

Growth, Productivity and Structural Transformation in Zambia¹

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Abstract

Zambia has experienced an unprecedented level of economic growth since 2000, with an average growth rate exceeding 6%. Despite the phenomenal growth, the level of income inequality has increased and remained very high over the same period, which suggests that the benefit of growth has not been shared evenly. This paper investigates the possible reasons for this anomaly. Specifically, using the Africa Sector Database compiled by the Groningen Growth and Development Center (GGDC) and Zambia National account data, the paper quantify and decomposed the productivity growth of Zambia to determine the pattern and nature of structural transformation and its role in the growth outcome. Following McMillan and Rodrik (2011) and McMillan, et al., (2017) we use the canonical decomposition technique to decompose productivity growth into within-effect and structural-change effect for the period 1970 to 2016. In addition, using econometric regression technique, the paper estimated employment elasticities of growth for Zambia to establish the employment intensity of each sector. The decomposition results show strong evidence of productivity growth driven largely by structural transformation effect since 2000. The productivity growth due to efficiency of within sector allocation which appears to be strong in the period before 2000 has weakened in recent years suggesting a deteriorating economic fundamentals. Moreover, the employment elasticity estimates suggest evidence of structural shift in favour of the finance, construction and community services sectors in that order since 2000, thus confirming the results of the decomposition technique. The results robustly confirm that the non-inclusive growth of the Zambia economy is due to the nature of structural transformation. It promotes movement of labour into either the very low productive service sector (community service and Trade) with relatively high labour absorptive capacity or to the very highly productive service sector (finance and construction) but with very low labour absorptive capacity.

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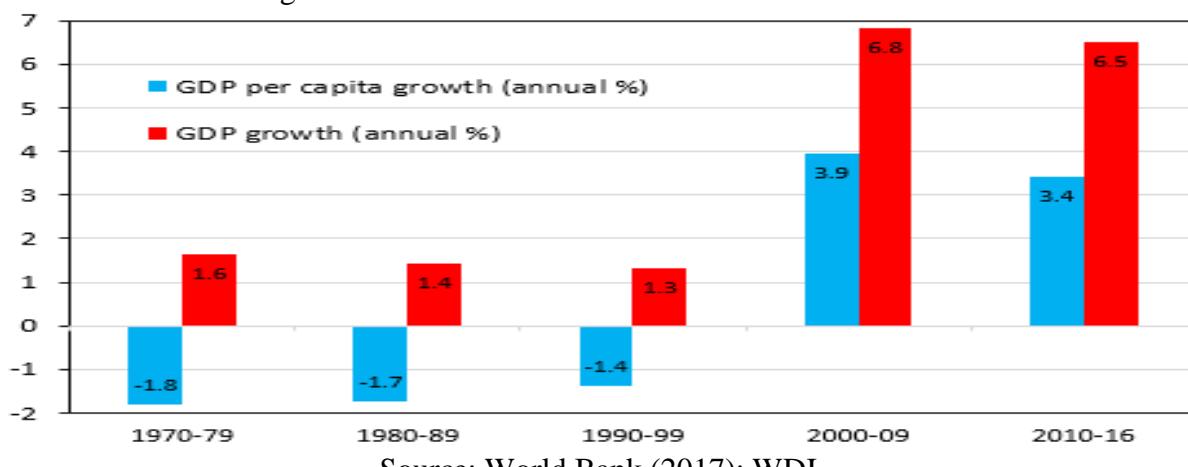
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A. Introduction

The decade since 2000 has been touted as Africa rising. This was due to the phenomenal economic growth experienced in sub-Saharan Africa (SSA) and the belief in further and rapid development of the continent. Of the thirty fastest growing countries of the world from 2000 to 2009, with an average growth rate above 6%, twelve of them were from Africa, compared to just six countries with lower growth rates in the previous decade. Similarly, between 2010 and 2015, nine of the thirty fastest growing countries of the world were from SSA (World Bank, 2017).

Like many African countries, Zambia experienced remarkable growth since 2000. GDP growth averaged 6.8% between 2000 and 2009, and 5.6% from 2010 to 2016 compared to average growth of lower than 2% between 1970 and 1999 (Figure 1). Moreover, per capita GDP grew by 3.9% between 2000 and 2009 and 2.5% between 2011 and 2016, following a contraction between 1970 and 1999.

Figure 1: Zambia Economic Growth Rate: 1964-2016



Source: World Bank (2017): WDI

Yet, the buoyant growth experienced after 2000 had very little social impact, and poverty and inequality stubbornly remained high. Inequality as measured by the GINI coefficient has been rising since 2004 (Table 1). The 2015 CSO Living Conditions Monitoring Survey (LCMS) suggests that Zambia had a Gini coefficient of 0.69, making it one of the most unequal countries in the world³. Poverty (as measured by the proportion of people living below US\$ 1.90 per day) increased from 41.7% in 1996 to 64.4% in 2010, and then declined only slightly to 57.2% in 2015. In urban areas, the incidence of poverty was 25.4 percent, slightly lower than in 2010 (25.7 percent). Poverty in rural areas was much higher, at 76.7 percent, having risen from 73.6 percent in 2010.

A natural question that arises is what has been responsible for the lack of inclusivity of the growth experience? Was Zambia's strong post-2000 growth accompanied by structural transformation? Could it be because of lack of or the nature of structural transformation in the country? Has structural transformation failed to drive development? What were and are the constraints and factors limiting Zambia's structural transformation? What specific

³CSO (2015), 'Living conditions monitoring survey', Government of the Republic of Zambia.

interventions could help to change the current scenario for the better? This paper will address the above questions and offers some practical policy strategies for encouraging growth inclusive structural transformation in Zambia.

Table 1: State of Inequality in Zambia: 1991-2015

Indicator Name	1991	1993	1996	1998	2002	2004	2006	2010	2015
GINI index (World Bank estimate)	60.5	52.6	48.3	49.1	42.1	54.3	54.6	55.6	69.0
Poverty headcount ratio at \$1.90 a day (% of pop)	54.0	54.5	41.7	42.1	49.4	56.7	60.5	64.4	57.5
Income share held by lowest 20%	0.9	3.0	4.5	4.3	6.1	3.5	3.5	3.8	2.9
Income share held by lowest 10%	0.2	1.1	1.7	1.6	2.4	1.3	1.3	1.5	1.0
Income share held by highest 10%	42.9	39.3	37.3	38.2	33.7	42.7	43.2	45.2	44.4
Income share held by highest 20%	61.9	56.6	53.6	54.2	48.8	59.0	59.5	61.0	61.3

Source: World Bank World Development Indicators

The rest of the paper is organised as follows. Section 2 provides some background of Zambia's economic policies since independence. Section 3 provides a review of the literature, beginning with a conceptual definition of structural transformation, then the analytical framework used to measure structural transformation and finally it reviews empirical literature on structural transformation in Africa and Zambia. In section 4, the paper presents the methods used for the analysis and the data. Section 5 presents the empirical results, starting with a comparative analysis of selected natural resource rich countries in Asia, Latin America and Africa and then the trend and pattern of structural transformation in Zambia. Section 6 discusses the policy implications of the study and offers practical policy strategies for encouraging structural transformation in Zambia.

2. Overview of Government Policies since independence

The economic reforms in Zambia can generally be divided into three periods: the pre-SAP period, the SAP period, and the post-SAP period. Table 2 provides a timeline of the policies.

Pre- SAP Period

The pre-SAP period was generally characterised by the African Humanism ideology which was an humanitarian ideology of development, and a focus on the nationalisation and consolidation of private owned companies (Chirwa & Odhiambo, 2016; Sekwat, 2000). The colonial economy inherited at independence was a dual-economy composed of the mining sector (driven by copper production), and the agricultural economy (consisting of large-scale commercial farmers with highly mechanised technologies, and rural smallholder farmers who were primarily labour-intensive and used traditional technologies) (Auty, 1991; Chirwa & Odhiambo, 2016). The economy was mostly dependent on its mining sector, and hence susceptible to external shocks from commodity price volatility.

In keeping with the philosophy of African Humanism for Zambians, various economic reforms were implemented between independence and 1975, all with the central objective of regaining control of economic interests from foreign colonial bodies, via the transfer of the major means of production and services to the government and to Zambians. According to Sekwat (2000), there were four major elements of the economic reforms: (i) state control and participation in the economy- attained through large-scale nationalisation and acquisition of

foreign businesses. (ii) Indigenization of the public and private sectors- through replacement of foreign work force with Zambian nationals, in both the civil service and parastatals. The indigenisation program led to a 10 times increase in the number of parastatals (from 14 to 147) in the 1970s, and by the 80s, the parastatal sector had become a key economic player accounting for almost 40% of formal public sector employment, 30% of the National Income, and 60% of investments (Sekwat, 2000). (iii) Rapid development of the rural sector; (iv) curbing domestic exploitation through a series of policy measures; all of which led to increased government ownership and control, administratively and economically.

In the first decade post-independence, the policies and reforms of the then government seemed to have succeeded, with the economy experiencing steady growth rate of about 4.7% per year, mostly driven by favourable international copper prices. However, the over-dependence on the mining sector combined with the humanism policies, which favoured socialist developments and public-sector control without measures to safeguard efficient use of resources and economic diversification, led to severe economic crisis as a result of the 1974-86 78% slump in copper prices, and the 1973 and 1979 increases in crude-oil prices by 221% and 115% respectively (Auty, 1991; Chirwa & Odhiambo, 2016; World Bank, 2015).

These economic crisis exposed the weaknesses of the humanism approach, with the policies of nationalism and welfarism previously lauded for their success, then blamed for Zambia's economic decline (Sekwat, 2000).

SAP Period

To address its economic crisis, the then government turned to the International Monetary Fund (IMF) and World Bank for economic bailout. Between 1974 and 1981, the Zambian government received several loans from the World Bank, and entered into various agreement with the IMF, all predicated on a shift from the humanism approach towards liberalisation of the economy accompanied by structural reforms(Sekwat, 2000). In 1978, the government adopted the IMF's 'Action Programme' agreement to provide budgetary support for the dwindling economy. This program was later expanded to a full-scale structural adjustment program (SAP) by 1983 (Chirwa & Odhiambo, 2016). This program brought with it requirements for major economic reforms.

The SAP period can largely be grouped into three sub periods: 1983-1987 SAP, 1987-1988 Interim National Economic Recovery Program (INERP), the 1989-1996 SAP with Movement for Multiparty democracy (MMD) regime change in 1991. This period largely focused on undoing or amending the policies made during the pre-SAPs period.

The activities and policies implemented from 1983 to 1987 involved a complete departure from the command-type economy of the Humanism era, to an economy driven completely by market forces. This led to severe economic hardships for Zambians, especially with the massive retrenchments in the public sector which led to unemployment, and the removal of food subsidies, and price controls, (Chirwa & Odhiambo, 2016). In 1986 riots resulting from the removal of maize subsidies led to loss of lives and injuries, and a temporary suspension of the SAP in May 1987, and the introduction of the National Economic Recovery Plan (NERP). The NERP focused on reinstating state control of the economy in line with pre-SAP ideologies. Although initially successful due to temporary improvements in world Copper prices and agricultural outputs, the economy was forced to revert back to the SAP program in 1988 due to worsening economic conditions fuelled by the suspension of financial aid by foreign donors (Chirwa & Odhiambo, 2016; Sekwat, 2000).

The new SAP programme was based on the Policy Framework Paper (PFP) co-developed by government, IMF and the World Bank, based on market-oriented principles. It

did not improve economic conditions and led to the loss of confidence in the Government, increasing oppositions and a riot in 1990 against the further removal of maize subsidies. Although the riot did not result in a reversal of the policy, in 1991, President Kaunda, out of concern for forthcoming elections, asked the IMF for an extension on the set date for implementing the next subsidy removal, to which they disagreed (Simutanyi, 1996). With rising opposition groups calling for a return to a multiparty system, and the holding of the first election, the opposition party - Movement for Multiparty democracy (MMD) - led by Fredrick Chiluba, won in a landslide victory. The MMD continued with aggressive implementation of the policies of the SAP program. By the end of 1993, all subsidies on maize and fertilizer had been removed with the cost of maize rising from K200 in 1991 to K4000 in 1993 (Simutanyi, 1996).

The policies implemented during the SAP period, although aimed at improving the state of the economy, in retrospect, did not do much to achieve this objective. There were massive retrenchments from the civil service, without corresponding job creation in the private sector. The result of this was the inability of formal sector (government and private) to cater to the increasing labour force, with formal employment steadily declining at an average of 20% year-on-year (Mulenga, 2008). The two decades of the SAP programs were marked by growing inequality, unemployment, deteriorating health including a high HIV/AIDS prevalence rate, declining access to education, and an urban infrastructure that did not keep pace with population growth(Hansen, 2008). The privatization of the economy pushed the majority of the labour force into the informal economy, and “little prospects for upward mobility and the acquisition of higher qualification” (Hansen, 2008).

Post-SAP Period

After the SAP, the Zambian government temporarily shifted from the implementation of NDPs to sector-focused plans called ‘Sector Improvement Program (SIP)’ between 1995 and 2001. The SIP focused on the agricultural, education, and road sectors. During this period the economy experienced a decline in the share of the mining sector in GDP, with a reversal in the trend after 2005. The economy shifted more and more towards informal sector employment as formal sector employment declined with the share of the mining and industrial sector in formal sector steadily declined, although the share of the service sector experienced an overall increase between 1975 and 2012 (Chirwa & Odhiambo, 2016).

In 2001, a new government took over power and once again, the National Development Planning approach was adopted. Transitional Development Plan co-developed with the IMF and World Bank was adopted. The plan, termed the ‘Poverty Strategy Reduction Paper’ (PSRP) emphasised liberalisation and the promotion of competitiveness in the business sector to reduce poverty levels (Hansen, 2008). Under this strategy, government spending targeted the agricultural sector, tourism, and the social sector. The strategy is however faulted for its weak focus on issues of employment and increasing urbanisation, which indicated a neglect of the livelihoods of the urban poor (Hansen, 2008). Also, although there were improvements in the export content with increases in metal, non-metal, and non-traditional agricultural commodities, traditional commodities, which most of the rural poor depended on, did not perform well (Republic of Zambia, 2006a). Albeit, there were positive improvements in economic indicators during this period. Favourable global economic conditions and the impact of previous reforms led to increased growth rate in the economy. The exchange rate of the Kwacha was fairly stable during this period, with declining inflation and interest rates recorded. There were also improvements in the country’s current account deficit and by 2005, the country qualified for debt forgiveness under the Multilateral Debt Relief Initiative, due to

it reaching its target under the Heavily Indebted Poor Countries Initiative (Fraser, 2007; Republic of Zambia, 2006a).

In 2006, the Zambian government moved away from medium-term development planning to long-term development planning, which would include intermediate milestones. It launched the “Vision 2030” as its first long-term NDP with the objective of becoming an upper middle income country by 2030 (Republic of Zambia, 2006b). Subsequent medium-term NDPs were guided by the Vision 2030 objective, with the first being the 5th National Development Plan with the stated objective of “broad based wealth and job creation through citizenry participation and technological advancement” (Republic of Zambia, 2006a). The plan focused on agricultural development as the main engine for economic growth and development, together with direct and interlinkage focus on infrastructure, tourism, manufacturing, mining, and energy. The guiding principle was a dedication to pro-poor initiatives by promoting income and employment creation initiatives and to direct resources towards strengthening economic and social infrastructure such as roads, schools and hospitals (Republic of Zambia, 2006a). This period witnessed continued increase in economic growth, exchange rate stability, and declining inflation and lending rates, from the Transitional National Development Plan (TNDP) period. However, economic growth was still predominantly driven by the mining sector (i.e. copper exports), and there were increases in external debt which was sustainable given that its share of GDP remained fairly the same (Republic of Zambia, 2011).

The 6th and 7th NDP built on the progress made with the 5th NDP in keeping with the objective of Vision 2030. The 6th NDP focused on accelerating infrastructure development and rural investment; diversification of the drivers of economic growth; and the continued focus on poverty reduction and improved welfare of the Zambian people. However, during this period (2011 -2015), the economy was still dependent on the copper mining industry for growth, and did not realise the increase in the contribution of agriculture to its GDP it had expected. The alleviation of poverty and improving formal sector employment remained a challenge (Ministry of National Development and Planning, 2017).

This brief review of the government policies and outcomes from independence to date shows that despite the different policy regimes, the economy remained largely dependent on mineral growth particularly copper mining with high vulnerability to external shocks. The narratives also shows a widening productivity gaps, and low human-capital development which has led to the challenge in improving formal sector employment, and the continuous migration of labour to the informal sector, characterised by low-productivity. A detailed analysis of the pattern of structural transformation will be given further attention in section 5. In the next section attention is first given to a literature review.

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Table 2: Policy Occurrences from Independence till Date

Period	Government Policy	Objective	Activities
Pre October 1964	Colonial Imperatives	Colonial Objectives and interests	-Reliance on a single commodity – Copper – for foreign exchange and export earnings -Rural sector housed majority of the population and basic services and amenities like schools, good roads, health and agricultural services, etc.
Oct' – Dec' 1964	Emergency Plan	African Humanism	United Independent National Party (UNIP) takes over power from Colonialists
Jun' 1965- Jun' 1966	Transitional National Development Plan (TNDP)	African Humanism- Decentralisation (i.e. The distribution of authority and power at different levels of the state/nation.)	-Abolishing of native authorities and the power of local chiefs. -Replacement with Institution of Rural Councils; and Provincial, District, Village, and Ward Development Committees, respectively – responsible for feeding the ideas of local development to the national decision making authorities
Jul' 1966 - 1970	1 st National Development Plan (1NDP)	African Humanism- Nationalisation	April 1968 – “nationalization of major companies and the associated industries included textiles, chemicals, construction, and manufacturing, including rural industries such as canning and cottonginnery”. 1969 – “new reforms were introduced covering the mining sector for government to own majority shares of up to 51% in all copper mines” 1970 – “Nationalization reforms extended into retail and trading; Reabsorption of development planning into the Ministry of finance.”
1972-1976	2 nd National Development Plan (2NDP)	African Humanism - Indigenisation	1972 - Government declared that only genuine Zambian organisations and individuals could only participate in these sectors. Furthermore, any businesses that were foreign-owned were limited to prescribed designated areas in ten major urban centres (Republic of Zambia, 1971, p. 28). 1972 - Abolition of multi-party politics and introduction of ‘one-party participatory democracy’ in December of that year.
1978 – 1982	IMF 1978 ‘Action Programme’	Provide budgetary support to assist in addressing high balance of payment deficits and inflation.	Set the stage for programs that will be adopted during the full launch of the SAP in 1983.
1979 – 1983	3 rd National Development Plan		
1983 – 1987	Structural Adjustment Programme (SAP)	-Expansion of the 1978 Action Program Decentralisation of Power and Liberalisation of the private sector and commercial activities.	1985- Adoption of Comprehensive market-based structural reforms --Introduction of an auction foreign exchange system. --Staple food subsidy removal --Abolition of interest rate controls and import licensing restrictions --Cut down on public expenditure. --Wage increases were limited to 5% --Liberalisation of agricultural marketing --Cuts in civil service employment. --Decontrol of prices of non-maize consumer goods.
1987 – 1988	New Economic Recovery Plan 1	-Abandonment of SAP -Return to African Humanism ideology. -Establishing self-reliance, away from dictates and requirements of external funders and creditors. -“Growth from our own resources” slogan launched.	-Restoring the original subsidies and prices for maize products. -Abandonment of SAP policy reforms including the reintroduction of government control for price, foreign exchange, imports, and external debt servicing.
1989 – 1991	-4 th National Development Plan (PFP implemented)	Liberalisation of the economy, implementation of open market system geared towards improving macroeconomic indicators.	1989- Policy Framework Paper (PFP) Co-developed by UNIP, IMG, and, World Bank, based on market oriented principles. This called for: --Further devaluation of the Zambian Kwacha --Removal of price controls and subsidies.

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			-Further manpower reduction in the civil service and government parastatals 1990 - 4 th NDP abandoned due to concerns for upcoming elections.	
1991-1993	New Economic Recovery Plan 2	A continuation of the SAP from the previous regime.	Oct' 1991 – New Government; Movement for Multi-party democracy (MMD). -Removal of all subsidies on breakfast, maize, and fertilizer by end of 1993. -Foreign exchange liberalisation by introduction of bureau de change. -Liberalisation of interest rates, imports, and agricultural marketing. -Liquidation and privatisation of public enterprises.	
1995 – 2001	Sector Improvement Program (SIP)	Shift from National Development Plans to sector-specific plans.	-Focus on the Agricultural, Education, and Road sectors. 2001 – New MMD Government	
2002 – 2005	Transitional National Development Plan (TNDP): Poverty Strategy Reduction Paper (PSRP)	Developed with the IMF and world bank to reduce poverty levels.	- Emphasis on democratisation, open markets, and competitiveness in business environments. - Spending targeted at agriculture, tourism, and social sector. - Lack of focus on issues associated with the urban poor such as urban employment, growth, markets, and housing.	
2006 – 2010	5 th NDP; Ministry of Trade Commerce, Trade and Industry (MCTI) Strategic Plan	“Broad based wealth and job creation through citizenry participation and technological advancement”	-Focus on agricultural development as engine of economic growth and development. -Direct and inter-linkage focus on infrastructure, tourism, manufacturing, mining and energy. -Focus on pro-poor initiatives to improve employment and income creation for the poor. -Emphasis on the creation of “strong linkages between the capital-intensive sectors and the rest of the economy”. -Focus on “strengthening the relevant economic and social infrastructure, especially roads, schools and hospitals”, as well as enhancing the development of agriculture and rural areas.	
2011 – 2015	6 th NDP	To build on the progress made in the 5 th NDP in attaining the vision 2030.	“The objectives of the SNDP are to accelerate: infrastructure development; economic growth and diversification; rural investment and poverty reduction and enhance human development.”	
2017 – 2021	7 th NDP	To become an upper-middle income country by 2030.	-To implement interventions to diversify the economy away from mining and enhance programmes for social protection. -Implement interventions to increase formal sector employment.	

Sources: Author's Compilation from the Literature

B. Brief Review of the Literature

i. *Conceptual and Analytical Framework*

Structural transformation is an ongoing process of structural economic change. As economies develop, there is a re-allocation of resources across sectors causing shift in the use of labour force and capital. Workers move from low productivity jobs in the agricultural sector to high productivity jobs in the modern sectors and the process is partially influenced by changes in the modern sector (Herrendorf, Rogerson, & Valentinyi, 2014; Timmer et al., 2012; UN-HABITAT, 2016; World Bank, 2014). Timmer et al. (2012) identifies four interrelated processes that define the structural transformation process. Firstly, there should be a declining share of agriculture in gross domestic product (GDP) and employment. Secondly, rapid urbanization as people migrate from rural to urban areas. Thirdly, there should be a rise in the modern industrial and service economy and finally, there should be a demographic transition from high to low birth and death rates (Timmer et al., 2012, p. 1). For structural transformation to foster inclusive growth, the difference between the agricultural shares of GDP and employment will narrow overtime thereby raising the incomes in the agricultural and rural sectors towards the incomes of the urban industrial sectors(Badiane, Ulimwengu, & Badibanga, 2012)

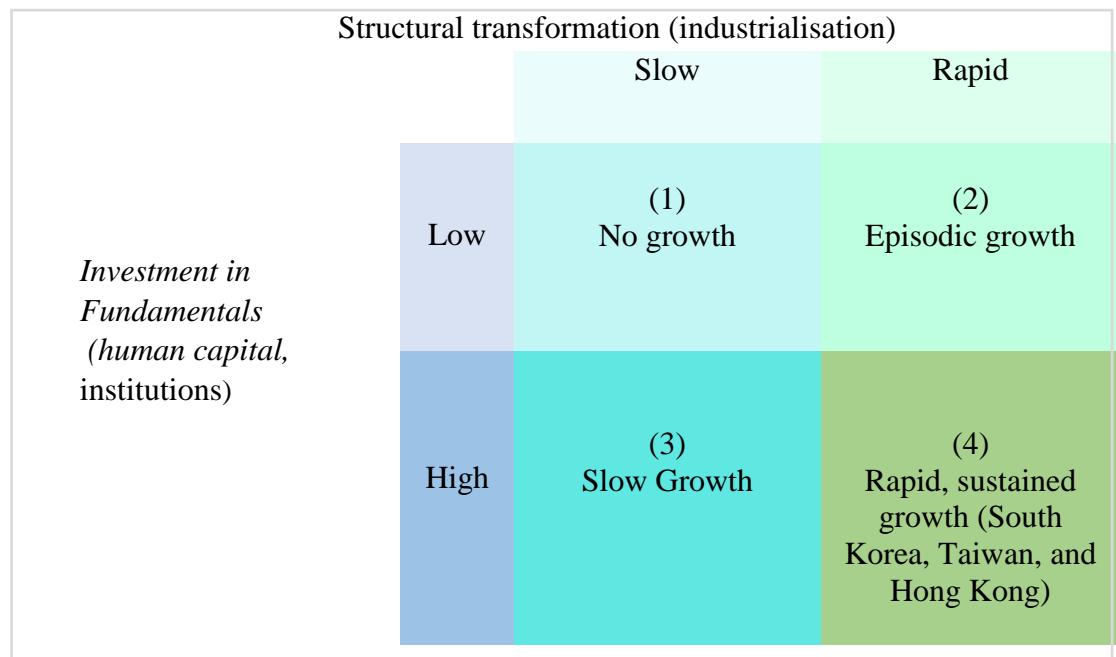
Recently, McMillan, Rodrik, and Sepúlveda (2017) developed a unifying framework based on the dual theoretical economy insights of Lewis (1954) and later by Ranis and Fei (1961) and the Solow (1956) neoclassical growth model. According to McMillan et al. (2017, p. 4) this two theoretical perspectives complement each other and provide good insights on how to think about economic growth. For instance, the Solow model can be thought of as basically focusing on the *within* modern sectors and the dual economy model as focusing on the relationships and flows *among* sectors. Two broad developmental challenges can be identified from these two models.

Firstly, *structural transformation challenges* – how to ensure that resources flow rapidly to the modern sector with high productivity. Secondly, *economic fundamental challenge*- how to accumulate skills and build strong institutional capabilities needed to generate sustained productivity growth and not just modern industrial sector but also across the whole range of services and other non-tradable activities (McMillan, et al., 2017, p.4).

Failing to balance these two challenges can result in cases where countries invest heavily in economic fundamentals without reaping the benefit of structural transformation. These possibilities can be visualised by the growth patterns and outcomes depicted in Figure 2.

Figure 2 shows that structural transformation can fuel growth on its own, however, if not backed by fundamentals, growth will slow down and remain episodic (quadrant 2). Similarly, investment in fundamentals which is costly, time consuming and complementary across the entire economy will only lead to steady but slow growth if not backed by structural change (quadrant 3). Overall, sustained growth and convergence will require both processes (quadrant 4).

Figure 2: A typology of growth patterns and outcomes



Source: Adopted from McMillan et al. (2017, p. 8)

Analytical Framework

A careful study of the development and growth literature reveals a number of approaches used in measuring the extent of structural transformation and its contributing to economic growth. In this section, we review the various approaches and provide the motivation for the approaches used in this paper.

One basic approach is to measure structural transformation using changes in sectoral value added and employment (ECA, 2014). According to this measure structural transformation occurs if the value added or employment shares of the manufacturing and services sectors are increasing, with a concomitant decrease in the share of the primary sectors of the economy. This method is however limited because it does not directly quantify productivity and the growth benefit of structural transformation (Chavula, Chinzara and Sondjong, 2014). Nevertheless, the share of value added and employment of the key sectors provides a first step in appreciating structural transformation.

Another common basic approach in the literature is to use the concept of labour productivity and relative labour productivity. Labour productivity is computed by dividing value added or output by the total person employed either for the total economy or for each economic sector. Similarly, relative productivity of each sector can be computed by dividing each sectors labour productivity by total productivity of the economy. The relative productivity measure the productivity of each sector relative to the other sectors or the aggregate economy. The relative productivity for the entire economy will always be equal to one. Hence, if the relative

productivity of a sector is equal to 2, then the sector is twice as productive as the total economy. The first objective of economic transformation is to ensure that each sector's productivity is high which can be achieved through improvement in economic fundamentals in an economy. Second, to ensure that labour moves from low productive sectors to high productive sector, an indication of structural transformation (Mcmillan & Rodrik, 2011).

The relative productivity of economic sectors can be juxtaposed with their relative share of value added and employment. If labour concentrate or moves to low productive sectors, then the structural transformation is not growth enhancing and inclusive. On the other hand, if labour moves from low productive sectors to high productive sectors then structural transformation is growth enhancing and inclusive.

Employment elasticity is another approach used to quantify the relationship between growth and employment. This approach, which gained popularity from the seminal work of Okun (1962), provides a convenient tool for gauging employment intensity of growth and the sensitivity of employment to output growth at different levels. At the aggregate and sectoral levels, elasticities link the number of jobs generated to rates of economic growth. Because of its relevance, policymakers, parliament, and critics of the government watch employment elasticities closely.

In the literature, two techniques are commonly used to estimate employment elasticity. The first technique uses simple arithmetic method to calculate the *arc* elasticity of employment by dividing percentage change in the number of employed persons in an economy or region by the proportionate change in economic output, measured by gross domestic product or value added. Though easy to compute, it has been shown in the literature that it exhibits a great deal of instability and may therefore not be appropriate for comparative purposes (Ajakaiye, et al. 2016, Kapsos, 2015). The second technique utilises econometric method of regression analysis which varies in its specification and estimation. The basic approach is to estimate a double-log-linear regression model relating employment and output (GDP) as follows:

$$\ln L_t \beta_0 + \beta_1 \ln Y_t + u_t \quad 1$$

Where L and Y are employment and output respectively, u_t represents the white noise stochastic error term and \ln stands for the natural logarithm of the relevant variable. Here, the regression coefficient β_1 serves as the employment elasticity. Estimating equation 1 as it is, may produce spurious result because of problem of serial correlation in the residual. For the purpose of this study we adopt a modified version of Equation 1 with a lag of the dependent variable introduced to correct for any serial correlation in the residual as follows:

$$\ln L_t \alpha_0 + \alpha_1 \ln Y_t + \alpha_2 \ln L_{t-1} + u_t \quad 2$$

We further modify Equation 2 to cater for sectoral analysis where lower case is used to represent the sector labour and output thus:

$$\ln l_t \alpha_0 + \alpha_1 \ln y_t + \alpha_2 \ln l_{t-1} + u_i \quad 3$$

If $\alpha_1 = 1$ (i.e. an elasticity of 1), this mean that every 1- percent point of output growth is accompanied by a 1-percentage point increase in employment.

Notwithstanding its usefulness, the elasticity measure has been criticised on a number of grounds. First, it does not state the actual extent of job creation (Ajakaiye, et al. 2016). Second, it does not say anything about overall changes in the *quality* of jobs or growth in the number of “decent” jobs (Kapsos, 2015). Lastly, as noted by Kapsos (2015), high elasticity, which may imply employment intensity, may not translate into other favourable outcomes like poverty alleviation. It is therefore important to consider the productivity side as well as other key indicators such as inequality and wage rate of the economy.

To address the quantification of productivity and the growth benefits of structural transformation, authors have generally used productivity growth decomposition techniques. Two broad approaches are very popular.

The first approach is based on the Gutierrez et al., (2007) and World Bank (2010) Job Generation and Growth (JOGG) stepwise decomposition using the Shapley decomposition method (see Ajakaiye et al., 2016). The World Bank’s (2010, p. 5) technique is a simple additive methods that links changes in a particular component to changes in total GDP per capita, taking account of the relative size of the sectors or components and the magnitude of the change. The World Bank (2010) performed the decomposition in a stepwise manner using the Shapley technique. In the first step, growth in GDP per capita, proxied by value added per capita is decomposed into employment rate changes, changes in output per worker and demographic changes. At the second stage, changes in employment is further decomposed into changes in employment by sectors. At the third stage, changes in output per worker is decomposed into changes linked to variations in output per worker within sectors and changes linked to sectoral reallocation of workers between sectors. The fourth stage goes further to understand the role played by each sector in the aggregate effect of employment reallocation across sectors whereas the fifth stage looks at the role of capital and TFP(total factor productivity) as sources of changes in output per worker at the aggregate level. The sixth stage then puts all the elements together to evaluate how each factor influenced total per capita growth (World Bank, 2010, p. 5).

The second approach is the canonical decomposition methods used by McMillan and Rodrik (2011); de Vries et al.(2013; 2015) and McMillan et al.(2017) which is a one-step decomposition technique. However, both decomposition approaches are growth accounting methods and their estimates are not in any way interpreted as causal inference.

The canonical decomposition analytical framework has been the dominant approach used by researchers to measure the contribution to growth from the movement of workers across sectors within an economy and across countries (McMillan & Rodrik, 2011; Rodrik, 2013; Timmer et al., 2013). Aggregate productivity is decomposed into within and between effects. The *within effect* measures productivity growth within sectors and *between effect* measures the productivity growth of moving labour across different sectors. As noted by de Vries, Timmer, and de Vries (2013, p.15-16), the canonical decomposition can be performed in different ways depending on the choice of the base and end year periods used for the weighting and this has implications for the measurement as well as interpretation of structural change.

One approach followed by McMillan and Rodrik (2011) and McMillan, et al., (2017) is to use the base period employment shares and final productivity levels. This gives the following decomposition of aggregate productivity:

$$\Delta P = \sum_i (P_i^T - P_i^0) S_i^0 + \sum_i (S_i^T - S_i^0) P_i^T$$

where S_i is the share of sector i in overall employment, P_i is the labour productivity of sector i , and the superscript 0 and T denote initial and final period. The first term on the right hand side (RHS) of Equation 4 is the “*within-effect*” also known as “*intra-effect*” and second term on the RHS is known as “*reallocation-effect*” or “*structural-change effect*” or “*shift-effect*”. The within-effect is positive when weighted change in labour productivity levels in sectors is positive and the reallocation term is positive when labour move from low to high productive sectors. However, one weakness of using base period employment levels is that the relative contribution of within-effect productivity growth will be higher compared to the contribution from reallocation effect.

De Vries et al. (2013, p. 16) suggest another variant of the Equation 4 that uses opposite weights. That is, using final period employment shares and base period productivity levels as follows:

$$\Delta P = \sum_i (P_i^T - P_i^0) S_i^T + \sum_i (S_i^T - S_i^0) P_i^0 \quad 5$$

Again, the decomposition of Equation 5 will give higher contribution to the reallocation effect relative to within effect. De Vries, et all. (2013,p.16) suggested the use of period average of employment and productivity thus:

$$\Delta P = \sum_i (P_i^T - P_i^0) \bar{S}_i + \sum_i (S_i^T - S_i^0) \bar{P}_i \quad 6$$

where \bar{S}_i is the average share of sector i in overall employment, and \bar{P}_i the average labour productivity level in sector i . This decomposition approach produces values that falls in-between Equation 4 and 5. de Vries et al. (2013, p. 16) noted that the reallocation term presented in Equations 4 to 6 is only a static measure of the reallocation effect because it depends on the difference in productivity levels across sectors and not growth rates.

A third variant of the decomposition introduces a third term as follows:

$$\Delta P = \sum_i (P_i^T - P_i^0) S_i^0 + \sum_i (S_i^T - S_i^0) P_i^0 + \sum_i (P_i^T - P_i^0) * (S_i^T - S_i^0) \quad 7$$

The first term on the RHS of Equation 7 is the *within effect*, the second term is the *static reallocation effect* also known as the *between static effect* which measures whether workers move to sector with above-average productivity levels. The third term is a *cross or interaction term* also known as the *dynamic reallocation effect* and it represents the joint effect of changes in employment shares and sectoral productivity levels. Hence, reallocation term in Equation 4 is divided into – *static reallocation effect* capturing whether labour has moved to sectors with above average productivity and *dynamic reallocation* which captures if productivity growth is higher in sector that expand in terms of employment shares (de Vries et al., 2013, p. 16)

Consistent with McMillan and Rodrik (2011), McMillan et al. (2017) used Equation 4 for their decomposition and based on the results, the authors classified each country into the quadrants in Figure 2. We will follow the same approach in this study to facilitate comparison of our results.

ii. Empirical Review and Stylized facts

There has been a surge in research on structural transformation in Africa. Economist and researchers are interested to finding out why Africa's growth is not leading to a reduction in poverty and income inequality (see for instance, Bah, 2011; Collier & Dercon, 2014; de Vries, Timmer, & de Vries, 2014; McMillan & Headley, 2014; McMillan, Rodrik, & Verduzco-Gallo, 2014; Mensah et al., 2016; Rodrik, 2016). The availability of sectoral data especially through the Groningen University Growth and Development Center –Africa 10 sector Database has further stimulated research interest on this subject. From a review of the empirical evidence on structural transformation around the world, the following stylised facts emerge.

In Africa, overall the patterns and trends of structural change are so heterogeneous that it is difficult to talk of structural change from a single continent wide perspective (Diao & McMillan, 2014; Enache, Ghani, & O'Connell, 2016; UN-HABITAT, 2016). However, most African countries do not appear to follow the experience of East Asia. There is also strong evident that in many African countries the movement of labour is largely from low productivity agriculture with high employability to high productivity modern services sectors with low persons employed without passing through the industrial or manufacturing stage. Furthermore, there is evidence of labour moving from high to low productivity formal and informal retail services sectors (de Vries et al. 2015; Diano, Harttgen, & McMillan, 2017; Enache, Ghani, & O'Connell, 2016). This has serious implications for social transformation as the services sector has high productivity but its labour absorption capacity is low compared to the manufacturing. This is one of the main cause of Africa's rising poverty and income inequality in the midst of rising growth.

The manufacturing sector in Africa expanded strongly during the early post-colonial period from 1960 to 1975. The relative share of employment in the manufacturing sector increased from 4.7% in the 1960s to 7.8% in the 1975s. The value added by the manufacturing sector also increased during the same period from 9.2% to 14.7%. This pattern of development mirrors Lewis (1954) dual economy model where workers move from the subsistence agriculture and are absorbed by the modern manufacturing and service sectors (de Vries et al., 2015, p. 677). The strong growth of the manufacturing sector from 1960 to 1975 was probably the result of the import-substitution industrialisation strategy of the immediate post independent governments in Africa. However, employment in the manufacturing declined when the policy was abolished and the sector was exposed to global competition in the 1980s and 1990s as many of the countries adopted structural adjustment programmes (Üllenberg, Minah, Rauch, Richter, & Beckmann, 2017)

A number of studies focusing on Zambia have emerged. Overall, structural transformation has been slow over time and had very little effect on social transformation (Wobst & Thurlow, 2005 and Mulungu & Ng'ombe, 2017). The lack of effect on social transformation especially in the 1980s was because of urban-bias in public investment spending that benefited urban households with little spillovers into the rural area. However, in the 1990s, rural poverty fell because of the collapse of the urban economy driven by the privatisation of states owned enterprises and trade liberalisation that resulted in massive job losses. The number of small scale farmer increased and rural poverty decline further as retrenched urban households migrate to the rural areas with income from formal employment and invested in rural agriculture.

Stagnation in agriculture and manufacturing as well as the capital intensive nature of the mining sector has resulted in majority of the jobs being created in trade and informal sectors where wages are low and insecure. Some reasons for the poor performance of the agricultural sector ranges from reliance on rainfall rather than irrigation for farming, structural reforms in the 1990s, high prevalence of HIV/AIDS and limited investments in research and extension services. Furthermore, growth driven by non-agricultural sector such as the mining and industrial sector is less effective in reducing poverty because of weak linkages to the rest of the economy especially the rural area relative to agricultural-led growth with stronger linkages (Diao, Hazell, & Thurlow, 2010; Diao, Mcmillan, & Wangwe, 2018; Badiane, Ulimwengu, & Badibanga, 2012; Resnick & Thurlow, 2014). The informal nonfarm trade sector became the main employer and the few new jobs created by high-valued services sectors - construction and services sectors benefited mostly middle class households with high skills in the urban areas. This is why the growth experience of Zambia is not inclusive and this is not a peculiar problem to Zambia, rather it is a reflection of the untransformed and undiversified nature of Africa economies (Chitonge, 2015).

Labours seems to have moved from high productivity to low productivity sector in urban retail and informal trading. This is indicative of negative structural change and the situation was aggravated by falling productivity in agricultural and industrial sectors in 1991-2010 and was partly offset by rising productivity in the service sectors in the same period (Resnick & Thurlow, 2014). However, the emerging evidence suggest signs of structural change over the past one and half decades but these structural changes are not making meaningfully contribution to social transformation of the economy. This is reflected in the low representation of the poor in high productivity and growth sectors of the economy and low productivity of agriculture and service sectors (informal retail trade) where most the poor work (Chitonge, 2015). Chitonge (2016) concluded that the major challenge facing the Zambian economy is thus to increase productivity in the agricultural sector as the bedrock for structural transformation. A challenge the post-colonial government is cognisant of but is failing in their strategy to realise their objective.

C. Method

i. *The Data*

The empirical analysis that follows relies on two main sources of data. The Africa 10 Sector Database from the Groningen University Growth and Development Center was the main source of data for the study. This data covers largely from 1960 to 2011. The Zambia National account data was used to complement the African 10 Sector Database. To ensure consistency of the sectors, some of the sub-sectors of the National Account data were summed to have the same 10 sectors as the African 10 Sector Database. Also, the real value added of the National Accounts was rebased to 2005 to be consistent with the African 10 Sector Database. Lastly, demographic and rural-urban population data for Zambia are sourced from the World Bank WDI (2017).

ii. *Data analysis methods*

Three methodological approaches were adopted for the empirical analysis. First, we computed the share of each sector value-added in total, the growth of each sector's value-added, the share of persons engaged (employed) of each sector in total employment. In addition, we computed the labour productivity and relative labour productivity of each sector as discussed earlier. Second, to quantify productivity growth and the growth benefits of structural transformation we follow McMillan and Rodrik (2011) and McMillan et al. (2017) to decompose productivity growth into *within-effect* and *structural-change effect* using Equation 4. The decomposition was carried out for the 1990-1999; 2000-2010 and 2000-2016. Lastly, we adopted econometric methods of regression analysis following Ajakaiye, et al. (2016) and Kapsos, (2015) to estimate aggregate and sector-specific employment elasticities for Zambia using equations 2 and 3 described above. This helps to track the potential of each sector to generate employment. The analysis uses annual data from 1970 to 2016. The employment elasticities were estimated for the entire period and then two sub-periods- 1970-1999 and 2000-2016 to compare the periods before and after 2000.

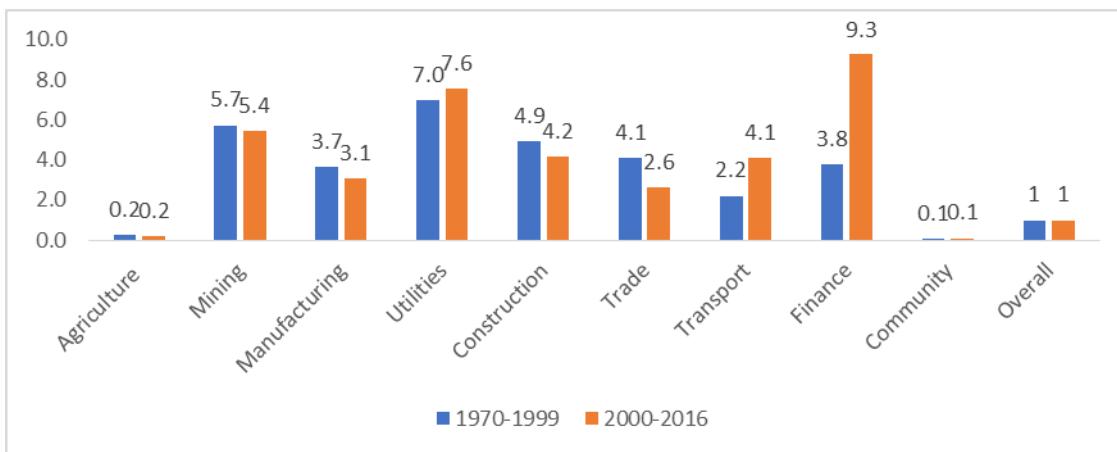
D. Empirical evidence

ii. Structural Transformation trends and pattern in Zambia

We triangulate the results of the different methods to arrive at the key conclusions. First, in line with McMillan et al. (2017) we classify Zambia in term of the typology of productivity growth. Next we used the four indicators of structural transformation as suggested by Timmer et al., (2012) to further explore the nature of structural transformation in the country. According to Timmer et al., (2012) when stuctural transformation occurs, the following situations should prevail. One, there should be a declining share of agriculture in gross domestic product (GDP) and employment. Two, there should be a rise in the modern industrial and service economy. Three, rapid urbanization as people migrate from rural to urban areas and finally, there should be a demographic transition from high to low birth and death rates (Timmer et al., 2012).

We begin the analysis with the results of the share of persons engaged and value added as well as the relative labour productivity of each sectors. The results are presented in Table 7 and Figures 3 to 7. As Figures 3 shows the relative productivity in the agricultural and the community services are the lowest in the economy. While agricultural sector is 5 times less productive than the overall economy, the community services is 10 times less productive. None of these two sectors has shown any sign of improvement over the two periods of the analysis - 1970-1999 and 2000-2016. The most productive sector is the finance sector, which has experience a tremendous improvement in relative productivity between the two periods.

Figure 3: Relative Productivity of Sectors in Zambia: 1970-2016

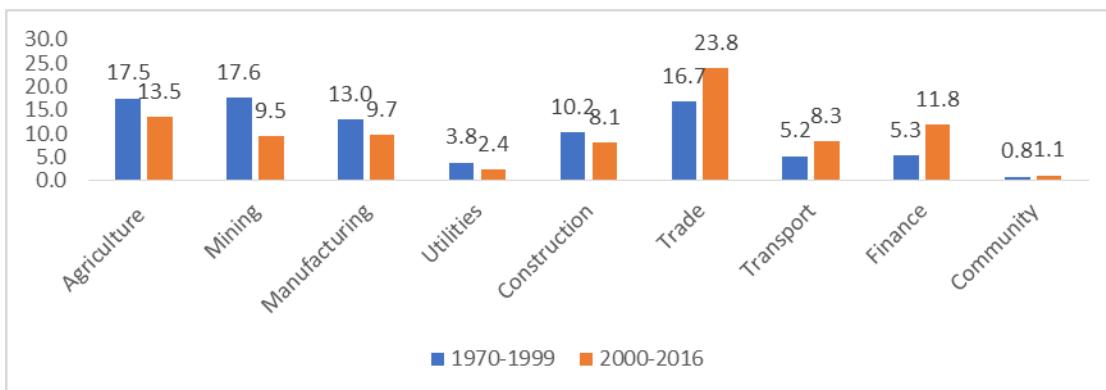


Source: Authors' own calculation using GDDC Africa Sector Database and Zambia National Account data

The share of value added and persons engaged in the primary sector comprising of agriculture and mining has decreased (Figures 4 and 7). Despite the decrease in the share of persons engaged in the agricultural sector, the sector still remains the major employer of labour in the country, employing some 70% and 65.5% in the 1970-1999 and 2000-2016 periods respectively. Ironically, the manufacturing sector besides employing very small proportions of labour, has seen a decline in the share of persons engaged between the two periods. Similarly the share of value added from the manufacturing sector has declined. The main sectors that have witnessed an increase in the share of value added are trade, finance and transport. However, the three sectors with the exception of the trade sector employ very few people.

Thus, on the first principle of Timmer et al., (2012), there is some evidence of structural transformation in Zambia. However, the second principle seems not to hold in its entirety. While some services sectors have grown in terms of both employment and value added, the industrial sector and some of the services sectors have instead experienced a decline.

Figure 4: Share of Value Added in Zambia: 1970-2016 (% of Total)



Source: Authors' own calculation using GDDC Africa Sector Database and Zambia National Account data

Figure 5: Growth of Value Added in Zambia: 1970-2016 (%)

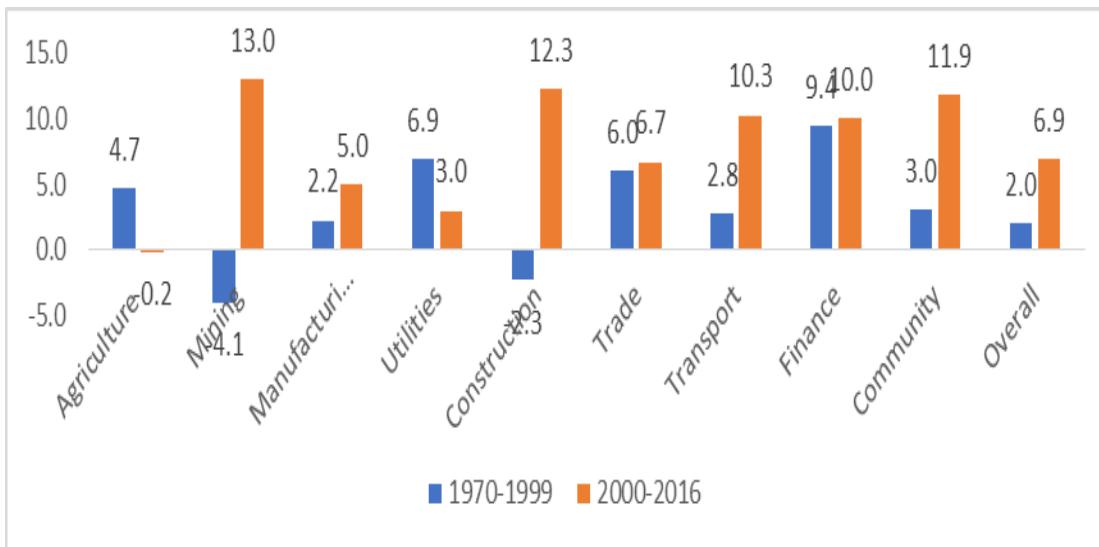
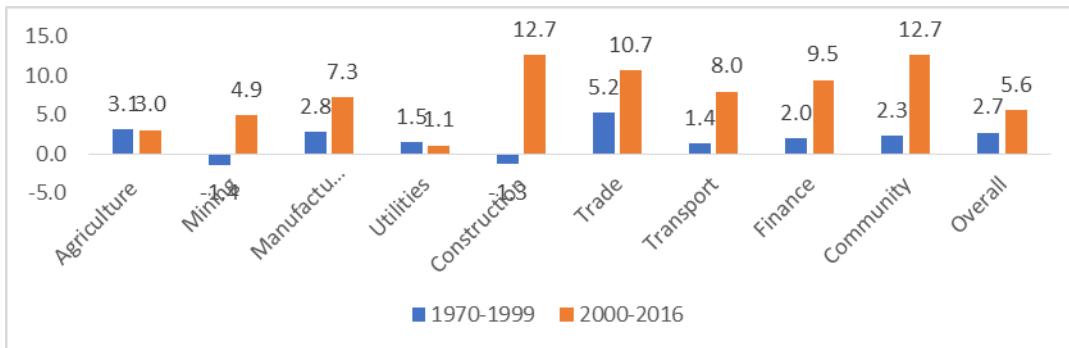
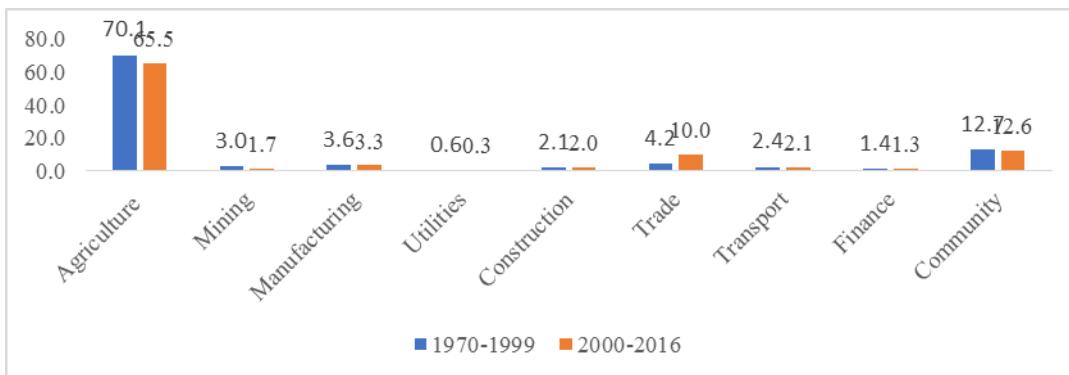


Figure 6: Percent Growth of Persons Engaged in Zambia: 1970-2016



Source: Authors' own calculation using GDDC Africa Sector Database and Zambia National Account data

Figure 7: Share of Persons Engaged in Zambia: 1970-2016

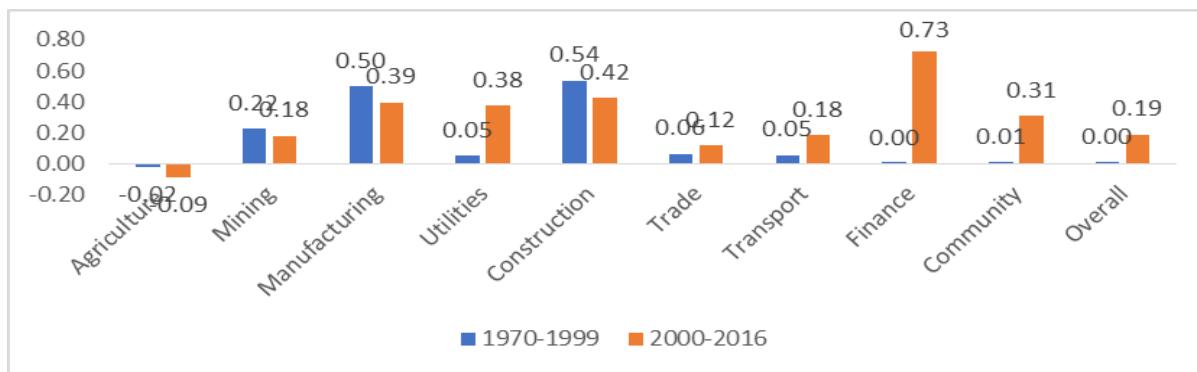


Source: Authors' own calculation using GDDC Africa Sector Database and Zambia National Account data

Employment elasticities

Table 8 and Figure 8 presents the results of employment elasticity based on Equation 2 for the whole economy and Equation 3 for the economic sectors. The table also juxtaposed the simple averages of relative productivity, growth in value added and persons engaged and share of value added and persons engaged. An examination of the results reveals some striking patterns. Overall, the results show a clear picture of why growth in Zambia since 2000 has not been inclusive. In the first period – 1970-1999, four out of nine sectors had significant elasticities- namely: Agriculture, mining, manufacturing and construction while the rest of the sectors including the overall economy have low and insignificant elasticities. Though agricultural sector had a significant elasticity, it was negative suggesting that growth in the sector is accompanied by a decrease in employment. This is consistent in the rest of the periods, albeit with insignificant elasticities. This is not surprising if growth in value added in the agricultural sector results from increased mechanisation which will necessarily lead to a drop in number of people employed.

Figure 8: Employment Elasticities by Sector in Zambia: 1970-2016



Source: Authors' own calculation using GDDC Africa Sector Database and Zambia National Account data

Table 8: Employment Elasticities, Relative labour productivity, Value-added and persons engaged growth rates by economic sectors in Zambia- 1970-2016

	Agriculture	Mining	Manufacturing	Utilities	Construction	Trade	Transport	Finance	Community	Overall	
1970-1999	Elasticity	-0.02	0.22	0.50	0.05	0.54	0.06	0.05	0.00	0.01	0.00
	P-value	0.00	0.00	0.00	0.22	0.00	0.32	0.24	0.93	0.96	0.94
	Relative Productivity	0.2	5.7	3.7	7.0	4.9	4.1	2.2	3.8	0.1	1.0
	Growth Rate %:										
	Persons Engaged	3.1	-1.4	2.8	1.5	-1.3	5.2	1.4	2.0	2.3	2.7
	Real Value Added	4.7	-4.1	2.2	6.9	-2.3	6.0	2.8	9.4	3.0	2.0
	Share of Total %:										
	Persons Engaged	70.1	3.0	3.6	0.6	2.1	4.2	2.4	1.4	12.7	100
	Real Value Added	17.5	17.6	13.0	3.8	10.2	16.7	5.2	5.3	0.8	100
2000-2016	Elasticity	-0.1	0.2	0.4	0.4	0.4	0.1	0.2	0.7	0.3	0.2
	P-value	0.41	0.19	0.19	0.42	0.02	0.72	0.08	0.00	0.01	0.05
	Relative Productivity	0.2	5.4	3.1	7.6	4.2	2.6	4.1	9.3	0.1	1.0
	Growth Rate %:										
	Persons Engaged	3.0	4.9	7.3	1.1	12.7	10.7	8.0	9.5	12.7	5.6
	Real Value Added	-0.2	13.0	5.0	3.0	12.3	6.7	10.3	10.0	11.9	6.9
	Share of Total %:										
	Persons Engaged	65.5	1.7	3.3	0.3	2.0	10.0	2.1	1.3	12.6	100
	Real Value Added	13.5	9.5	9.7	2.4	8.1	23.8	8.3	11.8	1.1	100
1970-2016	Elasticity	0.0	0.2	0.3	0.0	0.4	0.0	0.1	0.0	0.1	0.1
	P-value	0.02	0.00	0.00	0.45	0.00	0.45	0.01	0.06	0.00	0.00
	Relative Productivity	0.2	5.6	3.5	7.2	4.6	3.5	2.9	5.7	0.1	1.0
	Growth Rate %:										
	Persons Engaged	3.1	0.9	4.4	1.3	3.8	7.2	3.8	4.7	6.1	3.8
	Real Value Added	2.9	2.1	3.2	5.5	3.0	6.3	5.5	9.6	6.2	3.8
	Share of Total %:										
	Persons Engaged	68.4	2.5	3.5	0.5	2.1	6.3	2.3	1.4	12.7	100
	Real Value Added	16.0	14.6	11.8	3.3	9.4	19.3	6.3	7.6	0.9	100

Source: Authors' own calculation using GDDC Africa Sector Database and Zambia National Account

There was a striking shift in the sectors that recorded high and significant elasticities for the 2000-2016 period. This is evidence of some structural transformation. This time, only three out of the nine sectors had significant elasticities- construction, finance and community services. Thus, for most of the sectors growth was jobless. Of the three, the finance sector recorded the highest elasticity of 0.7%, that is, a 1% increase in the value-added of the sector is associated with 0.7% increase in employment. This is quite high by

international standard. The next sector with high elasticity is construction with elasticity of 0.5% followed by community services with elasticity of 0.3%. The community sector though has high and significant positive elasticity is the least productive sector of the economy with its productivity 10 times lower than the aggregate economy and two times lower than the agricultural sector, the second lowest productive sector, and about 100 times less productive than the finance sector during the 2000-2016 period.

It is noteworthy that the finance sector with the highest elasticity is also the most productive sector during 2000-2016 period. The finance sector with an average growth rate of 9.5% and 10% for persons engaged and value-added respectively for the 2000-2016 period (compared to an average growth of 1.3% and 5.2% respectively in the 1970-1999 period) shows a promising prospect in contributing to employment generation and economic growth (Figures 5 and 6). However, when these results are juxtaposed with information on its share of employment and value-added of just 1.4 % and 11.8% (2000-2016 average) of total employment and output respectively it tells a different story (Figures 4 and 7). The finance sector attracts the highly educated and skilled workforce and reward them with high income with the consequent that it widens the income gaps in the country. As similar picture can be painted with the construction sector. Thus, the rapid growth in both sectors- finance and constructions, has been a major contributor to the widening of income gap in the country.

Productivity decomposition results

The results of the productivity decomposition for Zambia along with the other countries are reported in Table 7. The analysis was done for three periods- 1990-1999, 2000-2010 and 2000-2016 to track the pattern of productivity growth over time. Evidently, Zambia is experiencing high productivity growth driven increasingly and mainly by structural transformation. During the decade of the 1990s, total productivity growth was driven positively by within-sector productivity, while structural transformation had a negative effect on growth. But, by the 2000-2010 period productivity growth was driven positively by both forces-within-sector and structural change effects, with the latter having a stronger influence. When the period of analysis was increased to 2016, structural change become the main driver, while the within-sector becomes a drag on total productivity growth.

Table 7: Decomposition of Productivity Growth in Zambia

	Within	Structural	Total growth	Decision
1990-1999	1,04	-0,40	0,64	
2000-2010	1,75	2,15	3,91	Significant improvement in productivity growth during 2000-2010 driven by both.
2000-2016	-0,44	3,10	2,66	

Source: Authors' own calculation using GDDC Africa Sector Database and Zambia National Account data

When juxtaposed with the results of employment elasticities and the share of persons engaged and value added, it is evident that Zambia is currently in quadrant (2) of McMillan et al.'s (2017) unified framework. The productivity growth is episodic, driving by rapid structural transformation accompanied by weak economic fundamentals, which tend to slow down the within-sector productivity.

A further probe into the sectoral drivers of within-sector productivity and structural change effect provides useful insight. The results of the sectoral drivers of contributions to total productivity growth are presented in Table 9. As the results show, during 2000-2016 when structural transformation contributed the most to total productivity growth, the main positive drivers of structural change were trade, finance and

construction sectors. Though manufacturing contributed positively to structural transformation, but its contribution was very low. On the other hand, the contribution of structural transformation was hindered by agricultural, utilities and mining sectors in that order of magnitude.

Regarding the drivers of within-sector's contribution to total productivity growth, the main positive contributors was mining sector. This is not surprising since reforms within the sector in the recent years has led to increased investment in modern technology in the copper mining (Chirwa & Odhiambo, 2016). Other sectors that have some positive, albeit weak effect on the within sector contribution are utilities and finance. In contrast, within-sector productivity effect was hindered by agricultural, trade and manufacturing sectors in that order of magnitude.

Overall, three key observations can be made. First, and interestingly, the trade sector, which contributed most to structural transformation's positive effect throughout the period since 1990, also was a negative driver of within-sector effect for the entire period. What this shows is that, while the trade sector is able to absorb some of the excess labour shed from the other sectors, thus contributing positively to structural transformation, but the weakening productivity of the sector represents underlying weaknesses within the sector. Second, agricultural sector has proved to a double whammy- it contributes negatively to both within-sector and structural transformation effect. This evidently reflects weaknesses within the sector, which urgently calls for attention. Third, the community services sector, which absorb most of the excess labour shed from other sectors, has very little effect on both the within-sector and structural transformation contributions. This is not surprising given that the sector is the least productive sector in the economy. Hence, it is no good news that the much of the labour is absorbed by the community services sector. It causes both increases in income inequality and slows down economic growth. Hence, efforts need to be made to direct labour from the community services to other more productive sectors.

Table 9: Main Sectoral Drivers of Contributions to Productivity Growth in Zambia

	Agriculture	Mining	Manuf	Utilities	Construction	Trade	Transport	Finance	Community	Sum GDP	Summary
Drivers of Within Effect											
1990-1999	0.60	-0.24	0.22	0.03	-0.06	-0.45	0.13	0.82	-0.01	1.04	Fin, Agric, Min, Trade
2000-2010	-0.72	0.52	0.05	0.09	0.41	-0.18	1.09	0.29	0.20	1.75	Min, Const, Trans Agric, Trade
2000-2016	-0.82	0.84	-0.25	0.20	0.09	-0.80	0.16	0.11	0.04	-0.44	Min, util Agric, Manuf, Trade
Drivers of Structural Transformation											
1990-1999	-0.08	-0.46	-0.42	-0.03	-0.07	1.12	-0.08	-0.41	0.02	-0.40	Trade,
2000-2010	0.01	0.83	0.21	-0.12	0.09	1.13	0.06	0.07	-0.13	2.15	Trade, Min, Manuf Commu, Utilities
2000-2016	-0.40	-0.24	0.19	-0.34	0.50	1.44	0.12	0.53	0.09	3.10	Trade, Fin, Constr Agric, Util, Min.

Source: Authors' own calculation using GDDC Africa Sector Database and Zambia National Account

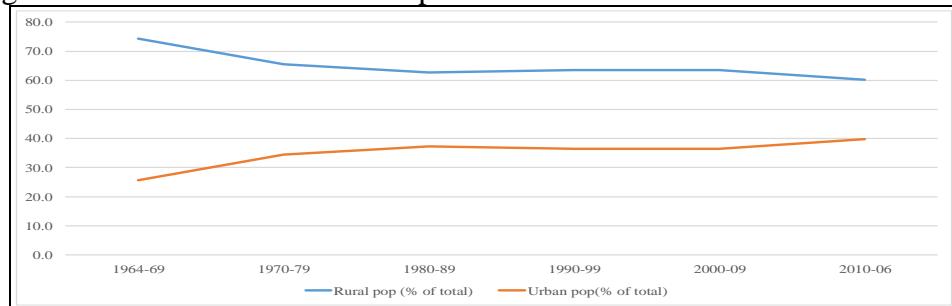
Urbanization and demographic transition

Next, we consider the relevance of the third and fourth principles proposed by Timmer et al.,(202) on structural transformation to Zambia. The third principle holds that there should be rapid urbanization as people migrate from rural to urban areas when structural transformation occurs. While the last principle suggest that there should be a demographic transition from high to low birth and death rates (Timmer et al., 2012). To explore these two principles in the context of Zambia, we use data on rural-urban population growth rate and the share as well as birth and death rate from the World Bank WDI (2017).

On the third principle, the evidence further confirms that structural transformation is occurring in Zambia since the decade of the 2000. After a continuous decline in the growth rate of the urban population from the time of independence, the urban population assumed a positive growth trajectory since 2000 (Figure 9 and 10). While both rural and urban population are growing, the rate of growth of the urban population is

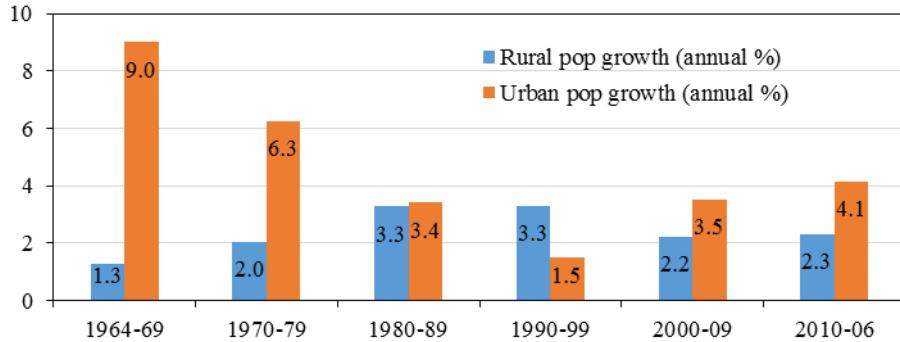
faster than that of the rural population. During 2000-2009 period, the urban population grew at 3.5% compared to rural population growth rate of 2.2% for the same period. In the 2010-2016 period the urban population further accelerated at the rate of 4.1% on the average while the rural population grew at just 2.3%. Hence, in no distance future the urban population will catch up with the rural population.

Figure 9: Share of Rural-Urban Population: 1964-2016



Source: Source: Plotted by author based on data from World Bank WDI 2017.

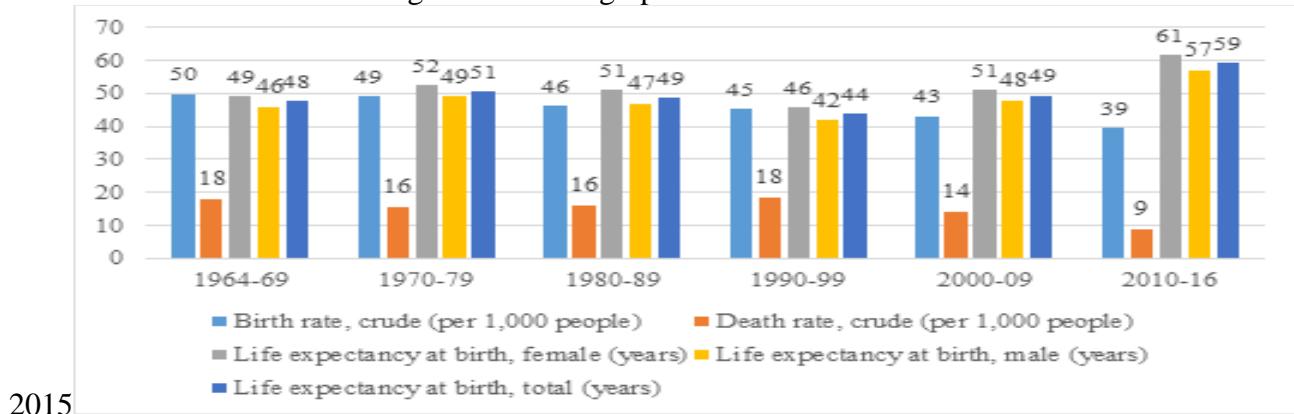
Figure 10: Rural-Urban Population Growth: 1964-2016



Source: Source: Plotted by author based on data from World Bank WDI 2017.

Demographic transition has started to manifest, although at a very slow pace due to HIV/AIDS pandemic which has badly affected the country. As shown in Figure 11, crude death rate has started to decline since 2000-2009 period, drop from 14 death per 1000 people to 9 in 2010-2016. Life expectancy at birth is also rising moderately. Overall, the full dividend of demographic transition will take some time for it to be fully realised.

Figure 11: Demographic Transition: 1964-



Source: Plotted by author based on data from World Bank WDI 2017.

E. Summary of findings and policy recommendations

The study investigates the nature and pattern of structural transformation in Zambia over the period 1970 to 2016. Following McMillan and Rodrik (2011) and McMillan, et al., (2017) we use the canonical decomposition technique to decompose productivity growth into within-effect and structural-change effect to determine the pattern and nature of structural transformation and its role in the productivity growth. In addition, using econometric regression technique, the paper estimated employment elasticities of growth for Zambia to establish the employment intensity of each sector. The study compares the outcomes for the period before and after the year 2000. Then using the McMillan et al. (2017) proposed unified framework we classify Zambia in term of the typology of productivity growth and, finally we used the four principles of structural transformation as suggested by Timmer et al., (2012) to further explore the nature of structural transformation in the country. The study employs the Africa Sector Database compiled by the Groningen University Growth and Development Center and Zambia National account data.

The key findings of the study can be summed up as follows:

- a. The unprecedented economic growth experienced in Zambia since 2000 has not been inclusive. Income inequality has increased and remained stubbornly very high.
- b. There is a clear evidence of structural transformation taking place in the country since 2000, which has manifested in a number of ways. First, the role of the primary sector has declined in terms of both the share of value added and employment. The services sector has assumed a growing importance. But the industrial sector has declined in importance.
- c. The nature of structural transformation has been a major cause of the growing income inequality. The major sectors that have absorb the excess labour shed from the primary and other sectors were either sectors with the least relative productivity and high labour absorptive capacity as in the case of the *community, social and personal services* which is basically the informal services sector or sectors with very high relative productivity but with very low labour absorptive capacity such as the finance and construction sectors. The productivity in the informal services (*community, social and personal services*) is more than 10 times lower than the whole economy and about 100 time less than the finance sector. Meanwhile it absorb some 12.7 of total persons engaged and just 1.1% of share of value added compared to the finance sector with 1.3% share of persons engaged and 10.2% share of value added.

- d. Structural transformation has increasingly and positively driven total productivity growth while the role of within-sector productivity has become a hindrance to total productivity growth. This suggests that economic fundamentals in the country are becoming weaker.
- e. The main sectors contributing to the positive effects of structural transformation are trade (trade, restaurants and hotels), finance (finance, insurance, real estate and business services), and construction in that order of magnitude.
- f. Agriculture has been a double whammy- contributing negatively to structural transformation effect and within-sector productivity. Hence, agricultural sector has contributed negatively to total productivity growth during the 2000-2016 period.
- g. Only two sectors-finance and construction- experienced significant relative productivity improvement on average between 1970-1999 and 2000-2016 periods. The rest of the sectors either experience a decline in or constant relative productivity for the same period.
- h. The main sectors with high employment intensity during 2000-2016 period are finance, construction, and community while other sectors had jobless growth.

What are the main implications of the findings of this study?

- i. Total economic growth is being impeded because of the nature of structural transformation which has witnessed labour being directed from more productive to the least productive sectors of the economy, especially the informal services sector. Greater economic growth would be unleashed if this trend can be reversed by redirecting labour from the least productive sectors to the more productive sectors
- j. Income inequality is being promoted because of weak economic fundamentals which has led to very few productive sectors while the majority experience low and declining productivity.

What economic policies and strategies could help to unleash inclusive growth in Zambia? Here are a few suggestions:

- k. **There is an urgent need to invest in economic fundamentals.** The first in this sphere is **human capital development**. Human capital development plays an important role in determining both within-sector and across sector productivity growth (McMillan, *et al.* 2017). In the case of Zambia this would entail an overhaul of the educational system, which would infuse intensive technical skill-based education complemented with practical, innovative entrepreneurship training in the educational systems at all levels. Such training would give the youth and graduates the foundation they need to become entrepreneurs and to improve the skills and employability of labour. The government need to consult with industrial experts in the private sector to get inputs in designing and upgrading educational curricula in order to match graduate to the demand and needs of the industries.
- l. The second element of economic fundamentals relates to market failures that often lead to inefficient equilibrium outcomes (McMillan, *et al.* 2017). Market failures often manifest in the form of credit rationing due to information asymmetry in the credit market. Market failure problems are far from easy to solve and are very pervasive in Zambia and in developing countries in general. They are at the core of financing problems for businesses, especially smallholder farmers, Agribusinesses, MSMEs, and first generation enterprises that are currently neglected because of risks and transaction costs. Possible solutions would include:
 - i. Appropriate incentives for the efficient functioning of private financial institutions and markets. The government can help the private financial system to flourish with innovations and to operate efficiently by creating appropriate market-friendly incentives and environment. At the core of this is to ensure a stable macro economy through appropriately coordinated fiscal, monetary and exchange rate policies.

- ii. In addition to the broad macroeconomic policies, governments need to create market-friendly institutions that guarantee property rights, encourage ease of doing business, and reduce information and transaction costs. Such basic market-friendly institutions will include credit reference bureaus that are linked to an efficient national identification system. This would help to reduce the information asymmetry problems inherent in credit markets and as such reduce the resultant credit rationing⁴ phenomenon prevalent in African countries. Further, the establishment of well-resourced and empowered commercial courts would help to improve the debilitating problems of weak legal systems and contract enforcement that hinder access to credit in formal financial institutions.
 - iii. There is need to invest massively in both social and economic infrastructures such as transportation systems (roads, railway lines, and airports), electricity generation and distribution, education and training institutions, hospitals and so on. Adequate investment in economic and social infrastructure would create a conducive environment for businesses to thrive and reduce cost of doing business in all sectors, thus enhancing their productivity.
 - iv. Land administration and titles. The successful development of manufacturing, agro-processing industries and the extension of the scale of farming will depend on how easy potential entrepreneurs gain titles to land for industrial and agricultural purposes. Thus, to facilitate the process of *agricultural-led* pro-poor structural transformation, the government has to simplify the 1995 Land Act and establish clear procedures of how local usufruct land rights holders can negotiate titles either as individuals or collectively.
- m. Whilst efforts to create the right environment for the private financial markets to thrive will help, there is still an abundant scope for the government to directly intervene given the existing state of underdevelopment and financing gap.
- i. First, interventions that encourage private financial institutions to provide financial services to underserved sectors by reducing and sharing risks and transaction costs due to market imperfections. One example of such interventions is credit guarantee schemes that target specific sectors such as Agribusinesses, smallholder farmers, MSMEs and the like. Guarantee schemes are usually employed where the targeted borrowers lack the standard collateral required by the lending institutions.
 - ii. Another example of risk and cost reduction and sharing intervention is a public private partnership (PPP) arrangement. Like guarantee schemes, PPP arrangements help to harness private sector capital and know-how to leverage the limited state capital in project development and finance. PPP would be a viable option to develop both economic and social infrastructure. Both guarantee schemes and PPP arrangements are common in some African countries, and these should be aggressively promoted and encouraged in Zambia.
 - iii. The government could set up alternative institutions and programmes that supply capital directly to markets, projects, firms and individuals that private financial institutions and markets cannot reach or are unwilling to serve, at least for now. Many African governments have established development banks or finance institutions to play this role. While the records of success of such institutions are limited, nevertheless, they are very relevant and absolutely needed. To ensure success the institutions must be adequately capitalised, have clearly defined goals, mandates, objectives, strategies and targets. They

⁴ See Akerlof (1970) and Stiglitz and Weiss (1981) for a masterful elucidation of this problem.

must have well established governance structure adequately independent and free of political interference.

- n. Given the relevance of the agriculture sector in the economy there is need to pay specific attention to the sector. Agriculture play a critical role as a source of raw material to other sectors, employment, food and foreign exchange earnings for the government. Smallholder farming in Zambia is characterised by mono-cropping – maize production probably because of government subsidy and the focus on maize production for staple food. The government should broaden this focus to other cash crops and encourage commercially oriented production techniques. Smallholder farmers will have to be schooled to cope with soil degradation and adaptation to climatic changes. This is critical for smallholder farmers in the drier Southern regions of the country with below median annual average rainfall and higher variability in the patterns of rain. The productivity of the agricultural sector can further be improved through agro-processing industries that are labour intensive and other value chain production systems particularly in the rural areas. This will help alleviate the urban bias of previous government policies.

In conclusion, it is hoped such interventions would enhance the productivity of each sector and further stimulate the growth benefits of structural transformation. Ultimately, the outcome would be a faster and more sustained economic growth with shared benefits.

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