

## Institutions, Innovation and Economic Growth Patterns in East Asia: Learning Curves for Sub-Saharan Africa

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### ABSTRACT

The study is an investigation into the roles of institutions and innovation in the economic progressiveness of Newly Industrializing Countries (NIEs) of East Asia, and the inherent lessons for the development of poor nations, especially in Sub-Saharan Africa. This is primarily germane given the historical and economic similarities that characterize these regions, and the quest to evolve development models relevant for African economic development. The study adopted a descriptive and theoretical stance in its analysis. Evidence from empirical and theoretical literature, as well as trend analysis of secondary data point to technological advancement and effectiveness of institutions as the major drivers of economic development in East Asia. Others include innovation, manufacturing performance, etc. The study therefore recommends funding of Research and Development (R&D) in order to boost innovation and local technological capacities, prioritizing education at all levels and periodic review of education curricula to reflect technical competencies especially in primary and secondary schools. Also, the study strongly recommends the development and implementation of unconventional growth models in poor nations of the world taking into consideration country characteristics and structural differences.

**Keywords:** Institutions, Innovation, Economic Growth, East Asia, Sub-Saharan Africa

### INTRODUCTION

The recent upsurge in economic activities in East Asia (EA) and its lessons for Sub-Saharan Africa (SSA) has been a subject of serious academic interest in the science of economics. Beginning from the 1980s through 1990s, several countries in East Asia achieved miraculous growth which translated to high standards of living of people in these countries. At the same time, it was obvious that the massive economic growth recorded in East Asia had its contrast in the "Growth Tragedy" that characterized Sub-Saharan Africa in the 1980s. This was however due to the grueling economic losses of the time; thus, per capita income fell beyond bearable proportions in the region (Stein, 1995) in (Henley, 2007).

Sub-Saharan Africa has been characterized by a poor (negative) growth trajectory during the periods 1960s through 2002. The weak performance of SSA economies has been linked to poor record of total factor productivity growth.

Whereas economic growth in East Asia accelerated at a rate of 3.2 per cent annually

during the period 1973-1992, economic growth in Sub-Saharan Africa turned negative (Iyoha & Oriakhi, 2002; Bosworth & Collins, 2003; Tahari, Ghura, Akitoby & Aka, 2004).

East Asia on the other hand has recorded positive growth trends and presented an example of a good development model for Sub-Saharan Africa (Morell, 2006). This economic progress evident in East Asia is a direct consequence of deliberate and conscious efforts by government and organized private sector. These countries managed to overcome exports barriers imposed by industrialized states by skillfully growing their export sector through careful selection of products and markets. Following this dramatic economic performance in East Asia especially among the tigers, it became obvious that dependency of poor nations on industrialized ones is not a growth catalyst.

Neoclassical economics has shown that economies with undue government intervention, trade barriers, and blinkered development have the tendency to perform below capacity. This became evident during the end of the 1980 decade; high levels of inflation, unsustainable

balance of payments, poor growth, rising international debts, domestic deficits, and economic decline grew to unbearable proportions so that, the need for change was widely accepted.

The growth in the reliance on free market economy by defunct socialist economies had also shown the rigidities of the command economy. Economies such as China, Tanzania, and India have earlier adopted market oriented reforms in the early 1980s and 1990s. The dramatic economic progress evident in East Asia has been viewed as the potency of the market economy to some scholars but to others, it showed the power in the mix of market forces and government intervention, with such mastery that cannot be easily deciphered.

The failure of development in Sub-Saharan Africa has attracted the concern of many economists.

Although recent pick-ups have shown considerable progress in some SSA countries such as South Africa, Nigeria and Botswana, etc., this growth is also accompanied by uncontrolled increases in population, inequality, extreme poverty and misery, showing, a great deal of macroeconomic instability (World Development Indicators, 2017). More effort is required to make up for the loss during the last three decades and to speed up development to the levels of Low Industrialized Countries (LICs) in the world. Levels of growth are still too low for Sub-Saharan Africa to reverse the harsh economic situation and dwindling standard of living of its citizenry.

It therefore behooves Sub-Saharan African countries to rise to the challenge of production efficiency and sustainability given the fundamental development goal of increasing the standard of living of people in the world; it is pertinent that they adopt production methods that lead to effective and systematic utilization of resources for maximum social and economic benefits.

The quest to unravel the dominant factors driving development in East Asia and South East Asia as opposed to her counterparts in Africa, despite, the observed similarities in human and material resources is the thrust of this study.

This is borne out of the need to build development frontiers and models that will guide poor countries in the world. For the

purpose of this study, Malaysia and Indonesia have been chosen from East Asia while Nigeria and South Africa are chosen from Sub-Saharan Africa.

### LITERATURE REVIEW

#### What Do Economic Theories Say About Growth and Development?

The period 1950s and 1960s has been characterized by neoclassical postulations of economic growth as developed by Solow-Swan (1956), and Koopmans-Cass (1965). The theory focused on capital accumulation and its link to savings decisions and population growth.

It posits that increase in the savings rate causes output to grow only in the short run. During the long run, economy will reach a steady state where per capita output is not growing anymore or becomes constant, and it applies to population growth as well; increase in population growth raises aggregate output growth rate, but reduces level of output per capita. The theory implies that a country with a lower initial income per capita will eventually catch-up or converge with those of higher income per capita as long as they have equal saving and population growth rate.

However, the absolute convergence property of neoclassical economic growth theory remains unresolved. Economic progressiveness in East Asia has been typified by increasing marginal productivity of labor and capital, explained majorly by technological innovations and market oriented reforms. In fact, economic performance in East Asia has the potential to overtake the west.

This however explains neoclassical postulations, although, in the real world, countries do not possess equal savings rate, population growth and technology and if by any means equal growth rate in these variables do exist, the universality of these postulations especially in poor countries of SSA is slim. Economic growth postulation received new limelight with the contributions of Romer (1986) and Lucas (1988). Their theory (endogenous growth theory) links human capita development and more recently, socio-political institutions to economic progressiveness.

The assumptions of the theory contradicts the earlier received neoclassical postulations of constant marginal product of capital and labor influencing output per capita to grow endlessly

and thereby, making countries with lower income per capita converge with those of higher income per capita. Instead, the theory holds that economic growth arises from a country's ability to develop its internal capacity to produce to meet local needs, and also export to other countries to secure external reserves.

Thus, human capital development, R&D, innovation, and formulation and/or implementation of relevant economic policies have been identified as economic growth drivers.

The views of the structuralists differ completely with that of neo-classical theory. The theory concerns itself with active government participation and regulation of the economy as a potent fiscal tool to economic growth actualization. The theory builds an idea showing that although economic shocks can reduce total spending (demand) and supply which amounts to economic shortages and further manifesting in terms of reduced incomes, lower standards of living, and uncontrolled increases in unemployment etc., effective use of monetary and fiscal policies are identified as measures to correcting these economic anomalies.

Mankiw (1997) submitted that advocates of the structuralist theory posit that the refusal of government to utilize statutory instruments for stabilization purposes amounts to economic waste. The World Bank further supported this argument by reporting that the destructive effects of market failure are enough reason why government involvement in demand management is important. In fact, the fortune of most East Asian economies has been linked to the application of the structuralist theory according to a World Bank study in 2012. The study identified three main strands of the East Asian revolution to include the ability of Asian governments to identify critical and most productive sectors of their economies. They were also able to direct investments to these sectors, implying that, preferential treatments such as subsidies, credit and trade restrictions have been employed as control instruments. Lastly, this theory applies to Asian developments as government functionaries at all levels have not meddled with public policy to the distortion of effective policy formulation and implementation.

Malaysia specifically has played a good script which portrays solid foundations of its public policy on the structuralist theory. Its policy

thrust has been tilted towards redeveloping its private cum public sectors as a means to achieving sustainable developments. Berhad (2012) showed that governance is done in a manner that resuscitates the economy while attention is also given to strengthening economic weaknesses for the attainment of growth. Korea, Japan and Taiwan are also worthy examples.

A World Bank study in 1993 showed that these countries used credit direction, interest rate repression etc., to control investments instead of depending completely on the market economy which has its inherent distortions. Thus, it pictured a clear demonstration of how government participation can accelerate economic growth in a transition economy.

The market friendly theory has been recently introduced during the World Bank Development report of 1991. The theory focused on “effective but careful provision for limited government activism” (World Bank, 1993). The theory revolves around the ability to harmonize some economic ideals to wit; global linkages, investment in people, a competitive micro-economy and a stable macro-economy. It was shown in this report that these four cardinal aspects of economic policy are worth doing in their right, but because of their linkages, the results will probably be disproportionately strong if done together. The theory is a colossus of neoclassical and structuralist theories. It however differs from other growth theories by stressing more of the need for investment in people other than just building human capital. The theory has been applied in China and Malaysia.

The above growth theories as shown in economic growth literature points to the fact that major growth drivers are made of technological advancement, R&D, innovation, institutional quality, efficacy of government policy and implementation, human capital development, industrial development and economic openness.

### **INNOVATION IN EAST ASIA AND SUB-SAHARAN AFRICA**

Innovation as used here consists of input sub-index and output sub-index. Input sub-index is made of institutions, human capital and research, infrastructure, market sophistication, and business sophistication. Output sub-index consists of knowledge and technology outputs,

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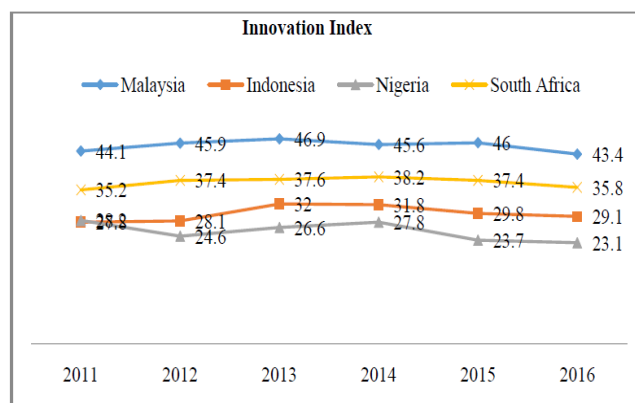
as well as creative outputs. Table 1 shows innovation index for selected EA and SSA countries and further buttressed by Fig. 1. However, figures show EA (Malaysia) scoring

highest in innovation all through the period under consideration. SSA (South Africa) comes second in innovation index. Thereafter, Indonesia follows, and then Nigeria.

**Table 1.** Innovation Index

Year	Malaysia	Indonesia	Nigeria	South Africa
2011	44.1	27.8	28.2	35.2
2012	45.9	28.1	24.6	37.4
2013	46.9	32	26.6	37.6
2014	45.6	31.8	27.8	38.2
2015	46	29.8	23.7	37.4
2016	43.4	29.1	23.1	35.8

Source: 2016 global economy database



**Figure 1.** Innovation in EA and SSA

### Technological Advancement

Patent application has been used as proxy for technological advancement owing to the paucity of technological data. It refers to exclusive rights for an invention, product or process that defines new possibilities. Available data shows that South Africa has performed well as regard

this variable from the year 2000 until when it was overtaken by Malaysia in 2008 through 2014. Indonesia comes third in this ranking, while, Nigeria is found with insignificant results compared to the other three countries. Evidence is shown in Table 2, Figure. 2a.

**Table 2.** Patent Applications

Year	Malaysia	Indonesia	Nigeria	South Africa
2000	206	157	-	895
2001	271	212	-	966
2002	322	234	-	983
2003	376	201	-	922
2004	522	227	-	956
2005	522	235	-	1003
2006	531	288	-	866
2007	670	284	-	915
2008	818	386	-	860
2009	1234	415	-	822
2010	1231	508	-	821
2011	1076	533	64	656
2012	1114	-	42	608
2013	1199	663	50	638
2014	1353	702	-	802

Source: 2016 global economy database

Figure. 2b also provides graph explaining levels of technology in the regions of East Asia and

Sub-Saharan Africa using high technology exports (% of manufacturing exports). These are

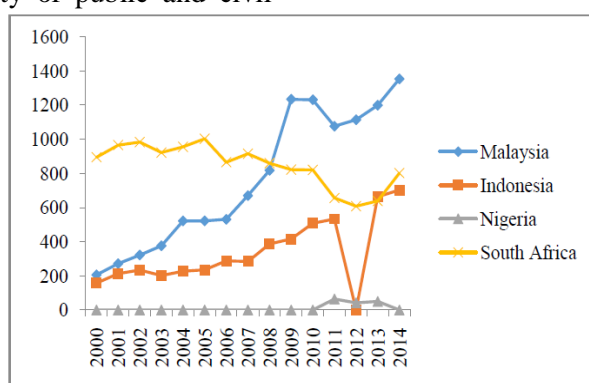
products with high R&D intensity such as scientific instruments, aerospace, electrical machinery, computers, and pharmaceuticals. The two Asian tigers (Malaysia and Indonesia), especially Malaysia is found creating a widening gap from the two SSA countries. South Africa comes third in ranking while Nigeria is found at the lowest levels (zeros) except in 2008 and the last quarter of 2006.

**Institutional Quality**

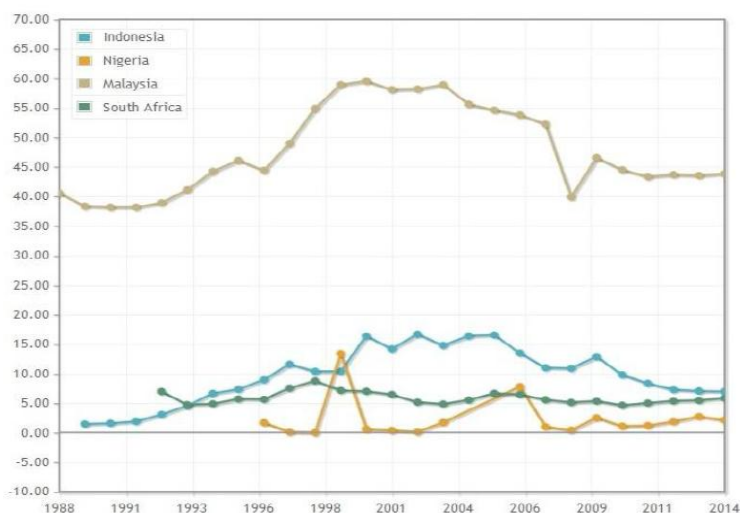
Rule of law and government effectiveness have been selected as some of the measures of institutional quality. Government effectiveness includes among others, independence from political pressures, quality of public and civil

service, commitment to effective formulation and implementation of public policy. Rule of law on the other hand refers to levels of enforcement of property rights, contracts, quality of the judicial system and the police.

Malaysia maintains the first position in the ranking of these two measures of institutional quality, reflecting the resilience of the country's (region) economy and why it has performed better than countries of Africa. South Africa which is Africa's biggest economy has also shown some degree of resilience in the measurement of institutional quality as it comes second in ranking. Indonesia, and Nigeria take the least scores. See Table 3, Figure. 4a and b.



**Figure 2a.** Patent applications in EA and SSA



**Figure 2b.** High-technology export (% of manufactured exports)

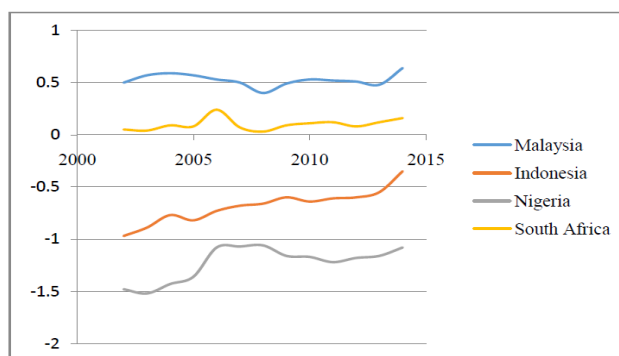
Source: World Bank, World Development Indicators, 2016, adapted from Index Mundi database

**Table 3.** Institutional Quality Index

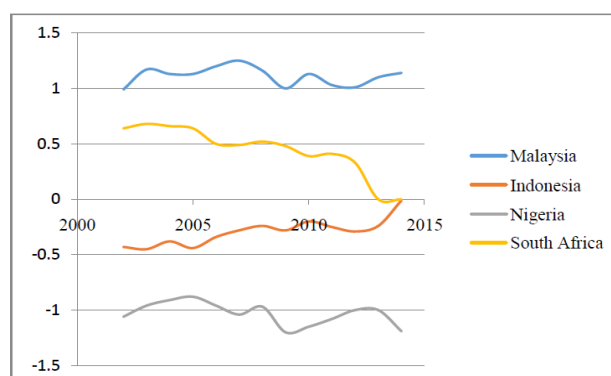
Year	Malaysia		Indonesia		Nigeria		South Africa	
	Rule of law	Govt. Eff.	Rule of law	Govt. Eff.	Rule of law	Govt. Eff.	Rule of law	Govt. Eff.
2002	0.5	0.99	-0.97	-0.43	-1.48	-1.06	0.05	0.64
2003	0.57	1.17	-0.89	-0.45	-1.52	-0.96	0.04	0.68
2004	0.59	1.13	-0.77	-0.38	-1.43	-0.91	0.09	0.66

<b>2005</b>	0.57	1.13	-0.82	-0.44	-1.36	-0.88	0.08	0.64
<b>2006</b>	0.53	1.2	-0.73	-0.34	-1.08	-0.96	0.24	0.5
<b>2007</b>	0.5	1.25	-0.68	-0.28	-1.07	-1.04	0.07	0.49
<b>2008</b>	0.4	1.16	-0.66	-0.24	-1.06	-0.97	0.03	0.52
<b>2009</b>	0.49	1	-0.6	-0.28	-1.16	-1.2	0.09	0.48
<b>2010</b>	0.53	1.13	-0.64	-0.2	-1.17	-1.15	0.11	0.39
<b>2011</b>	0.52	1.03	-0.61	-0.25	-1.22	-1.08	0.12	0.41
<b>2012</b>	0.51	1.01	-0.6	-0.29	-1.18	-1	0.08	0.33
<b>2013</b>	0.48	1.1	-0.55	-0.24	-1.16	-1	0.12	-
<b>2014</b>	0.64	1.14	-0.35	-0.01	-1.08	-1.19	0.16	-

Source: 2016 global economy database



**Figure 4a.** Rule of law in EA and SSA



**Figure. 4b.** Government effectiveness in EA and SSA

## EMPIRICAL GROWTH LITERATURE

In recent years, several researches bothering on economic growth have addressed questions on productivity and economic growth (performance) through analysis of country-specific and cross-country growth drivers. This section therefore reviews empirical researches on economic growth determinants relevant to this study.

In his investigation of the causes of economic growth among East Asian countries, Kowalski'oo (2000) using descriptive statistics and linear regressions, found that high export levels and investment (domestic and FDI) are the dominant factors boosting economic growth in East Asia. Other factors included total domestic and government investment which were positively correlated with GDP growth.

Harvie and Pahlavani (2006) used the Zivot model and Gregory-Hanson (1996) co-integration technique to estimate the major factors influencing economic growth in South Korea. The Gregory-Hanson co-integration technique was used due to its ability to test for potential structural breaks and results revealed the existence of a long-run relationship among the model estimate and a single structural break. ARDL results associated growth in Korea to exports, human and physical capital. Total imports was not statistically significant given the recent shift from capital goods to consumer goods importation in Korea.

Tolo (2011) adopted 23 transition economies with special focus on Asia in his investigation of the causes of per capita GDP growth. Panel regressions showed that Research and

Development (R&D), public and private investment, openness and agricultural exports were among the drivers of growth. Similarly, Hamidou (2011) sought to empirically analyze the causes of growth and recession of Japanese economy. It was found that the Japanese economic growth of 1960-1990 was influenced by technological advancement, investment and labor productivity. Also, its recession was attributed to financial crises, unfavourable discount rates and rise of Japanese Yen during the early 1990s and 2000s.

On the other hand, Tahari et al (2004) sought to investigate the causes of growth in Sub-Saharan Africa using descriptive data through the period 1960 - 2002. Growth rate of average real GDP was poor and continually decreased until the last quarter of 1990s. The findings also showed that the growth in the region was primarily the result of capital accumulation with little or no contribution from Total Factor Productivity (TFP).

In his inquiry of why Asia has succeeded and why Africa has not, Morrell (2006) compared economies in SSA with those in East Asia and Southeast Asia. Data after the first 20 years of independence was used for empirical analysis in each of the countries sampled in the study (six from and five from East Asia) and findings showed that population growth, public sector contribution, and demographic change were responsible for the growth discrepancy in the two regions.

Ndambiri, Ritto, Ng'ang'a, Kubowon, Mairura and Chero two (2012) used Generalized Method of Moments (GMM) to study the causes of economic growth in Sub-Saharan African region. The focus was on 19 Sub-Saharan African countries and spanned the period 1982 - 2000. The outcome showed that economic growth can be stimulated by human and physical capital development, as well as a strong export base. Other factors such as external aid, nominal discount rate and government spending were associated with decreases in growth rates.

However, Effendys (1998) discovered economic growth in China, Japan, Singapore and Indonesia showed divergent models with those of United States. This study linked growth in the United States to higher secondary school enrollment and terms of trade, whereas in Japan, secondary school enrollment and lower inflation rates were found to contribute more to growth.

Similarly, growth in China was found to be associated with higher savings rate, lower inflation rate, and terms of trade improvement, while higher life expectancy and savings rate explain economic growth in Singapore and Indonesia, although, growth was also linked to increasing government expenditure in Indonesia.

In this connection, Henley (2007) questioned the validity of Asia's progress to Sub-Saharan Africa since the socio-political environments in Africa are more vulnerable to geographical constrictions, poor political systems and destructive historical backgrounds. The study by Lionell (2013) also corroborates the findings of Effendys (1998) and Henley (2007). In his treatise, there exist a plethora of competing growth theories which leads to a burden of choice by poor countries yearning for development. The study further provided arguments showing that there is no one-fit-them-all economic model explaining growth and development in the world.

Petricos, Arvanitidis and Pavleas (2007) study of factors driving economic progress of countries in the world provided evidence for prevalent arguments in economic growth literature. The study identified increasing influence of political and institutional factors as one of the determinants of economic dynamism. It was also found that less advanced and advanced countries vary in terms of the factors which lead to economic dynamism. Whereas a factor may be found to be highly significant in some advanced countries, it may also be less significant in less developed countries due to differences in structural and economic environments.

Tridico (2007) made a significant attempt in examining the causes of economic progress in emerging economies. The study was carried out in two-folds; first, a cross country examination of the causes of growth from 1999 to 2005 was carried out in transition and emerging economies. Secondly, a comparative study was conducted and it was found that countries that adopted their own style of capitalism and model tend to be exposed to more growth opportunities since such economic models are usually built to match their structural and economic environments. He also associated the causes of economic growth with a country's willingness to match relevant government programs and institutions with other factors such as export

growth, education and some human development indexes especially reduction in infant mortality rate and life expectancy growth.

However, most studies have associated under-performing African economies to corruption and institutional impoverishment (Aknlabi, Hamed & Awoniyi, 2011). This position is in line with the descriptive analyses presented in Table 3 and figures 4a and 4b. Abdullah (2012) affirmed in his study of 177 countries from 1995 - 2009 that the ability of a country to overcome corruption and inflation is an empirically proven growth stimulant. Ugur and Dasgupka (2011) pointed that the negative effect of corruption is more severely felt in mixed economies than those characterized as under-developed or low income countries and that, corruption has more severe indirect effect especially through the public finance and human capital channels.

### CONCLUSIONS AND POLICY RECOMMENDATIONS

The study is an investigation into the determining factors driving economic progress in East Asia and its usefulness for Sub-Saharan Africa's economic growth and development. Emphasis was laid on the link between economic growth in East Asia and Institutions/Innovation. Other relevant growth drivers as shown in the study include technological advancement, human capital development, etc. However, the study has been conducted using Indonesia and Malaysia as proxy for EA while Nigeria and South Africa have been used for SSA. The choice of these selections stem from the similarity of economic characteristics (human and material resources) and historical antecedents that characterize their existence; governance in these countries have been characterized by military rule (dictatorship) as well as democracy. More so, the two group of countries from both regions have been colonized and also attained independence during the same period.

The widening gap that characterize the Newly Industrializing Economies (NIEs) of East Asia has been explained by huge R&D expenditures and technological advancements as exemplified by the analysis on high technology exports and patent applications. Innovation and quality of institutions have also been linked to Asia's development. These variables are responsible for economic growth divergence between EA and the poor region of SSA.

Guided by these submissions, solid evidence has been provided to show significant growth drivers in EA but much more pertinent is the relevance of these findings in connection with developments in Sub-Sahara African region. Therefore to fast track development in the region, the following policy recommendations are proffered;

- Innovation and creation of local technologies vis-à-vis production and distribution of goods and services should become a priority in Sub-Sahara Africa. The business of R&D should become a priority among governments of poor nations seeking development and consequently, emphasis should be placed on the provision of sufficient funds for this purpose.
- Also, government must prioritize education at all levels and review education curriculum to reflect majorly on technical competencies especially in primary and secondary schools. This will evolve new techs and innovations which will enhance industrial transformations in SSA.
- The development of efficient public institutions should be pursued relentlessly in order to ensure a sound financial and legal framework required to protect property rights, facilitate execution of contracts and speed up development where it is lagging.
- Government infrastructural expenditure is also a major economic growth stimulant in the two regions as shown by the findings from this study. Consequently, sufficient funds should be made available for the creation of access roads, hospitals and education infrastructure.
- In sum, poor nations should devise and implement unconventional growth models taking into consideration their country characteristics and structural differences. In fact, the need for effective policy design especially as regards the right and timely mix of government intervention and markets in influencing growth is highly essential.

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