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1 Introduction

1.1 Background of the Study

In recent decades, East Africa has experienced significant economic growth and development. This growth has been driven by various sectors, including services, manufacturing, and agriculture. Understanding the mechanisms that drive economic growth has been central to economic research for several decades. Historically, scholars have developed different theories to explain the processes and factors that contribute to economic growth, focusing primarily on the roles of various sectors in fostering or hindering this growth (Chirwa & Odhiambo, 2018).

The traditional view held by Harrod (1939), Domar (1946), Swan (1956), and Solow (1956) proposes that economic growth is mainly driven by factors exogenous to the economy, such as technological progress. These exogenous growth theories have been a significant part of economic thought, laying a foundation for the further evolution of growth models like the Ramsey-Cass-Koopmans model and the overlapping generations (Diamond) models.

However, the understanding of economic growth has evolved with the introduction of endogenous growth theories. These theories, including those proposed by Arrow, Frankel, Romer, Uzawa, and Lucas, argue that economic growth is primarily driven by factors internal to the economy, such as human capital, innovation, and institutional settings (Chirwa & Odhiambo, 2018).

Simultaneously, research has examined the role of various economic sectors in driving growth. The manufacturing sector has long been considered an engine of growth, particularly in developing economies (Szirmai, 2012; Haraguchi et al., 2017). Yet, in recent years, the notion of premature deindustrialization and the rise of the service sector have challenged this view (Rodrik, 2018; Sen, 2019). Similarly, the role of the agricultural sector in economic growth has seen shifts over time. Historically important in early development stages, the sector's modern significance, particularly in low-income and developing countries, is gaining recognition (Diao et al., 2010; Barrett et al., 2017).

The evolving understanding of the mechanisms and sectoral contributions to economic growth underscores the need for continuous research. This study aims to contribute to this ongoing discussion by examining the key assumptions and mechanisms of growth in exogenous and endogenous growth theories and assessing how manufacturing, service, and agricultural sectors affect economic growth.

1.1.1 Trends in Manufacturing, Services, and Agriculture

The current economic climate in East Africa can be analyzed by exploring three major sectors: manufacturing, services, and agriculture. The importance of these sectors can be quantified by their respective contributions to the region's Gross Domestic Product (GDP) and their employment levels. The historical data reveals interesting trends in these sectors.

Figures 1 and 2 show the percentage contributions of manufacturing and industry to East Africa's GDP. Simultaneously, Figure 3 provides an overview of the employment level in the industrial sector. The industry, including construction, and manufacturing sectors show mixed trends. In Burundi, industry as a percentage of GDP decreased from 18.99% in 1992 to 10.64% in 2022. A similar trend is visible in Kenya (17.31% in 1982 to 17.66% in 2022), while there are increases in the DRC (32.62% in 2002 to 48.65% in 2022), Rwanda (16.39% in 2002 to 21.23% in 2022), and Uganda (22.92% in 2002 to 26.78% in 2022). In the case of manufacturing, the trends are again mixed. In Kenya, the sector's contribution to GDP was higher in 1982 (10.60%) than in 2022 (7.83%), but in Uganda, the sector grew from 7.35% in 2002 to 16.37% in 2022.
The service sector's contribution to GDP and its employment level are depicted in Figures 4 and 5 respectively. The services sector has generally seen an increase across the board. In Burundi, services as a percentage of% in 2022. Similar upward trends are also seen in Rwanda (31.01% in 1972 to 46.49% in 2022) and Uganda (30.49% in 1972 to 41.59% in 2022).
The role of agriculture in the East African economy is similarly demonstrated in Figures 6 and 7, which indicate its contribution to GDP and its employment figures, respectively. Looking at agriculture as a percentage of GDP across these countries, there is a clear declining trend over the last six decades. For example, in Burundi, the sector contributed to 60.77% of the GDP in 1972, but this share fell to 27.57% in 2022. Similar declines are evident in Kenya (37.57% in 1962 to 21.17% in 2022), Rwanda (59.56% in 1972 to 24.89% in 2022), and Uganda (54.50% in 1972 to 24.06% in 2022). Despite these decreases, the agriculture sector remains an important part of the economy in all these countries.

1.1.2 Economic Growth in East Africa

The economic growth in East Africa, as captured by the Gross Domestic Product (GDP), shows remarkable growth across countries in the region over the past few decades. The GDP of Burundi grew from approximately $3.38 billion in 2022 from $2.95 billion in 2012, $2.08 billion in 2002, and $1.71 billion in 1982 (see Figure: Gross Domestic Product). The Democratic Republic of Congo also showed impressive economic growth, with its GDP reaching $52.35 billion in 2022, a substantial increase from $29.86 billion in 2012, and

$16.66 billion in 2002.

Kenya, Rwanda, Tanzania, and Uganda also exhibited positive GDP growth trajectories. In 2022, Kenya's GDP was about $94.80 billion, up from $61.28 billion in 2012 and $38.22 billion in 2002. Rwanda's GDP increased from $1.29 billion in 2022 to $7.06 billion in 2012 and $3.36 billion in 2002. Tanzania and Uganda showed similar trends, with Tanzania's GDP rising from $67.10 billion in 2022 from $39.16 billion in 2012 and Uganda's GDP increasing to $44.17 billion in 2022 from $28.28 billion in 2012. However, data for South Sudan was not available for comparison.

Economic growth rates, as measured by the annual GDP growth percentages, reveal interesting dynamics across the region. Kenya experienced a steady growth rate of around 4.85% in 2022 and 4.57% in 2012. Rwanda's economic growth was relatively high, at approximately 8.16% in 2022 and 8.64% in 2012. The Democratic Republic of Congo also experienced high growth rates of 8.92% in 2022 and 7.09% in 2012. Burundi, Tanzania, and Uganda exhibited moderate growth rates, with Burundi at 1.85% in 2022, Tanzania at 4.56% in 2022, and Uganda at 4.65% in 2022.

This data indicates a generally positive economic growth trend across East African countries. It is crucial to note that these growth rates might have been influenced by various factors, including political stability, macroeconomic policies, and international trade dynamics, among others.

However, while GDP and GDP growth are generally good indicators of economic performance, they may not fully capture the complexity of economic development or the distribution of wealth in these countries. For a more complete understanding, other factors such as employment rates, poverty rates, income inequality, and social indicators should also be considered.

Several studies have addressed the drivers of economic growth in East Africa. For instance, Juma (2020) argues that economic diversification, particularly towards manufacturing and services, is key to sustainable growth in the region. On the other hand, Mwangi and Murithi (2019) highlight the role of macroeconomic stability and infrastructural development in driving economic growth. As such, while the overall trend of economic growth in East Africa is positive, there remains a need for targeted policies to ensure this growth is sustainable and inclusive.
See Figures: Gross Domestic Product and GDP Growth for visual representations of these trends.

1.2 Problem Statement

Despite the demonstrated economic growth in East Africa (discussed in 1.1.2), there exist distinct differences in the growth patterns and economic contributions of the service, manufacturing, and agricultural sectors across the various countries. Each of these sectors has different implications for development, employment, income distribution, and long-term sustainability. However, the linkages and impacts of these sectors on overall economic growth in East Africa are not yet fully understood.

In the global context, the service sector has emerged as a significant contributor to GDP and employment in many developing and developed economies (World Bank, 2019). Nonetheless, the role and impact of the service sector on economic growth in East Africa remain a complex and understudied area. A similar situation exists in the manufacturing sector, where despite acknowledging its potential as an engine for economic growth and structural transformation (Szirmai, 2012), its specific impact on East African economies is less clear.

The agricultural sector, traditionally a cornerstone of East African economies, also presents an interesting scenario. In some countries, this sector continues to be the primary source of livelihood for a majority of the population, yet its contribution to GDP has been decreasing over time. There is a need to understand the causes and implications of this trend, and how it affects overall economic growth in the region.

The lack of a clear understanding of how these sectors individually and collectively contribute to economic growth in East Africa hinders effective policy formulation and implementation. This gap in knowledge may lead to the neglect of sectors that could potentially drive economic growth, while resources may be misallocated to less productive sectors. Moreover, without understanding these dynamics, it becomes difficult to develop effective strategies for economic diversification, employment generation, poverty reduction, and overall sustainable development in the region.

This study therefore seeks to carry out a comparative analysis of the effects of the service, manufacturing, and agricultural sectors on economic growth in East Africa. It aims to enhance our understanding of the dynamics and interplay of these sectors and how they contribute to the economic trajectory of the region.

1.3 Research Questions

This study seeks to answer the following research questions:

1. How does the service sector influence East African countries' economic growth?

2. What role does the agricultural sector play in East Africa's economic growth?

3. How does the manufacturing sector contribute to the economic growth of East African countries?

1.4 Research Objectives

The primary aim of this study is to examine how the manufacturing, agricultural, and service sectors influence the economic growth rates of East African countries. The specific objectives include:

1. To analyze and compare the influence of the service sector on economic growth in East Africa.

2. To ascertain the role of the agricultural sector in East Africa's economic growth.

3. To assess the contribution of the manufacturing sector to the economic growth of East African countries.

1.5 Significance of the Study

The significance of this study stems from several aspects. First, by providing an in-depth analysis of the service, manufacturing, and agricultural sectors' contributions to GDP in East Africa, it offers essential insights into the economic performance of these countries over the last six decades. This historical perspective provides a comprehensive understanding of economic development patterns, which can inform future economic policy and planning.

Second, the comparative nature of this study across different East African countries can identify common growth factors and challenges unique to this region. By uncovering these commonalities and differences, this study can contribute to regional policy dialogue, fostering a collaborative approach towards sustainable economic development.

Third, this study is relevant to the ongoing global discourse on the importance of diverse economies. By examining how different sectors contribute to overall GDP growth in East Africa, the findings can enrich the understanding of how sectoral balances affect overall economic performance. This could be useful not just to East Africa, but other developing regions as well, given the general trend of economic diversification as a strategy for achieving sustainable development.

Lastly, the findings of this study can guide investment decisions, both at the national and international levels. Identifying the sectors that contribute significantly to GDP

growth can attract potential investors to areas with promising growth potential, thereby promoting further economic development.

2 Literature Review

This section reviews the literature based on theory and previous research. It is divided into three parts comprising theoretical literature review, empirical literature review, and an overview of the literature.

2.1 Theoretical Literature Review

The effect of the manufacturing, agricultural and services sectors on economic growth can be assessed through the lenses of growth theory and mechanisms through which these sectors affect economic growth. This section describes these perspectives.

2.1.1 Exogenous and Endogenous Growth Theories

The body of knowledge on economic growth theories is in two folds: exogenous and endogenous growth theories. Exogenous growth theories, pioneered by Harrod (1939), Domar (1946), Swan (1956), and Solow (1956), postulate that long-term economic growth stems from factors external to the economy, most notably technological advancements. Solow's (1956) model, for instance, characterizes technological progress as exogenous and immune to influence from economic policies (Chirwa & Odhiambo, 2018). Further exogenous growth models such as the Ramsey-Cass-Koopmans model and the overlapping generations (Diamond) model emphasize the role of consumer optimization in shaping economic growth but similarly regard technological progress as external.

Endogenous growth theories, on the other hand, suggest that economic growth is driven by internal factors, including human capital, innovation, and policy. Kenneth Arrow's 'Learning by Doing' theory of 1962, for instance, posits that knowledge accumulation through production activities drives economic growth. Similarly, the AK model by Frankel (1962) and Rebelo (1991) establishes a direct relationship between capital accumulation and output growth. Paul Romer's model emphasizes the significance of knowledge and technological innovation in fueling growth (Romer, 1990). The Lucas model (1988) and Uzawa Two-Sector model underscore the role of human capital in driving economic growth, and Acemoglu et al. (2005) highlight the influence of policies and institutional settings. Balassa (1964) and Samuelson (1964) show how trade may promote growth.

These growth models mainly explain the channels of economic growth. However, they do not show the sectoral effect on growth which is the interest of this study. Therefore, the next section describes the mechanism through which economic growth can be affected by the manufacturing, agricultural and services sectors.

2.1.2 The Mechanism of Sectoral Contributions to Economic Growth

The manufacturing sector has traditionally been viewed as a critical driver of economic growth, especially in developing countries (Szirmai, 2012; Haraguchi, Cheng & Smeets, 2017). Manufacturing induces productivity enhancement, opportunities for capital accumulation, opportunities for economies of scale and technological advancement, all key for economic growth (Szirmai, 2012; Szirmai & Verspagen, 2015).

In most developing countries during the 1950-1973 period, productivity growth in manufacturing has been more rapid, and higher than in agriculture therefore causing dynamic shift effect-a transfer of resources to manufacturing sector results in more rapid aggregate growth. A transfer of labor from low-productivity agriculture to high-productivity manufacturing results in an immediately increases total productivity and income per capita. It is referred to as structural change bonus (Rodrik, 2009; Timmer and de Vries, 2009; Fagerberg and Verspagen, 1999; Lewis 1954).

Manufacturing, as a spatially concentrated industry, provides more opportunities for capital accumulation and intensification than dispersed agriculture. In developing countries, the transition from agricultural to manufacturing is significant in terms of aggregate capital accumulation because capital intensity in manufacturing is significantly higher than in agriculture, particularly prior to 1970. Manufacturing capital intensity declines as economies improve, as does the role of manufacturing as the sector driving capital accumulation. This is due to agricultural industrialization.

The manufacturing sector provides unique chances for embodied technological growth, which associates rapid capital accumulation with enhanced technology due to investment in new equipment that is embodied with new technological changes. Manufacturing also provides potential for disembodied technological growth, or advances in product and process technology knowledge. Cornwall (1977) has argued that manufacturing is the locus of technological progress.

Because of the nature of technologies that are most successfully applied in large scale production, the industrial sector, particularly manufacturing, has historically benefited from economies of scale as compared to agriculture and service industries. It also has something to do with learning by doing. Expansion of production expands the scope for learning (Fagerberg and Verspagen, 1999). Therefore, the rate of growth of productivity in manufacturing depends positively on the rate of growth of output (Verdoorn, 1949; Kaldor, 1966, 1967).

However, this sector's importance has been disputed recently, with some arguing for premature deindustrialization in developing countries (Rodrik, 2018). Nevertheless, evidence suggests manufacturing remains crucial for economic development, despite structural and concentration challenges (Szirmai, 2012; Haraguchi et al., 2017).

Sen (2019) reports a novel pattern of structural transformation in low-income economies where workers shift directly from agriculture to non-business services, bypassing the industrialization phase. This pattern is attributed to technological change, globalization, and urbanization.

The services sector has been significantly impacted by technological transformation, notably digitization. Historically, the potential for services-led expansion has been constrained by the requirement for face-to-face interactions between service providers and consumers, which limits options to satisfy demand outside of the local market. Increased digitalization, on the other hand, allows for more scale and innovation in the services industry, which can contribute to productivity gains and promote overall economic growth. High-skilled offshorable services, which are accessible to remote labor via digital distribution, have been among the least affected sectors during the COVID-19 pandemic, with output and investment even increasing (Nayyar & Davies, 2023).

Globalization has led to the growth of non-business services such as education and health, which are non-tradable and must be provided locally. Urbanization has led to the growth of public administration services as cities require more public services such as transportation and sanitation. The paper argues that this pattern of structural transformation is different from the traditional pattern of structural transformation where workers shift from agriculture to manufacturing and then to services. The new path to development involves investments in human capital and creating an enabling environment for service sector growth (Sen, 2019).

Historically, the agricultural sector's role in economic growth was most prominent in the early stages of development. However, recent studies show a continual significance in modern times, especially for low-income and developing countries (Diao, Hazell & Thurlow, 2010; Barrett, Christiaensen, Sheahan & Shimeles, 2017). Agriculture stimulates growth through productivity improvements (Gollin, 2010). Schultz's view that an agricultural surplus is a necessary condition for a country to begin the development process is characterized as the Mellor hypothesis which held that agricultural productivity growth resulted in increased farm revenue and profitability, decreased food prices, increased industrial and agricultural export competitiveness, and pushed labor and capital away from agriculture hence expansion of the domestic industrial sector. Gollin et al. (2002, 2007) echoed

Schultz in contending that a number of poor countries' growth processes are hampered by the necessity to devote substantial amounts of labour and other resources to food production. McMillan & Headey (2014) argues that agriculture aids structural transformation by releasing labor to more productive sectors. However, the direct shift from agriculture to services in some economies, bypassing industrialization (Sen, 2019), has highlighted the changing dynamics of agricultural contribution to economic growth.

In conclusion, exogenous and endogenous growth theories provide vital perspectives on the drivers of economic growth. Additionally, the roles of the manufacturing, service, and agricultural sectors in economic growth have evolved over time and vary across different economies. The modern economic growth narrative emphasizes the importance of considering internal dynamics, structural transformations, and the role of various economic sectors in crafting policy decisions.

2.2 Empirical Literature Review

The impact of different sectors on economic growth has been a central theme in development economics, with numerous studies evaluating the roles of the manufacturing, service, and agriculture sectors. While none of the provided studies specifically focus on East Africa, they offer insights that can help inform an understanding of the region's economic trajectory.

In the realm of manufacturing, Mijiyawa (2017) explored the role of this sector as a driver of structural transformation in Africa, with a particular focus on 45 African countries over the period of 1970 to 2010. The study found that factors such as initial manufacturing share, infrastructure quality, educational attainment, and natural resource dependence significantly affect the manufacturing sector's development. Using the System Generalized Method of Moments (GMM), the author presents a nuanced view of manufacturing's role, offering a pathway for East African nations to boost their manufacturing sectors.

Similarly, Opoku and Yan (2019) explored the role of industrialization in fostering sustainable economic growth across 53 African nations from 1980 to 2014. Using a panel Autoregressive Distributed Lag (ARDL) model, they found that industrialization, particularly manufacturing, positively impacts long-run economic growth in Africa, suggesting potential growth prospects for East Africa's industrial sector.

Szirmai and Verspagen (2015) examined the effect of manufacturing on economic growth in developing countries from 1950 to 2005. Using the Hausman–Taylor method, they found a moderate positive impact of manufacturing on economic growth. While the study sug-

gests manufacturing's importance may be declining since 1990, it hints at the importance of an educated workforce in maximizing manufacturing's benefits.

Using data from 18 African nations from 1965 to 2018, Naudé, W., and Tregenna, F. (2023) used pooled Ordinary Least Squares (OLS), Fixed Effects (FE), and Random Effects (RE) models to demonstrate that industrialization determinants are consistent across all three estimators. They contend that historical legacies, geographical considerations, economic factors, and technological factors are driving African industrialization and that de-industrialization is consistent with an inverse U-shaped relationship between industrialization and GDP per capita. The study finds that the formation of the African Continental Free Trade Area (AfCFTA) is opportune, but its benefits will be realized only if countries improve infrastructure, trade facilitation, and urbanization. Rekha Ravindran and Manalaya's (2023) findings concur, suggesting premature deindustrialization negatively affects long-run economic growth, a factor that East African nations should heed.

In contrast, di Meglio et al. (2018) revisit the notion of deindustrialization from the perspective of the service sector. Using data on 51 developing economies from 1990 to 2011, they argue that while there is a shift towards services, it is not indicative of deindustrialization, but rather a process of development. Thus, the service sector could offer opportunities for economic growth in East Africa.

Using data from six low-income countries during the 1990-2004 period, Diao et al. (2010) affirm the crucial role of agriculture in African development, suggesting it offers an essential path for poverty reduction. The study applies economy-wide, multimarket (EMM) model for Ethiopia, Ghana, and Rwanda, and computable general equilibrium (CGE) model for Kenya, Uganda, and Zambia to reflect regional and sectoral growth, employment effects through factor markets, price impacts through commodity markets within countries and through foreign trade, and household-level income and poverty effects through income sources or expenditure patterns. Import competition and export potential are also taken into account, allowing firms and consumers to select between domestic and international markets based on price variations. The models also represent broad income and expenditure trends across subnational regions, rural and urban areas, and household types. Alvarez-Cuadrado and Poschke (2011) add complexity to this narrative, suggesting that both agricultural and manufacturing sectors' productivity growth is vital for driving structural change.

2.3 Overview of Literature Review

In light of these studies, it is apparent that the manufacturing, service, and agriculture sectors have distinct roles in fostering economic growth. Each presents unique opportunities and challenges for East Africa's development trajectory, underscoring the need for a balanced, nuanced approach to sectoral development. The literature suggests that the relative and collective impact of the manufacturing, services, and agricultural sectors is crucial for understanding and fostering economic growth in East Africa. While the manufacturing sector appears to be instrumental in driving economic growth, premature deindustrialization poses potential risks. Meanwhile, the service sector can complement the manufacturing sector, suggesting that their co-development could yield positive economic outcomes. Lastly, the agricultural sector, while traditionally the backbone of East African economies, requires carefully managed structural transformation to ensure sustainable development. Thus, a balanced, multifaceted approach to growth seems to be the most promising pathway for East Africa's economic future.

Appendix

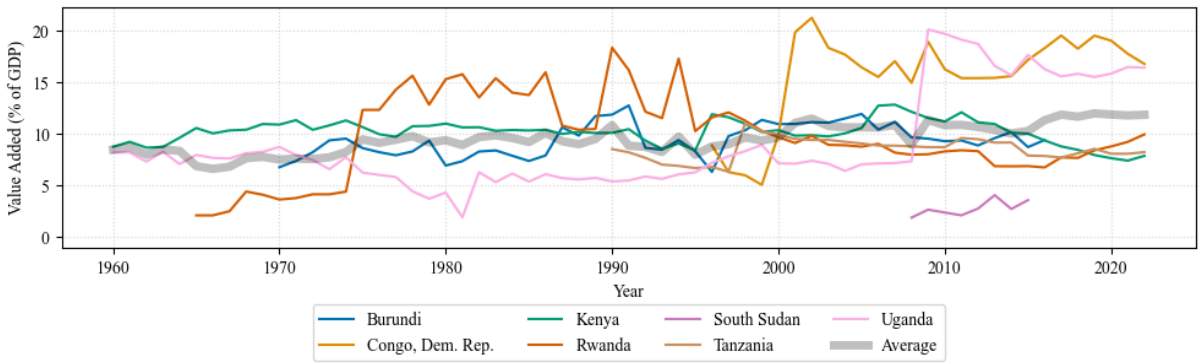

Figure 1: Manufacturing (% of GDP)
Source: World Development Indicators

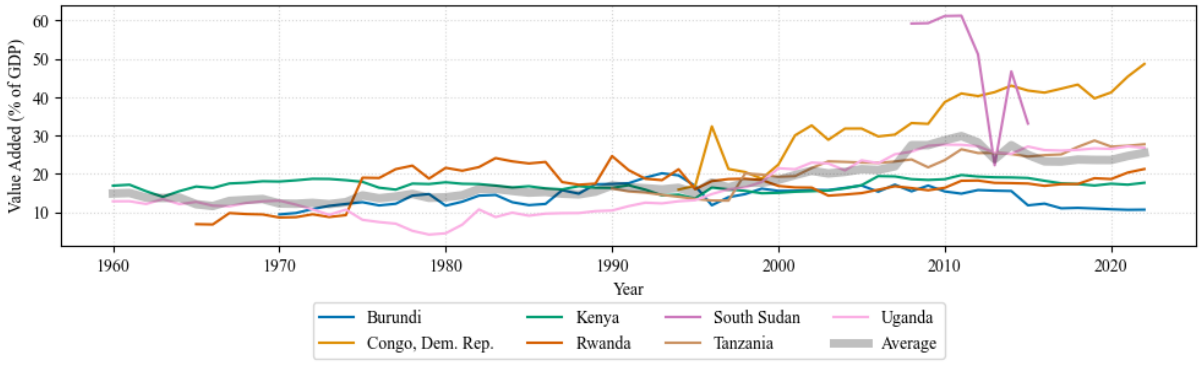

Figure 2: Industry (% of GDP)
Source: World Development Indicators

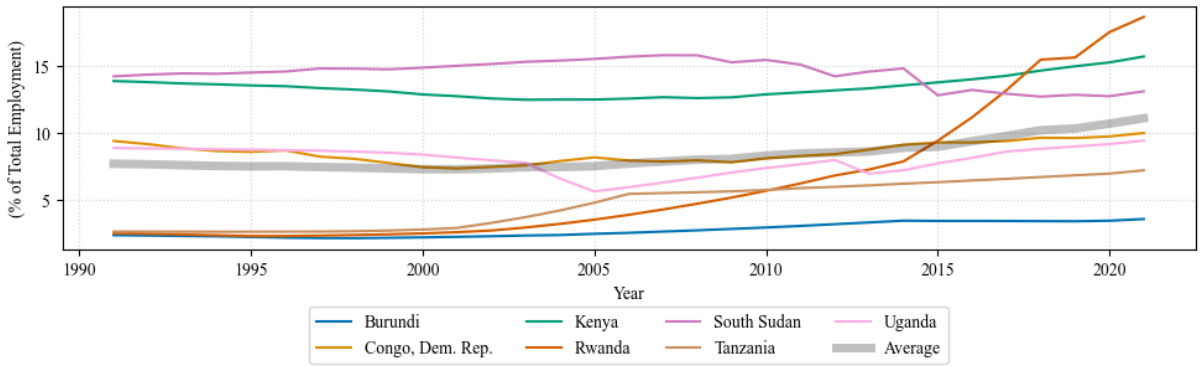

Figure 3: Employment in Industry
Source: World Development Indicators

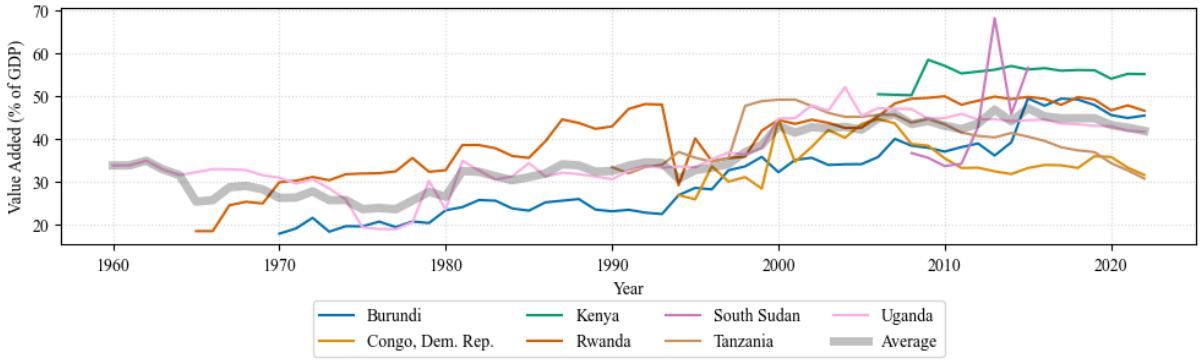

Figure 4: Services (% of GDP)
Source: World Development Indicators

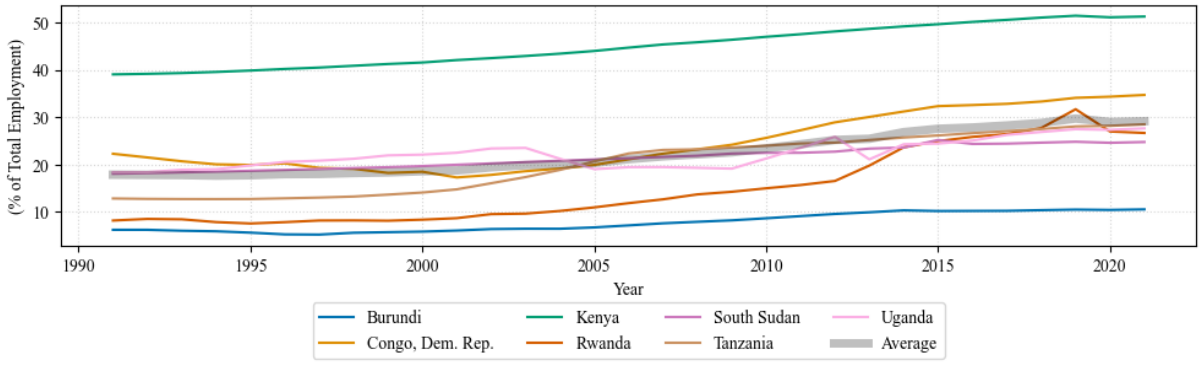

Figure 5: Employment in Services
Source: World Development Indicators

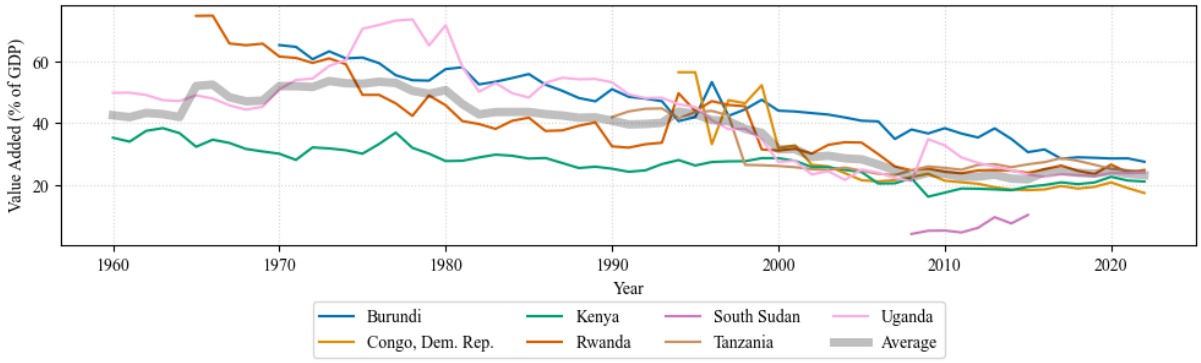

Figure 6: Agriculture (% of GDP)
Source: World Development Indicators

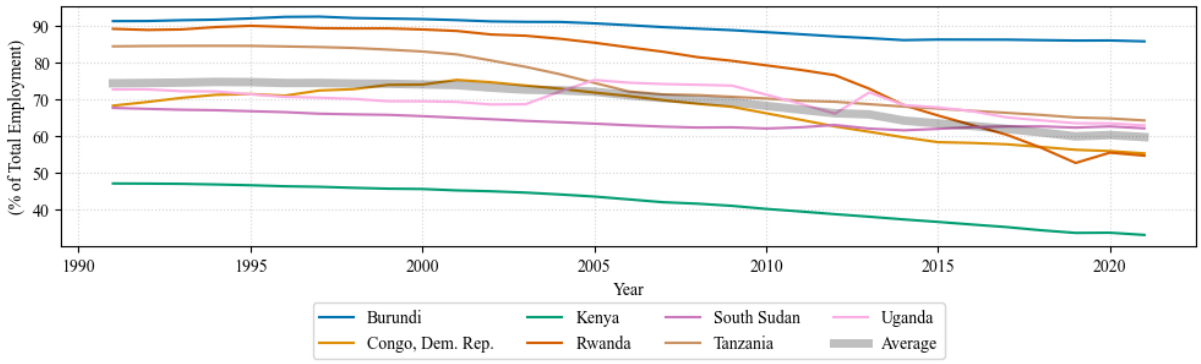

Figure 7: Employment in Agriculture
Source: World Development Indicators

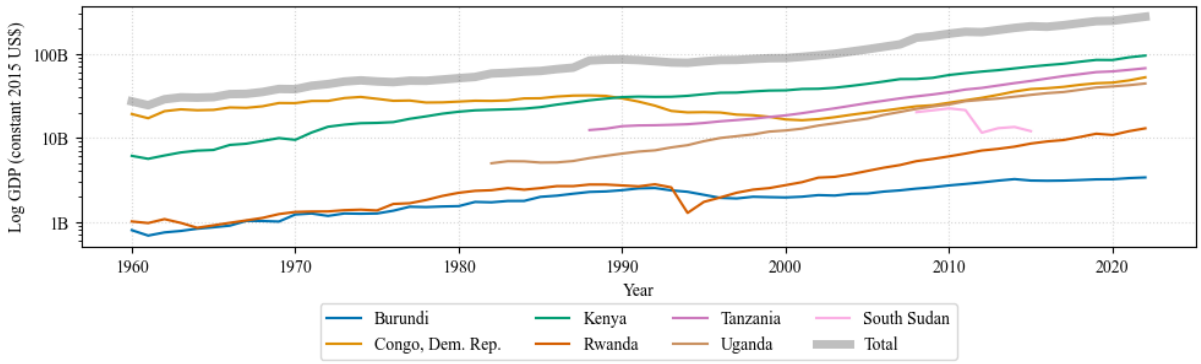

Figure 8: Gross Domestic Product
Source: World Development Indicators

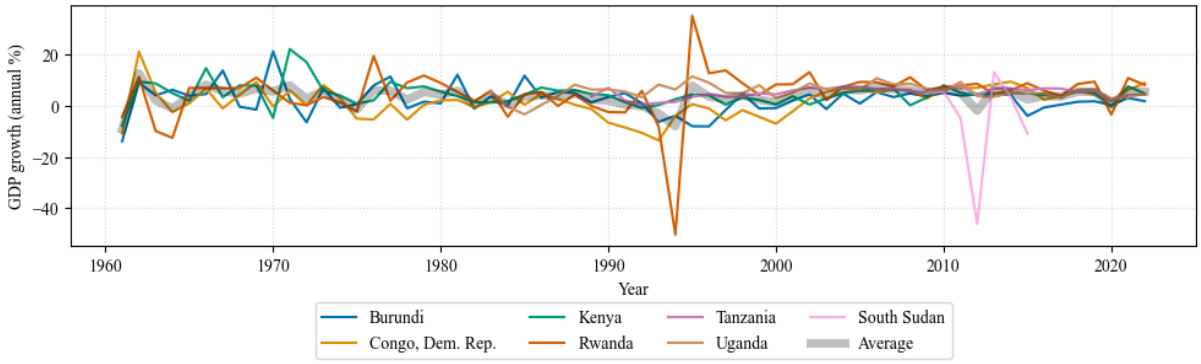

Figure 9: GDP Growth
Source: World Development Indicators