PRISM

Policy Research on International Services and Manufacturing

Structural Transformation in the Zambian Economy

Horman Chitonge
Centre for African Studies, University of Cape Town
Policy Research in International Services and Manufacturing (PRISM)
Horman.chitonge@uct.ac.za

Working Paper Series
Number 2024-2

Abstract

Youth unemployment has been increasing in Africa. It is particularly pervasive in South Africa, where the youth unemployment rate is persistently high, posing considerable socioeconomic challenges. In response, the government introduced the Employment Tax Incentive (ETI) program in 2014 to boost employment opportunities for youth. This study examines the extent to which the ETI program increases youth employment by looking at hiring and separation rates. The study also examines whether the program displaces non-youth workers—one of the main concerns among unions in South Africa. We take advantage of detailed employee-firm matched panel tax data from the National Treasury and the Revenue Service covering the 2011-2018 period and estimate a Difference-in-Difference model. We find that the program is associated with a 0.003 probability points higher of hiring youth in the 18-24 age bracket. However, we find a significant reduction in both hiring and separation rates for workers in the 24-29 and 30-44 age groups, suggesting some displacement effects not only on at-risk non-youth workers but also youth in the older age bracket. We also find that the overall positive effects of hiring rates of younger workers are driven by microenterprises, typically referred to as mom-and-pop businesses. Overall, the paper uncovers important heterogeneity in the impacts that could inform policymakers to re-configure the program for better targeting.

Keywords: unemployment, labour market, wage subsidy, hiring, separation, displacement, firm-level, tax.

JEL Codes: J08, J23, J3, J48, J6

Acknowledgments

This is based on a paper to be published in the Oxford Handbook of the Zambian Economy, which I co-authored with Dr. Vera Songwe. A link to the paper will be provided once the handbook is published. Any errors remain the authors own. The statements made and views expressed are solely the responsibility of the authors.

Recommended citation:

Chitonge, H. 'Structural Transformation in the Zambian Economy'. *PRISM Working Paper 2024-2.* Cape Town: Policy Research on International Services and Manufacturing, University of Cape Town.

Policy Research in International Services and Manufacturing (PRISM) is a research and policy unit located within the School of Economics. PRISM provides a lens to focus research and policy work broadly on issues of globalization, trade and industrialization. It is home to a number of related research activities, projects and programmes concerned with issues of globalization, global value chains, industrialization paths, international trade, foreign investment, the defence industry, policy governance, infrastructure development, the role of knowledge intensive services, innovation, and international competitiveness. Another feature of PRISM's work has been its applied focus, responding to economic policy questions issues in South Africa, the rest of Africa and beyond

Working Papers can be downloaded in Adobe Acrobat format from
https://commerce.uct.ac.za/prism

School of Economics Building, Middle Campus, University of Cape Town Private Bag, Rondebosch 7701, Cape Town, South Africa
Tel: +27 (0)21 6504470
Web: www.prism.uct.ac.za

Introduction

Economic growth or decline in the long run leads to changes not just in the way a particular economy is structured, but also changes in the broader society. The fact that long terms changes in economic activities affect broader society in general should not be surprising given that the economy is an integral part of society. The insight that long-run changes in an economy leads to fundamental shifts in society was elaborated by economists who have argued that the long term impact of economic growth do not just affect the economic sphere but lead to gradual shifts "in the system of views that dominate and govern the behavior of men" (Kuznets, 1966: 6). In this paper, we look at the structural changes which have occurred in the Zambian economy over time. We restrict the analysis in the paper to the period between 1964 and 2020 (independence) due to the fact that information about the economy before independence is not readily available. The paper looks at the pattern of structural change in the Zambian economy and how this has impacted on the broader dynamics such as economic growth and diversification, productivity, creating conditions for inclusive and sustainable development. In this paper explore whether the patterns of change in the economy have resulted in positive or perverse structural change. Understanding the changes in the structure of the economy and how this impacts on broader processes in society is important because it can help appreciate how changes occurring in the economy can help contribute to or hinder economic growth and development. Further, analysing structural trends in an economy allows one to see how the economy is using the available resources and on the basis of this identify what can be done to improve productivity in the economy. Structural change analysis enables us to understand the distributive effects in the economy in order to identify section of the economy that can play a bigger role in spreading the effects of economic growth more broadly. The paper shows that the structure of the Zambian economy has significantly changed over time, but the change in the economy has not meaningfully contributed to promoting inclusive and sustained economic growth or the diversification of the economy. The paper provides reasons why the structural change occurring in the Zambian economy has not contributed positively to the transformation of the economy and the Zambia society at large.

Structural Transformation

Structural transformation is a complex and long-term process that may lead to several changes including change in the sectoral composition of the economy, the way production is organized, the nature and type of institutions in society, dominant actors in the economy and the political economy character of a country. In this sense, structural transformation is at the heart of economic growth and the transformation of society (Ocampo, 2020). But literature on structural transformation often takes a narrow view which focuses on the sectoral shifts in the composition of output and employment over time (Andreoni et al, 2021). This relative shift in the sectoral composition of GDP shift is often associated with the phenomenon productivity growth as a result of factors moving between sectors[1]. While change in the relative share of output and employment over time constitute the immediate aspect of structural transformation which are easy to capture from available data, the process involves other changes in society which may not be directly related to structural transformation and many not be easy to quantify. Broadly, structural transformation involves long-term processes that lead to the transformation of entire societies through various dynamics including the introduction of new technologies, the creation of new products, changes in domestic consumption patterns, income distribution, and the structure and composition of trade (UNIDO, 2021). Structural transformation is

[1] Structural transformation is usually depicted as the process of reallocating labour from low productivity activities and sector to high productivity sector, taking a cue from Arthur Lewis (1954) Two Sector Model (see McMillan et al, 2015; World Bank. 2014).

a dynamic process which seeks to capture the changes in the economy and the societal wide changes this induces. Simon Kuznets captured the broader dynamics of structural changes which come with the interplay between economic growth, technological and social change. He argues that,

> Growth during any epoch is a matter not only of aggregative change but also of structural shifts. Even if the impulse to growth is provided by major technological innovation, the societies that adopt it must modify their preexisting institutional structure. This means substantial changes in the organization of society (Kuznets, 1966:6)

The structural changes that come with economic growth (or decline) lead to changes not just in the organization of society and production, but also change in people's views, beliefs and social relations. In economic analysis, although the changes in the structure of an economy leads to broader changes in society, the focus has been on the immediate changes in the structure of the economy, particularly the sectoral share in employment and output.

The simple idea behind the concept of structural transformation is that the productivity of factor of production, particularly labour, differs across sectors. As we illustrate in this paper in the case of Zambia, the productivity of labour and other factors (which is understood as a unit of output or value added per work) in the agriculture sector is low compared to industry and the services sector. Low productivity of labour in one sector affects the aggregate productivity levels in an economy, which in turn impacts on the rate of economic growth. In this instance, if factors can be reallocated from low to high productivity activities, the overall productivity in an economy increases, leading to higher income and economic growth rates. Chenery et al (1986), have argued that the distinguishing feature of countries which have transitioned from low to higher income status is that labour in particular has moved from low to high productivity activities, a phenomenon that led to the general rise in income. The reason for this is that the factor (labour in this instance) that has shifted or relocated to activities where productivity is higher produce higher output per unit factor. It has been argued that "When Labour and other resources move from less productive to more productive activities, the economy grows even if there is no productivity growth *within* the [receiving] sectors" (McMillan et al, 2014:11 emphasis in original). If the process of shifting factors from low to higher productivity activities is sustained and more widespread, the growth rates and income in an economy generally increase. When this process continues for some time, it is not just general income which rise because factors have become more productive, but the structure of the economy also changes in terms of the relative share of sectors in total employment, final consumption, income and technological makeup (UNIDO, 2021). The importance of structural transformation in the sense outlined above is that it leads to efficient allocation and use of resources in an economy and this is improved allocative efficiency is what provides the momentum for growth (McMillan et al, 2014; Timmer et al, 2014; ACET, 2014; UNECA, 2012). This is the structuralist view on economic growth, which is different from the neoclassical view[2]. One of the signs of inefficient allocation of resources in an economy is when there are large productivity gaps between sectors; when there are "systematic variations in the returns to labor and capital" across sectors (Chenery et al, 1986:15).

[2] Chenery et al (1986) make a useful distinction between the neoclassical view and the structuralist view on structural transformation. The fundamental difference is that that neoclassical view assumes that resources in an economy are efficiently allocated through competitive markets in the long-run, and because of this, it is impossible to increase output by reallocating resources between sectors. The structuralist view, on the contrary, assumes that resources, in developing economies, are inefficiently allocated, and this makes it possible to increased output (growth) by reallocation resources in an economy.

The dynamics that surround structural transformation is not a new concept, it has been articulated for a long time by different economists including Schumpeter (1939), Lewis(1954), Hirschman (1958), Kaldor (1966), Kuznets (1966) and Chenery et al (1986) who highlighted the dynamism crated when an economy undergoes these changes. Kaldor (1966) emphasized the point that as these shifts occur, they generate higher growth momentum through the multiplier effects arising from technical improvement and learning. Chenery and Syrquin (1989) observe that the initial momentum created by the shift of factors is reinvigorated by the resultant accumulation of capital (both physical and human) and the secondary effects these changes induce. In this sense then, structural transformation is an important process which lies at the heart of economic growth and development (Ocampo, 2020). Cases where labour is, over time, reallocated from less to more productive activities, the overall outcome of that is increased productivity and growth rates, which signals positive effects of structural transformation.

Types of Structural Transformation

However, the shifting of labour from less to more productive activities can only happen if there are opportunities for people to shift. As it has been observed, many people who are currently in low productive activities such as subsistence agriculture and informal trading in many African countries and other developing regions would be happy to move to activities where they can be more productive and earn more income, but these opportunities are not available for most people (Chitonge, 2016). Sometimes the discussion on structural transformation in Africa is portrayed as if the people in low productive activities like to be there (Page, 2015). Most people in these low productivity activities would like to move to high productivity activities, but the opportunities are not there, and this is the challenge for Zambia and most African countries. In economies where sectors with high productivity are small and not growing (a common characteristic of many low-income economies), the opportunities for reallocating labour to sector experiencing high productivity are limited. Although labour may shift between sectors over time, the change in labour composition by sector contributes little to economic growth because majority of the people end up relocating to activities that with either lower or the same productivity levels as the activities they came from. When this type of structural change contributes little to growth in productivity in the economy, and it some cases, this may lead to productivity falling over time. This signals perverse structural transformation where factors move from low to low or lower productivity activities (McMillan and Rodrik, 2011).

As study that reviews structural transformation trends in different regions between 1990 and 2010, concludes that structural change in Latin American and most Subs-Saharan African economies has not led to positive structural change because "Labour moved in the *wrong* direction, from productive to less productive activities, including, most notably, informality" (McMillan et al, 2015: 12). Another study that looked at structural transformation in 11 African countries (including Zambia) arrived at a similar conclusion noting that during the 1960s and early 1970s labour shifted from agriculture towards industries in most of the countries included in the study, and growth in most these countries was generally higher. While the pace of labour relocation slowed down between 1975 and 1995, the later part of the 1990s was again characterised by rapid shift of labour from agriculture (mainly) but this time not into industrial sectors but to services, especially the distributional services (informal retail trade services) where productivity was much lower, resulting in negative structural change (see de Vries et al, 2015). This shows that not all changes in the composition of labour by sector lead to growth. Shifts in the sectoral composition of labour generate positive growth momentum when labour moves from low to high productivity activities (positive structural transformation). A situation where labour shifts from low to low or lower productivity activities generates an anti-growth momentum in the economy, leading to stagnating or falling economy-wide productivity rates (perverse structural

transformation). The challenge for most developing economies, including Zambia, is that while the potential for reallocating resources in the economy are high, creating opportunities for the actual reallocation that generate positive effects has proved to be elusive for a long time.

Within and Between

The important thing about structural transformation is measure the different shifts in labour contributes to productivity growth in the economy. This is usually done by decomposing economic-wide productivity growth into different components. The most common approach is to decompose productivity growth into two components: the contribution coming from labour becoming more productive within a sector (the within component) and the contribution coming from labour being reallocated from one sector to another (the between component). Other studies have included a third component which capture productivity growth as a result of the interaction of the size of employment and levels of productivity which is the dynamic effects component (de Vries et al, 2015) or the interaction growth (Timmer et al, 2014). In this framework, there are three ways that contribute to productivity growth. The productivity of labour in a particular sector can growth as a result of more capital accumulated or invested, when a sector experiences technological changes or when there is improvement in how production is organized including improved sourcing of inputs (Ocampo, 2020). This component of productivity growth originates from investment as well as innovation in the Kaldorian sense which includes better organization of production and management systems at the firm level. Productivity from this component does not involve the reallocation of labour; the same labour becomes more productive when new investments, technology and better organisation lead to better productive capacities (AEO, 2013). This does not involve change in the composition of labour in particular. The within component captures the gains from new investment, accumulated capital (physical and human), new technological changes and innovations in the production and management systems broadly (see UNIDO, 2021).

Productivity also grows when labour and other factors are reallocated from low to higher productivity activities. As noted above, when this shift in resource allocation occurs, it leads to improved efficiency in the way resources are allocated and use , and the efficiency gains resulting from this lead to high factor productivity. For instance if labour moves from subsistence agriculture where productivity is often the lowest in developing countries to manufacturing sector or mining wheren productivity is higher; this means that labour is now more efficiently allocated and used than before (McMillan et al, 2014). The productivity gains in this instance are a result of efficiency gains made by using labour in more productive activities. This component of productivity growth is what is the between component and represent the effects of structural change (Page, 2015). It has been suggested that the within component often initiates the dynamism of productivity growth which often leads to the structural change component. In this sense the within and the between productivity growth components tend to be interrelated in influencing the aggregate levels and rates of productivity growth in an economy. Although most analysts have highlighted the importance of the between component, without the within component, it is difficult to create new ventures which can absorb labour from low productivity activities. The importance of the between component is that it creates the condition for the between component to occur. Similarly, the within component alone may not be able to sustain the economic momentum for a long time without the between dynamics which help to spread the moment generated from one sector across the economy. In other words, “Without the first [the within component], there is little that propels the economy forward. Without the second [the between component], productivity gains are not diffused to the rest of the economy (AEO, 2013: 14). As noted above, in situations where investments, technological change and innovations are not injected in the economy, it is difficult to create conditions that can stimulate/initiate the process of structural

transformation by creating more high productive employment opportunities. The two components of productivity growth have to interact to create sustained rages of productivity growth over time. The *between component* can also be disaggregated into different components depending on the status of the sector where labour is reallocated to.

The economic momentum created by sustained within and between productivity growth components, over time, lead to another important economic feature—diversification. Economic diversification is ultimately an outcome of positive structural transformation, which leads to the 'spreading out' of the economic dynamism to other sectors, thereby inducing the emergence of new industries. This is why the effects of structural transformation cannot be limited to the economic sphere only; the dynamism generated by the changing structure of the economy lead broader changes in society including urbanization, redistribution of income, and the nature of institutions. But in cases where structural change leads to anti-growth outcomes, it is difficult for significant diversification in the economy to occur as the case of Zambia illustrate.

In the same way that productivity growth is enhanced by reallocation of labour and other factors from low to high productivity activities, the opposite can occur if labour is moving from high to low productivity activities. Labour can move from a low productivity sector to a sector where labour productivity is higher and above the economy-wide average productivity level, but productivity is not expanding. This shift represents the *static effects* of labour reallocation between sectors, and captures the differences in the *level* of productivity between the two sectors. This means that the contribution of this shift in labour to overall productivity is positive because labour has moved from a sector where its contribution was lower; in other words, the aggregate productivity gains are higher than if labour had remained in the former sector. For example, labour moving from agriculture where productivity is low to business services such as retail trading, wholesale and restaurants where productivity is high but static. Sometimes labour can also move from a low productivity sector to a sector where productivity is above average and growing. This captures the *dynamic effects* of the reallocation of labour between sectors (Timmer et al, 2014). Unlike the static effects of reallocation of labour between sectors, the dynanmic effects captures not just the differences in the levels of productivity, but also the difference in productivity growth (de Vries et al, 2015). For example, labour moving from informal retail trade where productivity is low to utilities or manufacturing where productivity is not only higher, but also growing.

While the focus in the above discussion has been on labour moving from lower to higher productivity activities within and between sectors (positive structural transformation), labour can move from high to lower productivity activities within and between sectors (perverse structural transformation). This often happens in cases when industries where productivity is high shed jobs and the displaced works end up in low productivity activities, mainly in retail and wholesale trade and urban informal activities, as we show in the case of Zambia later in this paper. In cases where productivity gaps between sectors are small (developed economies), such displacement of works would have minimal effects on the economy-wide productivity McMillan et al, 2015). The simple reason for this is that the productivity losses from labour moving from one activity or sector to another are small since productivity levels among different sectors fall within a narrow margin. In situations where productivity gaps between and within sectors are high(as in most developing countries, the reallocation of labour from high to low productivity activities induce anti-growth structural change which contribute to declining overall productivity in the economy (Page, 2015). But the large productivity gaps between sectors which are predominant features in developing countries, reflect the potential for rapid growth resulting from efficiency gains from labour allocation and use. An influential report by UNIDO report on structural chnage found that the productivity growth as a result of structural transformation is higher in low

income countries that higher incomes countries (UNIDO, 1980). Chenery et al (1986) explain this finding further stating that in developed countries where the productivity gaps are small, the economies have exhausted the possible efficiency gains from allocation of resources, such that any shift in labour or capital leads to marginal gains. However, in developing countries where productivity gaps are high (manifested mainly through sharp duality in the labour market), reallocation of labour are an important source of growth in these countries than in the developed one.

McMillan et al (2015) make an interesting point that the standard productivity gain and loss estimations on structural change often do not factor in unemployment as an outcome of the labour shifts. Often, we assume that the displaced workers find something else to do, either in the formal or informal activities, where the productivity is low, but not completely lost. In cases where labour is displaced into unemployment, economy-wide productivity loses tend to be more substantive since labour is withdrawn from productive use. However, the withdraw of labour can lead to higher productivity as the sector or firms rationalize its operations, though the increased productivity may not make up for the withdrawn labour. Ultimately, the critical issue about structural transformation is not so much about the reallocation of labour over time, but where the labour is relocated to. In order to understand the nature of the structural changes occurring in an economy over time, it is vital to trace where labour is moving from and to. The exercise of decomposing productivity growth trends by sector, over time, is useful in highlighting whether the changes taking place in an economy have growth enhancing or reducing effects.

Structural Transformation and Industrialisation

Literature on structural transformation has commonly highlighted the strong link between positive structural change and industrialization, particularly the growth of the manufacturing sector (Singer, 1950; Prebisch, 1950; Hirschman, 1958; Kaldor, 1966; Kuznets, 1966; UNIDO, 1980, Chenery et al, 1986; McMillan et al, 2015; Page, 2015; Andreoni et al, 2021). The growth of the manufacturing sector is widely believed to have the power to initiate and sustain positive structural change for various reasons including that manufacturing activities have the potential to create mass employment which can induce the relocation of labour from agriculture and other low productivity activities into the industrial sector. Positive structural transformation has widely been associated with the growth of the manufacturing sector in particular, and perverse structural changes are seen to be more dominant in economies which have not seen sustained growth of the manufacturing sector. This is one of the reasons where the industrial sector (particularly manufacturing) is believed to be the "engine of growth", with the "power of dispersion", suggesting that it has the power to *spread* the momentum of growth to and *pull and push* other sectors in the economy through its strong linkages (Hrischman, 1958). We find even a stronger articulation of the relationship between manufacturing and structural transformation (general economic growth) in Kaldor(1966) whose "growth Laws", state that the faster the rate of growth of manufacturing, the faster the rate of labour transfer from sectors with low productivity; the faster the growth of GDP; the faster the growth of productivity[3]. But there is an emerging debate about whether the manufacturing sector still is the engine of growth, with some analysts arguing that the phenomenon of pre-mature deindustrialization has significantly reduced the ability of the manufacturing sector to create mass employment even in low income countries (Rodrik, 2015; Tregenna, 2009, 2016; Felipe et al 2017). These studies are showing that manufacturing activities are currently beginning to decline at lower levels of the sector's share in total employment than in the earlier periods. Indeed we have seen many low income countries with falling share of the

[3] Nicholas Kaldor developed a set of axioms which are now referred to as the "Kaldor Growth Laws". See Thirwall, (1983), for a summary of Kaldor's growth laws.

manufacturing sector in both employment and value added, leading to the view that there is *servicification* of the economies (Driemeier and Nayyar, 2018); that the service sector is becoming the dominant sector in the economy even in countries at low national income levels which have not experienced any significant industrial growth. However, although these studies have highlighted the declining capacity of the manufacturing sector, they argue that the sector is still important in structural transformation, especially of developing countries. This means that a transformative industrial policy can used as an instrument for promoting growth enhancing and inclusive promoting structural change (ECA, 2016). An industrial-lead structural transformation can contribute to not just promoting inclusive growth and reducing inequality, but also responding to the challenges of environmental sustainability which has become an urgent global issue (Andreoni et al, 2021).

Structural Transformation and Agriculture

In the debates on structural transformation, the role of agriculture ambiguously. This is mainly because of the dominant view that in a positively transforming economy labour should move from agriculture (traditional sector in the Lewisian model) to modern industrial sectors, mainly manufacturing. This has somehow created the impression that resources, particularly labour, should be redirected from agriculture to industries, thereby portraying agriculture as a sector in secular decline, with little to contribute to productivity growth (see Chitonge, 2016). It is easy to see why agriculture is sometimes perceived as a sector that hinders structural transformation and economic growth, when one only focuses on current productivity growth rates and levels. While productivity growth rates and levels in most developing countries like Zambia are the lowest, the sector itself is very strategic to structural transformation, especially in developing countries where majority of the people earn a living from growing crops. There are several reasons why agriculture plays a vital role in any process of structural transformation in the early stages. First of all, in the early stages of positive structural change, agriculture acts as a source of labour, which can be reallocated to other sectors where opportunities occur. The reallocation of labour from agriculture to other sectors does not improve the aggregate productivity growth and levels in the economy, but also induces productivity growth within agriculture as the sector rationalises it's use of labour and other factors including land (Sen, 1966). Second, the growth momentum in agriculture is traditionally seen as something that drives and sustains the growth of industrial sectors. Although the negative perception of agriculture is often attributed to Arthur Lewis' Two Sector Model, Lewis (1954:33) does acknowledge the critical role agriculture play in economic growth when he argues that "industrial and agrarian revolution always go together" and that "economies in which agriculture is stagnant do not show industrial development." As noted above, structural transformation generates growth enabling force not just in the manufacturing sector, but the agriculture sector as well. In cases where the agricultural sector growth is subdued, this affects all the other aspects of structural transformation including the growth of the industrial sector. This view is strongly articulated in Kaldor(1966) who argues that the growth in the manufacturing sector is not constrained by population growth (labour supply) but by the growth of demand in the agriculture sector. With reference to structural transformation and industrial revolution in England, it has been observed that,

> Everyone knows that the spectacular industrial revolution would not have been possible without the agricultural revolution that preceded it. … the introduction of turnip … brought about tremendous rise in agricultural productivity. Manpower was released for capital construction. The growth of industry would not have been possible without turnip and other improvements in agriculture (Nurkse, 1953: 52-53).

Lewis(1954) was himself clear that it is the surplus that is generated from the agriculture sector that provide investment for industrial growth. A struggling agriculture sector with no surplus (subsistence oriented) would constrain industrial growth in the Kaldorian sense mentioned above.

The third reason why agriculture is central to structural transformation in the early stages is that agriculture provides demand for industrial products, especially in the early stages of structural change when countries tend to rely more on domestic market demand (Ocampo, 2020). Agriculture's role in structural transformation was also elaborated clearly in Mundle's (1985) model, where he maps out what he calls "*double dependence"* of industry on agriculture. He illustrates that during the earlier phases of economic structural transformation, when industries are still in the formative stages, the industrial sector relies on agriculture for both inputs (which at the early stages industrialisation is mainly dominated by food and agricultural commodity processing, see Chenery et al, 1986), and the market for its products. In this model, the agricultural sector is not just a source of inputs for industries, but also provides a market for final products (such as fertiliser, equipment, and consumer goods) from the industrial sector. When agriculture income rise, the rising income increases and expands demand for industrial products and this can stimulate growth in the industrial sector. When agriculture lags behind, it constrains the growth of the industrial sector. Based on this, Mundle (1985) concludes (like Lewis and Nurkse) that "an agrarian revolution is a necessary pre-condition for sustained industrialisation" (Mundle, 1985:77). The role of agriculture in structural transformation has also been articulated in Aldeman's Agriculture-Demand Led Industrialisation (ADLI) model. He emphasizes raise productivity in the agricultural sector as the key to unlocking the transformative power of agriculture in the early stages of economic development, as this would lead to expanding the domestic market for intermediate and final goods from the industrial sector. Form this, it is clear that although the agriculture sector has the lowest productivity, its role in structural transformation is critical. This is especially true in developing regions where agriculture still accounts for the large share of employment. One can argue here that Africa's and Zambia's positive structural transformation is help back by the lack of productivity growth momentum in the agricultural sector.

Structural Transformation in the Zambian Economy

When we look at the Zambian economy over time, it is evident that the economy has undergone significant shifts in many respects. In terms of the fundamental indicators of structural change (composition of GDP and labour by sector), we see that there have been major shifts since independence. In 1965, mining and quarrying activities alone accounted for the bulk of total output (41 percent) in the economy, but its contribution over the years has been falling, reaching the low of 6 percent in the 1990s and 2000, and mining contribution to GDP has been growing steadily since the early 2000s, such that by 2020, mining and quarrying accounted for over 20 percent to total output (Table .1).

The importance of mining in the economy has been even more pronounced over time when one considers the sectors' contribution to foreign exchange earning which was almost 96 percent in 1965, although the contribution of mining to total export earnings has fallen it has remained the largest source of export earning accounting for close to 80 percent in 2018 (Chitonge, 2021). The composition of labour has followed a different path; although mining accounted for 52 percent of formal employment and 16.5 percent of total employment in 1965, the levels of employment in the mining sector increases steadily until the 1990s when employment levels started declined, with mining accounting for only an average of 2 percent since 2000. Although production volumes in the mining sector have trebled between 2000 and 2018, employment levels have remained low, dominated by contract workers (ibid, 146-148). However, the mining sector has had one of the highest levels of formal employment in the country, even after the mines where privatized during the 1990s. Although

the structure of the economy in Zambia has changes significantly over the years, the mining sector has still remained the pillar of Zambia's economy, and this points to the lack of positive structural transformation and lack of diversification in the economy (see also Resnick & Thurlow, 2014).

Table 1: Sectoral Composition of GDP and Employment % (1965-2020)
Source: Author based on data from CSO (Various sources) and ILO (online database)

	1965	**1970**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Agriculture	13,7	17,6	10,7	14,9	16,5	15,7	18,5	17,3	14,6	9,4	7,3	2,7
Industry	6,6	8,6	17,3	22,1	7,3	13,3	16,4	14,7	16,3	17,2	14,2	14,6
Mining	41,0	35,8	29,2	10,1	8,9	6,6	12,4	6,4	7,5	12,9	12,7	20,9
Manufacturing	6,8	6,3	10,9	18,9	20,4	23,7	10,6	10,5	9,6	7,6	8,1	7,2
Services	31,9	32,0	31,8	33,9	46,9	40,6	42,1	51,2	52,1	52,9	57,6	54,6
Employment by sector %												
	1965	**1970**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2019**
Agriculture	85,6	72,8	67,8	59,1	78,3	73,5	77,2	81,6	71,1	64,5	54,2	57,6
Mining	2,4	3,7	4,2	9,9	9,1	8,8	5,3	4,7	1,6	1,9	1,3	1,7
Industry	4,2	10,8	9,6	2,2	1,2	2,5	4,1	5,6	5,2	6,3	7,9	5,8
Manufacturing	1,6	3,5	3,6	3,2	2,4	1,7	1,8	1,8	2,6	3,6	3,5	4
Services	6,2	9,2	14,8	25,6	9,2	13,5	11,7	6,3	19,5	23,7	33,1	30,9

Note: the employment figures from 1965 to 1975 are estimates based on ILO data. The employment ratios in the table are estimates based on the total labour force and not just wage employment.

The other notable change in the structure of the Zambian economy is the share of agriculture, forestry and fisheries (agriculture sector) in GDP and in employment. As Table 1 shows, the agriculture sector's share in GDP remained steady at about 17 percent between 1965 to 1990 when it rose to the peak of 28 percent in 1995, and then started to decline after that, reaching the low of 2.7 percent in 2020. As noted above, the decline of agriculture share in GDP is commonly taken as an indication that the economy is structurally changing, although this does not necessarily entail positive structural change as we show later.

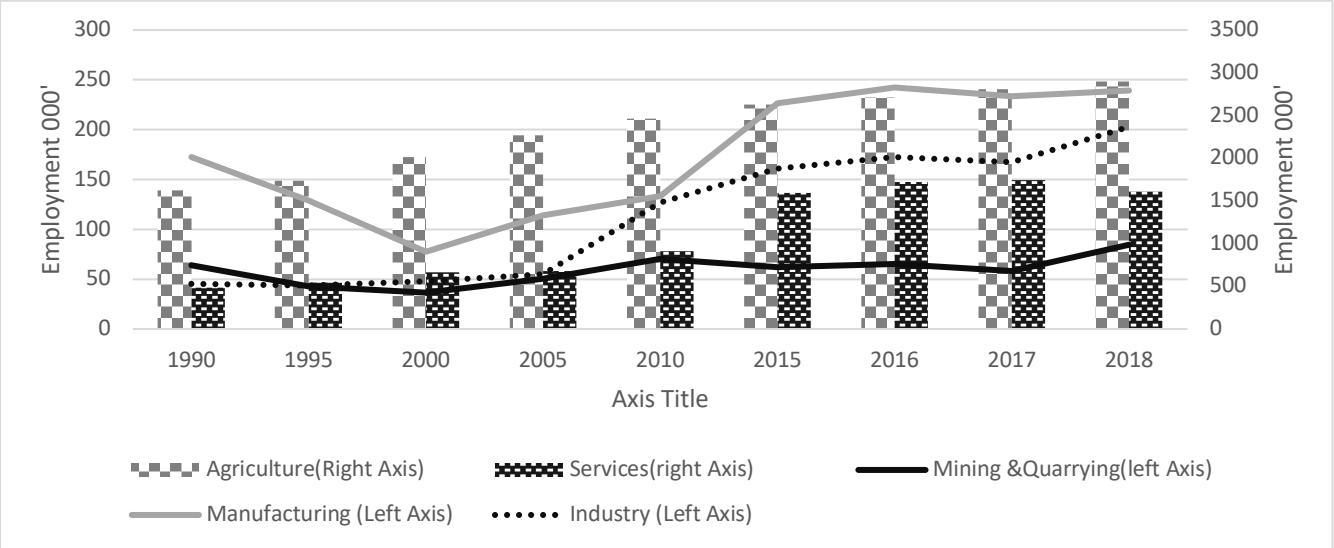
The agriculture sector's share in total employment[4] has followed a different trend from its contribution to GDP. Its share in total employment declined from 86 percent in 1965 to 65 percent 1975 where it stabilized before rising again to the average of 78 percent between 1985, and then started to decline in 1990, but rose again peaking at almost 82 percent in 2000, but its share in total employment has been declining steadily since 2000, though it rose slightly between 2016 and 2018. It is important here to point out that the larger component of employment in the agriculture sector is in the informal sector, largely in the subsistence agriculture with formal employment in the sector only accounting for an average of about 1.5 percent between 1990 and 2012(Chitonge, 2016: 11).

In the context of structural transformation, what is interesting is that there has been a steady decline in the share of agriculture sector in total employment since 200, with employment shared dropping by 30 percent between 2000 and 2018, suggesting that the sector's share in total employment has been declining at an average annual of about 1.6 percent. This however, does not mean that the absolute number of people employed in the agriculture sector has been declining; to the contrary, the

[4] This is not formal employment; it refers to those who work in the agriculture sector including subsistence producers.

number of people working in the agriculture sector has actually been increasing, rising from just over 2 million in 2000 to about 2.8 million in 2018 (Figure 1).

Figure 1: Employment by Sector (000') 1990-2018



Source: Author based on data from (Groningen Online Database, updated June 2021)

It is also apparent from figure 1 that the number of people employed in the service sector tripled between 2005 and 2018. ON the other hand, the number of people employed in the mining sector, despite the sector's recovery after 2002, has remained the same hovering around 70 000.

Table 2: Average Annual Rate of Employment Growth by Sector (%) 1990-2018

	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2000-2010	2010-2018
Agriculture, forestry & fisheries	1,4	3,2	2,5	1,8	1,3	-2,5	-6,7
Mining & quarrying	-6,6	-2,9	7,5	8,1	-2,3	18,1	-3,9
Manufacturing	-5,0	-8,0	9,4	3,4	14,0	0,6	-1,9
Utilities	2,4	-0,5	1,7	6,0	9,4	0,1	-3,04
Construction	-1,5	2,8	3,4	31,6	4,9	5,0	-3,1
Trade services	5,7	-3,3	11,7	4,3	24,6	0,5	-0,51
Transport services	-3,5	11,5	-2,1	22,1	0,6	8,9	-0,7
Business services	-3,5	8,4	-2,9	12,6	5,7	11,7	-3,3
Financial services	-3,5	4,0	0,3	7,8	17,2	-1,8	-12,3
Real estate	-3,5	4,0	0,3	7,8	17,4	5,8	1,4
Government services	1,2	8,6	-0,4	7,1	6,5	4,9	-4,8
Other services	5,1	13,0	-8,1	3,0	18,5	9,1	-5,8
Economy(average)	**0,9**	**2,8**	**2,3**	**3,4**	**5,2**	**5,9**	**-1,2**

Source: Author based on data from (Groningen Online Database, updated June 2021)

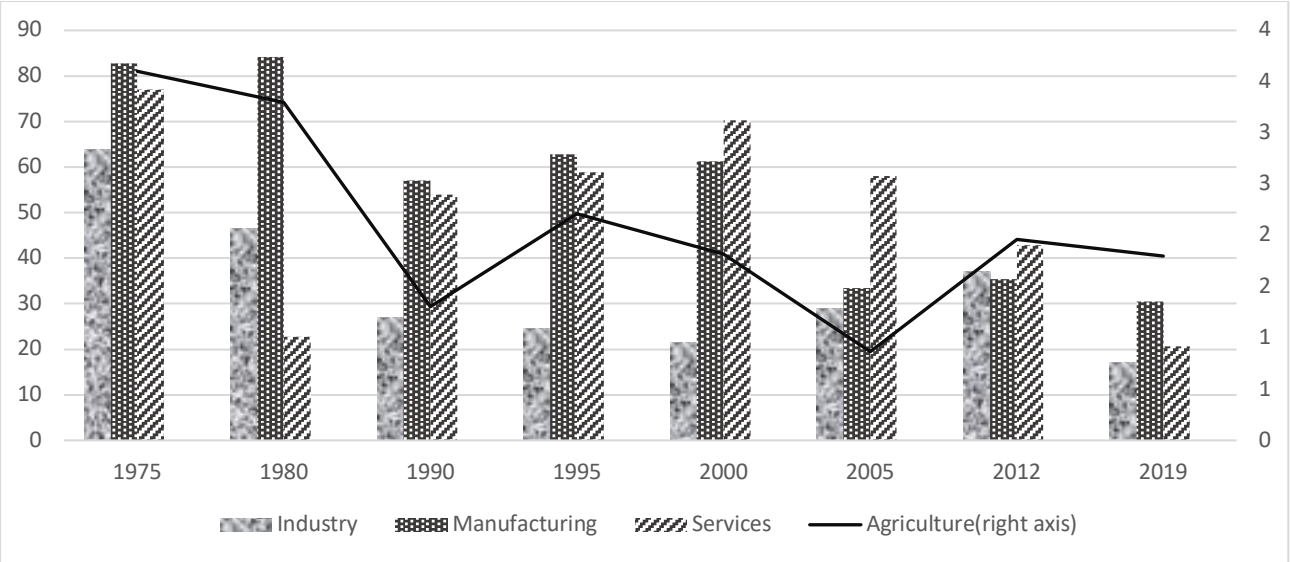
The decline in the share of agriculture in total employment means that the rate at which people working in agriculture is growing is lower than the rate at which the labour force is growing in the rest of the economy. As table .2, the average annual growth of people in employment in the agriculture sector was lower than the average growth in the whole economy at 2.4 percent between 2000 and

2018 compared to the 4.2 percent for the economy, and much lower when compared to other sectors such as construction, real estate, trade, manufacturing, financial and transport services.

However, the lower growth rate of workers in the agriculture sector is a sign that there is some shift in the allocation of labour relative to other sectors. The declining share of employment in agriculture may does not imply that labour is shifting from agriculture to other sectors, it could the new entrants to the labour market who are choosing to go into activities outside of agriculture. It does not mean that people working in agriculture are leaving the sector; most of the people are staying in agriculture because there are fewer job opportunities elsewhere in the economy. This is an important point to make because, often times, the declining share of agriculture employment is interpreted to mean that there is an exodus of labour from agriculture (see Yeboah & Jayne, 2018). Significant numbers of people working in agriculture can shift if there is mass employment created in other sectors (not just manufacturing) where they can be absorbed. The relocation of labour from agriculture to other sectors has been widely reported by recent studies conducted in Africa, though they all agree that the labour leaving agriculture is not going into manufacturing but into services, particularly whole, retail, hospitality, food and restaurants where productivity is relatively low but higher than in agriculture (Chitonge, 2016, McMillan et al, 2015; de Vries et al, 2015; McMillan and Rodrik, 2011; Timmer et al, 2012, AEO, 2013). If indeed people working in agriculture are leaving, this would result in growth enhancing reallocation if workers leaving agriculture end up in sectors and activities with higher and growing productivity. The main issue is about where the new entrants to the labour market are working, and whether the activities where they work has higher and growing productivity. This can be done by decomposing the productivity growth into the within and between components as highlighted earlier.

But before we get into that, it is important to look at what is happening in other sectors. Table.1 shows that the share of employment in the industrial sector fell steadily from 1965 but has been growing in the last decade. Mining share in employment has undergone continuous decline from about 20 percent in 1965 less than 2 percent in 2020. Manufacturing share in total employment remained steady at around 3.6 precent until the 1990s when it decline but has since 2005 recovered to the same level reached just before the 1990s. The services sector has however, experienced a steady increase of its share in employment, reaching the high of 34 percent in 2015 but declined to 31 percent in 2018. These labour dynamics are important in the structural transformation story, as we show later. While there has been growth of the share in total employment in other sectors, it is the service sector that has gained ground over the past decade or so, suggesting that employment levels in the sector are growing much faster the rest of the economy. If we look at the manufacturing and the industrial sector employment trends, we see similar patterns, with the sectors' employment share remaining quite subdued from the 1990s through to 2017 when employment shares have risen marginally. To assess the nature of structural changes taking place in the economy, we look both at employment shifts together with trends in labour productivity by sector. However, in terms of formal employment by sector it is clear that the formal jobs are very low in the agricultural sector and have been declining for 4 percent in 1975 to less 2 percent in 2019, and this includes workers in the forestry and fisheries subsectors (Figure 2)

Figure 2: Formal Employment by Sector (%) 1975-2019



Source: Form Labour forces Survey, Figures for 2019 are from ILO (online Database)

The manufacturing and services sectors reported relatively higher levels of formal employment, especially from the 1990s, those the levels have been declining since 2000, with formal employment in manufacturing accounting for only 30 percent and 20 percent for services. This suggest that the larger portion of employment in the economy is informal, particularly in retail and wholesale sectors.

Labour Productivity

Productivity in general captures output per unit of input; it measure the rate at which factors of production are being converted into output—economic performance. Seen from this angle, "Productivity is a measure of the ability to create goods and services from a given amount of labour, capital, materials, land, knowledge, time, or any combination of these"(Lindsay, 2004). We can thus estimate the productivity of each input: labour, land, capital, etc. We can also measure the total productivity of all factors combined, which is captured by the total factor productivity (TFP). TPF is a comprehensive measure of how efficient the factors are being used in an economy. The growth of TFP is there an indication of the efficiency levels in the economy, and its growth boots economic growth and per capita income which in turn contributes to poverty reduction (Dieppe et al, 2021).

Howewever, in practice, it is not easy to directly measure TPF; it is often estimated as a residual after netting out the productivity of labour and capital[5].

Structural change studies have largely focused on labour productivity dynamics because it is beclived that shifts in labour allocation has the potential to contribute to overall productivity in the economy (Syrquin, 1986). Labour productivity is estimated by diving the total output (gross value added—GVA or gross domestic product—GDP) by the total number of number of workers[6]. Labour productivity measures how efficient labour is in the production process. When labour productivity is high, it indicates a more efficient use of labour than otherwise. The weakness of the labour productivity

[5] Because TFP cannot be directly measured, it is sometimes referred to as the "measure of our ignorance" (see Abramovitz(1956)

[6] There have been debates about whether to use GDP or GVA in the estimation of labour productivity, but it has also been observed that the difference is usually small between the two. (Note: GDP = GVA plus taxes less subsidies on production, see Lindsay, 2004).

measure is that it does not take into account the quality of labour; it simply aggregates the employment in a given economy, sector, firm or unit. A more precise measure of labour efficiency would be a unit of output per hour of labour, but hourly labour data are usually not available, so most calculation are based on the aggregated number of workers per unit of analysis.

Labour Productivity Trends in Zambia

To get a sense of the nature of structural change taking place in Zambia, we start by estimating the productivity per worker, disaggregated by sector, to get a sense of which sector has a higher productivity of labour. Table .4 below shows the level of labour productivity between 1990 and 2020, disaggregated by subsector of the broader sector.

Table .3: Labour Productivity by Sector (Constant 2015 prices, 000'Kwacha)

	1990	1995	2000	2005	2010	2015	2016	2017	2018
Agriculture, forestry & fisheries	2,9	5,4	4,8	4,2	3,7	3,5	3,5	3,4	2,6
Mining & quarrying	103,7	93,6	85,9	164,9	311,1	373,8	387,8	402,4	292,2
Manufacturing	28,6	32,9	68,0	65,2	72,0	60,9	58,9	57,0	58,0
Utilities	196,4	220,9	274,2	292,3	276,7	264,2	261,8	259,4	234,9
Construction	118,9	116,8	114,5	221,5	125,7	132,8	134,3	135,8	114,3
Trade services	41,5	36,6	70,2	68,3	73,6	54,0	50,8	47,8	55,0
Transport services	36,7	45,1	46,6	82,5	92,5	70,0	66,2	62,7	70,7
Business services	11,7	20,6	26,2	49,7	63,0	69,4	70,7	72,1	58,2
Financial services	305,8	831,3	571,8	611,9	459,5	306,0	282,1	260,1	190,5
Real estate	202,2	478,0	824,6	1202,9	1342,8	780,8	700,5	628,5	846,5
Government services	78,2	87,3	63,7	64,8	95,6	99,3	100,0	100,8	78,9
Other services	10,6	8,6	6,3	8,1	13,2	6,0	5,1	4,3	5,1
Economy Average	18,4	21,0	21,8	27,4	36,6	37,3	36,7	37,6	35,4
Annual Productivity growth Rate %		2,8	0,7	5,1	6,6	0,4	-0,3	0,5	-1,2

Source: Author based on data from (Groningen Online Database, updated June 2021)

We see that labour productivity in the agriculture sector has consistently been the lowest, far lower than the average for the economy. Labour productivity is relatively high in mining (though this has varied significantly over time), utilities (water supply and electricity), financial and real estate services. Labour productivity in the manufacturing sector is surprisingly low compared to other industrial sectors like construction and utilities. Trade, business, transport, government and other services are also lower, but certainly higher than the levels in agriculture. In relative terms, labour productivity in agriculture has only been a small fraction of the average for the economy, just about 30 percent of the economy's average, but this has been falling, reaching just about 7 percent in 2018 (see Table 4)

It is interesting to look at the changes in the sectoral levels of labour productivity relative to the overall levels for the economy. Labour productivity in the mining, for instance, was 5 times the average for the economy in 1990, then it rose to almost 11 times in 2016, before falling 8 times in 2018. Utilities have however recorded a different trend; productivity in this sector was 12 times the average prodictivity levels in the economy in 1990, but this has dropped to about half in 2018. Financial services have had a similar trajectory, recording a high of 45 times the average labour productivity in the economy in 1990, but this declined to just 6 times in 2018. Real estate services, have however

maintained a consistenty high labour productivity, although this declined in after 2010, it has still remained high in 2018 at 23 times the average for the economy.

Table .4: Relative Labour Productivity by Sector (economy Average =1) 1990-2018

	1990	1995	2000	2005	2010	2015	2016	2017	2018
Agriculture; forestry & fisheries	0,29	0,22	0,15	0,10	0,09	0,10	0,09	0,07	0,07
Mining & quarrying	5,09	3,94	6,01	8,50	10,03	10,56	10,70	8,26	8,26
Manufacturing	1,79	3,12	2,38	1,97	1,63	1,60	1,52	1,64	1,64
Utilities	12,01	12,56	10,65	7,56	7,09	7,13	6,90	6,64	6,64
Construction	6,35	5,25	8,07	3,44	3,56	3,66	3,61	3,23	3,23
Trade services	1,99	3,22	2,49	2,01	1,45	1,38	1,27	1,56	1,56
Transport services	2,45	2,14	3,00	2,53	1,88	1,80	1,67	2,00	2,00
Business services	1,12	1,20	1,81	1,72	1,86	1,93	1,92	1,65	1,65
Financial services	45,18	26,21	22,30	12,56	8,21	7,68	6,92	5,39	5,39
Real estate	25,98	37,79	43,83	36,71	20,95	19,07	16,72	23,94	23,95
Government services	4,74	2,92	2,36	2,61	2,66	2,72	2,68	2,23	2,23
Other services	0,47	0,29	0,29	0,36	0,16	0,14	0,12	0,14	0,14

Source: Author based on data from (Groningen Online Database, updated June 2021)

Table .5: Labour Productivity per Worker (comparator Countries, Constant 2010 US$)1990-2019

Country	**1990-1995**	**1996-2000**	**2001- 2005**	**2006-2010**	**2011-2015**	**2016-2019**
Agriculture						
Kenya	1 469,9	1 369,7	1 197,9	1 039,1	1 015,3	1 089,8
Malawi	301,1	465,7	478,0	436,9	466,2	439,6
Rwanda	205,7	241,5	305,1	350,2	452,0	558,6
Uganda	1 074,1	1147,2	1 233,6	1 152,1	1 034,0	936,5
Zambia	898,9	886,6	763,0	623,7	678,7	617,1
Industry						
Kenya	2 878,1	3 098,9	5 298,3	7 275,7	7 843,4	8240,0
Malawi	1 940,0	2 131,8	1 932,5	2 725,0	3 145,8	3340,7
Rwanda	3 904,5	3 765,5	4 296,7	3 877,5	3 527,1	3594,4
Uganda	2 416,2	3 929,8	5 052,9	6 890,4	8 528,3	10 170,5
Zambia	11 956,9	9 380,3	11 746,7	15 103,5	13 074,6	13 388,5
Services						
Kenya	--	--	--	3 470,8	3 456,3	3 515,9
Malawi	3 426,7	3 731,0	3 410,3	3 583,5	3 719,6	3 726,1
Rwanda	4 237,0	3 639,3	3 873,9	4 223,5	3 651,2	3 214,9
Uganda	2 334,6	2 809,3	3 268,3	3 526,3	4 318,7	4 838,3
Zambia	4 938,2	4 800,9	6 294,2	8 002,3	7 101,3	6 657,6

Source: Author based on data from World Development Indicators (Online database)

The disaggregated sectoral analysis gives us an indication of what is happening at the smaller sectoral level, and also where should labour move to in order to contribute to positive structural transformation. When analysing structural transformation dynamics in an economy, it is important to also look at the trends in productivity in different sectors over time. When we compare the Zambia's

sectoral productivity with other countries in Africa at similar levels of development, we see that the country's level productivity in agriculture is among the lowest, while it has the highest in industry and services(Table 5).

However, while Zambia recorded high productivity levels in industry and services between 2000 and 2010, the levels have been declining in both sectors after 2010. This suggest the slow down in productivity growth which has contributed to the reverse of strong positive structural change experienced in the first decade of the new millennium.

If we look at productivity growth/decline in the different sectors in the Zambian economy, it is clear that labour productivity has been growing in some sectors at different periods (Table 6).

Table .6: Average Annual Labour Productivity Growth Rates (%) 1990-2018

	1990-1995	**1995-2000**	**2000-2005**	**2005-2010**	**2010-2015**	**1990-2000**	**2000-2010**	**2010-2018**
Agriculture; forestry & fisheries	16,8	-2,2	-2,3	-2,7	-1,0	7,3	-2,5	-6,7
Mining & quarrying	-1,9	-1,6	18,4	17,7	4,0	-1,8	18,1	-4,0
Manufacturing	3,0	21,4	-0,8	2,1	-3,1	12,2	0,6	-2,0
Utilities	2,5	4,8	1,3	-1,1	-0,9	3,7	0,1	-3,0
Construction	-0,4	-0,4	18,7	-8,6	1,1	-0,4	5,0	-3,1
Trade services	-2,4	18,3	-0,5	1,6	-5,3	8,0	0,5	-0,5
Transport services	4,6	0,6	15,4	2,4	-4,9	2,6	8,9	-0,7
Business services	15,3	5,5	18,0	5,3	2,0	10,4	11,7	-3,3
Financial services	34,4	-6,2	1,4	-5,0	-6,7	14,1	-1,8	-12,3
Real estate	27,3	14,5	9,2	2,3	-8,4	20,9	5,8	1,4
Government services	2,3	-5,4	0,3	9,5	0,8	-1,5	4,9	-4,9
Other services	-3,9	-5,2	5,6	12,7	-11,0	-4,6	9,1	-5,8
Total	**2,8**	**0,8**	**5,2**	**6,7**	**0,4**	**1,8**	**5,9**	**-1,2**

Source: Author based on data from (Groningen Online Database, updated June 2021)

We see for instance that labour producrivity in the agricultural sector grew at an average annual rate of 7 percent between 1995 and 2000, but productivity has been declining since 2000, with the average annual growth rate for the period 2000 and 2018 being-0.5. The mining sector has followed an opposite trend, with labour productivity declining at an average annual rate of -1.7 percent between 1995 and 2000, but then grew at over 5 percent per year between 2000 and 2005, and then 10 percent between 2005 and 2010(Table .5). What is interesting here is that labour productivity declined in all sectors between 2015 and 2018 except in mining where it increased marginally. For the economy as a whole, labour productivity has been growing steadily since 1995, reaching the high of 3.5 percent per year in the period 2005 and 2010, but this growth is reveserd in the later period.

To get a good insight into the nature of structural transformation occurring in the Zambian economy, we have to look at the sectoral share in employment against the levels of sectoral labour productivity and growth trends. What emerges from this comparison is that agriculture which accounts from more than half of total employment in the economy has the lowest levels of labour productivity and also with consistently declining productivity of labour since 2000. Sectors with very high labour productivity growth such as mining, financial services, real estate account for an insignificant number of jobs in the economy (Table 7)

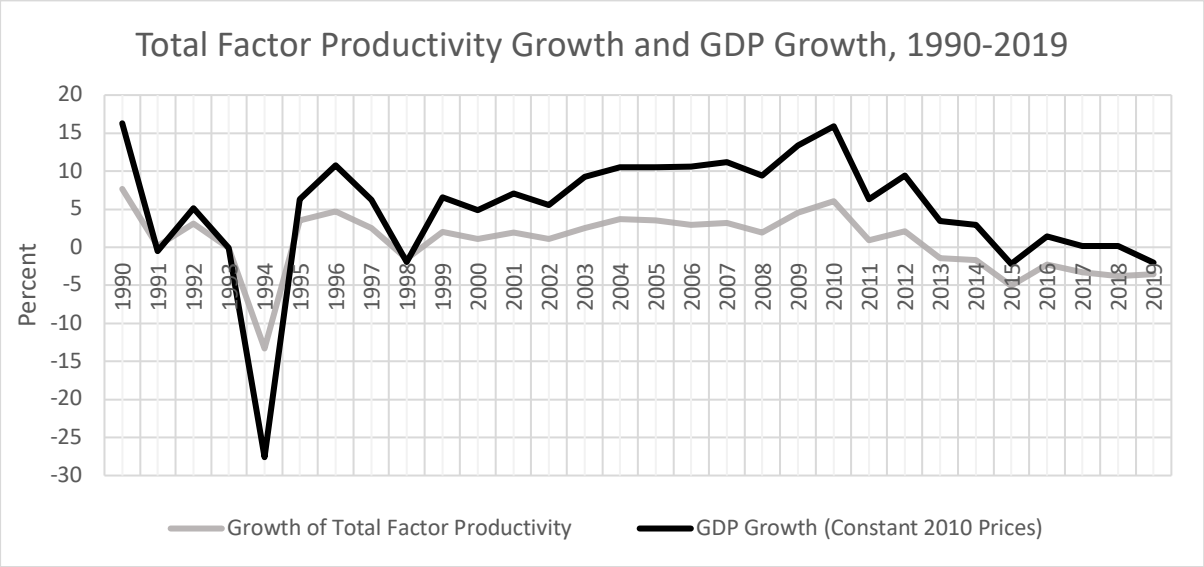
Table ,7: Sectoral Share in Employment (%) 1990-2018

	1990	1995	2000	2005	2010	2015	2016	2017	2018
Agriculture; forestry & fishing	68,0	69,7	70,9	71,6	66,5	56,3	55,2	56,0	57,6
Mining & quarrying	2,7	1,7	1,3	1,6	1,9	1,3	1,3	1,2	1,7
Manufacturing	7,2	5,2	2,7	3,6	3,6	4,9	4,9	4,7	4,7
Utilities	0,4	0,5	0,4	0,4	0,4	0,5	0,4	0,4	0,5
Construction	1,5	1,3	1,3	1,4	3,0	3,0	3,1	2,9	3,5
Trade services	7,4	9,2	6,7	9,5	9,9	17,5	17,9	17,1	15,2
Transport services	1,7	1,4	1,9	1,5	2,7	2,2	2,2	2,2	2,4
Business services	2,8	2,2	2,7	2,1	2,9	3,0	2,6	2,1	2,3
Financial services	0,4	0,3	0,3	0,3	0,3	0,5	0,5	0,5	0,5
Real estate	0,2	0,1	0,2	0,1	0,2	0,2	0,3	0,6	0,4
Government services	3,9	4,0	5,0	4,4	5,1	5,4	5,4	6,7	6,7
Other services	3,8	4,5	6,6	3,5	3,4	5,3	6,1	5,6	4,5

Source: Author based on data from (Groningen Online Database, updated June 2021)

Alhtough mining, utilities, financial and real estate services are among the activities with the highest labour productivity, they account for a small share of employment in the economy, with all combined accounting for less than 3 percent of total employment in the economy. In fact, employment share in these sectors have declined since 2015, suggesting that labour is moving from high to low productivity activities. With this structure of the economy, it is difficult to reduce poverty and promote inclusive growth because only a tiny section of the people are engaged in activities where labour productivity is high and growing. If we look at the total factor productivity, we see that although this grew consistently early 2000s, this growth momentum has been halted with TFP steadily declining from 2010, and more sharply from 2013 onwards (Figure 3), and this can be attributed to the

Figure .3: Total Factor Productivity and GDP Growth Rates, 1990-2019

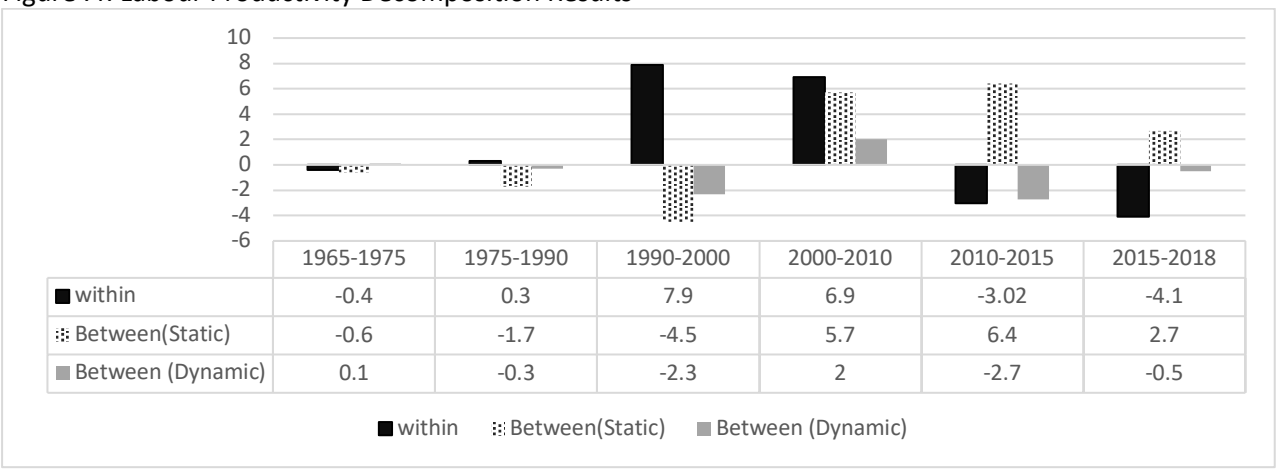


Source: Author based on data from World Development Indicators (Online Database)

Decomposition of Labour Productivity

The analysis above has outlined labour productivity by in a disaggregated ten-sector economy. The analysis has show both levels and changes (growth/decline) in labour productivity of the different sectors over time. To ascertain whether the shifts occurring in an economy contribute to productivity growth or decline, it is important to decompose the productivity of labour to see if the changes in labour reallocation lead to positive or negative effects on overall productivity. As noted above, productivity of labour can grow (or decline) depending on the levels and growth rates of the sectors or activities where labour is shifting to. Labour productivity grows when labour moves from a low to high productivity activity within the same sector (the within effects) or a different sector (the between or the structural change effects). As McMillan et al (2014) observe, the movement of workers from low to high activity or sector can contribute to positive growth of labour productivity and the overall productivity growth for the economy. Productivity growth can also be achieved when labour move from a sector with lower levels of productivity to a sector that has higher levels of productivity and productivity is growing, which captures the between-dynamic effects (see de Vries et al, 2015). On the other hand, when labour moves from high to low productivity activity or sector, this negatively affects productivity growth in the sector and the economy as a whole. To decompose the labour productivity, we follow de Vries et al(2015), building on McMillan et al, 2014) and Syrquin(1986). Here we extend the labour decomposition results presented in de Vries et al(2015) from 2010 to 2018[7]. The results show that there the reallocation of labour have had different effects on labour productivity(Figure 4)

Figure .4: Labour Productivity Decomposition Results



	1965-1975	1975-1990	1990-2000	2000-2010	2010-2015	2015-2018
within	-0.4	0.3	7.9	6.9	-3.02	-4.1
Between(Static)	-0.6	-1.7	-4.5	5.7	6.4	2.7
Between (Dynamic)	0.1	-0.3	-2.3	2	-2.7	-0.5

Source: Author based on Groningen Data (online database). Note: 1965-1975 and 1975-1990 figures are from de Vries et al(2015:682)

We see that the within effects have contributed positively to labour productivity except in the period 1965-1975 and 2015-2018, when they this component was negative. Increasing capital accumulation, use of modern technology and improved management of activities are some of the factors which could have accounted for the positive contribution of labour in the periods when the within component grew, particularly during the early 1970s to the late 1980s when the Zambian government aggressive

[7] De Vries et al(2015) used the following equation to decompose labour productivity:

$$\Delta P = \sum_i \left(P_i^t - P_i^o\right)S_i^o + \sum_i \left(S_i^t - S_i^o\right)P_i^o + \sum_i \left(P_i^t - P_i^0\right) * \left(S_i^t - S_i^0\right)$$

sought to promote the growth of industrial sector through state-led strategies (see Chitonge, 2021). The within effects were negative in the period 2015-2018 showing that jobs were being created in activities with low productivity, particularly in the informal sector. This is confirmed by data presented above which show that employment share increased mostly in the trade and business services where productivity was lower than the leading sectors such as mining, utilities, financial services and real estates. For example, the share employment in trade services more than doubled from 7.4 percent in 1990 to over 17 percent in the period between 2015 and 2018 (see Table 7).

The effects of the employment dynamics on the nature of structural change are more pronounced when we look at trends in the between (static and dynamic) components. The static component was negative from 1965 to about 1990, its contribution to labour productivity turned positive from 1990 through to 2010, but became negative in the 2010-2015 period, before recovering in the 2015-2018 period. This suggest that jobs expended in sectors which had higher productivity levels than the average productivity for the economy in the period 1990-2010. This could also be the effect of the improved labour productivity as a result of the privatization of state-owned enterprises during the 1990 which, though total employment declined, the few remaining workers became more productive as firms reorganized and streamlined their operations. The positive between(static) labour productivity during this period could also be attributed to the movement of people from agriculture to business services, especially retail urban businesses which have higher productivity . The between (dynamic) effects of structural change has been negative in all periods, much more pronounced in the 2010-2015 period. This is partly related to the dynamics in the agricultural sector which has consistently accounted for the larger share of employment. For the dynamic effects of this component to make positive contribution to productivity in general significant proportion of labour should move to the sectors where productivity is higher and growing. For instance, this would mean that workers should be moving from agriculture to mining, utilities, financial services, real estate as well as construction. But the experience has largely been the opposite of this, such that the sectors with the highest labour productivity have been shedding jobs which suggesting that the laid off workers move to lower productivity activities, and this contributes to negative effects of the overall structural transformation. Resnick and Thurlow (2014) also show that labour has been moving from the high productivity activities in mining and the formal sector in the serives sector to activities in the informal sector mainly the trade and business sectors. While the productivity levels in the business and trade services has consistently been higher than the average for the economy, this has only contributed to static gains, but not dynamic gains. Part of the negative effects from the dynamic component of structural transformation can be explained by the low levels of factor mobility, particularly labour from the agriculture sector. As shown above, though the agriculture sector's share in total employment has declined from the 1990s, there decline has been small, and the absolute number of people working in the agriculture sector has actually been growing as shown above. Low factor mobility has been is one of the factors which constrain the positive structural transformation because it perpetuates the factor misallocation, leading to low productivity within agriculture and a growing productivity gap relative to other sectors and the economy as a whole (Syrquin, 1986). Since the agricultural sectors accounts for a large share of total employment, its role in promoting positive structural transformation is crucial, and lack of significant movement within and from the sector leads to low gains from structural transformation. In fact, the gains from labour reallocation turn out to be negative overall due to lack of significant shifts in the agricultural sector as employment levels show above. Having so many people (more than half of the total labour force) working in a sector labour productivity of only 20 percent of the average productivity in the economy and only a fraction of a percent of the most productive sectors, negatively affects the overall productivity and economic growth in the country. Although the economy has been growing steadily since the early 2000s, this

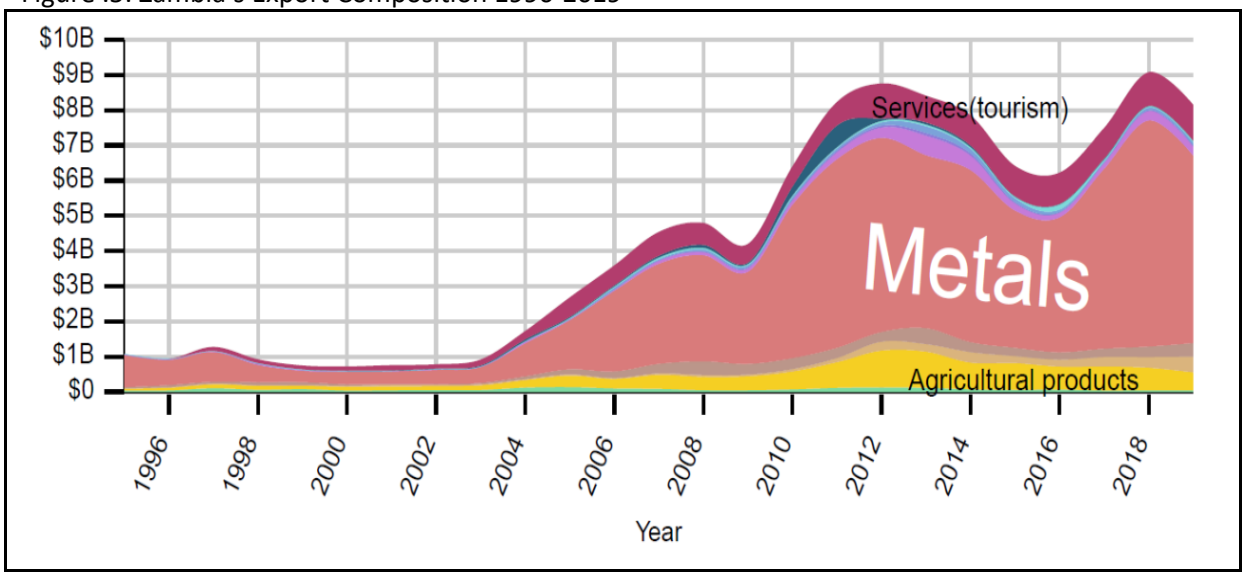
growth could have been much higher if the economy had had experienced significant positive gains from the reallocation of labour. Overall the current nature of structural change in the Zambian economy have only resulted in small gains,though the potential for higher gains from the reallocation of labour are high because the country has huge productivity gaps (McMillan et al, 2014; Timmer et al, 2012; de Vries, et al, 2015).

Implication of Structural Transformation Trends in Zambia

The nature of the structural transformation occurring in Zambia highlights the challenges for attaining sustained growth in the country. The analysis shows that while there are some sections of the economy where productivity is high and growing, these activities account for a very small percentage of the labour forces. The larger percentage of the labour force is engaged in activities where productivity is low and wither declining (in the case of agriculture) or stagnating (in the case of Trade, transport and business services). Promoting positive structural transformation would require two sets of interventions. One would be to promote the growth of employment in sectors where productivity is higher and this is difficult in the current situation given that the country's ability to create highly productive jobs has been weak (UNDP, 2016). The other option is to implement strategies that can promote the growth of productivity in the agricultural sector. This is also a challenge given that productivity in the agricultural sector has been extremely low even compared with low-income countries, but this can be done with consistent implementation of the right policies.

The other important point that has come out of this analysis is that the economy needs to diversify and reduce its dependence on commodities. As noted above positive structural transformation in the economy should lead to a diversified economy with growing levels of complexity. As things stand, the economic complexity index for Zambia highlights the lack of transformation manifesting in low levels of economic diversification and complexity (figure .4)

Figure .5: Zambia's Export Composition 1996-2019



Source: Author based on date from Atlas of Economic Complexity

Figure 5 reflects a feature of the economy that shows high levels of dependence on commodity exports. Studies which have examined the impact of commodity dependence on achieving positive structural transformation and diversification have shown that most commodity-dependent countries are trapped in the commodity dependence trap (CDT), and this is manifested in countries that which have remained commodity dependent for a long time (UNCTAD, 2021). Escaping the commodity trap

requires strategies that promote positive structural transformation which can contribute to diversification in the economy.

There are several ways of promoting diversification in an economy, but in the context of Zambia, the growth of the agricultural sector has a critical role to play. As highlighted above, in the case of transformation, the agricultural sector is central given the number of people still employed in the sector. For the Zambian case, this is even more important because sectors with higher productivity (including manufacturing which has traditionally been a puller of agricultural employment) are actually not generating sufficient jobs to absorb some of the underemployed labour in agriculture. If productivity in agriculture grows, it can generate the moment for other sectors to grow. This have been acknowledge for a long time by different analysts as indicated in the first section. The centrality of the agricultural sector for countries at lower levels of development like Zambia is simple and straight forward:

> Agriculture has several contributions to make during transformation: it must provide food for the urban population, raw materials for industry, markets for some of the industrial products, revenue for the state, and foreign exchange to cover the import requirements of industrialization while the capacity to export manufactured goods is being developed (syrquin, 1986:241).

It has been observed that countries which have fostered the growth of productivity in the agricultural sector have faired well in terms of structural transformation compared to countries which have ignored the agricultural sector. Syrquin(1986) argues that countries that succeeded in transforming their economies were marked by rapid growth in the agricultural sector. Stimulate sustained positive structural transformation in Zambia, the agricultural sector has to experience significant growth in productivity. This will not only raise the general income in the economy, it will contribute to reducing poverty and promoting inclusive growth. Inclusive growth, as we have seen, is a product of a positively transforming economy where more people are participating in economic activities with higher output.

Conclusion

This paper has discussed structural transformation in Zambia. Data presented in the paper show that while the Zambian economy has undergone significant shits over time, the nature of structural change occurring in the economy has contributed little to improving the overall productivity and growth in the economy. While there are some sectors in the economy with high productivity levels, these only account for a small proportion of workers. Majority of workers are still in the agricultural sector where productivity is very low and declining over the years. Promoting positive structural transformation would require that productivity is improved in sector where most of the people work. The other option is to create jobs in sectors where productivity is high and growing, but this is difficult to do on a large scale, as the past experiences have shown.

References

Andreoni, Antonio, Pamela Mondliwa, Simon Roberts and Fiona Tregenna (2021). "Framing Structural Transformation in South Africa and Beyond" in A. Andreoni, P. Modliwa, S. Roberts and F.

Driemeier , M. and Nayyar, G. (2018). *Trouble in the Making: The Future of Manufacturing-led Development*. Washington D.C.: World Bank.

Dieppe, Kawamoto, Y. Okawa, C.Okou and J. Temple (2021). What Explains Productivity Growth" in A. Dieppe (ed.) Global Productivity: Trends, Drivers and Policies. Washington D.C.: World Bank. 83-125.

UNDP(2016) Zambia

UNCTAD(2021). Commodity and Development Report 2021: Escaping from Commodity Dependency Trap Through Technology and Innovation. Geneva: UNCTAD.

Syrquin, Moshe (1986). "Productivity Growth and Factor Reallocation," in H. B. Chenery (ed.) Industrialisation and Growth: A Comperative Study. Washington D.C.: World Bank. 229-285.

Lindsay, Craig(2004). "Labour Productivity."Labour Market Trends: *Special Feature*. London: Office for National Statistics.

Yeboah, F. K., & Jayne, T. S. (2018). Africa's evolving employment trends. Journal of Development Studies, 54(5), 803–832

Mundle, S (1985). The agrarian barrier to industrial growth. Journal of Development Studies, Vol. 22, No.1. 49-80

Sen, A. K. (1966). "Peasants and Dualism with or Without Surplus Labour." *The Journal of Political Economy*, Vol. 74, No. 5. 425–450.

Adelman, I. (1984). "Beyond Export Led Growth." World Development Vol. 12, No. 9. 937-949.

African Centre for Economic Transformation (ACET, 2014). Growth with Depth. Accra: ACET.

Tregenna (eds.) Structural Transformation in South Africa: The Challenges of Inclusive Industrial Development in a Middle-Income Country. London: Oxford University Press. 1-27.

Tregenna, F. (2016). "Deindustrialisation: An Issue for Both Developed and Developing Countries" in J. Weiss and M. Tribe (eds.) Routledge Handbook of Industrialisation and Development. London/NewYork: Routledge. 97-115.

Rodrik, D. (2015). "Premature Deindustrialisation." National Bureau of Economic Research (NBER) Working Paper No. 20935. Available at: http://www.nber.org/papers/w20935. Accessed 16.09.2017.

Tregenna, F. (2009). "Characterising De-industrialisation: An Analysis of Changes in Manufacturing Employment and Output Internationally." Cambridge Journal of Economics, Vol. 33, No.4. 433-466.

Felipe, Jesus, A. Mehta and C. Rhee (2017). "Manufacturing Matters…but it's the Jobs that Counts." Asian Development Bank Paper Series, No. 420.

United Nations Economic Commission for Africa (UNECA, 2016a). Transformative Industrial Policy for Africa. Addis Ababa: Economic Commission for Africa.

Abramovitz, M. (1956) Resource and Output Trends in the United States Since 1870. American Economic Review, 46, 5-23.

Schumpeter, Joseph (1939). Business Cycles. New York: McGraw-Hill.

Singer, W. Hans (1950). "The Distribution of gains between investing and borrowing countries." American Economic Review 2(40), 473–485.
Prebisch, R. (1950). 'The economic development of Latin America and its principal problems.' Economic Bulletin for Latin America, No. 7. New York: United Nations

Chitonge, H. (2016). "Zambia at 50: The Persisting Challenges of Economic Structural Transformation." Development Southern Africa, DOI:10.1080/0376835X.2016.1231053

Ocampo, Antonio (2020). "Industrial Policy, Macroeconomics and Structural Change" in A. Oqubay, C. Cramer, H. Chang and R. Kazul-Wright (eds.) Oxford Handbook of Industrial Policy. London: Oxford University Press. 64-92.

Timmer, M., G. de Vries and K. de Vries (2014). Patterns of Structural Change in Developing Countries. Groningen Growth and Development Centre(GGDC) Working Paper No. 149

United Nations Industrial Development Organisation (1980). World Industry Since 1960: Progress and Prospects. Vienna: UNIDO.

United Nations Economic Commission for Africa (UNECA, 2012). Economic Report on Africa 2012: Unleashing Africa's Potential as a Global Growth Pole. Addis Ababa: UNECA.

Timmer, M, de Vries, G & de Vries, K, 2014. Patterns of structural change in developing countries. Groningen Growth and Development Centre (GGDC) Working Paper No. 149.

De Vries, G., Timmer, M. and de Vries, K. (2015). "Structural Transformation in Africa: Static Gains, Dynamic Losses." Journal of Development Studies, Vol. 56, No. 6. 674–688.

Page, J. (2015). "Structural Change and Africa's Poverty Puzzle," in L. Chandy, H. Kato and H. Kharas (eds.), *The Last Mile in Ending Extreme Poverty*. New York: Brooklyn Institute Press. 219–248.

African Economic Outlook (AEO, 2013). *Structural Transformation and Natural Resources*. Tunis: African Development Bank/Organisation for Economic Cooperation and Development/United Nations Development Programme and Economic Commission for Africa.

African Centre for Economic Transformation (ACET, 2014). *Growth with Depth—2014 African Transformation Report*. Accra: African Centre for Economic Transformation

Kuznets, Simon (1966). Modern Economic Growth: Rate Structure and Spread. New Haven/London: Yale University Press.

McMillan, Margaret, Rodrick, Dani and Verduzco-Gallo, Inigo (2014). "Globalisation, Structural Transformation and Productivity Growth." World Development, Vol. 63, No.2. 11-23

United National Industrial Development Orgranisation (UNIDO, 2021). . Escaping from the Commodity Dependence Trap Through Technology and Innovation (Commodity and Development Report 2021). Geneva: UNIDO.

Lewis, Arthur (1954)

World Bank, (2014). Africa's pulse: An analysis of issues shaping Africa's economic future. Vol. 9 (April, 2014). 1–49.

Chenery, H., Robinson, S. and Syrquim, M. (1986). *Industrialisation and Growth: A Comparative Study*. Washington, DC: World Bank.

Syrquim, M. and Chenery, H. (1989). "Three Decades of Industrialisation." World Bank Economic Review, Vol. 3, No.2. 145-181.

Thirlwall, A. P. (1983). "A Plain Man's Guide to Kaldor's Growth Laws." Journal of Post Keynesian Economics, Vol. 5., No. 3. 345-358.

Resnick, D, & Thurlow, J, 2014. "The Political Economy of Zambia's Recovery: Structural Change without Transformation." *International Food Policy Research Institute*(IFPRI) Discussion Paper 01320.