trade activities across boarder saw most SSA countries witnessing the formulation and implementation of trade liberalization policy within the context of structural adjustment programme (SAP) framework, with the support of the IMF and World Bank in the mid-1980s. Starting from the mid-1980s, most SSA tends to favour trade liberalization policy with many countries reducing trade barriers significantly (i.e. restriction on imports). Reducing tariffs and non-tariffs barriers were meant to ease importation process on the one hand, and encourage export by eliminating export taxes and instead provide export intensive on the other hand. Thus, tariffs in this context became the main trade policy of most SSA countries.

Other anti-export bias measures were equally adopted to boost manufacturing export performance in most of the SSA countries. For example, countries such as Mali and Ghana either abolished export levies and duties on most exports or have no export quotas or voluntary export restraints. In a similar vein, Uganda replaced its export licensing requirements by a less restrictive export certification system in 1990 and also abolished export taxes. Following the same trends, exportation in Botswana does not require permits and so are significant reductions in the effective rates of protection in SSA countries such as Nigeria, Kenya, South Africa, Mali, Zimbabwe and Cote d'Ivoire. Where there are still some level of export prohibitions, the argument is that such are necessary because of the need to ensure that the require standard with respect to quality is not compromised as well as for health and environmental reasons. More so, export processing zones (EPZs), which are a product of the Free Zones Act enacted in the Gambia were also adopted by

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government in some of the SSA countries. In practice, Mali for example, creates free trade zones as part of measures to boost its manufacturing export performance. The bulk of manufacturing exports in Mauritius dominated by textiles and clothing are also done via the export processing zones enterprises.

However, the liberalization of trade policy in SSA seems not to be limited to the reduction or abolishment of tariffs and related trade protection policies mentioned above. Rather, exchange rate regimes in most of the SSA countries were also liberalized. A good number of SSA countries that include Kenya, Uganda, Ghana, Tanzania, Zambia, Nigeria, Cote d'Ivoire, among others have long stopped fixing exchange rates and overvaluing of their currencies in order to stimulate exports and make the economy more competitive. In a similar development, the system of multiple exchange rates was abolished in Burundi, while Ethiopian currency, the Birr, was allowed to float since 1996, thereby resulting in the convergence of the official, auction and parallel market exchange rates.

REVIEW OF LITERATURE

Sizeable literature on export performance and trade policies relationship are rooted on the view that trade restrictions as well as any forms of export bias could reduce export performance below potential. The empirical plausibility of this strong assertion is still far from conclusion. The extant studies on the link between trade policies and export performance can be classified into two main strands namely; country specific study and cross-country analysis. Empirical literature that investigate the impact of trade policy on export performance following country specific approach usually focus on firms and/or sectoral export performance particularly in developed economy (see for example, Jayanthakumaran, 2011; Allaro, 2012; Atif et al., 2012; Bas, 2013; Paudel, 2014; Mitral et al., 2014; Odongo, 2015). However, in view of recent availability of establishment data as well as the switch from protective to trade liberalization policies; researchers focusing on developing economy particularly Africa tend to favour the cross-country approach in their evaluation of the impact of trade openness on manufacturing export of developing regions.

Similar to the empirical findings on the basis of country specific studies, the view that trade policy such as trade liberation enhances export performance is still empirically far from settled even on the basis cross-country analysis. While investigating export performance of East Asian countries and China for instance, Arthukorala (2011) shows that country with high level of trade openness performs better due to their benefit from production sharing network leading to increase in their national output. Using alternative estimators to take zero trade problem and endogeneity into consideration, Cestepe et al. (2015) employs panel gravity model to examine the impact of trade liberalization on the export of 13 MENA countries to 30 OECD trade partner. The study finds that while WTO membership affects export of MENA countries negatively, trade liberalization via free trade agreement on the other affects the export supply positively.

Greenway and Sapsford (1994) utilizes Flavery-Gemmel modified model to examine the impact of trade openness on export growth of 19 developing countries and conclude that, trade openness did explains significantly increase in the export growth of the 19 countries. For Santos-Paulino (2002) who utilizes export duties as indicator for openness of trade to examine the impact of trade

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liberalization on export performance of 22 developing economies namely; Asian, Latin America and countries from Africa. The study which empirically employs dynamic panel estimation method using fixed effect and Generalized Methods of Moment (GMM) estimators submitting that export duties which is the measure for trade openness affects export performance negatively. Ackah and Morrissey (2005) argues that trade liberalization in SSA rather increases import tremendously with no significant response of export to the openness of trade and in turn leads to trade deficit in SSA. Shafaeddin (1995), Nieme (2001) and Ghani (2011) are some of the studies that have also reports weak relationship between trade liberalization and export performance.

Niemi (2001) investigates the response of exports to trade liberation using demand side approach between the Association of Southern Asian Nation (ASEAN) and European Union (EU). Findings from the study shows that trade liberalization focusing on reducing trade tariffs has no significant impact on the export performance of commodity flow from ASEAN to EU. Also, Ghani (2011) in his evaluation of trade liberalization and export performance in Organization of Islamic Conferences countries shows that, openness of trade improve not export performance of the OIC member countries especially in the long term as compare to the medium term. Using a panel data approach to examine both the steady-state and the transitory impact of trade liberalization on export performance within a sample of selected OECD countries, Ratnaike (2012) finds trade policy to be largely insignificant determinant of export performance.

Wobst (2003) studied the impact of trade policies on export performance of five African countries using a 12 sector standardized social Account matrices (SAM). The study finds that trade liberalization policies such as exchange rates devaluation, and tariff cut improves export performance considerably. Iwanow and Patrick (2008) estimates a standard gravity model using a panel dataset of 124 developed and developing economies to assess the impact of trade facilitation and other trade related institutional constraints on manufacturing export performance with particular reference to Africa. In its empirical reports, the study shows that trade facilitation reforms though contributed to improve export performance, but not without other reform that include quality of the regulatory environment, and the quality of basic transport as well as communication infrastructure.

However, in addition to the fact that there are only few empirical literature focusing on the cross-country analysis of trade policies and manufacturing export performance especially in Africa. A cursory of review of literature thus shows that the issue of the popular assertion of a strong influence of trade liberalization on export performance is empirically remain unresolved , where studies such as Weiss (1992), Arthukorala (2011), Bas (2013), Paudel (2014), Odoji (2015) are among the few that reported evidence of positive and strong relationship. Santos-Paulino (2002), Ackah and Morrisey (2005), Fernades (2007), Babatunde (2009), Ghani (2011), and Ratnaike (2012), among other, shows that there is no significant relationship or that the relationship is negative in some instance.

RESEARCH METHODS

This aspect of the study comprises of Data source with the measurement and description of variables. It also involves preliminary analysis, descriptive statistics and Model specification of the study.

Data source and description

The key variables of interest in this study are manufacturing export (MXPT) measured as percentage ratio of manufacturing export to total merchandize export, relative price or exchange rates (EXR) measured as the price of one country's currency expressed in another country's currency (local unit currency of the respective SSA countries per USD), and productive capacity (PCAP) is proxy by the log of exporting economy's real GDP (real GDP of SSA countries). Given our desire to account for the response of manufacturing export performance to trade policies, trade policies indicators that were used in the course of our empirical analysis include: trade liberation (TLIB) measured as percentage share of the sum of export and import to GDP; and tariff rates (TRF) which is define as average nominal tariff rates on all product. In addition, domestic investment (INV), interest rates (INTR), credit to private sector (CPS) and money supply (MS) are used as control variables. All data are sourced from World Data Indicator (WDI). The measurement and sources of the variables as well as their economic meaning are listed in Table 1 and Table 2 as follows:

Table 1: List and Measurement of Variables

Variable	Description	Data Source
MXPT	**Manufacturing Export**: Percentage Share of Manufacturing Export to Total Merchandize Export (%)	World Data Indicator (WDI)
EXR	**Exchange Rates:** Log of Local Unit Currency of the respective SSA Countries per USD (%)	
PCAP	**Productive Capacity:** Log of Real GDP of the respective SSA Countries	
TLIB	**Trade Liberalization:** [(Export + Import) / GDP] *100 (%)	
TRF	**Tariff Rate:** Simple Average Tariff Rates on all Products (%)	
INV	**Domestic Investment:** Log of Gross Fixed Capital Formation	
INTR	**Interest Rates:** Log of Nominal Interest Rates	
CPS	**Credit to Private Sector:** Domestic Credit to Private Sector by Bank (% of GDP)	
MS	Money Supply: M2 as a percentage of GDP (%)	

Table 2: Theoretical Expectation (Apriori)

Variable	Theory Intuition	Expected Sign
EXR	Determining apriori, impact of exchange rate on manufacturing export could be ambiguous. However, the study build on the premise that depreciation of Exchange Rate (EXR) of local currency against US dollar will make manufacturing products in SSA less expensive to predict positive relationship between exchange rate and manufacturing export performance.	Positive (+)
PCAP	It is expected that the productive capacity would positively enhance production of exporting goods and service and as such we expect positive relationship between productive capacity and manufacturing export performance.	Positive (+)
TLIB	Openness of trade is expected to positively stimulate manufacturing export performance.	Positive (+)
TRF	Protection measure via tariff rates is assumed to be detrimental to trade performance hence we expect negative relationship between tariff rates and manufacturing export performance.	Positive (-)
INV	Investment remains the main source of capital stock and such we expect positive relationship between domestic investment and manufacturing export performance.	Positive (+)
INTR	Interest rate is the cost of capital and low cost of capital will affect manufacturing export performance positively, while high cost of capital on the other hand will impact manufacturing export performance negatively.	Negative/Positive (- /+)
CPS	Availability of credit to private sector especially the manufacturing sector is expected to aid production of manufacturing export products positively.	Positive (+)
MS	If money supply results to rising price level (Inflation) it may leads to decline in manufacturing activities and exporting products, but if money in circulation are channel towards investment expenditures it may on the other hand affect manufacturing activities positively.	Negative/Positive (- /+)

The core objective of this study is to empirically investigate the impact of trade policies on manufacturing export performance of the whole countries in the SSA. However, only sixteen(16) countries based on the availability of data/variables are under consideration in the present study. Table 3 shows the countries studied and their codes which are used in the models. Moreover, other available data used to consider the effectiveness of this study are data sets used for Average total export(percentage of GDP)before and trade liberalization in thirty(30) SSA countries(Table 4), Average manufacturing export(percentage of total merchandize exports for thirty two(32) SSA countries(Table 5),Average value added(percentage of GDP) for thirty one(31) SSA countries(Table 6).

Table 3: Countries and Codes

Country	Code	Country	Code	Country	Code
Algeria	1	Guinea	7	Rwanda	12
Burundi	2	Kenya	8	Seychelles	13
Cameroon	3	Madagascar	9	South Africa	14
Central African Republic	4	Mozambique	10	Tanzania	15
Gabon	5	Nigeria	11	Uganda	16
Gambia	6				

Preliminary analysis

Trends in manufacturing export performance
In order to understand the performance of manufacturing exports before and after the introduction of trade liberalization policy, this study commence its analysis by first of all observing the average percentage share of total export to GDP of countries in SSA sub region of Africa. The aim is to have a prior knowledge on whether average exports performance in SSA countries, is better off without trade liberalization (pre-liberalization policy era) or more desirable with trade liberalization (post-liberalization policy era). This mode of trend analysis is meant to help us understand if the proportion of export to GDP in SSA countries increases or decreases after the introduction of trade liberalization policy.

As shown in Table 4 below, we observed that average percentage share of export to GDP in nine of the thirty SSA countries whose exports we considered, decreases after the introduction of trade liberalization in the said countries. This decline in the ratio of export to GDP following the advent of trade liberalization policy seems to be more pronounced in Gambia and Central Africa Republic; where the falls in the ratio of export to GDP after trade liberalization is 10 per cent and 8 per cent respectively. However, the post trade liberalization period shows that the ratio of export to GDP improves by 31 per cent in both Congo Republic and Lesotho and Zambia by 27 per cent respectively. Other SSA countries that have also witnessed some level of significant improvement in their export performance following their adoption of trade liberalization include Nigeria, Mozambique, Ghana, Benin, among others. This notwithstanding, export performance when measures via its proportion to GDP in countries such as Malawi, Mauritania, Rwanda, Senegal and South Africa indicates no significance difference even after the introduction of trade policy in these countries.

Table 4: Average Total Exports (Percentage of GDP) Before and After Liberalization in SSA

Country	Liberalization Period	Pre-Liberalization	Post-Liberalization	Changes (Δ)	Remarks
Algeria	1989	26.38	34.17	07.79	Increase
Benin	1988	12.88	23.06	10.18	Increase
Burkina Faso	1991	07.37	14.45	07.08	Increase
Burundi	2003	10.21	07.84	-02.37	Decrease
Cameroon	1989	23.95	20.60	-03.35	Decrease
Cape Verde	1991	20.03	26.54	06.51	Increase
Central African Republic	1995	23.89	15.19	-08.70	Decrease
Congo, Rep.	2001	47.67	79.13	31.46	Increase
Cote d'Ivoire	1994	36.18	45.47	09.29	Increase
Gabon	1994	50.41	57.19	06.78	Increase
Gambia	1986	39.94	29.60	-10.34	Decrease
Ghana	1983	16.88	28.14	11.26	Increase
Guinea	1986	00.00	27.54	27.54	Increase
Kenya	1993	28.69	23.77	-04.92	Decrease
Lesotho	1994	16.11	43.55	27.44	Increase
Madagascar	1988	14.50	24.31	09.81	Increase
Malawi	1988	24.11	23.97	-00.14	Decrease
Mali	1998	14.68	24.08	09.40	Increase
Mauritania	1989	39.49	39.52	00.03	Increase
Mauritius	1985	49.89	58.52	08.63	Increase
Mozambique	1991	06.90	21.94	15.04	Increase
Niger	1994	15.86	18.21	02.35	Increase
Nigeria	1986	15.10	33.10	18.00	Increase
Rwanda	1995	10.36	10.43	00.07	Increase
Senegal	1986	25.27	26.23	00.96	Increase
Sierra Leone	1989	23.19	20.54	-02.65	Decrease
South Africa	1994	27.36	27.93	00.57	Increase
Togo	1994	41.86	37.42	-04.44	Decrease
Uganda	1987	18.66	13.10	-05.56	Decrease
Zambia	1991	00.00	31.58	31.58	Increase

Sources: WTO policy reviews for various countries; while the increase or decrease values are the author's calculations

Thus, it is not impossible to assume that the share of total export to GDP of individual SSA countries is not adequate enough as a measure for reflecting trend in manufacturing export performance. That is, considering more than one indicators of trade performance in the course of our trend analysis will provide us with pre-information; on whether modeling manufacturing export performance in SSA is sensitive to measure or indicator of manufacturing export performance that is under consideration. In view of this, factors such as: average manufacturing export as percentage of total merchandize export and manufacturing valued added as a percentage of GDP; were further considered for the historical evaluation of manufacturing export performance in SSA. However, in addition to the historical evaluation of manufacturing export performance of

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individual SSA countries via these two key indicators, trends in manufacturing exports performance of notable developing regions across the globe are also considered in relative term to that of SSA sub region of Africa. The implementation of trade liberalization in Africa started in the 1980s with argument that it will helps revive manufacturing sector of the region, whose growth is assumed to be stalled by different forms of trade protection, which isolated an inefficient manufacturing sector from the pressure of completion.

Figure 1
Developing Region's Shares of Manufacturing Exports to

Total Merchandize Exports, 1980-2015
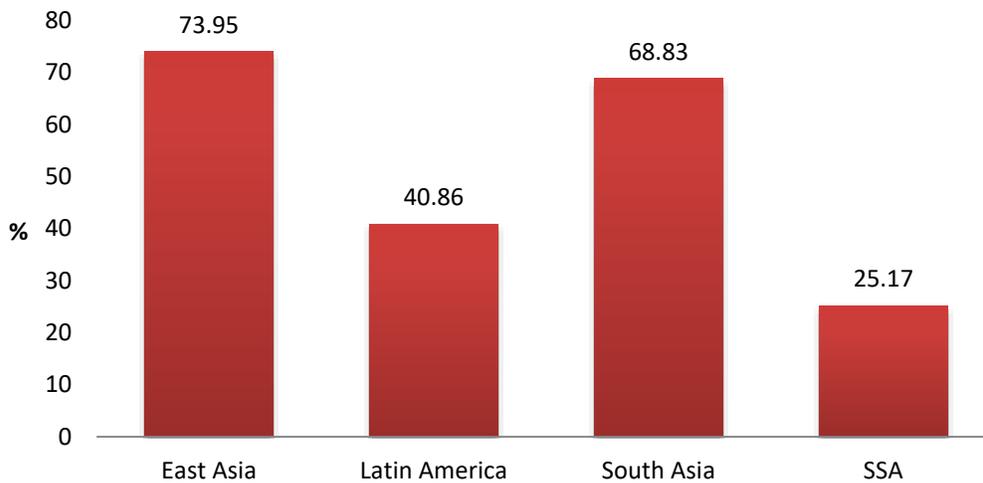
Source: WTI, 2015

There is no gainsaying that prior to the introduction of trade liberation policies, trade activities in Africa between 1970s and the early 1980s are hugely facilitated via protection measures namely; import tariffs, export taxes and exchange rate overvaluation. Given the tendency of these trade protection measures to create substantial disincentives for manufacturing exports, many Africa countries were spur to adopts trade liberalization policy in attempt to encourage export of manufactured product; and possibly replicate the successful development experience of other regions, in particular East Asia. However, the historical illustration of manufacturing export performance represented in figure 1, shows that SSA with 25.17 per cent has the least manufacturing export shares of total merchandize between the period 1980 and 2015. That is, even after the adoption of trade liberalization policy, the SSA sub region of Africa still have the lowest share of manufacturing export when compare to other developing regions. For instance, average manufacturing export shares of total merchandise exports in East Asia, South Asia and Latin America were 73.98 per cent, 68.83 per cent and 40.86 per cent, respectively (see figure 1). This relative poor performance of manufacturing export of SSA as against other developing economies may not be unconnected to their over reliance on low value primary commodities export as well as poor performance by relatively large economy such as Nigeria (whose export have failed to grow either in relative to GDP and/or in relative to total export merchandize.

While the above fact findings appear to be in consonance with one of the most extensively cited stylized facts of African trade performance, which says that the continent's share in world merchandize trade has declined since 1980 (WTO, 2004). Morrissey (2005) however, argues that this does not mean that trade liberalization is not essential for Africa. For instance, the individual country reports in Table 5 below, shows that SSA countries such as Lesotho, Mauritius, Madagascar, Senegal, South Africa and Togo, had their respective average share of manufacturing export to total merchandize export equal to/or higher than 30 per cent. This notwithstanding, the outcome of trend analysis in Table 5 point to the fact that, more than 2/3 of the SSA countries still have their respective average share of manufacturing export to total merchandize export far from being impressive. Thus far, the trend analysis tends to be stressing the assertion that Africa remains an insignificant actor in the world trade of manufacturing products.
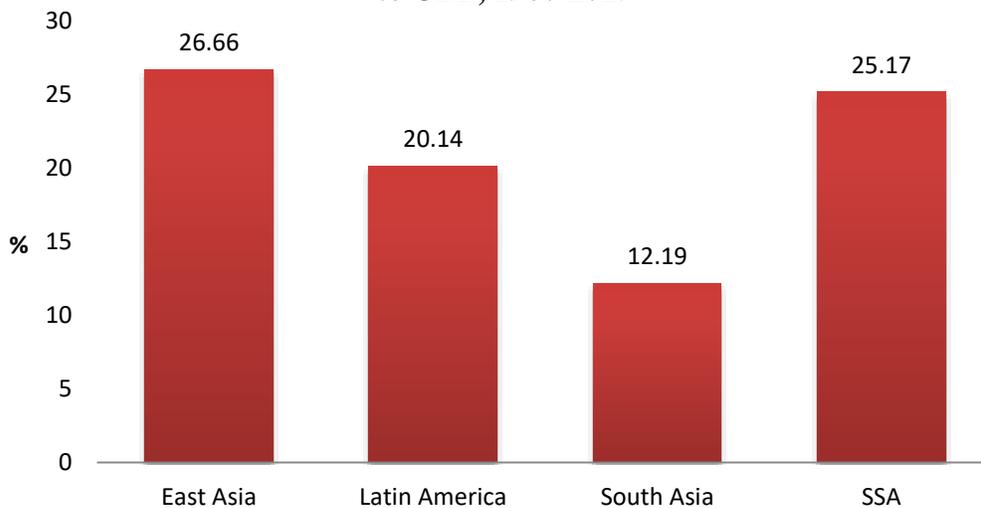
Table 5: SSA Average Manufacturing Export (Percentage of Total Merchandize Exports)

Country	*1980-1989*	*1990-1999*	*2000-2009*	*2010-2015*
Algeria	01.57	03.19	01.98	02.37
Benin	00.81	05.22	11.76	12.69
Burkina Faso	04.96	05.79	10.47	07.64
Burundi	00.00	01.71	09.23	15.09
Cameroon	06.13	03.26	07.74	09.71
Cape Verde	00.76	39.80	63.54	14.05
Central African Republic	06.97	46.25	34.07	04.73
Congo, Rep.	02.52	0.73	05.08	26.41
Cote d'Ivoire	03.99	07.02	16.97	15.47
Gabon	01.43	01.66	05.97	00.00
Gambia	00.00	09.68	03.54	19.85
Ghana	00.38	06.67	17.35	11.87
Guinea	00.00	10.63	15.87	03.26
Kenya	10.41	26.84	29.60	14.30
Lesotho	00.00	00.00	60.83	43.76
Madagascar	04.84	22.48	47.05	39.87
Malawi	04.50	05.98	11.47	10.17
Mali	00.46	01.71	11.34	07.57
Mauritania	00.00	00.06	00.00	00.01
Mauritius	10.75	69.52	67.41	61.50
Mozambique	00.00	06.31	06.91	10.64
Niger	00.21	01.51	10.46	08.32
Nigeria	00.07	00.82	02.02	04.39
Rwanda	00.00	02.34	06.67	08.84
Senegal	10.88	34.84	40.24	39.83
Seychelles	02.95	00.40	03.49	00.00
Sierra Leone	06.30	00.00	01.72	01.90
South Africa	09.23	37.17	54.61	47.52
Tanzania	03.26	04.69	19.47	24.37
Togo	08.16	07.45	46.13	57.37
Uganda	00.00	04.55	14.48	27.97
Zambia	00.00	06.44	10.16	11.12

Sources: Author's Computation using data sourced from WTI 2015.

In attempts to ascertain some level of consistence such that the aforementioned trend reports on manufacturing export of individual countries in SSA, as well as the region performance in relative to other developing regions of the world is not due to the measure of trade indicator that is under consideration thus far. To this end, this study further extend its historical analysis of manufacturing export performance in SSA with emphasize on manufacturing value added, which explains the net output of industries in particular countries after adding up all outputs and subtracting intermediate inputs (see World Bank, 2014). As demonstrated in the figure below (figure 2), the SSA sub region of Africa whose value of manufacturing value added is 15 per cent of GDP in 1965, rather shows no improvement from this original value even aftermath of trade liberation between the period 1980 and 2015. Relative to the performance of other developing economies, the average proportion of manufacturing value added of SSA to GDP is only half of the value in East Asia and South Asia for the period between 1980 and 2015. Average percentage ratio of Latin America's manufacturing value added to GDP over the same periods is equally 8 per cent higher than that of SSA sub region of Africa

Figure 2
Developing Region's Shares of Manufacturing Value Added

to GDP, 1980-2015

Source: WTI, 2015

In consistence with our earlier reports precisely in Table 5 above, information in Table 6 further reveals Mauritius and South Africa as the only two SSA countries whose average manufacturing value added as a percentage of GDP, between the periods 1980-1989 and 1990-1999 equal to or higher than 20 per cent. More than often, Table 6 presents a mildly declining trends in the ratio of manufacturing value added to GDP virtually across all the SSA countries listed on the table (Table 6). The declining trend is particularly more pronounced in the period from 1990s onwards, when most economies in SSA are liberalized. In summary, the general message from our trend analysis so far, is that SSA and Africa at large has plays little or no role in the world manufacturing trade activities either before or after trade liberalization. While there is room to blame the poor performance of SSA's manufacturing export on restrictive trade policies especially after the

introduction of trade liberalization in the 1980s, the main reason however, may not be unconnected to the fact that trade in Africa is dominated by primary commodities export.

Table 6: SSA Average Manufacturing Value Added (Percentage of GDP)

Country	*1980-1989*	*1990-1999*	*2000-2009*	*2010-2015*
Algeria	12.94	10.90	00.75	00.00
Benin	07.85	09.46	20.95	14.91
Burkina Faso	15.15	15.08	11.80	07.03
Burundi	09.43	10.65	11.70	09.62
Cameroon	12.10	19.00	18.44	14.59
Cape Verde	03.18	12.13	04.97	00.00
Central African Republic	08.67	09.30	06.36	07.37
Congo, Rep.	06.84	07.36	04.39	04.60
Cote d'Ivoire	00.00	16.05	14.33	12.80
Gabon	00.00	00.00	02.33	02.72
Gambia	00.00	00.00	04.05	04.90
Ghana	07.80	09.93	09.43	05.96
Guinea	00.91	04.19	05.86	06.90
Kenya	11.97	11.51	12.34	12.02
Lesotho	13.05	16.68	19.25	09.59
Madagascar	06.81	10.27	12.22	00.00
Malawi	14.97	16.23	12.93	10.45
Mauritania	06.28	10.01	10.25	06.66
Mauritius	20.35	23.58	20.50	16.72
Mozambique	00.00	13. 57	15.39	10.27
Niger	05.80	06.42	05.93	05.71
Nigeria	07.95	05.49	03.06	08.31
Rwanda	13.50	12.79	06.10	05.15
Senegal	13.97	16.08	15.27	11.60
Seychelles	09.21	12.49	12.38	06.37
Sierra Leone	04.43	06.69	02.93	01.95
South Africa	22.84	21.08	17.70	13.39
Tanzania	00.00	08.30	08.30	07.11
Togo	07.43	09.18	08.72	06.73
Uganda	05.52	07.23	07.75	08.76
Zambia	25.13	20.72	10.36	05.50

Sources: Author's Computation using data sourced from WTI 2015.

We further consider analysis of the statistical features of the data under considerations with the statistics of interest including the mean, maximum, minimum and the standard deviation properties of the concern data. The descriptive or summary statistics for manufacturing export performance (*MXPT*) in SSA as well as its determinants namely; Trade Liberalization/Openness (T*LIB*); Tariff or Trade Restriction (*TRF*); Production Capacity (*PCAP*), Domestic Investment (*INV*); Interest Rate (*INTR*); Exchange Rate (*EXR*); Money Supply (*MS*); and Credit to Private Sector (*CPS*) are represented in Table 7 below.

Table 7: Descriptive Statistics

Variable	Mean	Standard. Dev.	Minimum	Maximum
MXPT	16.4829	16.2549	0.0240	68.2450
TLIB	59.5040	30.7326	19.6840	225.0150
TRF	12.9927	6.2815	1.0970	39.4360
PCAP	8.8970	1.7336	5.9644	12.7031
INV	7.14757	1.8657	3.1868	11.3591
INTR	2.8882	0.3613	2.0794	4.0943
EXR	5.07215	2.0267	-.0736	8.8557
MS	29.8025	19.2484	.83100	110.7690
CPS	19.5531	29.2235	2.7840	160.1250

Source: Author's Computation

The reported summary statistics in Table 7 above, which include the mean for example, shows that average SSA's percentage share of manufacturing exports to total merchandize between the period 1990 and 2014 16.48 per cent. However, the maximum percentage share of SSA's manufacturing exports to total merchandize exports over the same period of time is 68.25 per cent, while the corresponding minimum is 0.02 per cent. This evidence of significant differences between the minimum and maximum values of manufacturing exports may be responsible for the indication that manufacturing export is unstable in SSA given its standard deviation statistic whose value is as high as 16 per cent. More so, when compare the mean value of tariffs to that of trade liberalization, openness of trade between 1990 and 2014 is far more pronounce than restriction or protection of trade over the same period.

Putting it differently, the adoption and introduction of trade liberalization policy precisely between the period of 1990 and 2015; had seen trade protection measures in some of the SSA countries declining to as low as 1 per cent, while the highest level of protection measures that could be associated with any of the SSA countries under consideration is 39 to 40 per cent. This on the one hand suggests huge compression of tariff measures in SSA, while the minimum and the corresponding maximum values of trade openness on the other hand implies rising in the implementation of trade liberation policy in the region. In the light of this, the following sub-section centered on the outcomes of the empirical evaluation of the impacts of trade openness on manufacturing exports performance of SSA sub region of Africa.

Empirical Model

There are two prominent approaches to analyze the response of export performance to trade policies namely, export demand function and export supply function. UNCTAD (2008) identifies Africa's weak supply response as an important impediment to the continent's export performance thus implying that future export policies should focus on way to improve production for export. However, a cursory review of empirical literature on trade reveals two main approaches to specification of an export supply function namely; the neo-classical approach in which relative price and production capacity are identifies as key determinants of supply decision; and the Keynesian approach, in which willingness of domestic firms to supply is largely associated to domestic demand pressure, with price given little or no consideration. Building on this premise, this present study adopts the conventional export supply function which relates exports to relative

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price (exchange rate) denoting the price of a country's export relative to the foreign price of related goods expressed in a common currency, and the economy's productive capacity to support export production. Mathematically, following Babatunde (2009), the relationship can be expressed in a functional form as follows:

$$MXPT_{it} = f(EXR_{it}, PCAP_{it}) \tag{1}$$

Equation (1) is the export supply equation, where $MXPT_{it}$ represent manufacturing export in SSA countries at time t, EXR_{it} is the exchange rate representing relative price level, while $PCAP_{it}$ denotes production capacity of countries in SSA to produce export products. In addition to the above traditional export supply function which represent a framework for analyzing the response of manufacturing export to relative price and productive capacity changes. This study is further interested in the response of manufacturing export to trade policies such liberalization and tariffs. Other determinants of manufacturing export to be included in our model are: domestic investment, interest rates, credit to private sector and money supply. To account for these addition factors in our model, the supply function represented in equation (1) is further re-specified as follows:

$$MXPT_{it} = f(EXR_{it}, PCAP_{it}, TLIB_{it}, TRF_{it}, INV_{it}, INTR_{it}, MS_{it}, CPS_{it}) \tag{2}$$

The model in equation (2), where $TLIB_{it}$ represent trade liberalization, $TLIB_{it}$ is tariff rate, INV_{it} is domestic investment, $INTR_{it}$ is interest rate, MS_{it} is money supply, and CPS_{it} denotes credit to the private sector assumed that implementation of trade liberalization will positively enhance manufacturing export performance. The theoretical justification is that openness of trade would encourage capital inflow which in turn aid production of exportable goods leading to improvement in the allocative efficiency of trade system otherwise known as comparative advantage and bring about positive changes in manufacturing product. In theory, trade protections discourage export and therefore have negative impact on export performance. To this end, trade restriction or any form of protection measures via tariff is expected to impact manufacturing export performance negatively. Domestic investment, credit to private sector and money supply are expected to manufacturing sector activities leading to increase in the production of exporting products. Thus we expect these factors to positively enhance the performance of manufacturing export in SSA.

PRESENTATION AND DISCUSSION OF FINDINGS

The hausman test results in Table 8 though reveal the random effect model as the most appropriate relative to the fixed effect model. For the purpose of robustness and consistent however, we present and discuss estimates from both variants of static panel models. Mores so, the study employs least square dummy variable (LSDV) in the case of fixed effect model and the essence is to provides a good way to understand the individuality of the cross-sectional unit.

Table 8: Model Selection (FEM vs REM)

Variable	Hausman Test			
	Coefficient		Difference	sqrt(diag(V_b-V_B)
	Fixed (b)	Random (B)	(b-B)	Standard Error (S.E)
TLIB	0. 1248	0.1136	0.0121	0.0044
TRF	-0. 3797	-0.4082	0.0288	0.0312
PCAP	-2. 0544	-2.8005	0.7461	2.8481
INV	4. 6255	4.2504	0.3751	0.3344
INTR	5. 3477	6.6496	-1.3018	0.5352
EXR	3. 3396	2.4111	0.9285	0.8966
MS	-0. 0684	-0.0824	0.0140	0.0148
CPS	0. 0163	0.1427	-0.1264	0.0384
Test: Null Hypothesis (Ho): difference in coefficients not systematic chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 4.08 Prob>chi2 = 0.9060				

Starting with the estimates from the fixed effect model in Table 9, the coefficient of trade openness/liberalization (TLIB) as well as the coefficient of trade restriction (TRF) are reported as statistically significant. The positive and negative sign of these coefficients is an indication that manufacturing exports in SSA countries has been responding to trade openness positively and negatively to trade protection measure over the period under consideration. Building on the premise that depreciation of Exchange Rate (EXR) of local currency against US dollar will makes manufacturing products in SSA less expensive to trade partner. The expectation as evidently indicated via the positive coefficient of (EXR) on the basis of estimates from fixed effect model is that manufacturing export within the period 1990 and 2014 responded positively to exchange rate. However, contrary to the aprior expectation of the study, which predicts positive relation between manufacturing exports and production capacity (PCAP) of the exporting country. A report from the fixed effect model rather reveals evidence of negative relationship. This notwithstanding, the insignificant of this relationship thus implies that manufacturing export in SSA over the period under consideration has not been significantly influenced by the level production capacity of the region.

Interestingly however, the report of positive coefficients of domestic investment (INV) is an indication that manufacturing export in SSA; respond positively to domestic investment of the exporting region. This therefore, implies that in addition to manufacturing export determinants that are relatively external in nature namely relative price such as exchange rate, investment activities in the exporting economy remains a major promoter of manufacturing export in the SSA sub region of Africa. Manufacturing export in SSA also responds positively to both interest rates (INT) and credit to the private sector (CPS) although the response is only significantly pronounced on the basis of variation in interest rate.

The fixed effect via LSDV posits that each country has its own intercept but shares the same slopes of regressors (i.e. EXR, PCAP, TLIB, TRF, INV, INTR, MS, and CPS). Then, to account for this individual effect, we introduce 16 dummy variables each for the countries under consideration.

However, one dummy variable is dropped to avoid the problem of perfect collinearity or dummy trap. To this end, we add 15 dummies, while suppressing the dummy for (Algeria) to act as our reference category using the slope coefficient to show the comparison. Although, the introduction of dummy for each country is meant to estimate the specific effect of the individual country by controlling for the unobserved heterogeneity; yet we need ascertain the validity of the LSDV fixed effects method to shows that including difference intercepts for each country is indeed required in our model, before we can interprets the estimates of the individual specific effects. To do this, we need to conduct the standard F-test to check fixed effects against the simple constant OLS method. The null hypothesis is that all the constant are the same (homogeneity) and that the common constant method and not fixed effect should be used, but the *F-test result reported in Table 9 above suggest the rejection of the null thus validate the application of LSDV fixed effect method in the course of this present study.

When compare to the intercepts of the rest of the 15 countries under consideration, there are significant deviation between the average manufacturing export performance in some individual countries relative to the parameter estimate of the dropped dummy (D1: Algeria), which is the baseline intercept or reference category. For instance, while there is no significant individual differences in the manufacturing export performance of the reference country (Algeria) and manufacturing export performance in countries such as Burundi, Cameroon, Gambia, Guinea, Mozambique, Nigeria, Rwanda, Seychelles, Tanzania, and Uganda. Average manufacturing export performance in countries such as South Africa, Central Africa Republic, Kenya, and Madagascar are 49%, 35%, 28%, and 20% significantly higher than that of the reference country respectively.

Presented in Table (10) are estimates from the study's preferred panel estimator, which is random effect model in the context of this study. The finding seems consistent with those from the fixed model. Reaffirming our findings from the fixed effect model, reports from the random effect models reveals evidence of positive relationship between manufacturing exports in SSA and trade openness. Still in consonance with the fixed effect model, the random effect model further shows that restriction to trade on the basis of tariff protection measures could be detriment to manufacturing exports in SSA sub region of Africa. Another indication of uniformity between the two models lies in their similarity of the theoretically plausibility of their findings, where the impact of openness of trade on manufacturing exports performance is shown to be in consonance with the theoretical expectation of the study, which predicts positive relationship between trade liberation and manufacturing export performance.

Table 9: Empirical Estimates from Fixed Effect Model

Least Square Dummy Variable (LSDV) Approach			
	Dependent Variable: *Manufacturing Exports (MXPT)*		
Variable	Coefficient	Standard Error	T-stat.
Constant	205.5048**	88.5262	2.32
D_2: Burundi	9.9058	14.1068	0.70
D_3: Cameroon	3.5536	7.2095	0.49
D_4: Central African Republic	35.6105**	13.6217	2.61
D_5: Gabon	-6.7074	8.5355	-1.79
D_6: Gambia	23.7266	14.8625	1.60
D_7: Guinea	12.1062	12.8778	0.94
D_8: Kenya	28.5247***	5.7253	4.98
D_9: Madagascar	20.7657*	11.1146	1.87
D_10: Mozambique	12.3247	8.7007	1.42
D-11: Nigeria	-0.1649	3.5801	-0.05
D_12: Rwanda	8.5841	11.9902	0.72
D_13: Seychelles	15.7729	13.0983	1.20
D_14: South Africa	49.3543***	9.4983	5.20
D_15: Tanzania	8.3604	7.6614	1.09
D_16: Uganda	2.8647	9.8637	0.29
TLIB	0.1248***	0. 0286	4.38
TRF	-0. 3797 ***	0. 1369	-2.77
PCAP	-2. 0543	3.4111	-0.60
INV	4.6254***	1.1653	3.97
INTR	5.3477**	2.2472	2.38
EXR	3.3395**	1.3383	2.50
MS	-0. 0684	0. 0608	-1.13
CPS	0. 0163	0.0765	0.21
Diagnostic Tests			
Number of Observation: 400			
F-statistic: 42.73 (0.0000)			
Adjusted R-square: 0.73			
Root MSE: 8.6764			
*F-test: 24.57 (0.0000)			
Wooldridge Test for Autocorrelation: 1.536 (0.2342)			

Note: ***, ** and * implies significance at 1%, 5% and 10%

Table 10: Empirical Estimates from Random Effect Model

Variable	Coefficient	Standard Error	T-stat.
Constant	166.0847**	80.6993	2.06
TLIB	0. 1136 ***	0. 0282	4.02
TRF	-0. 4082 ***	0.1333	-3.06
PCAP	-2.8005	1. 8772	-1.49
INV	4.2504***	1.1164	3.81
INTR	6.6495 ***	2.1826	3.05
EXR	2.4111 **	0.9935	2.43
MS	-0.0824	0.0589	-1.40
CPS	0.1427 **	0.0661	2.16
Diagnostic Tests			
Number of Observation: 400 R-square: 　　　　Within: 0.1414 　　　　 Between: 0.2873 　　　　 Overall:　0.2406 Wald Chi2: 68.70 (0.0000) LM Test for Random Effects: 702.09 (0.0000)			

Note: ***, ** and * implies significance at 1%, 5% and 10%

CONCLUSION AND RECOMMENDATIONS

This study employs annual panel data set of 16 Sub-Saharan Africa countries ranging from 1990 to 2014 utilizing static panel estimators namely; fixed effect and random effect models to examine the impact of trade policies on the manufacturing export performance of the SSA sub region of Africa. The findings of evidence of negative relationship between tariff rates and manufacturing export performance as reported in the course of our empirical analysis seems to have confirmed the assertion that trade protection measures are still very much favoured in some SSA countries. Interestingly however, the view that openness of trade via trade liberalization is effective for stimulating manufacturing export performance tends to be supported by the panel evidence reported in this study. In line with the theoretical apriori of the study, one can conclude that in addition to exchange rate which reflects the price of one country's currency expressed in another country's currency, trade liberalization policy remains a viable alternative policy that can significantly enhances manufacturing export performance in SSA. Domestic investments as well as credit to private sector have also shown to be an effective stimulant through which developing economy such as SSA can establish themselves as key players in the international trade activities. The findings of this study offer some avenues that can be helpful on how to improve manufacturing export performance of countries in SSA. First and foremost, there is no gainsaying that exporting behaviour of an economy primarily depends on its productive capacity, but with other secondary factors. To this end, developing economies such SSA must be mindful of their weak productive capacity and do all that it requires to strength it by investing more on capital inputs and the technical know-how of their unproductive large labour size. This would go a long way in enabling

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productive capacity of the economy to play its expected role as a promoter of manufacturing export performance significantly and positively. The evidence of significant and positive impact of trade liberalization on manufacturing export can be taken as a wakeup call for SSA countries yet to embrace trade liberation to do so. However, openness of trade especially when the goal is to promote manufacturing export performance of an economy needs to be augmented via appropriate domestic factors to include expansion of manufacturing sector of the economy through adequate domestic investment and availability of investment credits. More importantly, we suggest that rather than encouraging trade protection measures in wholesome to wedge against some negativity of trade openness, which cannot be entirely ignored anyway mainly due to the developing nature of the concern economy. The concern authority should instead of using tariff rates for that purpose; learn the art of manipulating exchange rates in a manner that is less harmful to the gain of international trade given the positive relationship of manufacturing export performance and exchange rate.

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