Understanding the Persistent Low Productivity of the Agricultural Sector in Sub Saharan Africa

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Abstract
Agricultural productivity is essential for sustaining livelihoods of majority people who dwell in rural areas of developing countries. It is also crucial for ensuring sufficient food requirements for the ever increasing global population. However, Sub-Saharan Africa’s (SSA) agriculture has been less productive for a long period of time with chronic food shortages if compared with other regions of the world.

This study seeks to understand better why SSA agricultural productivity continues to lag behind other regions amidst an abundant and naturally fertile agricultural potential. This study takes a point of departure in the theory of structural transformation envisaged by Lewis, to understand the possible linkages between industrial growth and agricultural productivity growth.

This work is a product of a desk study under which process tracing variant of case study research design is used to delve into the past five decades of agricultural development in SSA. The study uses documented materials as source of data and exhaustively makes use of online databases and library material.

The results of the research show that, there is a general lack of enough domestic and foreign investments in agriculture. In addition, the agricultural policies in relation to technology, markets, prices, infrastructure and trade both domestic and in the western world seem to lack a priority in raising agricultural productivity of SSA. Moreover, things are not moving well in the industrial sector, it has been showing constant decline before it grows to the average productivity levels of the manufacturing sector in other regions.

The study concludes that, it seems the low agricultural productivity question in SSA may continue evading solution if, the productivity and performance of the “sister” manufacturing sector is not boosted.

Key words are; agriculture, investment, policy, markets, productivity and manufacturing.
Dedication

This piece of work is dedicated to my beloved mum Ms. Margret Kabahunguki for her undying efforts to make me a happy son.
Acknowledgments

First and foremost, I extend my gratitude to the almighty God-Jehovah for the blessing of good health, protection and wisdom. Without his grace, this thesis would have been far from completion.

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In the same manner, I thank my family for the powerful prayers you mentioned on my behalf, the moral guidance, care and comfort, may God bless you abundantly.

Last but not least, i say thank you to my friends, buddies and class mates both at MUST and LNU, your ideas, encouragement counsel and friendship made it possible for me to complete my master’s programme, big ups.
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<th>Description</th>
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<tbody>
<tr>
<td>ACP</td>
<td>African Caribbean and Pacific</td>
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<tr>
<td>AGOA</td>
<td>Africa Growth Opportunity Act</td>
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<tr>
<td>AOI</td>
<td>Agricultural Orientation Index</td>
</tr>
<tr>
<td>CAADP</td>
<td>Comprehensive Africa Agricultural Development Programme</td>
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<tr>
<td>CAP</td>
<td>Common Agricultural Policy</td>
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<tr>
<td>CGE</td>
<td>Computable General Equilibrium</td>
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<tr>
<td>DC</td>
<td>District of Columbia</td>
</tr>
<tr>
<td>DRC</td>
<td>Democratic Republic of Congo</td>
</tr>
<tr>
<td>EBA</td>
<td>Everything But Arms</td>
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<tr>
<td>ECOWAS</td>
<td>Economic Community of West African States</td>
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<tr>
<td>EEC</td>
<td>European Economic Community</td>
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<tr>
<td>EPA</td>
<td>Economic Partnership Agreements</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>FAO</td>
<td>Food and Agricultural Organization</td>
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<td>FAOSTAT</td>
<td>Food and Agricultural Organization Statistics</td>
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<tr>
<td>FDI</td>
<td>Foreign Direct Investments</td>
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<tr>
<td>GATT</td>
<td>General Agreement of Trade and Tariffs</td>
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<tr>
<td>GDP</td>
<td>Growth Domestic Product</td>
</tr>
<tr>
<td>GFCF</td>
<td>Gross Fixed Capital Formation</td>
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<td>ha</td>
<td>hectare</td>
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<tr>
<td>IDC</td>
<td>International Development Cooperation</td>
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<tr>
<td>IEG</td>
<td>Independent Evaluation Group</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>IFPRI</td>
<td>International Food Policy Research Institute</td>
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<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>Kg</td>
<td>kilogram</td>
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<tr>
<td>LDC</td>
<td>Least Developed Countries</td>
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<td>NARS</td>
<td>National Agricultural Research Services</td>
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<tr>
<td>NEPAD</td>
<td>New Economic Partnership for African Development</td>
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<tr>
<td>ODA</td>
<td>Official Development Assistance</td>
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<tr>
<td>OECD O</td>
<td>Organization for Economic Cooperation and Development</td>
</tr>
<tr>
<td>R &amp; D</td>
<td>Research and Development</td>
</tr>
<tr>
<td>SALISES</td>
<td>Sir Arthur Lewis Institute of Social and Economic Studies</td>
</tr>
<tr>
<td>SSA</td>
<td>Sub-Saharan Africa</td>
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<tr>
<td>UNdata</td>
<td>United Nations Data</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
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<tr>
<td>US</td>
<td>United States</td>
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<tr>
<td>US$</td>
<td>United States Dollar</td>
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<td>WTO</td>
<td>World Trade Organization</td>
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1.0 Introduction

This chapter positions the study in scientific research. It traces the problem of the research and thereafter identifies the research problem. In this chapter, we also find the research objective, the research questions, and relevance of the study, limitations, delimitations and disposition of the study.

1.1 Problem identification

According to Gunnar Myrdal, it’s through the agricultural sector that we can win or lose the battle for economic growth (Todaro & Smith, 2011:416). Sub-Saharan Africa (SSA), according to the World Bank Agricultural report 2008, was affirmed further as an agricultural based region, though the average contribution of agriculture to GDP was estimated at 14%, but at the same time agriculture represents close to 80% of the labour force, with 63% of labour force directly employed in the agricultural sector. This implies a low productivity in the sector (Benin et al, 2011:33-34). SSA has vast land and water resources; the region is naturally endowed with an agricultural climate for various crops and animals. Another key feature is that 65% of the populations in the region dwell in rural areas and earn their living directly or indirectly from agricultural related activities and jobs (Punam-Chuhan & Manka, 2011:2). This indicates that the sector could be a good base for improving the standards of living of people in SSA.

The agricultural policies in SSA over time have been wanting, reflected in lack of clear investments in agriculture and agricultural related infrastructures and technology. According to some analysts, this is due to the influence of development strategies such as the 1950-60s’ modernization that staged industrialization at the fore front. Writers like Bates (1981:11), contended that, governments in SSA were willing to sacrifice farmer interests at the expense of industrialization. More so, the liberalization views of 1980s that called for rationality in public finance came to affect the investment in agriculture through a reduction in public spending in various sectors, some of which have a close linkage with agricultural development (Koning, 2002).

The above mentioned influences could have impacted on the agricultural policies of SSA countries in one way or the other. This is because; SSA countries have acted as ‘policy takers’ who normally rely on the technical and financial aid that majorly comes from the developed
world. On the other hand, the interests of these ‘policy givers’ (developed countries) have tended until recent, to be less concerned about agricultural sector development (Sadoulet & De Janvry, 2010:14). To this, it is argued, there has been a slow growth in productivity of the agricultural sector. Debates have also taken at the unresolved WTO policy on agriculture, and the agricultural policies in the OECD countries of subsidies, protectionism, price and producer support to farmers. The productivity in SSA has been failing to match the competition with other agricultural regions of the world (World Bank, 2008, Townsend & Binswanger, 2000). The agricultural sector in SSA has not only been slow in improving the domestic performance of the economies in terms of GDP and productivity, but has also failed to facilitate enough food production to feed the burgeoning populations, leading to chronic food crises and hunger (UNDP, 2012).

1.2 Problem statement

It can be said that the African continent is generally speaking a naturally fertile ground for agricultural development, but it has for the last fifty years been lagging behind the rest of the world not only in terms of productivity but also in terms of earnings from the agricultural sector. Moreover, projections have indicated that Africa is the only region that will continuously experience high food shortages and high incidences of malnutrition in the next 20 years. African cereals’ productivity is still a quarter of world average and for decades SSA has not increased its average yields (Toenniessen, et al, 2008), how can we understand this anomaly?

To try and give an account for why the agricultural productivity is low in SSA, most of the studies have been looking at this phenomenon from an angle of problems within the agricultural sector per se, since pre and postcolonial time. However, though, explanations of the phenomenon and possible remedies have been provided in the literature, the situation has been altered less, until present. Against this background, this study takes a point of departure in the theory of structural transformation envisaged by Lewis in his two sector model in order to present a modified dimension of the problem, from outside the agricultural sector as such, so as to provide a historically synthesized understanding of the anomaly, leaving a fertile continent with starvation.
1.3 Objective of the study

The objective of the study was to understand better why Sub-Saharan Africa’s agricultural productivity continues to lag behind other regions of the world, even when the region has naturally fertile agricultural potentials. To realize the objective, the study shall ask three questions.

1.4 Research questions

1. What patterns in agricultural development in terms of productivity, technological levels, market access and investments can we see during the last 5 decades in SSA?

2. What trends in agricultural policy debate can we see internationally over time, and how has international development cooperation and its contribution to agricultural development been part of the dominating discourse?

3. What has been the pattern of structural transformation in SSA?

1.5 Significance/relevance of study

With the view that investing in agriculture would be an efficient strategy for diminishing hunger and poverty while promoting sustainability, there has been a growing concern about the performance of the agricultural sector in Africa, so as to improve the conditions of poor people especially, following the fact that majority of them live in rural areas. Concern also has been raised to address the hunger threats and malnutrition in relation with the recent food price spikes of late 2000, (FAO, 2012). This study is relevant following the methodology it has taken of describing and analyzing the trends and patterns in agricultural policies, investments, productivity, market access and crop varieties in the last 5 decades, by showing how far the agricultural sector in SSA has evolved.

The study may increase awareness about the synergies of various agricultural constraints and abilities in Africa, like agricultural conditions by donor agencies in OECD and other regions hence contributing to the general debate on how to step up the performance of the agriculture sector in SSA in efforts to achieve the millennium development goal of reducing hunger through global partnerships. The study could form a basis for future studies looking in the direction of current state of Sub-Saharan Africa’s agriculture, and students who would wish to do future researches may find the conclusions more useful to begin with.
1.6 Limitations of the study
The study was challenged by the fact that it relied on only printed sources for data. This implies that the researcher was limited to only such information. Secondly, the study was limited by insufficient data. Some countries had inadequate or missing data for past years on the agricultural policies and investment information. Most of the reliable data concerning investments in terms of resource flows is documented beginning with period of the 1980, while scanty data, which is not very reliable is available for the 60s and the 70s. Another limitation is that, spending in agriculture by governments has been used as a measurement of investment since no data singling out actual investment in agriculture is available (Lowder & Carisma, 2011).

1.7 Delimitations of the study
The study used agricultural data for the last 5 decades, though statistics captured were mainly for the last 3 decades; this was due to data inadequacies. The second concern is about the scope of the term agriculture. According to FAO agriculture covers fishing and hunting on addition to crops and livestock. This study primarily used information concerning crops and livestock to refer to agriculture, except indicated, most of the reference to agriculture is synonymous with crop production. Another delimitation was to do with the definition of productivity as a key variable used by the study. Though it is normally understood as the output in put relationship, the study concentrated on the efficiency of those components and factors that directly translate into high agricultural production as determinants of productivity. Thus, for convenience, and for purposes of adhering to the identified research problem, the study only dealt with a few, and major agricultural productivity indicators and metrics such as, labour productivity, land productivity, cereal productivity, input productivity as well as agricultural total factor productivity.

1.8 Disposition
The thesis is structured in six chapters. Chapter one is the introductory chapter, and in this, the problem of the study is formulated, the objectives of the study and the research questions are spelled out. Still in the same chapter, there is the significance of the study, the limitations and delimitations of the study. Chapter two is the theoretical background. Under this, the guiding theory is explained, the limitations of the theory are stressed, and the importance of the theory in
the study is outlined. In this chapter, we find an overview of the literature review that corresponds to the identified research problem.

**Chapter three** is the methodological framework and background of the study. In this chapter, the research design, data collection and analysis methods as well as reliability and validity of the study are explained. It ends with an overview of the background of Sub-Saharan Africa. **Chapter four** of the thesis presents the results of the study. The results are presented according to sections that correspond to research questions. The sections in this chapter are three, section 4.1, 4.2 and 4.3; while, each section has sub categories. **Chapter five** presents a discussion and analysis of the results presented in chapter four and it is also structured in sections i.e. section 5.1, 5.2 and 5.3. **Chapter six** is the concluding one. In this chapter, lessons learnt from the entire study are presented.
2.0 Theoretical Framework and Literature Review

This chapter lays out the theoretical underpinning of the study at hand, and goes ahead to delve into the previous literature on the research problem. It introduces the structural transformation theory, with reference to the dual sector model of Arthur Lewis. In the chapter, we find the critique to the dual sector theory, the positioning of the theory in the current study and it wraps up with the literature review on the problem.

2.1 Introduction to the Structural Transformation Theory

This study takes a point of departure in the structural transformation theories of development that have been guiding development policy during a long period of time. Agricultural policies in the period shortly after independence of African countries were highly influenced by the modernization theory, and the structural transformation theory that advocated for industrialization as the way to realize rapid economic growth in newly independent countries (Fei & Ranis, 1961).

2.1.1 The Unlimited Supply of Labour Theory of Lewis

The core of structural change theory is that the role of the agricultural sectors in the economy should be reduced, and a more modern urbanized, industrialized modern and service sector make the major contribution to economic growth. Under the structural theories we find the famous Lewis’ dual sector theory. Lewis argued that, the classical economists failed to account for surplus labour amidst scarce physical resources.

The overriding assumption the author makes is that there is an unlimited supply of labour in the traditional sectors of the economy, whose marginal productivity is stagnant and insignificant, in some instances it is at zero. In this traditional sector, very little capital is employed in production, if any, and production is mainly for subsistence. He adds that, because of the zero marginal productivity some labour force can be withdrawn from the sector without affecting output at all (Lewis, 1954:139).

Lewis contends that the key to the expansion of the economy is the capitalist surplus, which gets reinvested in creating a wider capital base. Consequently more labour is pulled from the subsistence sector with constant wages, thus the process of extracting unlimited labour continues until the redundant labour is exhausted. Lewis has strong faith in the capitalists, as he
strongly argues that the spirit to get surplus drives them to plough back the profits into new mans of production, and the process of capital accumulation continues and national income widens in tandem (Lewis, 1954:159).

He wraps up that, the process of industrialization has to match with the food production in agriculture to provide enough food to feed the workers in urban centers. To this, he offered an example that, this is a reason why economies with stagnating agriculture have little industrial progress since they fail to exploit the linkages between manufacturing and agriculture (Lewis, 1954:179).

2.1.2 Critiques to the unlimited supply of labour theory

The theory however, faced some weaknesses especially when it was first applied in Central America. For instance, Lewis paid less attention to the source of resources to start the manufacturing sectors. In the early years where Lewis was instrumental in applying the strategy in the Caribbean, the region had less capital to begin manufacturing and he suggested foreign capital. This provided according to some critical analysts yet other challenges such as unemployment, capital flight and massive income inequality (SALISES, 1980:20). The theory has further been criticized for lacking scientific applicability to various regions of the developing country and that Lewis was trying to replicate what worked historically in the British system and could barely achieve the same results in other places (Ibid:21).

Mabro, (1967) presents yet another critique to Lewis’ assumption of unlimited supply of labour, especially when he quoted Egypt, in his works, Mabro reveals that, there is seasonal unemployment and not necessarily any surplus labour in the case of Egypt. He indicates that in some developing countries social cultural constraints were not taken into consideration by Lewis in assuming that women can be drawn from households to go and work in the industrial or modern sector, especially in Egypt’s case at the time (Mabro, 1967:326).

The other proposed weakness is Lewis’ too much faith in the capitalists’ spirit of reinvesting the profits. Some analysts have argued that he was shortsighted of capital flight especially in developing countries that took toll especially in the 1980. As if not enough, capitalists can invest their surplus in labour saving techniques that augment production, there is little evidence to justify beyond doubt that capitalists would not import luxuries or resort to consumption instead of reinvesting (Cypher& Dietz, 1997:156). Nevertheless, and independently
of the criticisms, Lewis’ theory has been remarkably strong, as an underlying assumption in many policy debates, up to today.

2.1.3 Positioning structural transformation theory in this study
The theory of Lewis gives this study a starting point to investigate the last 50 years of contemporary strategies of achieving growth that have been attempted, or pondered upon in SSA region. The idea forms a background to which one can position a line of thinking that the agricultural sector is a possibility to become a strong complement of the industrial sector in furthering economic growth in SSA. Though the study does not use Lewis’ theory deductively or abductively, it is nevertheless a background that is vividly present in the reasoning.

2.1 Literature review
This section presents positions identified in the previous and current literature to understand the under performance of the agricultural sector in SSA. The literature stresses six tendencies relating to the role of human capital, agricultural institutions, technological levels, international lending policy, public investment in agriculture and agricultural policy to understand the low productivity of SSA agriculture.

2.1.1 Human capital
Braun & Paulino, (1990), argue that high morbidity affects adversely labour productivity in agriculture. In their article of food and trend policies in sub Saharan Africa, they show that 61% of women farmers interviewed in Gambia during the rainy season were ill in a month before the interview, while women farmers in Kenya who had been monitored for a year were found to be sick 28% of their time in that year (Braun & Paulino, 1990:515).

2.1.3 Agricultural institutions
Eicher, (1989) in his work about sustainable institutions for African agriculture argues that, the lack of sustainable agricultural institutions was a challenge in the 1970s and 80s. He argues that the transfer of resources to National Agricultural Research Services (NARS) by international institutions was not commensurate with the political will, and domestic mobilization capacity. To him, this explains partly the low productivity of agriculture in some countries of Africa. For instance, he adds, the World Bank was providing funds without training in sustainability of institutions like in Somalia in the 1980s (Eicher, 1989:26).
2.1.4 Technological patterns
Detheir & Effenberger (2011), in the brief review of agricultural development, argue that low yields in African agriculture cannot be explained by the characteristics of the region alone. To them, inappropriate technology and slow uptake of this technology account immensely for the low yields in the African context. They add that, uniform green revolution is inappropriate for SSA, thus failure to identify geographical fitting technologies has been a reason for the slow progress of the African green revolution (Detheir & Effenberger, 2011:15).

Nin-Pratt & Yu (2011), present a related phenomenon to explain the total factor productivity of SSA, from annual growth of -1.33% to 1.34% per year for 1960-80 and 1984-2006 periods respectively. In the study, however, they contend that, that productivity lacked technology as a driver and thus could have been higher. Binswanger and Townsend (2000), conquer with the low technology in agriculture, in the post-colonial period. However they contend that this has been brought about by the adverse resource endowments of SSA, like sparse rural populations. Timmer (1988), in his article, Sources of Agricultural Transformation, argues that between 1973 and 1984 agricultural productivity in terms of land labour productivity declined and this he adds, could be attributed to insufficient and inappropriate technology and agricultural policies.

2.1.5 Agricultural policy
Donovan & Cleaver, (1994), Bezemer & Headey, (2008), argue that agricultural policy is to blame for low productivity. Donovan & Cleaver, (1994) hold that, countries that instituted economic reform policies between 1988-92 had positive agricultural growth productivity while those that were slow in enacting them still had negative productivity growth citing countries like; Zambia, Cameroon Sierra Leone etc. with negative productivity growth between 1988-92 (Donovan & Cleaver, 1994:20). Bezemer & Headey, (2008) argued in terms of OECD policies such as export tariffs, dumping and subsidy as impacting on the SSA African farmers’ capacity to increase output. Morgan & Solarz (1994) argue that, mismanagement of the export sector by government agencies, and a lack of clear economic policies to retain and attract foreign investments in postcolonial period accounted for low productivity of agriculture. They assert that, the problem of raising productivity lies more in the management and economic policies of African governments.
2.1.6 Public spending
The share of agriculture in total government spending has tended to decline in the developing region in relation to the developed region even when number of farmers is decreasing in the latter. Fan, (2008: 2) holds that, “agricultural expenditure as a percentage of agricultural GDP measures government spending on agriculture relative to the size of the sector.” This percentage, he argues, has tended to be low at less than 10% in developing countries while in developing countries it has tended to be more than 20% between 1980 and 2002.

2.1.7 Lending policy
A report by the Independent Evaluation Group (2007), asserts that the lending policy of the World Bank as the chief external financer of development projects in Africa, can explain the low productivity of the sector. According to the report, the World Bank’s lending to agriculture between 1991 and 2006 declined drastically, meanwhile the funds from other donors to SSA agriculture have also been declining since the 1990s (IEG, 2007).

In summary, the literature on the challenges of agriculture in SSA features the agricultural technology constraint, agricultural policy constraint, agricultural, labour constraint, institutional capacity constraint and financial constraint to explain the low productivity of the agricultural sector. It seems as if most of the proposed explanations are linked to intra-agricultural conditions, or atleast are avoiding taking a broader perspective of the conditions surrounding the agricultural sector. This study uses a historical explanation process tracing method to try to create a more coherent view of the challenges for agriculture in Sub-Saharan Africa. It goes beyond the intra-agricultural conditions and discusses inter-sectoral perspectives that seem to have a bearing on the development of the agricultural sector in Sub-Saharan Africa.
3.0 Methodological framework and Background

This chapter has two important sections. It presents the procedure undertaken to conduct the study as well as a brief background on Sub-Saharan Africa. Under the methodology section, there is the research design, data collection method, data analysis method and, reliability with validity section. Within the background, we find the economic overview, status of agricultural sector, land resource and recent agricultural initiatives.

3.1 Research design

According to Cresswell (2009:3), a research design is a whole range of procedures of conducting research, spanning from the inception phase, through the data collection to the analysis phase. This thesis is a product of a desk study and has applied a pragmatic world view perspective. Pragmatic research perspective enables the use of both qualitative and quantitative research methods and data where necessary to explore the research problem other than strict adherence to a single method (Cresswell, 2009:10).

That being said, the study uses a case study strategy of inquiry that investigates contemporary phenomenon with in its real life context (Yin, 2009, Jack & Baxter, 2008). With case studies, researchers collect information over a given activity, process or phenomenon and the researcher utilizes various methods to gather the information (Stack, 1995). The case in the context of this study is the low productivity of the agricultural sector in Sub-Saharan Africa. Within the case study strategy of inquiry, historical explanation process tracing method has been used.

Process tracing is useful in understanding differences between historical and law-like propositions. Process tracing according Bennett & George (1997), does not only aid in generating theories and testing them, it also aids in the explanation of phenomenon. It helps investigate and explain the decision processes that are responsible for outcomes in particular conditions. Moreover, with process tracing, both or one of the methods, fieldwork & secondary data, primary archives & secondary sources can be used to trace the case under study (Falleti, 2006:6, Collier, 2011: 823). Jack & Baxter, 2008 argue that case study research enables the researcher to describe and recontextualise a phenomenon.

Process tracing is closely related to historical explanations, and according to some scholars, process tracing is no more than good historical explanation. However George & Bennet
(2005) argue that, historical explanation is one of the varieties of process tracing. Of particular importance to this study, is the historical explanations variety of process tracing. George & Bennett have given an explicit rationality of using historical explanations in qualitative studies. They argue that, a well detailed narrative may suggest a great deal of causal processes that a researcher can use for a more theoretically oriented process tracing explanation. They add that historical explanations hardly make use of explicit theories and theory connected-variables but can make use of explanatory hypotheses, though tacitly (George & Bennett, 2005:210). According to Roberts (1996), the great power of historical explanation lies not in counting instances, but by describing the working mechanism of phenomena.

However, according to Jack & Baxter (2008), case study designs are difficult for researchers to establish the unit of analysis and thus, they may end up running into broader objectives than they can predict (Jack & Baxter, 2008:546). With historical explanations, a challenge may arise in singling out which events stand out among others as important in the process of explaining phenomena (Roberts, 1996:38). Anyhow, it is with in this approach this study works.

3.1.1 Data collection method
The study mainly uses primary data and secondary data as supplementary. Primary data is obtained from the FAO data base, World Bank data base, IMF database, NEPAD database, Eldis database, UNDP database, IFPR database and OECD data base. Secondary information is obtained from articles, books and journals using the Linnaeus university library One Search, Google scholar and Libris. All in all, information was obtained from documented sources and mainly on line (Creswell, 2009:181). For easy collection of information, material was gathered basing on the research questions.

Most of the material from data bases, books and Journals used are compiled and written by renowned researchers in the field of agriculture and rural development. However, as Mikkelsen points out, the documented information faces a challenge of seduction and is unreliable sometimes (Mikkelsen, 2005:88).

3.1.2 Data analysis
Data was manually analyzed by aid of thematic content methods. Creswell, (2009:183-184) holds that data analysis is a step where data gathered from various sources are given meaning.
That being said, patterns emerging from readings and compiled data were generated and interpretation made regarding the identified patterns (Mikkelsen, 2005).

This enabled the researcher to give his interpretation in relation to the developed themes, and emerging differences and similarities in the data that was collected according to the objectives. Given the fact that the historical explanation variety of process tracing was the design governing the study, the method allows the use of comparisons outside the case in question. The analysis made use of some comparisons with agricultural performances in other developing regions and developed regions, and even between sectors in SSA for the purpose of adding essence to the research. The discussion in the analysis brings out the linkages the manufacturing sector can share with agricultural sector for an understanding of the vitality of a structural transformation, as presented in theoretical section. Presentation of data is made in form of subtitles under which the information is explained while, figures are used to illustrate trends and patterns over time where necessary. More so, tables are used to display important information and statistics. A good section of this work has relied on statistics and figures trying to compare them across time and other regions as well as domestic sectors with in SSA.

3.1.3 Reliability and validity
To ensure neutrality of the study, accredited sources of information from renowned authors are used to answer the question, to provide literature and the background to the study. The method of triangulation is used in controlling for bias in the study. Mikkelsen, (2005) argues that it involves looking at phenomenon from different sources. I used various sources of information to cross check and update information. Nevertheless, some time frames were missing adequate data especially the 1950, 1960 and the early 1970s on particular indicators used in the study. Therefore, most of the statistics used in the study tended to be those dating from the mid-1970s though the study made a qualitative contextualisation for the last 5 decades.
3.2 Background of the study

This section presents an overview of the agricultural sector in Sub-Saharan Africa region. It shows a brief economic overview of Sub-Saharan Africa, the status of agriculture on overview of the land resource in the region as well as the recent agricultural initiatives.

3.2.1 Economic overview

SSA refers to all countries in Africa except South Africa and North African countries (Eicher, 1989). The total number of countries in the region is 48 with more than 800 million inhabitants at a growth rate of 2.5 per year. Per capita GDP of the region is $633 (constant 2000) as of 2011. Poverty gap at $2 (PPP) has stagnated at 36% since 2008. The agricultural GDP annual growth since 2003 has been modest between 3% and 5%, with 2011 the latest year with data available at 4% annual growth. Per capita agricultural GDP as of 2011 stands at $334 (constant 2000) compared to India at $523 and South Asia at $550 (constant 2000) (http://databank.worldbank.org/data/views/reports/tableview.aspx# 2013). This implies that the agricultural sector growth has been sluggish, and the low per capita agricultural GDP compared to other regions seems an indicator of a lagging productivity of the sector.

3.2.2 Status of agriculture

According to various reports including (Donovan & Cleaver, 1994, Dixon et al, 2001, World Bank, 2008) the region is highly agricultural with exception of few mineral exporting countries that are less than ten. Agriculture throughout the recent history has formed the back bone of SSA economy, with sizable foreign exchange earners and chief exports being agricultural products. In colonial SSA, agriculture was purely practiced for subsistence and to provide cheap food for the urban and emerging industrial sector (Eicher, 1999:15-16). For a majority of the countries, two or one crop has been produced for export and on a large scale, what is termed as plantation farming, especially for nonfood crops such as cotton, tea, rubber, cocoa, oil palm, coffee, and sisal and to some extent groundnuts (Iimi & Smith, 2007).

Agriculture as of 2011 contributes 12% to GDP in SSA countries, and it was close to 50% in countries like Liberia, Comoros, Ethiopia, DRC and Central African republic by 2010 (FAO, 2012). Sixty five percent of the total labour force is directly or indirectly employed in the agricultural sector. On-farm and off-farm but agricultural related activities have been a source of

During the last 30 years a huge labour force in SSA and the most productive one has been lost in the face of political instabilities and HIVA/IDS and this has affected the farming systems especially the Highland perennial and maize mixed systems, while small scale and commercial farming systems has also been affected (Dixon et al, 2001, IEG, 2007, Kydd et al, 2002a).

3.2.3 Land resource
FAO estimates that SSA has one billion hectares of agricultural land. However, only 300 million hectare presently is under cultivation. From 1961-63 cultivated land was 123 million ha; this by 1999 had increased to 173 million hectares reflecting an annual expansion of 0.73%. Nevertheless total arable land\(^1\) currently stands at 9% and this is one percent higher than total arable land in Latin America & Caribbean at 8%. Forest land covers 17\% of SSA though the rate of disappearance is projected to increase with population and time (UNDP. 2012:30).

3.2.4 Recent agricultural initiatives
It has in the last 2 decades come to attention that SSA as much as has witnessed a growing service and mining sector, agriculture is still very crucial if poverty is to be diminished substantially and millennium development goals be met by 2015. The African Development Bank initiative under the New Partnership for African Development (NEPAD) has come up with a comprehensive African agriculture programme (CAADP) to foresee the development of the agriculture sector in the region. Efforts have targeted increased budget support to agriculture, agricultural research, small holder farmer integration and women involvement in the planning and implementation to rejuvenate the sluggish African green revolution (Practical Action, 2005, FAO, 2012, Maputo declaration\(^2\), 2003).

Having explored the background of the case under study, a platform has been formed from which the questions of the study can be executed so that the dilemma of a laggard agricultural performance can be underscored with in a descriptive- process tracing method of research.

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1 Arable land according to FAO is that piece of land including land under cultivation, land under permanent crops, and land under fallow for less than 5 years, land under pastures as well as land under feeds.
2 Maputo declaration refers to the assembly of the African Heads of states in Maputo where the leaders endorsed and affirmed their commitment to the support and development of various sectors and for agriculture in particular, to increase the public spending on agriculture to a minimum of 10\% and agricultural R&D 1\% of national budgets and accelerate agricultural growth at 6\%. 

15
4.0 Findings

This chapter lays out the results of the study. The results are structured in accordance with research questions. It is important to bear in mind that the results presented on other hand, have a bearing of details from the research literature, which information is analyzed critically in the next chapter. On addition, there is a section that shows the overview of the structural transformation and in particular, the status of the industrial sector with emphasis on manufacturing. This section is also critically analyzed in the next chapter.

4.1 Patterns of agricultural development

This section presents results in accordance with the first research question of the study. The results are structured in codes that repeatedly emerged from the readings.

4.1.1 Crop varieties

Agricultural production in SSA mainly consists of staple crops such as cereals, cassava, maize, yams, rice and sugar. From the point of non-staples, Africa has five main commodities it offers these are; a) tea, coffee and cocoa, b) livestock products, c) tobacco, d) cotton and cotton seeds, e) sugar. Other crops of particular importance are for instance, rubber in Liberia, and vanilla in Comoros (Iimi & Smith, 2007: 13). However, staple production has recently gained attention, after the performance of non-staple crops began to be disheartening in terms of revenue earnings on the world market.

For instance, Evenson & Gollin, (2003) have identified some tendencies in relation to crop variety improvement during the green revolution period of the 70s and 80s. (i) Modern variety development of crops was low in 1960 for all developing regions. The expansion of improved varieties accelerated during the 1970s, whereas for SSA, the use instead decelerated. (ii) As if not enough, breeding of varieties was being made in an irrational way, for instance in 1970s there was a general release of few modern staple varieties compared to other developing regions in terms of maize, root tubers, rice, wheat and sorghum & millet. It is notable that the defacto existing release of modern varieties was high for wheat in SSA and very poor for other crop varieties that suit better than wheat the wide agro-ecological conditions of the region. (iii) The rate of uptake of modern variety crops innovated was poor for SSA. For instance in 1970s, less than 20% of total rice cultivating areas were grown with modern rice variety, while less than 5% of land was planted with other modern varieties of maize, root crops, rice, sorghum and
millet apiece. In 1990s, we see an increase in planting of modern variety crops, but still the main staples for the bigger part of the region having less coverage in terms of land planted (Evenson & Gollin, 2003:759). This could have been so, because the soils were still fertile and land was still vast in relation to the population. Therefore, increasing output it seems was easier by land intensification. On the other hand, it shows that productivity improvement was not a priority in the postcolonial period, not until the problem of food insufficiency became alarming.

4.1.2 Mechanization

Land under mechanized irrigation was only 3% of farmed land by 1980. Moreover, in terms of distribution, irrigated farms tended to be large plantations, while small holder farmers in most of SSA, and in particular semi-arid SSA, depend(ed) on irregular rain-fed farming (Braun & Paulino, 1990: 673). Today, expansion in irrigated land according to latest reports reveal that it has been discouraging since 1980. Only 1% has been added on to make 4% of aggregate irrigated land in SSA according to World Bank, (2008). The infrastructural irrigation sector, according to African Development Bank, has been stationary at 6% of total arable land in Africa between 1980 and 2008. Distribution across regions in irrigated land indicates that the increase has been by only 1% from 3%-4% of total arable irrigated land in Eastern Africa. West and Central Africa have not seen any expansion in irrigated land, and land under irrigation has only been 1% between 1980 and 2008. Meanwhile Southern Africa has had a 2% expansion to 10% of irrigated land between 1980 and 2008 as presented in a table 1. In Ethiopia and Tanzania for example, 0.26% and 2% respectively of total agricultural land is under irrigation, far much below the average irrigated area in Asian green revolution countries (World Bank, 2008:9, Gajigo & Lukoma, 2011).

### Table 4.1: Land under irrigation in SSA region

<table>
<thead>
<tr>
<th>Africa</th>
<th>% of land under irrigation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1980</td>
</tr>
<tr>
<td>Eastern Africa</td>
<td>3</td>
</tr>
<tr>
<td>Southern Africa</td>
<td>8</td>
</tr>
<tr>
<td>West &amp; Central Africa</td>
<td>1</td>
</tr>
<tr>
<td>SSA region</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Secondary data, (2013); using Gajigo & Lukoma 2011
Use of farm machinery has also been inadequate. During 1980 animal traction system was used for less than 15% of land cultivated. Tractors were expensive and mainly concentrated in a few areas of Nigeria, South Africa and Northern Africa (Malton & Spencer, 1984: 673–4). There are no current statistics pointing to tractorization and animal traction, however, FAO data of latest year 2000 shows that the number of tractors in agriculture for the whole of Africa were 536,093. In comparison, East Asia alone had 3,087,135 total numbers of agricultural tractors during the 1990 period (FAOSTAT, 2013). These figures of tractors alone can explain a big difference in labour productivity in the two regions. That being said, mechanization becomes far more effective when complemented with soil science which is presented hereafter.

4.1.3 Soil/land management
Land management is crucial for maintaining soil fertility and augmenting land productivity. By 1983, mainly traditional land management techniques of mulching, contour plough, and tied ridges were being used. But in many parts of the region, land management was not a priority and with decreasing importance of shifting cultivation and bush fallowing, most fertile lands were losing nutrients due to soil mining³ (Braun & Paulino, 1990:673). Sanchez, (2002), points out the danger that soils have faced so far. He contends that soil mining had depleted vital nutrients for land productivity in the 4 decades after 1960s of 22kg of nitrogen, 2.5kg of phosphorous and 15kg of potassium per hectare of land cultivated. This indicates that with such a tremendous loss in natural fertility, soil improvement mechanisms of fertilizer application are not only necessary but also a condition for augmenting land productivity.

4.1.4 Fertilizer use
Fertilizer use in SSA has had a lot of politics surrounding it. Issues of discrimination in application with a favor accorded especially to cash crops, and limited capacity to produce domestic fertilizer, have been hinted on to have affected the distribution and application of fertilizer on farms (Malton & Spencer, 1984: 674).

Trends reveal that fertilizer consumption in SSA has been varied. In the 1980s, Nigeria and Zimbabwe accounted for 38% of fertilizer use in SSA, whereas more than three quarters of the region’s countries shared the 62% of fertilizer. Average fertilizer consumption in SSA

³ Soil mining refers to the consistent loss of nutrients that makes soil fertile. It happens in an instance of over cultivation of the same piece of land that accelerates crop-harvest removals, soil wash away and percolation.
stagnated at 8kg/ha in the 1990s until late 2000 when an increase in consumption led to an estimated use at 11kg/ha. This is a low consumption in relation to a country like India that consumes on average more than 90kg/ha of fertilizer (Howard et al, 2003, FAOSTAT, 2013). This low application can also be related to cost of fertilizer in SSA. For instance a metric ton of urea costs around US$90 free on board in Europe, it becomes US$120 while arriving at Mombasa port, and when it reaches Western Kenya the price is as high as US$500. Therefore, as earlier hinted on, limited capacity to manufacture fertilizer domestically puts the region at a low consumption rate (Sanchez, 2002). However, regardless of how many kilograms of fertilizer that are being applied, if the seeds are of poor quality, the productivity still raises a lot of questions.

4.1.5 Crop/seed improvement

A study done by Alliance for a Green Revolution in Africa, (2011) shows that less than half of SSA countries in the mid-80s had established seed production, and distribution mechanisms for major crops. Malton & Spencer (1984), reveal that introduction of high yielding varieties was slow in SSA compared to India, for instance ICRISAT was barely successful in introducing better sorghum and millet varieties in West Africa in the early 80s. Staple crops were being discriminated in terms of seed research and breeding, while the considered ‘potential export crops’ had priority (Evenson & Gollin, 2003). In some countries, the seed sector is still highly centralized and private initiative is slow in being integrated to undertake research and distribution of the improved seeds. Given insufficient funds, seed variety research is still limited and few varieties are being released for farmers (Beintema & Stads, 2010).

4.1.6 Research and Development

Agricultural R&D in SSA, in the past two decades prior to the year 2000 had stagnated. This stagnation could have been due to agricultural institutions that were not tailored to indigenous needs in some countries, while other countries had too big institutions, to be managed by the inadequate labour force existing at the time. Moreover, the research leaned on potential export commodities, at the expense of small scale and medium enterprise agriculture (Beintema & Stads, 2004). By 2000, progress in R&D was becoming visible however, less than 100 full time employed researchers could be traced in many of the countries. The number of agricultural researchers with PhD and Master’s degrees is still small especially in East and Central Africa, and the composition of staff is uneven, with few women as agricultural researchers (Beintema &
Stads, 2010). So far, the above presented results describe on-farm agricultural productivity indicators. The following section looks at off-farm patterns of agricultural development.

4.1.7 Agricultural trade development

There was a rise in the value of global agricultural exports since 1961, though in absolute terms, the world proportion of total agricultural exports had declined in SSA by 2001. SSA experienced a sharp decline in share of world agricultural exports from 7% in 1961 to less than 3% in 2000 (FAO, 2003:130). A wide disparity within export trade among SSA countries is also a factor to reckon with.

Within SSA, a few countries within each region account for more than 60% of the total exports. In Eastern Africa, Kenya, Madagascar, Ethiopia Tanzania and Uganda account for more 80% of exports and 17% of SSA exports. In West Africa, Nigeria, Ghana, Cameroon, Senegal and Ivory Coast, explain 75% in the region and 34% in SSA. South Africa though outside of this scope, and Zimbabwe account for 75% in southern Africa and accounted for 26% for SSA during the wake of the millennium. Therefore, only 12 countries in SSA in early 2000 covered 76% of total exports in the region while more than 30 countries represented 24% of exports (Diao & Yanoma, 2003:11). As if not enough, close to 50% of countries in SSA in 2003 relied on only two crops for export, with 12 countries relying on one major export crop for more than 20% of their merchandise export earnings. They relied on either, coffee, tea, cocoa, sugar or cotton (Broca et al, 2008:17).

<table>
<thead>
<tr>
<th>SSA</th>
<th>Country⁴</th>
<th>% of exports in region</th>
<th>% of exports in SSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Africa</td>
<td>Ke, Ma, Eth, Tz, Ug.</td>
<td>80</td>
<td>17</td>
</tr>
<tr>
<td>West Africa</td>
<td>Ni, Gh, Ca, Se, IvC.</td>
<td>75</td>
<td>34</td>
</tr>
<tr>
<td>Southern Africa</td>
<td>Zim, Sa.</td>
<td>75</td>
<td>26</td>
</tr>
</tbody>
</table>


But, scholars have continuously expressed how these crops are faring badly in terms of markets. The prices of these crops that SSA dearly stages and depends on, are stagnating at low levels if not decreasing. In other words the market for these commodities is showing a downward spiral (World Bank, 2008). Data reveals that, (i) in 1970, Ghana was the largest cocoa

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⁴ Ke-Kenya, Ma-Madagascar, Eth-Ethiopia, Ug-Uganda, Ni-Nigeria, Gh-Ghana, Ca-Cameroun, Se-Senegal, IvC-Ivory Coast, Zim-Zimbabwe, Sa-South Africa.
exporter on the planet and ranked among the biggest 20 countries to earn highly from exportation of a single crop. However, since then, SSA countries have not appeared on the list again. (ii) In the 60s Angola, Ethiopia, Uganda and Cote d’Ivoire were among the 10 major coffee exporters and earners. By 1980, only Cote d’Ivoire and Uganda had remained on the list. None of SSA country surfaced on the list until late 2000 when Ethiopia found a position, but still ranking last among the big 10 export earners from coffee (FAOSTAT, 2013). It can be recalled that prior to 2000, the low prices of SSA commodity exports in a given year, assuming they had created a deficit in trade, a STABEX fund established under the Lome I convention of 1975 would be provided to balance the accounts. However, this arrangement of funds was stopped in 2000. Thus, a future decline in agricultural commodity prices has not been insured against since then.

Indeed, there has not come to be such a thing as price stability of major agricultural exports of SSA. The table below shows price developments for selected commodities over the second half of 1990s and early 2000.

**Table 4.3: Price Developments for Selected SSA Export Commodities.**

<table>
<thead>
<tr>
<th>Time</th>
<th>Maize US$/ton</th>
<th>Coffee US cents/1b</th>
<th>Tea US$/kg</th>
<th>Cocoa US cents/1b</th>
<th>Sugar US cents/1b</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>117.20</td>
<td>133.49</td>
<td>2.01</td>
<td>73.41</td>
<td>11.36</td>
</tr>
<tr>
<td>1998</td>
<td>102.2</td>
<td>109.05</td>
<td>1.90</td>
<td>76.19</td>
<td>8.97</td>
</tr>
<tr>
<td>1999</td>
<td>91.76</td>
<td>85.76</td>
<td>1.80</td>
<td>52.08</td>
<td>6.29</td>
</tr>
<tr>
<td>2000</td>
<td>88.22</td>
<td>64.56</td>
<td>1.97</td>
<td>40.27</td>
<td>8.43</td>
</tr>
<tr>
<td>2001</td>
<td>89.61</td>
<td>45.67</td>
<td>1.52</td>
<td>49.03</td>
<td>8.70</td>
</tr>
<tr>
<td>2002</td>
<td>99.25</td>
<td>47.69</td>
<td>1.49</td>
<td>80.58</td>
<td>6.91</td>
</tr>
<tr>
<td>2003</td>
<td>105.07</td>
<td>51.92</td>
<td>1.54</td>
<td>79.57</td>
<td>7.10</td>
</tr>
<tr>
<td>2004</td>
<td>111.94</td>
<td>62.03</td>
<td>1.55</td>
<td>70.26</td>
<td>7.16</td>
</tr>
<tr>
<td>2005</td>
<td>98.39</td>
<td>82.76</td>
<td>1.47</td>
<td>69.77</td>
<td>9.9</td>
</tr>
<tr>
<td>2006</td>
<td>121.07</td>
<td>95.11</td>
<td>1.96</td>
<td>71.91</td>
<td>14.75</td>
</tr>
</tbody>
</table>

Source: FAO International Commodity Database, 2013

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5 Lome I convention refers to the 1975 economic cooperation agreement signed in Togo between the European Economic Community (EEC) and the African Caribbean Pacific (ACP) countries. This convention established a fund known as STABEX to stabilize economies of ACP commodity dependent countries in case they incurred deficits due to fall in international commodity prices.
A clear trend in the price developments is that, there has been volatility in prices of over time. There is a tendency of prices to boom for a specific year and slump for the next ones. Taking a look at coffee for example, the price of coffee was high in 1997 at 133.49 US cents/lb and in early 2000, the prices drastically declined by more than 50%, before a modest rise in mid-2000. The same price instability has been for cocoa, tea, sugar and maize respectively. What is visible in these trends also is the fact that, there is no single point in time when prices have gradually increased by 50%, however, when it comes to price decelerations; they are hasty, and can easily take a 50% decline. The effect on one hand is inhibited proper planning since incomes keep fluctuating unwarrantedly. On the other hand, it indicates that a great deal of export revenues is required to obtain a unit of an import, Box 2. Adler & Saso (2011) indicate that, commodity prices, especially for foods and agricultural raw materials have historically been declining since 1958, figure 4.1. Going by what Adler & Saso argue, it calls for checking the status of terms of trade for SSA. IMF, (2007) shows that, terms of trade for SSA have been discouraging. In the regional economic outlook 2007, SSA is indicated as having imported more than it exported in terms of
agricultural and nonagricultural goods between 2002 and 2008 figure 4.2. Middle income SSA countries are exceptions. They show some modest positive terms of trade over the same period while low income SSA countries exhibit a negative trend of terms of trade. The terms of trade in the IMF (2013) report indicate that imports have steadily been rising since 2008; while, exports have been fluctuating up and down, with booms and slumps.

Box 4.1: Illustration of Terms of Trade for SSA with Reference to Burundi

Burundi is a landlocked country with a population of 9.85 million inhabitants. The country is classified among the fragile and least developed countries. Per capita income in current US dollars stands at 251. It is one of the most unlikely countries to achieve even half of the millennium developed goals, come 2015. The main economic activity is agriculture and small holder farming with farm sizes of less than 2 hectares dominate the farming system. More than 65% of the population is employed in agriculture. The chief export crop grown is coffee and it constitutes 60% of Burundi’s exports. In 2007 total export value of Burundian coffee was US$38,484,416. At the same time, the total value of all goods and services exported was US$98,430,758.3. This implies that coffee alone supplied the country with close to one half of revenue earnings in 2007. The total imports’ value as of 2007, stood at US$464,102,385.1. Looking at the statistics, it shows that the country was in negative terms of trade. To further compare how disadvantaged primary commodities are in comparison with manufactured goods, let us compare the price of a tractor to the price of Burundian coffee. A four wheeled tractor made in the United Kingdom costed approximately US$38755 in 2007. The UK exported 42557 tractors in total. In other words, the total revenue from exports for Burundi as a whole in 2007 could enable them purchase only half of the tractors that were sold off by the UK. The illustration above is an indicator of how SSA commodity dependent countries have been tied in a cycle of unfavorable terms of trade in relation to manufactures’ dependent countries.

Sources:


It is true that access to international markets creates fertile grounds for increased production. Nevertheless, it is also beneficial if domestic markets in SSA can first be captured before thinking about overseas. Generally, intra-regional trade has not been fully exploited. Poor infrastructures have served to reinforce this inaccessibility to local markets. Transport costs are higher in SSA transport corridors than in other regions of the world. Citing Mali, it is revealed that transport costs were six times higher than in Pakistan during the 1990s, and 40 times higher than in France (Diao, et al, 2008:19). This implies, even if farmers in Mali were to increase their output, the transport costs to cities to sell output or purchase goods would reduce gains from this output and create disincentives for future productivity rise.

4.1.8 Market policy

In the nearby postcolonial period, markets were highly centralized with state parastatals and marketing boards, regulating domestic trading of inputs, crops, as well as exports. This implies that merchandise was largely regulated. Nevertheless, marketing boards were instrumental in coordinating trade in the environment of weak private sector. They filled the agro-infrastructural gap through provision of advisory and extension services as well as credits to farmers. They were known for stabilizing farmers’ incomes through creation of buffer finance stocks, which ensured a stable income to the farmer in periods of low world market prices (Doward & Kydd, 2003). Like any other public institution, marketing bodies had their weaknesses, *inter alia* low prices to farmers, delayed payments, overtaxing output etc. to some analysts, these shortcomings inhibited agricultural production (Bates, 1981). Internal hindrances to trade seem an insufficient explanation to low agricultural production, however, coupled with OECD policies on tariffs, quotas and subsidies, market access for SSA produce tended to be weakened. Not only was that a problem, the growing volume of exports with cheap prices from middle income countries of the green revolution in Asia and Latin America served to reinforce the weak SSA commodity access to international and domestic market (World Bank, 1982:40).

Putting that aside, recent information is underscoring a few issues from the post-colonial period with other new significant barriers to market access. Still looking through the different angles of data on markets, the issue of policy remains outstanding once more. Though there has been liberalization of trade in OECD countries, some policies, like that of subsidy if well eliminated in consideration of LDCs, could lead to increased international market access and induce production. Diao & Yanoma, (2003) using a global Computable General Equilibrium
(CGE) model of trade for Africa, simulated that, holding other factors constant, assuming subsidies alone are removed, SSA exports would increase by 20% and exports to the E.U and the U.S would increase by 33%. A detailed discussion on subsidies will be handled in the agricultural policy section. Leaving markets aside, the study furthermore, look at the developments in agricultural investment in SSA as presented below.

4.1.9 Public investment in agriculture

Public spending in agriculture as share of the total public spending is showing a decline according to different sources. FAO shows investments in various sectors for 10 SSA countries for the periods 1980-2007. It can be seen from the estimates that, agriculture attracted public expenditure of 6% both in 1980 and 1990 respectively, compared to defense that had more than 6% in both years. In the 2000, the investments in agriculture had declined to 3.6% while in 2007 the decline has continued down to 2.7% (FAO, 2012).

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<th>Table 4.4: Investments in SSA Agriculture, Selected Years (Percent)</th>
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Government spending per agricultural worker in the period from 1980-2000 declined by more than 50% in absolute terms in SSA. SSA countries are reflecting neglect towards the public share of resources allocated to the agricultural sector. In line with the Maputo declaration of increasing output by 6% annually, and spending in agricultural investment by at least 10%, less than eight countries according to the latest data of 2009 have achieved the target, ten countries are indicating signs towards the target in the nearby future, fifteen countries have shown signs of moving away from the target, while for another eight countries, it is not clear if they are heading in the right direction or not (Benin et al, 2011). The Agricultural Orientation Index (AOI) measures the ratio of public spending on agriculture to the GDP contribution of the sector. For 9 SSA countries that had adequate statistics since the 1980, the AOI has tended to decline from 0.3 in 1980-89 to 0.17 in 1990-98, 0.14 in the 2000-04 while 2005-08 was 0.12. The rest of the developing regions have had a decreasing but higher ratio than that of SSA during the same period (FAO, 2012:28).
4.1.10 Investment in R&D

Expenditure on research and technology in the SSA agricultural sector has been inadequate, and thus production has tended to lag. Meanwhile, the resources invested in research and crop modification have tended to produce thin results due to insufficient localization of the research to indigenous conditions (Dethier & Effenberger, 2011:16). Surprisingly, as Pardey & Alston put it, “the starkest contrast is between the Unites States and Sub-Saharan Africa, with India usually in between. Africa has almost 30 percent more public agricultural researchers than the United States and 50 percent more than India but the training of these researchers continue to lag well behind those in the Unites states...” (Pardey & Alston, 2010:7). More so, the amount spent on a researcher is four times higher in USA and twice in India than SSA in general. Pardey, et al, (2006) add that, in fact, real spending on agricultural researchers’ training is 50% less in SSA today, than in 1981.

Beintema and Stads, (2004), argue that R&D had significant progress in the 1970 and early 80s both in agricultural research capacity and spending; however, it remained below the levels in other regions of Asia and South America. In the late 80s and the whole of the 1990s R&D tended to stagnate. The trend since 2000 indicates an increase in investment in R&D. There was a rise by 20% of R&D spending since 2001 from mere 5% of total agricultural spending on R&D in SSA in 2000. Though impressive, this increase was championed by only 5 countries with Nigeria accounting for more than one third. Also, by 2008, the average resources spent on research and development though had increased, were still less than 1% with few countries like Burundi, Kenya, Botswana, Mauritius, Uganda and Namibia spending slightly 1% or higher in accordance with the CAADP target of 1% (Beintema & Stads, 2011:8).

4.1.11 Foreign public investments

The 1990s marked an epoch of declining external assistance to agriculture globally. However, total commitments to African agriculture declined substantially compared to other aid receiving regions. Aid to agriculture was more than halved from 1980 to 2002. For instance, between 1994 and 1998, of the estimated 72 billion (constant 1995 prices) total commitments, Africa shared less than 12 billion. More so, Africa shared in total, only 21% of agricultural donor resources, below Asia with 46% and the South America with 23% by 1998 (FAO, 2000:19). Agricultural aid per worker in SSA reduced from US $20 in 1980 to US $ 7 per worker in 2001. This decline in aid meant also decline in research on agriculture (Bezemer & Headey, 2009:16).
Looking into West Africa in particular, ODA to ECOWAS has been inadequate in agriculture yet the sector is in many of those countries a strategic economic growth engine. The assistance to the agricultural sector from the total ODA to all ECOWAS members was only 4.7% between the years of 1995-2007. The problem of insufficient aid in West Africa would not be acute if the available assistance was well coordinated. Oxfam found that most aid is haphazard and uncoordinated with government programmes and priorities, a factor that weakens local capacities and the governments’ potentials to make feasible budgetary plans (Oxfam, 2009:11). The above presentation shows that agriculture has been underfunded in the most critical time, when investments were required to catch up with the increasing population and other regions of the world.

4.1.12 Foreign private investments

Foreign direct investments (FDI) have been growing particularly in the agro-industry, tobacco processing and beverage sector over the years, and less in primary agricultural production. FDI to the agricultural sector in SSA have been showing a slight increase, though the region is receiving the lowest amount of FDI in the sector with mere few countries receiving less than $100 million of FDIs. Lowder & Carisma, using databases of Financial Times reveal that, FDI to SSA agriculture from the period 2003-09 have tended to stagnate, except through 2007-2009 when there was a slight increase, which however, later reversed to a decline in 2010 (Lowder & Carisma 2011:36).

In this section, we have understood that in the early postcolonial period, increasing productivity in agriculture was less of a priority and efforts in place were aimed at ensuring food sufficiency and boosting industrialization. More so, mechanization in Africa has been weak and simple farming techniques have barely been applied in agriculture at least for the majority of small holder farmers. It is also clear that there is a general loss of market for African primary products that are chief export revenue earners, like coffee and cocoa. Meanwhile, there is lack of a binding global agricultural trade policy thus; multiple trade distorting producer and market subsidies, especially in developed countries remain profound. In as far as resource investment, we have learnt that governments in SSA and donors have generally decreased their amount of investment in SSA agriculture since the late 80s, this has left the sector undercapitalized and less productive.
4.2 Trends in agricultural policy

This section looks at the agricultural policy in SSA, and presents the extent to which International Development Cooperation (IDC) has been involved in the dominating policy debates.

4.2.1 Postcolonial agricultural policy

According to Doward and Kydd (2003), the agricultural development policy in SSA can be categorized in two phases, the state and the market led agricultural policies. This study has categorized the state agricultural policy as postcolonial agricultural policy which I present in the proceeding paragraph while for the market led agricultural policies, I presented before in the market patterns section.

The first two postcolonial decades were dominated by the model of import substitution; this school of thought requires investment in the industrial sector to produce goods that were hitherto being imported. Import substitution was adopted following the need to achieve rapid economic growth. This was hoped to lead to a drastic reduction in consumer goods’ imports, boosting infant production, proper utilization of resources, creation of more employment opportunities in manufacturing, and nurturing of the entrepreneurial base. More so, import substitution would make manufactured inputs available for agricultural production, thus, this shielding of revenue from outflow would generally lead to growth of the economy and self-reliance (Doward & Kydd, 2003).

Now, alongside this import substitution industrial strategy that was state managed, operated the agricultural sector that was state controlled at the same time. Scholars have been so critical of both policies, in other words, import substitution strategy has been criticized for creating a discriminatory force against the agricultural development in SSA. Outstanding among other points, has been the heavy tax burden on agriculture, overvalued currency rate as well as the open protectionism of industrial sector at the expense of the agricultural sector. In the colonial period, agencies (parastalas in post-independence) were created to help in the stabilization of farmers’ incomes and farming economy. Bates, (1981) argues that, the surplus these agencies would get was invested back into the farmers during periods of low prices for crops on the world market (Bates, 1981:13).

With independence however, the African leaders were more determined to modernize their states than colonial masters had done. They had to find a way of raising revenue to invest in
modern sectors. At the time, import substitution was the viable development strategy option at hand. The then parastatals (formerly agencies) were given a responsibility of raising revenue for the government to invest in industrialization. To do this, parastatals had to squeeze producer prices reasonably below the world markets to generate revenue the state would use in industrial programmes. In summary, critiques of import substitution policy assert that, agriculture suffered from heavy export taxation by the state to raise revenue, low producer prices and limited protection in relation to the infant manufacturing industries that were being groomed. These could be said to be the direct ways how agriculture was being discriminated. There is yet another indirect way how agriculture was disadvantaged; this was through the overvaluation of the exchange rate. Whenever the currency is overvalued, exports become expensive and imports look cheaper. Given the fact that agriculture was not protected by import quotas and import tariffs, the producers faced this negative externality of low incomes considering the out competition from cheap, imported agricultural commodities (Townsend, 1999).

However, other scholars advance that, the over lamented heavy taxation would not itself have produced the negative effect on agricultural development if surpluses were being ploughed back in form of rural public and infrastructural investments as well as buffer incomes. For instance, Townsend (1999) shows that, in East Asia, agriculture was equally taxed highly though at the end of the day, investments contributing to agricultural development were being effected. Using an illustration of Tanzania however, Bates (1981) reveals that Tanzania had less than 10% of population in urban centers though the urban areas received 30% of public spending consecutively in the first two development plans. This shows a clear discrimination of rural, agricultural areas with more significant populations. Whereas, others believe, the internal conditions alone are insufficient to explain the woes of the agricultural sector without looking at the external point of view. By this, Mills (1989:6) point out the two oil crises that could have worked hand in hand with the internal weaknesses to pitfall agricultural productivity in SSA, not forgetting the ill advice and ‘blind eye’ of the international institutions and organizations, which Africans had faith in, in terms of development expertise and advice.
Box 1: Economic Partnerships before the Millennium

During the mid-60s a few francophone countries especially in West Africa entered an economic partnership with European Economic Community (EEC) by then. In this partnership trade and financial assistance for development were key issues in the arrangement. This partnership was broadened with the entry of Britain in the EEC in 1975, what came to be known as Lome I convention was signed. Unique about this convention was the financial and economic cooperation of EEC and ACP countries and more so, the establishment of the STABEX funds to insure against agricultural commodity failure on the world market. The most significant commodities covered under this arrangement were coffee, tea cotton, cocoa, rubber, ground nuts, palm oil crop etc. The STABEX funds were being disbursed on commodity by commodity basis. The fund initially began with support to ACP countries’ tree crop exports and later on in 1990s, it had expanded to include other crops such as groundnuts, bananas etc. Though impressive, some important commodities to countries like Swaziland, Botswana, Mozambique, Mali and Chad like sugar, tobacco and meats were still left out of the scheme by 1999.

The STABEX arrangement has been critiqued for the time lag in disbursing funds that meant lack of effectiveness of the resources. It has been condemned for covering a fraction of SSA commodities. Moreover, the funds were sometimes not reaching the intended users (producers) since the governments would put them under sue in other sectors that were wanting at the same time (Aiello, 1999) In an evaluation report of the European commission, the fund was discontinued in 2000. “Stabex funds were stopped in 2000 because, amongst other things, the late release of funds meant their use was not counter-cyclical.” However, six countries according to the same report were still in use of the funds by 2009 (European commission, 2012). Other critiques have argued that, it seems the fund was very inefficient given majority of SSA countries since 1975, are still among the least developed countries in the world.

From there, a series of conventions after five year span continued to be signed e.g. Lome II, III, & IV until 2000 when the 2000-2020 partnership was signed in Benin what came to be termed as the Cotonou convention. The Cotonou agreement is assessed and amended if necessary every after five years (European Commision, 2012). Within the Cotonou frame work stands the EPA that has raised a lot of concern in the ACP countries. Krasniqi, et al, (2008) argue that the terms in the EPA are kind of problematic to some middle income SSA countries that already cannot benefit from the EBA arrangement since it caters for least developed countries according United Nations standards.

Sources


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4.2.2 Agricultural policy in the General Agreement of Trade and Tariffs

During the 1990s, arrangements were made to include an agricultural policy in the General Agreement on Trade and Tariffs (GATT). This came to be known as the Uruguay round of multilateral negotiations. The most important resolution reached was, to continue in future with negotiations on the agricultural policy. Two things can be identified from the Uruguay debate; a) domestic agricultural policies of OECD countries were not altered much, as it was believed they had little harm on agricultural trade, b) export-import measures were negotiated, and it was agreed in 1995 that, export subsidies of and import taxes of OECDs be reduced for agricultural exports (Abdulai & Delgado, 1995:17).

Generally, we can say that the Uruguay round of trade did not have much impact on agricultural trade. The notable effect on ground could be the precedent it set in motion for future development rounds and negotiations that led to the birth of the Doha Development Agenda (DDA). However, one could also assert that, since it was the first multilateral arrangement of the kind involving agriculture, the notable agricultural effects that began in the 2000s could be partly attributed to the Uruguay round. The discussion on these and more agricultural arrangements will be handled in the analysis section, and shall briefly be mentioned in the proceeding paragraphs of this section.

The Doha negotiations of 2000 came up to strengthen the 1995 Agreement on Agriculture designed under the Uruguay round. With a more zeal than before, emphasis was on reducing and abolishing where necessary trade and producer distorting agricultural policies. What came to be called the three pillars of discussion can be identified as; domestic support, export competition and market support. The Doha ministerial declaration of 2004 asserted that, “there will be a strong element of harmonization in the reductions made by developed members. Specifically, higher levels of permitted trade distorting support will be subject to deeper cuts.” (FAO, 2005:29). Elimination or reduction of domestic support would help to break the cycle of over production that necessitates intervention by OECD countries to stabilize incomes and prices at home. Relatedly, when over production has been managed, the problem of export subsidies is handled. This has benefits for both OECD and developing countries a piece, i.e. OECD countries save the dollars that would be spent on subsidies, while developing countries are relieved of dumped food commodities that displace domestic food merchandise, and at the same time, the saved dollars in the OECD could be in turn used as assistance to upgrade the low productivity of
agriculture in say, SSA. Market support comes in terms of regulating produce from developed countries to enter OECD markets, if dealt a way with, or substantially reduced; there is a likelihood of increased agricultural exports of developing countries to OECD countries.

However, the Doha round of negotiations have been stalling since then, and by 2009 in Geneva, the latest round of ministerial negotiations hit a deadlock. For instance there was opposition from the US business community who called upon the Obama admiration to reject the Doha proposals in the 2008 round, citing that the proposals were unfair to the Americans (Cho, 2010). Nevertheless, there has been some impact as already highlighted in the precedent paragraph from these world trade organization negotiations. For instance, the common agricultural policy (CAP) of the EU, since the negotiations began way back in the 1990s in Uruguay, has made changes. Direct intervention by buying off surplus was halted for some products like maize in 2006. Intervention prices were also reduced in the diary and fruits sectors while producer payments were promoted. Multiple income payments to farmers were replaced with a single payment depending on size of farm, production and environmental safety conditions (Bhala, 2012).

There have been some other arrangements like the Generalized Scheme of Preferences (GSP) that gives reduced tariffs to commodities of developing countries in European markets, the Everything But Arms (EBA) purposely for Least developed countries trade with European union, Africa Growth Opportunity Act (AGOA) for the U.S and Africa and the ongoing negotiations of E.U and ACP countries on the EPA, with an ultimatum to ACP countries to sign the comprehensive agreement by January 2014 or risk cutting their membership. Looking through the whole process, the above mentioned effects seem to be so far the changes that could have accrued from the slow-moving Doha negotiations. However, much is left to be desired.

Koning, (2002) argues that agriculture in OECD countries is still protected and a similar situation occurred in the South Asian green revolution of the 1970s and 80s. On the contrary, current international debates are against protection of the agricultural sector, the debates contend that, protection will reduce the chances of competition and gains from trade by developing countries. Input subsidies have been under scrutiny in SSA by the international development overseers, and according to Havnevik et al, (2007), this tendency is affecting small holder productivity of staple crops especially in the era of soil mining in SSA. In explaining the intensity of a subsidy, Stiglitz and Charlton, (2005) offer an illustration of a European cow that is
subsidized daily by US $2, which in World Bank standards are required to lift a person in SSA to the poverty line.

4.2.3 Reaction of IDC to international agricultural discourse

The aid policy to agriculture has been intriguing in the sense that, aid has been conditioned for SSA most of the time. Back in the 1960s and 70s, the World Bank was slightly conditional in lending for traditional export crops in SSA, on grounds that over production would lead to distortion of price stability in the world market. Such beliefs drew from the works of Nurkse in the 1950s, when he argued about export pessimism and inelastic demand for primary products in the world markets.

In the structural adjustment period, the debates revolving around aid had one message of structuring the economy as a precondition for resources. Most of the donor community, like USAID, responded positively to the call of the IMF and World Bank to give more assistance to countries that were willing to implement the liberal market policy (Anderson & Masters, 2008:8). In a call to the IMF and World Bank to revise their methods, the Oxfam brief report, (2006) presented the cries of the Malian president, Mr. Amadou Toure in 2005 at a Washington conference, “... often programmes are imposed on us, and we are told it is our programme....People who have never seen cotton come to give us lessons on cotton. The conditionalities of certain donors....are so complicated that they themselves have difficulty getting us to understand them. This is not a partnership. This is a master relating to his student.” Oxfam, (2006:3).

It should be noted that, Mali had been denied substantial amounts of aid at the time, for having refused to fully privatize her cotton sector. More so, structural adjustment policies of the major donor communities, according to the Nordic African Institute report of (2007) were a wrong doze to small holder rural producers in SSA. Similarly, liberalized markets came with a tendency of price speculations and hoarding. Traders especially in hard to reach areas cheat farmers by offering them a low price during periods of good harvest, while, prices rise during periods of poor harvest, either way, the farmer loses. Foreign companies have benefited from the markets in SSA while the region is struggling with difficulties to penetrate the international markets, thanks to deregulation of trade (Havnevik et al, 2007).

Recently, World Bank financing to private investors has come under critique by some scholars. It is pointed out that, these resources are harming small holder farmers in developing
countries through land evictions and grabs by foreign land investors in the era of increasing demand for biofuels (Nash, 2013). Fears have been expressed for example as regards the Swedish aid policy. It is speculated that aid is likely to shift to support of industrial agriculture. Analysts have expressed that industrial agriculture was tried in India, however, the results were soil degradations, and fossil fuel use that affects the environment and landlessness that comes from buy off of poor farmers land. For instance in Tanzania, aid to private business is likely to cause chaos since much of the fertile lands are being taken away from small holders by companies that receive aid for bio-fuel and export production in the name of foreign direct investments from Sweden (Havnevik, 2011, Weso & Nygren, 2012).

In this section, we have seen the details concerning agricultural development structured according to research questions. Important issues have been explored such as the trend of investments, the challenge of agricultural technology, the challenge of markets and the international policy concerning agriculture etc. The next chapter will discuss and analyze these results in a way of testing their viability to explain the low productivity of agriculture in SSA. However, before I present the analysis, the following section presents the results concerning the status of manufacturing sector in SSA. This in particular has been the major contribution of the study especially through integrating the linkages between agricultural productivity and light manufacturing as will be seen in the concluding section.

4.3 Structural transformation pattern

This section complements the patterns of development in the agricultural sector in SSA by looking briefly at the performance of the manufacturing sector with the intent of understanding how a structural transformation as envisaged by Lewis, has “performed” during the last 50 years.

4.3.1 Production and Export performance of manufacturing sector

SSA industrial sector in 1965 period had a 29% share in the GDP, this increased to 32% by 1975, and it reached the peak in 1985 at 34%, before beginning to decline in 1995 and stagnating in 2003 at 31% share in the GDP. Hence, industry’s contribution to GDP has increased only modestly with 2% units during the period 1965-2003. Manufacturing in particular was higher in 1975 than 2010 at 17.7% in former and 12.4% in latter share in GDP. As if not enough, even the growth rate in manufacturing has been decreasing since the 1960-70 period from as high as 7.9%
to as low as 1.6% in the 1990-2003 period. In 2005, SSA share of manufactures in world production declined to 0.3% from 0.4% in 1980. Meanwhile, the trend was the same for exports from 0.3% to 0.2% of world manufactures. Light manufacturing is also declining to less than 1% irrespective of the preferential treatments in US and European markets from the 1.5% in the 1990s (Dinh & Clark, 2012).

**Figure 4.3: Structural Transformation Envisioned by Lewis and that of Present**

**Panel A: A hypothetical Structural Transformation**  **Panel B: Structural Transformation Today**

*As envisioned by Lewis.*

Manufacturing has tended to be uneven in terms of export trade. For instance, in 1965 only two countries in SSA accounted for around 50% of the exports as manufactures in total domestic exports. In other words Congo Brazzaville and Central African Republic had the highest degree of manufactured exports in the 1960 and 70s especially agro-products and wood products. As of 2010, Central African Republic manufactured exports are 3.2% of total exports while Congo’s manufactures are 30% of exports (Lawrence, 2003, World Bank DataBank, 2013). Today, mainly Southern African countries are showing signs of a good competitive manufacturing sector. Countries like Swaziland had 43% of GDP contributed by manufacturing as of 2005-09 periods and had 71% of her exports as manufactures (wood pulp, soft drinks, textile & apparel and sugar). Woe in manufacturing is in countries of Ghana, Mali and Kenya reflected in declining manufactured exports as well as manufacturing share in GDP. These countries in the past had modest textile and cotton seed oil exports for Mali, textiles, beverages, cocoa processing and flour milling plants for Ghana, while Kenya prided with garments and dairy products (Dinh & Clark, 2012, globalEDGE, 2013).
4.3.2 Employment in manufacturing sector

Manufacturing firms employ few workers in Africa on average compared to Asian firms. It is argued that, Africa has the highest number of micro and small manufacturing firms in size with average size of 47 employees compared to south East Asia with more than 100 employees in an average size firm (Dinh & Clark, 2012). Agricultural in SSA has seen a decline in labour force participation, this would according to Lewis imply the rise in labour force partition in industry (manufacturing). However, Bryceson, (1996) shows that agricultural labour force declined from 78% to 68% in SSA between 1965 and 1989. In contrast, industrial labour force in SSA remained flat at 8% of total labour force in the same period. This is an indicator that a structural transformation is barely taking place given the fact that the surplus labour is nowadays ending up in petty trade of the informal sector.

4.3.3 Constraints of industrial growth

Dinh et al, (2012) are partly in agreement with Lewis that sustained productivity in agriculture will come true through a structural transformation, where workers get pooled out of the agricultural and informal sector and they get absorbed in the industrial sector. Matsuyama (1992) held that, advances in manufacturing technology are crucial for the growth of agricultural productivity of an economy. Lall & Wangwe (1998:71) contend that, manufacturing in SSA has been a parasite on the primary sector, using up its earnings while contributing little to boost the sector. This, Lall and Wangwe argued in reference to what literature has tended to contend that, agriculture provided capital to kick-start industrial projects in most of SSA countries, yet these industries failed to expand and extend spillover benefits to agriculture. However, in this section, I explain the challenges that the manufacturing sector in SSA is facing. My stand point in this case is that, working out these obstacles gradually will revamp the vitality of the manufacturing sector thus; Lall & Wangwe (1998) could may be in future studies record a symbiotic other than parasitic relationship between the manufacturing and agricultural sector.

We can trace as already mentioned in the agricultural policy section that the tendency of international donors to attach economic assistance to governance issues short circuits progress, not only in the agricultural sector but also in the manufacturing sector. Taking Kenya as a point of reference, the country is one of the poor countries in the world that can hardly do much without economic assistance. However, World Bank and IMF have been suspending aid to the
country on several occasions. For instance, between 1991 and 1993, assistance had been temporarily halted. In 1997 and 2001, again economic assistance was withheld on grounds of poor governance. Going by data around those periods, the manufacturing sector has equally performed badly during the 1990s in Kenya. (Bigsten et al, 1999, globalEDGE, 2013). Temporally withholding of aid on good governance terms is one thing, and neo-liberalism still by the donors is another thing to reckon with as presented below.

When carefully tracing the processes of structural transformation and growth of manufacturing sector in for instance East Asian countries, we see that there was a high degree of freedom to play and switch development strategies at will, depending on the circumstances. As an example, Taiwan was able to employ import substitution strategy between 1952 and 1972 to develop her manufacturing sector and later on, it opened up her economy and ventured into export of manufactures when the infant industries were in a better position to handle competition. Similarly South Korea and Singapore maintained the role of the state in their industrial development. The state was instrumental in regulating trade using the possible tools available to promote domestic production and international competition (Brautigam, 1994:127).

In fact, Gereffi (1989:518) argues that, South Korea and Taiwan were able to make proper use of the import substitution industries established in 1960 and 70s to venture into a competitive export led manufacturing in the 1980s. However, the situation in Sub Saharan Africa has been to a large extent a different one. Given the fact that neo-liberalism policies have always been seen as ideal for instituting rapid economic growth and development in developing countries by World Bank, IMF and other donors, countries that depend on the technical and financial assistance of these organizations have been under pressure to adopt the Washington consensus doctrines (Kaplinsky, 2008).

The free trade and privatization in some countries of SSA are lamented to have worsened the stiff competition with cheap manufactured import from low cost Asian countries that are already well established with large economies of scale. Studies show that in Ethiopia in 2006, the trade relations with China though are a mode of technology transfer; the cheap imports were kicking local enterprises out of business. There were considerable Small and Medium scale Enterprises (SMEs) that scaled down operations, while some recorded bankruptcy. Similar complaints were recorded for textile firms in Zambia and Nigeria involving heavy job losses due to out-competition from cheap Asian manufactures in 2007 (Kaplinsky, 2008).
It is also important to recall that African countries since early 2000, enjoyed a favored position in the export of textiles to the USA under the AGOA scheme. This was possible by imposing quotas on Asian garment products in the USA, however, by 2005; the quota on China and other countries was lifted. This implied that, Asian countries dealing in clothes were not only going to displace garments in SSA boundaries, but also in the USA and Europe, since they offered the garments at cheaper prices. Another manufacture that Africa and Ghana in particular was exporting with an advantage to Europe was furniture; however, beginning 2005, the preference was shifted to Vietnam and China. Ghana faced a cut throat competition from Asian exporters who were offering furniture at a reasonably lower price. Favorable competition in manufacturing requires strong ability to mobilize capital for investment, the capital accumulation potentials in SSA are explained below.

One of the ways according to Lewis (1954) of acquiring capital to invest in modern industrial sector is through mobilization of domestic capital and another is through foreign direct investments. In SSA Gross Fixed Capital Formation (GFCF) and foreign direct investments were not correlated with manufacturing or industrial sector, in fact, there is a general decline in the two forms of capital accumulation with foreign direct investments trying to recover of recent. For instance gross fixed capital formation was 25% of GDP in 1975, higher than south Asia to 16% of GDP, and began to decline to 16% in 2000 when South Asia was showing an increase at 22% of GDP. There was a slow recovery in SSA, as of 2011 at 20% while south Asia scored as high as 28% of GDP. Similarly, foreign direct investment rates also declined in SSA since the 1980s form 19.6% in early 1980s to 17.3% in 1990-1993, and to some scholars the boom in FDI bypassed SSA (Lawrence, 2003).

Figure 4.4: Trends in Gross Fixed Capital Formation in SSA

Source: World Bank database 2013
Note: Vertical axis shows GFCF percent of GDP
Lack of local capacity to handle the manufacturing sector has been considered a serious obstacle to growth of the sector. Meier & Steel, (1989) show that SSA faced high management costs due to reliance on expatriates in industries and technical activities. The salaries of expatriates were 3 times as much in Africa than in Europe, and in Ivory Coast that was an industrializing potential by 1989, the salaries of expatriates were one quarter of manufacturing value added.

Limited industrialization in SSA can also be explained by lack of adequate markets. Unfinished regional integration hampered and continues to affect the growth of industrial sector. Integration would increase market size and enhance competition. Integration has been affected by poor infrastructure, high costs that make goods expensive from member countries, political disputes manifest and latent etc. (Meier & Steel, 1989). The unlevelled playing field at the start of liberalization explains the slow seizure of opportunities to increase manufacturing and trade in SSA. More so, SSA has continued to export combinations of products that are primary, and resource based, compared to Asia where low-tech, medium and high-tech products have quickly found their way in exports (Dinh et al, 2012).

Poor business environment is cited as a big obstacle to labour productivity in the manufacturing sector in SSA. An environment of financial inaccessibility and high costs of operation affect productivity. Using enterprise Survey data (2006-2010), Dinh and Clark calculated that access to finance, holding factors constant, can increase employment of permanent employees in a firm by 3.1% while limited access can reduce the number of permanent workers by 1.7%. A survey of 38 SSA countries in 2006-2009 indicated that costs for access to credit and electricity were huge and binding constraints to business performance. Bigsten & Söderbom, (2005) add that because of unfavorable business environment, up to 40% of Africa wealth is kept abroad. That being said, failure to formalize the informal sector is explaining why firms are failing to graduate to big firms, and expand to attract more labour. Informal sector industries are undercapitalized, lack expansion and thus can hardly employ more labour (Dinh et al, 2012). Hence, inaccessibility to credit, especially by small firms and electricity costs has made it difficult to improve the manufacturing performance.

In summary, we see that the SSA manufacturing sector has been challenged by factors not only of its own making, but also exogenous factor. For instance, events of the 1970 to early 1980 like the oil shocks, the decision of the US to convert the system of gold determination of the dollar,
the oil price spikes, and the escalation of the HIV/AIDS affected the industrial sector’s capacity to increase production and absorb more labour from the agricultural sector (FAO, 1985, Havnevik et al, 2007).
5.0 Analysis

This chapter presents a discussion and analysis of results. The analysis is structured in sections based on the research questions, while themes are developed in each section by the researcher according to the findings. The first part of the analysis discusses the phenomenon of low agricultural productivity, as an intra-agricultural issue. The last part of the analysis discusses the assumed linkages between, and enhancement of a light manufacturing sector leading to structural transformation, and increased agricultural productivity in SSA.

5.1 Patterns of agricultural development

This section analyses and discusses the trends and patterns in the findings of this research that are directly related to agricultural productivity in SSA.

5.1.1 Crop variety argument

The disheartening productivity of SSA can be on the one hand understood when looking at crop varieties. It can be argued that the delay in introduction of modern variety staples of cassava, millet, maize and beans in the early postcolonial period created a disadvantaged ground for the region to compete with other developing regions that got access to improved staple varieties in time. Moreover, most initiatives had been geared towards improving export crops as to increase foreign exchange earnings. It can also be recalled that, this was the time when the assumption of industrialization led growth was high on the agenda in SSA. It is most likely that the neglect of staple crop research was as a result of pursuance of industrialization research. Therefore a limited scope of research on crops that suit the agro ecological conditions of SSA explains the low productivity of the crop sector in relation to other crop producing developing regions (Evenson & Gollin, 2003). Research on some crops is again beginning to decline before it matures fully. For instance, Barnett, et al, (2011:21) argue that, there has been a declining release of resistant and short maturing rice and maize varieties in Uganda since 1990.

5.1.2 Mechanization argument

Mechanization increases labour productivity since the stock of capital per worker increases, as more tractors, ox-ploughs and irrigation equipment become available. The situation in SSA has been a disappointing one. Unfortunately there are limited statistics to reveal current mechanization levels in agriculture especially tractors and ox-ploughs. In the findings, we saw that mechanization in SSA has been limited, compared to other developing regions. Binswanger
& Pinali (1988), confirm that ‘tractorization’ is poor in SSA. However, they argue that, this is due to the undulating terrain of most parts of the region. They add that use of tractors was found not to increase yields in SSA but increased acreage. Nevertheless, in this study I argue that what matters is increasing productivity of agriculture regardless of whether it is from yields, land or technology. Limited use of tractors and ox-ploughs in most parts of SSA has affected the possibility to increase productivity, since most farmers are still using simple rudimentary tools, like hoes to till land. The implication has been one of where more labour is used to plough a small piece of land that would otherwise have been cleared in a short time. This leads to low labour productivity.

Looking at irrigation mechanization, it can be argued that lack of small scale irrigation has crippled agricultural productivity in SSA. The 4% irrigated land in SSA is so much below the irrigation potentials in South Asia and Latin America during their agricultural take off of the 1980s. It is also plausible that failure to increase the amount of land under irrigation significantly since 1960 beyond 2% units in SSA, especially in this era of climate change, explains a significant part of low yields. Findings of this study are in harmony with Malton & Spencer, (1984) who argue that large scale irrigation is doubted given the management inadequacies to produce enough food for the populations. The SSA situation where half of the farmers are small holders, increased access to small scale irrigation technologies would be a viable option to increase crop growing seasons. Also Barnett, et al, (2011) add relevancy to the study, when they find out that reliance on rainfed seed breeding technology has affected the potential to breed sufficient varieties of seeds in Tanzania and Kenya.

5.1.3 Fertilizer argument
Soil and land fertility is crucial for maintaining and augmenting land productivity. Coupled with long time soil mining, most soils in SSA are becoming low yielding. We saw in the findings that important nutrients in soils have been lost at unprecedented rates in SSA. The option of fertilizer use to rejuvenate soil fertility according to findings has been far from reach in some countries. The cost of fertilizers is high and with abolition of subsidies, application has reduced drastically. Findings are correlated with AGRA report (2011) in West Africa that fertilizer application in Burkina Faso was at low levels of 6kg/ha far below the world average. Moreover, farmers usually find it difficult to adopt new high yielding crop varieties, since they require a great deal of inputs. Malawi has stood out as an example, when it reinstituted fertilizer subsidy after a long
period of low maize productivity and invested in fertilizer in 2007. Yields of maize according to reports, increased from 0.8 tons/ha to 2 tons/ha above the 1.6 tons/ha required by the MDG to escape hunger by 2015 (Geremo, 2012). Even if the subsidy programme was not very efficient; for instance, critics argue that it benefited more the well-off farmers than rural poor farmers, and that private fertilizer traders were crowded out. It should be noted that, the increased production of maize sent prices of food low. Therefore, rural farmers who spend some section of their money on food and urban workers who get a small salary are finding it somehow affordable to get a plate of food. In addition, neighboring Zimbabwe has been a strong beneficiary of the high production of maize in Malawi, through a great deal of maize imports.

5.1.4 Seed R&D argument

Seed improvement is being affected by insufficient funds to undertake long term research in the crop sector. Most of the funds are donor dependent, and thus are subject to international shocks in donor economies. For instance, rice research in Uganda is entirely being funded by the government of Japan and thus, fluctuations in the Japanese economy are likely to affect drastically the projects in pipeline for new rice developments (Barnett et al, 2011). In many countries, private research involvement in the crop research sector has not taken toll. In Niger, Togo, Burkina Faso and Uganda research on crops is under the central governments. This comes with a weakness of “priority in spending”, since the governments are overwhelmed by many other commitments like politics beyond mere crop researches. No wonder, according to FAO, (2012) report on Research and Development spending, many SSA countries had failed to achieve a minimum target of 1% of GDP spending in R&D in 2008 as they had endorsed in the Maputo declaration of 2003.

Research and development is further being challenged by the quality and training of the agricultural scientists. It is imperative to remember as presented in previous chapter, the quantity of agricultural researchers in SSA is more than in the US and India, though the quality of a researcher and amount of time spent on research in SSA, is 5 times and 2 times lower than in the US and India respectively. This generally implies that the services of agricultural researchers in SSA are still substandard. Coupled with the low levels of education of majority farmers, especially women, rising productivity through modern farming techniques has been slow.
5.1.5 Market access patterns

According to findings, we can see that the consistent loss of market for agricultural commodities of SSA has been significant since the 1970s. In trying to correlate productivity of agriculture in 1960s and market access, it is possible to identify that there was a considerably larger market for products from SSA like coffee, cocoa, palm oil rubber and sugar in 1960s and 1970s, than we can witness in contemporary times. However, the prices were being dictated by developed countries, and were never stable. In other words, downward spiral of prices and loss of markets for major exports have had an impact on agricultural productivity. It is possible to argue further that, the more agricultural products have lost market in the international trade, the more the region’s productivity has declined. This understanding conquers with Benin et al, (2011), who argue that the repeated failure of exports reduces incentives for farmers to produce not only export crops but also food crops. The end result has been a persistent net importing of agricultural commodities. That put aside, wide disparities in access to markets among SSA countries could also be advanced to understand the persistent low productivity of the region. Majority of the countries have limited access to international trade, for instance in 2000, only twelve countries accounted for 76% of the agricultural exports of SSA. This implies that the remaining 30 countries, fared poorly in foreign exchange earnings contribution from agriculture, and incentives for agricultural expansion were most likely reduced.

5.1.6 Market policy argument

In the decades shortly after independence in SSA, the market policies in many countries were so much regulative. Incentives to increased production that are driven by the profit motive were weak, the fixing of agricultural prices and direct purchasing by marketing boards in economic understanding reduced the urge for profits that is always driven by the forces of demand and supply if envisaged through the rationalists perspective. However, price and market controls were not the worst enemy of productivity in the agricultural sector. According to many scholars, domestic market policy coupled with the OECD producer and trade policies of tariffs, protectionism and export subsidy, to mention but a few, worked to the detriment of agricultural productivity.

Subsidized agriculture sometimes makes agricultural products of OECD countries cheap on the world market and in SSA, to an extent that they at times displace the local produce from the market and exports through “cut throat price competition”. Farmers then get little incentive to
continue with production and they also resort to living on imports. This is not bad because the consumption gap is bridged by imports and generally consumers benefit. For instance in Liberia, the domestic production of rice is one half of the required consumption; thus, cheap rice from abroad becomes crucial to combat hunger at this stage. However, a poor harvest in OECD countries immediately calls for a restriction of food exports. This drives prices of foods high so that developing countries reduce their standard of living in terms of adequate food intake.

Therefore, OECD subsidy schemes create a dependence syndrome (a case of export subsidies), which not only can lead to low productivity, but also can impact on the welfare of economies in SSA (producer and export subsidies). In addition, the recent market policies of liberalization, in as much as they have been acknowledged for instituting economic growth in some countries; they have tended to be unfair to agricultural productivity in many other countries. Using an example of Tanzania, Havnevik et al, (2007) argue, ‘after liberalization, high prices reflect a situation of post-harvest deficient supply, while low prices accompany a bumper harvest’. Such fluctuations affect the plans of surplus smallholder producers (Havnevik, et al, 2007:23).

5.1.7 Public investment in agriculture argument

Investments in agriculture reflected in government spending in agriculture have not been impressive in SSA. At the time when population was growing at a high rate during the 1980 to 2000 period in SSA, the proportion of budget expenditures going to agriculture in SSA declined by half. It can be recalled that this was the time when adjustment policies were at their peak in SSA, thus it is plausible that the decline in agricultural spending could have been a result of strings attached to financial and technical assistance from the IMF and World Bank to SSA. Another observation is that when direct agricultural spending was decreasing, higher spending in rural infrastructures could have offset the burden, however in the same period, infrastructure and telecommunication spending also was downscaled drastically by 50% from 6.3% of total budget spending in 1980 to 3.1% in 2005 in SSA. The implication for this is that, the role of infrastructural growth linkages to agricultural productivity growth have been short-circuited until late 2000s, an issue that can explain slow productivity of the agricultural sector. This reasoning is in harmony with UNDP (2012:74) arguing that, without well-established infrastructures, farmers can hardly increase yields or sell off their surplus.
5.1.8 Investment in R&D argument
This study underscores that, at the time when massive investment in research and technology is required, the level of investment in R&D during 1981 far beats the investments in the modern times. This does not imply that the productivity of agriculture was better in the 1980s. According to Eicher, (1989) most of this spending in 1970 and 1980s was quantity rather than quality driven and the proficiency remained unchanged. The minimum amount of resources pledged by African governments in Maputo 2003 to agricultural R&D by 2008 of 1% budgetary spending has not been achieved by many of the countries. This implies that R&D is still below capacity to increase productivity to atleast the levels that Asian countries achieved in the 1980s.

5.1.9 Foreign investments argument
Besides public investment, foreign investments are also vital for the growth and performance of the agriculture. Substantial amounts of aid to the region explain a significant part of economic growth in SSA. As noted in the findings, a substantial amount of official development assistance came to SSA during the 1970 and 80s, but over all too small. According to literature, the performance of agriculture did not improve substantially. Moreover, most of this assistance was being mismanaged and misdirected. There was lack of coordination and harmonization of these funds, and project rather than sectoral assistance was common. Eicher, (1989:15) confirms to this possibility by arguing that, the large donor funds in Senegal in 1970 and 80s helped maintain a status quo and postponed the agrarian restructuring and financing of necessary agricultural services.

During the 1990s donor funds declined drastically in SSA and subsequently in agriculture as well. The issue here was the economic restructuring and large debt burden of many SSA countries on addition to conditions imposed for receipt of any assistance. The slow investments translated into serious food problems and hikes in food prices necessitating substantial food aid amounts in the 2000s. Since the world food spikes of 2007-2008, ODA commitments have again increased in SSA, with emphasis on donor coordination, harmonization and budgetary support in line with the 2005 Paris declaration on efficiency. As Beintema and Stads, (2011) argue, investments in agriculture do not produce short run results, the results can be realized in the medium and long run, thus renewed agricultural commitments can only be evaluated in the nearby future for an understanding of their contribution to productivity rise in SSA.
Last but not least is the role of private foreign investments in SSA. If agricultural productivity was judged on the basis of only foreign direct investments, it would be plausible to argue that the lack of FDIs in SSA accounts for the low productivity of the sector. Literature reveals that the boom of FDIs in the 1980s largely bypassed SSA. This argument can also be linked to the structural transformation theory assumption concerning the capital formation. Lewis argued that foreign capital attraction was crucial in the event of limited capacity to mobilize enough domestic capital to boost the transformation. It is of late in the 2000s that a tendency of emerging FDIs can be traced. However, in respect to the agricultural sector, this emergence is still insignificant. Agro-processing, plantation agriculture and tobacco sectors have received these emerging foreign direct investments. It is undoubted that FDIs have a role to play in the rise of productivity especially through technological R&D transfer.

5.2 Analysis of trends in agricultural policy
This section corresponds to research question two and discusses the policies that have had an influence on the agricultural performance of SSA. It ends with an analysis of the extent international development cooperation has been influenced by or influencing agricultural policy debates during the last 5 decades.

5.2.1 Import substitution industrialization (ISI) strategy policy
The import substitution industrial model advocated by major SSA countries like Kenya, Ghana, Senegal, Zimbabwe, Nigeria, Ivory Coast, Tanzania and Uganda etc. has been discredited in much of the literature for short-circuiting the efforts in the agricultural sector. It should be noted that the policy in itself was not bad because its cardinal aim is to raise domestic production and save foreign exchange which is crucial for the development of any economy. However, the implementation was the problem. According to the dual sector model of Lewis (1954), the investment in industrialization is crucial as it creates demand for labour in the economy and indirectly translates to rise in agricultural production through the manufacture of inputs like fertilizers, pesticides and farm implements. Lewis holds that investment in the industrial sector should be commensurate with substantial investment in agriculture to raise enough food and raw materials for workers and factories.

Eicher, (1999) believes that, the problem at the time was to convince agricultural ministries and policy makers to invest a certain share of the taxes obtained from the sector back,
in form of infrastructures and services. Dinh et al, (2012) argue on a related note that, the Asian experience demonstrated that import substitution and some protectionism are healthy for the growth of a young economy as both policies were applied with an advantageous end result. One thing is clear in this sense, that, failure to identify a comparative advantage in the manufacturing sector should be an issue to rise other than blaming the whole strategy. Given the abundant resources both labour and raw materials, labour-intensive low-tech manufacturing would serve the majority of labour abundant SSA countries as experience of Asian countries has demonstrated (Dinh & Clark, 2012).

Another important issue to contemplate is the way the international institutions of the World Bank, the IMF and other donors came up to strongly abhor the ISI strategy at the time. It should be remembered that when import substitution was being exercised, part of the assistance in terms of technical knowledge and resources were coming from these very institutions. Parastatals were also getting funds from these institutions to run their activities. One wonders why they didn’t condemn the ISI strategy as early as possible or guide the African states in the implementation of the strategy, for the betterment of the general population in terms of food security, incomes and productivity of agriculture. Putting that side, the following section looks at other loopholes in the policies of international institutions in as further strengthening the agricultural sector of SSA is concerned.

5.2.2 WTO and OECD policies on agriculture

Agricultural policy in WTO itself, reflected in constant failure to come up with a resolution in the series of Doha multilateral trade meetings, should be underscored in this sense as a crucial factor that has continued to impact on agricultural performance in SSA countries. Subsidies under the common agricultural policy of the EU stand out as a huge share of agricultural spending in OECD countries. Though there are special arrangements like Everything But Arms (EBA), AGOA for the U.S, and Economic Partnership Agreement (EPA) that replaced the Cotonou partnership arrangement, with intent to increase LDC export commodities in the developed world, these arrangements have clauses that make trade maximization limited. For instance, the Common Agricultural Policy (CAP) of the E.U maintains a clear stance on agricultural imports coming from the developing world. This implies free trade is in writing, and this tool is in many occasions unfair for developing countries entirely, in relation to developed countries.
As if not enough, the comprehensive EPA with African Caribbean and Pacific (ACP) countries has seen a delay in endorsement. African states express the fear that it is likely to cause a loss on import revenues of ACP countries through the liberalization clause. More so, Stiglitz & Charlton, (2005) warned that, there is indirect protectionism in these arrangements since most imports tend to get disqualified under the phytosanitary and rule of origin conditions. Moreover under the EBA some commodities of rice, fresh bananas and sugar ceased having duty free access to the European markets between 2002 and 2009. As data reveals, SSA countries have been losing market for exports they hitherto used to enjoy with a comparative advantage. Crops like coffee, rubber, palm oil and cocoa have seen a declining market access. In this free trade era, domestic competition is stiffening with cheap agricultural products from highly subsidized low cost producing OECD and Asian countries. The agricultural policy coupled with the international development cooperation policy as discussed below can stand to explain a part of the poor performance of the agricultural sector in SSA.

5.2.3 Argument on International Development Cooperation policy
Looking through the debate on international development cooperation, most fingers are pointed to the World Bank and IMF and to some extent individual donor nations. As presented in the findings, it is clearly visible that the swings in the World Bank policy towards agriculture have been both instrumental and detrimental in SSA. Most development assistance to SSA in the early post-colonial decades from Western Europe and also Eastern Europe was tied to the capitalist or socialist block. This had an implication that aid monitoring was not of great importance as long as allegiance was paid to either of the blocks. This created elite struggles for resources and eventually political instabilities in economies, therefore common knowledge dictates that agriculture was severely affected by such turmoil and unrest of the 70s and 80s regardless of how much investment were made in the sector (Anderson & Masters, 2008). One issue emerges out in this period that, agricultural productivity given the surrounding economic and political environment was at a loss.

The second reasoning draws from the structural adjustment conditions of IMF and World Bank in the 1980s and onwards. Again in this period, assistance was not free; it had conditions of reforming the economy before getting aid. Havnevik, et al, (2007) have drawn various examples to justify that the reforms were arbitrary, that agricultural productivity was severely affected with cuts in services and supply of fertilizers. Price fluctuations since then have become the order of
the day and this is affecting especially smallholder farmer’s productivity. Related to that is the growing importance of good governance and democracy as a condition for aid from OECD countries.

The Swedish Government bill for development policy of 2003 clearly reveals the attachment of development assistance to democracy and good governance. Other intentions of industrial agriculture in Africa have been raised as well in the aid policy. Such views have not reflected a clear understanding of the development needs of SSA countries. SSA has majority of persons dwelling in rural areas and these earn a living from agriculture, besides more than 70% of them are smallholder farmers (FAO, 2012). Improving the conditions of rural people requires raising productivity in their immediate economic activities. Governance and democracy in states with immature politics creates fragmentations, and unity for a common goal tends to be scarce (Therkildsen & Booth, 2012), while industrial agriculture defies the possibility of working with small farmers who have land holdings of less than 3 hectares. Thus, an attempt to skip them, does not solve the productivity question of the region other than prolonging it.

5.3 Structural transformation argument
This section corresponds to the last research question of the study and discusses the status of the industrial sector since the first stages of the postcolonial period. However, the discussion on industrialization in this section refers explicitly to the manufacturing sector.

5.3.1 Status of manufacturing sector
Like the agricultural sector, the manufacturing sector has been facing a declining growth rate in SSA. An increase in the share of manufacturing to GDP would send a signal that the sector is growing and holding other factors constant, employment opportunities and general welfare of the masses is improving. According to Lewis, at this point more excess labour would be pulled out of the agricultural sector to create room for increased land holdings and expansion of marginal productivity. The data reveals that manufacturing share in GDP between 1965 and 2003 has been decreasing as well as the growth rate for the manufacturing sector. Now, using the structural transformation assumptions that a booming manufacturing sector will create linkages for agricultural productivity, in this case, the manufacturing sector has frustrated any contributions it would accord the agricultural sector to improve its performance. This reasoning provides partly
an explanation for the lagging behind of the agricultural productivity, since the assumption of a growing industrial sector has not come to pass.

Another observation is that the manufacturing sector has been unproductive in most of the SSA countries. Manufacturing exports in 2011 account for less than 30% of total exports. Moreover, a few countries have enjoyed these exports. This implies that the production capacity in many other countries is too small to be accounted for in exports, for instance Burundi has had a negative growth in manufacturing value added since 2007 and her manufactured exports as of 1998 could hardly total to 0.5% of total exports. According to structural transformation approach, the expansion of the manufacturing sector is crucial for the creation of more jobs for the unproductive surplus labour in the agricultural and other informal activities in the developing countries. However, the unproductive manufacturing sector implies low returns of foreign exchange earnings, low foreign exchange earnings indicates low capital base, and inadequate capital inhibits expansion of the manufacturing sector and building of infrastructures that facilitate economic activities in a given country. Here it seems as if the mutual reinforcement between agriculture and industry that Lewis is forecasting, instead has turned to become a vicious circle with negative reinforcements.

A closer look at the employment in manufacturing is difficult to trace because most statistics combine general industry including services. However Bryceson, (1996), helps give an average overview, that manufacturing employment in SSA from 1965 to 1989 remained flat at 8% even when agricultural employment declined from 78% to 68% of the total work force in the same period of time. This implies that the industrial sector as Lewis had postulated did not absorb any excess labour from agriculture; instead, scholars are documenting a growing number of people in the informal and service sector. Though a large people are being absorbed in the service and informal sector, the linkage with agricultural productivity has not fully been established. No wonder, structural transformation according to Lewis hardly recommended the service and informal sector as having linkages with agricultural performance. It can plausibly be argued therefore that, low productivity growth in agriculture amidst an overwhelming population growth rate and slow decline in persons employed in agriculture can partly be attributed to the inability of the manufacturing sector to complement the service sector in take up of surplus labour.
According to many scholars as highlighted in the critique section of the theory in chapter two, the structural transformation theory of Lewis cannot be relied on to institute economic transformation. Nevertheless, the unlimited surplus labour model of Lewis may have failed to produce intended results, this does not rule out the fact that structural transformation policy wise, led by manufacturing can in the future contribute to a rise in the economic performance of SSA countries. If well modified and tailored to the local structures in SSA, manufacturing especially light, labour-intensive and low-tech manufacturing can lead to economic growth, as well as raise the productivity of the laggard agricultural sector (Matsuyama, 1992, Dinh et al, 2012).

The manufacturing sector has been falling short of its glory in SSA, due to multiple challenges as highlighted in the preceding chapter. However, examples of emerging manufacturing countries with likes of Ethiopia in the line of light labour-intensive manufacturing brings back the hope that the linkages between industrial sector and agriculture can still be realized beginning with the upgrading of small and medium (informal manufacturing) enterprises. Many countries in SSA are beginning to appreciate and formalize the hitherto dubbed informal manufacturing enterprises. This attempt has especially four salient benefits for the structural transformation of SSA, (i) it will make easy the small manufacturing enterprises to acquire capital for expansion and insurance in form of credits and loans, (ii) these small and medium enterprises will increase the quality of products since they have a closer monitoring from the government and the competition within the enterprises themselves that leads to value addition and higher price (iii) increased recruitment of labour that comes with increased scale of operation and expansion, (iv) the above three benefits establish a firm ground for the government to get revenue for public investment.

The four benefits directly and indirectly advantage the agricultural sector in the following ways, (i) employment creation can provide an alternative for agricultural farmers to part time in enterprises and diversify their incomes. This makes agricultural improvement like use of inputs feasible, (ii) the enterprises help in the manufacture of inputs like feeds for livestock, simple manures and pesticides etc. these at the end of the day can lead to agricultural productivity rise, (iii) the revenue collected by the government if well-handled can lead to growth in infrastructures like feeder roads that connect farms to market centers, extension of electricity and subsidy programmes for fertilizers, and employment of agricultural scientists etc. (iv) small medium enterprises by nature are labour intensive, and these can help offset the high
labour forces engaged in agriculture especially in this era of land fragmentation in high population growth countries of SSA.

6.0 Conclusions

The study draws a conclusion in three angles. One angle is directly related to the agricultural sector, and the other is about the role of international development cooperation and the last one being the structural transformation angle in boosting agricultural productivity.

The study has pointed out that the neglect of staple crops during the time of agricultural scientific advancement in favor of export crops brought about a situation of low productivity in agriculture in relation to other developing regions that first concentrated in staple agricultural research advancement and crop by crop research.

The study also understands that agriculture that makes use of available water sources for irrigation will be instrumental in boosting and sustaining productivity. This is due to the fact that, climate change is continuing to affect natural rain patterns and there is a growing threat of aridity in many parts of SSA. Small scale irrigation techniques will be of great importance to majority small holders that constitute majority of farmers in the region.

The case of Malawi presented in this piece should be the way to go for SSA countries. Malawi has been under criticism for defying the fertilizer policy, however, the production of staple maize due to fertilizer subsidy has drastically improved, in that the country is no longer on the list of food insecure countries on top of being well on track to achieve the hunger reduction goal by 2015.

The study also argues that technology has not been localized and most copy and paste research and development technologies from the Asian countries have been failing to produce related results. Agricultural scientists in SSA need to understand the differences in farming systems that characterize SSA and develop seeds, fertilizers and pesticides that harmonize with the agro ecological conditions of the region.

Another conclusion is that, there are unequal gains from international trade of agricultural exports and general merchandise in SSA. The study has revealed that the consistent low productions in many of the countries can partly be attributed to insufficient markets for produce. One quarter of countries in SSA accounted for close to 80% of exports in year 2000, this is a
gross disparity in terms of access to export markets. Measures aimed at raising the exports of weak exporting countries could help to create incentives for agricultural production in areas that are faring badly.

The agricultural policy in the WTO has continued to evade resolution and this is affecting the possibilities of developing countries to access developed country markets. The limited benefits SSA countries are getting from the EU/ACP partnership are likely to reduce with the completion of EPA comprehensive agreement in 2014. Moreover subjections were introduced for some agricultural commodities by 2006 under the EBA arrangement.

More so, the import substitution model of industrialization advocated for by many SSA countries would have produced results if it had been well implemented and planned. Following the fact that all the middle and high income countries of Asia blended import substitution and protectionism in their growth strategies with managed functional policies and performed well in manufacturing and agriculture in the 1970s and 80s, there is little evidence that this mix of strategies would have failed the agricultural sector in SSA.

International development cooperation is beginning to lose focus again in terms of intervening in agricultural sector growth in SSA. The World Bank already blundered in the region by conditioning economic policies in an environment that was premature for them. Some of the effects like untold fluctuations in farmers’ incomes due to price volatility and shortage of rural social services and infrastructure can be identified in many liberalized countries. Conditioned assistance by OECD countries based on democracy and good governance theme and industrial agriculture theme for biofuel production are beginning to gain ground in SSA, and in these themes, we hardly can see where rural off-farm activities, infrastructures and smallholder farmers will benefit from.

Last but not least, SSA has for long failed to identify its comparative advantage in respect to the manufacturing sector. The study has revealed that light, labour-intensive, low-tech manufacturing is ideal for the region especially after considering the endowments in terms of resources and low skilled labour. Lessons from emerging Ethiopia’s light labour intensive manufacturing coupled with the growing economic partnerships of Africa and development countries, SSA can still come back on track and implement a structural transformation. Important to recall is the fact that, structural transformation advocated by Lewis in the two sector model has been thrown in the dustbin of history. This study has made an attempt to reconcile the
economic model with a new blend of labour intensive, low-tech manufacturing to be the basis for the judgment of the feasibility of a manufacturing led structural transformation in SSA.

Moreover, the search for identifying obstacles for productivity in SSA agriculture is probably misdirected. All the intra-sectoral obstacles are seemingly well known and identified. What calls for more research is the lack of dynamic relations between a budding industry and the agriculture sector, and the gradual transfer of labour to the industry, and the subsequent eradication of rural (and urban) surplus labour with zero marginal productivity. Hence, may be the most adequate way of increasing agricultural productivity is to industrialize.

In a nut shell therefore, the real problem is probably that industrialization has failed to create a demand for labour; hence, rural people could survive by expanding land in pace with population growth- no pressure emerged to improve productivity. This implied no increase in demand for food.
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Appendix 1
Case study 1; Maize market and prices in Tanzania

Maize is an important crop in Tanzania, it is the second largest produced commodity in terms of quantity and ranks number five in terms of value of all agricultural commodities produced. In 2011, production stood at 4340820 million tons from 2445000 million tons in 1990. The crop is the most consumed and marketed cereal in Tanzania. The importance of maize in Tanzania can also be viewed in terms of the per capita calorie intake, where by the crop is consumed at 73kg per capita with 33% caloric density intake (FAOSTAT, 2013, Minot, 2010).

Maize trade is seasonal in Tanzania and most of the exports take place between the months of June and August while imports peak in the months of March to May. Over the 2005-07 periods the country exported only 2% of the maize produced and the commodity is mainly exchanged with neighbors, Malawi, Kenya and Zambia. The maize market in Tanzania according to studies has not been well integrated in the world market and thus maize prices in Tanzania are virtually higher than maize price on the world market as shown in figure one. This implies that maize is produced and marketed costlier in Tanzania than in the United States. There are variations with in regions of Tanzania in terms of prices of maize. The southern highlands of Songea and Mbeya tend to have the lowest prices sometimes lower than the US Gulf prices because of favorable growing seasons while the northern parts tend to have highest prices almost double those of the US especially Dar es Salam and Arusha as shown in figure two (Minot, 2010).
Figure 1: Recent trends in Maize prices in Tanzania

Adapted from Minot, 2010:6

Figure 2; variations of maize prices within Tanzania

Real producer prices of maize in Tanzania during the liberalization wave of the 1990s showed a decrease from 298shs/kg in 1993 to 118shs/kg in 1999. This according to some scholars could be attributed to the removal of price regulations that may have led to speculations and fluctuations depending on the harvest season (Havnevik, et al, 2007).
Since Tanzania is not well integrated in the international market of maize, surplus maize resulting from good harvests result in low producer prices while scarcity resulting from crop failure leads to higher prices which farmers can not enjoy because they have little to sell, whereas consumers at the other end pay for higher prices of maize in turn during such bad harvest seasons. This affects the incentives of farmers to produce the crop explaining why there is a significant amount of food imports annually in Tanzania (Minot, 2010).

**Case study 2; Cotton Market and Prices in Benin**

Cotton growing in Benin is of great importance to the economic growth of the West African state. The crop constitutes 40% of total agricultural exports amidst a small GDP contribution of agriculture to the general GDP. This implies cotton is a strong contributor to GDP in the country. According to Gergley (2009), the cotton sector was highly booming in the period of 1970s to 80s in Benin and producers received a high price for their commodity, however the general economic crisis of the early 1980s led the country to adopt SAPs and partial liberalized the cotton sector. Cotton sector did not perform well either in the liberalized period because of uncompetitive markets, government interferences in the payment systems and overall decline in the world market for cotton. Production of cotton decreased from 400,000 tons to less than 200,000 tons between 2001 and 2006.

Cotton prices on the world market have been falling since the 1990s. Benin as a cotton producer has suffered from these price shortfalls. Between 2001 and 2002 alone, cotton prices fell by 40%. According to scholars, the prices of cotton were seen as the lowest in history. Benin that is assured of 20% income from cotton production has been challenged so much by international fluctuations in the prices of the commodity. Unlike Maize where more than 50% of the crop is consumed with in boundaries of any given SSA country, cotton is an export crop entirely. The devaluation of the currency made the cotton board make profits until 1999 but did not make use of these profits in saving to cater for future shortfalls in cotton world prices as buffer. Therefore the drastic fall in prices of cotton in early 2000 made the board incur losses and these were transformed to producers in form of low prices (Gergely, 2010)

Producer prices of cotton have not been entirely determined by the market at least until 2008, and government has had a tacit influence in these prices for political reasons and where necessary
subsidies for cotton production have been witnessed. Producer prices have generally been fluctuating between 150FCFA/kg and 220FCFA/kg from 1993 to 2006. The Subsidy structure in European cotton producing countries and the USA are partly to blame for this fluctuation with high production emanating from an assured high producer price of farmers. In 2008/09 period, ginners in Benin agreed on an 180FCFA/kg producer price and at the same time the FOB price was estimated at 987FCFA or 73 cents/pound which is higher than world price of cotton at 68 cents/pound. The implication from the above scenario is that, the domestic policy on the cotton market has affected the sector, the liberalization period also produced less results to cotton farmers meanwhile the subsidies in cotton producing countries has also negatively affected the demand and price of the commodity especially for developing countries. It is estimated that losses from export of cotton in Benin due to subsidy for US cotton production was bigger than the financial assistance the US contributed to Mali and Benin combined. (World Bank News Release, 2003, Gergely, 2009, Minot & Daniels, 2002).