Why is it Imperative for Tanzania to Industrialize?

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Abstract

*Tanzania's average annual growth rate of GDP of 6.4% between 2005 and 2017 has had limited impact on jobs and poverty reduction. The current government's mantra, '*Tanzania ya Viwanda'*, is meant to tackle these two problems. The objectives of the paper are fourfold: first, to gain clear understanding of the Tanzanian context and why it is imperative to industrialize; second, to examine to what extent Tanzania has structurally transformed, and how that has been responsible for poverty and growth without jobs; third, to examine how industrial development could enhance agricultural production; and fourth, to assess the opportunities and challenges that exist in Tanzania's industrialization drive and draw some policy implications. The paper uses labour market, macro and trade data from secondary sources, and employs the exploratory analytical approach. It concludes that the imperative to industrialize in Tanzania cannot be overemphasized due to the following gains: structural transformation, job creation, higher agricultural productivity, and poverty reduction. The industrialization drive must focus on Tanzania's comparative advantage and ensure that some of the challenges identified—i.e., poor infrastructure, weak business environment and regional integration hurdles—are well known, addressed, and given the priority they deserve.*

JEL *Codes: I30, J60, O55*

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1. Introduction

Tanzania's impressive growth over the years has not produced enough jobs for the growing youth population, and it has had minimal impact on poverty levels. This development challenge also affects other sub-Saharan African (SSA) countries that are growing at reasonable growth rates, but whose benefits are elusive to many in terms of high poverty levels and unemployment among youths (see, for example, a study by Jones and Tarp (2015) on Mozambique). Expressing this concern, a joint communiqué that was issued after a high-level event on the "Third Industrial Development Decade for Africa (2016-2025): 'From Political Commitments to Actions on the Ground'[1] succinctly stated: "*Even in economies that record impressive rates of growth compared to the rest of the world, poverty, hunger and unemployment*

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[1] The event Communiqué was signed by the following representatives: President of the African Development Bank (AfDB), Chairperson of the African Union Commission (AUC), Executive Secretary of the United Nations Economic Commission for Africa (UNECA), Director General of the United Nations Industrial Development Organization (UNIDO), and United Nations Acting Special Adviser on Africa (UN-OSAA) (Joint Communiqué, 2017: 3).

persist. Youth, women, rural populations, and the urban poor are particularly affected. This situation can largely be explained by a lack of industrial transformation of African economies" (2017: 1). For Tanzania, this is of particular concern, and as such, the current government's mantra of '*Tanzania ya Viwanda*'[2] is not misplaced. Its overriding goal is the creation of jobs that will provide incomes and alleviate poverty levels among its people, especially the youth. Through industrialization, raw or primary products that have dominated Tanzania's export basket for decades will be processed and value added to them.

Indeed, the goal to industrialize is not just being pursued by the Tanzanian government: it is being emphasized at the regional level, as well as globally, as a way that will ensure that youths find jobs, and the many raw products that constitute many African countries' exports are processed to extract higher earnings. In the regional integration arrangements that Tanzania is a part of, industrialization is the dominant development agenda. For example, the Southern African Development Community (SADC) has put industrialization at the centre of its integration efforts. Similarly, the East Africa Community (EAC) is drumming up the industrialization agenda through its strategy, stating that the overall objective is "… *to create a modern, competitive and dynamic industrial sector that is fully integrated into the global economy*" (EAC, 2012: 10). At the continental level, the African Union's Agenda 2063 also champions the industrialization drive by recognizing the key role that manufacturing has to play to structurally transform Africa to attain one of its aspirations of having a prosperous continent that is based on inclusive growth and sustainable development (AU, 2015). At the global level, the 9th Goal of the United Nation's Sustainable Development Goals (SDGs) is on building resilient infrastructure, promoting sustainable industrialization and fostering innovation, which squarely places the important role of industry to drive economic growth, reduce poverty and create jobs (Goals 1, 2 and 8). Thus, the SDGs commit member countries to economic transformation. Researchers and international organizations have also emphasized the fact that SSA's low productivity, poverty and youth unemployment reflects a failure to structurally transform its economies, and that this will find a lasting solution if industrialization is prioritized (Page, 2012; Szirmai et al., 2013; AfDB, 2017).

The imperative for Tanzania to industrialize is unquestionable and long overdue: Table 1A shows that economic growth averaging 6.4% annually between 2005 and 2017 did not create enough jobs to absorb the multitude of youths who enter the labour market yearly. The employment to population ratio fell steadily over the same period, and industry's contribution to Gross Domestic Product (GDP) averaged about 24%. This paper argues that Tanzania's inability to structurally transform is largely behind its inability to transform the composition of its export basket, and this is one of the reasons why it has not produced enough jobs and reduced poverty in a significant way.

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[2] It means "*Industrialized Tanzania*" in Kiswahili.

This paper is motivated by, among others, the current emphasis by the government to fast-track the industrialization process and the zeal it exhibits to achieve this, the global debate on how SSA's impressive growth can be translated into inclusive growth and job creation, and the need to examine the extent to which Tanzania's economy has structurally transformed. Another motivation is the need to examine how industrialization could enhance productivity in agriculture, and hence reduce poverty in rural areas where it is more widespread; and to consider policy options that are required in creating a vibrant industrial sector in Tanzania. Thus, the paper addresses four questions:

1) Why is it imperative for Tanzania to industrialize?
2) To what extent has Tanzania structurally transformed, and how has that been responsible for poverty and growth without jobs?
3) How can industrial development enhance productivity in agriculture and aid poverty reduction?
4) What opportunities and challenges exist in Tanzania's industrialization drive, and how could policies address the challenges?

To answer these questions, the paper uses data from various official sources for the analysis: labour market indicators and macroeconomic data from the National Bureau of Statistics (NBS) and the World Bank, and trade data from the International Trade Centre (ITC). The analytical approach is largely exploratory. The study calculates the Revealed Comparative Advantage Index to evaluate the extent of structural transformation using Tanzania's export basket between 2005 and 2015, and uses a statistical test on the equivalence of means to determine the significance of structural change over the same period.

The paper is structured as follows. After this introductory section, section two reviews theoretical and empirical literature on the imperatives to industrialize, focusing on the standard dual model, assesses Tanzania's structural transformation using the trade theory, and why it is imperative for Tanzania and SSA in general to industrialize. Section three examines the opportunities and challenges that Tanzania faces in its momentous journey to industrialize, specifically looking at the unexploited potentials in livestock production, and the challenges imposed by inadequate infrastructure, unfriendly environment for doing business, and the existence of non-tariff barriers in regional integration efforts. Section four concludes the paper and discusses some policy implications.

2. Theoretical and Empirical Perspectives on the Imperative to Industrialize and Structural Transformation

This section examines the theoretical and empirical perspectives on the need to industrialize in three ways. First, it examines early development and growth theory in relation to the dual structure of developing countries, and how rural and urban areas depend on each other. Secondly, it draws on trade theory to show the composition of Tanzania's export basket over time, and how that composition has not significantly changed over the years. The lack of structural transformation has partly

led to the inadequate creation of jobs and impact on poverty that is characteristic of Tanzania's growth. Thirdly, it examines new perspectives that are championing the urgency to industrialize in SSA, and it also presents evidence on Tanzania.

2.1 *Development and Growth Literature Perspectives*

Early development literature recognized the role that the agriculture or subsistence sector plays in transferring resources to industry or modern sector. Specifically, the pioneering work of Lewis (1954), in his dual sector model, and extensions by other scholars (see, for example, Fei & Ranis, 1961; and Harris-Todaro, 1970) postulate economic duality as characterizing underdeveloped economies: the existence of a rural subsistence sector and a high productivity modern urban sector.[3] The two sectors co-exist and are supportive of each other through surplus labour being transferred from the rural sector without affecting output, but improving productivity in the modern sector. Profits generated in the industrial sector are reinvested in modern machinery and tools, further increasing profits. Thus, this cycle creates a sustainable growth process. This early development model illustrates how a primarily subsistence economy structurally transforms.

Though theoretical, the basic tenets of the model are borne out by empirical findings in many countries (e.g., India, China, Japan, US, the UK, Australia, etc.). In line with the basic idea of dual economies, studies have confirmed resource shifts from agriculture to industry; and others have made attempts to quantify the effects of the resource shifts (Dowrick & Gemme, 1991). For developing countries, the existence and persistence of dualism has in fact been among the reasons given for income inequality (Bourguignon & Morrisson, 1998). For advanced countries, literature has documented how their growth path is characterized by structural transformation, with the share of employment in agriculture falling over time as labour moves to seek employment in the industrial and other sectors. Such transformation is deemed necessary for developing countries to develop and reduce poverty (Lin, 2011). In fact, Timmer and Akkus (2008: 2) point out four features of structural transformation of *successful* developing countries: falling share of agriculture in output and employment; rising share of industry and modern services; migration of workers from rural to urban areas; and a demographic transition from high birth and death rates to low birth and death rates.

This characterization of structural transformation raises the question of whether this is a natural process, or it must be achieved by deliberate policies to enhance productivity in agriculture that will feed into industry. In other words, what forces bring about this structural transformation? Busto et al. (2013: 1) note that "… *isolating the forces that can give rise to structural transformation is key to our understanding of the development process.*" The theoretical literature on structural

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[3] The rural sector is characterized by zero marginal labour productivity, where labour is abundant, such that this surplus labour can be withdrawn from the subsistence sector without losing any output. The modern industrial sector, on the other hand, has a positive marginal product of labour, and labour from the subsistence sector is gradually transferred into this sector (Lewis, 1954; Wang & Piesse, 2009).

transformation has also prompted research on factors that give rise to it (see, e.g., de Souza, 2014), and what can be done to enhance structural transformation (Badiane & Collins, 2014). Specifically, empirical studies have sought to understand whether growth in industry is spurred by agriculture; or whether industry spurs growth in agriculture. By and large, the consensus is that the two sectors are interdependent, and it is this interdependency that is crucial for overall development. For example, Koo and Lou (1997) note that growth in the agriculture sector depends on demand from industry for agricultural goods; and at the same time, growth in industry depends on increase in demand for industrial goods from agriculture, as well as raw materials for processing (Thirtle et al., 2001).

2.2 Extent of Structural Transformation: Perspective from Trade Theory

The contribution of trade theory to the structural transformation debate is the recognition that as countries go through stages of economic development, the composition of their export basket changes. In other words, the stages of development that they go through—traditionally from producing primary goods to manufactured goods and services—are mirrored in their trade pattern (Brakman et al., 2011). Thus, the key aspect is how to recognize structural change in trade patterns. In fact, changes in the sectoral composition of economic activities regarding trade and production are key factors of the process of economic development (Mayer, 2004).

Studies done to indicate such structural breaks (see, e.g., Brakman et al. (2011) for the OECD; and Mkenda (2014) for Tanzania) use different methodologies. Here, we adopt the approach by Mkenda (ibid.) that uses revealed comparative advantage (RCA) to examine the nature and extent of structural transformation. Specifically, using Tanzania's export content or export basket over time, the RCA approach is used to assess whether structural change occurred over time or not. Balassa (1977, 1965) developed the RCA approach that builds on the concept of comparative advantage.[4]

Table 2A presents the RCA indices for Tanzania for three selected years.[5] Using a test for equality of means to check whether structural change has occurred, the results in Table 3A show that for all periods 2005–2010, 2010–2015, and 2005–2015, the null hypothesis that the means are equal is accepted. This means that no structural change occurred as the difference in the means is not statistically significant. This is not surprising as a casual examination of the product groups in the three sub-periods shows that among the top twenty product groups in Tanzania's export basket, more than half appear in all the sub-periods' export basket, and most of these are primary products.[6] This implies that Tanzania's

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[4]Comparative advantage simply reflects a country's specialisation, given differences in opportunity costs in producing the goods that it exports. It is calculated from a country's ex-post trade data, although we know that comparative advantage is expressed in terms of relative prices evaluated in the absence of trade. Since these are unobservable, the approach measures comparative advantage indirectly using export data (Mikic & Gilbert, 2007). See Appendix B (Box B1) for details on how the calculation is done.

[5]The selected five-year intervals are: 2005, 2010 and 2015.

[6]To indicate this close correlation across the years, Mkenda (2014) finds that the Pearson's Correlation was significant, another indication of lack of structural change of the economy as exhibited by the export basket.

comparative advantage is still dominated by primary products, and that the economy has not structurally changed since 2005.

An obvious question to ask is: how can Tanzania use its comparative advantage in primary commodities to structurally transform her economy? Given the strong comparative advantage that Tanzania reveals in natural resource-based sectors—which seems not to have changed between 2005 and 2015—a way of transforming the economy is to locally process the products at a much larger scale than is currently the case so as to add more value to them before they are exported. This call is not new at all, and it is something that is known by policy-makers,[7] and has assumed a pivotal place in academic debates (Page, 2016; Newman et al., 2016; ESRF, 2015). There are three main benefits of locally processing primary products: it ensures higher export earnings; the required transformation of the economy will take place from exporting primary products to processed goods; and local processing of primary goods creates jobs that are needed by the growing youth population who are now largely eking out a living in precarious jobs.

2.3 The Imperative to Industrialize –Four Key Reasons
It is unquestionable that the driving force of the development process is industrialization (UNIDO, 1995). It is no accident that industrialized countries are more developed than less industrialized ones, and the contrast is clearly visible. For example, a simple measure such as GDP per capita indicates that on average, the industrialized countries' GDP per capita for 2016 was 67 times higher than that of less industrialized ones (World Bank, 2018). In terms of human development, industrialized countries are miles away, enjoying higher levels of literacy rates, health, and nutrition than less industrialized countries.[8]

The development path that industrialized countries took involved structurally transforming their economies, with agriculture's importance diminishing over time (but its productivity increasing), and the share of industrial output in GDP increasing. This process of structural transformation ensured that agricultural productivity increased, with labour being released to work in industry (Herrendorf et al., 2013). This structural change is portrayed in the trend of employment by sector as a share of total employment for four industrialized countries (see Figure B1), which shares a similar pattern to the GDP, differences notwithstanding owing to differences in productivity in these countries (Islam & Iversen, 2018). Today, developed countries, which were transformed by industrialization, enjoy higher living standards, face reduced population growth rates, and generally experience modernization and cultural change (Inglehart & Baker, 2000). The South-East Asian countries that have followed that path and have reached advanced stages of

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[7]See, for example, URT (2011); URT, (2016); and Tanzaniainvest.com (2018).

[8] For example, the number of under-5 deaths and prevalence of stunting among under-5s in low-income countries in 2016 was 25 times and 15 times higher than that of high-income countries, respectively. Life expectancy at birth in 2015 averaged approximately 80 in high-income countries, while it was 60 in low-income countries (World Bank, 2018).

industrialization have seen improving standards of living for their people (UNIDO, 1995). For most of SSA, its late and disrupted industrial process has been a major factor behind the poor living standards of its people, unemployment, and overall low welfare levels (Page, 2012; Szirmai et al., 2013; AfDB, 2017).

The imperative to industrialize by African countries, and other less developed countries (LDCs) in general, has been clearly addressed by UNIDO (2016) as consisting of four major reasons. First, is the likelihood of meeting the SDGs by 2030. Specifically, the one relating to industry, innovation and infrastructure would not be met if LDCs do not industrialize. Second, is the need to eliminate poverty by 2030, which requires industrial development that is both inclusive and sustainable in the sense of "… *job creation, sustainable livelihoods, innovation, technology and skills development, food security and equitable growth*" (UNIDO, 2016: 1). Third, historically most countries that have managed to transition from being poor to being rich have done so through a sustained structural transformation from being agrarian-based to developing an industrial and service-based economy. Such transformation guarantees a level of wealth that sustains livelihoods as productivity increases. Fourth, is *the need to create jobs for millions of youths who are facing various forms of unemployment, and whose socio-economic status would improve with decent and sustainable jobs*. This reason is quite important and directly relates to what the government of Tanzania wants to tackle. It is important to appreciate and emphasize that it is through industrialization that decent jobs for the youths can be created. Further to that, fiscal revenues collected from industrial production could help build the needed investments in social infrastructure, further ensuring that growth is inclusive.

These four reasons are evident in the case of Tanzania, and hence the imperative to industrialize is needed now more than ever before. Starting with the first, Tanzania is a signatory to the SDGs, and efforts must be made towards putting in place policies to ensure that the focus on industry is taking its rightful place. The second and third reasons require appreciating that poverty is still rife both in urban and rural areas. As noted, the relatively high economic growth that Tanzania has attained has made very little impact on eradicating poverty, and more importantly, it has not created enough jobs. Figure 1 charts the share of the key sectors' contribution to GDP. It shows that overall growth has not been inclusive given that the sectoral share of agriculture, the sector where many Tanzanians are employed, has been falling over time. It is in this very sector where poverty levels are higher.

Table 1, on the other hand, gives average annual percentage growth in sector-wise value-added for four sectors. It shows that the service and manufacturing sectors have enjoyed the highest average growth rates. However, although the annual growth rate for manufacturing was the highest, especially between 2010 and 2016, its sectoral share to GDP is still small, averaging at just approximately 7% (see Table 1A).
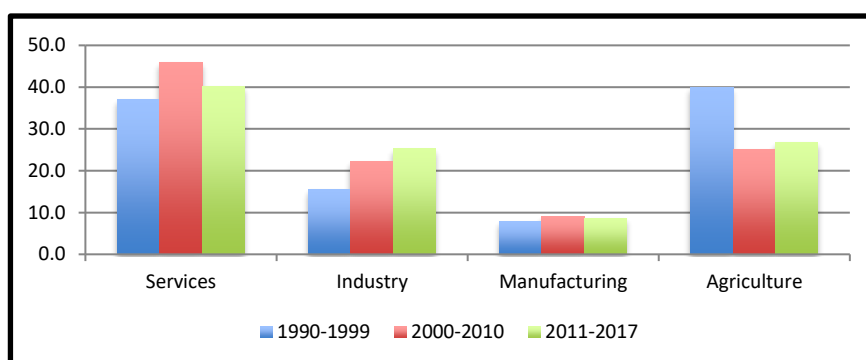
Figure1: *Sector-wise Share to GDP, 1990-2016*
Source: World Bank (2017), World Development Indicators online; http://data.
worldbank.org; Accessed August 2019.

Table 1: Annual Average Percent Growth of Sector-wise Value Added (1990-2017)

	Agriculture	Industry	Manufacturing	Services
1990–1999	3.1	3.0	2.6	2.6
2000–2010	4.5	3.2	2.9	2.9
2011–2017	4.5	9.2	7.2	6.7

Source: World Bank (2017), World Development Indicators online; http://data.
worldbank.org; accessed, August 2019

Two aspects are evident from Figure 1 and Table 1. First, growth in the agriculture sector must be enhanced to have a meaningful impact on welfare levels of Tanzanians. Given that the poor are concentrated in rural areas, growth in agriculture will have a bigger impact on poverty reduction. This means that if economic growth does not ensure that most of that growth emanates from agriculture, the fight to reduce poverty will be lost. Indeed, the Food and Agriculture Organization (FAO) (1997) observes that countries that have managed to reduce levels of hunger and malnutrition are those where growth in the economy originated in agriculture. Their cross-country analysis shows that, on average, the effectiveness in benefitting the poor population from agricultural growth was twice as much compared to growth generated in the non-agriculture sector. Thus, a key lesson to note is that "*… economic growth and poverty reduction policies as such do not automatically ensure success: the source of growth matters too*" (ibid: 28). As indicated above, this impact is important as the poorest in Africa earn their livelihood in the agriculture sector, which currently faces low productivity levels and incomes. Thus, it cannot be overemphasized that agricultural growth is essential not just for overall development of the economy, but also for reducing poverty levels in the rural sectors of Africa (Thirtle et al., 2001). The second aspect is that the contribution of manufacturing (and industry) to GDP must increase over time. This structural transformation will enable industry to handle the growth ensuing from the agriculture sector. In essence, the two sectors need each other.

The fourth reason for the imperative to industrialize requires looking at Tanzania's job landscape, which is possible with the benefit of data from labour force surveys. First, is how significant the informal sector has become as a source of livelihood for not only youths, but also for adults, over the years. In 2001, 35% of households were engaged in informal sector activities. The percentage rose to 40% in 2006, and further to 43% in 2014.[9] The informal sector has also become significant over the years as a source of household employment and income. This increase reflects the scarcity of formal sector jobs, and attempt to supplement household incomes as an alternative. The policy question often discussed in the literature now is whether the informal sector should not constitute the focus of job creation (Jones & Tarp, 2015; Szirmai et al., 2013). Clearly, it is large, growing and cannot be ignored. It is in the informal sector where job creation has occurred and is occurring.

Second, other key aspects of the labour market given in Table 4A indicate that Tanzania has a young population, with over 60 percent of it being aged below 25 years (those below 15 years old constitute 44%, and those who are 15 to 24 years old make up 19%). This youthful population is predominantly rural. It is more revealing to look at the working age population: it is also predominantly rural. If the youth are defined as those aged 15 to 35 years, the youthful labour force is also predominantly rural, with the unemployment rate for youths higher in urban areas. This is where the problem lies: while rural youths are many, they suffer lower unemployment than their urban counterparts. It is the urban youths who are likely to exhibit discontentment with the lack of jobs: this is the group to watch. Unemployment by education indicates that it is higher among people with secondary education and above, which doubled between 2006 and 2014. Unemployment among the more educated young people is a source of concern as it can result into social unrest, as was the case with the Arab Spring (Özekin & Akka, 2014).[10]

Overall, although the rate of unemployment has fallen, underemployment has gone up[11] from 8% in 2006 to 12% in 2014, and it is higher in rural areas.[12] The rising rate of underemployment has implications on productivity and the quality of jobs: it reflects low productivity, and the prevalence of low quality jobs (Tarp & Jones, 2013). The top two reasons for underemployment given are: inability to find more work in a job, agriculture, or business (43%); and the absence of suitable agricultural land or slack period in agriculture (30%), providing agriculture as the sector with the highest rate of underemployment when characterized by sector. This reflects a dire need for increasing productivity in agriculture.

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[9]See NBS labour force surveys for 2001, 2006 and 2014.

[10]A key root to the discontent were the young and educated in the demographic, who over time, became more politically aware and demanding, with the economic structure in the Middle East and North African (MENA) region remaining unresponsive to the growing needs of this younger population (Özekin & Akka, 2014).

[11]Measured by the number of hours worked per week (referred to as time-related underemployment), it considers those working below 40 hours per week, but are available or prefer to work more hours but do not do so for various involuntary reasons, as underemployed (NBS, 2006 &2014).

[12]It is not only higher than in urban areas, it is also higher than the national rate. Notable is how the rate of rural underemployment doubled between 2006 and 2013.

The third aspect needing highlighting in Tanzania's labour market is that some transformation occurred between 2006 and 2014 involving a 10% *fall* in the percentage of the labour force employed in agricultural activities. The most significant change is the increase in self-employed people. This illustrates the involvement in informal activities, and as indicated, the informal sector being clearly a source of employment compared to paid employment. However, although it rose, the increase was not significant to absorb the rising labour force.

The fourth aspect of concern in Tanzania's labour market is vulnerable employment. According to the 2014 Labour Force Survey (LFS), the proportion of youths in vulnerable employment[13] was 82%; and among workers, the proportion was higher for those with lower levels of education, in rural areas and among females (see Table 5A). Such prevalence of a large share of youths in vulnerable employment is a reflection of the desperation to earn a livelihood, or simply poverty. Clearly, the imperative to industrialize is the generation of decent jobs for youths.

These aspects on Tanzania's labour market are insightful. They require modelling the welfare implications of involving households in various activities as a way of drawing some policy lessons on which activities require support. This requires linking our analysis here with data from household budget surveys. This is for future work. For now, it is possible to still examine the opportunities that industrialization provides for providing jobs, and what we see as the challenges.

3. The Policy Question: Opportunities and Challenges of the Industrialization Drive in Tanzania

3.1 The Opportunities

Insights from the trade theory have revealed that Tanzania's comparative advantage lies in primary products, dominated by agricultural and mineral products. The opportunities that this presents require understanding the benefits that ensue from the linkages that exist between the agriculture sector and industry. There are two ways in which the linkages between the two sectors produce benefits to the economy and enhance income: *through potential demand from agriculture to industry; and potential supply from agriculture to industry*. These two ways illustrate that agriculture and industry need each other. First, as incomes in the agriculture sector increase through higher productivity, farmers can afford to buy products that are produced in the manufacturing sector. This demand is important as it then further enhances production activities in manufacturing, and creates further employment opportunities. The second linkage means that both sectors provide raw materials to each other. This inter-linkage is significant as both sectors feeding into each other provide opportunities for strengthening the linkages and contributing to increased productivity and growth. Thus, the academic debates emphasizing developing agro-processing plants are not misplaced.

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[13] When one is in vulnerable employment, it means that they do not have formal employment contracts, they have no access to employment benefits or social protection programmes, and they are more at risk to economic cycles as they get easily dismissed when economic conditions worsen (see NBS, 2014).

Given these inter-linkages, the question is: what potentials exist in Tanzania's agriculture that would provide a solid basis for a strong and productive industry? Tanzania's potential in agriculture is enormous, given its varied agro-ecological zones that present potential for a variety of agricultural crops, as well as livestock farming (Wolter, 2009). Hence, developing agricultural activities is essential as it guarantees benefits that relate directly to reducing the level of poverty through uplifting the lives of farmers, and it would capitalize on Tanzania's comparative advantage (Lin, 2011). The existing potential requires exploration of several sub-sectors, such as livestock, fruits, vegetables, flowers, etc. As an illustrative case, we explore the livestock sector, specifically bovine animals.

Tanzania's share in the global market for bovine animals is very small: it averaged 0.004% between 2001 and 2014. In 2015, the share rose to 0.05%, fell in 2016, and reached a high level (still small) in 2017 at 0.36%, after which it plummeted to 0.05% in 2018 (Figure 2). This is despite a rising trend in the index for livestock production since the 1990s (Figure 3). This shows a lack of penetration in the export market for bovine animals despite the country being the third in Africa in terms of livestock population, after Sudan and Ethiopia (Kamugisha et al., 2017).
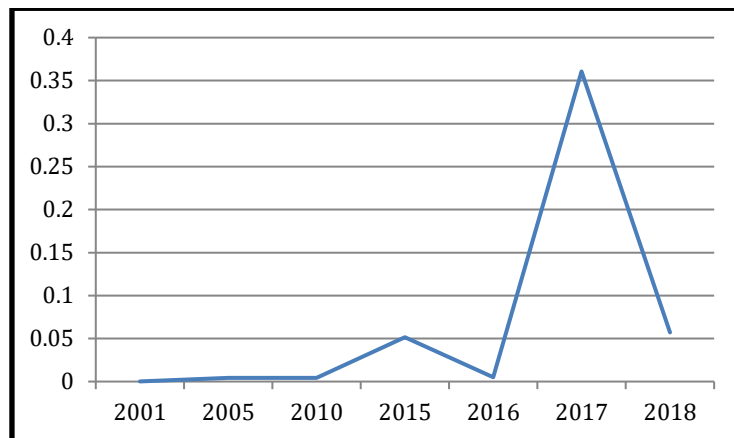
Figure 2*: Tanzania's Export Value as Percent of Global Export (Bovine Animals), 2001-2018*

Source*: Trade Map, http://www.trademap.org/: accessed August 2019.*

The potential for both increasing export earnings of livestock in the global market and for further expansion exists in the need to meet local demand for meat. It is estimated that Tanzania imports 800 tonnes of high-quality meat, mainly for tourist hotels and mines (PASS Trust, 2013; Wolter, 2009).[14]

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[14]In 2017/2018, imports of meat are said to have increased to about 1405 tonnes, but dropped to approximately 517 tonnes in 2018/2019. The reduction in importation of meat has been attributed to improvements in business environment that have attracted investment in the sector, measures that

Index (2004-2006 =100)

Figure 3: *Tanzania's Livestock Production Index, 1990-2016*
Source: World Development Indicators, http://data. worldbank.org;
Accessed, August 2019.

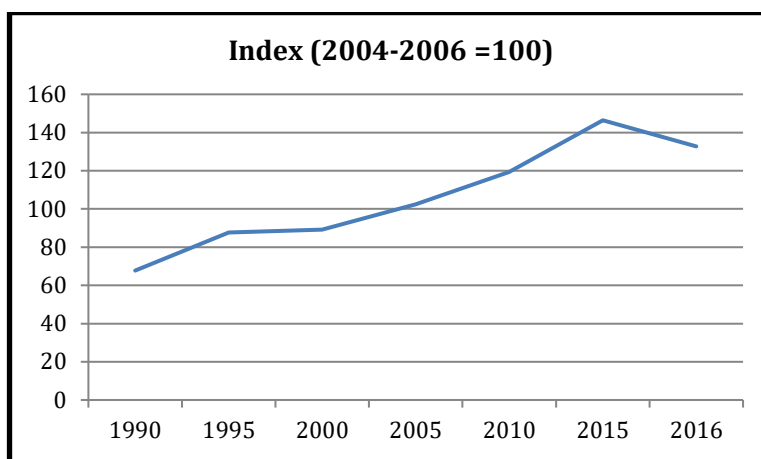The opportunity for expansion of the livestock industry is also evident from the fact that livestock units in the country were reported to be below the estimated carrying capacity of Tanzania's rangelands (URT, 2011). This is illustrative of only one sub-sector, as potential for agro-processing exits in others too.[15]

The vast potential for expanding the livestock sector is evident in that, firstly, there is a growing demand for livestock products in both rural and urban areas of Tanzania, which has not been satisfied. Tanzania still imports meat, chickens, and eggs to meet demand in urban areas. This unmet demand is an opportunity to explore ways of increasing production of high-quality livestock, even for hotels that are reported to rely more on imported meat products. Secondly, expanding livestock production presents an opportunity to create employment for rearing of animals, and from by-products of the animals such as leather. Currently, Tanzania's exports of livestock by-products are dominated by exports of raw hides. The average percentage contribution of Tanzania's exports of raw hides to total global exports between 2001 and 2016 was 0.04. At the same time, the percentage contribution of exports of articles of leather to the global market averaged 0.001 over the same period. Compared to Ethiopia, for example, the average percentages are 0.3 and 0.004, respectively (for details see Trade Map, 2018).

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have been put in place to both control imports and stimulate exports of meat, and to increase local production and consumption of meat (Daily News, 2019). It should be remembered that meeting local demand for meat through local livestock production would save foreign exchange earnings that could then be used for importation of machinery for industry.

[15] In the fruit sector, for example, Tanzania's performance at the global level is not impressive either, despite having varied ecological zones that produce a variety of fruits. It is common to read of fruits rotting without a market or factory to process them, which of course makes sad reading (*Daily News*, 2015).

The opportunity here lies in adding value to livestock by-products through processed leather and locally-made leather products. This requires concerted efforts to attract investment in such factories. Although the processing of hides and production of leather goods and articles faces challenges in terms of low-cost imports (BET, 2004) that do not provide a competitive environment for a vibrant industry to flourish, steps must still be taken to set up factories. A niche can be found in terms of producing goods that are unique to Tanzania. It would be a lost employment creation opportunity if the production of leather goods remains artisan-based, and exclusively oriented to the domestic market and to tourists (ibid.). Scaling-up production will provide the needed supply for local markets, and investing in quality improvements could make leather goods enter foreign markets.

Thirdly, the potential also exists in Tanzania's underdeveloped commercial poultry sector, which only has a few companies operating large-scale production units.[16] In a study on white meat (pig and poultry) market value chain, Wilson (2013) finds that although production of white meat contributes significantly to income of many Tanzanians in rural areas and has the potential to earn the country more foreign exchange, this is not fully exploited. He finds that production in the poultry industry has stagnated -- or even declined -- over the years, with neighbouring countries taking advantage of the existing potential in the local, regional, and international markets by increasing their market share. Figures B2 and B3 compare the average proportion of production and export values of chickens for Tanzania and a few selected countries, respectively. Figure B2 shows that the three East African countries had similar average percentage contribution to African chicken production (at 2.8% for Tanzania and Kenya, and 2.7% for Uganda), while South Africa accounted for 13.3%. For chicken exports, Tanzania lagged all countries except Uganda, with South Africa leading by accounting for 33.3% of all African chicken exports.

In the meat sector, there are inadequate processing units (see Table 2). Notable is that some of the regions that are among the biggest producers of livestock—such as Tabora, Shinyanga and Manyara—do not have meat-processing factories, and Mwanza has only one beef processing factory (URT, 2017). Although information on installed capacity and whether the plants operate at full capacity is not available for all plants, in general most plants are reported to be underutilized to as much as operating at 50% of installed capacity (Kamugisha et al., 2017; UNIDO, 2012). Clearly, attracting investment in these areas could create jobs and assert Tanzania's place in the global market for processed meat and leather.[17]

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[16]The following companies are listed as operating large-scale production poultry units in Tanzania; NAPOCO (Usa River), Mkuza Chicken (Kibaha), Ruvu JKT (Bagamoyo) and Euro Poultry (Mkuranga), Kenchick, Interchick and Twiga feeds (Dar es Salaam) (PASS Trust, 2013).

[17]Globally, Tanzania's cattle population is second to Ethiopia, but export earnings from processed meat and leather are way below that of Ethiopia. For example, in 2016 Tanzania's earnings from meat exports were a mere 9% of Ethiopia's earnings.

Table 2: Meat Processing Plants in Tanzania and Installed Capacity

Name	Region	Installed Capacity (Single Shift/Day)	Status
Sumbawanga Agricultural and Animal Feeds Industries (SAAFI)	Reiwa	150 cattle	Operational but below capacity
Peramiho Mission	Ruvuma	-	
Tanzania Pride Meat Company	Morogoro	200 cattle	In receivership
Tanzania Meat Company	Dodoma	200 cattle; 2000 goats and sheep	
Makela Foods	Dar es Salaam		
Arusha Meat Company	Arusha	300 cattle; 400 goats and sheep	Operational
Happy Sausage Processing; Meat King processing	Arusha	-	
CEFA/BomaNg'ombe Village Company	Iringa	-	
Best Beef Processing	Coast	-	
Peramiho Mission	RUVUMA		

Source: Wilson (2015); Tabora City Investment Promotion Unit (2013), Ministry of Livestock and Fisheries Development (2010).

The employment potential in poultry lies in establishing more commercial production units to employ young people. Such a drive could be started by the government going into partnership with youth organizations to run these commercial poultry units. The commercial units could deliberately target rural areas, which could stem the tide of migration to urban areas as youths could find good jobs in these units. Such commercial poultry units could provide demand for poultry feed, implying further opportunities for units producing feed for the livestock.

3.2 Some Challenges
3.2.1 Development of Adequate Infrastructure
Investment in infrastructure development is a key ingredient in industrialization, and an enabler for industrial development. The infrastructure gap that SSA countries face is among the three areas identified by the African Development Bank Group (AfDB, 2017) as separating Africa and the rest of the world in economic fundamentals.[18] For countries that have industrialized ahead of developing countries, the development of infrastructure was given its due importance in driving and facilitating the industrialization process (Cain, 1997; Kniivilä, 2007). The development of infrastructure in the process of industrialization ensures that the competitiveness of the industry is not undermined by high costs of transportation; or hampered by production inefficiencies imposed by, for instance, inadequate power supply or inefficient port and customs procedures.

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[18]The others are skills gap and institutional effectiveness gap (AfDB, 2017).

In Tanzania, the development of infrastructure to support the industrialization drive is proceeding, albeit at a slow pace. For example, although the country's ranking for Logistics Performance Index (LPI) improved between 2014 and 2016[19], it was behind the three EAC partner states of Kenya, Uganda, and Rwanda (World Bank, 2016). The development of infrastructure is important locally, and for the EAC region to facilitate the movement of goods among the partner states: it would ensure that markets in the region are linked so that the benefits of regional integration are maximised, especially in terms of boosting intra-regional trade. Several studies have indicated the serious need for the EAC to double its efforts in infrastructure development and investment to enhance trade, attract investment, and reduce logistical costs and hurdles (Bulzomi et al., 2014; ESRF, 2014; AfBD, 2013).

However, while road networks are being improved (which is a positive development), an important aspect of significantly reducing transport costs locally and in the region is the development of a rail line to link markets.[20] This could enhance competitiveness and boost intra-regional trade in goods that Tanzania enjoys comparative advantage. At the regional level, infrastructure development requires joint efforts by all member states, since the strategic areas that are identified by the EAC for developing regional value-chains are mostly bulky. This means that the EAC countries will require massive investment in infrastructure for their industrialization policies to be effective, and to encourage potential investors in the EAC countries by the ability to access the larger EAC market.[21]

The development of infrastructure does not only extend to roads, rail, and ports, but also includes reliable power supply. For Tanzania, the discovery of natural gas is a positive development that requires vast investments to provide stable power supply from gas reserves, given that electricity was cited as the biggest problem faced by more than half of the surveyed exporting firms in 2013 (see Table 6A).[22] Indeed, ensuring that power outages are a thing of the past would aid the development of manufacturing activities, and attract more investment in export activities.

3.2.2 Improving the Environment for Doing Business

The industrialization process, as articulated by the government, is going to be largely driven by the private sector, with the government ensuring that adequate investors are attracted to invest in Tanzania's industry through having a friendly and conducive environment for doing business. Such an environment would help lower costs of manufactured goods and make them competitive in local, regional, and global

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[19]The LPI is a tool that ranks countries based on trade logistics, combining both qualitative and quantitative data. For more details on how it is constructed, see the World Bank (2016).

[20] Locally, the current investment in the standard gauge railway line by the government is commendable, and more is needed to link Tanzania's vast area.

[21]An example to illustrate the importance of good infrastructure is the case of a cement producing firm, Heidelberg Cement AG in Tanzania. Faced with an oversupply of cement, it bemoaned how exporting the extra supply to neighbouring countries is not even considered due to poor roads, ports and rail lines linking them, which makes transport costs too high to be competitive (Bloomberg.com, 2015).

[22]World Bank (2013), Enterprise Survey, Washington DC.

markets. Data on the ease of doing business in Tanzania (Figure 4) shows that Tanzania's latest rank deteriorated from 132 in 2016 to 144 in 2018. This indicates that more effort is needed to improve the business environment. Table 7A compares the performance of the EAC countries: the ranks for Tanzania, Uganda and Burundi deteriorated between 2016 and 2018; while those of Kenya and Rwanda improved. In all the EAC partner states, Rwanda has the best rank; and within SSA, Rwanda was ranked as the third easiest economy to do business in. What is to bear in mind is that since the EAC partner states must compete for investors, the countries whose ranks are not good ought to invest in improving them and to learn from countries that are doing well.
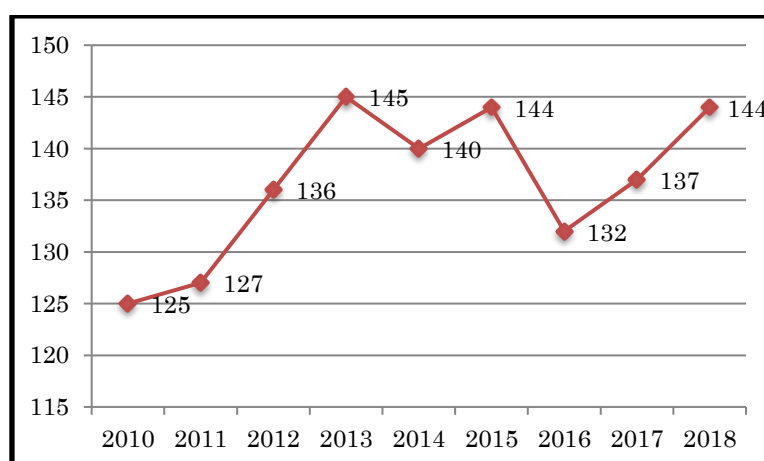
Figure 4: *Trend in Tanzania's Ease of Doing Business, 2010-2018*
Source: https://tradingeconomics.com. Accessed, August 2019.

3.2.3 Regional Integration
Tanzania's membership to regional integration arrangements ensures that it accesses a bigger market than its own. However, studies show that the regional arrangements that Tanzania belongs to suffer limited trade opportunities due to non-tariff barriers (NTBs).[23] NTBs limit access to markets of partner states, and also contribute to higher prices of goods. In general, NTBs have been identified as key factors in limiting trade in SSA. A study by Keane et al. (2010) on SADC found that NTBs diverted imports from SADC to non-SADC countries, stifling trade in the process. The effect of NTBs on intra-regional trade in the EAC has also been pointed out as a major factor contributing to low intra-regional trade.

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[23]NTBs are restrictions on trade that are not tariffs that governments impose, which result in making trade in goods more costly. Some of the measures that are taken are; government laws, regulations, policies, conditions, restrictions or specific requirements, and private sector business practices, or prohibitions that protect the domestic industries from foreign competition (Trade Mark, 2016).

NTBs are a challenge to Tanzania's industrialization efforts, and as such, require attention so that incentives to invest are not affected. The index of intra-regional trade intensity (ITII)[24] in Figure 5 is indicative of how NTBs might be a significant challenge in the EAC. The declining trend signifies lower intra-regional trade over time among the EAC member states, compared to the intensity of trade with other regions that are not part of the EAC. Given the preferential arrangements embedded in the EAC, one would have expected a rising trend over time in intra-regional trade intensity.[25]
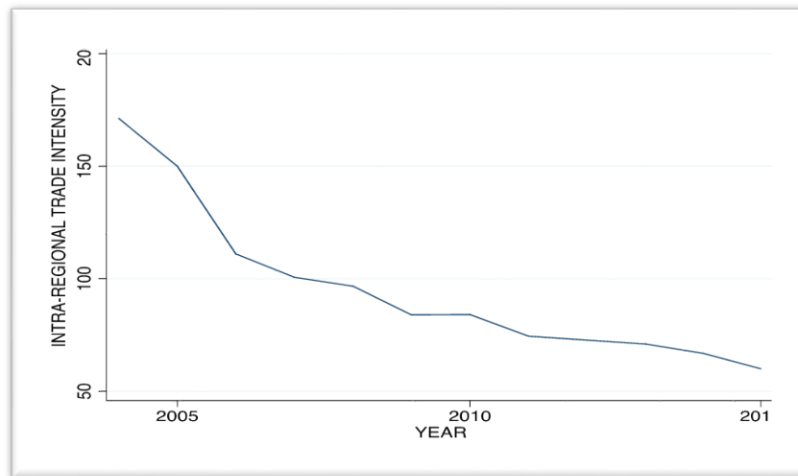
Figure 5: *Trend of Intra-regional Trade Intensity*
Source: Own calculation.

4. Conclusion and Policy Implications

This paper set out to examine four issues: why it is imperative for Tanzania to industrialize; the extent to which Tanzania has structurally transformed and how that can explain poverty and growth without jobs; how industrial development could enhance agricultural productivity; and what opportunities and challenges exist in Tanzania's industrialization drive. Indeed, Tanzania is not alone in the bandwagon of countries with an impressive economic growth that has had limited impact on job creation and poverty reduction. This is the basis for the imperative to industrialize.

Being a predominantly agricultural economy, with an average contribution to GDP of 26% between 1990 and 2017 coming from agriculture, and over 70% of the labour

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[24]This is calculated as follows: $ITII = T_{ii}/T_i/T_i/T_W$; where $ITII$ *is* the intra-regional trade intensity index; T_{ii} are exports of region i to region i plus imports of region i from region I; T_i aretotal exports of region I to region world plus imports of region i from region I; T_W are total world exports plus imports. Note that an index of more than one shows that the flow of trade within the region is larger than expected given the significance of the region in global trade (Asia Regional Integration Center, 2017, https://aric.adbd.org/integrationindicators/technicalnotes#intra-regional-trade-intensity-index); accessed August 2017.

[25] See Leke et al. (2010) on the importance of expanding intra-African trade as crucial to future growth of economies.

force engaged in agricultural activities, the drive to industrialize must capitalize on this comparative advantage. This will ensure that the level of poverty in rural areas, where it is relatively higher than in urban areas, is reduced. With industrialization, rural farmers would increase their productivity given a ready market for their agricultural products, and jobs would be created to engage the many youths without jobs and/or are underemployed.

While the existing potentials in agriculture that can spur the industrialization drive are numerous, the paper focused on illustrating the case of livestock. The paper also provided challenges that need serious consideration for the industrialisation drive to assume the required speed and urgency: development of adequate infrastructure, improving the environment of doing business, and eliminating NTBs. All these challenges will help attract investment that is needed to establish industries. But what are the policy questions to address? These are mainly two.

The first relates to attracting investment, either private or in partnership with the government, that will target and emphasize the development and exploitation of the existing potential in agriculture. The unexploited potential in livestock examined here is by no means the only one. What is important though is to learn from countries that have succeeded in adding value to agricultural products. For example, in keeping with the same livestock example, Tanzania can learn from Botswana on livestock processing; and from Ethiopia on processing hides and establishing leather factories.

The second policy question relates to ensuring that investors (both local and foreign) are encouraged to establish industries through ensuring that appropriate supportive infrastructure exists. While it is the responsibility of investors themselves to structure their production in a manner that ensures a competitive edge for their products, there is a lot that a government can do to facilitate this. For Tanzania, it is important to continue scaling-up public investment in energy, transport infrastructure, water and other utilities, and other commonly shared overhead costs of industrialization[26] to ensure that the cost of production is brought down by the quantity and quality of such public investments. The Tanzania government must remember that all countries in the EAC are competing for investors in their economies. This challenges it to provide investment incentives that will attract more investors. Tanzania is on the right path, but more needs to be done.

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[26] This relates to establishment of industrial parks, industrial clusters with common effluent treatment facilities, reliable energy, good transport facilities (roads, rail and air), packaging and other logistics such as one-stop centres for facilitating investors. Ethiopia is a good example in taking a lead in this direction (see UNIDO, 2018).

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APPENDICES

Appendix A

Table 1A: Selected Statistics on GDP, Sectoral Contribution to GDP and Employment, 1990-2017

	Annual Growth Rate of GDP	Agriculture, forestry, and fishing, VA[a] (% of GDP)	Industry[b] VA (% of GDP)	Services, VA (% of GDP)	Manufacturing, VA (% of GDP)	Employment to POP[c] Ratio, 15+, total (%)[d]
1990	7.0	42.0	16.1	33.3	8.5	-
1991	2.1	43.9	15.4	31.9	8.2	84.2
1992	0.6	44.7	15.1	33.3	7.6	84.3
1993	1.2	44.8	14.5	33.8	7.0	84.1
1994	1.6	41.6	14.0	36.9	6.8	84.1
1995	3.6	43.7	13.4	35.5	6.6	84.0
1996	4.5	44.0	13.0	34.6	6.8	84.0
1997	3.5	42.6	13.0	35.4	6.3	84.1
1998	3.7	26.5	20.1	47.6	11.0	84.2
1999	4.9	26.4	19.8	48.7	10.2	84.1
2000	4.5	26.2	19.2	49.1	9.9	84.2
2001	6.1	25.8	19.4	49.1	9.5	84.4
2002	7.1	25.2	21.5	47.6	9.4	84.5
2003	6.7	24.9	23.2	46.0	9.4	84.7
2004	7.5	25.7	23.1	45.1	9.2	-
2005	7.5	24.6	22.9	45.1	9.0	-
2006	6.5	23.7	22.8	45.6	8.8	-
2007	6.8	23.2	23.2	45.5	8.8	-
2008	5.7	24.8	23.7	43.7	8.7	85.4
2009	5.3	26.0	21.7	44.6	8.7	84.7
2010	6.3	25.6	23.6	43.3	8.7	83.7
2011	7.7	25.0	26.4	41.4	9.5	82.7
2012	4.5	26.6	25.4	40.6	9.4	82.3
2013	6.8	26.8	25.4	40.3	9.1	81.8
2014	6.7	25.8	25.1	41.3	9.1	81.7
2015	6.2	26.7	24.5	40.4	7.9	81.6
2016	6.9	27.4	24.9	39.4	7.8	81.6
2017	6.8	28.7	25.1	37.9	7.7	81.7

Note: [a]VA – Value added; [b]Industry includes construction; [c]POP – Population; [d]Modelled ILO estimate.
Source: World Bank (2019), World Development Indicators online; http://data.worldbank.org; accessed, August 2019.

Table 2A: Index of Revealed Comparative Advantage

Code	Product Group	2005	2010	2015
1	Live animals	0.68	0.13	0.39
2	Meat and edible meat offal	0.02	0.00	0.02
3	Fish and crustaceans, molluscs and other aquatic invertebrates	16.23	6.83	7.03
4	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere . . .	0.12	0.06	0.05
5	Products of animal origin, not elsewhere specified or included	3.70	2.12	1.28
6	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage	7.20	10.88	6.72
7	Edible vegetables and certain roots and tubers	7.32	6.62	13.53
8	Edible fruit and nuts; peel of citrus fruit or melons	6.00	6.25	10.43
9	Coffee, tea, maté and spices	37.58	17.45	24.52
10	Cereals	5.01	1.43	0.66
11	Products of the milling industry; malt; starches; inulin; wheat gluten	11.39	12.05	0.47
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal . . .	5.13	4.25	12.15
13	Lac; gums, resins and other vegetable saps and extracts	1.84	0.41	4.28
14	Vegetable plaiting materials; vegetable products not elsewhere specified or included	1.44	5.82	6.87
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal . . .	1.30	2.57	0.96
16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates	0.00	0.04	0.00
17	Sugars and sugar confectionery	3.00	1.03	0.02
18	Cocoa and cocoa preparations	2.16	1.86	3.92
19	Preparations of cereals, flour, starch or milk; pastrycooks' products	0.10	0.10	0.03
20	Preparations of vegetables, fruit, nuts or other parts of plants	0.08	0.08	0.04
21	Miscellaneous edible preparations	0.88	0.72	0.08
22	Beverages, spirits and vinegar	0.45	0.49	0.14
23	Residues and waste from the food industries; prepared animal fodder	1.68	1.29	1.12
24	Tobacco and manufactured tobacco substitutes	33.65	15.13	53.12
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	1.08	4.14	2.13
26	Ores, slag and ash	8.83	15.87	10.82
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral . . .	0.18	0.12	0.08
28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, . . .	0.06	0.13	0.15
29	Organic chemicals	0.01	0.01	0.75
30	Pharmaceutical products	0.04	0.03	0.02
31	Fertilisers	0.60	6.72	1.32
32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring . . .	0.40	0.15	0.24
33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	0.30	0.47	0.43
34	Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial . . .	1.69	1.49	0.22
35	Albuminoidal substances; modified starches; glues; enzymes	0.02	0.00	0.02
36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparation . . .	0.01	0.67	0.01
37	Photographic or cinematographic goods	0.00	0.02	0.00
38	Miscellaneous chemical products	0.03	0.06	0.01
39	Plastics and articles thereof	0.23	0.66	0.18
40	Rubber and articles thereof	0.21	0.13	0.03

41	Raw hides and skins (other than furskins) and leather	1.65	0.99	2.71
42	Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles . . .	0.00	0.44	0.01
43	Furskins and artificial fur; manufactures thereof	1.25	1.63	0.04
44	Wood and articles of wood; wood charcoal	0.78	1.75	1.54
45	Cork and articles of cork	0.05	0.01	0.01
46	Manufactures of straw, of esparto or of other plaiting materials; basketware and wickerworks	0.08	0.20	0.29
47	Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or . . .	0.03	0.01	0.06
48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	0.15	1.53	0.28
49	Printed books, newspapers, pictures and other products of the printing industry; manuscripts, . . .	0.06	0.03	0.10
50	Silk	0.02	1.69	0.00
51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric	0.30	0.04	0.00
52	Cotton	15.17	6.40	3.34
53	Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn	15.13	12.42	29.57
54	Man-made filaments; strip and the like of man-made textile materials	0.01	0.05	0.06
55	Man-made staple fibres	0.44	0.08	0.12
56	Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables and articles thereof. . .	2.28	1.66	0.87
57	Carpets and other textile floor coverings	0.01	0.01	0.02
58	Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery	0.09	0.04	0.01
59	Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable . . .	0.20	0.38	0.01
60	Knitted or crocheted fabrics	0.54	0.19	0.09
61	Articles of apparel and clothing accessories, knitted or crocheted	0.24	0.18	0.80
62	Articles of apparel and clothing accessories, not knitted or crocheted	0.06	0.06	0.07
63	Other made-up textile articles; sets; worn clothing and worn textile articles; rags	3.15	6.52	1.50
64	Footwear, gaiters and the like; parts of such articles	0.27	0.18	0.03
65	Headgear and parts thereof	0.09	0.00	0.02
66	Umbrellas, sun umbrellas, walking sticks, seat-sticks, whips, riding-crops and parts thereof	0.53	0.01	0.01
67	Prepared feathers and down and articles made of feathers or of down; artificial flowers; articles . . .	0.00	0.03	0.74
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	0.05	0.10	0.02
69	Ceramic products	0.05	0.73	0.03
70	Glass and glassware	1.19	0.44	2.05
71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad . . .	17.66	8.53	6.30
72	Iron and steel	0.31	0.23	0.28
73	Articles of iron or steel	0.20	0.44	0.15
74	Copper and articles thereof	0.96	3.48	5.74
75	Nickel and articles thereof	0.00	0.00	0.01
76	Aluminium and articles thereof	0.19	0.17	0.20
78	Lead and articles thereof	0.89	2.07	5.30
79	Zinc and articles thereof	0.07	0.10	0.57
80	Tin and articles thereof	0.00	0.08	0.21
81	Other base metals; cermets; articles thereof	0.00	0.01	0.01

82	Tools, implements, cutlery, spoons and forks, of base metal; parts thereof of base metal	0.18	0.30	0.04
83	Miscellaneous articles of base metal	0.01	0.05	0.09
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	0.06	0.16	0.04
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television . . .	0.04	0.13	0.02
86	Railway or tramway locomotives, rolling stock and parts thereof; railway or tramway track fixtures . . .	0.00	0.41	0.00
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	0.06	0.08	0.03
88	Aircraft, spacecraft, and parts thereof	0.03	0.04	0.03
89	Ships, boats and floating structures	0.00	0.02	0.32
90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical . . .	0.02	0.09	0.02
91	Clocks and watches and parts thereof	0.01	0.01	0.00
92	Musical instruments; parts and accessories of such articles	0.02	0.30	0.02
93	Arms and ammunition; parts and accessories thereof	0.01	0.02	0.00
94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; . . .	0.04	0.54	0.02
95	Toys, games and sports requisites; parts and accessories thereof	0.00	0.25	0.01
96	Miscellaneous manufactured articles	0.05	0.09	0.02
97	Works of art, collectors' pieces and antiques	0.11	0.09	0.19
99	Commodities not elsewhere specified	0.00	0.00	0.38

Source: Calculated from trade data from Trade Map: http://www.trademap.org/, International Trade Centre (TIC): accessed August 2017.

Table 3A: Results of Tests of Equivalence of Means

ttest Y2005 == Y2010

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev	[95% Conf. Interval]	
Y2005	97	2.325	0.615	6.058	1.104	3.546
Y2010	97	1.895	0.375	3.696	1.15	2.64
diff	97	0.429	0.354	3.491	-0.274	1.133

mean(diff) = mean (Y2005 - Y2010)   t = 1.212

Ho: mean(diff) = 0   df = 96

Ha: mean(diff) < 0	Ha: mean(diff) !=0	Ha: mean(diff) > 0
Pr(T < t) = 0.886	Pr(|T| > |t|) = 0.228	Pr(T > t) = 0.114

ttest Y2010 == Y2015

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev	[95% Conf. Interval]	
Y2005	97	1.895	0.375	3.696	1.15	2.64
Y2010	97	2.357	0.705	6.947	0.9957	3.575
diff	97	-0.462	0.486	4.792	-1.428	0.504

mean(diff) = mean(Y2010 - Y2015)   t = -0.949

Ho: mean(diff) = 0   df = 96

Ha: mean(diff) < 0	Ha: mean(diff) !=0	Ha: mean(diff) > 0
Pr(T < t) = 0.174	Pr(|T| > |t|) = 0.345	Pr(T > t) = 0.827

ttest Y2005 == Y 2015

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev	[95% Conf. Interval]	
Y2005	97	2.325	0.615	6.058	1.104	3.546
Y2010	97	2.357	0.705	6.947	0.957	3.757
diff	97	-0.033	0.398	3.919	-0.822	0.757

mean(diff) = mean(Y2005 - Y2015)   t = -0.082

Ho: mean(diff) = 0   df = 96

Ha: mean(diff) < 0	Ha: mean(diff) !=0	Ha: mean(diff) > 0
Pr(T < t) = 0.467	Pr(|T| > |t|) = 0.935	Pr(T > t) = 0.532

Table 4A: Demographic Profile, Youth Labour Force and Unemployment

Population (%)		
	2002	*2012*
Below 15	44.24	43.94
Youth	19.57	19.02
Adult	32.25	33.14
65+	3.94	3.90
Labour Force Participation Rate by Area		
	2006	*2014*
Dar es Salaam	85.8	76.2
Other Urban	87.2	84.4
Rural	90.8	89.8
Total	**89.6**	**86.7**
Youth Labour Force (%) (15-35)		
Dar es Salaam	12.1%	11.6%
Other Urban	17.1%	26.9%
Rural	70.8%	61.5%
Total	**100.0%**	**100.0%**
Youth Unemployment (15-35)		
Dar es Salaam	36	28.8
Other Urban	19.1	12.4
Rural	7.9	8.2
Total	**13.2**	**11.7**
Unemployment Rate (15+) by Education		
Never Attended	9	9.8
Primary	12	10
Secondary & Above	17.3	33.8
Total	**11.7**	**10.3**
Underemployment by Area (%) (15+)		
Dar es Salaam	8.7	5.6
Other Urban	8.3	10.1
Rural	7.6	13.4
Total	**7.8**	**11.8**
Currently Employed People by Sector		
Agriculture	75.1	65.7
Self Employed Without Employees	9.1	15.9
Self Employed with Employees	1.8	2.8
Paid Employees	10.5	13.8
Unpaid Family Helpers (Non-Agric.)	3.5	1.8

Source: NBS, 2006&2014 LFS Reports.

Table 5A: Vulnerable Employment among Youths and Workers, 2014

Proportion of Youth in Vulnerable Employment by Education (%), 2014	
Never Attended	94.8
Primary	85.4
Secondary	77.6
Vocational Training	35.7
Tertiary Non-University	23.9
University	12.4
Total	**82.3**

Vulnerable Workers Aged 15+ by Area and Sex, 2014

	Male	**Female**	**Both**
Dar es Salaam	37.4	54.3	44.6
Other Urban	63.2	79.4	71.4
Rural	90.9	96.8	93.9
Total	**78.2**	**88.7**	**83.4**

Source: NBS, 2006&2014 LFS Reports.

Table 6A: Biggest Obstacle Affecting the Operation of the Establishment

	Frequency	**%**
Electricity	36	54.55
Access to Finance	10	15.15
Tax rates	7	10.61
Others*	13	19.69
Total	**66**	**100**

Note: *includes the following: access to land, business licensing and permits, crime, theft ad disorder, customs and trade regulations, inadequately educated work force, labour regulations, practices of competitors in the informal sector, tax administration, and transport.

Source: World Bank (2013), Enterprise Survey (ES) Data, Washington DC.

Table 7A: Ease of Doing Business in East Africa, 2010-2016

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Tanzania	125	127	136	145	140	144	132	137	144
Kenya	106	109	122	129	129	113	92	80	61
Rwanda	50	45	54	32	55	59	56	41	29
Uganda	119	123	126	132	135	116	115	122	127
Burundi	177	169	157	140	151	155	157	164	168

Source: https://tradingeconomics.com; accessed, August 2019.

Appendix B

Box B1: Calculation of Revealed Comparative Advantage

Revealed Comparative Advantage
It is used to identify sectors or products in which a country has comparative advantage. Devised by Balassa (1965), it is calculated as;

$$RCA_{ij} = \frac{X_{ij}}{X_{it}} \Bigg/ \frac{X_{wj}}{X_{wt}}$$

where,
RCA_{ij} - revealed comparative advantage of country i in product j
X_{ij} - country i's exports of product j
X_{it} - country i's total exports
X_{wj} - global exports of product j
X_{wt} - total global exports
A value of the RCA above one in a product (or sector) k for country I means that I has a revealed comparative advantage in that sector.
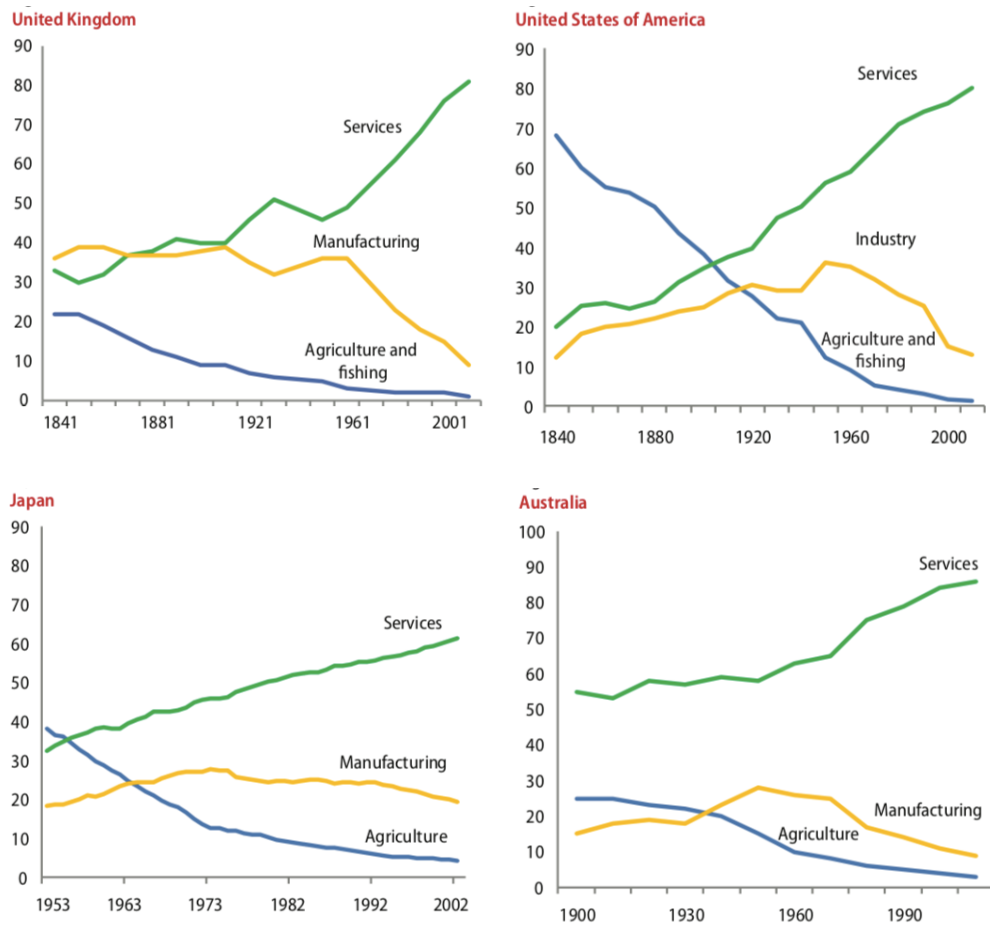
United Kingdom

United States of America

Japan

Australia

Figure B1: *Employment as a Share of Total Employment for Selected Developed Countries*
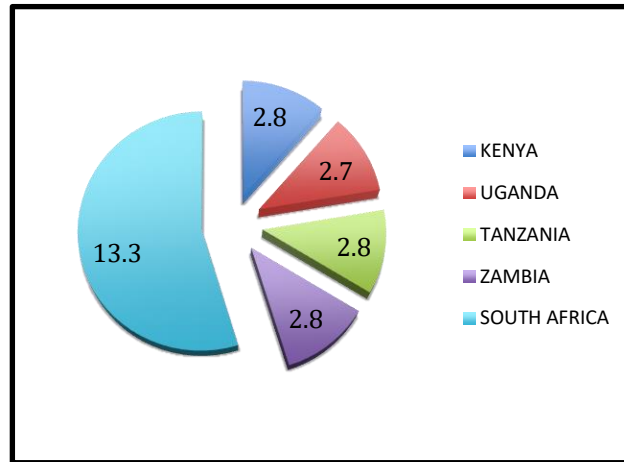**Source**: Islam and Iversen (2018).

Figure B2: *Average % Value to African Production of Chickens, 2000-2017*

    Source: Calculated from trade data from Trade Map: http://www.trademap.org/, International Trade Centre (TIC): accessed August 2019.
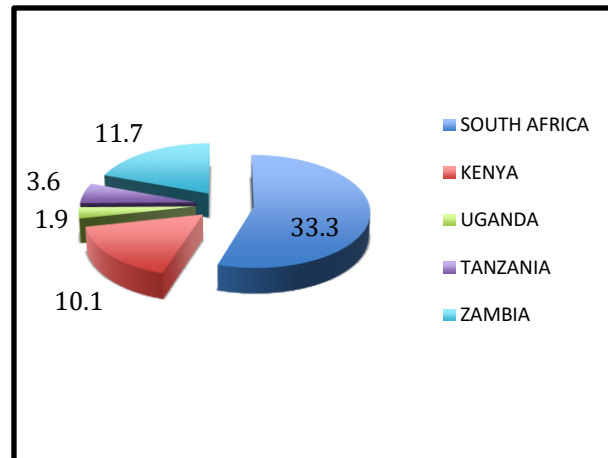

Figure B3: *Average % Value to African Exports of Chickens, 2000-2016*

    Source: Calculated from trade data from Trade Map: http://www.trademap.org/, International Trade Centre (TIC): accessed August 2019.