

STRUCTURAL TRANSFORMATION IN SUB-SAHARAN AFRICA: THE REGIONAL GROWTH POLES STRATEGY

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ABSTRACT

The goal of this paper is provoke discussions and challenge policymakers on alternative sustainable structural transformation strategy for sub-Saharan Africa through the growth pole technique. The proposed technique involves identifying, developing, and managing regional development clusters and value chains of selected commodities and activities. The empirical investigation into the growth poles in SSA suggests that South Africa and Botswana in the South, Nigeria in the West, Angola in the Central, and Kenya in the East are the most consistent top growth poles in SSA based on different measures of channels through which growth pole exerts influence on peripheral economies. The emergence of potential growth poles such as Ghana, Ethiopia, Tanzania, and Equatorial Guinea is highly desirable. The framework for cluster and value chain development and management presented in this study holds a high potential for sustainable structural transformation of SSA economies.

1. Introduction

Structural transformation remains elusive in sub-Saharan Africa (SSA) despite several efforts at inducing it. Worse still are the large and varying degrees of structural transformation and disparities across countries in the region despite many years of country-specific structural adjustment programmes aimed at fostering sustainable growth, development, and transformation. Moreover, many years of efforts by local, regional and national governments at promoting growth and structural transformation have remained unsuccessful. Thus, the economies of most countries in the region remain structurally unchanged since political independence till now. Production is dominated by the primary sector – agriculture, minerals or both, with very limited application of scientific production techniques. Agriculture productivity is low and largely subsistent. Most economies continue to depend heavily on natural resource revenues for fiscal revenues, raw commodity exports remain the dominant foreign exchange earner, and industrial and manufacturing development is stagnant. There is also high level of unemployment with high concentration of employment generation in the primary sector. Noteworthy is the fact that growing wide variety exists on the level of growth, development, and transformation across SSA countries on these factors described here.

Continued disparity among SSA countries could have serious consequences for the region. It could further heighten underdevelopment conditions that have the strong likelihood of culminating in extremely unfavorable socio-economic consequences and endangering the stability of the whole region. A reference case in point is the drought and poverty currently ravaging the Horn of Africa. This has resulted in serious pressure on Kenya, the major growth pole in the Eastern African region. Such crisis, if not well managed, could result in tension that could degenerate into conflict and war between countries. Thus, developing a strategy that will ensure higher growth and better economic performance in some countries diffuse and spill over into poorer ones will help douse this possible tension, promote even growth, and transform the region in a sustainable way.

This paper aims at proffering alternative solution for transformation in SSA based on the growth pole strategy. The strategy would gradually reduce the gap and disparities on levels of growth, development, and transformation between countries in the region for the benefits of the backward and least favoured regions and countries. The framework also has the potential for accelerating economic growth, and support social progress through efficient utilization of natural and agricultural resources in line with the potentials of each country and region. The proposed framework for structural transformation in SSA through development of growth poles should focus on two key issues: identifying regional clusters that would serve as development corridors; and developing value chains of activities and commodities within each cluster. This proposed strategy relies on the fact that, clusters, if appropriately and well structured and are successful, have the potential to become growth poles. This will involve a holistic use of all available resources. It is imperative to start by using what is available and gradually move to create new opportunities based on existing natural, financial and human resources. This will provide the key to unlocking several opportunities that are hidden, yet unknown but waiting to be tapped in SSA.

The paper is structured as follows. Section two examines the concept of growths and channels through which growth is diffused from core growth poles to the peripheral areas. The focus here is on four major channels: technology; trade; capital flows; and migration. Section three presents empirical estimation of growth poles in Africa, adopting four measures of growth poles that include real GDP growth, trade, FDI, migration and technology. Section four outlines the proposed framework for structural transformation in SSA through identification, selection, development, implementation and management of clusters and value chains in SSA countries. In order to have textured picture, this section proposes some clusters and value chains within the clusters and presents an agenda for making best selection. Section five makes policy recommendations that would facilitate the proposed growth pole strategy while section six presents concluding remarks and agenda for further research.

2. Literature Review

2.1 Concept of Growth Poles

Although the growth pole theory derives from the work of English economist William Petty (1623-1687) who was fascinated by the high growth observed in London during that period, French

economist François Perroux (1950) is generally credited with its formalization and elaboration of the concept, using it in the context of economic growth. Perroux set the growth pole theory formalization in the context of development in economic space, as opposed to physical space, and conceptualized these poles as centres of the most intense economic activity. The poles were assumed to be linked to other sectors with varying degrees of strength determined by proximity in economic space. Thus, a growth pole can produce polarization in leading sectors with corresponding growth consequences for close or distant sectors. According to him, “growth does not appear everywhere at the same time; it becomes manifest at points or poles of growth with variable intensity and spreads through different channels with variable terminal effects on the whole of the economy”.

The core idea of the growth poles theory is that economic development, or growth, is not uniform across an entire region, but instead takes place around a specific pole. The pole is a concentration of productive activity and propagates growth by the diffusion of growth and spillover effects from the core centre into the surrounding peripheral regions. Growth poles were a popular regional development strategy in the 1960s and early 1970s, with national governments investing in centers that were identified as growth poles or growth centers, with the belief that this would ultimately reduce regional disparities in employment and incomes, facilitate decentralization, and support rapid industrialization.

This concept generally refers to the grouping of industries around a central core that are able to impact growth for the core area as well as that of the surrounding areas. It is an economy whose domestic growth diffuses and thus helps drive the growth process in other economies through spillover externalities, knowledge transfer, and gains from exchange and interfacing. The core issue here is that for a country to be a growth pole, growth in such economies must be capable of stimulating economic activity in the countries or peripheral areas with which it has strong links and interactions. The notion involves firm and industrial agglomerations that promote growth concentration with linkages within the agglomerations and to peripheral areas.

As noted by Darwent, (1969) the intuitive notion of growth poles would identify a growth pole as an industry or perhaps a group of firms within an industry. At an extreme, a growth pole might be a single firm or a group of industries. This suggests, therefore, that an industrial cluster, a manufacturing cluster, a city, a country, a region, or group of these can be a growth pole. Indeed, cities where economic growth is concentrated are generally known as growth poles, and this has been extended to continental and global levels where some countries or regions are described as regional or global growth poles because of their significant economic activities and linkages to other countries or regions and strong impact they exert on growth in other areas. This demonstrates that the conventional usage of the term ‘growth pole’ is an *outcome*-based classification of geographically concentrated economic activity. If concentrated growth is achieved in a geographical area, that area can be considered to be a growth pole. The classification of a country, region, or an area as a growth pole depends on two issues: the growth rate of the economy relative to the growth rate of the area

being considered, and the strength of linkages between the growth pole and the area being considered.

Several strategies for developing growth poles are identified in the literature. First is the support for the potential growth pole through infrastructure enhancement and provision of incentives to private firms to locate their activities in the industrial clusters within the growth pole. In its initial conceptualization, spatial or geographical concentration was not incorporated into the growth pole theory. Today, however, the geographical aspects of growth poles or growth centers are now considered to be the most important feature of growth pole theory. This derived from the works of Friedmann (1966, 1972) that applied the theory directly to physical space.

The Silicon Valley is a typical successful innovative growth pole. For years, it has been a source of innovative ideas, technologies, organizations, and people. One of the reasons for success is because the region has several pre-requisites that include large market, the business and intellectual climate and capacity for innovation, sophisticated logistics infrastructure, and support services such as venture capital provision.

Australia provides illustrative example of countries that have applied the growth pole theory to drive national economic growth and transformation. Following a change of national government in the early 1970s a growth centres policy was formulated for two regions in eastern Australia. This policy was designed to stimulate investment, growth and employment in selected regional areas, and to forestall the population drift from regional areas to the major cities. To this end, Orange-Bathurst and Albury-Wodonga Growth Centers were selected for development. These two centers were selected as growth poles because of their clear advantages in terms of transport, education and other services.

South Africa provides excellent example of SSA country that have used the growth pole strategy to drive national growth, development, and transformation. The country implemented a regional development policy in the 1960s that relied heavily on this strategy. The government engaged in massive infrastructure investment and establishment of industries in selected areas with the belief that development in such areas will gradually diffuse to the poorer and isolated parts of the country. In addition to this underlying objective, the policy aimed at achieving two things: decongestion of the core urban areas through employment generation for residents of the rural peripheral areas; and reduction in polarization and national system decentralization (Fair 1982).

Growth pole theory is not without challenges, though. Peattie (1987), and Parr (1999a, 1999b, and 2001) submit that growth poles generally created disappointing results in the 1960s and 1970s, leading to disenchantment in its implementation. According to Cerón (2004), investments, along with the growth pole strategy failed because they were in “poor locations” and were “politically driven”. Several factors that explain the failure include: lack of competitive advantage in the government-identified growth poles; heightened expectations of the benefits of growth poles; over-

estimations of external economies; and governmental politics affected the ability of governmental sponsored growth poles to turn lagging regions into leaders.

2.2 Channels of Transmission of Growth Poles from Core to Periphery

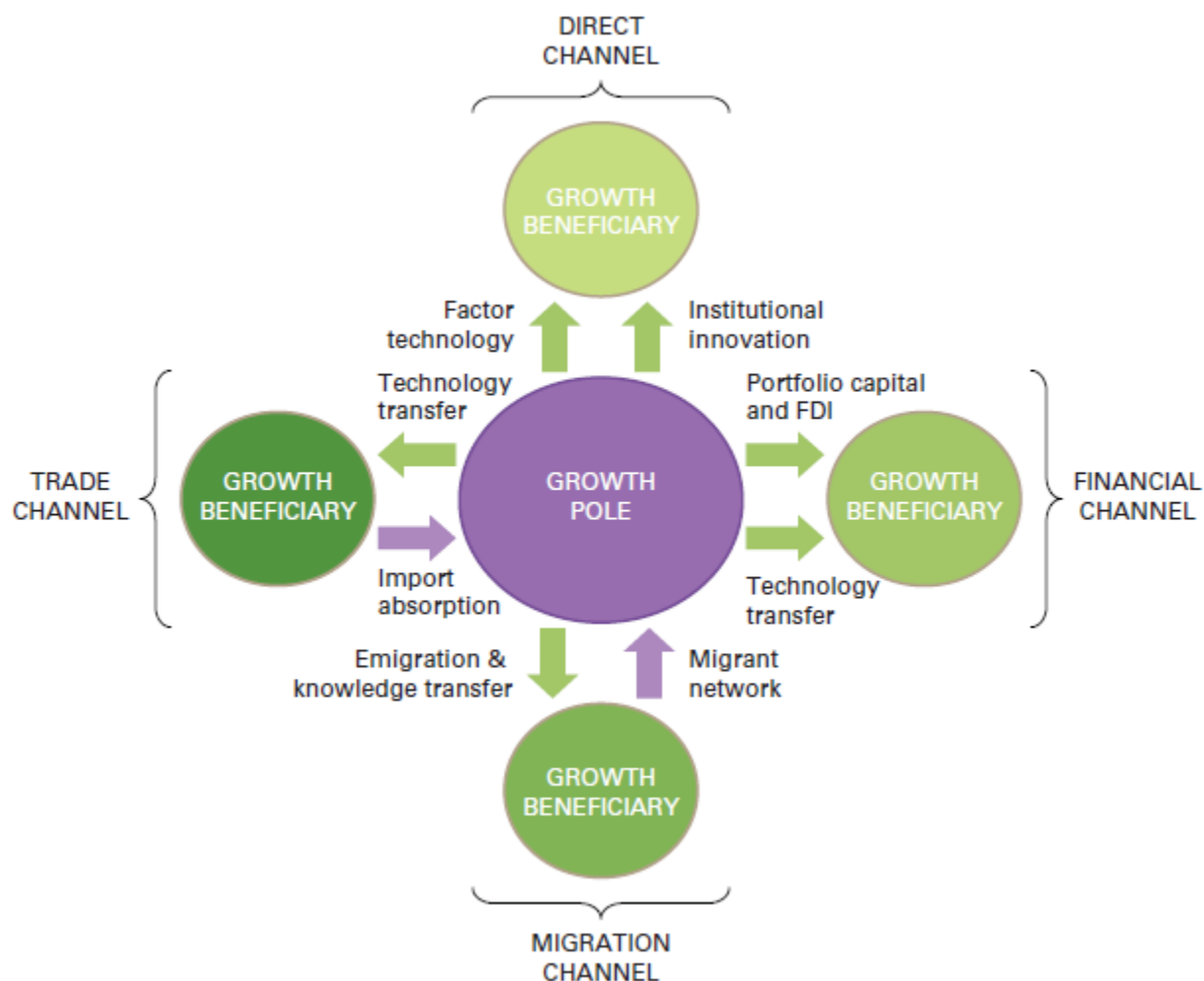
A number of economic transmission channels from growth poles to peripheral areas have been identified in both theoretical and empirical literature. Based on the submissions by Solow (1956) and Romer (1990), technological progress is a key driver of sustainable, long-run growth, suggesting that technology to be major channel for growth transmissions and spillovers from core growth poles to the peripheral areas. World Bank (2011) identifies these channels to include flows of knowledge through trade, finance, and migration, as well as more direct transfers of technology embedded in physical capital and technological knowledge embodied in human capital. When a country engages in foreign investment in another country, such activities have the potential for transferring technology, albeit indirectly through establishment of plants, factories, and equipment. In addition to such indirect technology transfers, direct technology and skills is also possible through training of locally-recruited staff and workers, and learning by local suppliers and contractors as they endeavor to keep to the standards set by the foreign investor.

Replication and transfer of institutional practices are additional channels of transfer of best practices from a growth pole to peripheral areas. Development of growth poles involves developing institutions that help promote and sustain the growth in such pole. Such institutional developments promote efficiency in the organization and management of economic, social and political activities. As these institutional developments and the benefits they bring become glaring to peripheral states, these peripheral states are inclined to model the growth poles by replication of the good things they observe. Furthermore, a growth pole with improved institutional development that engages in trade or investment activities in peripheral economies are inclined to establish similar institutions in the country of operations. Such development is expected to gradually rub-in on the domestic institutional structure, thus contributing to improving them.

Figure 1 presents a schema of the channels through which growth diffuses and are transmitted from a growth pole to peripheral areas. The core channels are Trade, capital flows (particularly FDI), and international migration. It is believed that these channels reinforce the traditional knowledge and technology transfer earlier mentioned because they all serve as conduit for indirect technology transfer. Trade is considered as one of the strongest channels because it provides a medium for contact between local firm in the peripheral economies and more advanced firms in the growth pole. The more such contacts the more the potential for learning and technology acquisition. Such learning and acquisition becomes even stronger when what is being traded is an intermediate commodity that characteristically embodies some technologies. Empirical evidence in East Asia has confirmed the potency of this channel, demonstrating that firm openness in the region induces firm-level productivity (Hallward-Driemeier, et al 2002).

The second channel through which a growth pole drives growth in peripheral areas is capital flows, especially FDI. Given the nature of FDI with a multinational company in a growth pole investing in a subsidiary located in a periphery economy, direct and indirect transfer of technological know-how is made possible through such investments. Again, this channel becomes stronger when the interface involves intermediate goods and services (Du, et al 2011; and Markusen 2004). Cross-border capital flows from a growth pole will also help promote corporate governance and mature financial institutional structures in the growth pole to the periphery economy. In addition to technology diffusion, FDI spillover may occur through reallocation of capital to the most productive firm in a sector or the most productive sectors in an economy. Despite the theoretical propositions on the FDI channel, the empirical findings on this channel are inconclusive, ranging from large intra-industry spillovers in the case of high-technology activities (see Larrain, et al 2001; and Keller and Yeaple 2009) to small intra-industry spillovers at firm level (see Griffith, et al 2004; Javorcik 2004; and Haskel, 2007).

Figure 1: Channels of Growth Spillovers from a Growth Pole



Source: World Bank 2011, p. 12.

International migration that includes labour mobility also serves as a channel for growth diffusion from core growth pole to peripheral areas. This is based on the fact that international migration of labour results in personal transfer of skills and technology among persons and workers through contact. This position has been well established in the empirical literature. Firms that employ skilled international labour migrants benefits from flows of knowledge and information from such workers, especially if they are from growth poles where superior skills, knowledge and technology exist relative to the peripheral areas (Hovhannisyan and Keller 2010). Similarly, migration of people from the peripheral areas to the growth pole has high potential for networking in the growth pole that could lead to increased knowledge transfer, remittances, and trade from the growth pole to the peripheral economies through these migrants (see Kerr 2008; and Kerr and Lincoln 2010).

3. Empirical Results for Growth Polarity in Africa

Our journey into the empirics begins with the articulation of measures of growth polarity. Generally, a growth pole is defined in the context of the contribution of such pole to the total economy under consideration. For the purpose of this study, the total economy of SSA is the total economy under consideration. Thus, a growth pole in SSA refers to the contribution of such growth pole to the total growth in SSA. Following Adams-Kane and Lim (2011), the growth pole and its associated channels are presented below:

$$G_{it} = \frac{\Delta y_{it}}{Y_{t-1}} \quad (1)$$

G represents the measure of growth pole, Y is the total GDP of SSA by aggregating the GDP of all countries in the region, while y is the GDP of individual country. The subscripts i represents the individual country while t denotes time. Δ symbolizes change in the GDP of the individual economies. The real GDP per capita growth rate (g_{it}^y) is employed.

However, to ensure that the relative contribution of each country to total growth is decomposed, the contribution of the growth rate in the growth pole is size-adjusted. To allow for the alternative channels through which growth poles exert their influences on peripheral economies, measures based on these channels are necessary. These are trade, capital flows, migration and technology. The measures for each of these channel-weighted measures are presented below.

Trade Growth Channel

$$G_{it}^T = \frac{m_{it}}{X_t} \cdot g_{it}^y \quad (2)$$

m_{it} represents the total imports of country i at time t , and X_t is the total exports of all SSA countries.

Capital Flows Channel

$$G_{it}^{FDI} = \frac{fdi_{it}}{FDI_t} \cdot g_{it}^y \quad (3)$$

fdi_{it} denotes the total inflows and outflows of FDI in individual SSA country i at time t , while total FDI in SSA is represented by FDI_t .

Migration Channel

$$G_{it}^M = \frac{m_{it}}{M_t} \cdot g_{it}^y \quad (4)$$

In this case, m_{it} represents the migrant stock in SSA country i at time t , and M_t is the total sum of migrants in all SSA countries.

Technology Channel

$$G_{it}^I = \frac{i_{it}}{I_t} \cdot g_{it}^y \quad (5)$$

Where s_{it} is the measure of technology diffusion by SSA country i at time t while S_t is the total technology diffusion for all SSA countries. Given the difficulty involved to observe technology, the study employs the total number of patent applications in each country.

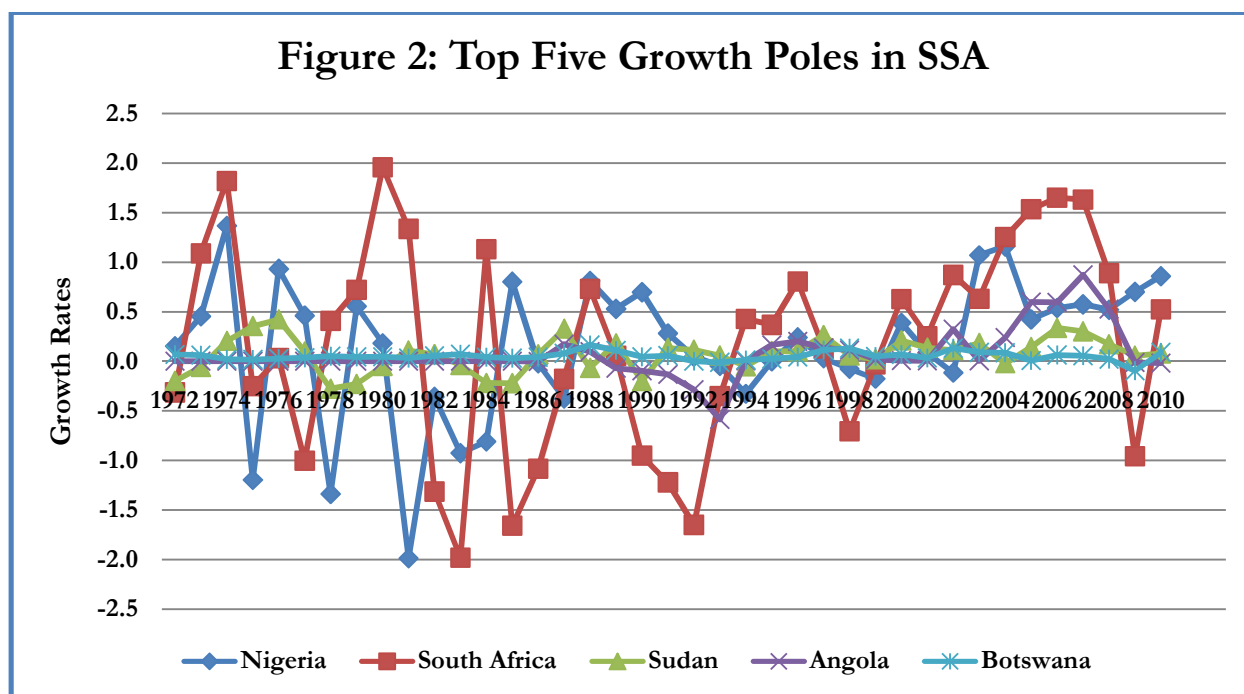
The theoretical computations for growth polarity is subjected to empirical data and calculated for SSA countries in order to identify growth polarity based on these measures. Based on the results, SSA countries are ranked to determine their polarity strength under each measure. These results are discussed in turn. The dataset spans 1970 and 2009 or 2010. The data sources for real per capita GDP, trade, and migration are sourced from the World Bank's World Development Indicators and Global Development Finance Database, FDI data is collected from UNCTAD's FDI Online Database, and data on patent applications – a proxy for technology and innovations – is derived from WIPO's Patentscope Database. In the computations, both short-term and long-term periods are considered. While the short-term considers performance over a decade, the long-term period examines performance over the entire period. The application of empirical data to the measure of growth polarity over the short- and long-term reveals intriguing dynamics with countries rising and declining as growth poles. However, some countries have demonstrated high consistency over time on some growth polarity measures, most prominent of which are South Africa and Nigeria.

3.1 Real GDP Growth

Growth rates in SSA have been quite low and volatile over the years. However, some countries continue to perform relatively well. The empirical analysis reveals that over the longer-term, Nigeria, South Africa, Sudan, Angola, and Botswana are the top five growth poles in SSA based on this measure of growth polarity (see Figure 2 and Table 1). One very strong observation here is that

apart from South Africa that combines industries and manufacturing with its wealth of natural resources, all the top five countries are resource rich economies. This sends the signal that natural resource endowment is a major driver of growth poles in SSA based on the growth polarity measure of real GDP. One important conclusion that could be made from this finding is that SSA countries can induce and sustain growth by leveraging on their comparative advantage on natural resource endowment.

Another important observation on the growth poles over the longer term is that growth volatility is pronounced according to the ranks of the growth poles. This is most pronounced in the case of Nigeria and South Africa. This means that higher ranking growth poles manifest higher real GDP growth volatility compared to lower ranked growth poles. This should be expected, however, because higher ranked growth poles have higher range of growth rates as opposed to lower ranked growth poles.



Source: Author's computations.

While it could be safely said that the structure of the growth poles did not change significantly over the short to the medium term, a few surprises are found. First, no growth pole remains in the top five over the short to the medium term throughout the period under review. In this wise, Nigeria recorded the best performance by remaining in the top five growth pole each decade except in the 1980s. The next best performers were Cameroon, South Africa, Mauritius, Sudan, and Angola, each of which appeared as important top five growth poles in the short to the medium term. Second, there is a bit of dynamics as some prominent growth poles have risen and fallen over the short term, with some going into oblivion while some were able to launch a comeback. Gabon is a notable example of this. While the country emerged as the third ranked SSA countries in the 1970s, the

country lost this position and ever since has not been able to rank among the top ten growth poles in SSA.

Table 1: Top Ten Growth Poles in SSA Ranked According to Growth Polarity Measure

1970 – 1979		1980 – 1989		1990 – 1999		2000 – 2010		1970 – 2010	
Nigeria	0.637	Botswana	0.067	Nigeria	0.065	South Africa	0.809	Nigeria	0.269
South Africa	0.492	Cameroon	0.042	Sudan	0.061	Nigeria	0.562	South Africa	0.234
Gabon	0.154	Congo, Rep.	0.037	Uganda	0.055	Angola	0.286	Sudan	0.070
Cameroon	0.130	Mauritius	0.030	Mauritius	0.046	Ethiopia	0.156	Angola	0.070
Kenya	0.106	Zimbabwe	0.026	Botswana	0.046	Sudan	0.156	Botswana	0.050
Cote d'Ivoire	0.101	Angola	0.020	Equatorial Guinea	0.035	Tanzania	0.129	Ethiopia	0.038
Botswana	0.040	Kenya	0.018	Mozambique	0.031	Equatorial Guinea	0.111	Equatorial Guinea	0.038
Sudan	0.039	Sudan	0.017	Ghana	0.020	Uganda	0.075	Tanzania	0.034
Mali	0.026	Swaziland	0.014	Burkina Faso	0.016	Mozambique	0.070	Kenya	0.033
Zimbabwe	0.019	Chad	0.011	Zimbabwe	0.016	Ghana	0.050	Cameroon	0.033

Source: Author's computations.

When the top ten important growth poles are considered in SSA over the short-term, a bit of dynamics are observable. There are a few countries that appeared briefly as a growth pole and completely went into oblivion in subsequent decades and have not been able to re-launch as a growth pole. While several examples abound on this, the cases of Cote d'Ivoire, Republic of Congo, and Zimbabwe deserve a mention given their early lead as strong growth poles. While the socio-political crisis rocking Cote d'Ivoire that has resulted in prolonged civil war and political instability may be adduced for its less importance as growth pole over time, political governance issues appear to be the challenge facing Zimbabwe. The lesson is that governance, social and political stability are important determinants of growth polarity, and should be given attention for a country to attain and sustain its position as a growth pole.

Some emerging growth poles are also identifiable from the empirical results, prominent among which are Ghana, Equatorial Guinea, Tanzania, Uganda, and perhaps Ethiopia. This demonstrates further spread of potential growth poles that are perhaps developing as a result of the diffusing benefits they derive from longer-term regional growth poles such as Nigeria in the case of Ghana, Cameroon in the case of Equatorial Guinea, and Kenya in the case of Ethiopia, Tanzania, and Uganda. The recent discovery of additional natural resources, especially crude oil in Ghana and Uganda is expected to add impetus to these countries and consolidate their emerging position as growth poles, provided the resources are well developed and managed to ensure both forward and backward integration through value chain creation, development, and management.

Geographical distribution of growth poles in SSA employing real GDP measure reveals a relatively small structural change over the period under review. While Western and Southern African regions were the significant growth poles in the 1970s to the 1990s, with high concentration of growth poles

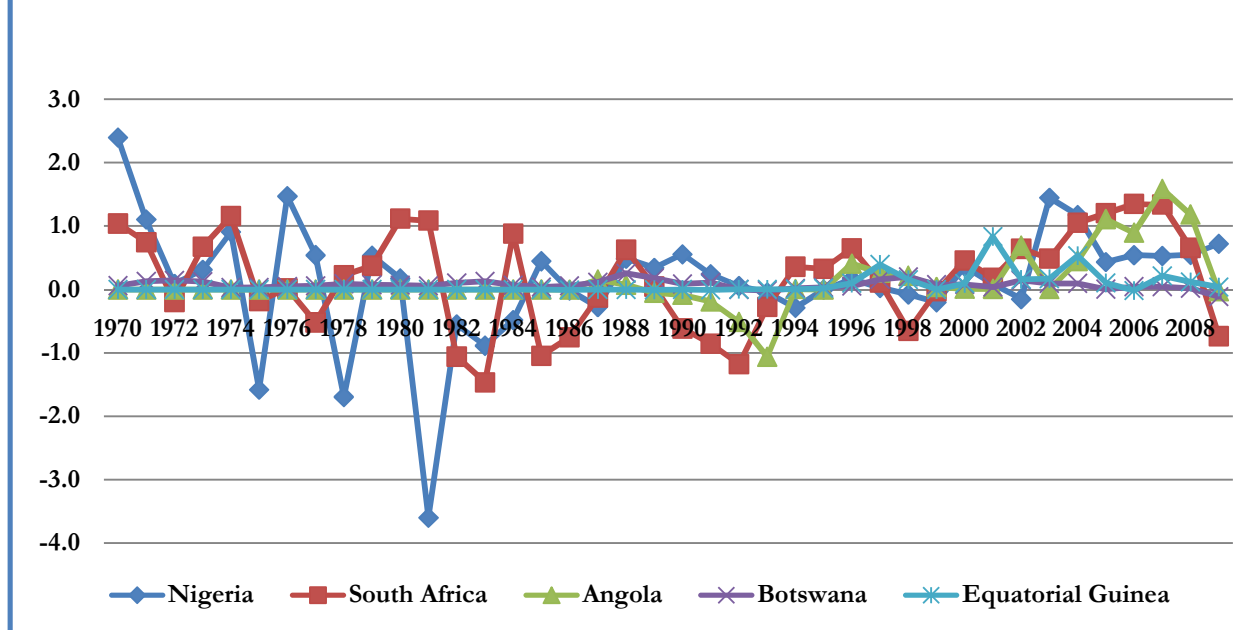
in these regions, Eastern African countries appear to have come out strongly at the turn of the millennium. While the Central African region was a strong regional growth pole in SSA in the 1980s, the region seemed to have dwindled in importance, though with a seeming improvement in recent times. Also worrisome is the state of stupor of Western African countries as the region could not produce any growth pole in the top ten during the 1980s. It is likely that the structural problem plaguing the economies during this period was responsible for this poor performance. Nigeria appears to be the strongest growth pole in the Western Africa followed by Ghana. In the Eastern Africa, Kenya and Sudan appeared prominent, with Ethiopia, Tanzania, and Uganda appearing to emerge to complement these major regional growth poles. South Africa is, of course, the strongest growth pole driving the Southern African region while Cameroon is holding the fort in the Central Africa.

3.2 Trade

The empirical finding on growth polarity in SSA employing trade measure over the longer-term reveals that South Africa is the top trade growth pole in SSA, followed by Nigeria, Angola and Botswana (see Figure 3 and Table 2). The results appear surprising to the extent that a relatively small country dominated by crude oil exports feature prominently among the top five trade growth pole countries over the longer-term. Several bigger economies such as Tanzania that are expected to perform strongly on this measure of growth pole faltered and did not come close to the top ten. While relatively big economies such as Kenya and Ghana, and export-oriented economies such as Mauritius are able to make it to the top ten over the longer-term, emergence of Equatorial Guinea in the top five trade growth poles over the long-term – economy that can be termed small by several standards – is a great surprise. The high per capita economic growth in the country given its oil wealth and small population coupled with its trade liberalization policies and adoption of the Economic and Monetary Community of Central Africa (CEMAC) Common External Tariff (CET) in 1993 is possible strong explanation. Moreover, the country enjoys favorable access to international markets, with a weighted average tariff of just 0.2% from the rest of the world as compared to 3.5% for SSA and 3.1% for upper-middle-income countries.

The leadership role of Nigeria and South Africa on this measure is understandable and anticipated. South Africa is a major exporting country for manufactures and minerals. Indeed, for a long time, South Africa has been a major trading and investment force within the Southern African region, initiating and maintaining high volume of trade and investment with neighboring countries in the region. These activities appear to be gradually spilling over to the neighboring countries such as Botswana and Mauritius, possibly providing additional explanations for the emergence of these countries as top trade growth poles in SSA. Nigeria is playing a similar leading role in West Africa where the country is both a major exporter and importer of variety of products based on its large market and population size. In addition, the country is playing a leading role as top petroleum exporter in SSA.

Figure 3: Top Five Trade Poles in SSA



Source: Author's computations.

Emergence of another very small economy – Gabon – in the top ten trade growth pole in SSA is also an interesting finding. The possible explanation for the emergence of this country may be linked to its small population size, strong real GDP growth and high oil exports. Similar assertion can be made about Angola and Botswana that appear in the top five given their respective strong oil and diamond exports and stable price of these commodities over the years. Sudan's appearance as a leading trade growth pole is also noteworthy and could be possibly linked to oil exports. Kenya is a known leading trade hub in Eastern Africa and has been acting as distribution hub for the region for a over the years. Thus, landlocked countries such as Uganda and Ethiopia have relied heavily on Mombasa Port as a channel for foreign trading activities. One would expect Tanzania to be playing similar role in the region given its proximity to more landlocked countries of Burundi, Rwanda and Malawi. It is observable, however, that Kenya and Tanzania appears to be switching positions as trade growth poles in the medium-term. The complete drop-out of Cote d'Ivoire as a trade growth pole is again observed as its good performance in the 1970s could not be replicated in subsequent years.

Apart from South Africa that maintained a high level of spikes over the entire period under study, and Gabon whose spikes peter out toward the end of 1990s, most of the top five countries maintained relative stability as trade growth poles. Perhaps, the observed spikes in the dynamics of South Africa as trade growth pole reflect the global market prices of its major minerals exports. Similar submission could be made about Gabon whose exports are dominated by oil. This contrasts, however, with Botswana, an economy that depends heavily on diamond exports, but still maintained stability over the entire period.

A few dynamics are discernible for the trade growth poles in SSA over the short- and medium-term. First, the top growth trade poles in SSA have been switching hands among diverse countries with varying characteristics. While Nigeria came top in the 1970s, Botswana snatched the position in the 1980s, while it was the turn of Mauritius in the 1990s. South Africa took over in the 2000s and appears to be strongly entrenched. Second, the top five countries have not been consistent over the short- to the medium-term. For instance, the top two countries – Nigeria and South Africa – that came out strong in the 1970s, went into oblivion and did not resurface in the top five until the 2000s.

Table 2: Top Ten Trade Growth Poles in SSA

1970 – 1979		1980 – 1989		1990 – 1999		2000 – 2010		1970 – 2009	
Nigeria	0.408	Botswana	0.108	Mauritius	0.107	South Africa	0.664	South Africa	0.178
South Africa	0.333	Republic of Congo	0.080	Botswana	0.072	Angola	0.592	Nigeria	0.146
Gabon	0.184	Cameroon	0.062	Equatorial Guinea	0.067	Nigeria	0.570	Angola	0.130
Kenya	0.144	Mauritius	0.054	Ghana	0.044	Equatorial Guinea	0.225	Botswana	0.076
Cote d'Ivoire	0.121	Swaziland	0.036	Uganda	0.042	Sudan	0.125	Equatorial Guinea	0.073
Cameroon	0.101	Zimbabwe	0.034	Nigeria	0.042	Ethiopia	0.106	Mauritius	0.060
Botswana	0.079	Sudan	0.018	Mozambique	0.031	Ghana	0.097	Sudan	0.055
Sudan	0.048	Angola	0.018	Namibia	0.031	Tanzania	0.075	Kenya	0.041
Lesotho	0.028	Kenya	0.014	Sudan	0.029	Mauritius	0.068	Ghana	0.040
Republic of Congo	0.027	Ghana	0.014	Lesotho	0.026	Mozambique	0.063	Gabon	0.033

Source: Author's computations.

The emergence of some landlocked countries as trade growth poles in SSA both in the short- to medium-term and in the long-term is surprising. Some of these countries are Botswana, Ethiopia, Uganda, Lesotho, Swaziland, and Zimbabwe. Surprisingly, Lesotho turned up twice in the 1970s and 1990s in the top ten trade growth poles. A possible explanation for the performance of this country and other geographically close countries such as Swaziland, and Zimbabwe is their proximity to the leading sub-regional trade growth pole – South Africa. Ethiopia and Uganda may similarly be befitting from Kenya, the leading regional trade growth pole in the Eastern Africa. This tends to confirm the growth pole theoretical propositions that growth will gradually diffuse from the core to the peripheral areas.

Geographically, SSA trade growth poles appear to be fairly well distributed across the sub-regions. In the longer-term, all the sub-regions are well represented, albeit some regions perform better than the others. Similar trends are observed in the short- to medium-term. The representativeness of the Central African countries, a region where most of the countries are landlocked, is remarkable. This tends to water down the long-held belief that landlocked countries trade less than coastal countries.

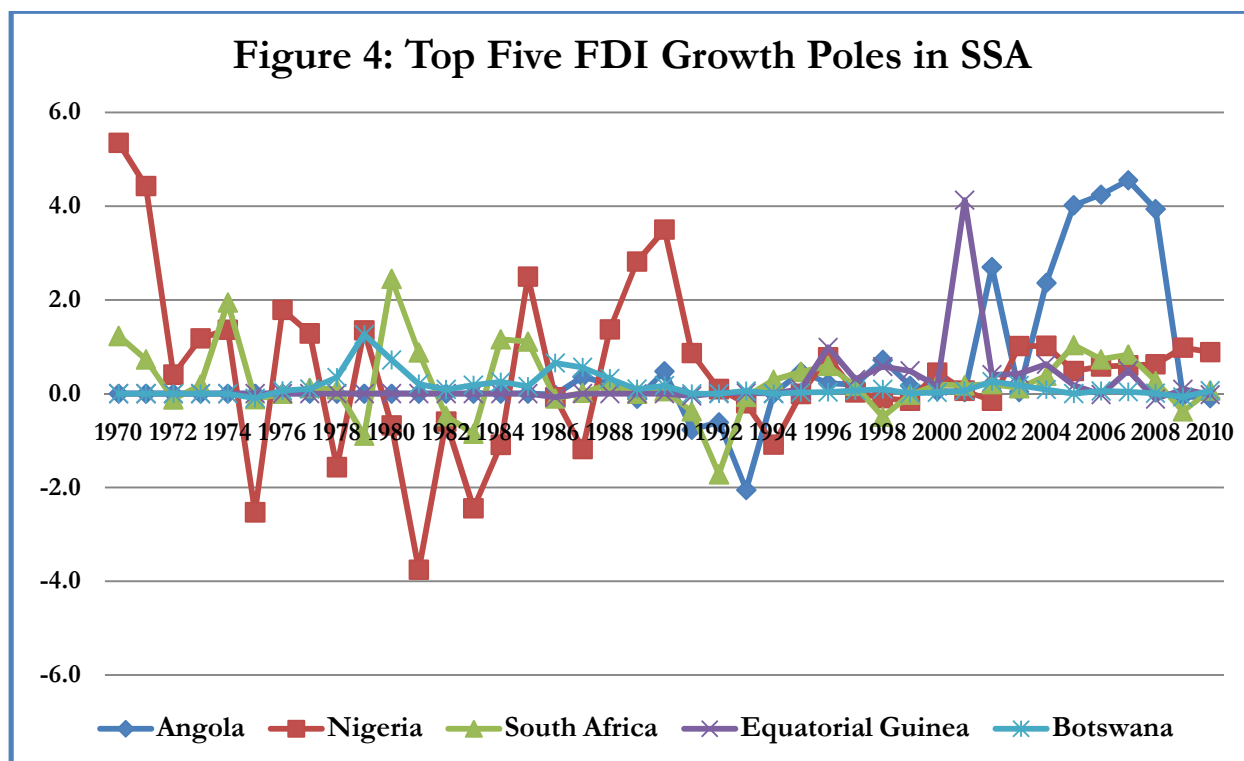
This also confirms that landlocked nature of countries does not hamper such economies from being a growth pole.

3.3 Capital Flows

Based on our empirical findings, the top five FDI growth poles in SSA over the long-term are exclusively resource rich economies of Angola, Nigeria, South Africa, Equatorial Guinea and Botswana (see Figure 4 and Table 3). That tends to confirm that capital flows to SSA is driven by natural resource wealth apart from South Africa that combines natural resources with substantial industrial activities. Large swings are also observable in the nature of capital growth poles in the long-term, suggesting that these countries are perhaps responding to the volatility in the global market of commodities that is likely to be strong determinant of foreign investment in these resource sectors.

Surprisingly, Equatorial Guinea appears again in the top five capital growth pole. Again, the possible explanation is the large capital flows into the crude oil sector coupled with the unprecedentedly high and unsustainable economic growth in the country. It is also clear that the composition of the top five capital growth poles is not representative enough because the Eastern Africa is not well represented. One would expect countries like Kenya and Tanzania to feature prominently. Yet, they do not appear, not even in the top ten over the long-term. In contrast, the emergence of Chad is a great surprise because the country is less endowed with natural resources. The significance of Chad as possible FDI growth pole was first recognized in the UNCTAD's World Investment Report of 2002 where the country was identified as a leading FDI destination during the year.

The emergence and sustenance of their positions as FDI growth poles by Nigeria and South Africa is again noteworthy. The strong emergence of several Central African countries in the top ten over the long-term is also encouraging. Indeed, six out of the top ten countries are from this region. This demonstrates the importance of this region as FDI growth pole in SSA. In contrast, non-representativeness of the Eastern African region is worrisome. Similar observations are made about the Western Africa where Nigeria is the only country in the region that appears in the top ten FDI growth pole. It is hoped that the discovery of oil in most Western African countries that include Ghana, Liberia and Sierra Leone may improve the situation with the expectations that FDI flows are expected in crude oil development, further exploration and exploitation in these countries.



Source: Author's computations.

The structure and composition of growth poles in the short- to medium-term has also turned out to be very interesting with some dynamics. Nigeria, South Africa and Botswana appeared consistently in the top five FDI growth pole except for Nigeria in the 1980s, South Africa in the 1990s and Botswana in the 2000s. While Kenya was a strong FDI growth pole in the 1970s and 1980s, the country lost its position in the top ten and has not recovered ever since. Apart from the appearance of Uganda in the 1990s and Tanzania in the 2000s, the Eastern African region has not demonstrated significant strength as FDI growth pole. The picture may start to change gradually, however, if Tanzania is able to consolidate its emergence and sustain the tempo. The appearance and disappearance of some relatively smaller economies around South Africa such as Mauritius, Mozambique, Namibia, and Swaziland is a reflection of possible limited spillover benefits from South Africa, the regional stronghold.

The empirical results also demonstrate the emergence of some promising FDI growth poles that should be nurtured and cultivated. One of these is Chad. This country is not known for significant natural resource wealth – the major attraction of FDI in SSA. This country holds high potential for FDI growth pole that is unrestricted to the natural resource sector. It is also indicative of the fact promoting FDI growth pole with diverse sectors and activities is not impossible in SSA. Ghana is another promising FDI growth pole, especially with the recent crude oil discovery. In addition, the country also holds high potential in financial services development that has the potential for attracting huge FDI. The strong political success of the country and improved infrastructure

development also provides the enabling environment for FDI in diverse sectors and activities, especially manufacturing and agro-processing.

Table 3: Top Ten FDI Growth Poles in SSA

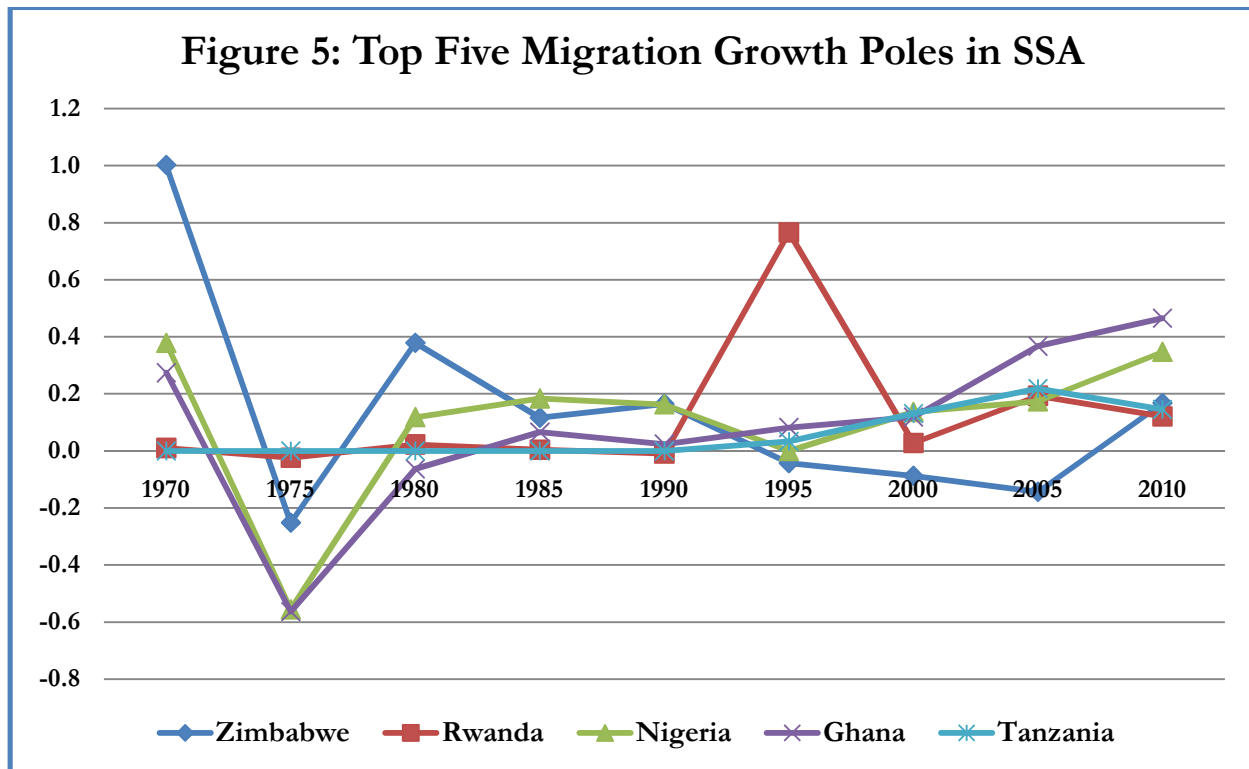
1970 – 1979		1980 – 1989		1990 – 1999		2000 – 2010		1970 – 2010	
Nigeria	1.306	South Africa	0.440	Nigeria	0.374	Angola	1.980	Angola	0.513
Gabon	0.411	Botswana	0.325	Equatorial Guinea	0.242	Nigeria	0.597	Nigeria	0.494
South Africa	0.321	Swaziland	0.166	Mozambique	0.050	Equatorial Guinea	0.576	South Africa	0.248
Botswana	0.169	Cameroon	0.114	Botswana	0.047	South Africa	0.333	Equatorial Guinea	0.212
Congo, Rep.	0.148	Sierra Leone	0.075	Uganda	0.046	Sudan	0.259	Botswana	0.150
Cameroon	0.126	Congo, Rep.	0.070	Cameroon	0.040	Chad	0.151	Sudan	0.078
Cote d'Ivoire	0.101	Angola	0.043	Namibia	0.033	Congo, Rep.	0.118	Congo, Rep.	0.074
Kenya	0.093	Chad	0.041	Zimbabwe	0.028	Tanzania	0.076	Cameroon	0.073
Mauritania	0.071	Mauritius	0.038	Ghana	0.028	Ghana	0.069	Gabon	0.061
Zimbabwe	0.060	Kenya	0.033	Mauritius	0.024	Mozambique	0.068	Chad	0.048

Source: Author's computations.

Key regional FDI poles are identifiable from the empirical results. Nigeria maintains its position as the strongest force in Western Africa, followed by Ghana. This is anticipated and expected to increase given the leading FDI role of the country in almost all Western African countries, especially in financial services. South Africa sustains its position in the Southern African region, seconded by Botswana. Several contenders emerge in Central African region led by Angola, followed closely by Equatorial Guinea. The picture is a bit fuzzy in the Eastern African region, save for the performance of Sudan. However, the emergence of Tanzania in the recent time provides a consolation in addition to hopes that Kenya will rebound.

3.4 Migration

Migration is a strong channel for technology spillover if well managed and harnessed locally. Zimbabwe tops the chart of the migration growth poles in SSA over the long-term, followed by Rwanda, Nigeria, Ghana, and Tanzania in that order (see Figure 5 and Table 4). Zimbabwe achieved this feat at the back of large migration into the country in the 1970s and 1980s. However, the country has been waning over the years as a migration growth pole in SSA due to political and economic situation in the country. Given the recent phenomenon where the economy has been bombarded by socio-economic challenges, especially high unemployment rate and hyper-inflation, Zimbabwe has witnessed large scale irregular migration from Zimbabwe into neighboring countries coupled with emigration of professionals and skilled workers to neighboring countries and overseas. This explains why the country is likely to lose its prominent position as migration growth pole.



Source: Author's computations.

Emergence of relatively small economies such as Rwanda, Ghana, and Burkina Faso as migration growth poles is highly notable. Rwanda did not become a leading migration growth pole until 1990s after the genocide. The socio-political stability Ghana has experienced over the years appears to be a factor working in favour of the country as a migration growth pole, topping the chart in 2000s. Ethiopia also appears to be another emerging migration growth pole, pulling a surprise by coming second in 2000s. It is hoped that this feat is sustained over the long-term.

The obvious crash of Cote d'Ivoire as the leading migration growth pole in the 1970s to the bottom in the 2000s is likely due to the political crisis that engulfed the country, resulting in decades of civil war. This further demonstrates that social and non-economic factors such as violence could be a strong determinant of growth polarity in SSA, with high potential to make or mar a growth pole. This factor is probably the reason why conflict-prone countries such as Cote d'Ivoire, Democratic Republic of Congo are at the bottom rung of most growth polarity measures adopted in this study.

The regional distribution of the migration growth poles over the short-term to the long-term appears to be more in favour of Western Africa and disfavour of Southern Africa. While Western African countries feature prominently, with an average of about 40% in the top ten, Southern African countries are at disadvantage, averaging about 20%. Apart from this, the migration growth poles seem fairly distributed across the regions. As more and more countries emerge from conflict,

mature, and stabilize, especially within the Western African region, new migration growth poles are expected to emerge and complement the existing ones.

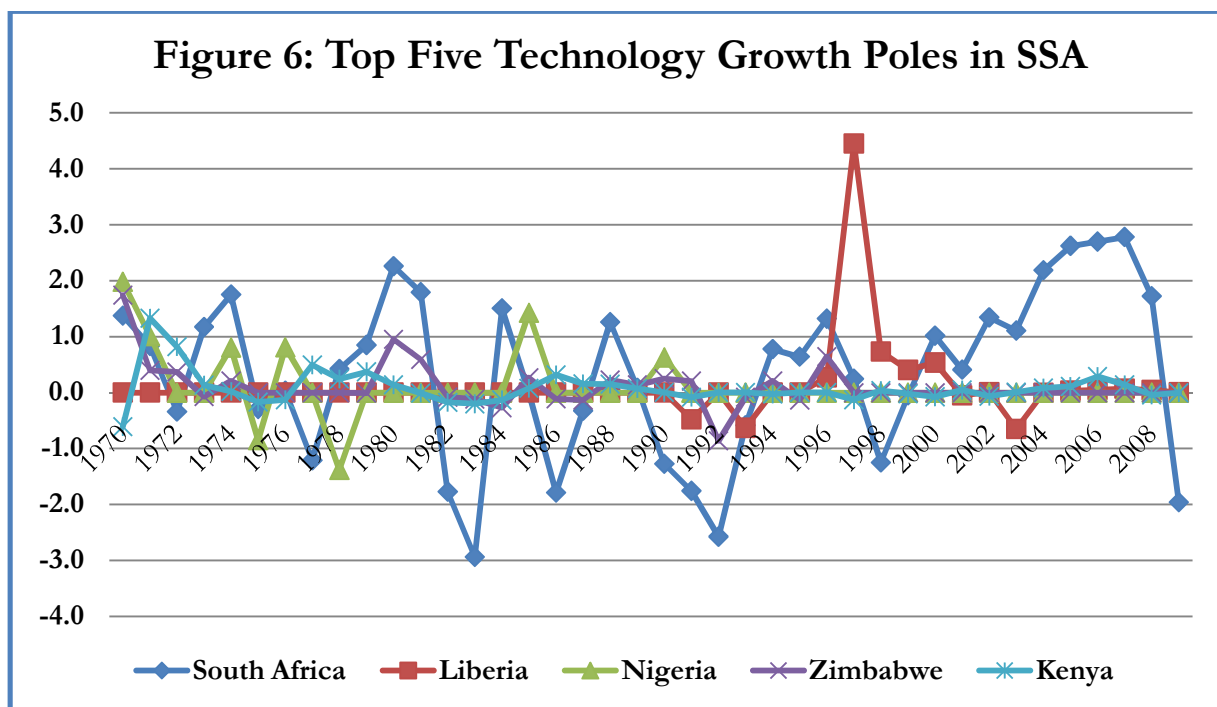
Table 4: Top Ten Migration Growth Poles in SSA

1970s		1980s		1990s		2000s		1970 – 2010	
Cote d'Ivoire	0.580	Zimbabwe	0.247	Rwanda	0.378	Ghana	0.317	Zimbabwe	0.145
Zimbabwe	0.375	Nigeria	0.151	Malawi	0.228	Ethiopia	0.223	Rwanda	0.123
Sudan	0.245	Burundi	0.090	Uganda	0.210	Nigeria	0.219	Nigeria	0.105
Burundi	0.149	Togo	0.076	Nigeria	0.081	South Africa	0.192	Ghana	0.086
South Africa	0.130	Burkina Faso	0.053	Zimbabwe	0.060	Sudan	0.181	Tanzania	0.059
Mali	0.118	Chad	0.029	Ghana	0.053	Tanzania	0.165	Burkina Faso	0.059
Cameroon	0.094	Congo, Rep.	0.025	Ethiopia	0.043	Burkina Faso	0.142	South Africa	0.056
Senegal	0.082	Benin	0.020	Guinea	0.033	Rwanda	0.113	Malawi	0.049
Gabon	0.066	Kenya	0.013	Kenya	0.025	Chad	0.102	Chad	0.040
Gambia, The	0.032	Rwanda	0.013	Gabon	0.017	Mozambique	0.076	Burundi	0.036

Source: Author's computations.

3.5 Technology

Technology diffusion is one of the major channels through which growth diffuses from growth poles to peripheral areas. South Africa, Liberia, Nigeria, Zimbabwe, and Kenya are the top five technology growth poles in SSA over the long-term. The performance of Liberia on this transmission channel of growth pole is very surprising and deserves further probing. Similar observation is made about Sierra Leone that emerges in the top ten technology growth pole in the long-term. The inclusion of Nigeria, South Africa, and Kenya in the top five testifies to the geographical spread of the countries in the top five over the long-term. The performance of Mauritius in the top ten is anticipated because of the country's move to manufacturing and industrial development that demands high investment in technology innovation. The feat achieved by Mozambique and Swaziland appears to be the result of their proximity to South Africa through trade and investment.



Source: Author's computations.

The technology growth pole was highly dominated by Southern African countries in the 1970s, accounting for about 50% of the top ten growth poles. This continues over the short- to medium-term. The Central African region did not perform well on this polarity measure at both short- and long-term, conspicuously missing in most cases. Cameroon that was expected to lead the region on this measure did not come close to the top ten at all. This is a serious cause for concern for technology innovation and diffusion in the region.

Table 5: Top Ten Migration Growth Poles in SSA

1970 – 1979		1980 – 1989		1990 – 1999		2000 – 2010		1970 – 2009	
South Africa	0.460	Zimbabwe	0.148	Liberia	0.475	South Africa	1.392	South Africa	0.353
Zimbabwe	0.264	Nigeria	0.143	Mauritius	0.129	Sudan	0.303	Liberia	0.120
Kenya	0.250	Mauritius	0.097	Sudan	0.071	Mozambique	0.224	Nigeria	0.111
Nigeria	0.238	Swaziland	0.074	Nigeria	0.063	Sierra Leone	0.145	Zimbabwe	0.109
Malawi	0.073	Botswana	0.068	Mozambique	0.058	Zambia	0.058	Kenya	0.079
Sudan	0.065	Kenya	0.039	Malawi	0.046	Lesotho	0.056	Mozambique	0.070
Botswana	0.041	Seychelles	0.026	Zimbabwe	0.025	Ethiopia	0.053	Mauritius	0.057
Swaziland	0.032	Sierra Leone	0.010	Ghana	0.016	Swaziland	0.049	Sudan	0.051
Sierra Leone	0.023	South Africa	0.009	Seychelles	0.014	Kenya	0.047	Swaziland	0.039
Burundi	0.020	Lesotho	0.003	Lesotho	0.013	Tanzania	0.037	Sierra Leone	0.039

Source: Author's computations.

4. A Framework for Structural Transformation in Africa through Development of Growth Poles

The proposed framework for structural transformation in SSA through development of growth poles should focus on two key issues: identifying regional clusters that would serve as development corridors; and developing value chains of activities within each identified cluster. This proposed framework relies on the fact that, clusters, if appropriately and well structured and are successful, have the potential to become growth poles. This will involve a holistic use of all available resources for growth, structural transformation, and development. It is imperative to start by using what is available and gradually move to create new opportunities based on existing natural and human resources. This will provide the key to unlocking several opportunities that are hidden, yet unknown but waiting to be tapped. The proposed framework for achieving this is briefly discussed below.

4.1 Identifying Regional Clusters

A cluster can be is a concentration of companies and industries in a geographic region that are interconnected by the markets they serve and the products they produce, as well as by the suppliers, trade associations, and educational institutions with which they interact. This concept of industry clusters was popularized by Porter (1990) which he defined to mean a geographically proximate group of interconnected companies and associated institutions in a particular field, including product producers, service providers, suppliers, universities, and trade associations. Thus, a cluster is characterized by a geographic and sectoral agglomeration of enterprises (McCormick, 1998). The key issues in clusters are interconnectedness between activities, the economic links between industries and companies, and the synergies that industrial organizations realize from close proximity to other companies and industries that relate in some way to their business.

The advantages realized by clusters are numerous. They include increasing market access, fostering communication and information sharing, facilitating technological upgrading, increasing efficiency, and contributing to the development of supportive institutions. It contributes to improved and expanded wide range of services that include education, health, and market opportunities within the cluster, between clusters, and between clusters and peripheral economies. Such agglomeration also improves efficiency and synergy among firms. Economies of scale are also made possible.

Identification of activities in regional clusters involves identifying the real and potential opportunities peculiar to each region, and leveraging on existing resources for developing them. Such choice should be based on several objectives that include unlocking regional and national growth potentials, utilising considerable domestic resource thus reducing unemployment, sustaining multiplier effects throughout the economy through both forward and backward linkages across its production chain, and poverty reduction. In addition to the direct spill-over effects in the regional clusters, the provision of infrastructure such as rail, power, housing, education and health institutions will directly create construction jobs that involve low, mid-level and high-level skills of significant levels.

Figure 7 presents the proposed regional clusters and activities for value chain development in SSA. The proposed activities are based on several factors that include resource endowment, comparative advantage, and empirical evidence on the strength of these countries as growth poles. It is important to stress at this juncture that the clusters suggested here are simply proposals based on the factors described above and deserves further rigorous assessment. Therefore, to ensure a selection of clusters that will deliver on the expected benefits of growth pole, the following framework should be applied in the process.

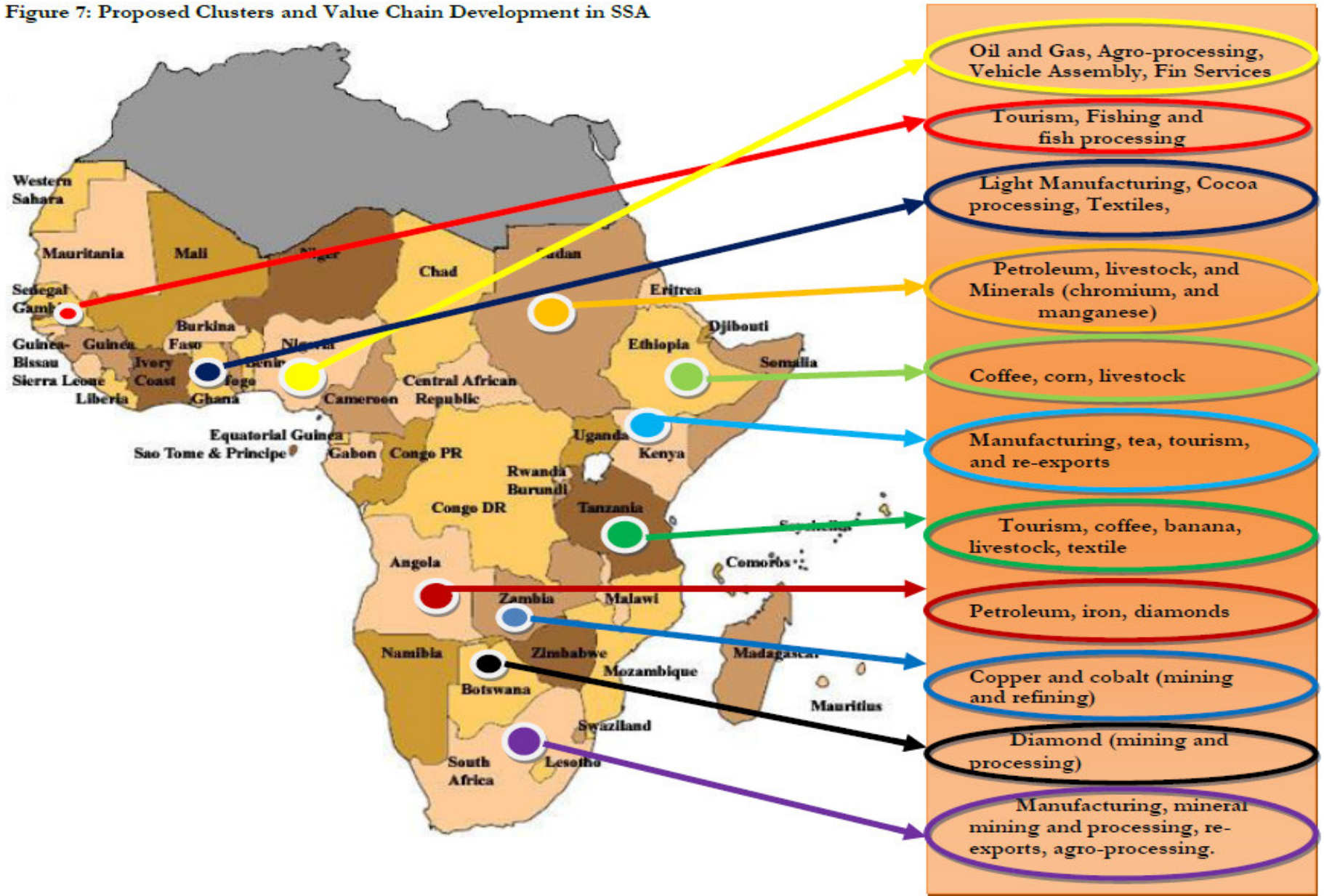
Selection Criteria

The identification of the exact location of the clusters should be done through extensive and intensive consultations by continental institutions, regional economic community institutions, national governments, state governments, government departments and ministries, private sectors, donors, relevant non-governmental organizations. This will help in identifying the clusters with the highest possible potential impact within the cluster and on peripheral areas. In making such selections, there is need to take into account the existing opportunities, challenges, and critical gaps peculiar to the environment. These include existing transport, power, and telecommunication infrastructures, state of technology, innovations, and research and development. Human capital availability, networking opportunities, availability of common facilities, quality of work, and socio-economic factors must also be considered. Serious attention also needs to be paid to opportunities for synergy among firms within the cluster and with the rest of the peripheral economies.

Preparation of Detailed Study and Report

A detailed and rigorous field surveys and analyses are required for informed decision on the choice of clusters. This will require a competent and capable agency or agencies to undertake this study. Such study will provide the most detailed examination and assessment of the proposed growth poles that will lead to the publication of comprehensive report of findings. Some of the information to be sought are mentioned above. In addition, the report must include collection of data at the national, regional, local and sectoral levels on all relevant issues pertaining to the proposed cluster. There is also need for detailed information on the financing needs, requirements, constraints, and outlay, detailing expected, prospective, real and potential sources of funding. The study that will culminate in the report should be carried out in close consultations and collaboration with the public, private and non-governmental organizations, national planning commissions and national bureau of statistics.

Figure 7: Proposed Clusters and Value Chain Development in SSA



Mapping

An excellent mapping of the cluster growth pole areas is required. Issues in the mapping include: the location of the clusters; their demographic characteristics; available physical, social and soft infrastructures; existing institutional structures; state of industrial development; proximate industries and their linkages; and educational and vocational institutions and the programmes being undertaken. This list is by no means exhaustive. It rather provokes thinking on the relevant information required in the mapping process. Such mapping must be as exhaustive as possible to ensure that all necessary information that will assist in making the best and most informed choice are provided.

Decision Process

To arrive at an informed decision of the choice of proposed clusters, all available information must be presented in a Preliminary Report. Such report should contain detailed and extensive information and detailed strategy for implementation. Such report should be presented in stakeholders meetings aimed at obtaining diverse and representative perspectives and ensure the findings and proposed recommendations are plausible, feasible and viable. It will also provide a forum for securing the buy-in and commitments from all stakeholders in support of the cluster development projects. Such forums should be organized at all possible levels to ensure detailed discussion of all relevant issues.

Another important action at this level is a constitution of technical expert groups with the technical wherewithal to assess proposed cluster development projects. The work of this group will be thorough assessment of proposed cluster development projects aimed at fine-tuning them. This means such groups should have the expertise that will assist in the emergence of the best cluster development projects through their inputs in modifying submissions. Appropriate committees should also be constituted at different levels to ensure all actions are well coordinated. Decision should be made about setting up appropriate agencies that will oversee the approval and implementation of the approved cluster development projects. Such agencies should be all-encompassing and cross-cutting (multilateral, bilateral, regional, sub-regional, national, state, local, private sector, NGOs, etc), with necessary institutional and administrative structures. Implementation mechanism must also be decided at this level. To kick-start the process, pilot studies may be undertaken before full implementation is rolled out.

4.2 Value Chain Development

A value chain is a mechanism that allows producers, processors, and traders—separated by time and space—to gradually add value to products and services as they pass from one link in the chain to the next until reaching the final consumer that could either be at the domestic or global level (UNIDO 2011). Analysis of value-chain examines processes within a firm to determine value-creating activities. In using this technique, three key issues are involved. First, there is need for a business model of value-added activities of firms in the production process. Second, an assessment of “value adding” activities that are internal to firms and industries. Finally, there is need for value adding analysis of gaps between the business model and the indigenous value adding activities.

A value chain must involve a transformation of goods, usually in the form of manufacturing or processing. Usually, primary commodities are processed and transformed through a chain of value addition activities into new forms that generates a new form of products that would serve as either inputs into the production of other products or transformed into a consumable form. Private sector firms are the main actors in the value chain creation and management process. A critical feature of value chain is that each step must have a direct link to the next in order for the processes to form a viable chain. At each stage, some additional transformation or enhancement is made to the commodity or product.

However, the success of value chain development and management depends on availability of a wide range of publicly-provided services such as infrastructure, and legislation, and privately-generated activities that include financial, technology, research and development, etc. The global socio-economic policies and environment also impinge on the development and management of the value chain process given the increasing trend of globalization where no country is an island. These demonstrate that the process of developing and managing value chain requires active involvement and participation of a wide range of stakeholders in planning, priority setting, implementation, monitoring and evaluation.

Value chain development and management holds a key to socio-economic transformation of SSA. First, value chain development and management promotes industrial development. As mentioned earlier, value chain involves transformation and processing of raw commodities into high value forms, especially manufacturing. Thus, value chain creation demands establishment of industries equipped with the capacities to manufacture, produce, and process. Second, it improves competitiveness of the economy through improved competitiveness of industries and the entire range of production activities. Demonstrating the importance of value addition in creating competitive niche, UNIDO in its 2002/2003 Industrial Development Report defines competitiveness as the capacity of countries to increase their industrial presence in domestic and international markets while developing industrial structures in sectors and activities with higher value added and technological content. When used with respect to value chain development, competition involves ability to offer products and services that meet the quality standards of the local and/or world markets at prices that are competitive while providing adequate returns in relation to the resources used.

One important benefit of improved competitiveness in value chain development and management is in improving international market entry through improved quality, wider range of products, and improved phyto-sanitary measures that were hitherto absent. This will improve competition at national, regional, and global markets. To improve competitiveness, attention must be focused on wide range of factors, some peculiar to the value chain that could involve internal capacities, others specific to domestic and global socio-economic environment and developments.

The proposed approach of value-chain design, development, implementation, and management, is based on efficient resource allocation. For example, the power need in each cluster of economic activities would be mapped and supplied accordingly, in order to further gear economic activities in the value-chain creation area. This will be done across the rural and urban areas since resources are obtained at the rural areas and processed in urban centres where industries are located. Needs assessment would have to be developed along the entire identified value chains for specific sectors and activities in each identified cluster.

The value chain process differs from activity to activity, depending on the nature and structure of such activities. For oil and gas, for instance, the process will begin with prospecting and exploration and is expected to lead to production, if findings are made in commercial quantity. Refineries will have to be established for the processing of crude oil into finished petroleum products. The crude oil derived from this process will then be transported to the refineries for refining. Distributions of the refined product will have to be conveyed to final consumers. However, the value chain is not as linear as presented above. Several ancillary activities with a new line of value chain are identifiable. These include transportation, pipeline construction, bye-products and petrochemical processing, plastics and tyres manufacturing, etc.

Specific activities and commodities for which value chain development and management should be focused are presented in Figure 7. Again, these are proposed activities aimed at stimulating decisions on the most appropriate activities and commodities in each cluster. The choice of these activities are based on: leveraging on existing resources in each identified cluster; need to unlock regional, national, and local growth potentials; improved employment based on utilization of domestic resources; potential for sustainable multiplier effects through creation of forward and backward linkages across the whole production chain; potential for high spillover effects to peripheral and less developed economies. In identifying the most appropriate and efficient sectors and commodities for value chain development and management, similar framework outlined under the cluster identification stage should be followed.

The aim should be that of promoting and stimulating value addition activities in each identified strategic sectors and activities. Development of the domestic industrial base through establishment of ancillary industries along the production value chain of the local industries is also anticipated. Considering the importance of natural resources and agriculture in SSA, value chain development should focus on developing a modern and highly productive natural resource and agriculture sectors through strong links between the urban and rural areas.

To achieve this, there is need for excellent and well integrated transportation system. This suggests that priority should be given to the rehabilitation and construction of feeder roads to link the rural agricultural areas with the industrial manufacturing clusters. Efficient railway network that links the clusters to commercial cities and ports are also necessary to guarantee the supply of raw materials to the clusters, with easy access for conveyance of finished products to the local consuming centres and export destinations. Power, education, research and development, technology incubation centres,

health facilities, etc, are all important initial conditions for successful take-off of value chain development and management.

5. Policy Recommendations

To transform the SSA economies through cluster and value chain development, African countries urgently need both in-country and regional infrastructure development to help bridge the infrastructure gap, facilitate intra-regional trade, tourism, development and promote successful implementation of the identified cluster and value chain projects. Such infrastructure needs are wide-ranging and include energy, roads, railways, bridges, buildings, ICT and water. Below, we propose and articulate specific projects, not just national infrastructure development, but more importantly regional infrastructure development and possible low-hanging fruits that can be tapped to achieve these.

Development of energy, especially power supply that will ensure reliable electricity supply in SSA is a very important area for the success of the development of the growth poles. Indeed, energy deficiency is a major challenge in the industrial take-off of the region. There is need for demonstrated commitment for both national and regional energy projects that will benefit regional activities within each cluster and promote value chain development of specific activities and commodities. To this end, regional power generation projects that will further promote access, coverage and guarantee sustainability at the continental level are proposed.

A very important potential that can be converted in achieving this objective is gas flaring in Nigeria. Gas flaring is both an environmentally unfriendly practice and a waste of important energy and economic resource in a region that is energy-starved and desperately needs to boost its power output. In addition to its environmental and social costs, gas flaring in Nigeria was estimated to represent annual economic loss of over \$2.5 billion in 2004 (Friends of the Earth 2004). There is need for organized focus on initiating projects that will convert this large economic waste to energy and power generation for the Western African cluster of countries. The success of this project will guarantee energy security for the Western African countries and perhaps, beyond. Similar potentials in other regions of SSA should be similarly harnessed and utilized towards the same end.

Furthermore, African countries are very rich in renewable energy resources such as hydro, biomass, wind, geothermal and solar. There are a handful of these projects ongoing in diverse countries as Sudan, Zambia, Ethiopia, Mozambique, Nigeria, Ghana, and Congo. Attention should be focused on further developing existing facilities such as Akosombo dam in Ghana and Kanji and Shiroro dams in Nigeria. These hydro energy facilities, if fully tapped, have the potential to generate and supply electricity to almost all the West African countries. In addition, there are several other dams and rivers in these countries and other regions of SSA that could be developed to serve as additional sources of power generation in the continent. Attention should be focused on uncompleted power projects across African countries that have the capacity for continent-wide or at least regional power generation potential. Another area that holds high potential for energy generation is bio-mass and

solar energy. There are several atomistic solar energy devices in use by individuals in SSA countries. Given the high solar potentials of African countries, attention should be focused on developing this potential and converting it into impressive power generation that will provide energy for use in the clusters.

The current trend in transport infrastructure development in SSA focuses on country-specific roads and railways. While this is commendable, there is need to think seriously about regional and sub-regional roads and railways development projects that would further enhance regional development and promote cohesion and integration among member countries in the identified clusters. This will ensure speedy transport of humans, materials, and finished goods for use both within each regional cluster and among the clusters in the continent. Specifically, SSA countries should develop sub-regional ring roads and railways in the Central, Eastern, Southern and Western Africa, with each of the ring linking up with the closest ring in such a systematic way that the whole continent is thus linked. Such regional road and railway development projects will greatly improve integration among the clusters, promote intra-Africa trade, tourism, and development. It will also further ease the currently high cost of doing business in the continent.

On information and communication technology, SSA countries should initiate information and communication technology assembly plants and skills development centres in the continent. SSA countries should direct efforts at establishing ultra-modern ICT incubation centres that will harness the labour abundance and favorable tax policies in SSA countries. One possible argument against this proposed project is that African countries lack skilled labour for such large-scale technical production. This need not be a constraint, however, because there are several similar privately-organized projects going on across several African countries. A typical example is the computer village in Lagos, Nigeria. In this village, there are several Nigerians and Africans engaged in the most intricate ICT works that range from assembly to servicing. This suggests that the required basic skills are not only available but can be further honed given the ingenuity of Africans. The advantage of such ICT development is enhanced communication and technology access that will promote productivity in the cluster and value chain development.

The finding that natural resource availability and management is key to structural transformation in SSA through its deployment and use in cluster and value chain development demands that SSA countries should promote transparency in the natural resource sector by supporting global transparency initiatives such as the Extractive Industry Transparency Initiative (EITI), Equator Principles and the ICMM Framework for sustainable development both at the national and regional levels. SSA countries should be more aggressive in forcing multinationals operating in the natural resource sector to apply international best practices in safety rules and working conditions, which include compliance with international mining and environmental standards.

The claims that SSA countries are under-exploiting their natural resources suggest the large potential transformative resources that remain locked up in the soil. Thus, there is need for more investment in exploring and exploiting the natural resources available for transformative use through offshore

and deepwater oil and gas investment. Such increased investments hold the potential for improved economic prospects for most SSA countries given the high natural resource wealth of the region. Countries should engage in more long-term sustainable development of yet-to-be-developed natural resource potentials in the region, especially in countries that have not yet attained the status of net exporters of these resources. For projects that may seem extremely risky and expensive, synergy through consortiums and joint ventures should be formed among investors and African state-owned enterprises to help bring such projects to reality. This will help pool together the expertise and resources of all parties for the ultimate benefit of African countries.

More significantly, the importance of natural resource to the region demands for the need to guarantee sustainability of resource extraction in African countries for the benefit of both the current and future generations of Africans. To this end, there is need to establish a Natural Resource Sustainability Fund that will help cushion the shocks from market price volatility and cater for the needs of both the present and future generations of Africans who jointly own the resources. Funds realised from this initiative could form the take-off fund for creating the required investment in creating the required infrastructure and other necessary conditions for cluster and value-chain development in SSA. Issues of equitable distribution of the revenues from resource extraction for poverty reduction and general welfare of all through employment generation in the clusters and value-chain activities should be incorporated into the use of the Fund. More importantly, issue of investment of the fund in cluster and value chain development should be clearly spelt out. In addition, wanton resource extractions that do not take cognizance of sustainability issues should be discouraged. This implies that sustainability issues should be built into all natural resource extraction contracts in SSA countries with all investors.

Above all, the African Development Bank (AfDB) should take the lead in driving the entire process. This must be done in close collaboration with other regional bodies, sub-regional economic communities, national governments, multilateral institutions, international financial institutions, donor agencies, private sector organizations, local community development organizations, etc. To fund activities that promote effective take-off of the growth pole strategy, national African governments should establish a Growth Pole Fund. The aim of this Fund is to help provide the needed pool of financing to provide the basic infrastructure and institutional structures for growth pole development in SSA. The institutional mechanism for managing the fund should be strengthened to ensure effective supervision, transparency and accountability. The AU and the AfDB should work out the modalities and AfDB is encouraged to broker this and host the Fund, while AU works on securing the needed political will and commitments from national governments and regional economic bodies.

7. Conclusion and Agenda for Further Research

This study argues that structural economic transformation is not impossible in SSA. The paper further submits that the growth pole strategy offers a strong potential to achieve this. In general, the proposed strategy aims at spurring growth and transformation in SSA economies through

development of clusters and value chain in an integrated framework that encompasses the region's agricultural, manufacturing, minerals, oil and gas, etc, with a view to unleashing the productive opportunities in each cluster and driving the growth in the entire region through growth diffusion from the core growth poles to the peripheral and less-developed countries and areas.

Over time, it is expected that some level of balanced growth would be achieved across SSA, significantly reducing the problems of exports of crude natural resources, and promoting economic diversification across regional, national and local economies, and across sectors. In addition, this strategy will ensure greater food security, less dependence on imports and eventual growth in foreign exchange earnings from agricultural and manufacturing exports for SSA economies. Beyond the direct spillover effects in the cluster regions, the provision of infrastructure such as rail, power, housing, and the construction of education and health institutions will directly create jobs that involve low, middle-level and high-level skills of significant magnitude.

However, commitments are required from all stakeholders to ensure success. Government support is highly needed in providing incentives and enabling infrastructure support. Electricity, excellent transport system, educational support systems for the clusters at each stage of the value chain are of utmost importance. Such public investments should be considered as supporting because whatever is invested will be recouped through increased tax incomes on activities in the clusters and increased export revenues. Government primary action should be that of ensuring a favourable environment for the private sector to take the lead. The national governments also need to ensure that the required institutional arrangements are established for careful selection, implementation and management of clusters and value chains. Such institutional structures would include laws, security, investment regulations, environmental controls, private sector, and financial sector development.

A very important agenda for further research is empirically establishing determinants of growth polarity in SSA. Such study will improve understanding on the variables to watch and focus policy attention on to improve the performance and contributions of the SSA growth poles to other countries in the region. This will also assist countries to re-focus and re-direct policy efforts at stimulating growth in the potential growth poles. Second, there is need to ascertain the extent to which real and potential growth poles identified in this study, or any other growth pole for that matter, generate spillover benefits on the surrounding countries by assessing the trickle down effects of the growth poles on neighbouring countries and channels through which these occur. More detailed case studies of clusters and value chain development on specific activities along those identified is proposed. Such studies will help inform policymakers on how to implement and actualize the proposals.

Given the observed surprises in some of the empirical measures of growth poles in SSA, it is important to investigate further the determinants of growth polarity in SSA. This will inform understanding on the additional variables that deserve attention by policymakers in strengthening the performances of their countries as growth poles and provoke others that are yet to attain this status.

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