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Addressing youth unemployment through industries without smokestacks: A Zambia case study

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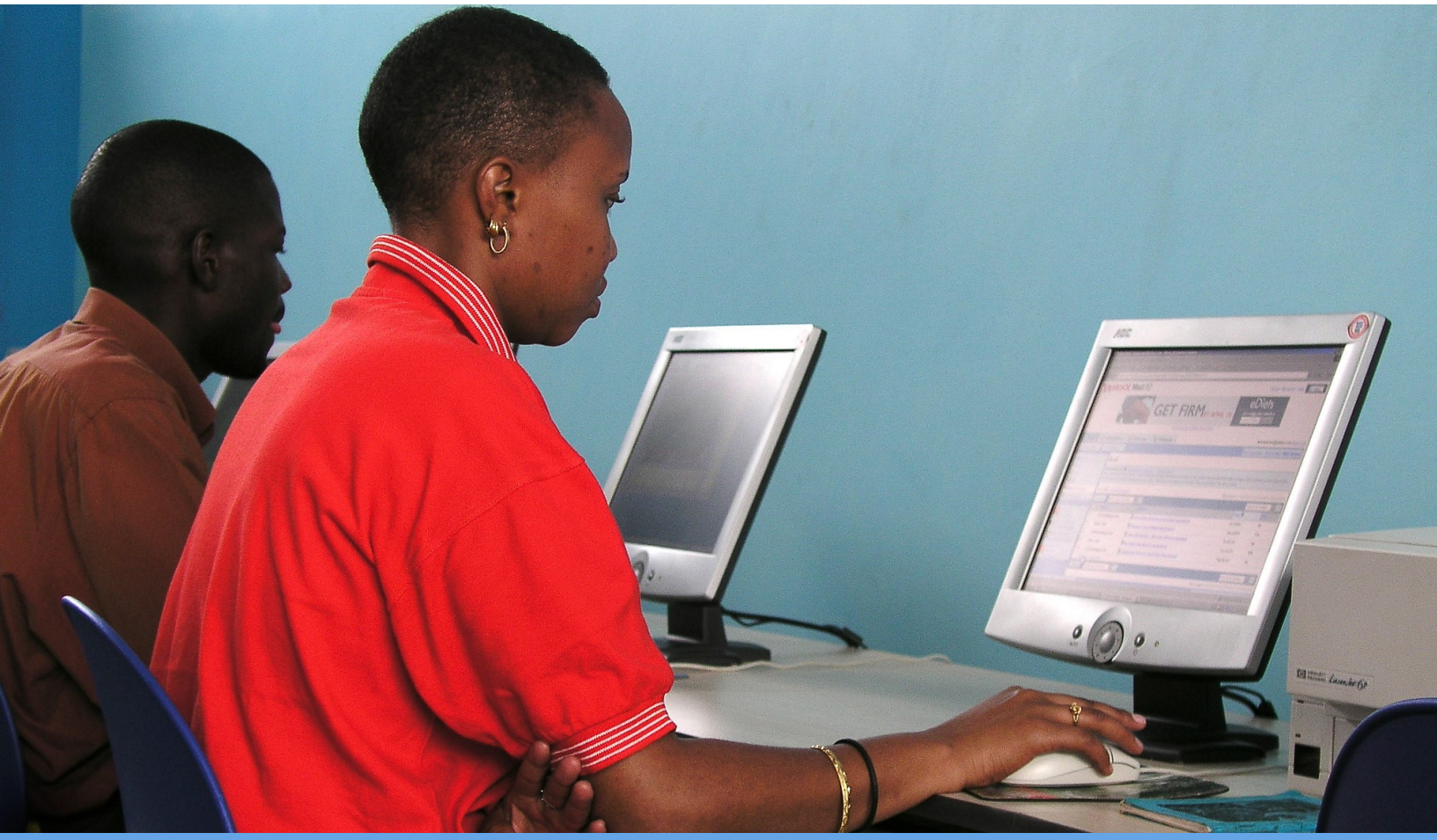

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Abstract

With a cyclical and capital-intensive copper industry, landlocked Zambia faces a number of hurdles to economic diversification and job creation even as the labor force has grown rapidly. The headline story about structural transformation from the past three decades is: (a) a manufacturing sector that has plateaued at below 10 percent in share of GDP and only 4 percent of employment; (b) a service sector that has grown explosively and now accounts for 54 percent of GDP and 24 percent of employment; and (c) an agricultural sector with only 3 percent share of GDP but a substantial 57 percent share of employment. Over 85 percent of the labor force is employed in an expanding but low productivity informal sector, as a result of the stunting of the formal sector, which employs less than 15 percent of labor. Youth unemployment is high and the failure to generate enough high productivity jobs is a major factor in the rising inequality in Zambia.

This case study seeks to identify areas of promise for productive employment growth and policies in Zambia that might enhance their job creation. Between 2005 and 2018, industries such as finance and business, agro-processing, transport, storage, and ICT, and formal wholesale and retail trade (a group designated as industries without smokestacks (IWOSS)) grew employment more rapidly than traditional industries. These are industries that are: (a) tradeable; (b) able to employ moderately skilled workers; (c) achieve higher-than-average productivity; and (d) capable of technological change and benefitting from agglomeration. Employment elasticity of output growth in the IWOSS sector in Zambia is strongly positive and higher than for non-IWOSS. As such, there is potential to expand employment in these industries, with agro-processing, horticulture, floriculture, tourism, and a small but dynamic ICT industry offering scope for growth in productive employment.

The experience of growth in both IWOSS and non-IWOSS industries has been influenced by both economy-wide as well as industry-specific constraints. Macroeconomic conditions have deteriorated and raised the risks and reduced the reward for private firms, limiting their growth. Labor market regulations are increasingly a deterrent to formal sector employment. Skills are also a constraint for the formal sector. Beyond these generally unfavorable conditions for employment growth, there are specific constraints that limit individual sectors and industries. Tourism, horticulture, and floriculture are constrained by the limited air transport links between Zambia and the rest of the world, which raise costs and reduce competitiveness of Zambian exports. The ICT sector faces shortage of critical skills in network management and cyber security. While Zambia ranks relatively highly in the Doing Business rankings, administrative delays and licensing requirements are also seen to be onerous in tourism, agro-processing, and horticulture.

The outlook for productivity-raising employment expansion for a growing youthful workforce is thus challenging. But three areas of reform would help improve the potential for fairly rapid employment growth in Zambia: restore and credibly sustain macroeconomic stability; restore flexibility to the labor market; and implement medium-term strategy for improving human capital in order to address skill gaps, including in the IWOSS sectors. Addressing these important issues would allow the process of structural transformation that would contribute positively to employment creation, poverty reduction, and the goals of *Vision 2030*.

Acronyms

7NDP	Seventh National Development Plan
BOZ	Bank of Zambia
CRUPLF	Combined Rate of Unemployment and the Potential Labor Force
CSO	Central Statistical Office
GDP	Gross Domestic Product
FDI	Foreign Direct Investment
ICLS	International Conference of Labor Statisticians
ILO	International Labor Organization
IMF	International Monetary Fund
ISIC	International Standard Industrial Classification
IWOSS	Industries without Smokestacks
LFS	Labor Force Survey
MCC	Millennium Challenge Corporation
UNCTAD	United Nations Conference on Trade and Development
WITS	World Integrated Trade Solution
WTTC	World Travel and Tourism Council
ZDA	Zambia Development Agency
ZEGA	Zambia Export Growers Association
ZSA	Zambia Statistical Agency

1. Introduction

Zambia at independence in 1964 was a largely agrarian economy with a flourishing enclave mining sector and very limited manufacturing or service activities. Zambia's population was 3.5 million, and most of those of working age were employed in subsistence activities in the agricultural sector. Population growth has been rapid in the years since, averaging 3 percent per annum in the 1970-1999 period, declining only slightly to 2.7 percent per annum in the most recent two decades.

In 2018, the population was 17.3 million with those of working age estimated to be 9.5 million. The share of the employed population engaged in agriculture has declined from 69 percent in 2005 to 57 percent in 2018. This might be taken to suggest that Zambia has undergone a structural transformation like some other developing countries, with the decline in agricultural labor shares matched by absorption of labor into higher productivity activities in industry and services, enabling a growth of per capita income and living standards. The actual nature of structural transformation has been less positive and is, in part, the focus of this study, which is concerned with the experience and prospects for employment creation for a growing population.

Global and local conditions that enabled East Asian countries to grow labor-intensive manufacturing and employment rapidly over 1970-2000 appear to have either been unavailable to Zambia or not effectively supported by domestic policies. Thus, the release of labor from the primary sector has not led to absorption into higher productivity manufacturing on a significant scale. The substantial expansion of the informal sector is one of the other salient characteristics of the Zambian growth experience and should be seen as a sub-optimal development, given the low productivity and incomes associated with most informal activities.

The Zambian government continues to aspire to grow the formal manufacturing sector as part of its development strategy. Instruments such as special economic zones are used to attract foreign direct investment (FDI), and efforts to enhance local content in processing of copper and agricultural products have been attempted. Zambia does quite well in the Doing Business rankings, ranked 85th of 190 countries, just behind South Africa. Looking forward, rapidly changing technologies and international trading patterns will pose their own challenges. In a 2018 report, the World Bank noted:

> *"Changing technologies and shifting globalization patterns call the feasibility of manufacturing-led development strategies into question. Trade is slowing. Global value chains remain concentrated among a relatively small number of countries. The Internet of Things, advanced robotics, and 3-D printing are shifting the criteria that make locations attractive for production and are threatening significant disruptions in employment, particularly for low-skilled labor. These trends raise fears that manufacturing will no longer offer an accessible pathway for low-income countries to develop and, even if feasible, would no longer provide the same benefits of productivity gains and job creation for unskilled labor."*

These structural and technological changes have enormous implications for employment creation and need to be understood in the context of overall population growth. A critical issue for Zambian policymakers is the creation of productive employment for the country's expanding and youthful labor force. In fact, the youth unemployment rate is estimated to be 18.6 percent, well above the overall unemployment rate. With 46 percent of the population below the age of 15, the challenge of job creation will only intensify in coming years.

It is increasingly apparent that the manufacturing sector, long expected to provide the ladder of opportunity for workers leaving rural occupations and moving to urban areas, is no longer able to provide such opportunity for expanding employment in most developing countries, particularly in low- and middle-income countries outside Asia. Rodrik (2016) refers to this phenomenon, the failure of manufacturing to significantly grow output and employment as part of their development process as "premature deindustrialization." Many countries in Latin America and sub-Saharan Africa have experienced such premature de-industrialization, with the exception of Mauritius. This malady also afflicts developed countries (where the phenomenon is described as just de-industrialization) and is seen to be a result of both globalization and the emergence of labor-saving manufacturing technologies that limit employment prospects for low-skilled workers.

Given this evident limitation of the traditional manufacturing sector, there is a need to find alternative industries and services that might provide potential employment growth—the ability to employ significant numbers of low-skilled workers, raise their productivity and incomes, and use domestic comparative advantages to expand output and exports. The notion of such an alternative is captured in the concept of "industries without smokestacks" (IWOSS), which are characterized by their ability to employ significant numbers of moderately skilled workers, whose outputs are tradeable, have relatively high productivity, and have the potential to use technology to sustain productivity growth (Newfarmer, Page, and Tarp, 2019). In the context of Zambia, these are potentially seen to include agro-processing, horticulture and floriculture, tourism, transport, finance and business services, and services related to the explosive growth of demand for information and communication technologies (ICT). IWOSS are a supplement to more traditional industries and services, including manufacturing, which we categorize as non-IWOSS.

The following sections provide more discussion of the Zambian context (section 2), the patterns of structural transformation and sectoral trends in output and employment including comparison of IWOSS performance relative to non-IWOSS (sections 3 and 4). Section 5 describes the value chain for specific IWOSS activities in order to identify the constraints and potential to further expand these sub-sectors and thereby increase productive employment for Zambian youth. Section 6 projects potential employment effects of growing the in line with Vision 2030 while section 7 takes stock of the main findings of the paper to that point. Section 8 provides observations on critical policies to enhance employment growth in Zambia, and a final section concludes the paper.

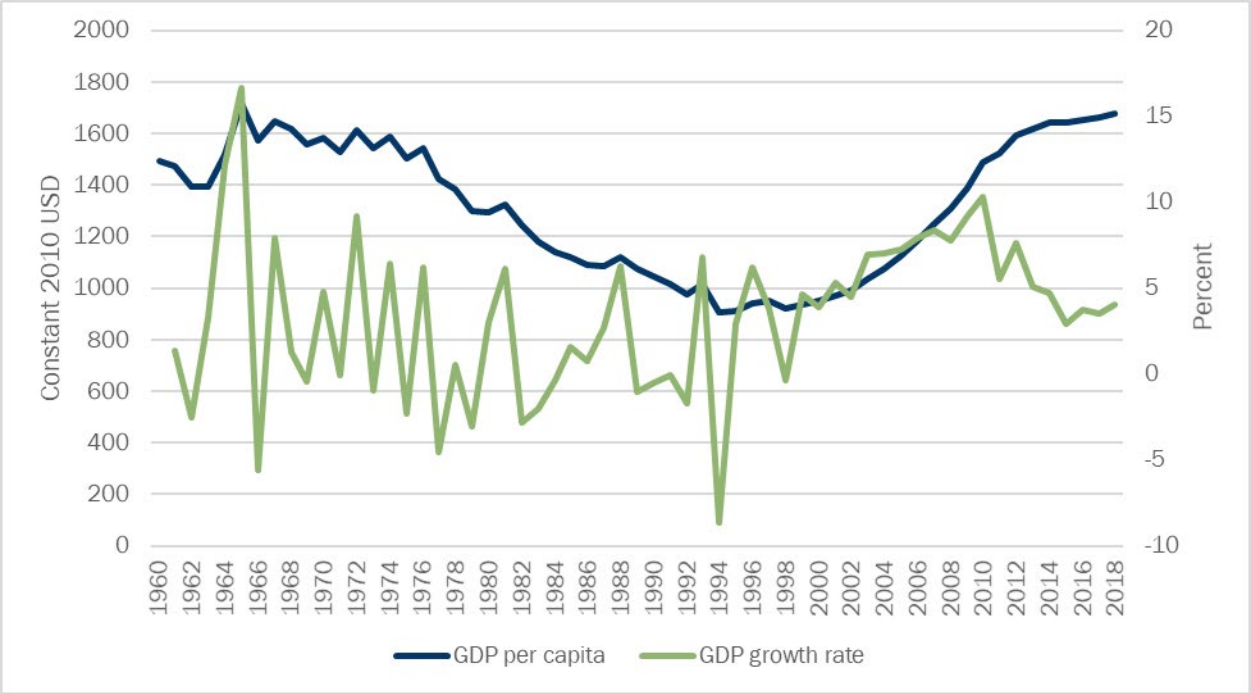
2. Country context

Zambia has been attempting to transition from an economy historically dependent on primary sector activities, including mining, to a more diversified economy. The pace and pattern of transition has varied over the decades since independence, the first three decades being marked by import substitution and a strong direct role of the state in the economic sphere and a growth of industry and services. This period also witnessed volatile growth and declining per capita incomes (see Figure 2.1). Following the introduction of multi-party democracy in 1991, structural adjustment reforms opened up the economy to import competition and marked the beginning of a more market-oriented approach to economic development.

Reforms liberalized exchange and interest rates, removed quantitative restrictions on trade, and privatized numerous state-enterprises. The pivot from a statist economy to a market-oriented one imposed drastic structural change. GDP declined sharply in 1994 but after a slow recovery growth picked up after 2000, driven in part by a nine-year rally in copper prices. Whereas average GDP growth

rates were barely 1 percent in the period 1981-90, and 1.75 percent in 1991-2000, average growth in the first decade of the 2000s stepped up to an impressive 7.5 percent before slowing to 5.2 percent in 2011-15 and declining further in 2016-19 to about 3.2 percent.

Figure 2.1: GDP per capita (constant 2010 USD) and GDP annual growth, 1960-2018



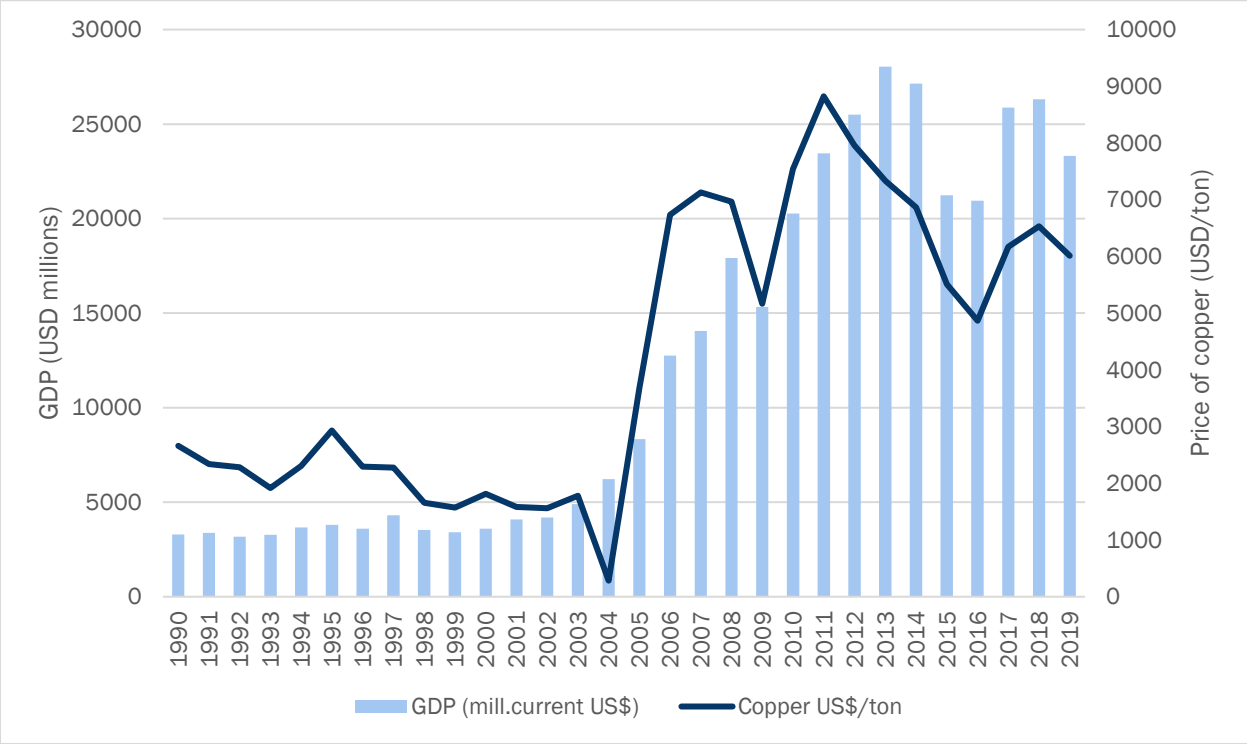
Source: Authors' construction based on World Bank Development Indicators, 2020 (using World Bank national accounts data, and OECD National Accounts data files).

Despite the recovery in GDP per capita, the quality of growth has been narrow and non-inclusive in a number of respects: First, it is confined to activities that are regionally concentrated around a few urban locations, and second, it has not generated employment or income-earning opportunities to enable improvement in the standard of living for the broad population. Income inequality in Zambia is very high, with the Gini coefficient of income distribution in 2015 estimated to be over 0.70.[1] Urban-rural inequalities, regional inequalities across provinces, and inequalities across occupational groups have widened. The poorest groups derive most of their income from agricultural self-employment while the richest groups derive most income from wages. Those in the middle deciles derive most of their income from non-agricultural self-employment.

One reason for the poor distributional outcomes of growth is because the Zambian economy failed to create decent jobs to match the growing labor force. Indeed, growth remains tied to the performance of the copper mining sector, as shown by Figure 2.2, which illustrates the strong correlation between copper price trends and Zambia's GDP over the past three decades. Given its capital-intensive technology and weak links to domestic industry, growth in mining has had limited direct and spill-over employment effects on the broader economy.

1 Bhorat, Kachingwe, Oosthuizen and Yu (2018), "Growth and Inequality in Zambia", Development Policy Research Unit, University of Cape Town, commissioned by the International Growth Centre, Zambia. The World Bank and Zambia CSO estimates for the Gini coefficient for Zambia for 2015 is 57.1, substantially lower than the estimate cited above which is explained by the fact that Bhorat et.al. use income rather than expenditure to measure inequality.

Figure 2.2: Zambia GDP and copper price trends, 1990-2019



Source: Authors' construction based on data from World Bank for GDP and IMF for Copper Price data.

Definitional shifts in measuring employment recommended by the ILO and applied in 2017 in Zambia affect our ability to identify real trends in the labor force and employment (see Box 1).[2]

One effect of the change in definition is an abrupt decline in the reported labor force in 2018 relative to 2014 (see Table 2.1). This change makes interpreting trends over the period somewhat challenging. Nevertheless, we are able to make some observations from the data available. The working-age population has expanded from 6.2 million in 2005 to 9.5 million in 2018. We report the labor force participation rate to be about 77 percent (based on the estimate for 2014), since the 2018 estimate of 35 percent is unrealistic.[3]

2 Numerous changes in the methodology of the Zambia Labor Force Survey (LFS), the primary source of labor statistics, complicates an assessment of the structural change in employment over an extended period (see Box 1). Besides the LFS was only sporadically conducted before 2014, and only thrice from 1986 to 2008. Only the 2008 and 2014 surveys included in Table 2.1 are comparable.
3 The LFPR of 35 percent in the 2018 LFS report reflects the ICLS definitional change that was applied in 2017 and should not be taken as reflecting real participation rates.

Box 1: Technical note: Methodological variation in labor force surveys over time

To date, Zambia has undertaken seven Labor Force Surveys (LFSs) covering the years 1986, 2005, 2008, 2012, 2014, 2017, and 2018. In 2017, major revisions were made to the methodological approach, including a change in the frequency of data collection from a bi-annual to a quarterly basis. A more significant change, however, that renders the 2017 and post LFSs incomparable to LFSs preceding 2017, is the change in the labor force framework, the survey questionnaire, and the definition of employed and unemployed persons.

Prior to 2017, past LFSs—namely the 1986, 2005, 2008, 2012, and 2014—were based on the 1982 Labor Force Framework adopted at the 13th International Conference of Labor Statisticians (ICLS). From 2017 onwards, the LFS methodology is premised on the 2013 Labor Force Framework adopted at the 19th ICLS, which issued new guidelines for measuring and compiling labor statistics. In this new framework, the employed population now strictly includes persons engaged in work for pay or profit (including self-employed or contributing family workers); while the unemployed population must strictly satisfy the conditions of seeking a paid job and being available to take up the job. In contrast, former LFSs included in the definition of persons employed, persons in own use (consumption) production work such as:

> "…collecting firewood, growing of crops for household consumption only, fishing for household consumption…" (CSO, 2015).

These definitional changes have subsequently led to a significant reduction in the overall labor force population which is defined as all persons—employed or unemployed—aged 15 years or older at the time of the survey. For instance, in 2014, the labor force population was estimated at 6,329,076 while it was estimated at 3,398,294 in 2017 largely as a result of a marked reduction in number of employed persons in agriculture industries (CSO, 2015, 2018).

In addition to the conventional measures of unemployment, there is now what is defined as the national combined rate of unemployment and the potential labor force (CRUPLF). This is the sum of the unemployed and the potential labor force populations. Whereby, the potential labor force population is defined as:

> "All persons of working age who during the short reference period were neither in employment nor in unemployment and: (a) carried out activities to 'seek employment', were not 'currently available' but would become available within a short subsequent period established in the light of national circumstances or (b) did not carry out activities to 'seek employment', but wanted employment and were 'currently available,'" i.e. discouraged workers. (CSO, 2018).

Analysis in this paper is therefore taken in cognizance of these methodological variations over time and the extent to which the authors reconcile these differences.

Measured unemployment at 12.8 percent in 2018 has declined from the levels in 2005 but is above levels measured in intervening years. However, unemployment as formally defined is not the main issue. Unemployment fails to capture those who are not part of the labor force (e.g., because they are discouraged) but could potentially be. In 2018 there were almost a million discouraged workers. The combined rate of unemployed and potential labor force (CRUPFL) yields a figure of 41 percent, significantly higher than the unemployment rate alone. In addition, the serious but hidden problem of

underemployment, which official estimates indicate as between 7-8 percent of those employed, is also a problem. Underemployment disproportionately affects younger workers.[4]

Table 2.1 indicates the trend in total and youth unemployment rates, both of which show a dip followed by an increase over 2005-18. Youth unemployment has varied between 3 and 7 percentage points above the overall unemployment rate, although the very sharp dip between 2005 and 2008 raises some concerns about whether both the level and the change are accurately measured by the LFS. While the mining boom did create a knock-on effect on employment in the construction, services, and public sector the 8 to 9 percentage point dip in unemployment between 2005-08 seems exaggerated.[5] Lacking skills and experience, nearly 70 percent of youth in employment were engaged in the informal sector (46.6 percent) or as household workers (22.9 percent) where conditions of employment were likely not to be favorable. An important feature of development in Zambia has been the stunting of the formal sector and the corresponding expansion of the informal sector. By the end of the economic rebound in 2014, 84.5 percent (4.9 million out of 5.8 million) of the employed population worked in the informal sector. The major categories of informal sector employees consist of: a) Own-account workers with no business registration such as most of the small farmers in the agriculture sector; b) Employees in informal sector enterprises or in households such as domestic workers who are "not subject to standard labor legislation, taxation, social security or entitlement to certain employment benefits…"; and c) Paid or unpaid family workers.

Table 2.1: Basic labor statistics, 2005 to 2018

	2005	2008	2014	Absolute change	Annualized % change	2018
Labor market aggregates ('000)						
Working-age population	6,202	6,716	8,150	1,434	3.3%	9,483
Employed	4,131	4,607	5,859	1,252	4.1%	2,949
Unemployed		397	470	73	2.9%	427
Labor force	4,918	5,004	6,329	1,325	4.0%	3,329
Discouraged work seekers						960
Labor force participation rate (LFPR) (%)	79.3%	74.5%	77.7%	3.1%	0.7%	35.1%
Unemployment rate (%)						
Unemployment rate (all)	16.0%	7.9%	7.4%	-0.5%	-1.1%	12.8%
Unemployment rate (youth)	23.0%	14.0%	15.0%	9.0%	6.4%	16.0%
Underemployment	--	8.2%	8.3%	0.1%	0.2%	7.1%

Source: Authors' construction based on Central Statistics Office, 2005, 2008, 2014, and 2018 Labor Force Survey reports
Note: Time-Related Underemployment reflects the mismatch between hours an individual works and the hours the person is willing and available to work. Normal working hours are taken to be 40 hours. This measure depicts underutilized productive capacity of the labor force which here, is measured as a percentage of the total employment.

Informal sector jobs are characterized by low earnings (implying low productivity), lack of job security, poor working conditions, and poverty. Notably, according to the ILO and OECD, "whereas only 5.1% of formal workers can be classified as living in extremely poor households (per capita expenditure less than the $1.90/day poverty line), 60% of informal workers live in extremely poor households by the

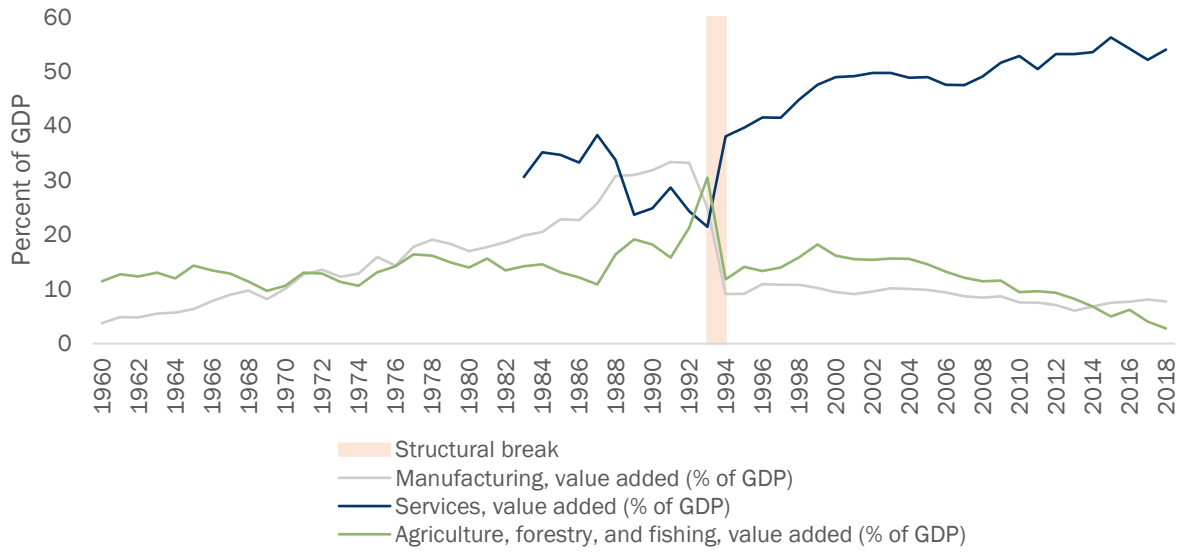
4 A 2017 World Bank analysis estimated that underemployment, defined as those working less than 35 hours per week, affected as much as 56 percent of males and 61 percent of females in the urban service sector in 2012. The corresponding figures for agriculture were 64 and 65 percent. Jobs Diagnostic Zambia, Vol.1. Analytics, World Bank 2017.
5 ILO data for 2012-2018 suggests that unemployment rates did dip by 2-3 percentage points for both the 15-19 year and 20-24 age groups in 2012-14 but rose sharply to about 24 percent by 2018 as economic growth slowed sharply.

same measure."[6] Formal sector workers on average earned 3.2 times more than their informal sector counterparts and 3.9 times more than household workers. Industries in the informal sector are hubs of low productivity. About 68.4 percent of people employed in agriculture were in the informal sector. The 1994-2014 period witnessed a significant expansion of tertiary sector activities, as well as wholesale and retail trade, but much of this expansion was in the informal sector.[7]

3. The pattern of structural transformation in Zambia

Zambia, like many other newly independent African economies, appeared to follow the conventional process of structural transformation until the early 1990s with a steady growth of the industrial sector and an expansion of the service sector (figure 3.1).

Figure 3.1: Composition of economic activities in Zambia, 1960-2018



Source: Authors' construction based on World Bank Development Indicators, 2020 (using World Bank national accounts data, and OECD National Accounts data files.)
Notes:
1/ Data on services value added not available for the period before 1983.
2/ The shares do not add up to 100 percent. Other industries (e.g., mining, construction, utilities, government, and others) are excluded.

Manufacturing value added (MVA) as a share of GDP rose steadily from 3.8 percent in 1960 to a peak of 33.3 percent in 1991 (Figure 3.1). Like many other developing countries over that period, industrialization was supported by protectionist policies and subsidies to state-owned manufacturing firms, funded from mining profits in Zambia's case.[8] Through nationalization and the creation of new state-sponsored companies, the bulk of the manufacturing sector was state-owned. Managed under the umbrella of the Industrial Development Cooperation (INDECO), inefficient companies were cross subsidized within the conglomerate or supported by treasury subsidies. Price controls were pervasive

6 ILO and OECD, October 2018: Informality and poverty in Zambia, Findings from the 2015 Living Conditions and Monitoring Survey.
7 Arnold and Mattoo (2007) noted that while services have grown consistently over 1966-2002, at an annual average growth rate of 3 percent, its growth appeared impressive only relative to the low overall average GDP growth of 1.4 percent over the same period. Also, growth of services such as tourism, transport and communications, and finance and insurance lagged behind less dynamic sectors such as community and social services and wholesale and retail trade. (p.62)
8 Thurlow & Wobst, 2004

and protected urban consumers at the expense of rural producers. From a fiscal and economic perspective, this approach proved to be unsustainable and macroeconomically unstable. As early as 1978, Zambia was faced with current account and fiscal deficits and attempted macroeconomic reforms at various points during the following decade but did not sustain them. Through the 1980s, public debt and payment arrears increased, foreign exchange shortages intensified, and inflation accelerated, peaking at 180 percent in 1992.

With the coming to power of a new government in 1991, Zambia embarked on rapid economic reforms as part of its Structural Adjustment Program (SAP) agreed with the IMF and the World Bank. At the heart of the reforms were the complete removal of agriculture subsidies (in 1991), elimination of import controls and exchange rate controls (in 1992), and removal of food price and money market controls (in 1993). Alongside the macroeconomic reforms, the new government also embarked on wholesale privatization of state-owned enterprises with the then-president declaring that were to be "no sacred cows." The initial phase of privatization focused on the non-mining enterprises with the mining companies only being privatized in 2000. The structural adjustment program led to the collapse of many industries now exposed to global competition. The textile industry was among those to be decimated as it had to now compete with second-hand clothes imported cheaply from abroad. Enterprises linked to the ailing mining sector in the Copperbelt province also suffered.[9]

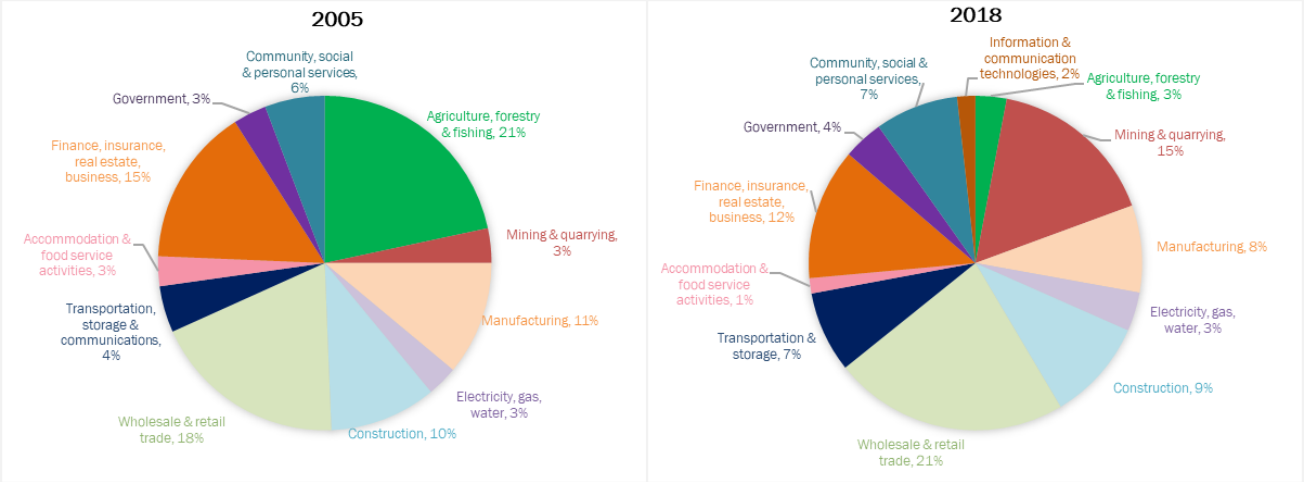
Manufacturing activities fell from 33 percent in 1992 to 9 percent of GDP in 1994 (Figure 3.1). Manufacturing's share of GDP stagnated over the subsequent two decades, in part because of the boom in copper prices and exports between 2005-2014, and volatility in the exchange rate, which adversely affected profitability of various manufactured products. Services, on the other hand, rose markedly from 21.4 percent in 1993 to more than 50 percent of GDP over the last decade with both formal and informal services expanding. Agriculture's share of GDP has declined steadily over the past two decades (from 18 percent in 1999 to less than 3 percent in 2018) owing to a broad set of factors including continued dependency on rain-fed farming, low mechanization, low productivity, limited diversification, and inadequate extension services and skills. Figure 3.2 shows the breakdown of the composition of GDP by industry over 2005-2018 and reveals more granular structural changes in recent years.

Zambia's economic structure has continued to transform over the past 13 years. In 2005, the economy was still relatively agro-driven with agriculture, forestry, and fishing accounting for 21 percent of GDP, but by 2018 this consolidated sector had contracted to just 3 percent of GDP. Manufacturing has effectively stagnated, contracting from 11 percent of GDP in 2005 to 8 percent of GDP in 2018, although this aggregate conceals the emergence of some dynamic manufacturing activities such as chemicals. Service sector activities have expanded and now dominate economic activities, growing from 45 percent to 54 percent of GDP in 2018, much of it in the informal sector. Within the service sector, wholesale and retail trade[10] grew from 18 to 21 percent of GDP. Transport and communications technology have also expanded to 9 percent of GDP in 2018 from 4 percent in 2005.[11] Although the share of finance and business activities reduced from 15 percent in 2005 to 12 percent in 2018, the proportion of such economic activities remains significant. Mining, a very

9 A 2001 evaluation of the Zambia privatization program concluded that two thirds of the privatized companies declined in terms of output and all saw a fall in employment over 1992-1998, with only larger, export-oriented firms recovering to pre-privatization levels of output. Zambia Post-Privatization Study, World Bank, Operations Evaluation Department, 2003.
10 Formal trade (estimated at about 43 percent for Zambia), is considered to be part of IWOSS.
11 In 2005 the transport industry also included some ICT activities that stand alone in 2018. The sum of transport and storage and ICT in 2018 constituted 9 percent of GDP in 2018, relative to the 4 percent in 2005.

important and traditional industry for foreign exchange earnings, rebounded explosively from 3 percent of GDP in 2005 to 15 percent of GDP in 2018—but remains subject to cyclical forces in the global economy as well as instability in policies towards the sector.

Figure 3.2: Contribution to GDP by industry, 2005 and 2018



Source: Authors' construction based on time series nominal GDP data obtained from the Zambia Statistics Agency
Notes:
1/ The national accounting in 2005 and 2018 are based on slightly different nomenclatures: the ISIC Revision 3.1 in 2005 and ISIC Revision 4 in 2018.
2/ For comparability over time, we combine the utilities i.e. Electricity, gas, steam and air conditioning supply with Water supply; sewerage, waste management and remediation activities (2018) to correspond with Electricity, gas and water (2005) and rename Restaurants, Bars and Hotels (2005) as Accommodation and food service activities (2018).
3/ In both years, we combine Financial and insurance activities, Real estate activities with Professional, scientific, and technical activities, Administrative and support service activities to create Finance, insurance, real estate, business.
4/ We maintain Transport and storage (2018) and Information and communication (2018) and Transport, storage, and communications (2005) different as ICT activities cannot be easily extricated from sections it had been included in under ISIC, Rev.3.1. These included Manufacturing, Transport, storage and communications, Real estate, renting and business activities and Other Community, social and personal service activities.
5/ In both years, we define Public administration and defense as government activities.
6/ In both years, we define Community, social and personal services to include Education, Human health, Arts, entertainment and recreation, and Other service activities.
7/Totals do not add to 100 percent of GDP because of adjustments due to financial intermediary services indirectly measured and taxes minus subsidies which are part of GDP at market prices.

Manufacturing has not been a major contributor to Zambia's employment growth and structural transformation in the last 25 years. Therefore, it is paramount that specific industries are identified that can boost employment growth, particularly youth employment, in the country. This paper considers the potential of activities with higher productivity in Zambia, which Page and Newfarmer define as "industries without smokestacks."[12]

Firm characteristics in industries without smokestacks (IWOSS) include:

- Being tradable;
- Having the ability to absorb large numbers of moderately skilled labor;
- Having higher than average value-added per worker; and
- Exhibiting capacity for technological change and productivity growth.

12 Newfarmer, Page and Tarp, 2018.

In Africa, (IWOSS)—agro-industry and horticulture, tourism, business services, including ICT-based services, and transport and logistics—have become increasingly important, both in the rate of growth of employment as well as in output. Table 3.1 indicates the shift in labor allocation over 2005-2018 across the primary, secondary, and tertiary sectors in Zambia. While the primary sector share declined by about 12 percentage points, the tertiary sector grew by about the same amount. The secondary sector, including manufacturing and construction, grew by 4 percentage points, offsetting the decline in the "not-stated" category.

Table 3.1: Employment in primary, secondary, and tertiary sectors, 2005-2018

	Employment			Employment share	
	2005	2018	Change	2005	2018
Total employment	**3,726,024**	**6,295,524**	**2,569,500**	**100%**	**100%**
Primary	**2,617,430**	**3,685,453**	**1,068,023**	**70.2%**	**58.5%**
Agriculture	2,583,865	3,563,804	979,939	69.3%	56.6%
Horticulture*	12,111	41,136	29,025	0.3%	0.7%
Mining	21,454	80,513	59,059	0.6%	1.3%
Seconday	**105,471**	**423,120**	**317,649**	**2.8%**	**6.7%**
Manufacturing (excl. agro-processing)	44,671	125,670	80,998	1.2%	2.0%
Agro-processing*	25,792	124,841	99,049	0.7%	2.0%
Utilities	10,669	22,734	12,065	0.3%	0.4%
Construction	24,338	149,874	125,536	0.7%	2.4%
Tertiary	**433,655**	**1,502,738**	**1,069,084**	**11.6%**	**23.9%**
Trade: formal*	16,331	105,619	89,288	0.4%	1.7%
Trade: informal	198,651	516,929	318,278	5.3%	8.2%
Transport & storage*	37,468	101,333	63,866	1.0%	1.6%
ICT*		14,626	14,626		0.2%
Financial & business*	22,347	163,397	141,049	0.6%	2.6%
Tourism	98,854	118,598	19,745	2.7%	1.9%
Government	21,113	76,629	55,516	0.6%	1.2%
Domestic services	41,653	63,714	22,061	1.1%	1.0%
Other services**	96,091	460,492	364,401	2.6%	7.3%
Not stated	**569,469**	**684,213**	**114,744**	**15.3%**	**10.9%**

Source: Authors' own computed estimates based on ZamStats Labor Force Survey data.
Notes:
* Denotes what are considered.
** Other services include health, education, arts, entertainment and recreation, accommodation and food, and other activities.
1/ Numbers do not match what is in published labor force reports. These employment estimates are derived on the basis of the 1982 labor force framework adopted at the 13th International Conference of Labor Statisticians (ICLS). This framework allows us to capture subsistence farmers that were excluded in the new framework applied to years 2017 and 2018 in Zambia. This is arguably more reflective of Zambia's labor force. Details of the computations are elaborated in Annex 1.
2/ Sum of Tertiary excludes tourism to avoid double counting since tourism cuts across various industries.
3/ 'Not stated' includes workers with missing ISIC codes that could not be classified into any industry.
4/ Prior to 2010, Transport and Storage was classified with ICT as per the ISIC Revision 3. Thus, in 2005, the stated employment in Transport and Storage also includes employment in some ICT industries.
5/ Agro-processing is taken as the sum of employment in the Food, Beverages & Tobacco; Textile, Clothing & Leather; Wood & Wood Products; and Paper & Paper Products manufacturing sub-sectors.
6/ Employment in Horticulture in 2005 is based on ISIC Revision 3 codes 0112-growing of vegetables, horticultural specialties, and nursery products and 0113 -growing of fruit, nuts, beverage and spice crops. Employment in horticulture in 2018 is based on ISIC Revision 4 codes 012-growing of perennial crops; and 013-plant propagation.

The emerging importance of IWOSS for employment

To better understand employment dynamics within sectors, Table 3.2 provides a breakdown of employment across industries which are categorized under three groups: IWOSS, manufacturing (excluding agro-processing), and other non-IWOSS. Labor force survey data show that non-IWOSS are historically the major source of employment, as shown by the 96 percent share of total employment in 2005. Agriculture shed labor as a share of total employment, declining from 69 to 57 percent between 2005 and 2018. Not surprisingly, given that this period coincided with the copper price boom, construction, mining, and government employment all grew substantially over this period, with construction, in particular, more than doubling its share of employment in the economy to 2.4 percent. Manufacturing employment grew by 8.3 percent and increased its employment share, but the level was just 2 percent of the total.[13]

13 Manufacturing employment grew in absolute and relative terms during a period when manufacturing's share of GDP declined. This is likely due to growth in some more labor-intensive industries relative to those that declined or grew at lower rates.

Table 3.2: Employment in IWOSS and non-IWOSS, 2005-2018

	Employment				Employment share		Annual (%) growth
	2005	*2018*	*Change*	*Share of change*	*2005*	*2018*	*2005-2018*
Total employment	**3,726,024**	**6,295,524**	**2,569,500**	**100%**	**100%**	**100%**	**4.1%**
Total IWOSS*	**114,049**	**550,952**	**436,903**	**17%**	**3.1%**	**8.8%**	**12.9%**
Agro-processing	25,792	124,841	99,049	23%	0.7%	2.0%	12.9%
Horticulture	12,111	41,136	29,025	7%	0.3%	0.7%	9.9%
Tourism	98,854	118,598	19,745	5%	2.7%	1.9%	1.4%
Transport & Storage	37,468	101,333	63,866	15%	1.0%	1.6%	8.0%
Financial & business	22,347	163,397	141,049	32%	0.6%	2.6%	16.5%
Trade: formal	16,331	105,619	89,288	20%	0.4%	1.7%	15.4%
ICT		14,626				0.2%	
Manufacturing (excl. agro-processing)	**44,671**	**125,670**	**80,998**	**3%**	**1.2%**	**2.0%**	**8.3%**
Other non-IWOSS	**3,567,303**	**5,618,902**	**2,051,599**	**80%**	**96.0%**	**89.3%**	**3.6%**
Agriculture	2,583,865	3,563,804	979,939	48%	69.0%	56.6%	2.5%
Mining	21,454	80,513	59,059	3%	0.6%	1.3%	10.7%
Construction	24,338	149,874	125,536	6%	0.7%	2.4%	15.0%
Trade: informal	198,651	516,929	318,278	16%	5.3%	8.2%	7.6%
Utilities	10,669	22,734	12,065	1%	0.3%	0.4%	6.0%
Government	21,113	76,629	55,516	3%	0.6%	1.2%	10.4%
Domestic services	41,653	63,714	22,061	1%	1.1%	1.0%	3.3%
Other**	96,091	460,492	364,401	18%	2.6%	7.3%	12.8%
Not stated	569,469	684,213	114,744	6%	15.3%	10.9%	1.4%

Source: Authors' own computations based on ZamStats Labor Force Survey data and World Travel & Tourism Council data
Notes:
1/ Employment in the tourism sector is derived from World Travel & Tourism Council data.
2/ Annual employment growth rate computed using the compound average growth rate.
**Other includes health, education, arts, entertainment and recreation, accommodation and food and other activities while Not-Stated are employees with missing information on the industry they are employed in.

Notably, employment in IWOSS grew at a rate of 12.9 percent per annum, well above the 3.6 percent of non-IWOSS, more than doubling IWOSS' share of employment over the 13-year period to 8.8 percent of total employment. Nearly one-third of all new IWOSS jobs in this period came from finance and business services bolstered by the expansion in insurance and pension funds, professional, scientific, and technical activities. This demonstrated higher employment creation of IWOSS is an important finding and suggests future potential that will require further analysis to determine whether and how it can be sustained.

Among our IWOSS of interest,[14] financial and business services had the fastest annual growth in employment, expanding at the rate of 16.5 percent per annum, quadrupling its share in total employment. Although this pace of growth in employment was closely followed by construction, a non-

14 We single out agro-processing, tourism, ICT, and horticulture as IWOSS with the most potential for employment creation and economic transformation in Zambia

IWOSS sector, growing at 15.1 percent, construction's employment growth followed the mining boom and the government's decision to spend heavily on infrastructure development. Other high performers in employment growth were agro-processing and formal trade and wholesale, both IWOSS sectors that grew at a rate higher than 10 percent. Among non-IWOSS, mining and government also grew above 10 percent per year. Employment in horticulture grew at almost 10 percent per year. Although IWOSS still only accounted for a small share of employment in 2018, they were creating new sources of employment growth distinct from the performance of the mining industry.

The employment potential of ICT activities is much harder to gauge owing to data constraints. The industry's share of employment in 2018 was 0.2 percent, which is miniscule but unsurprising as ICT is in its infancy in Zambia. A big disappointment is tourism whose share of employment contracted over the period owing to a lower (1.4 percent per annum) than average employment growth rate. If the much talked about job creation potential of tourism is to be realized, it is important to understand the binding constraints affecting this sector and how these could be resolved.

3.2 Simultaneous transition into productive IWOSS and non-IWOSS

Whether the movement of labor out of agriculture and into other productive activities has raised average labor productivity in Zambia and by how much is important to answering questions related to raising living standards. Understanding which industries have the highest labor productivity is clearly important to creating productive jobs and enhancing livelihoods.

Table 3.3 depicts the within-industry labor productivity estimated for 2005 and 2018 measured as value-added per worker. Focusing first on the figures for 2005, we note that labor productivity in the IWOSS group is significantly higher than for manufacturing, other non-IWOSS, and the economy as a whole by multiples of 9, 15, and 10, respectively. Within IWOSS, finance and business showed the highest productivity followed by formal trade and agro-processing. Within non-IWOSS, construction, mining, and utilities displayed very high labor productivity, reflecting, in part, the capital-intensity of their technologies. Tourism shows moderate labor productivity at about the same level as transport, but significantly above the economy-wide average. The abysmally low level of labor productivity in agriculture is starkly evident, at less than a fourth of the economy-wide average.

Table 3.3: Labor productivity (value added per worker, constant 2010 prices)

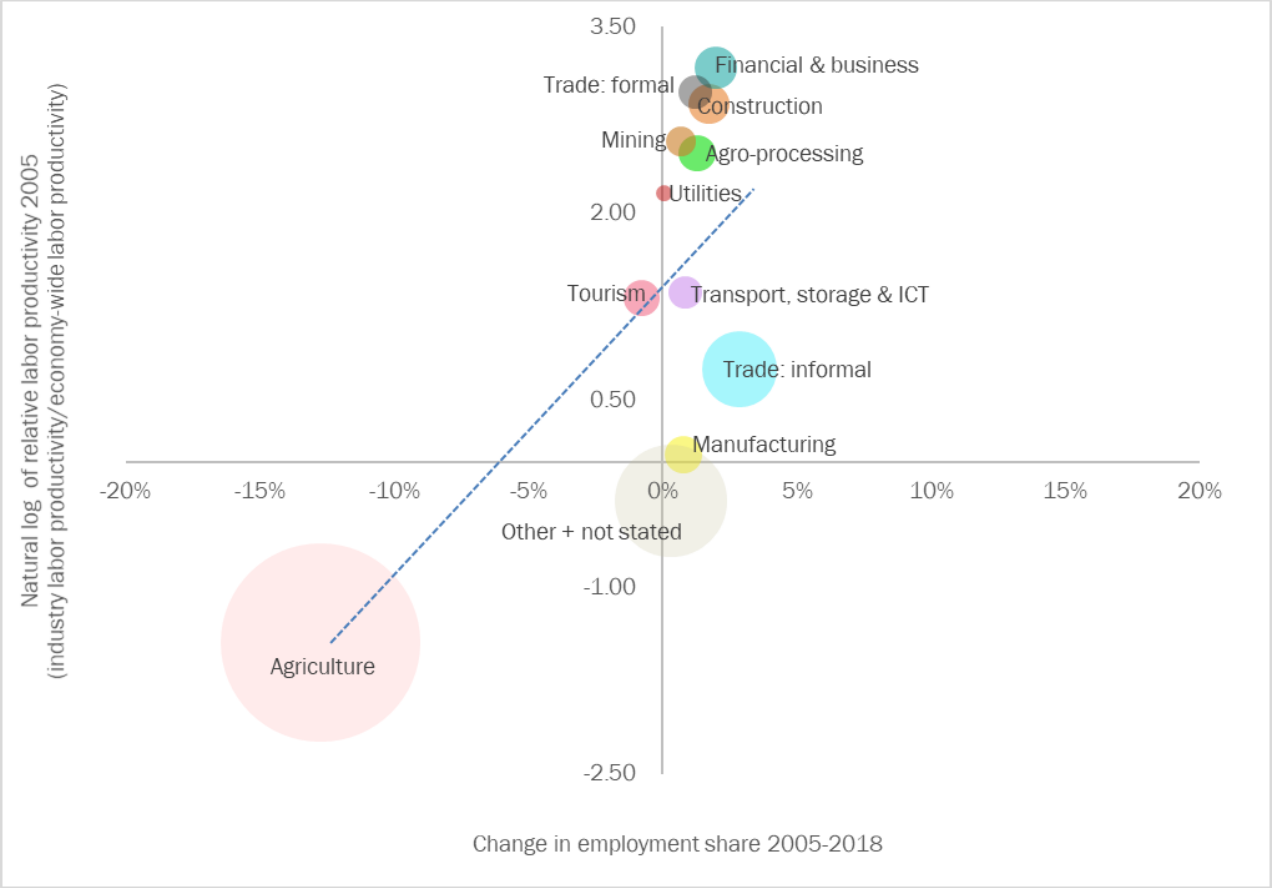
	Labor productivity		Growth
	2005	2018	2005-2018
	ZMW		%
Economy-wide	**17,188**	**22,188**	**29%**
Total IWOSS	**166,734**	**82,540**	**-50%**
Agro-processing	205,589	32,010	-84%
Tourism	64,571	71,699	11%
Transport & storage	67,303	49,120	-27%
Financial & business	410,445	86,317	-79%
Trade: formal	335,138	121,442	-64%
ICT	-	422,272	
Manufacturing (excl. agro-processing)	**18,225**	**57,946**	**218%**
Other non-IWOSS	**11,171**	**14,561**	**30%**
Agriculture (incl. horticulture)	4,040	2,278	-44%
Mining	226,540	185,463	-18%
Construction	305,830	101,251	-67%
Trade: informal	36,373	32,758	-10%
Utilities	149,192	123,271	-17%
Government	-	92,421	
Domestic services	-	-	
Other	12,587	15,094	20%
Relative labor productivity: IWOSS to other non-IWOSS	15	6	
Relative labor productivity: IWOSS to manufacturing	9	1	
Relative labor productivity: IWOSS to total	10	4	

Source: Authors' calculations based on ZamStats labor force and gross value-added data.
Notes:
1/ The sum of IWOSS excludes tourism to avoid double counting since the tourism sector is a composite of tourism activities in various industries
2/ We lack disaggregated gross value-added data for government and domestic activities for years prior to 2010. for domestic services, this data is also not available post 2010. Similarly, ICT cannot be disaggregated prior to 2010. Thus, labor productivity for some industries in some years is not computed.
3/ Agriculture includes horticulture activities due to lack of disaggregated gross value add data at 4-digit level required to compute labor productivity for the horticulture sub-sector. We are unable to report labour productivity in horticulture under IWOSS for this reason.
4/ In 2005, the average ZMW to USD exchange rate was 4.46 whereas in 2018 it was 10.46.

Changes in statistical method complicate inferences about directions of change in labor productivity through 2018, particularly regarding manufacturing and agro-processing. In Table 3.3 it appears that, between 2005 and 2018, economy-wide labor-productivity increased by nearly 30 percent, driven by an increase in manufacturing and other non-IWOSS labor productivity. As a result, the labor productivity gap between IWOSS and manufacturing productivity particularly appears to have decreased markedly in 2018 relative to 2005. IWOSS relative to other non-IWOSS also shows a narrowing of the productivity advantage of IWOSS. While it is possible that agro-processing productivity declined and manufacturing increased, the size of the productivity shifts for these two industries may be overstated by methods used to rebase GDP and the resulting effects on manufacturing and agro-

processing outputs.[15] For these reasons, we report the 2018 results but do not use them to make any inferences about recent labor productivity.

Figure 3.3: Correlation between industry productivity in 2005 and change in employment share, 2005-2018



Source: Authors' construction based on LFS data (2005 & 2018) and gross value-added data from ZamStats; and World Travel & Tourism Council data

Notes:

1/ Relative labor productivity is computed as the natural log of value added-labor ratio of each industry divided by the economy-wide labor productivity. A ratio > 0 indicates that the industry's labor productivity is higher than the total productivity of the economy; <0 means otherwise.

2/ Bubble size represents the size of employment in 2018.

3/ The doted linear trendline shows the best fitted values.

15 Agro-processing, financial and business and formal trade became significantly less productive over the period under review. The marked reduction in labor productivity in agro-processing (84 percent) and corresponding increase in manufacturing (218 percent), are interesting to note but we suspect this is an artefact of the data. Between 2009 and 2010, we observe a step in the time series gross value-added data for manufacturing and agro-processing. Gross value added jumped by 379 percent from ZMW963 million in 2009 to ZMW3.9 billion in 2010 for manufacturing. Conversely, gross value added nearly halved for agro-processing from ZMW6.3 billion in 2009 to ZMW3.5 billion in 2010. This abrupt change is borne out of the change in the variable used to disaggregate gross value added according to manufacturing sub-sectors. Prior to 2010, ZamStats relied on the Industrial Production Index for this disaggregation. Following the rebasing of the national accounts in 2010, the Economic Census became the basis of the computation of the gross value added for manufacturing sub-sectors.

For the purpose of understanding structural change in Zambia, we assess whether labor is moving to relatively more productive sectors over time. Figure 3.3 illustrates the productivity-employment structural transformation nexus by correlating the *level* of relative labor productivity in 2005, with the *change* in the industry share of employment over the period 2005 and 2018. Phrased differently, the graph allows us to assess whether labor is being released (denoted by a contraction in employment share) from industries that are least productive (i.e., lower left quadrant), and being absorbed (denoted by an expansion in the share of employment) in more productive industries (i.e., upper right quadrant).[16]

We observe the following: First, employment has contracted sharply in agriculture (an industry with low productivity) and has expanded in both productive IWOSS and productive non-IWOSS (upper right hand quadrant). Second, while employment has contracted in agriculture by nearly 13 percentage points over this period, the industry still employs a considerable number of workers (57 percent of employed labor) as evidenced by the size of the bubble. Third, the majority of IWOSS (with the exception of tourism) are clustered within the upper right-hand quadrant where relative labor productivity is higher and employment is expanding. About 5.7 percentage points of the 12.7 percent reduction of workers in agriculture over 2005-2018 found employment in IWOSS. Among IWOSS, financial and business activities—the most productive of all sectors in 2005—expanded employment by 2 percentage points. At the same time, workers moved to productive formal trade and agro-processing activities, albeit to a smaller extent. Respectively, these industries' share of employment expanded by 1.2 and 1.3 percentage points. Similarly, transport (grouped with ICT) grew its share of employment by 0.8 percentage points over this period. Disappointingly, tourism recorded a contraction in its share of employment (0.8 percentage points) even though the industry displays higher relative labor productivity.

Fourth, workers were also absorbed into traditional manufacturing whose share of employment expanded by 0.8 percentage points. Manufacturing's relative labor productivity in 2005, it appears, was only marginally above the average so that it barely fits in the upper right quadrant. Comparatively, more workers have been absorbed into non-IWOSS that are relatively productive industries such as construction and mining. Fifth, confirming our observations about the rapid growth of the informal sector, informal trade increased its share of employment by the highest margin, by 2.9 percentage points. Productivity in informal trade in 2005 appears higher than in manufacturing but measurement issues would not warrant placing confidence in such an assessment. The share of employment in relatively very high productive industries—mining, construction, and utilities—also increased but by 0.7, 1.7 and 0.1 percentage points respectively.

All in all, Zambia's structural transformation has been generally positive as evidenced by the upward sloping linear trend line. Indeed, employment has been shifting out of low productivity agricultural activities into more productive activities in trade, finance and business, construction, agro-processing, mining, transport, and ICT and even, to a limited extent, manufacturing. However, as indicated by the small size of the bubbles, IWOSS remain a relatively small source of employment, collectively accounting for about 8.8 percent of employment.

The experience of structural change in Zambia confirms that manufacturing has not been a growth-leading sector. A significant proportion of the structural change corresponding to the shrinking of agriculture appears to be driven by the absorption of labor into low productivity activities in the informal

16 Fox, Thomas and Haines (2017): Structural Transformation in Employment and Productivity: What Can Africa Hope For?

urban services sector, a phenomenon which has been characterized as "growth reducing".[17] However, the IWOSS have demonstrated both higher productivity and relatively high employment growth that suggests a potential avenue for productive job creation. This is the subject of more detailed analysis in the next section.

4. IWOSS versus non-IWOSS

How these structural changes have been manifested in employment across industries is important to understand both how labor has been reallocated and to anticipate where future employment growth may be possible. Table 4.1 provides both the growth of output over 2005-2018 and the rate of growth of employment over 2005-18. The ratio of the growth in employment to the growth in GDP is used to derive the simple elasticity of employment growth.[18] The elasticities provide an indicator of employment creation potential across industries which is of great value from the perspective of policy makers interested in expanding jobs for their population.

Table 4.1 also provides the employment elasticities for the economy as a whole as well as for industries organized under the now familiar category headings of IWOSS, Manufacturing, and Other non-IWOSS. The economy-wide employment elasticity is estimated at 0.88. IWOSS as a combined category display a higher elasticity of employment of 2.7 whereas manufacturing has an elasticity of 1 and other non-IWOSS of 0.85. This suggests that IWOSS hold the greatest potential for employment creation. For an equal rate of growth of value-added, IWOSS have the most rapid growth of additional employment relative to other categories.

17 J. Cilliers, "Made in Africa: Manufacturing and the fourth industrial revolution", Institute for Security Studies, 2018.
18 Sector GDP growth rates are estimated as the compound average growth rate for the period 2010-2018, rather than 2005-2018, to avoid potential errors due to the rebasing of GDP in 2009 which differentially affects output estimates for manufacturing and agro-processing. The lack of a labor force survey in 2010 also required that we use 2005 data for estimating employment growth through 2018. The use of CAGR for the elasticity should minimize any significant distortion but we expect some imprecision in the estimates.

Table 4.1: Output and employment growth and employment elasticities by industries, 2010-2018

	GDP (ZMW, 2010 constant prices)			Employment			
	2010	*2018*	GDP CAGR	*2005*	*2018*	Employment CAGR	Employment elasticity
Total	97,215,915,374	139,688,155,332	4.6%	3,726,024	6,280,898	4.1%	0.88
Total IWOSS*	29,414,077,757	42,080,257,853	4.6%	85,699	389,571	12.4%	2.7
Agro-processing	3,465,945,481	3,996,212,242	1.8%	25,710	124,841	12.9%	7.2
Tourism	5,817,940,000	8,503,330,000	4.9%	98,854	118,598	1.4%	0.29
Transport & storage and ICT**	7,293,475,153	11,153,548,586	5.5%	37,633	101,333	7.9%	1.45
Trade (Formal)	7,581,503,629	12,826,547,641	6.8%	26,336	85,912	9.5%	1.4
Financial & business	11,073,153,494	14,103,949,385	3.1%	22,356	163,397	16.5%	5.38
ICT**	1,587,529,865	6,176,108,832	18.5%		14,626		
Manufacturing (excl. agro-processing)	3,901,352,648	7,282,101,574	8.1%	44,712	125,670	8.3%	1.02
Other non-IWOSS	58,520,863,969	82,415,611,181	4.4%	3,595,614	5,765,657	3.7%	0.85
Agriculture (incl. horticulture)	9,158,659,025	8,212,522,278	-1.4%	2,596,294	3,604,940	2.6%	-1.89
Mining	12,428,685,255	14,932,214,589	2.3%	21,611	80,513	10.6%	4.59
Construction	9,761,345,778	15,174,943,382	5.7%	24,219	149,874	15.1%	2.65
Trade	10,008,992,030	16,933,423,684	6.8%	188,655	536,636	8.4%	1.23
Utilities	1,784,026,905	2,802,456,503	5.8%	10,805	22,734	5.9%	1.01
Government**	3,905,367,612	7,082,079,429	7.7%	20,866	76,629	10.5%	1.36
Domestic Services				41,359	63,714	3.4%	
Other + Not stated	11,473,787,364	17,277,971,316	5.3%	665,468	1,144,705	4.3%	0.81

Source: Authors' construction based on ZamStats LFS and gross value added data. CAGR is compound annual growth rate.
* Sum of IWOSS excludes tourism to avoid double counting, since tourism cuts across various industries.
**Prior to 2010, Transport and storage was classified with ICT as per the ISIC Revision 3. For comparability over time, we add ICT to transport & storage figures.
***Source: Aspirational growth projections based on Zambia's 'Vision 2030', a national plan towards being "a prosperous middle-income nation by 2030", p9.
For manufacturing and agro-processing, we observe a step in the data between 2009 and 2010. Over one year, gross value added increases for manufacturing from ZMW 963 million in 2009 to ZMW 3.9 billion in 2010. Prior to 2010, ZamStats relied on the Industrial Production Index. In 2010, the Economic Census became the basis of the computation of the gross value added of various sub-sectors. Conversely, gross value added is nearly halved for agro-processing from ZMW 6.3 billion in 2009 to ZMW 3.5 billion in 2010. This is an artifact created by the change in the variable used to disaggregate gross value added according to manufacturing sub-sectors.

4.1 Employment elasticity of growth

Within the IWOSS, the industries with the highest employment elasticities are agro-processing (7.2), ICT (5.4) finance and business (1.4) and formal trade (1.45). In the other non-IWOSS category, the employment elasticity estimates for mining (4.6) and construction (2.65) are surprisingly high. Agriculture reports a negative employment elasticity of 1.9 which is due to the negative rate of growth of output while the work force in agriculture continued to expand. Employment elasticity is more moderate in transport and ICT (0.44) and quite low for tourism (0.39). In general, these numbers which represent arc elasticities should be treated with caution given the underlying cyclical instability over

this period and the effects on sector GDP figures. For example, mining employment grew over the initial years after 2005 but output slowed after 2012 when copper prices declined.

4.2 Demographics

Tables 4.2 and 4.3 reveal that IWOSS have not performed as well in creating jobs for women and youth, the two critical demographics of great concern for creating an inclusive economy. Indeed, IWOSS have seen lower shares of young workers. The proportion of female workers also fell over 2005-2018, both in IWOSS and in manufacturing, with a corresponding rise in the shares employed in agriculture. Although female employment in the IWOSS expanded at a decent rate of 9 percent, that of males was growing at an even faster rate of 16 percent per year. As a result, the share of women employed in IWOSS declined from 52 percent in 2005 to 34 percent in 2018. The decline in female employment in manufacturing was more dramatic, declining from 49 to 7 percent over the same period. The share of employment for those aged 15 to 24 years old declined from 37 in 2005 to 12 percent in 2018, while it grew for ages 35-64—from 33 percent in 2005 to 50 percent in 2018. It is, therefore, very clear that current trends in both IWOSS and manufacturing are not expanding employment for these critical demographic groups, and Zambia will need to do more to create jobs for women and youth.

Table 4.2: Summary of sex, age, and educational characteristics in the Zambian population, 2005 and 2018

	Absolute ('000s)						Share (%)						Annual growth		
	2005			2018			2005			2018					
	IWOSS	Man.	Non-IWOSS	IWOSS	Man.	Non-IWOSS	IWOSS	Man.	Non-IWOSS	IWOSS	Man.	Non-IWOSS	IWOSS	Man.	Non-IWOSS
Total	**114**	**45**	**3,567**	**551**	**126**	**5,619**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**13%**	**8%**	**4%**
By sex															
Male	55	23	1,737	365	117	2,349	48%	51%	49%	66%	93%	42%	16%	13%	2%
Female	59	22	1,830	186	9	3,270	52%	49%	51%	34%	7%	58%	9%	-7%	5%
By age															
15-24 yrs	42	17	1,450	63	21	1,573	37%	38%	41%	11%	17%	28%	3%	2%	1%
25-34 yrs	35	15	1,027	202	49	1,718	31%	33%	29%	37%	39%	31%	14%	10%	4%
35-64 yrs	37	13	1,090	278	55	2,336	33%	28%	31%	50%	44%	42%	17%	12%	6%
By education															
Primary	63	26	1,870	117	44	2,427	55%	58%	52%	21%	35%	43%	5%	4%	2%
Secondary	19	8.6	820	345	68	2,235	17%	19%	23%	63%	54%	40%	25%	17%	8%
Post-secondary	1.03	0.96	59	74	9.2	360	1%	2%	2%	13%	7%	6%	39%	19%	15%
Zero or not stated	32	8.9	819	16	3.8	597	28%	20%	23%	3%	3%	11%	-5%	-6%	-2%

Source: Authors' tabulations based on ZamStats Labor Force data.
Notes:
1/ Zero or not stated indicate workers that indicated having completed 0 years of schooling as the former, or who did not indicate the number of years of schooling completes as the latter.
2/ Data on workers in the tourism industry by level of education is not available and thus cannot be depicted.

Table 4.3: Share of employment by females and youths, IWOSS vs. non-IWOSS, 2005 and 2018

	Share				Growth rate	
	2005		2018		Compound Annual Growth Rate	
	Females	Youth (15-24 yrs)	Females	Youth (15-24 yrs)	Females	Youth (15-24 yrs)
Total IWOSS	**52%**	**37%**	**34%**	**12%**	**9%**	**3%**
Agro-processing	47%	39%	43%	24%	12%	9%
Horticulture	57%	36%	45%	10%	8%	0%
ICT			37%	25%		
Financial & business	50%	40%	39%	3%	14%	-3%
Transport and storage	57%	33%	2%	8%	-18%	-3%
Trade: formal	46%	36%	41%	12%	14%	5%
Manufacturing (excl. agro-processing)	**49%**	**38%**	**7%**	**17%**	**-7%**	**2%**
Other non-IWOSS	**51%**	**41%**	**58%**	**28%**	**5%**	**1%**
Agriculture	52%	41%	67%	34%	5%	1%
Mining	54%	42%	12%	7%	-2%	-4%
Construction	49%	42%	2%	9%	-11%	2%
Utilities	50%	43%	2%	17%	-16%	-1%
Trade: informal	49%	43%	59%	12%	9%	-2%
Government	50%	28%	40%	3%	9%	-7%
Domestic Services	57%	36%	70%	31%	5%	2%
Other	50%	46%	49%	9%	13%	0%
Not Stated	50%	40%	39%	33%	-1%	0%

Source: Authors' tabulations based on ZamStats Labor Force data.

Note: Data on workers in the tourism industry by level of education is not available and thus cannot be reported.

Table 4.4 provides an overview of the education profile of employed workers in aggregate and by industry between 2005 and 2018. While data on skills is not readily available, we use the level of education as a good proxy predictor of the capacity of workers to build their skills. In general, a higher proportion of employed workers in 2018 were educated than in 2005.

Table 4.4: Share of employment by education level, IWOSS vs. non-IWOSS, 2005 and 2018

	Share							
	2005				2018			
	Post-Secondary	Secondary	Primary	Zero or not stated	Post-Secondary	Secondary	Primary	Zero or not stated
Total employment	**2%**	**23%**	**53%**	**23%**	**7%**	**42%**	**41%**	**10%**
Total IWOSS	**1%**	**17%**	**55%**	**28%**	**13%**	**63%**	**21%**	**3%**
Agro-processing	1%	23%	52%	24%	6%	64%	27%	3%
Horticulture	2%	23%	62%	13%	5%	52%	38%	5%
ICT	-	-	-		16%	72%	12%	0%
Financial & business	1%	14%	56%	30%	23%	58%	16%	3%
Transport and storage	1%	14%	53%	32%	5%	72%	17%	5%
Trade: formal	0%	13%	57%	30%	18%	61%	21%	0%
Manufacturing (excl. agro-processing)	**2%**	**19%**	**58%**	**20%**	**7%**	**54%**	**35%**	**3%**
Other non-IWOSS	**2%**	**23%**	**52%**	**23%**	**6%**	**40%**	**43%**	**11%**
Agriculture	1%	24%	52%	23%	2%	38%	47%	13%
Mining	0%	14%	69%	17%	30%	56%	13%	1%
Construction	0%	18%	54%	28%	14%	66%	20%	0%
Utilities	6%	13%	45%	37%	35%	58%	7%	0%
Trade: informal	2%	21%	49%	28%	3%	54%	37%	5%
Government	0%	21%	44%	36%	26%	62%	12%	0%
Domestic services	2%	21%	44%	34%	0%	44%	52%	4%
Other	2%	17%	53%	28%	42%	39%	17%	3%
Not stated	2%	23%	55%	20%	0.2%	26%	58%	23%

Source: Authors' tabulations based on ZamStats Labor Force Data.
Note: Data on workers in the tourism industry by level of education is not available and thus cannot be reported.

Using the highest level of education successfully completed, we find that in 2018, 63 percent of the employed in all IWOSS had successfully completed some level of secondary education, having completed at least grade 7, up to a maximum of 12. This number is significantly greater than the 17 percent level in 2005. At the high end of the spectrum, among IWOSS, the highest proportion of workers—those with more than 12 years of schooling—are employed in finance and business activities (23 percent). Conversely, horticulture and transport employed the lowest percentage of workers with a post-secondary education. Manufacturing, like IWOSS, showed a sharp increase in employment of those with secondary schooling, from 19 percent in 2005 to 54 percent in 2018.

For non-IWOSS, the highest level of education completed is more varied. On aggregate, the majority of workers have primary education. Mining and utilities demand a higher level of education, with about a third of the employed population in these industries having completed more than 12 years of schooling. Similarly, the majority of workers (42 percent) in "other services," which include health and

education services, have a higher proportion of workers with post-secondary education. Among government employees, one quarter have more than 12 years of education. Agriculture and domestic services, on the other hand, employ a higher proportion of workers with primary education and very few with post-secondary education.

A recent study of skills based on a 2016 survey of 350 small, medium, and large enterprises in Zambia offers insight into the effect of workers' skills levels on firm performance.[19] Overall, the study underlined the problem of inadequate practical training of many graduates and, therefore, the importance of in-service training to ensure productive skills. The study distinguished 216 firms as "high skill demand" firms and the other 134 as "low skill demand" firms, with the former involved in export or innovative products and services. The study found that some, but not all, firms responded to skill gaps with strategies such as hiring local or expatriate workers or offering training. Firms with high skill demands sought to fill skill gaps with expatriate workers at a higher rate and also were more likely to offer in-service training. Notably, the study found that, at 28.2 percent, the use of in-service (on the job) training in Zambia, was below the average for other lower-middle-income countries. One reason for the lower use of training appears to be a concern that such investment could be "poached" by other firms. Improving enterprise skills typically resulted in higher labor productivity, and such firms paid workers higher-than-average wages.

In addition, there may be labor market distortions that affect the allocation of existing skills in Zambia. A 2017 World Bank report[20] noted that a significant share of those with tertiary education were absorbed into the public sector, where remuneration, adjusted for skill, tends to be higher than in the private sector. In a generally skill-constrained context, this trend may be a factor constraining industries that are looking for skilled labor.

Because skilled labor is likely to be more productive, endowing workers with market-relevant skills for different occupational groups is an important dimension of any strategy to enhance economic growth of output and employment. Anticipating the future skill requirements of an economy in a dynamic global context with changing technologies is difficult but, for the purpose of this study, that effort has to begin with some understanding of which industries are likely to thrive and their likely labor requirements, the topic of a later section.

4.3 Export performance

We now turn to another important dimension of a dynamic and productive industry: its capacity to export. Trade remains an important mechanism for productivity growth that has been demonstrated empirically to hasten the process of structural transformation for countries locked in low-productivity agricultural activities. In Table 4.5 below, we contrast the export performance of IWOSS relative to manufacturing, non-IWOSS, and overall exports. Under IWOSS, we make an additional distinction between merchandise exports and services exports.

19 'Enterprise Skills and Firm Performance in Zambia: Evidence from Structural Equation Modeling of a Skills Demand Model", World Bank, 2018.
20 "Jobs Diagnostic—Zambia", World Bank 2017.

Table 4.5: Exports and export growth, by industry, 2005-2018

	2005		2018		2005-2018
	USD millions	*Share*	*USD millions*	*Share*	*Annual % growth*
IWOSS total	**772**	**32.7%**	**1320**	**13.2**	**4.2%**
IWOSS services exports	506	21.5%	897	9.0%	4.5%
Transport	14	0.6%	54	0.5%	11.1%
Tourism	477	20.2%	801	8.0%	4.1%
Telecommunications, computer & information	12	0.5%	36	0.4%	8.8%
Other business services	3	0.1%	6	0.1%	5.6%
IWOSS goods exports	266	11.3%	422	4.2%	3.6%
Horticulture	39	1.7%	16	0.2%	-6.8%
Agro-processing	226	9.6%	406	4.1%	4.6%
Manufacturing non-IWOSS total	**82**	**3.5%**	**1043**	**10.4%**	**21.6%**
Other non-IWOSS total	**1410**	**59.8%**	**7560**	**75.6%**	**13.8%**
Mining	1263	53.6%	7245	72.5%	14.4%
Utilities	5	0.2%	83	0.8%	25.0%
Agriculture (excl. horticulture)	143	6.1%	232	2.3%	3.8%
Total exports (goods and services)	**2358**	**100%**	**10000**	**100%**	**11.8%**
Ratio of IWOSS exports to total exports		0.33		0.13	-6.7%
Ratio of manufacturing exports to total exports		0.03		0.1	8.8%
Ratio of other non-IWOSS exports to total exports		0.6		0.76	1.8%

Source: Authors' construction based on UN COMTRADE data obtained from World Bank World Integrated Trade Solution (WITS) available at http://wits.worldbank.org, the United Conference on Trade and Development (UNCTAD) statistics at https://unctadstat.unctad.org and the World Travel and Tourism Council (WTTC) Data at https://www.wttc.org/

Notes:

1/ Horticulture exports are based on ISIC Revision 3 codes 0112-growing of vegetables, horticultural specialties, and nursery products and 0113 -growing of fruit, nuts, beverage, and spice crops.

2/ Growth rates based on the compound average growth rate.

Zambia's exports are dominated by mining products. In large part because of the commodity super-cycle that occurred over this period and boosted copper prices and exports, the share of mining exports increased from 54 percent in 2005 to 72 percent in 2018.[21] Manufacturing exports have gained over the years, increasing from 3.5 percent in 2005 to 10 percent in 2018, with annual growth of over 21 percent. A part of this increase in manufacturing outputs can be traced to the increase in export of chemicals.[22] On the other hand, the share of agricultural exports declined from 6.1 percent in 2005 to 2.3 percent in 2018. On aggregate, non-IWOSS' share of exports increased from 60 percent to 76 percent.

IWOSS exports lagged non-IWOSS exports by a considerable margin over this period but this comparison may be overstated given the choice of 2018 as the end-date, since IWOSS agro-exports were significantly lower than normal during this period, in part due to weather conditions. Growing at

21 Most copper exports are classified as manufactured basic metals. We exclude exports of manufactured basic metals from manufacturing in order to better gauge and reflect the performance and contribution of non-mining manufactured exports.

22 Data from ITC indicate that Zambia is a major exporter of sulphuric acid and cobalt oxides, accounting for between 9-11 percent of world trade in these items in 2017.

well below the rate of total export growth, the share of IWOSS in aggregate exports declined markedly by 20 percentage points, from 33 to 13 percent by 2018. Under services, the share of tourism exports fell by more than half while the share of transport and telecommunications, computer and information exports contracted marginally by 0.1 percentage point. Under merchandise exports, the share of horticulture and agro-processed goods also fell from 2 percent and 10 percent, to 0.2 and 4 percent, respectively. Horticulture exports have been contracting by 7 percent per annum after a promising start in the 2000s. The next section discusses constraints to growth that may have contributed to the relatively weak export performance of IWOSS in Zambia.

5. Selected value chain and constraints analysis

5.1 Value chain analysis

A value chain analysis is useful for identifying each stage of production, distribution, marketing, and retail, the key actors and the linkages between them. In applying it to specific IWOSS subsectors (horticulture, agro-processing, tourism, and ICT) we seek to understand the value chain for each industry, identify likely constraints, and assess the potential for job creation.[23] Having established that IWOSS have shown stronger capacity to generate productive employment and that the export performance has been less stellar, this section focuses on identifying ways in which growth in selected IWOSS is currently constrained and assesses whether and how policy and institutional adjustments may enhance growth prospects.

5.1.1. Horticulture and floriculture

Zambia has nascent floriculture and horticulture sectors that have established footholds in export markets but have less of a presence in the domestic market. About 26 firms constitute the main producers, with vegetable products largely exported to the U.K. and the bulk of flower exports to Holland. Most firms are located around Lusaka. Zambia's flower exports (principally small-headed sweetheart roses of which Zambia produces 40 to 50 percent of world output) constitute about 0.1 percent of global trade, and the country's vegetable exports are an even smaller fraction of world trade.[24] By comparison, Kenya has about 7.7 percent of global flower exports and about 0.3 percent of global vegetable exports. While this may be taken to suggest that Zambia has the potential to grow its share of such trade, both flower exports and vegetable exports have decreased. Flower exports reached a peak value of $32.7 million in 2013 but fell sharply to just $8.6 million in 2019.[25]

Large-scale farmers in horticulture and floriculture typically have contracts with European supermarkets who determine the price and standards and provide the packaging. For example, York Farm produces organic vegetables to supply TESCO in the U.K. On flower production, Khal Amazi is the major player and supplies stores in the Netherlands, the U.K, Germany, and Sweden, using both passenger and cargo freight carriers. A key part of the value chain uses high-quality seeds, appropriate fertilizers and pesticides, especially for vegetables intended for export markets, ensuring phytosanitary standards and maintaining the cold chain. The Zambia Export Growers Association, ZEGA, is an association of farmers who export to the EU and South Africa. The Association owns ZEGA Ltd, a

23 Restrictions due to the COVID-19 situation limited the scope of investigations to study individual links in the value chain for each sub-sector, as had been originally envisaged.
24 Khal Amazi, one of the dominant floriculture firms, was estimated to export 90 percent of the sweetheart roses, with about 180-200 million stems exported in 2013. (An Enterprise Map of Zambia, J. Sutton and G. Langmead, IGC, 2013)
25 Figures based on ITC Trade Map data.

company that does cold chain management. ZEGA Ltd controls virtually the entire logistics market of horticulture/floriculture that is moved by airfreight.

Lowered access to transportation via air has become a constraint for Zambian flower exporters in recent years, as British Airways discontinued direct flights to Lusaka in 2013 and KLM did the same in October 2014. KLM had initiated the direct flights in May 2012 citing the robust growth of the Zambian economy and the link to growing flower exports as the rationale; it then ceased those flights in 2014 for the "optimization of the KLM network portfolio." Since Amsterdam is the global hub for the flower industry and almost all of Zambia's rose exports were to the Netherlands, this stoppage negatively impacted the Zambian floriculture industry.

While South Africa has a long history of floriculture linked to the Netherlands focused on export of flower bulbs (that are less perishable), other African countries are still developing the supply chain management and freight capacities to export flowers, with varying degrees of success.[26] Among these efforts, Kenyan private growers have made significant progress in building cold chain facilities at the Nairobi airport and have also expanded transport links both via belly-hold cargo on passenger flights as well as dedicated freight flights to Europe and the U.K. Ethiopia, a relative newcomer to the sector, adopted a more planned approach and is now the second-largest flower exporter from Africa, behind Kenya. A massive expansion of cold storage facilities at the airport in Addis Ababa supports both flower and horticulture exports, and Ethiopian airlines has two freight flights a day to Amsterdam and 10 flights a week to other destinations, which reduces unit cost of exports. Zambia has a much thinner transport connection and none of these cost advantages; flower and horticulture exporters are, therefore, constrained in their expansion despite climatic conditions that would support the supply of flowers. Airfreight is estimated to account for as much as half of producers' direct costs for Zambian flower producers, in large part because of the limited flights to Europe.

As noted, the major supply constraint for export of floriculture and horticulture is transport but in recent years irrigation difficulties due to poor rainfall and erratic electricity supply has also been a constraint. Floral firms have largely invested in irrigation systems to support year-round production but costs are affected when power supply is unreliable and power generators have to be used. Firms also complain that the removal of duty exemptions has increased costs and reduced profitability. As a relatively small producer, Zambian exporters are price-takers so rising costs run into an international price constraint that squeezes profits. The industry could grow and employ more labor in Zambia if higher standards were also applied to produce for the domestic and regional market (AgBit, 2015). This may be possible for horticulture, however, the demand for floriculture is not great enough in the region.

There is potential for horticulture producers to expand their domestic market since most supermarket chains do not sell Zambian produce; indeed, this local market should be an achievable target. Unskilled labor is not a constraint (although specific agronomy and agro-scientific skills are in short supply in Zambia) and more than half of those employed in the formal horticulture industry are women. It may be advisable to prepare producers to improve quality and strengthen the value chain before attempting greater access to foreign markets with their more stringent requirements. While supporting small farmers, a significant proportion of whom also produce vegetables for sale in roadside stalls and local markets, would enlarge the employment effects of such growth, such efforts require appropriate institutional, advisory, and financial support to link them effectively to the formal supply chain. Indeed, the lack of marketing channels and extension services to improve quality of produce are a constraint

26 K. Button, "The economics of Africa's floriculture air-cargo supply chain", Journal of Transport Geography, June 2020.

for the small farmers that, if addressed, could significantly improve their output and employment and diversify their income sources.

5.1.2. Agro-processing[27]

Agro-processing firms process agricultural products, including horticultural produce, into other processed goods. Cane and beet sugar and related products, oilcakes, beverages, and cereals are the main exports of the Zambian agro-processing sector. We looked at two agro-processing value chains: agro-processing of milkshakes and sugar production.

Inputs for Zambia's milkshake businesses are imported or bought from domestic producers, and domestic logistics are conducted entirely by the agro-processing firm. Import and export logistics are conducted by a third party. Firms collect milk and milk powder in warehouses, process them into milkshakes in production plants, and then transfer the final product to depots. From the depots the product is distributed to domestic sellers or exported. The agro-processor provides marketing support for sellers through billboards, TV and radio advertisements, and roadshows. An increase in cost-competitive domestic production of raw materials would remove the need to import raw materials and enable an increase in domestic employment. In addition, if quality of the milkshakes is further improved, firms could increase the export market from just Zambia's neighbors to the greater Africa region, Europe, and Asia.

The agro-processing value chain for horticulture in Zambia is not generally well developed and there are many nodes where upgrading could result in more jobs. However, the example of the sugar industry illustrates the potential to grow output, exports, and employment. Indeed, Zambian climatic conditions are ideal for sugarcane production, and there is potential to grow output and employment both in growing and harvesting sugarcane as well as in processing into sugar and related products. Zambia Sugar PLC (currently majority owned by Ilovo Sugar Ltd. of South Africa, a subsidiary of Associated British Foods) is the country's dominant sugar producer with over 90 percent share of the domestic market. It produces sugarcane on its own acreage (17,000 ha) while also drawing in cane from out-growers for its milling plant. There are a few other smaller sugar-producing firms, but they account for less than 10 percent of domestic production. Zambia Sugar PLC employs 2,000 permanent staff and up to 5,000 seasonal staff. It exports both raw sugar as well as a growing volume of specialty sugars to the EU and regional markets in Southern and Central Africa. Refined sugar is sold to Zambian consumers as well as to domestic beverage makers and confectioners. Zambia PLC is a sophisticated and vertically integrated firm which produces 40MW of power from bagasse-fired plant and has its own water treatment facility.

While the example of Zambia Sugar illustrates how agro-processing potential could be exploited, significant hurdles to growing the sector persist. According to a Zambia Development Agency report (2014) the "major constraints to the development and growth of agro-industrial enterprises [are] … inadequate raw material supplies, limited access to appropriate technology, limited capacity to maintain technologies, failure by locally processed products to compete against imports, low viability of existing agro-processing enterprises and limited access to credit." Specialist skills for quality and safety management are in limited supply in Zambia and are also a constraint to growth, with the sugar

[27] Agro-processing in this paper refers to firms engaged in manufacturing of food, beverages and tobacco, textile, clothing and leather, wood and wood products, and paper and paper products.

industry often having to bring in skilled workers from Ilovo South Africa and from Associated British Foods as needed.

Agro-processors need a reliable supply of raw materials, and quality of those materials is a particularly important aspect for export markets. Currently, crop and livestock production can vary and be unreliable for downstream processing firms. Raw materials that are supplied in Zambia are of varying quality and quantity, partly because of fluctuations in weather and damage due to pests. While the Zambia Development Agency (ZDA) recommends that the agro-processors should ensure implementation of appropriate standards for soil, pest, and water management, this effort requires staff with necessary scientific skills not widely available. There is an important role for public extension services to provide advice to farmers beyond what agro-processors themselves can provide.

The ZDA has also recommended that agro-processors encourage farmers to grow crops that mature at different seasons so that machinery can be in continuous use (ZDA, 2014). Adapting crop patterns, where possible, would enhance both upstream and agro-processing employment. Improvements in coordinating and organization of firms to improve logistics would also enhance productivity and increase production value within the agro-processing value chain.

5.1.3. Tourism

In 2018, Zambia received almost 1 million international arrivals, the bulk (78 percent) of whom came from within sub-Saharan Africa, while 9.2 percent were from Europe and 7 percent from Asia. Business visitors were the largest group at about 53 percent. Tourism is a sector that can provide high value jobs to skilled and moderately skilled labor and there is considerable under-exploited potential to increase value added in this sector. According to the Zambia Tourism Agency there are three tourism value chains in Zambia: (i) leisure tourism; (ii) meetings, incentives, conferences, and events (MICE); and (iii) “shopping” tourism (Interview with Zambian Tourism Agency, ZTA, 2019).

For leisure tourists, Zambia has abundant natural assets with Victoria Falls and many national parks. There are several opportunities to increase employment in this sector. In particular, because the safari season runs for only six months of the year, lodges, other infrastructure and labor are not utilized during the other half of the year. To attract visitors and increase use of these facilities in the low season, leisure tourism operators could consider offering other activities, including cultural activities (Acorn Tourism Consulting, 2018). Increasing the number of activities and highlighting unique aspects of wildlife and landscapes would encourage tourists to look at Zambia as a sole destination in itself, rather than just a short add-on destination to a safari in South Africa or Botswana. Moreover, the northern circuit remains largely unexploited owing to underdeveloped tourism products and weak linkages to the southern circuit,[28] which has contributed in large part to the short—and declining—average length of stay.[29]

Zambian tour operators are not earning the revenue from tourists coming in from Europe who either book online or use foreign travel agents. Given this trend, Zambian firms might earn more revenue by looking to domestic and regional tourists. However, to make this happen Zambian firms need to invest in better technology (e.g., to make bookings, payments), develop their industry networks, and train more skilled labor (Acorn Tourism Consulting, 2018).

28 Report of the Auditor General on the Performance of the Tourism Sector in Ensuring an Increase in the Length of Stay of International Tourists, Office of the Auditor General, 2020.
29 Ibid.

The Zambia Tourism Master Plan 2018-2023 provides a comprehensive and critical analysis and approach for addressing the many constraints hindering the tourism sector. It provides clarity and a strategy for growing the sector in a phased way which, in the best-case scenario, could enhance international tourism revenue by $3 billion by 2038 and add 1.63 million arrivals to the current 0.98 million. However, the plan acknowledges that accomplishing this goal will require attention to (a) sustained clarity in policy direction toward tourism; (b) improved tourist access, including easy visa processes and air and road connections; (c) expanded supply of suitable tourist venues, including more 3- to 4-star accommodation and reduced costs; (d) effective destination promotion of Zambia; and (e) perhaps most importantly, improved management of the sector, which requires reduction in bureaucracy, better government coordination, strengthened law enforcement, and more skilled professionals.

Zambia is an expensive tourist destination, a handicap which will need to be addressed unless Zambia adopts a focus on high-end clientele for whom cost may not be a consideration. In fact, across tourism firms surveyed, respondees reported that the high costs of domestic and international travel are major constraints to the growth of the sector. Indeed, transport connections into Zambia and within Zambia are limited and costly. It is often more expensive to fly to Zambia than other tourist destinations in Africa such as Kenya or South Africa. Additionally, the lack of a national carrier has rendered travelling to Zambia very expensive compared to other destinations such as South Africa, Botswana, and Namibia. Internal flights are also expensive.

Acorn Consulting conducted an analysis to determine what is stopping Zambian tourism SME's from attracting European customers and found a number of constraints, including not enough differentiated products, such as activities and accommodation, that meet the necessary standards of European tourists. In addition, connectivity between different tourist areas in Zambia is poor; domestic tourism is significantly hampered by the poor state of roads: Although in recent years Zambia has invested significantly in improving its road network, its road density of 9.1 per 100 sq. km is still well below the sub-Saharan average of 14.9 km per 100 sq. km.

A narrow range of accommodation choices also hinders the growth of tourism. In general, many hotels and lodges are luxury-rated, and there are few mid-range accommodations, the effect of which is to limit tourist options, raise costs, and reduce tourist arrivals and length of stay. In Livingstone, where tourists come to see Victoria Falls, only 6 percent of accommodation providers are in the middle price range of $80 to $159. In Cape Town, by contrast, 38 percent of accommodation providers fall in the mid-range (Acorn Tourism Consulting, Ltd).

In terms of the value chain, skilled labor, especially regarding the quality of service staff, is a bottleneck.[30] As a result, in their report, Acorn Consulting recommends increasing the number of training facilities and teaching skills that match demand. A deeper constraint to developing the necessary skills is the quality of training institutions: While the Zambian Institute for Tourism and Hospitality Services (ZITHS), Livingstone International University of Tourism Excellence and Business Management (LIUTEBM), and Livingstone Institute of Business and Engineering Studies (LIBES) all offer a range of degrees and diplomas as well as technical education, vocation, and entrepreneurship training programs, they are poorly equipped and lack qualified trainers, leading to the quality of training to be seen as inadequate and not aligned with industry needs.[31] At present, these institutions are

30 Acorn Consulting Ltd, 2018.
31 Zambia Tourism Master Plan 2018-2023, Ministry of Tourism and Arts, p.21.

capable of training about 700 graduates per year but clearly the quality of training must be improved for strategy to promote growth in the sector.

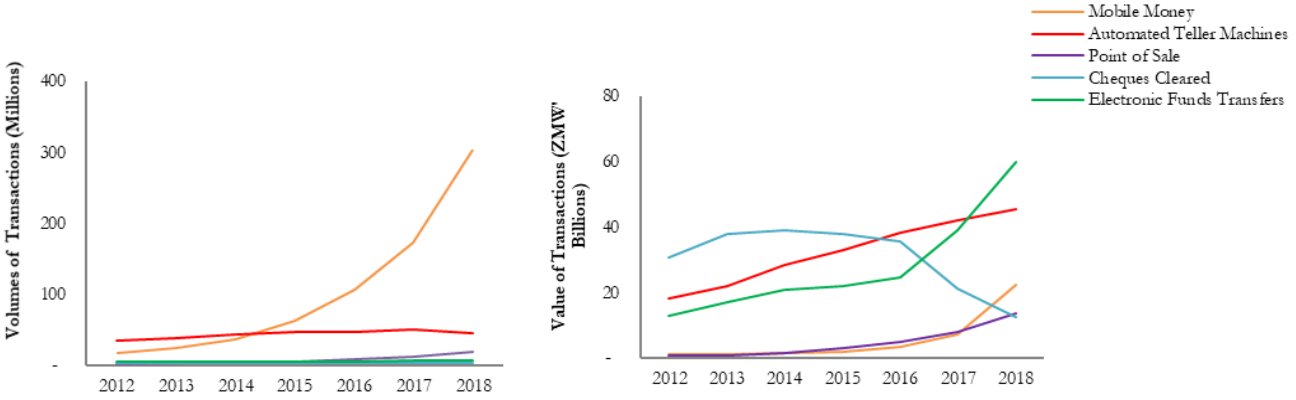
An additional constraint to tourism in Zambia is marketing; arguably, not enough has been done to highlight the country's unique attractions and successfully develop international interest in visiting Zambia. Indeed, Zambia is often an add-on destination to a holiday in southern Africa but not seen as a single destination in itself. While the Zambia Tourism Master Plan provides a credible medium-term strategy for attracting visitors, this strategy needs to be supported by an appropriately funded marketing plan. The Zambia Tourism Agency, however, has a very limited budget for marketing activities (ZTA Interview, 2019), which undermines the implementation of such a plan.

5.1.4. Information and communications technology (ICT)

One of our four IWOSS industries of interest exhibits a growth rate unparalleled by non-IWOSS and the overall economy and as such, we dwell on it a bit more but at a broader level. Between 2005 and 2018, ICT in Zambia expanded rapidly, on average by 18.5 percent per annum, driven in large part by the adoption of modern communications technologies by businesses, government, and a rapidly growing share of the population. Financial accounts in 2017 were accessed digitally by 46 percent of the population, relative to 21 percent in 2011, a fact driven both by the adaptations of banks and financial institutions as well as the wider access to mobile money providers in Zambia. In fact, the number of active mobile subscribers almost tripled from 5.4 million in 2010 to 15.5 million in 2018. Similarly, mobile broadband users increased exponentially by 2,486 percent from less than 400 thousand to more than 9 million users (ZICTA, 2019).

The government itself is expanding the use of digital payments for salary and pension, in government-to-business and government-to-government payments, thereby reducing transactions costs and improving government accounts.

Figure 5.1: Volume and value of types of monetary transactions in Zambia, 2012-2018



Source: Authors' construction based on BOZ Data.

Beyond direct output growth, ICT enables growth in other industries by improving productivity. For instance, the growth of mobile money—a derivative of ICT and financial services, which is also proving to be a source of employment—has also been unprecedented. Between 2012 and 2018, the volume of mobile money transactions grew exponentially by 1,644 percent, exceeding the number of transactions vis-à-vis other conventional payment forms (Figure 5.1). In tandem, the value of

transactions grew by 1,807 percent, albeit this number remains below the value of transactions carried out through automated teller machines and electronic funds transfers.

The explosive growth of ICT in Zambia has been facilitated by growth of digital infrastructure, digital financial services, and digital platforms, as identified by a recent World Bank diagnostic report on the digital economy in Zambia.[32] Of the five essential pillars for a country to realize the benefits of digital transformation, Zambia has done very well with regard to digital infrastructure (having established a state-of the art data center and links to provincial centers) and has achieved a significant expansion of digital financial services and digital platforms (as already described) but is seen to be lagging in building up digital skills and is relatively weak in digital entrepreneurship. Moreover, last-mile connectivity issues persist with regard to the digital network; thus, serving remote populations remains a challenge.

Although the ICT industry has grown explosively in recent years, this strong performance may not be sustained. If not addressed through urgent action to develop suitable digital curriculum, skill limitations are apparent and will likely cause such growth to stall and for dependence on foreign expertise to deepen. Second, the World Bank diagnostic report[33] also points to the limited availability of digital entrepreneurship, the capacity to identify opportunity, design solutions, and take risks. The real challenge for Zambia, then, concerns upgrading digital technology skills in its population to enable full exploitation of the available infrastructure. Entrepreneurship is a skill that is not easily taught but, once digital skills are available in the population, there are ways in which angel investors could help develop the entrepreneurial instincts among those who show promise. While there is an incipient growth of digital enterprises—more and more firms are registering to provide digital services across sectors such as tourism, education, and financial services—there is tremendous scope for expansion should the skill levels be enhanced. The World Bank's diagnostic report[34] recommends that the government develop a digital transformation strategy to better exploit the potential of ICT, including promoting greater use of digital technologies and paying specific attention to the investments necessary to improve digital skills. Addressing this important skills constraint would help catalyze rapid growth of ICT-related enterprises and related employment for youth in Zambia in high-productivity occupations. Notably, prospects for attracting foreign investment and generating exports of ICT services will also depend on demonstrated skills to provide reliable services in the *domestic* market first, as Kenya has shown.[35]

5.2 Constraints limiting the growth of IWOSS

Growth in both IWOSS and non-IWOSS industries has been influenced by economy-wide constraints as well as industry-specific ones. Macroeconomic policies over the past decade and resulting high deficits and payment delays have crowded out private sector access to credit, raised debt levels to alarming levels, and created exchange rate instability over the past 5 years—all of which adversely affect firm operations and profitability. Power shortages due to drought conditions and uncertainties regarding tax policies have also undermined investor confidence and growth.

Labor market regulations over the past 5 years have increasingly tilted the playing field against employers as concerns for protecting workers have failed to take into account the impact on

32 Accelerating Digital Transformation in Zambia—Digital Economy Diagnostic Report, World Bank, 2020.
33 Ibid.
34 Ibid.
35 "Kenya's reputation for quality leads companies to choose Nairobi", Financial Times, November 1, 2019.

employers, and therefore on employment. For example, new regulations have imposed significant burden on employers by reducing flexibility in contracts, which hinders job creation. For example, in 2015, Zambia introduced legislation to address concerns about the increasing "casualization" of work, which was a trend in which employers reduced permanent jobs in favor of repeated casual or temporary contracts, impinging on the rights of workers to contractual security. While clarifying different kinds of contracts (including consultancies and seasonal contracts) the legislation defined terms under which repeated use of shorter-term contracts must be upgraded to longer-term contracts. Notably, the Employment (Amendment) Act also criminalized violations of the terms of the Act, moving adjudication from the industrial courts to the judicial courts. A 2017 study[36] surveyed firms across various regions to assess the effect of such labor market regulations on labor outcomes. The responses identified the criminalization as a major concern for employers, as was the perceived implicit ban on casual work that limited the ability of firms to cope with uncertain economic conditions. High severance pay requirements for longer-term workers were also seen as disincentivizing such contracts.

More recently, the new Employment Code Act, which came into force on May 10, 2020 has been described by most firms as disastrous to their activities, raising costs and lowering labor productivity. The Act requires all categories of employees (including those previously unprotected) to be covered, significantly expanding the scope of the law. By increasing leave entitlements, gratuity, and severance payments, allowing overtime eligibility for managers, and codifying provision of housing assistance and medical services to employees, the law significantly escalates costs to enterprises across the country. Moreover, the new employment code inhibits job creation as it renders seasonal/temporary hiring extremely difficult, which particularly impacts sectors such as tourism, among other industries. It also restricts the recruitment of expatriate staff, which limits the acquisition of necessary skills in various industries.

The Act has been critiqued by Zambian policy analysts as particularly inappropriate during the economic downturn that was exacerbated by the pandemic, and employers have called for suspending the provisions of the Act and a reconsideration of the approach to employment regulations.[37]

Other binding constraints to economic growth in Zambia include the low quality of human capital, poor infrastructure services (e.g., electricity, water, and sanitation), and coordination failures that limit exports.[38] In a 2013 World Bank Enterprise Survey, firms in Zambia stated that they faced obstacles such as taxation and access to finance and electricity. At that time, 27.5 percent of interviewed firms indicated that access to finance was their biggest obstacle, compared to the world average of 14.9 percent and the sub-Saharan African average of 22.2.

As part of this study, we surveyed a limited number of IWOSS firms was used to update and supplement this assessment to identify constraints specific to the IWOSS sectors.[39] The module on constraints focused on access to credit, macroeconomic environment, infrastructure, taxes, and labor market. In terms of the general business/macroeconomic climate, most of the surveyed firms decried dwindling profit margins and the rising costs of inputs sourced from foreign markets. All four horticulture and agro-processing firms who took part in the case study import most of their inputs from China, South

36 Gibson Masumbu and Felix Mwenge, Labor Market Regulations and Labor Market Outcomes in Zambia: A Firm's Perspective, ZIPAR Policy Paper No.4, Zambia Institute for Policy Analysis and Research, July 2017.
37 Oliver Saasa and Felix Mwenge, Critical Assessment of the Employment Code Act, 2020.
38 Analysis of Constraints to Inclusive Growth in Zambia, MCC, 2011.
39 Two agro processing firms, 6 tourism firms, 3 ICT firms and 2 firms from the horticulture sector.

Africa, and the EU. The continuous depreciation of the kwacha has rendered imported inputs very expensive. For example, between March 2019 to March 2020, the kwacha lost 24 percent of its value against the dollar in nominal terms. Most of the surveyed firms do not export yet they import most inputs quoted in dollar terms. As a result, the profitability of these firms has been significantly reduced. These statistics underline the fact that macroeconomic management is critical to successful growth of the IWOSS.

Agro-processing, horticulture and tourism firms all reported cumbersome administrative procedures and numerous licenses as a major hurdle to the expansion of their businesses. These firms complained that they spend a lot of time and money in order to comply with the numerous administrative requirements. These resources could have been reinvested in expanding their businesses.[40]

All the firms interviewed decried the fact that taxes in Zambia are very high compared to other countries.[41] In addition, many complained that fiscal policies are inconsistent and unpredictable. For example, the September 2018 announcement of replacing VAT with a sales tax created great uncertainty for firms. Many firms also lamented the fact that they are not consulted in decision making on fiscal policies.

Financial conditions have deteriorated since 2013 so both access to finance and cost of financing have become more of an issue. These broad results were confirmed by our interviews with IWOSS firms in August 2020. Of the 13 firms which responded to the survey, 5 firms reported difficulties in accessing affordable loans as a major constraint to the of growth their business. The process of acquiring a loan was described by these firms as lengthy, procedurally complex and uncertain.

Access to reliable energy also emerged as the most important constraint limiting the growth of most of the IWOSS firms interviewed. Erratic rainfall in a hydro-dependent system has reduced power generation in Zambia over the past five years. Out of the 8 firms which provided information on infrastructural constraints, 5 noted that frequent and unpredictable electricity outages significantly impede their activities. Though some firms have adopted alternative sources of energy such as solar panels or fuel driven electricity generators, they hold that these back-up sources are very costly to maintain. An agro-processing firm highlighted the fact that most of its equipment cannot be powered by solar energy, hence the firm is dependent on hydroelectricity. ICT firms highlighted the fact that disruption in electricity supply leads to breakdown in the provision of ICT services such as internet and mobile money services. Load shedding paralyzes irrigation and refrigeration systems used by horticulture and floriculture firms. Load shedding also affects the choice of production technology of agro-processing firms. Improved irrigation, which would require more reliable energy would increase the quality and consistency of produce, which is demanded by both the European and regional export market.

As noted above, the growth of Zambian firms in several sectors has been constrained by the lack of direct flights to Europe since British Airways and KLM stopped service in 2013 and 2014, respectively. Such stoppages have increased the time it takes to deliver exports from Zambia to Europe, an important factor in the quality of fresh of fresh produce such as horticulture and floriculture. These

40 It should be noted that despite these specific complaints Zambia ranks relatively well in the Doing Business rankings, coming in at #85, the fifth ranked country from sub-Saharan Africa, behind Mauritius (#13), Rwanda (#38), Kenya (#56) and S. Africa (#84). However, the provisions of the new Employment Code will likely result in a downgrading of the environment for business in Zambia.
41 The timing of the surveys in mid-2020, as the COVID pandemic was breaking, limited the scope, quality and depth of the interviews and our capacity to dig deeper into particular questions.

products have to be transported via Johannesburg, Nairobi, or Dubai. While Air France/KLM announced a once-a-week freight flight from Amsterdam to Lusaka from September 2019 that may restore the prospects for floriculture and horticulture in Zambia, it is not clear if this commitment will be sustained in the aftermath of the COVID-19 pandemic, which has severely affected the aviation industry. Zambia, thus, remains vulnerable to its limited options for transporting fresh produce to export markets. Additionally, the lack of direct flights (which are also more expensive) make Zambia a less attractive tourist destination compared to South Africa and East African countries that are better linked.

The lack of skills in the working-age population continues to hinder growth across sectors as well: Indeed, a 2011 Millennium Challenge Corporation (MCC) study on constraints to inclusive growth in Zambia highlighted the challenge of the "low quality of human capital."[42] In fact, the Labor Force Survey 2018 revealed that 8 percent of the employed population have received no education, 29 percent received education up to Grade 7, 49 percent have received education levels up to Grade 12, and just 13 percent have received a certificate/diploma, bachelor's, or master's degree (LFS, 2018). These figures do not include those employed in informal agriculture, which may suggest that the working population is actually less educated than these figures show. We would also expect the unemployed population to have lower education levels.

Given these statistics, a major challenge for Zambia is to ensure that sectors can productively absorb labor at different skills levels in adequate volumes to reduce unemployment, while striving to raise skill levels across the population. IWOSS has the potential to absorb significant numbers of those with Grade 12 education as well as lower-skilled workers. At the same time, higher-level, specialized skills essential to upgrading quality are likely to be a constraint for specific industries, particularly ICT where the lack of high-skilled personnel in domains such as network management, software development, and cyber-security, etc., force firms to hire foreign experts or outsource some of their activities.

6. Projecting the employment effects of Vision 2030

In *Vision 2030*, a document prepared in 2006, the government of Zambia outlined an aspirational path to become a "prosperous middle-income nation by 2030."[43] This optimistic scenario offered the opportunity to examine how future growth might influence labor demand in IWOSS, manufacturing, and non-IWOSS sectors. The *Vision 2030* document provides one basis for projecting the likely implications for sector-specific growth. The employment elasticities derived in Table 4.1 could then be used to estimate employment growth and skill demand across sectors.

Vision 2030, in its "preferred scenario," projected growth rates increase to higher plateaus in each five-year plan period, beginning at 6 percent and reaching 10 percent in the final decade, 2021-2030. Zambia did grow at an average rate of 7 percent over the 2004-2012 period, so such a high growth rate is conceivable, although the copper boom was a major factor in that high growth. The 2017-2021 five-year plan moderated growth assumptions to 5 percent, a more realistic target.[44] In our projection we estimate an overall GDP growth rate of 7.2 percent annually from 2018 to 2030. Within this scenario, and assuming that there are no constraints to their expansion, IWOSS sectors would grow at 7.6 percent annually, with manufacturing and non-IWOSS growing at 10.5 percent and 7 percent,

42 Millennium Challenge Corporation, "Analysis of Constraints to Inclusive Growth in Zambia," 2011
43 The "optimistic scenario" assumed growth would increase steadily from 6 percent to 14 percent over the 24 years. National Planning Commission, 2006. " Vision 2030." Available at: https://www.mndp.gov.zm/wp-content/uploads/filebase/vision_2030/Vision-2030.pdf
44 The 2017-21 Five Year Plan is available at: https://www.mndp.gov.zm/wp-content/uploads/2018/05/7NDP.pdf.

respectively. With respect to labor demand, our projections, which are described in Table 6.1, are consistent with a story of continuing structural transformation. In short, we see a significant transition away from agriculture and towards more productive sectors, with the majority of new formal sector jobs being created in IWOSS. The employment elasticities derived in Table 4.1 were assumed to hold over 2018-2030: 2.7 across all IWOSS, 1.02 for manufacturing, and 0.85 for other non-IWOSS and 0.88 for total employment. Under these assumptions, we project that IWOSS employment shares will expand from 6.2 percent to 19 percent of total employment, while other non-IWOSS shares will decline from 92 to 78 percent of the total. Similarly, we find that manufacturing employment shares will rise by just 1 percentage point over this period. These employment numbers are partly a result of the ambitious growth projections embedded in *Vision 2030*. If actual growth rates are lower, overall levels of employment growth and the shift in labor allocation to IWOSS would be correspondingly lower.

Table 6.1: Future projections based on aspirational growth to 2030

	GDP (millions)			Employment		Share of total employment	
	2018	*2030 (proj.)*	*Annual growth****	*2018*	*2030 (proj.)*	*2018*	*2030 (proj.)*
Total	139,688	323,126	7.2%	6,280,898	13,626,686	100%	100%
IWOSS*	42,080	101,183	7.6%	389,571	2,601,079	6.2%	19%
Agro-processing	3,996	12,874	10.2%	124,841	873,677	2.0%	6%
Tourism	8,503	23,943	9.0%	118,598	700,032	1.9%	5%
Transport & storage and ICT**	11,154	31,406	9.0%	101,333	598,125	1.6%	4%
Trade (formal)	12,827	17,190		85,912	164,819		1%
Financial & business	14,104	39,713	9.0%	163,397	964,458	2.6%	7%
Manufacturing (excl. agro-processing)	7,282	24,238	10.5%	125,670	424,057	2.0%	3%
Other non-IWOSS	82,416	197,706	7.6%	5,765,657	10,601,549	91.8%	78%
Agriculture (incl. horticulture)	8,213	15,158	5.2%	3,604,940	6,196,450	57.4%	45%
Mining	14,932	34,663	7.3%	80,513	170,941	1.3%	1%
Construction	15,175	48,887	10.2%	149,874	432,889	2.4%	3%
Trade (informal)	16,933	22,694	2.5%	536,636	691,803	8.5%	5%
Utilities	2,802	8,156	9.3%	22,734	59,647	0.4%	0%
Government**	7,082	20,610	9.3%	76,629	201,047	1.2%	1%
Domestic services				63,714		1.0%	
Other + not stated	17,278	47,538	8.8%	1,144,705	2,848,773	18.2%	21%

Notes: * Sum of IWOSS excludes tourism to avoid double counting.
** Prior to 2010, Transport and Storage was classified with ICT as per ISIC Revision 3. For comparability over time, we add ICT to transport and storage in 2018.
*** Aspirational growth projections based on Zambia's "Vision 2030", pp.9.

On methodology

The approach taken to construct these employment projections has sought to follow the employment elasticity approach as outlined by Bhorat et al. (2020). However, several points should be highlighted. Bhorat et al. (2020) note the importance of long time series in order to glean accurate estimates for employment elasticity, particularly in terms of GDP growth, which is often more volatile than employment growth. In the case of the Zamstats LFS survey data available to us, this approach proved challenging. While we had access to LFS and national account data ranging from 2005 to 2018, our GDP estimates are based on the narrower time period of 2010-2018, due to a step change in the data for manufacturing and agro-processing between 2009 and 2010. Over one year, gross value-added increases for manufacturing from ZMW 963 million in 2009 to ZMW 3.9 billion in 2010. Conversely, gross value-added for agro-processing nearly halved from ZMW 6.3 billion in 2009 to ZMW 3.5 million in 2010. This drop most likely stems from a change in definition rather than underlying economic phenomena: That year, ZamStats changed the variable used to disaggregate gross value add according to manufacturing sub-sectors. Prior to 2010, ZamStats relied on the Industrial Production Index. In 2010, the Economic Census became the basis of the computation of the gross value-added of various sub-sectors.

In order to address this shortened time series and attempt to smooth any associated volatility, we undertook two steps in assembling our elasticities and projections. The first was to compare compound annual growth rates over 2010-2018 for GDP and 2005-2018 for employment. The second was to use the broader elasticities calculated for IWOSS, non-IWOSS, manufacturing, and agriculture, rather than more granular elasticities by individual sector in calculating labor demand.

We also examine trends in skill demand by sector between 2005 and 2018, projecting these trends forward to understand the composition of skills that will be required to meet forthcoming labor demand in IWOSS (Table 6.2). With respect to projected demand by skill level, we follow the methodology employed by Newfarmer et al. 2020. In this approach, we first project the annual trends in skill distribution we observe between 2005 and 2018 to 2030. Then, because these estimates are not bounded by the size of the labor force, we apply these relative shares to the new jobs to be created (detailed in Table 6.2). As Newfarmer et al. (2018) note, this approach acknowledges that the skills distribution is comprised of both a stock and a flow, a stock of existing workers, and the flow of workers

Table 6.2 displays on skills demand across industries may shift over the next decade in line with the projections of labor demand described in Table 6.1. In general, the distribution of skills will shift from lower skills towards higher skills with narrowing of demand for those with low skills. Within IWOSS, finance and business services will see the greatest demand for high skills while agro-processing will require almost three-fourths of its workers to be moderately skilled. The numbers are similar for manufacturing, while mining will require all but 10 percent of its work force to be highly skilled.

Table 6.2: Projected labor demand by skill level

	2018			2030 (proj.)							Annual % growth 2018-2030		
	LS	*S*	*HS*	*Total*	*LS*	*S*	*HS*	*LS*	*S*	*HS*	*LS*	*S*	*HS*
Total	**45.6%**	**46.6%**	**7.8%**	**9,664,253**	**1,056,646**	**4,258,715**	**4,348,892**	**10.9%**	**44.1%**	**45.0%**	**2.1%**	**9.2%**	**16.6%**
IWOSS*	**20.3%**	**66.3%**	**13.4%**	**9,911,928**	**155,635**	**4,437,973**	**5,318,319**	**1.6%**	**44.8%**	**53.7%**	**4.2%**	**25.1%**	**38.7%**
Agro-processing	27.4%	65.9%	6.6%	4,058,197	265,932	3,026,315	765,951	6.6%	74.6%	18.9%	7.2%	22.0%	31.7%
Tourism													
Transport & Storage and ICT**	17.3%	76.0%	6.7%	2,240,690	31,051	1,980,511	229,127	1.4%	88.4%	10.2%	-0.5%	24.4%	27.2%
Financial & business	16.9%	59.8%	23.3%	3,613,041	28,067	1,146,628	2,438,346	0.8%	31.7%	67.5%	6.1%	30.0%	49.8%
ICT**													
Manufacturing (excl. agro-processing)	**36.3%**	**56.1%**	**7.6%**	**302,281**	**36,471**	**228,821**	**36,989**	**12.1%**	**75.7%**	**12.2%**	**4.2%**	**17.1%**	**18.9%**
Other non-IWOSS	**47.8%**	**44.8%**	**7.4%**	**-549,956**	**-83,347**	**-235,552**	**-231,057**	**15.2%**	**42.8%**	**42.0%**	**1.9%**	**8.2%**	**15.4%**
Agriculture (incl. horticulture)	53.8%	43.7%	2.5%	-2,573,635	-1,029,821	-1,461,797	-82,017	40.0%	56.8%	3.2%	1.5%	6.4%	6.0%
Mining	13.1%	56.6%	30.3%	76,849	82	6,228	70,539	0.1%	8.1%	91.8%	-2.9%	23.3%	59.0%
Construction	19.6%	66.6%	13.8%	231,309	7,575	221,192	2,542	3.3%	95.6%	1.1%	6.4%	27.3%	
Trade	36.1%	58.2%	5.7%	162,482	22,057	128,412	12,012	13.6%	79.0%	7.4%	5.2%	17.1%	16.6%
Utilities	7.3%	57.9%	34.9%	30,543	97	16,823	13,623	0.3%	55.1%	44.6%	-7.8%	19.1%	22.1%
Government**	12.3%	61.8%	25.8%	102,950	2,100	96,347	4,422	2.1%	93.6%	4.3%	0.3%	20.2%	
Domestic services	53.8%	46.2%						40.5%	59.5%		4.8%	9.6%	
Other + Not stated	46.6%	34.6%	18.8%	1,419,546	255,452	334,411	829,683	18.0%	23.6%	58.4%	2.1%	7.1%	21.5%

Source: Authors' own computations based on ZamStats Labor Force Survey data.
Notes:
1/ LS = low skilled, S = skilled, and HS = high skilled
2/ Level of education attained is used to proxy skills owing to data challenges of using occupations. Skills are defined as low skill if the highest grade completed is equal to or less than 7 but more than 1; skilled if greater than 7 but less or equal to 12; and high skilled if greater than 12
3/ The totals do not include workers with zero years of schooling completed and workers with unstated highest level of education completed. Thus, the total does not add up to the total of workers employed in each industry
4/ Data on workers in the tourism industry by level of education is not available and thus excluded.

It should be noted that the rapid expansion of the high skilled (HS) category in Table 6.2 reflects the anticipated growth in the share of the labor force with at least 12 years of education. This is realistic given the youthful population and a policy focus on expanding access to education and school completion rates. However, Zambia will be challenged to significantly expand the supply of specialist skills in the medium term. Thus, even for moderate rates of overall economic growth in the 3 to 5 percent range, skill constraints will be a factor limiting the ability of many sectors, but particularly the IWOSS industries as well as mining and construction, to expand their output and employment. Thus, policymakers must be highly aware of this constraint and ensure that there are as few impediments as possible to the recruitment of higher-level specialized skills from international sources. Regulations that limit the ability of firms to recruit specialized skills would be costly and should be avoided, since they will limit the capacity of firms to invest and expand overall employment. In addition, the incentive for in-service training by Zambian firms could be improved. Identifying and targeting the factors that make firms use this form of skill upgrading would improve opportunities for younger workers. Over the longer term, Zambia urgently requires a jointly developed public-private strategy and implementation plan for improving the supply of required skills, particularly among young as well as female workers.

7. Taking stock

The evidence of structural change and the way it has affected employment across industries that emerges from the above analysis is mixed and refuses to yield to a straightforward narrative about the nature of change in Zambia.

The first finding is that there is an ongoing process of structural change in Zambia, with labor gradually moving from agriculture to more urban occupations. However, the nature of the shift in labor is not, as conventionally expected, largely into the manufacturing sector but rather into service sector activities, similar to the experience of many countries experiencing pre-mature deindustrialization.

The second finding is that Zambia's manufacturing sector as a whole has not been a major driver of growth, as it further contracted its share of GDP from 11 to 8 percent between 2005 and 2018. However, its share of employment has expanded from 1.9 to about 4 percent—pointing to intra-sectoral shifts as some industries have expanded while others have shrunk.[45] Rather than the typical "hump" relating the share of manufacturing employment to the GDP per capita expected as part of structural transformation, Zambia has had a collapse followed by a small u-shaped increase in manufacturing employment. There is some nuance to the manufacturing story since particular industries such as chemicals have expanded labor productivity and exports.

The third finding is that the service sector has experienced very substantial growth and now accounts for 54 percent of GDP and 24 percent of employment. However, the nature of the growth of the service sector is uneven, with much of it in low-productivity informal trade.

The fourth finding is of the stunting of the formal sector and the explosive growth of informality in the economy, the latter being a reflection of the former. Workers entering the labor market are clearly limited in their job prospects in the higher productivity formal sector where growth is not adequate to

45 Agro-processing, which in the context of this paper is treated as part of IWOSS, has been a dynamic part of the manufacturing sector, accounting for much of the employment expansion and half of the total.

absorb the volume of new labor joining the work force as well as those moving from the rural areas. This growth of informality is consistent with observations from other developing countries.

Table 7.1: Synthesis of key trends across industries in Zambia, 2005-2018

	Share of employment							
	Agriculture	Manufacturing	Agro-processing	Hort./ floricult	Tourism	ICT	Business/ finance	Formal trade
Output share in GDP	Declining	Declining	Unstable	Declining	Stable	Rising	Declining	Growing
Employment share	Shrinking	Growing	Growing	Growing	Declining	Growing	Growing	Growing
Elasticity	< 0	= 1	> 1	n.a.	< 1	n.a.	> 1	> 1
Labor productivity	Declining	Growing	Declining	n.a.	Growing	High	Declining	Declining
Exports	Slow growth	Growing	Slow growth	Declining	Slow growth	Growing	Growing	n.a.

Source: Various tables throughout this report.
Note: "n.a." indicates not available.

The fifth finding is that most of the jobs in the informal sector are in informal trade which is both low productivity and involves under-employment. Although formal sector services such as business and finance, formal trade, and ICT have also expanded the largest growth is in informal services. Targeted policy efforts need to ensure that a more significant part of employment growth in the future should be in the formal, higher productivity, IWOSS sector.

The growth in the projected labor force implies a continuing shift towards younger workers, including female workers, in the 15-24 age group whose entry into the labor market will pose particular challenges. As noted earlier, over 2005-2018, the share of both groups in employment in IWOSS and manufacturing declined sharply. While particular subsectors such as agro-processing and horticulture have traditionally employed a significant share of young and female workers, this shift is worrisome and will require further study to understand and correct the factors contributing to the decline.

The final finding is that agricultural labor productivity is low and declining. This decline is worrisome since it implies a falling standard of living for the large population still engaged in agriculture and deserves urgent policy attention. However, the shift of labor from lower-productivity agriculture to the urban informal sector is a productivity-augmenting change for the economy as a whole.

Getting into more granular detail about where there is potential to grow productive employment is where the picture becomes a little less clear. Table 7.1 summarizes the mixed nature about findings on output, employment, and export growth, about elasticities, and about productivity levels and direction and extent of change over 2005-2018, using available national data. In an economy subject to volatile growth the choice of comparison years could significantly influence any conclusion about trends and that risk remains, but it nevertheless does illustrate the confounding trends across industries across the economic indicators that are the focus of interest. Agro-processing has shown rapid growth for a period but also shows declining labor productivity, whereas tourism shows higher productivity and declining labor share. Horticulture appears to have declined sharply since 2014, we surmise due to new logistical constraints that emerged around then, particularly the decision of key European airlines to discontinue direct service to Zambia. Some aspects of manufacturing appear to show dynamism and export capability which might be expanded.

The information above was supplemented by case studies and interviews with selected firms in the IWOSS group which provided information that allowed us to make some careful judgments about prospects for employment and output growth in the industries. All three industries within IWOSS have potential to grow as revealed by the case studies and discussed before in section 5.

That gives us the confidence to suggest that there is potential for expanding employment in IWOSS, specifically, agro-processing, horticulture and floriculture, tourism, and ICT. The next section discusses the need for an enabling policy environment that, together with the relaxation of specific constraints discussed earlier, would enable Zambia to expand employment prospects for the youthful job-seekers aspiring to improve their income and welfare.

8. Policies to promote employment growth

This paper has established the potential that Zambia has to grow output and employment in industries such as agro-processing, horticulture, tourism, and ICT by noting their potential through their performance over the past 15 years. No industry shows a compelling argument but each shows potential that suggests that closer attention to addressing constraints may boost greater employment creation. But what policies will Zambia need to follow to significantly increase and sustain productive employment growth for its growing population?

At the time of this writing, Zambia finds itself in a very difficult macroeconomic predicament, having defaulted on its external debt in 2020, becoming the first African country to do so. Moreover, like the rest of the world, Zambia is also confronting the effects of the COVID-19 pandemic that has disrupted global trade and travel to an extraordinary extent and caused producers to reconsider their supply chains. Inevitably, this economic shock will be disruptive, and many firms may not survive the difficult conditions. The policies that will be required for Zambia to achieve its objective of ensuring productive employment for its population will have to take into account the extraordinary conditions that now prevail. However, there are some clear issues for policy attention within Zambia, regardless of the path that the world takes toward restoring normalcy.

Keep the macroeconomy stable: A necessary condition for economic growth and employment generation is macroeconomic stability. Access to finance at reasonable cost and a stable exchange rate and tax regime are essential for private investment and enterprise. These are critically necessary but not sufficient conditions for enhanced growth. But absent these factors, substantial employment growth on the scale required for poverty reduction will remain a goal that will be perennially out of reach. Zambia has wasted the opportunity provided by the HIPC debt relief in 2005 by following a fiscally risky approach, borrowing heavily during the copper price boom to build infrastructure and rebuilt debt to critical levels. Recognition that booms are short-lived should have prompted forward-looking efforts to set up fiscal rules and finance a stabilization fund, as countries such as Chile have established. Looking forward, restoring and sustaining macroeconomic stability is a deep policy and institutional challenge that will require attention if the future growth path is to achieve job creation and poverty reduction goals.

Labor markets need flexibility to create jobs: Zambia faces a difficult task in creating jobs for its growing population, but an important part of the problem is self-inflicted. From the early years of independence, advisers have warned that the Zambian economy could not have both big increases in

wages and growth in jobs, but political forces ensured that this advice was ignored.[46] The formal public sector continues as a privileged sector where wage increases are not linked to labor productivity, the effect of which is to disadvantage other sectors competing for skills. Second, Zambia has a multiplicity of labor laws and regulations often enacted with little consultations with employers that raise the cost of labor and limit the ability of firms to adjust the workforce during lean times.[47] These include provisions on minimum wage, severance packages, housing allowance and a ban on "casualization." Despite firms being mandated to contribute to the National Pensions and Social Security Authority (NAPSA) towards an employee's social protection, they are additionally required to pay two months' salary for every year completed as redundancy package to an employee being laid off. When severance pay arises from a firm's low performance such as during an economic downturn, these severance packages are often unaffordable and may lead to a company ceasing operations altogether. The recent Employment Code Act significantly increases the regulatory constraints and related costs to employers and further undermines the scope for formal sector employment growth.

Under these conditions, firms are averse to hiring and incline towards less labor-intensive production technologies or avoid investment altogether. These policies may also contribute to a bias against younger workers whose lower skills and lack of experience may already be a disadvantage in the job market. The rigidity of the formal labor market is a strong factor in explaining the stunting of the formal sector and the sprawling growth of the informal sector where 70 percent of young jobseekers earn a living. Current labor market policies and institutions maroon millions of Zambians in low-productivity informal sector occupations that cannot provide a decent living.

Instead of reforming policies to achieve flexible labor markets, the country has sought to tighten labor laws and regulations. While the instinct to protect workers is understandable, such policies are demonstrably hurting workers, particularly youth entering the labor market. Each of the three national development plans since 2006 has included a long list of measures aimed at protecting the fundamental rights of workers. The measures are subsequently picked up in various legislative amendments. The culmination has been the 2019 Employment Code, which introduced a number of mandatory benefits, like the housing allowance that had been done away with in the 1990s. Coming at a time of high interest rates, unstable exchange rates, and slow business even prior to the COVID-19 pandemic, this new code has forced many firms to cease operations altogether and lay off workers. Amending this wrong-headed approach to labor markets will be essential to creating the enabling environment for formal sector growth and productive job creation, both in IWOSS and in manufacturing but also in non-IWOSS. Any policy that has stubbornly resisted change for many decades suggests strong political interest in its retention, so we need to acknowledge the difficulty of this political economy challenge. However, the opportunity costs to millions of young Zambians from allowing narrow self-interest to prevail should be recognized, and if widely understood, may be the spur to change.

Skill development should be a priority: Sustained improvements in productivity will require a strategy and continuous investment in developing Zambia's human capital, the more so in a world where new technologies require higher skills and adaptability. Addressing the skills constraint will require a solid foundation at the base of the population pyramid where Zambia needs to ensure that primary and secondary schools provide equitable access to education to children in every region while also enhancing the capacity of higher educational institutions to provide specialized skills to those

46 Dudley Seers, 1970: "Urbanisation in Zambia, 1970: "An International Urbanization Survey Report to the Ford Foundation" mimeo
47 Gibson Masumbu and Felix Mwenge (2017).

preparing to enter the labor market for skilled positions. Recent research has shown that the distribution of teachers in Zambia is highly uneven across the provinces and even within provinces, the results of which are limited opportunities for students in many parts of the country.[48] This built-in inequality in access to education clearly should be remedied to enable equitable growth and development. Preparing students for a world in which digital technologies are the norm needs to begin at the school level, and access to appropriate curriculum should be provided across the country. As noted in the discussion on ICT, Zambia has immense potential to grow the industry, but will need to make a sustained effort to develop the skills broadly in the population with appropriate expansion of science, technology, engineering, and mathematics (STEM) training. The potential for ICT services to grow is particularly dependent on skills to manage and implement the new technologies and will require adapting curricula to facilitate such skill acquisition.

The use of training and vocational education is likely to be important to imparting skills that are required by employers, but the design of these programs should include strong collaboration with the private sector to ensure relevant skill shortages are addressed. As noted in the discussion of value chain in tourism, Zambia has wisely invested in developing a Tourism Master Plan in 2018. Effective implementation of the Tourism Master Plan would require attention to improving the quality of training institutions and teaching professionals to enable a sustained upgrading of skills required by firms in the sector. Similarly, for success to be broad-based and sustained in agro-processing and horticulture, a significant upstream effort will also be required to expand the availability of agronomists and other scientists who could support the increase in quality and productivity of horticulture and floriculture outputs for export.

Agriculture productivity is important: Any strategy for sustained growth in Zambia must attend to the dismal and declining productivity of the agricultural sector both because it is the livelihood of a majority of Zambians and because a successful and growing agro-processing sector will require it. Policies to enhance agricultural diversification and growth both by smallholders and commercial farmers should not be neglected, and efforts should be made to strengthen the value chain connections to downstream agro-processors and, ultimately, to domestic and foreign consumers. There is a role for government in facilitating the collaboration and coordination with the private sector necessary for making such development successful.

Transport connections matter: Addressing the specific constraints faced by the IWOSS industries will be another important area for policy attention. Restoring a direct air-connection to Europe and to other export markets appears to be another critical condition to enable horticulture, floriculture and tourism to expand output and employment. Internal road networks are also important for domestic as well as regional and foreign trade—including tourism. Zambia has invested substantially in its road network over the past decade and some recent IGC research[49] suggests that such infrastructure investment may improve quality of life in settlements by improving access to markets, with potential positive impact on IWOSS, including agro-processing and tourism. However, it remains important to ensure good *ex ante* cost-benefit analysis in selecting the projects, as well as transparent procurement and project implementation to ensure that the investment provides a cost-efficient and well-maintained asset, and the benefits to the population exceed the costs.

48 See T. Walter, "The allocation of teachers across public primary schools in Zambia", IGC, 2019. Available at: https://www.theigc.org/publication/the-allocation-of-teachers-across-public-primary-schools-in-zambia/
49 C. Peng and W. Chen, 2020, "Does paving roads improve the quality of life? Examining the Zambian context using AI", IGC https://www.theigc.org/project/the-impact-of-infrastructure-improvement-on-urban-life-quality-and-firm-output/

Accurate data and timely analysis is foundational: Given the importance of employment issues for the welfare of Zambians, there is a critical need for accurate and timely data on a range of issues related to the labor market. In particular, policymakers require consistent long-term data on the labor force, labor force participation, employment across industries, the size and nature of formal and informal employment, unemployment and under-employment rates by age and gender, and the supply and demand for skills across industries, among others. Notably, in the course of undertaking this study, it became apparent that there are significant inconsistencies in the labor force and employment data.[50] Both Zambian and international researchers would benefit from attention to improving the quality, consistency and timeliness of such data in order to enhance empirical research. In turn, government will benefit from solid research in designing evidence-based policy for job creation and productivity enhancement. Overcoming this important challenge requires a joint effort by the public, private, and academic sectors under the leadership of government.

9. Conclusion

Zambia faces an immense challenge in generating productive and decent employment for a burgeoning population. Structural transformation is taking place but at a pace and pattern that reveals both problems as well as promise. Despite long-standing efforts to diversify the economy beyond mining, manufacturing has not been an adequate source of job creation. Workers leaving a declining agricultural sector and others entering the labor market are being forced to find livelihoods in the informal sector, largely in informal trade, a sector characterized by low productivity and low incomes. Both unemployment and underemployment disproportionately affect younger workers whose capacity to contribute productively is being lost. While efforts to grow manufacturing employment should continue, this chapter argues that IWOSS offer another avenue to diversify and enhance employment in Zambia.

A necessary condition for any effective growth and employment generation process is macroeconomic stability. After a creditable first decade (2001-2010) during which Zambia's macroeconomy was well managed, that macroeconomic stability has steadily eroded over the past decade to the point that Zambia defaulted on its external debt in 2020. While concerns about an unsustainable fiscal policy have been repeatedly raised by both domestic and external analysts over the past five years, the government has delayed and resisted making the necessary policy and budgetary adjustments. Such delay is costly and renders the objectives of *Vision 2030* unattainable. Thus, macroeconomic stability will have to be restored and sustained in Zambia for any of the specific interventions to improve industrial employment and growth to achieve their full potential.

The overall growth of the formal sector in recent years has also been constrained by, among other things, increasing labor market regulations that raise the cost of labor and limit the ability of firms to respond to changing market conditions. Until recently, these regulations largely applied to the formal sector, constraining its growth and contributing to the expansion of the informal sector. Reforming labor regulations would go a long way towards creating a healthier process of structural transformation, enhancing job creation in the formal sector, and enabling workers to be employed in

50 For example, official figures suggest that the labor force dropped from 6.3 million in 2014 to 3.3 million in 2018. Since the working age population in 2018 was 9.5 million, this suggests that 6.2 million are considered to be "outside the labor force". Similarly, the LFPR drops sharply from 78 to 35 percent between 2014 and 2018. Such large discrepancies need to be fully explained in order to sustain the credibility of labor data and to ensure accurate tracking of real trends. Lack of disaggregated employment data by youths aged 15-24 years and by two-digit ISIC classification of economic activities also limits analysis of issues regarding youth employment.

higher productivity activities. Even the manufacturing sector might do better and contribute to job creation with less onerous labor regulations.

Despite this policy-induced (and therefore correctable) handicap, there is promise of growth in output and employment in IWOSS, notably in agro-processing, horticulture, floriculture, tourism, and ICT. In each of these industries, firms have shown the ability to exploit Zambia's comparative advantage and create productive job opportunities across different skill levels—more so than other sectors. However, each of these industries also faces particular constraints that will need to be addressed, some of which are amenable to policy intervention. More specifically, logistical constraints are a hurdle for floriculture and horticulture in reaching high-value export markets in Europe, but if that key constraint is addressed, there is great potential for growth in employment, output, and exports. Agro-processing has great potential both in the domestic market and in regional markets but will require development of value chains between growers and processors and between processors and retail shopping outlets. Tourism faces both logistical hurdles as well as costs imposed by regulations.

All sectors require investment in skills to ensure firms are able to recruit employees with the necessary capabilities to sustain quality and grow their markets. If Zambia is to develop its high-productivity services, including ICT and finance and business services, it will call on a deeper reservoir of skilled talent than is currently available. Thus, Zambia will have to urgently develop and implement a comprehensive strategy of education and training to create the generation of skilled technology workers to fuel and manage the expansion of that sector. Tourism, another promising sector, has the advantage of a current government-led Tourism Master Plan, and effective implementation of the plan would greatly enhance growth prospects in that sector. Should these constraints be addressed, the process of productive job creation would be significantly improved, and, with it, the standard of living for a growing share of the population.

The rewards to Zambia accomplishing the necessary improvements in policies and implementation with regard to macroeconomic management, labor market regulation, and skills development would be substantial. While creating the conditions for broad-based growth across sectors, it would also enable IWOSS to expand output and productive employment for a burgeoning youth workforce. Structural transformation of this nature would enable important progress to the goals outlined in *Vision 2030*.

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