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ABBREVIATIONS

CSO..... Central Statistical Office
LFS..... Labor Force Survey
WDI..... World Development Indicators
ZIPAR..... Zambia Institute for Policy Analysis and Research



EXECUTIVE SUMMARY

Jobs need to be at the center of economic development policies in Zambia. Since the early 2000s, a copper-driven boom and a private sector investment response to the better business environment has led to rapid economic growth. While the economy was badly affected by the triple shocks of 2015 and 2016 (copper downturn, poor harvest, power shortages), there are signs of recovery in 2017. However, the number and distribution of jobs did not change in a meaningful way and thus the poverty rate hardly declined during the period of growth; absolute poverty remains very high, especially in rural areas. Indeed, although structural transformations have started, with labor moving out of rural areas and agriculture into Lusaka and into wage employment, most workers are still own account smallholder farmers, and off-farm jobs have been created mainly in low-productivity activities, often in the informal service sector. The objective of this report is to identify the main jobs challenges facing Zambia and to highlight the types of policies and programs that would need to be part of a jobs strategy to strengthen economic growth and improve standards of living through the creation of more and better jobs.

Zambia remains one of Africa's youngest countries by median age. Over the next two generations, demography will move in Zambia's favor as the dependency ratio falls. But this fall in dependency will only be an asset if Zambia's economy can generate faster growth of jobs with higher productivity. According to the UN's mid-range population projections, at least 375,000 young people on average will enter the workforce each year to 2030. Between 2030 and 2050 this average number doubles to 747,000 jobs per year,¹ just to keep the present-day rates of labor force participation and employment fixed.

Zambia's impressive economic growth has delivered less impressive jobs outcomes. The economy grew by an annual average of 7.3 percent between 2000 and 2014, and per capita GDP grew by 4.3 percent. At the same time, employment grew by only 2.81 percent per year. The implied employment elasticity of growth for the period of just 0.28 is significantly lower than the 0.49 estimated elasticity for comparable Lower Middle Income Countries.

Labor productivity growth came not from within sectors, but from employment shifts across sectors (the movement of workers out of agriculture and into services and industry). Of the 4.35 percent annual growth in value added per worker in Zambia between 2000 and 2014, 3.6 percentage points came from the shift of employment out of agriculture and into services and to a lesser extent, to industry. Throughout the period, labor productivity in agriculture and services was nearly stagnant.

At the heart of Zambia's challenge to reduce poverty with economic growth seems to be the low productivity of agriculture for the majority of poor Zambians, who are farmers – but it may also present an opportunity. Eighty percent of Zambia's poor work in agriculture where value added per worker has remained flat since 2000. However, commercial farming and agro-processing in Zambia expanded in recent times, and agro-based goods account for almost half of non-copper exports. Given that this sector tends to be more labor intensive than mining, and potentially have more supply-chain linkages to the local economy, it could become a driver for Zambia's economic diversification and a catalyst for more, better jobs.

¹ The increased rate of growth of the labor force is due to the larger population rather than due to a fertility boost. In fact, population growth is expected to be slower in the 2030–2050 period as secondary schooling improve, health advances and higher prosperity lead to lower fertility.

SUPPLY-SIDE TRENDS

Economic transformation is underway but requires more off-farm formal sector jobs and better jobs in rural areas. Evidence from the household-based Labor Force Surveys (LFS) indicates that economic transformation could support the demographic transition with diversification out of agriculture, especially for young people, increased urbanization (especially to secondary towns outside of Lusaka), increase in wages and contract work that yields better income.

Skills development is the key to ensuring poorer people benefit from economic growth. Skills are fetching a premium on the labor market, and those without skills are less likely to get better jobs, and more likely to be inactive. Gender does not matter so much as experience for the decision to work, but it is a strong determinant of the type of work a person is able to get, and of their earnings in the job. The public sector is absorbing more skilled people, and pays more.

However, the structural shifts in jobs in Zambia are not without challenges: underemployment seems to be rising, for both rural and urban workers, youth, and those working in service sectors, especially youth in urban services. Hours worked in urban areas hours are falling, and in rural areas inactivity has increased. Moreover, despite an upward trend, about two-thirds of young wage workers are without a contract.

Many of the new jobs were created in self-employment and household-based unpaid work in the informal sector in urban centers, where underemployment is rising, especially for youth. Including unpaid family work and omitting non-respondents, the share of workers aged 15–64 in agriculture in the Labor Force surveys fell from 71 percent in 2008 to just 33 percent in 2014. The share in services rose from 21 to 36 percent, whereas the share in industry remained at 7 percent.² It has mostly been young people who moved to the urban areas and who moved into service sectors. There have been healthy signs of increases in the shares of both formal and waged jobs in Zambia. Excluding non-respondents, the share of working-age workers who were employed in waged jobs rose from 17 to 29 percent, with private sector waged work rising from 12 to 21 percent. The share of self-employed non-agricultural workers rose from 11 to 28 percent, while the share of self-employed in agriculture fell from 31 to 18 percent. However, the bulk of the new jobs in urban-based services are in the informal sector. The average number of hours worked by an informal service worker in urban areas fell as more and more young people moved to the towns and cities (see chapter 2).

Widening gaps in productivity and in earnings contribute to the rising inequality in Zambia. Earnings gaps in Zambia have widened; between formal and informal workers, between rural and urban workers, between regions in the country, and between unskilled and skilled workers. Women earn about 20 percent less than men (13 percent less after adjusting for selection into particular types of work), but the gender wage gap seems to be narrowing slightly over time. Gaps also widened between public sector workers and the private sector, as the government granted quite generous pay raises. These dualistic trends go some way to explaining why despite globally high GDP growth, Zambia has done much less well in reducing poverty than several African countries which have grown more slowly.

Zambia also faces jobs challenges and opportunities to include women and the bottom 40 percent of poor Zambians in the growth process. Most of the poor in Zambia are farmers, and the least mobile workers have been found to be women. To be inclusive, a jobs strategy for Zambia would need to promote higher productivity jobs in the places where the poor, and especially where poor women live. Spatial analysis shows clusters in of dense poverty in the east and north; and the data on agribusiness firm creation suggest high potential for wage job growth and improved smallholder linkages in the same places.

² The 2014 LFS in Zambia has a high share of respondents missing in employment type and sector share, and weights differ between the 2008 LFS [based on the 2002 census] and the 2012 LFS [based on 2010 pop census], so comparisons over time between 2008 and 2012 are only approximations.

DEMAND-SIDE TRENDS

Zambia has a relatively good investment climate, a relatively healthy size and age structure to establishments, a good track record in attracting foreign investment, and relatively high formality in employment (in common with other Southern African economies). Whereas most firms are informal, young and small, most employment among establishments is in larger, formal and slightly older firms. Sixty eight percent of firms in the 2012 Economic Census were reported as informal, and only 32 percent were formal. However formal firms in the Economic Census were much larger on average, accounting for 72 percent of employment in establishments, compared to only 28 percent in informal firms. Firms and jobs are concentrated in services, although a significant share of jobs in Zambia, particularly within larger firms, are in traded goods sectors (agriculture, mining, and manufacturing) and in particular, in commercial agriculture and agro-processing. Most of the 'good' formal sector waged jobs and most of the jobs in new formal sector firms, are in Lusaka and the central road corridor from Copperbelt to Lusaka.

Nothing in the analysis of the structure and dynamics of firms, nor in regression analysis of employment, productivity and wages gives unexpected results, nor points to obvious unhealthy symptoms of the investment climate in Zambia.

The following findings warrant further analysis however, and could have implications for a jobs strategy for Zambia:

- i. Micro firm survival seems low, and yet smaller firms while having lower output per worker, seem to have value added per worker that is similar to larger firms.
- ii. Whereas entry and foreign investment in the manufacturing sector has been buoyant, manufacturing productivity (output per worker) shows up in regressions controlling for other characteristics, to be lower than in other sectors.
- iii. Productivity among the largest firms' (50 staff or more) is lower than for small young entrants after adjusting for other factors.
- iv. The distribution of labor productivity across mining, manufacturing and commerce is bimodal in Zambia, pointing to either asymmetric costs, unfair competition, or (most likely) dualism in these sectors.
- v. There are large (and foreign) firms of all ages across most sectors, mixed in with plenty of smaller and informal firms and self-employed workers. This not only sends the message that Zambia is open for business, but it allows potential scope to connect large and small-scale firms in value chains in specific locations.

The most common locations for incumbent firms and for entrants and job creation are in the central corridor running from Copperbelt through Lusaka to Livingstone. This is an area of high crop potential, is densely populated, has good access to markets by road, and has a high poverty density also. A jobs strategy for Zambia should investigate the potential to develop more jobs with higher productivity in the densely populated and poor regions of Eastern and Northern Province.

ZAMBIA'S JOBS CHALLENGE

Zambia's jobs policies need to achieve three objectives in order to capture the demographic dividend of an expanding workforce and falling dependency and ensure inclusive growth:

- Create more formal sector jobs
- Improve the productivity of informal jobs in smallholder farming, while encouraging commercialization and links to agribusiness supply chains;
- Connect vulnerable groups to jobs

To increase labor productivity growth and create more jobs, Zambia's economy has to see continued structural change, with faster agricultural productivity growth, increased rural non-farm employment, and with more formal and more productive informal jobs in secondary towns and Lusaka. Most Zambians are still farmers. Therefore to avoid a collapse in agricultural labor productivity as many young people enter the workforce in rural areas, new jobs for young people will increasingly need to be created outside

of own-account agriculture, and in higher productivity occupations both within agriculture and in industry and services. Faster growth in formal employment and – since workers tend to leave agriculture as productivity rises – in urban based jobs, will be necessary.

Zambia will need to move toward more targeted sectoral and regional policies focusing on vulnerable population groups. To reach a large enough number of poor Zambians, a job rich and inclusive growth path will need to be designed around agro-value chains, and cross border export trade in these products. Zambia has abundant land resources, a very low population density, land borders with 8 neighboring countries, and relatively close proximity from different regions to major commercial centers in Harare, Lilongwe and Lubumbashi, meaning that there are ready markets in the region for higher value agro-produce. Agro-based firms tend to be more diverse in location across Zambia than other manufacturing firms and services, which are very strongly concentrated around Lusaka and the Copperbelt, producing mostly for these markets.

The rest of this report is organized as follows: Chapter One explores the underlying macroeconomic, demographic and productivity trends defining the jobs challenge. Chapter Two explores the supply side of jobs using the household-based Labor Force Surveys (LFS) to first explore labor market demography, then to better understand who is benefiting from which sorts of jobs in the processes of economic transformation. Chapter Three focuses on the demand side, analyzing jobs constraints from the perspective of firms.

Zambia's Main Jobs Challenges:

Zambia will need to put jobs at the center of development planning and at the center of the macro fiscal corrections under the economic recovery program³ to achieve its potential. Zambia has a relatively good investment climate which improved further during the 2000s, and until the recent decline of copper prices, had established a good track record of stable macroeconomic and fiscal policies. The country scores significantly above the IDA average on building human resources (health and education), just above the IDA average on property rights and rule-based governance and on public sector management and institutions, but significantly below on social protection (having declined in the Bank's rating in 2012). An ambitious road development program has seen transport infrastructure within the country improve, although border crossings for trade remain slow on most routes. More recently, a loosening of fiscal policy in the face of external instability and an energy crisis, have sparked macroeconomic reforms under the Government's economic recovery program.

Zambia will also need to move towards more targeted sectoral and regional policies focusing on vulnerable population groups. To reach a large enough number of poor Zambians, a job rich and inclusive growth path will need to be designed around agro-value chains, and cross border export trade in these products. Zambia has abundant land resources, a very low population density, land borders with 8 neighboring countries, and relatively close proximity from different regions to major commercial centers in Harare, Lilongwe and Lubumbashi, meaning that there are ready markets in the region for higher value agro-produce. Agro-based firms tend to be more diverse in location across Zambia than other manufacturing firms and services, which are very strongly concentrated around Lusaka and the Copperbelt, producing mostly for these markets.

To increase labor productivity growth and create more jobs, Zambia's economy has to see continued structural change, with faster agricultural productivity growth, increased rural non-farm employment, and with more formal and more productive informal jobs. Most Zambians are still farmers. Therefore to avoid a collapse in agricultural labor productivity as many young people enter the workforce in rural areas, new jobs for young people will increasingly need to be created outside of own-account agriculture, and in higher productivity occupations both within agriculture and in industry and services. Faster growth in formal employment and—since workers tend to leave agriculture as productivity rises—in urban based jobs, will be necessary.

These jobs challenges are framed by the need for the economy, and especially Government, to adjust to lower copper prices and lower tax revenues. As economic growth slows in response, Zambia will need to ensure a soft landing, and hasten a rebound for jobs in the upturn in the economic cycle.

³ At the time of writing, international copper prices have just started to recover from a five-year decline from historically high prices. In the 2017 Budget Speech, the Finance Minister announced an economic stabilization and recovery package of fiscal measures.



1. THE BIG PICTURE

SUMMARY

Zambia's economy has been growing sufficiently to create employment for the youthful population but is failing to create enough good jobs. Growth has been unequal and the poverty head count has increased. Labor productivity growth drove close to all of the increase in per capita income between 2000 and 2014 as labor shifted out of informal and rural agriculture and into formal and urban employment in industry and services. Since 2008 demographics and improvements in the employment rate have also contributed to a small extent.

At the heart of Zambia's challenge in reducing poverty through economic growth seems to be the low productivity of agriculture for the majority of poor Zambians, who are farmers—but it may also present an opportunity. Eighty percent of the poor work in agriculture, where value added per worker has remained flat since 2000. However, commercial farming and agro-processing have expanded in recent times, and agro-based goods account for almost half of non-copper exports. Given that agriculture tends to be more labor intensive than mining and potentially has more supply-chain links to the local economy, it could be significant for Zambia's economic diversification and for jobs.

RAPID GROWTH WITHOUT POVERTY REDUCTION

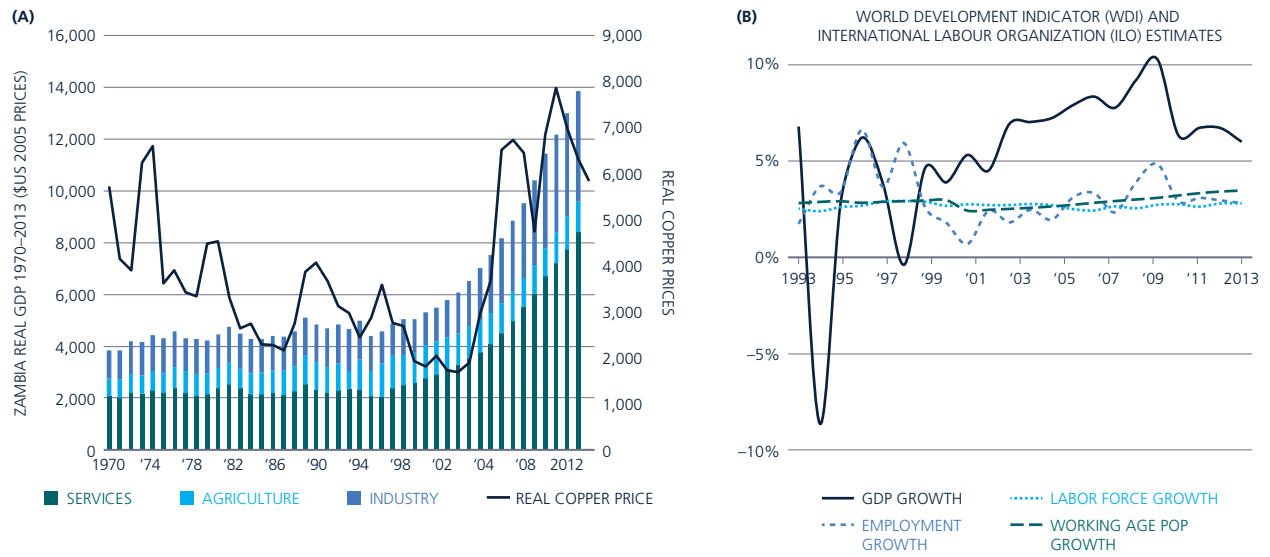
Zambia's economy has been growing sufficiently to create employment for the youthful population⁴ but is failing to create enough good jobs. Following the resumption of continuous economic growth in the late 1990s after a prolonged period of volatility and decline, a decade-long surge in world copper prices propelled service- and construction-driven growth in Zambia. Before the late 1990s, copper prices had been declining systematically, and the economy had faced volatile and weak growth in real GDP (figure 1). From 2000 to 2014 real GDP grew by 7.3 percent per year on average, whereas employment is estimated to have grown by only 2.8 percent per year on average.

In contrast to expectations, Zambia's rapid economic growth came with an increase in the poverty head count. According to World Development Indicators (WDI) data, despite the rapid growth in real GDP between 1998 and 2010, Zambia saw poverty rise and the income share of the bottom 40 percent fall from 2003 to 2010 (figure 2). The poverty head count ratio, at \$1.25 per day (purchasing power parity), had declined when GDP growth was relatively stagnant in the 1990s, yet the income share of the bottom 40 percent of the population remained close to 10 percent.

Zambia exhibits a dual economy structure across locations, with firms and jobs concentrated in the central corridor running from Copperbelt Province in the north through the capital city of Lusaka to Livingstone in Southern Province (for more discussion, see chapter 3). Sixty-six percent of all firms and all jobs in firms are in Copperbelt and Lusaka provinces alone. Adding Southern and Central provinces, this share rises to over 80 percent of firms and 88 percent of jobs; particular drivers are the main cities and towns of Lusaka, Ndola, Kitwe, Livingstone, Kabwe, Kafue, and Chingola.

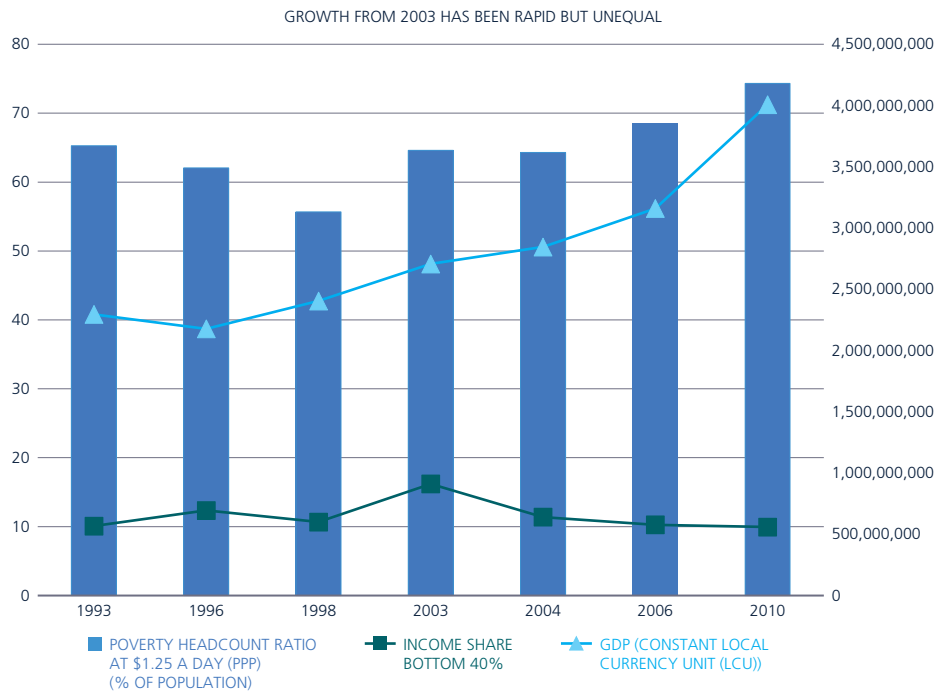
⁴ Forty-six percent of Zambians in 2015 were under 15 years of age, a figure that is expected to drop to 42 percent by 2030 [see figure 4].

Figure 1
Real GDP, real copper prices, and growth in labor market demographics over time



Source: Adapted from WDI, DEC, and ILO data.

Figure 2
Real GDP, poverty head count, and income share of the bottom 40 percent of earners



Source: Adapted from WDI data.

Table 1
Cumulative annualized growth in value added per worker by sector, 2000–14
%

	2000–14	2000–05	2005–08	2008–14
Agriculture	0.56	(3.28)	(5.18)	6.97
Industry	2.21	5.20	3.91	(1.04)
Services, etc.	0.14	7.14	6.69	(8.28)
Total change in productivity (value added per worker)	4.29	4.66	5.12	3.71

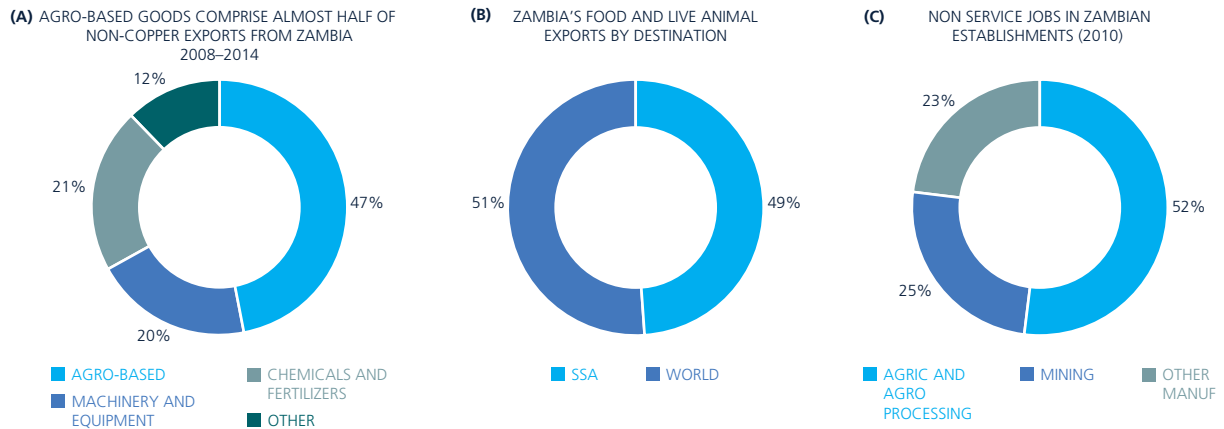
The rapid economic growth has not been inclusive: According to the latest poverty numbers from the Central Statistical Office (CSO), in the Key Findings from its Living Conditions Monitoring Survey, the rural poverty head count was estimated to be 76.6 percent in 2015. This was barely changed from 77.9 percent in 2010, with urban poverty declining to 23.4 percent in 2015 from 27.5 percent in 2010. This translates to a national poverty head count of 54.4 percent in 2015—down from 60.5 percent in 2010 but still relatively high and illustrating the rural–urban gap in living standards. Indeed, Western, Luapala, and Northern provinces recorded poverty head counts in 2015 of 80 percent or higher. This contrasts with the 30.8 percent recorded in Copperbelt and the 20.2 percent in Lusaka Province. In the 2013/14 crop season, the 2015 Living Conditions Monitoring Survey found that 89.4 percent of rural households engaged in agricultural activities.

At the heart of the challenge to reducing poverty through economic growth seems to be the low productivity of agriculture for farmers—the majority of the poor. This jobs diagnostic does not analyze agricultural productivity at the farm level, but a sector-level analysis of real GDP and employment between 2000 and 2014 reveals an important dynamic: In the 2010 population census, more than 50 percent of workers identified themselves as working in agriculture, accounting for over 80 percent of poor Zambians. Labor productivity in agriculture is thus a key determinant of prosperity for the rural poor. As table 1 shows, annualized average growth in value added per employee in agriculture was –3.3 percent from 2000 to 2005 and –5.2 percent between 2005 and 2008. Only after 2008 did average labor productivity in agriculture grow, and as figure 3 shows, part of the impetus for this was a move of labor out of agriculture and into services and industry. Another factor contributing to the rise in average labor productivity in agriculture after 2008 was the big increase in foreign farmers and livestock producers that began in the mid-2000s. A decomposition of Zambia’s economic transformation is discussed later in this chapter.

Despite this low productivity, commercial farming and agro-processing have expanded in recent years. Agro-based products made up close to half (47 percent) of non-mining exports from 2008 to 2014 (figure 3). Of these, about half (49 percent) of food and live animal exports went to Sub-Saharan Africa. Agriculture and agro-processing jobs in firms made up 52 percent of non-construction jobs in industry in 2010 (compared with 25 percent of such jobs in mining). These industries tend to be more labor intensive than mining and potentially have more supply-chain links to the local economy. Therefore regional trade in food and agro-processing could be important for Zambia’s economic diversification and for jobs.

Faster growth in non-mining production and exports would likely lessen the impact of commodity price fluctuations and can help Zambia recover from the 2015–16 slowdown. A number of macroeconomic trends provide grounds for optimism in 2017. After five years of annual declines, copper prices have regained some losses and are back to their May 2015 levels, and annual production is expected to increase. Since the kwacha plummeted in 2015, the exchange rate has stabilized, staying in a 10 percent band for the past nine months. Inflation is back in single digits (6.8 percent in February 2017). Zambia has enjoyed above average rainfall, resulting in a 10 percent larger harvest in 2016 over 2015 and projections for above-average cereal production in 2017. All these positive trends can help Zambia achieve a softer landing in adjusting to lower copper prices, if exports of higher-value agricultural products and agro-processed goods can be increased. The continuation of a lower-value kwacha would increase the price of important inputs such as petroleum, fertilizers, veterinary drugs, and animal feed supplements, but it could also make some of Zambia’s agricultural exports cheaper and more attractive in the region and on global markets.

Figure 3
Export types, export destinations (2008–14), and non-service sector jobs (2010)



Source: Adapted from UN COMTRADE.

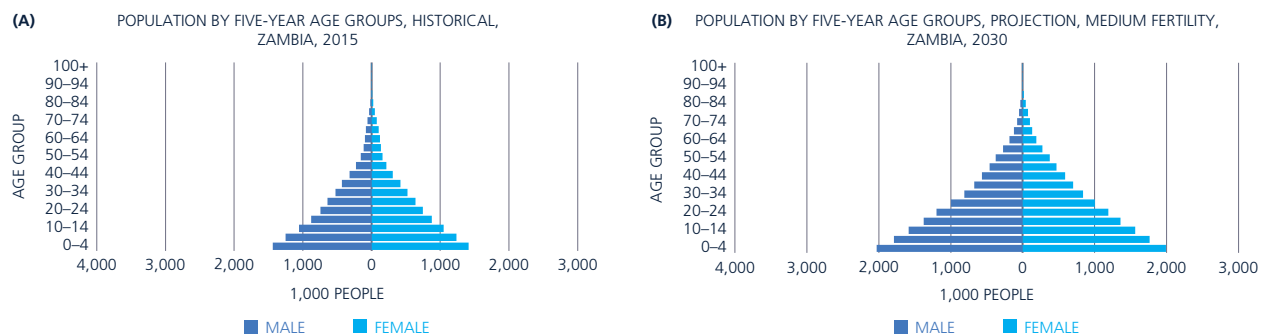
YOUTHFULNESS AND THE PRIORITY OF JOBS

Zambia's population is youthful and growing quickly, meaning that the workforce is set to grow rapidly. The UN population projections for Zambia are for population growth of 3.02 percent between 2014 and 2030, with the working-age population growing by 3.35 percent (figure 4). Between 2014 and 2050, the UN projects that the population will grow by 2.83 percent, and the working-age population by 3.27 percent.

Zambia's population is entering a period of falling dependency, potentially offering a demographic dividend. The share of working-age to total population will increase from 51 percent today to about 58 percent by 2050 (table 2). The ratio of workers to dependents will increase from 1.05 today to 1.22 in 2030 and as high as 1.41 in 2050 (figure 5). This means a demographic window is opening. If Zambia can generate more and better jobs for young people in the coming years, the country could start enjoying a demographic dividend on economic growth.

Zambia must create many more jobs per year than it has in recent years. Assuming no increase in the labor force participation rate or the unemployment rate, Zambia will need to create 11.8 million new jobs by 2050: over 328,000 jobs each year on average. This would be 252 percent more jobs every year than during Zambia's fast-growth years of 2000–14, when the average annual increase was 130,000 jobs. According to UN projections, Zambia will have 294,000 more working-age people each year on average between 2014 and 2030. That figure rises to 446,000 each year on average between 2030 and 2050. Employment would have to

Figure 4
Population pyramids by five-year age groups, 2015 and 2030



Source: Adapted from UN mid-term population projections, 2012.

Table 2
Population and working age, 2015–50

Millions	Population	Working age	Ratio
2015	16.212	8.297	51%
2030	25.313	13.917	55%
2050	42.975	25.124	58%

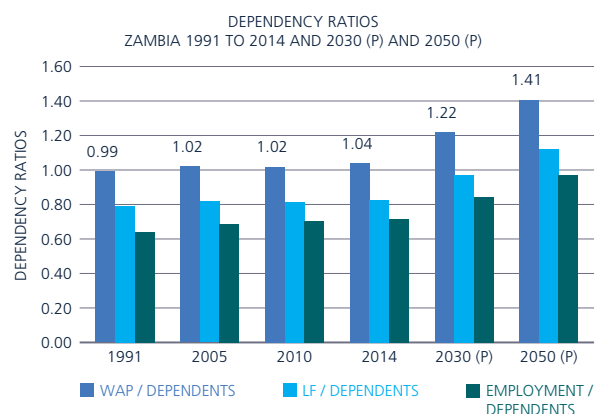
Source: Adapted from WDI data.

increase by 3.51 percent per year between now and 2030, and then by 3.0 percent between 2030 and 2050 in order to keep rates of unemployment and labor force participation the same as they are today.

To create more and better jobs, future economic growth will need to be both more labor intensive and higher in labor productivity. Between 2000 and 2014—Zambia’s period of historically (and globally) high economic growth—employment rose by only 2.8 percent. Assuming future growth is slower than during those copper boom years, the first of Zambia’s job challenges is to create sustained and more labor-intensive economic growth than before. Between 1991 and 2005, Zambia did achieve employment growth of 3 percent, but average labor productivity grew by a relatively low 0.2 percent, and labor productivity in agriculture fell. To create better jobs that help reduce poverty in the future, Zambia is going to need agricultural productivity to grow (figure 6). Yet international evidence⁵ shows that as agricultural productivity grows, employment in agriculture typically falls. To create better jobs on average, Zambia will therefore also need to create off-farm employment in industry and services, ideally in services that support the processing and export of agricultural products.

Generating enough better jobs off-farm for the growing labor force will require a combination of labor-intensive growth and economic transformation. For all Sub-Saharan countries for which data are available in WDI since 1991, nearly half (9 of 21) have seen annualized employment growth higher than 3 percent for a period of at least 10 years.⁶ Of these, only six⁷ managed to also attain positive growth in within-sector labor productivity (that is, better jobs within sectors) during the period of employment. Only three⁸ saw

Figure 5
Dependency ratios to 2050



Source: Adapted from UN DESA World Population Prospects.

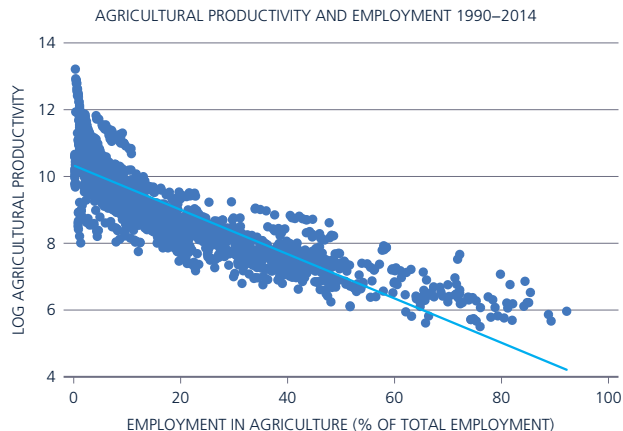
⁵ Merotto and de Padua [forthcoming].

⁶ These countries are Botswana [1996–2010], Burkina Faso [1994–2006], The Gambia [1993–2014], Ethiopia [1994–2014], Namibia [1991–2004], Senegal [2001–2011], Tanzania [1991–2014], Uganda [2003–2013], and Zimbabwe [1999–2011].

⁷ The six are Botswana, Burkina Faso, Ethiopia, Senegal, Tanzania, and Uganda.

⁸ The three are Burkina Faso, Ethiopia, and Tanzania.

Figure 6
Relationship between agricultural labor productivity and agriculture's employment share, all countries, 1990–2014



Source: Adapted from WDI data.

a positive contribution to overall productivity from structural change in addition to this growth in employment and within-sector productivity, and only one—Tanzania (1991–2001)—has managed to achieve all these improvements plus both a shift of labor into industrial sector employment and an increase in industrial labor productivity. Other countries for which WDI data are available and which achieved this advantageous structural change since 1991 are Cambodia, Chile, the Arab Republic of Egypt, Honduras, Malaysia, Pakistan, Panama, and Trinidad and Tobago.

TOWARD LABOR-INTENSIVE GROWTH AND ECONOMIC TRANSFORMATION

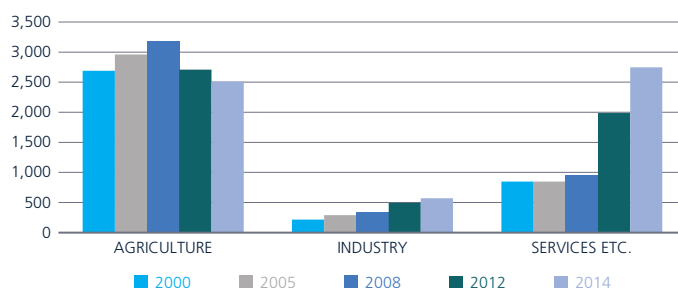
The annual per capita GDP growth of 4.3 percent from 2000 to 2014 was driven entirely by growth in labor productivity, which grew at 4.35 percent annually in terms of value added per worker. The contributions to annual growth in per capita income of the increased unemployment rate (0.03 percent) and the decreased labor force participation rate (0.06 percent) were negative. At the same time, the contribution to annual growth in per capita income from changes in the share of the working population (0.04 percent) was slightly positive and was in fact increasing through the period as dependency started to fall (see chapter 1).

Labor productivity growth came not from within sectors but from employment shifts across sectors (the movement of workers out of agriculture and into services and industry). Of the 4.35 percent annual growth in value added per worker, 3.6 percentage points came from the shift of employment out of agriculture and into services (86 percent) and, to a lesser extent, to industry (14 percent). This means that the share of services in total employment almost doubled from 2000 to 2014. Between 2008 and 2014, the share of jobs in informal agriculture fell as urbanization accelerated rapidly around Lusaka and some secondary towns, and as the availability of waged jobs in agriculture and informal services increased in rural areas.⁹

Throughout this period, labor productivity in agriculture and services was disappointing. In agriculture the growth rate was just under 0.6 percent per year. And although average labor productivity in services rose between 2000 and 2008, it fell subsequently as labor moved into service sectors. Over the full period from 2000 to 2014, labor productivity in services rose by only 0.14 percent per year on average, as compared with the 2.2 percent annual average growth in labor productivity in industry. These patterns reflect the small size and informal nature of the firms and jobs that have been created in Zambia's economic transformation.

⁹ This report bases employment shares by sector on the LFS collected by the Zambian Central Statistical Office. The top-line numbers given here are consistent with their published reports for the 2008, 2012, and 2014 surveys [<http://www.zamstats.gov.zm/index.html>]. However, as noted elsewhere in this report, the LFS data are subject to volatility in employment shares by sector over time, which appears to be driven by unpaid family workers. Adjusting for this category of workers leaves the trends in economic transformation the same, but the shifts are less dramatic.

Figure 7
Total employment by sector of economic activity, 2000–14
thousands



Source: Adapted from LFS.

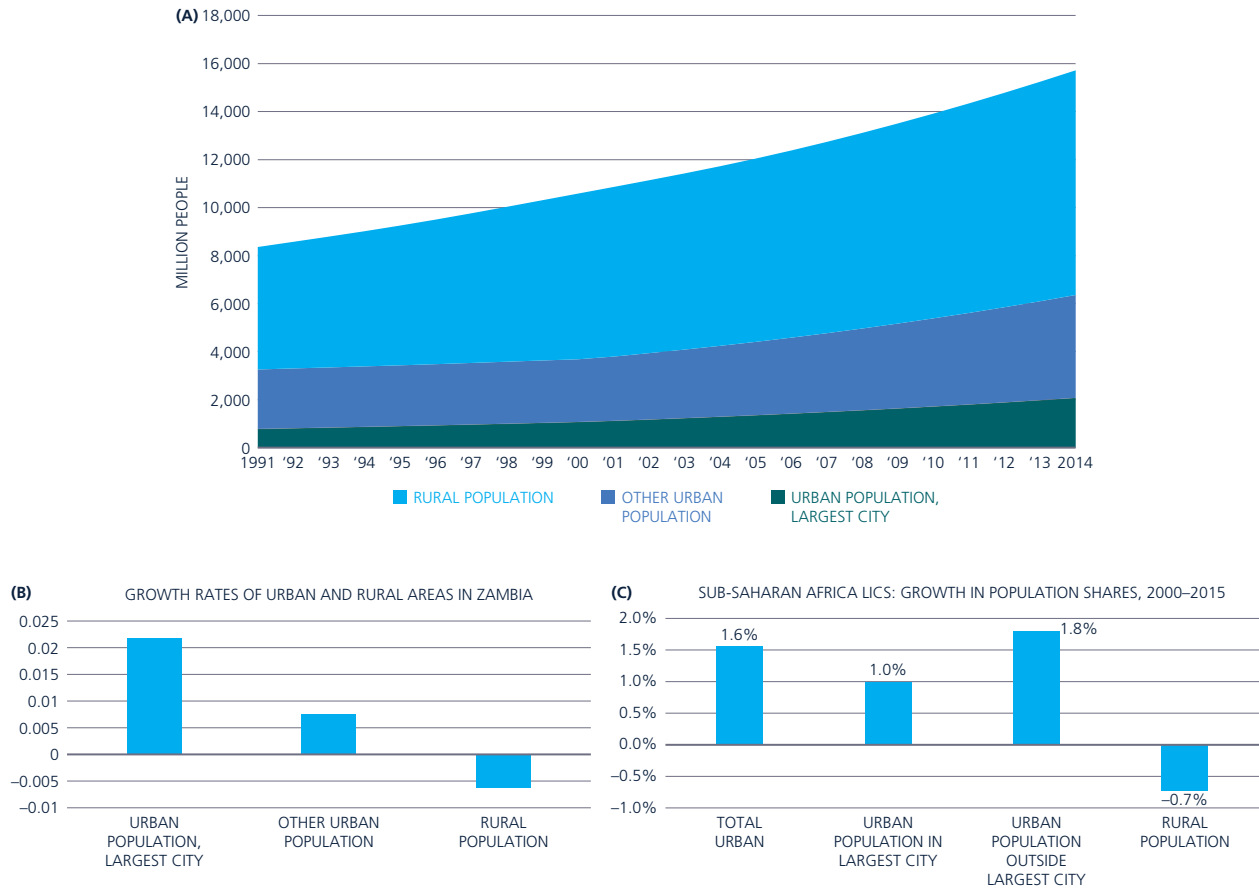
Nevertheless, economic transformation seems to have started in 2005, with diversification, urbanization, and formalization under way.¹⁰ Although the economy remains largely rural, agricultural, and informal, employment has been shifting—as noted—to urban-based jobs in services and, to a lesser extent, industry. In addition, the rural economy seems to be formalizing, with an increase in formal jobs in agriculture, presumably on commercial farms and in agro-processing. Figure 7 shows the sectoral pattern of employment across sectors observed in the LFS of 2000, 2005, 2008, and 2012. Agriculture continued to dominate employment and new jobs from 2000 to 2008, although employment in industry was increasing throughout this period. From 2008 to 2012, the sectoral breakdown suggests a big shift toward services and a decline in total employment in agriculture; this was also observed in the 2014 LFS.

Annual growth in the urban share of the population between 2000 and 2014 was faster in the capital, Lusaka, than the average experienced by low-income countries, but slower in secondary towns. As figure 8 shows, Zambia’s population remains predominantly rural, even though the share of people in urban areas has been rising annually. According to WDI data, in 2014, 9.4 million of Zambia’s 15.7 million people lived in areas defined as rural, compared with an estimated 4.3 million in urban areas outside of Lusaka and 2.1 million within the administrative boundaries of Lusaka. Growth in urban share was more focused on the capital city than is the pattern for the average for low-income countries (figure 9). It is also significantly more focused on the capital city than is the average for Sub-Saharan Africa (see figure 8c). At 2.2 percent, the growth rate of the population share in Lusaka is more than twice the average in the largest city for all countries in Sub-Saharan Africa (1 percent). Since annual growth in the share of the rural population is declining in line with the Sub-Saharan average, the share of secondary towns in Zambia is growing more slowly than in the rest of Africa—by only 0.7 percent compared with 1.8 percent (unweighted by population size). In rural low-income economies, the employment and poverty reduction potential of the rural non-farm sector has been found to depend on the impact of farm–non-farm links and urban–rural links (Binswanger-Mkhize, Samboko, and You 2015). Hence, Zambia’s low poverty elasticity of growth may be related to the lack of urban–rural links around secondary towns.

In common with other countries in southern Africa, “informal is normal” for workers in Zambia; however, the formal sector is quite well represented in the jobs landscape, and formality has been increasing. Figure 11a uses data from the 2010 Living Conditions Monitoring Survey to show the breakdown of employment. In 2010 the data suggest that only 17 percent of employment was in waged work; of this, only 13 percent was formal and just 7 percent was private and formal (6 percent—roughly half of formal waged workers—were employed in the public sector). The 2008 and 2012 LFS were used to assess changes in the share of employment, classifying workers as rural or urban, and formal or informal, as shown in figure 10b and in table 3. The definition of formality used here depends on the worker having a contract or receiving overtime or social security benefits.

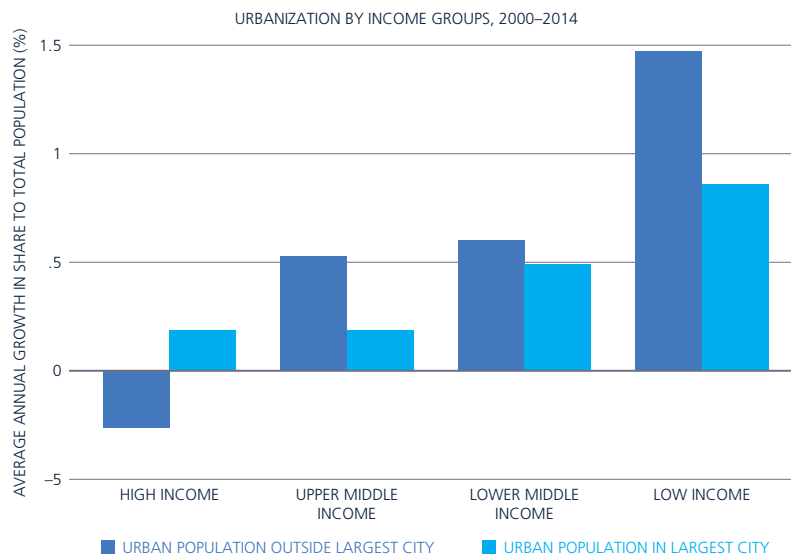
¹⁰ This section uses LFS data for 2000, 2005, 2008, and 2012. The 2014 survey has also been analyzed and points to patterns similar to those in the 2012 survey, but the variable for employment sector seems to suggest overrepresentation of services compared with past surveys, and underrepresentation of agriculture.

Figure 8
Rural and urban population shares and growth rates of shares, 2000–14



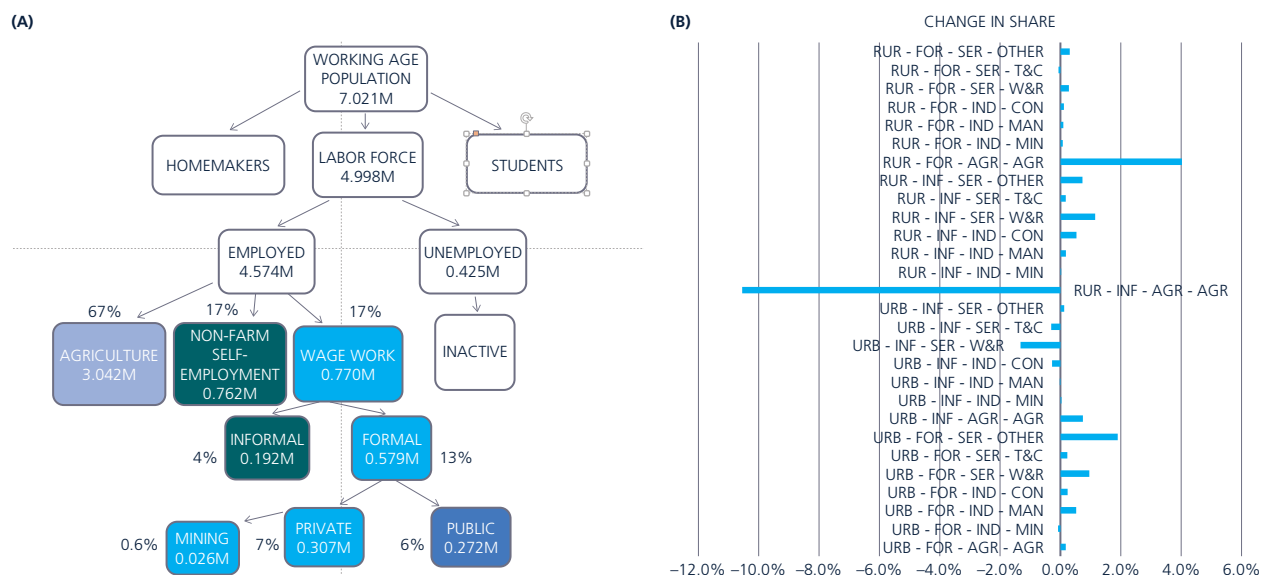
Source: Adapted from WDI data.

Figure 9
Growth in share of population in largest city, by income group, 2000–14



Source: Adapted from WDI data.

Figure 10
Composition of formal and informal work, 2010 and 2008–12



Source: Based on World Bank (2013), chapter 2.

The decomposition between location and formality shows that employment in rural informal agriculture fell from 43.5 to 32.9 percent of total employment between 2008 and 2012. However, formal employment in rural agriculture increased from 17.6 to 21.6 percent, and formal and informal employment in urban agriculture together increased their collective share of employment by 1 percent. The share of employment in rural informal and formal wholesale and retail, and in rural informal construction and other services also increased as the share of employment in rural agriculture fell. Within urban areas, formal employment in manufacturing, construction, wholesale and retail, and other services increased. The net effect was an increase in formal and urban jobs relative to rural and informal jobs.

Labor productivity growth drove nearly all of the increase in per capita income between 2000 and 2014, although since 2008 improvements in the employment rate and demographics have contributed to a small extent. Figure 11 shows the decomposition of yearly changes in per capita GDP value added, showing those due to changes in (a) value added per worker (productivity), (b) employment per labor force participant, (c) labor force per working-age person, and (d) the share of working-age people in the total population. Globally, this decomposition of per capita GDP value added into productivity and labor market demography typically shows that productivity improvements drive 80 percent of per capita income growth.¹¹ For Zambia, over the period 2000–14, productivity accounts for 100 percent of the per capita GDP growth of 4.35 percent annually. For the period 2000–05, labor market demographics contributed negatively to per capita income growth: a falling employment rate in particular shaved off on average 0.72 percentage points, while an increase in dependency chipped another 0.1 percentage points. After 2005, and especially between 2008 and 2012 when it added 0.75 percent annually, an improved employment rate made a positive contribution to per capita GDP. From 2012 to 2014, the employment rate again made a negative contribution (minus 0.12 percent) to per capita GDP. But in 2008 Zambia’s working-age population began rising faster than the school-age population (under age 15), raising per capita GDP by 0.12 percent per year on average between 2008 and 2012 and then by 0.33 percent per year from 2012 to 2014. As noted previously, this trend will continue, providing the opportunity for a demographic dividend. Nonetheless, with the labor force participation rate falling from 2000 to 2014, and the employment rate (that is, the number employed as a share of labor force participants) falling between 2012 and 2014, Zambia has yet to fully reap the benefits of its demographic gain.

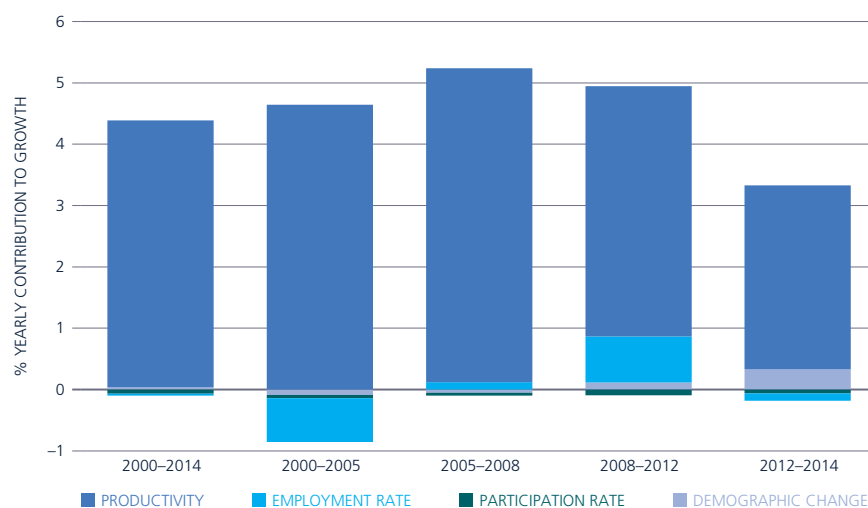
¹¹ Merotto and de Padua [forthcoming].

Table 3
Sectoral employment data per 1,000 people

Total and sectors	% Change	Share in 2008	Share in 2012	Change in share
Total Employment	8%	100%	100%	
Urb - For - Agr – Agr	16.7%	2.1%	2.3%	0.2%
Urb - For - Ind – Min	3.0%	1.7%	1.7%	-0.1%
Urb - For - Ind – Man	54.4%	1.2%	1.7%	0.5%
Urb - For - Ind – Con	51.0%	0.6%	0.8%	0.2%
Urb - For - Ser – W&R	63.6%	1.8%	2.8%	1.0%
Urb - For - Ser – T&C	35.3%	0.9%	1.1%	0.2%
Urb - For - Ser – Other	47.2%	5.2%	7.1%	1.9%
Urb - Inf - Agr – Agr	38.0%	2.6%	3.4%	0.7%
Urb - Inf - Ind – Min	27.9%	0.2%	0.2%	0.0%
Urb - Inf - Ind – Man	5.7%	1.2%	1.2%	0.0%
Urb - Inf - Ind – Con	-7.2%	2.0%	1.7%	-0.3%
Urb - Inf - Ser – W&R	-12.2%	7.1%	5.8%	-1.3%
Urb - Inf - Ser – T&C	-17.4%	1.3%	1.0%	-0.3%
Urb - Inf - Ser – Other	11.5%	3.7%	3.8%	0.1%
Rur - Inf - Agr – Agr	-18.4%	43.5%	32.9%	-10.5%
Rur - Inf - Ind – Min	25.2%	0.2%	0.2%	0.0%
Rur - Inf - Ind – Man	28.8%	0.9%	1.1%	0.2%
Rur - Inf - Ind – Con	225.9%	0.3%	0.8%	0.5%
Rur - Inf - Ser – W&R	82.2%	1.7%	2.8%	1.2%
Rur - Inf - Ser – T&C	122.8%	0.2%	0.3%	0.2%
Rur - Inf - Ser – Other	104.3%	0.8%	1.5%	0.7%
Rur - For - Agr – Agr	32.4%	17.6%	21.6%	4.0%
Rur - For - Ind – Min	88.9%	0.1%	0.2%	0.1%
Rur - For - Ind – Man	37.7%	0.3%	0.4%	0.1%
Rur - For - Ind – Con	63.7%	0.2%	0.3%	0.1%
Rur - For - Ser – W&R	63.5%	0.5%	0.8%	0.3%
Rur - For - Ser – T&C	-38.1%	0.2%	0.1%	-0.1%
Rur - For - Ser – Other	25.9%	1.8%	2.1%	0.3%

Source: Adapted from 2008 and 2012 LFS.

Figure 11
Decomposition of growth in per capita value added, 2000–14



Source: Adapted from WDI data.

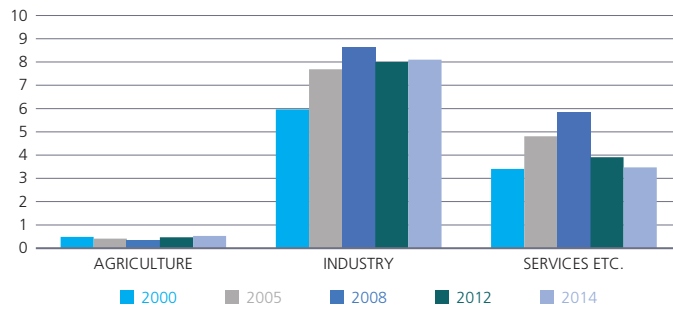
Most of Zambia’s increases in labor productivity between 2000 and 2014 came from the shifts of labor out of informal and rural agriculture and into formal and urban employment in industry and services (figure 13). Figure 12 shows that by 2014 the average value added per worker in industry and in services (in constant 2005 U.S. dollars) was 16 and 7 times that of agriculture,¹² respectively. Consequently any shift of labor from agriculture into industry and services would be productivity enhancing on average. However, figure 12 also suggests that this shift from agriculture into services and, to a lesser extent, industry, has coincided with a decline in average productivity of the service sector, and with the flattening out of productivity in industry. Despite the positive transformative sign of strong growth rates in urban and formal employment, the high share of informality suggests that in absolute numbers, many of the workers moving from agriculture into services and industry have moved into informal services.¹³

Economic transformation in the coming years will likely depend upon Zambia’s ability to increase agricultural productivity and catalyze the development of processing industries. The fall in copper prices was matched with an increase in mining production, and 2017 and 2018 might bring higher prices and more production. The mines that laid off workers in the 2015 slowdown are now rehiring. However, public investment seems unlikely to recover to 2014 levels. Despite these signs of recovery, employment growth in services is unlikely to continue as it did in the peak of the mineral boom (from 2008 to 2012), and so the movement of labor out of agriculture and into services is likely to slow unless agricultural productivity can be raised more. Whereas average labor productivity in agriculture was about the same in 2014 as in 2000, the observed shift of remaining agricultural labor from informal agriculture to formal commercial farms (figure 11) seems to have boosted average productivity in agriculture since 2008. The rising average, coinciding with capital-intensive formalization, suggests that some smaller informal farmers most likely have stagnant or falling productivity, which will need to be addressed in a national job strategy.

¹² Several studies of productivity in Africa adjust for hours worked and conclude that productivity in agriculture is not far from that in services or industry. Given the orders of magnitude of the differences in sectoral productivity in Zambia, and the relatively strong presence of highly capitalized formal sector employment in Zambia, it seems unlikely that this holds true in Zambia.

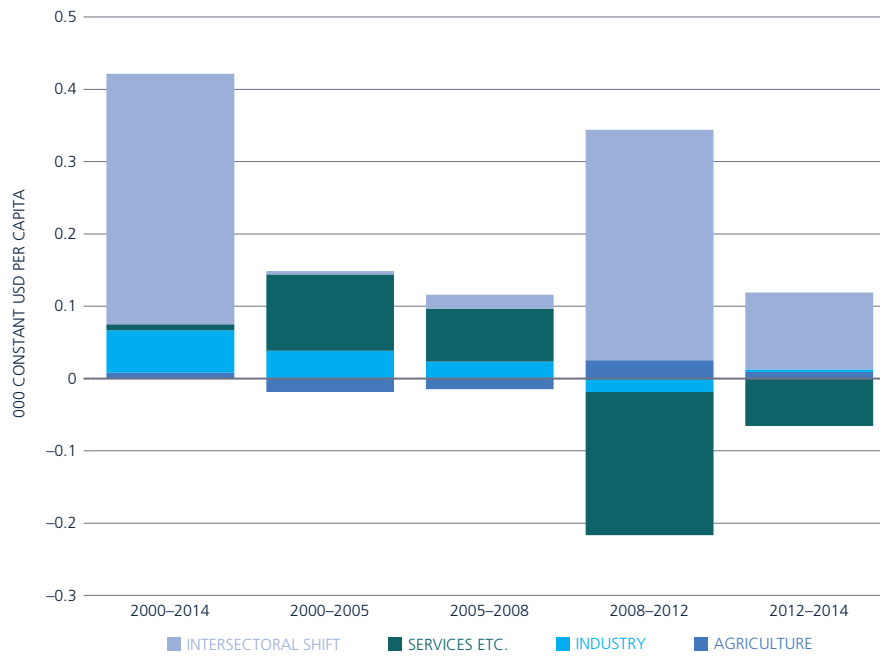
¹³ De Vries, Timmer, and de Vries (2015) observe this phenomenon in several African countries. They differentiate static and dynamic gains from structural transformation: static gain comes from a shift to a sector with higher average labor productivity, whereas the dynamic loss comes from the shift to less productive subsectors or informal firms. The authors invoke the metaphor of moving up a floor but onto a down escalator. In contrast, Rodrik (2015) notes the productivity gains that countries can attain by increasing employment in productivity-enhancing and globally traded formal manufacturing industries. He refers to these as elevator industries—capable of lifting average labor productivity and of generating dynamic productivity gains.

Figure 12
Value added per worker by sector, 2000–14
\$US thousand, constant 2005



Source: Adapted from LFS.

Figure 13
Contribution of within-sector changes in value added per worker and intersectoral shifts to the absolute change in value added per capita, 2000–14



Source: Adapted from WDI data.

Zambia's most likely path for diversified net export growth is in agriculture and agro-processed products. Figure 3 showed that agro-based products were nearly half of non-mining exports from 2008 to 2014 and that agriculture and agro-processing jobs accounted for 52 percent of non-construction jobs in industry in 2010 (compared with 25 percent of such jobs in mining). There should be scope to both industrialize and stimulate productivity gains in agriculture by connecting smallholder farmers with large-scale farmers in aggregation schemes, by developing agro-processing for export, and by linking smallholder farmers to higher-value meat, dairy, and horticulture value chains of domestic supermarkets for domestic consumption. Given that the majority of Zambians still live in rural areas and secondary towns (see figure 9), a strategy to raise rural incomes and stimulate agro-industrial exports from secondary towns should also boost demand for services in rural areas and secondary towns.



2. TRENDS IN THE SUPPLY OF LABOR

SUMMARY

This chapter uses household-based Labor Force Surveys (LFS) from Zambia's CSO to explore labor market demography and then to better understand who is benefiting from which sorts of jobs in the process of economic transformation described in chapter 1. The key findings:

Economic transformation is under way but requires more off-farm, formal sector jobs and better jobs in rural areas. Economic transformation could support the demographic transition with diversification out of agriculture—especially for young people and increased urbanization—especially to secondary towns outside of Lusaka, as well as both increases in wages and contract work that yields better income.

Skills development is the key to ensuring that poorer people benefit from economic growth. Skills are fetching a premium on the labor market, and those without skills are less likely to get better jobs and more likely to be inactive.

Underemployment is rising, and labor force participation rates are declining: Hours worked in urban areas are falling, and in rural areas inactivity has increased. Young people especially are affected by these changes.

Gender does not matter as much as experience in the decision to work, but it is a strong determinant of the type of work that a person is able to get and of earnings in the job.

The public sector is absorbing more skilled people and pays more.

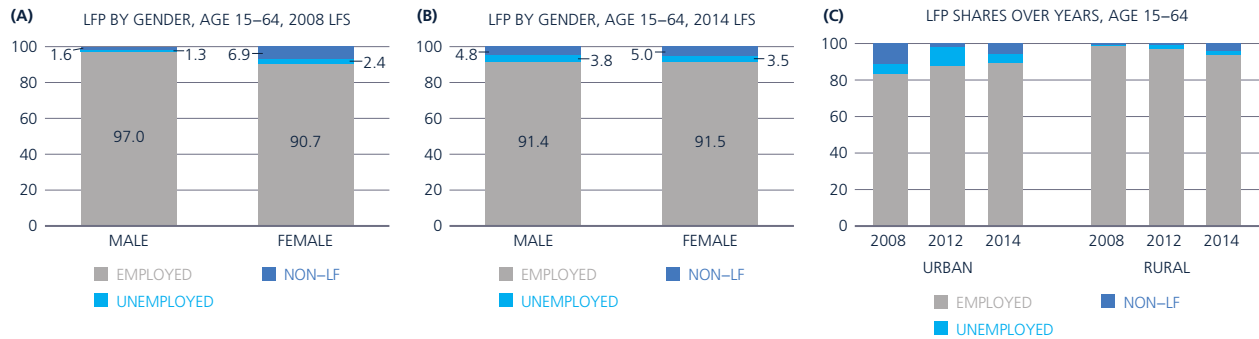
LABOR MARKET DEMOGRAPHICS

Labor force participation is generally high; it seems to be falling in rural areas but rising in urban ones.

High labor force participation is common in low- and lower-middle-income countries, where poorer people cannot afford not to work. The 2014 LFS put the shares of employed women and men even, at 91.4 and 91.5 percent, and estimates male unemployment at just 3.8 percent and female unemployment at just 3.5 percent (figure 14). Compared with 2008, this suggests a decline in male employment (97 percent in 2008 and 94.4 percent in 2012) and a very slight increase in female employment (90.7 percent in 2008 and 91.6 percent in 2012). Labor force participation in aggregate had declined slightly since 2008, when 1.6 percent of working-age men and 6.9 percent of working-age women were recorded as not in the labor force. By 2014, 4.8 percent of men and 5 percent of women were not in the labor force. The drop seems to be due to a decline in participation in rural areas. The share of Zambians who were not in the labor force and were living in rural areas grew more than fourfold, from 9.1 percent in 2008 to 40.1 percent in 2014. In contrast, the share of working-age people in the labor force in urban areas seems to have improved between 2008 and 2014.

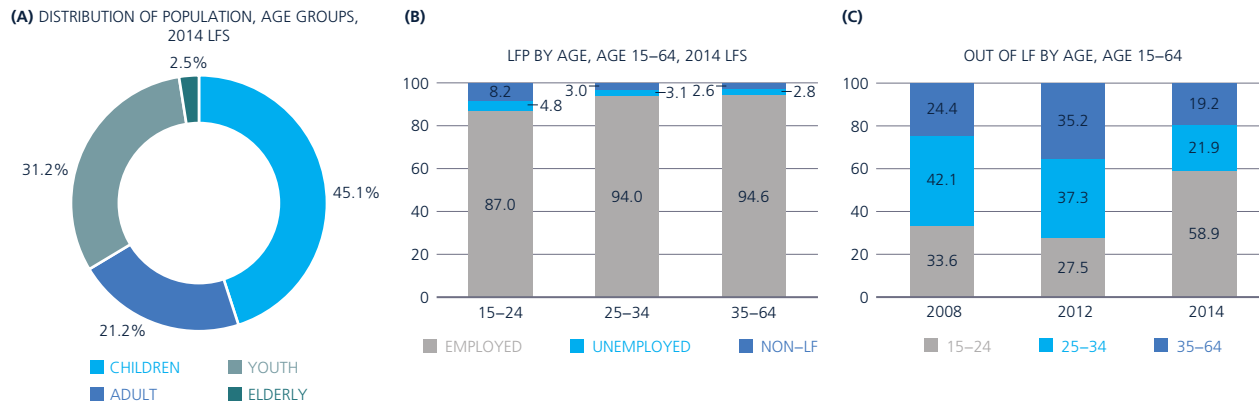
Youth (ages 15–24) are a significant and growing share of the working population but are becoming less likely to be employed. Figure 15 breaks down the observed decrease in dependency mentioned in chapter 1. By 2014, the share of children below age 15 had declined to 45.1 percent, and the share of elderly people was just 2.5 percent. This means that 52.4 percent of the population was of working age and 21.2 percent of working-age Zambians were youth. It is common for young people to take time to find their first job, and if youth are staying longer in school, a decline in labor force participation may be a good thing for future worker productivity. That said, figure 16 suggests that youth who are about 20 years old are taking longer to transition from school to work, as the share at that age who were neither working nor in school had increased by 2014.

Figure 14
Labor force participation by gender (2008 and 2014) and employment status (2008, 2010, and 2014)



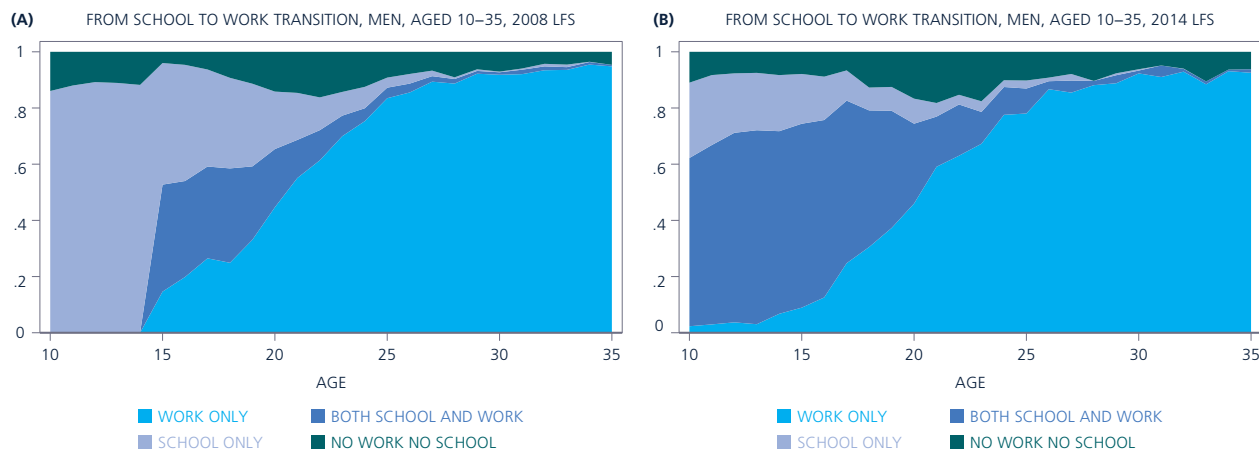
Source: Adapted from 2008, 2012, and 2014 LFS.
Note: Data are for workers age 15-64.

Figure 15
Age structure of the population (2014) and labor force participation (2008, 2012, and 2014)



Source: Adapted from 2008, 2012, and 2014 LFS.
Note: Data are for workers age 15-64.

Figure 16
School-to-work transition for men age 10-35, 2008 and 2014



Source: Adapted from 2008 and 2014 LFS.

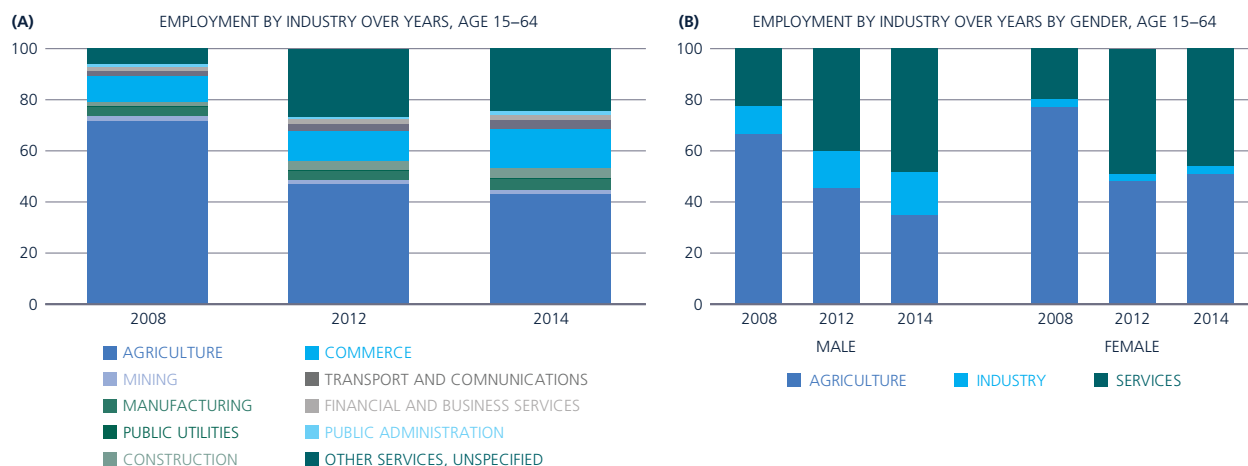
In 2008 about 80 percent of 25-year-old men and 16 percent of 15-year-old men were working, compared with about 70 and 10 percent in 2014. But a larger share of youth (both ages) in 2008 were both in school and working, perhaps implying an increase in youth work for family businesses. Figure 15c also suggests that youth have become a higher share of those who are not in the labor force.

ECONOMIC TRANSFORMATION WINNERS AND LOSERS

Further disaggregation of who is making the transition out of agriculture to new jobs in services and industry suggests that younger workers and men are benefiting.¹⁴ Figure 17a shows that the big shift in employment out of agriculture took place in commerce and other services, with gains also in construction, manufacturing, and transport and communications. Figure 17b suggests that men have moved out of agriculture into industry and services, whereas women have moved out of agriculture into services, and that about half of women have remained in agriculture compared with only about 35 percent of men. Figures 18 and 19 shows that a significant share of those leaving agriculture were youth. In 2008, 37.4 percent of those employed in agriculture were youth, whereas by 2014 that share had fallen to 27.8 percent (figure 19). Nonetheless, agriculture remains the biggest sector of employment in all provinces other than Lusaka and Copperbelt (figure 18b).

Better jobs seem to be being created through the increases in formal work, including agricultural and off-farm work. There are more people engaged in formal and waged work, and fewer people self-employed in agriculture. Formal and waged work is better remunerated on average than informal work (see discussion later). As a share of employees, paid workers rose from 17.3 percent in 2008 to 29.4 percent in 2014, whereas unpaid workers dropped markedly from 40.6 to 24.5 percent (figure 20). Within the rising share of paid employees there seems to have been a healthy increase in private waged work, from 12.0 percent in 2008 to 21.4 percent in 2014 (figure 20b). The increases in waged work are occurring in rural areas—especially for young people—but more dramatically in urban areas, for young people and for men (figure 20c and 20d). Furthermore, as figure 21 shows, the quality of jobs seems to be improving for those who are working,

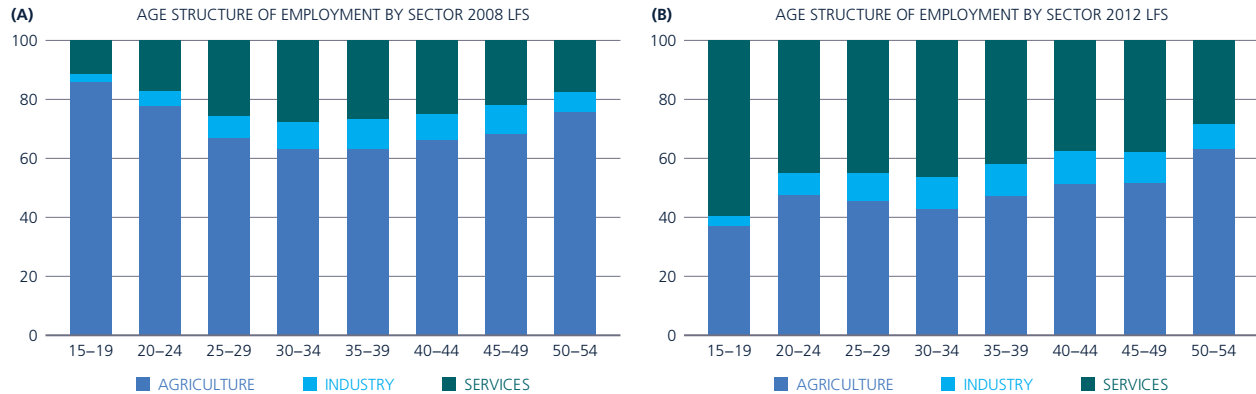
Figure 17
Sector shifts in employment and by gender, 2008, 2012, and 2014



Source: Adapted from 2008, 2012, and 2014 LFS.
Note: Data are for workers age 15–64.

¹⁴The sampling frame for the LFS was developed by the Zambian CSO with technical assistance support from the ILO using population trends across surveys. The results generated here are consistent with the CSO for the 2008, 2012, and 2014 LFS. However, these yield a suspiciously high drop in agriculture employment from 2008 to 2012. The drop was caused by a large shift of (female) unpaid employees out of agriculture and into “other services,” a shift that stopped in 2014. Excluding both unpaid workers and the “other services” category would not represent the actual story, so such analysis is not presented here. However, considering only paid and self-employed workers and excluding “other” confirms the story of structural change. On this basis, 80 percent of workers were engaged in agriculture in 2008, 65 percent in 2012, and 48 percent by 2014.

Figure 18
Sector shifts by age structure of employment, 2008 and 2012



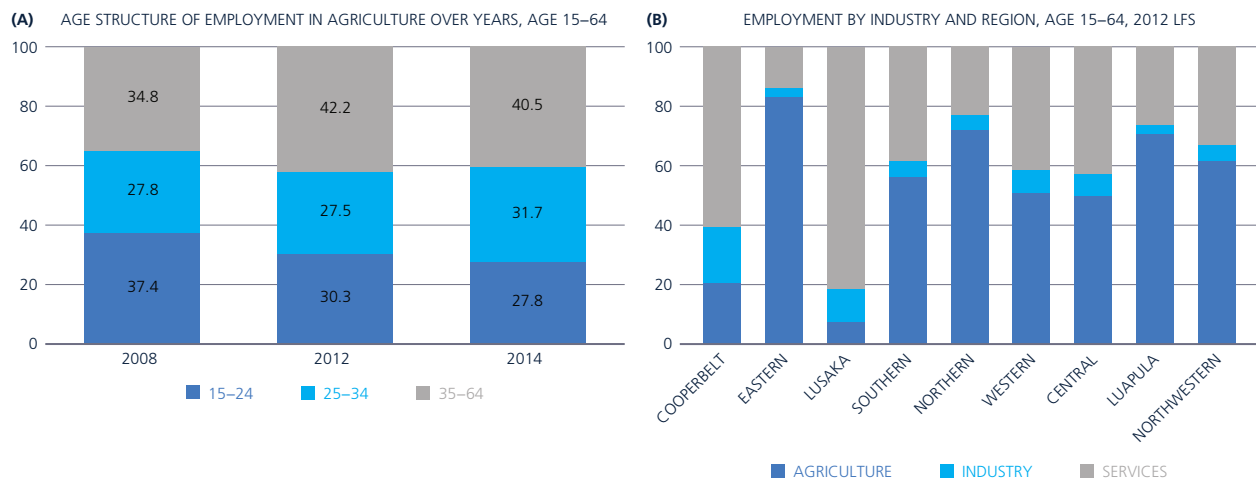
Source: Adapted from 2008 and 2012 LFS.

including for young people, with increases in social security coverage and a rise in the share of youth who have a work contract.

Zambia's youth seem more likely to migrate to urban areas for jobs, as one would expect. Urban jobs are becoming more important quite rapidly. Employment rates increased in urban areas between 2008 and 2014, but seem to have fallen in rural areas, which hold a larger share of working-age youth who are out of the labor force. The share of all youth in urban areas has increased since 2008 as the share of youth in rural areas has fallen (figure 22).

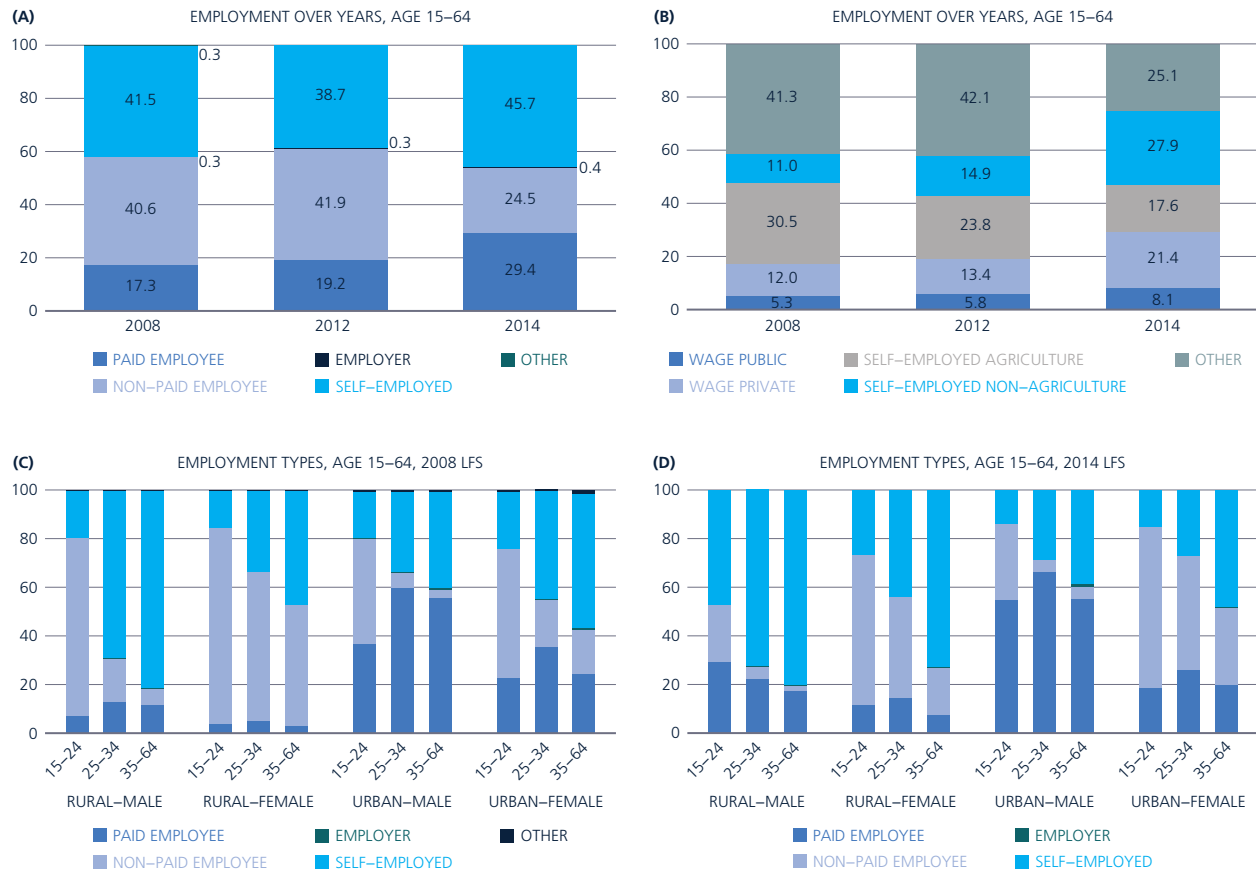
Those with skills, as proxied by education level, are more likely to benefit from the economic transformation under way. Figure 23 shows that not only are unskilled people more likely to work in agriculture than skilled workers, but also that the proportion of those with no education or with incomplete primary education in elementary occupations has increased. Even in skilled agriculture, the share of workers with completed primary and some secondary education has increased over time, perhaps suggesting that the increase in formal

Figure 19
Age and regional structure of agriculture, 2008, 2012, and 2014



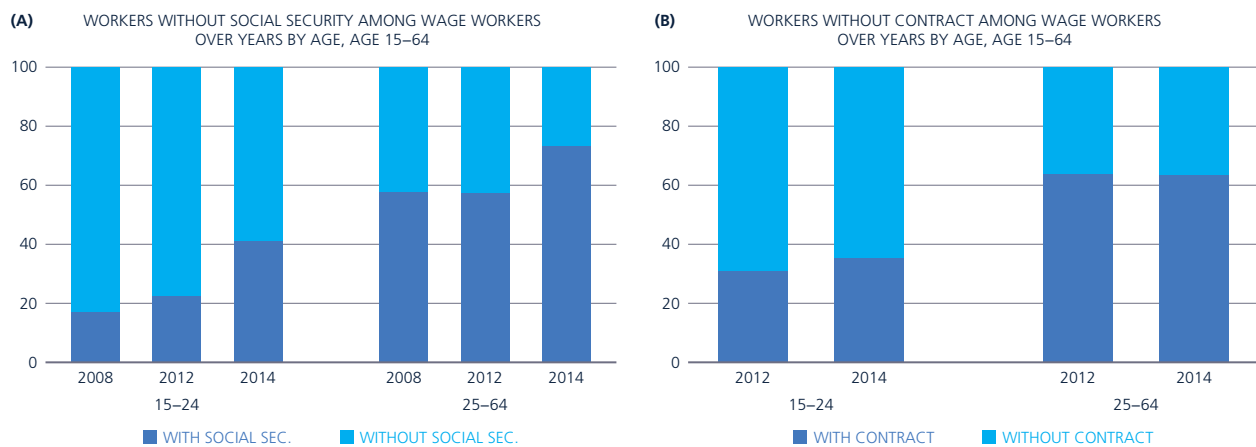
Source: Adapted from 2008, 2012, and 2014 LFS.

Figure 20
Employment status and type of work, 2008, 2010, and 2014



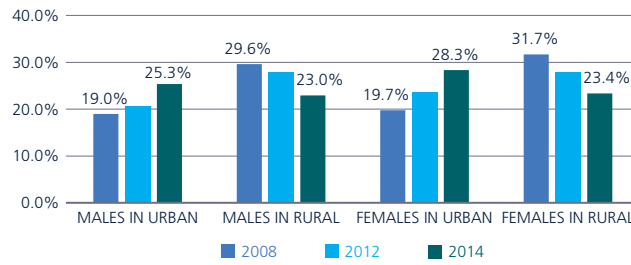
Source: Adapted from 2008, 2012, and 2014 LFS.
Note: Data are for workers age 15-64.

Figure 21
Formality of work, 2008-14



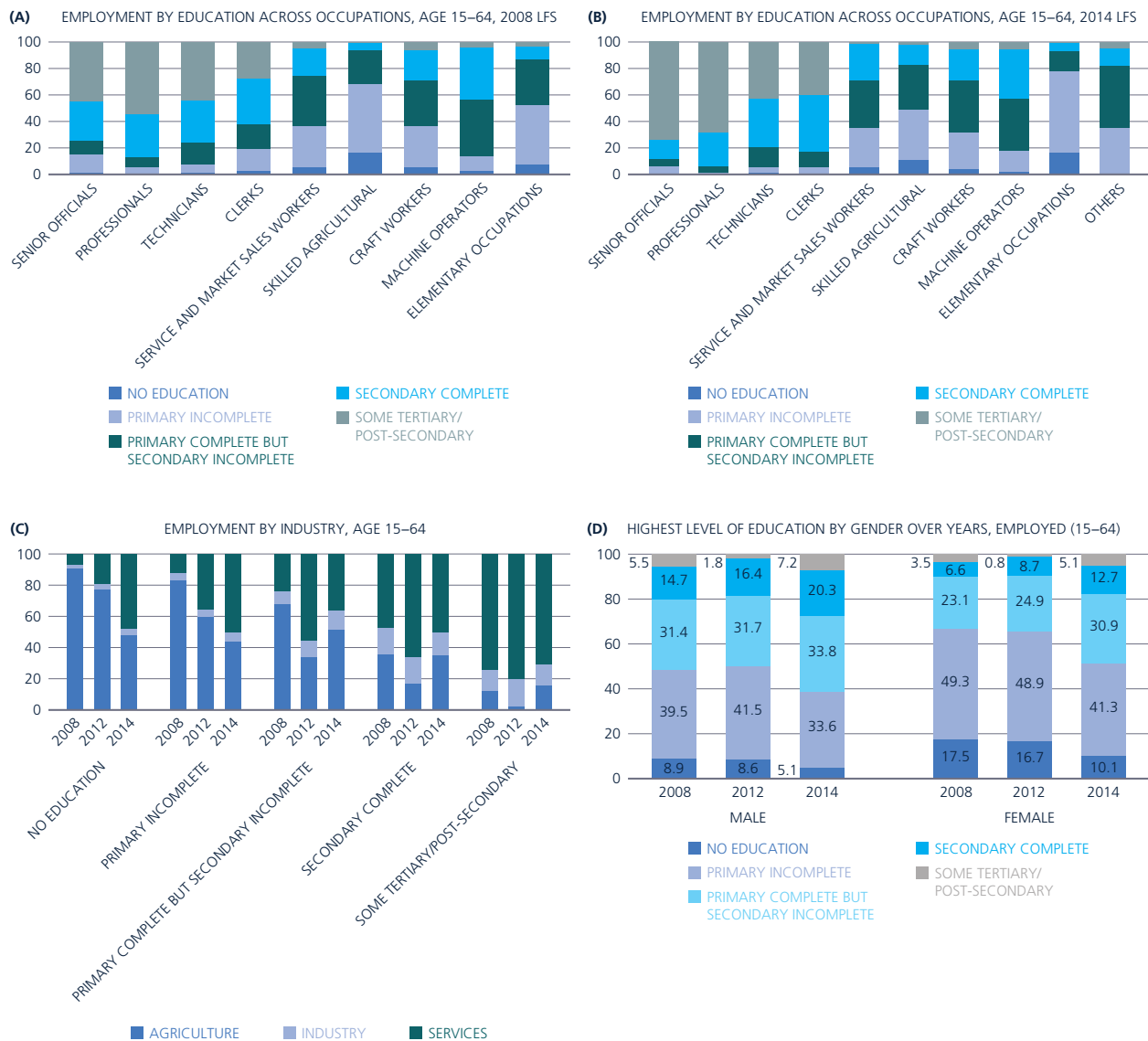
Source: Adapted from 2008, 2012, and 2014 LFS.
Note: Includes work that offers social security and a contract. The non-response rate for the questions “has contract” and “has social security” are high, meaning that the findings for informality may not be statistically robust in some cross-tabulations.

Figure 22
Urban and rural shares of youth population by gender, 2008–14



Source: Adapted from 2008, 2012, and 2014 LFS.
Note: Data are for workers age 15–24.

Figure 23
Education and occupations, sector of employment, and labor force participation, 2008, 2012, and 2014



Source: Adapted from 2008, 2012, and 2014 LFS.
Note: Data are for workers age 15–64.

Figure 24
Shares of public and private sector employment by skills, 2008 and 2012



Source: Adapted from 2008 and 2014 LFS.
Note: Data are for workers age 15–64.

waged work in agriculture is also more demanding of worker education. People with all kinds of skills seem to have moved into services, where jobs are more heterogeneous and earnings reflect this fact (as shown in the section on earnings and duality). Education also seems to become increasingly important for those who participate in the labor force, as indicated by the increasing shares of both female and male workers who have higher education levels (figure 23d). This holds true for rural as well as urban areas. The public sector and professions absorbed a growing share of university graduates between 2008 and 2014.

The public sector is absorbing a large and increasing share of skilled labor and is paying more on average than the private sector. Figure 24 shows that between 2008 and 2014, the share of those with some tertiary and postsecondary education who work in the public sector increased from about 50 percent to about 55 percent. Furthermore, waged earnings are higher on average in the public sector (figure 25). Table 4

Figure 25
Kernel densities of public and private sector monthly earnings, 2008 and 2012



Source: Adapted from 2008 and 2012 LFS.
Note: Excludes unpaid workers.

Table 4
Public-private wage differentials by education level

	2008	2012	2014
No education	3.03	1.20	2.34
Primary incomplete education	1.23	1.45	1.37
Primary complete secondary incomplete	1.15	0.90	1.74
Secondary education		1.19	2.34
Higher education	0.77	0.99	1.10

Source: Adapted from Zambia Labor Force Surveys 2008, 2012 and 2014.

Note: Table covers only working age population (15–64) with a non-missing and nonzero wage. Mean wages are reported as weighted.

shows that by 2014 this was true for average wage earnings, even after controlling for education. There are relatively few unskilled public servants, but the public sector pays significantly more for all levels of education than the private sector does. The exception is tertiary graduates, who were paid just above the mean of the private sector wage in 2014. Public servants also seem to have benefited from the high growth period through more generous wages.

RISING UNDEREMPLOYMENT

The structural shifts in jobs are not without challenges: underemployment seems to be rising, for rural and urban workers, for youth, and for those working in service sectors, especially youth working in urban services. Figure 26 shows the proportion of workers working fewer than 35 hours per week in 2008 and 2012. It shows the shares of youth underemployed by gender in rural and urban areas by sector (26a and 26b), the sectoral breakdown of youth underemployment in rural and urban areas by gender (26c and 26d), and the age breakdown of underemployment by location and gender (26e and 26f). Across the board, youth underemployment rose during this period. The share of young people in total urban underemployment rose, whereas their share in rural underemployment fell. There was a dramatic rise in the share of service jobs in youth underemployment in all locations. By 2012, over 90 percent of youth underemployment in urban areas was in service sectors compared with about 40 percent in 2008. Both young women and young men saw this increase in underemployment. These findings point to an important conclusion: although better jobs are being created in the economy, Zambia is not creating enough of them. Possible explanations are examined in chapter 3 in the section that looks at the demand for labor by firms. The rest of this chapter considers earnings from waged work and presents the results of regressions of the determinants of labor force participation, employment type, and earnings.

EARNINGS AND DUALITY

Wages seem to reflect the duality in Zambia's economy. Figure 27 shows the kernel densities of the log of monthly earnings in the 2014 LFS for paid workers, comparing formal and informal earnings, by education and by sector. As one would expect, wages are higher for formal workers. Given the definition of formality used here, this is especially true of contract workers (figure 27b). However, the distribution of earnings for formal workers with contracts is bimodal, with a peak near the higher earnings and a lower mode much closer to that for the informal sector (without contract). This bimodal distribution repeats in the earnings distributions by secondary education (figure 27c) and in the services sector (figure 27d). The cause is twofold and likely reflects Zambia's dual economy. First, the public sector pays more for a given skill and hires more skilled people. Second, the formal sector is much more capital intensive and potentially higher in productivity, especially in the emerging modern service sectors of retail, commerce, finance, transport and communications, and hotels and restaurants (see chapter 3). As labor shifts into services across the economy, it is likely that informality in employment in services is increasing; and as noted in the preceding section, the number of hours worked is likely falling also.

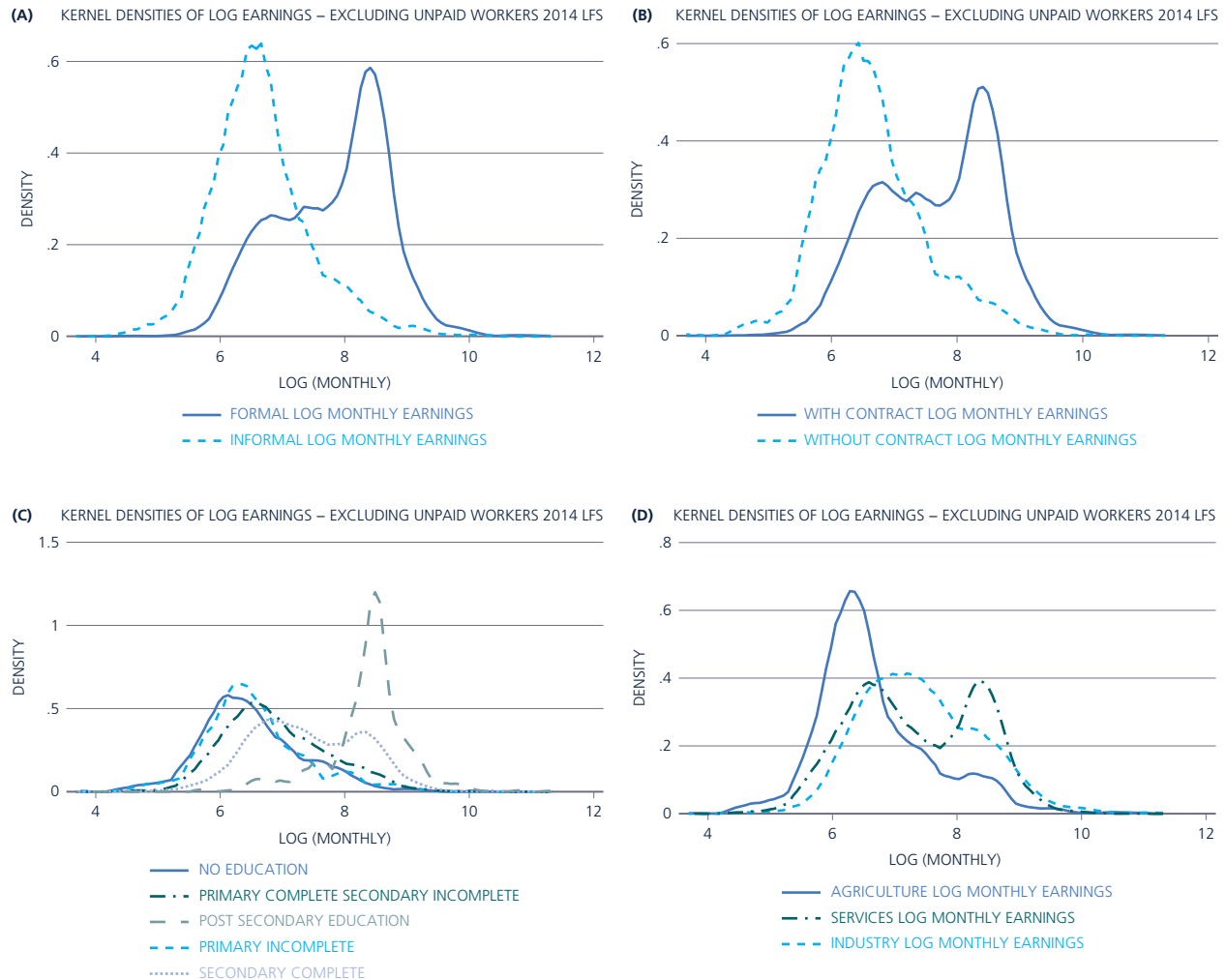
Figure 26

Underemployment by location and sector, by gender and age, 2008 and 2012



Source: Adapted from 2008 and 2012 LFS.
 Note: Underemployed = less than 35 hours per week.

Figure 27
Kernel densities of wages for paid workers by formality, education, and sector, 2014



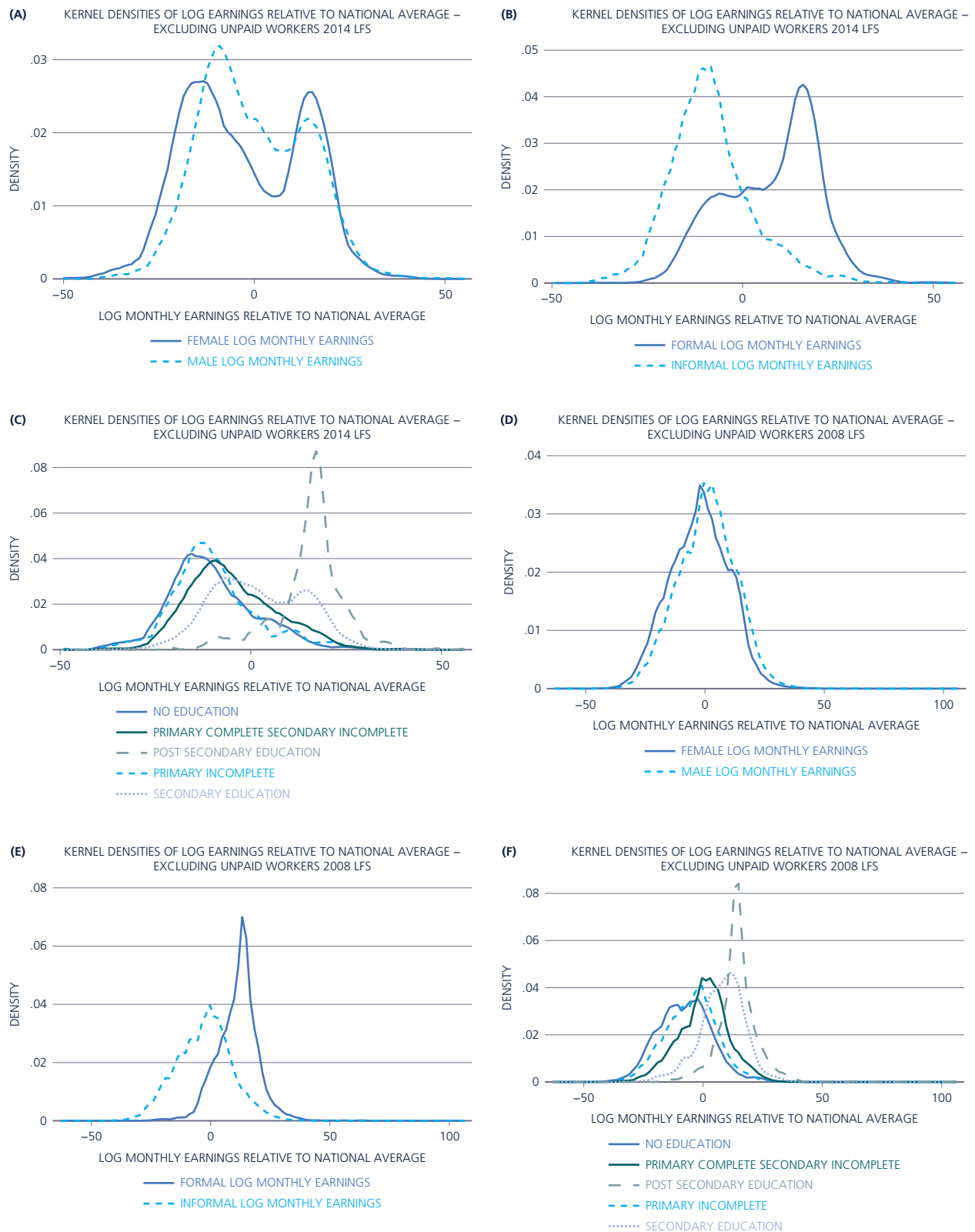
Source: Adapted from 2014 LFS.
Note: Excludes unpaid workers.

Earnings gaps have widened over time, and duality has become more pronounced. Figure 28 shows that not only are gaps higher for those with higher education, for men, and for formal sector workers, but also that the nominal earnings gap—as revealed by kernel densities—grew between 2008 and 2014.

A significant jobs challenge is to help improve productivity and earnings for jobs in informal services while promoting the development of and job creation in more productive modern services in the main urban centers. Informal service jobs are already showing signs of underemployment, which could be a symptom of market saturation in the main urban centers. As seen in chapter 1, most of the urbanization in Zambia has occurred around greater Lusaka. One option would be to explore the possibility of stimulating stronger service economies in secondary towns, which could serve agricultural zones and support agro-processing.

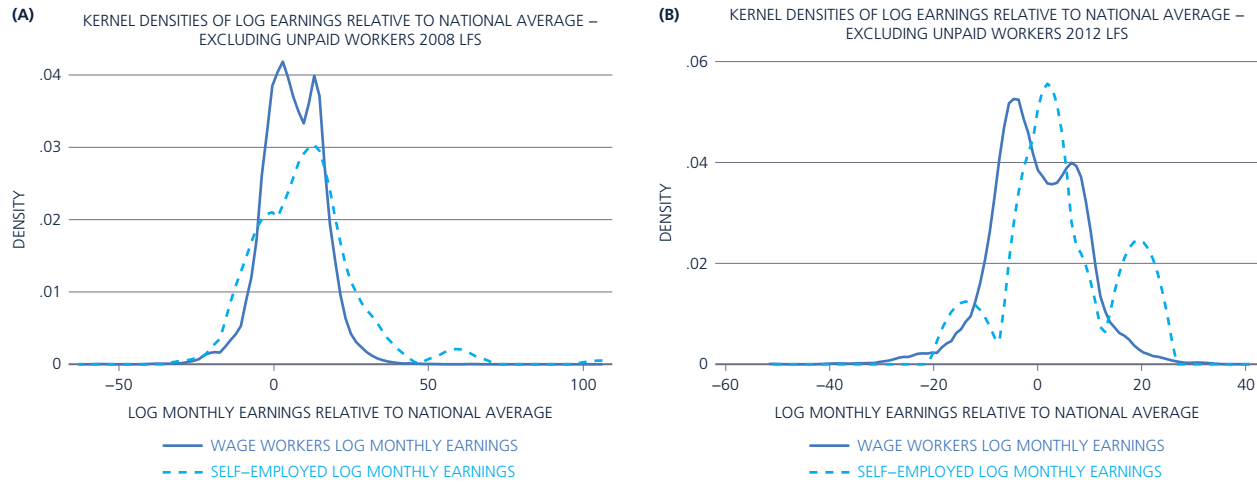
It will be important for policy makers not to be too dogmatic about the merits of self-employment versus waged work. Like most economies in southern African, Zambia has a higher share of formal waged work than do many other youthful African countries, and this is a strength. However, until Zambia is able to generate much higher growth in formal sector waged jobs than it has managed to date, the youthful and fast-growing workforce is going to have to find informal work and engage in self-employment. LFS data suggest that the earnings potential of self-employment, especially off-farm, is not significantly different from that for waged work (figure 29).

Figure 28
Kernel densities of log monthly earnings relative to national average for paid workers by gender, formality, and education, 2014



Source: Adapted from 2008 and 2014 LFS.
Note: Excludes unpaid workers.

Figure 29
Kernel densities of log monthly earnings relative to national average for self-employed and waged workers



Source: Adapted from 2008 and 2012 LFS.

DETERMINANTS OF LABOR FORCE PARTICIPATION AND EARNINGS

This section first presents the findings of logistic regressions of labor force participation, to better understand which household characteristics are associated with higher probabilities of participating in the labor force. It then presents the results of applying the same technique to employment types. Finally it presents the findings of Mincerian adjusted earnings regressions, looking at how individual workers' characteristics determine their earnings in the labor force. These statistical techniques validate the descriptive data findings presented earlier in this chapter, where the focus was on understanding the dynamics of the labor market in response to structural changes in the economy.

For the multinomial logit estimation of labor force participation and employment, all individual-level and household-level characteristics are used, as are regional dummies and urban and rural dummies. The average marginal effects are shown in figures 30 and 31. The full set of results appears in appendix A. In the multinomial logit estimation of employment type, gender interactions are also included to see if the impact of individual characteristics is significantly different for females. All individual-level and household-level characteristics are used in the employment logit estimations as well as the region and urban and rural dummies used in the labor force participation logit regression. The log odds are shown in figure 31. The base category is self-employed in agriculture. Again, a full set of results for alternative models is set out in appendix A.

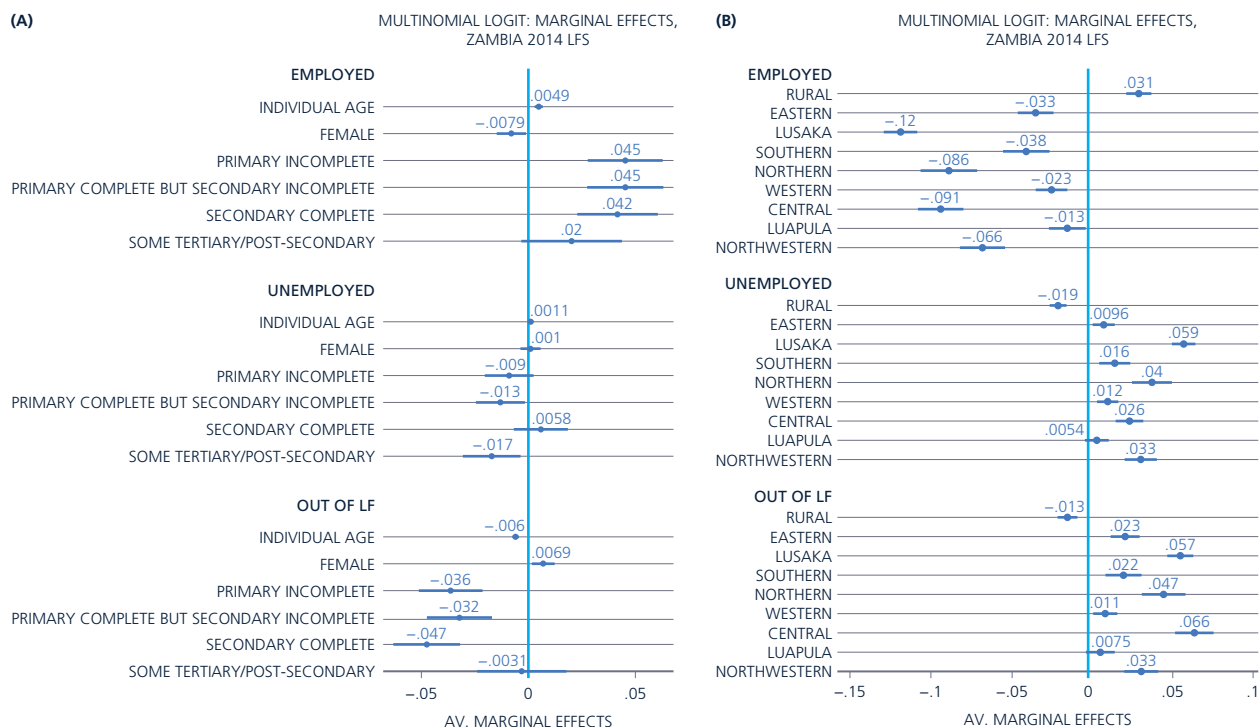
Employment and Participation

Older, more experienced workers are more likely to be working and less likely to be inactive. As figure 30a shows, age has an equally positive impact on employment and negative impact on inactivity. A one-year increase (decrease) in an individual worker's age increases the probability of employment (inactivity) by 0.5 percentage points.

Gender matters in the decision to work and is a strong determinant of both the type of work a person is able to get and their earnings in the job. Figure 30a shows that gender has a strong impact on the labor force participation decision. Being female increases the probability of inactivity by 0.7 percentage points and decreases the probability of employment by 0.8 percentage points. As discussed later, however, women earn less than men for the same work, and there are some jobs that they are clearly more likely to select into.

Education is the most important determinant of labor force participation. Whereas in most cases the impact of education on unemployment is not statistically significant, its impact on employment and inactivity is significant. Having some primary or secondary education, whether complete or not, increases the probability of employment by 4 to 4.5 percentage points compared with having no education. Having some tertiary education

Figure 30
Multinomial logit estimation of labor force participation



Source: Adapted from 2014 LFS.
Note: Base region is Copperbelt.

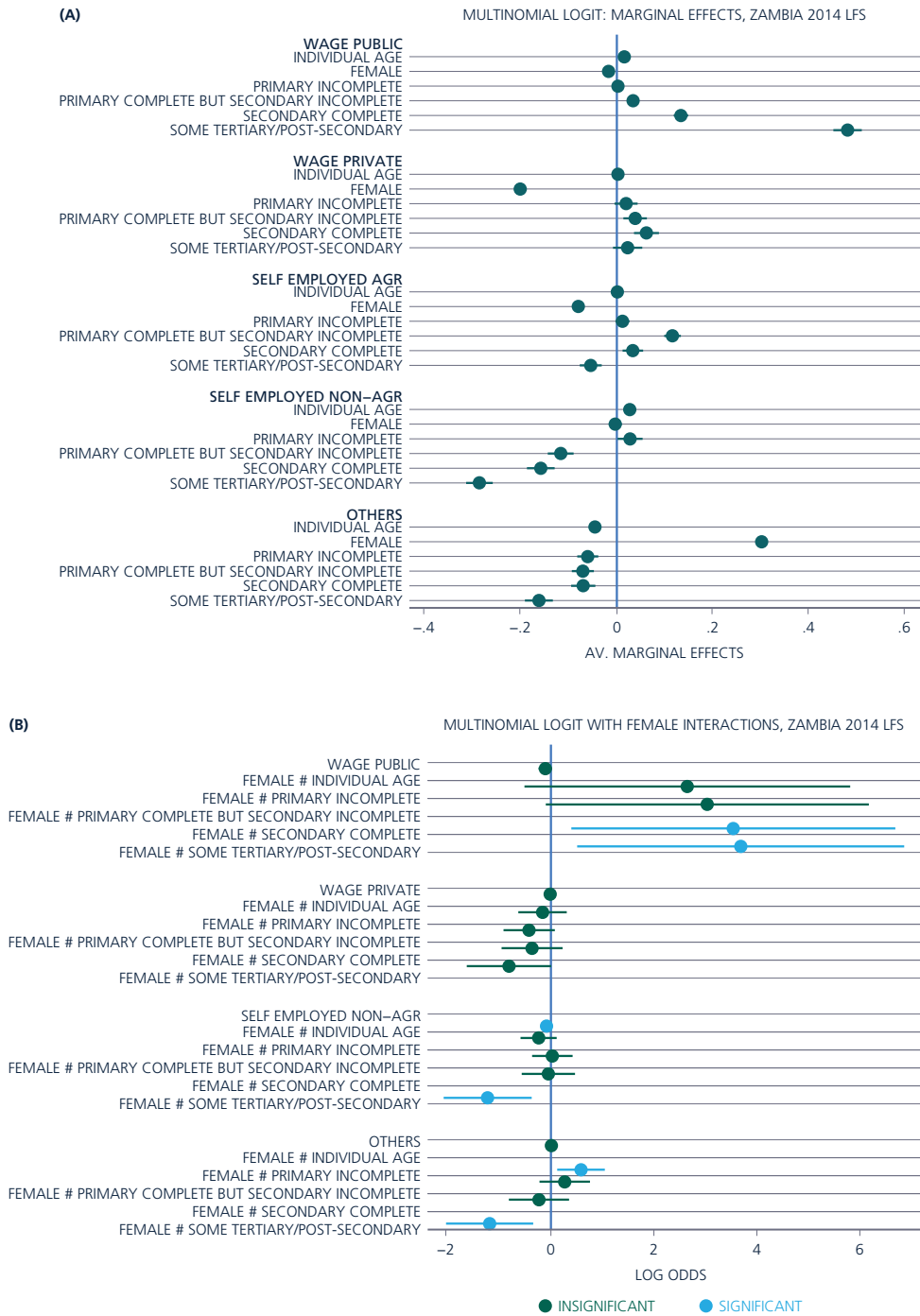
increases the probability by 2 percentage points but increases a worker’s earnings much more (see below). This is an important if not surprising finding for worker mobility. Having no education seriously hinders a worker’s ability to find work, and so for a rural person, living on a subsistence farm is a recipe for being trapped in poverty. Almost all education categories—with the exception of postsecondary education—have similar negative impacts of 3–5 percentage points on the probability of inactivity.

Employment probability is highest in rural locations and in Copperbelt Province, because of the increased job creation in that area. An average individual of working age in a rural area is 3 percentage points more likely to be employed than a working-age person in an urban area, 1.3 percentage points less likely to be inactive, and 1.9 percentage points less likely to be unemployed. The regional pattern of employment and labor force participation therefore masks wide differences in the quality of jobs. In the regressions for figure 30b, marginal probabilities of employment in various provinces are compared with the probability in the base province of Copperbelt. In all those provinces, working-age people have lower probabilities of employment than in the base province. For instance, the probability of employment is lower by 12 percentage points in Luapula, by 7 percentage points in North Western, and by 9 percentage points in Western.

Not surprisingly, in the less prosperous provinces, the probability of inactivity is higher, suggesting a lack of job opportunities in these areas. The probability of inactivity or unemployment is higher in all those provinces than it is in Copperbelt. For example, an average worker in North Western is 3.3 percentage points and in Lusaka 5.9 percentage points more likely to be unemployed. Workers in North Western, Central, and Lusaka are between 3.3 and 6.6 percentage points more likely to be inactive than workers in Copperbelt.

Age does not seem to affect a worker’s job type by much, except for off-farm self-employment. That is, younger and older people have almost equal likelihoods of being waged or self-employed. Figure 31 shows the results of the multinomial logit estimation of employment type. Older workers are more likely to be self-employed in sectors other than agriculture and in other employment (unpaid and employer) than youth, but the magnitude is well below 1 percentage point per year.

Figure 31
Multinomial logit estimation of employment type



Source: Adapted from 2014 LFS.
Note: Base outcome is Self-Employed Agriculture.

Women are less likely to find private waged work, less likely to be self-employed farmers, and much more likely to be unpaid family workers. Gender does not have a significant impact on the probability of being a waged worker in the public sector or being self-employed in sectors other than agriculture. However, being female decreases the probability of being a private wage worker by 2 percentage points and of being self-employed in agriculture by 1 percentage point. Women are also almost 4 percentage points more likely than men to be unpaid family workers.

Education matters, and more education matters more for the type of employment a worker can get. Educated people are less likely to be unpaid family workers and less likely to be self-employed in non-agricultural activities. A higher education level has a significant and stronger impact on the type of job a worker can land, with the highest impact of education being on the probability of being a waged worker in the public sector. The public sector, which tends to hire mostly teachers, nurses, administrators, and clerks, is almost as significant for employment as private waged work. Thus, having completed secondary education and having some tertiary education increases the probability of public sector employment by about 2 and 6 percentage points respectively.

The public sector clearly seems to be attracting skilled women, especially those with tertiary education. The analysis in figure 31a shows that secondary education and some tertiary education increases a worker's likelihood of finding waged work. Using gender interaction terms in the employment multinomial logit regression makes it possible to check whether the impact of individual characteristics on the probability of getting employment of a certain type differs significantly for women and men. The significant and positive results are shown in blue in figure 31b. The analysis shows that having secondary and tertiary education increases the probability of a female worker being a waged worker in the public sector by more than it does for male workers. The same is not true for private waged work: having tertiary education has a positive impact on the probability of being a wage worker in the private sector, but being female does not change the impact of education on that probability. Women with tertiary education are less likely to be in the self-employed and other categories of work (unpaid and employer—mostly unpaid in Zambia) than are their male counterparts. Conversely, if a female worker has incomplete primary education, she is more likely to engage in unpaid family work than her male counterpart.

Earnings

The Mincerian wage estimations—covering only waged workers—were run for all workers and then separately for female and male workers. Four specifications were used: without dummies, with three industry dummies, with eight sector dummies, and with dummies for occupation type. The full set of results is presented in appendix A, and the main highlights are reflected in tables 5 to 7 and discussed here in turn by worker characteristics, occupation, sector, and location.

Although experience and education lead to higher wages, women earn less than men for the same work. As in the employment analysis, cross-sectional wage regressions reveal that education makes the biggest difference—and the more education, the bigger the wage premium (table 5). However, the relative returns to education seem to be falling over time. In 2008 incomplete primary education had a positive and significant effect on wages relative to no education, but by 2014 the coefficient was not significant. In 2008 the premium on completed secondary education over no education was between 90 and 115 percent depending on the model used, but by 2014 this had fallen to between 65 (model 3) and 89 percent (model 1). The exception is tertiary education, which has maintained broadly the same high return to education as in 2008, indicating perhaps the higher public wages over time or an increase in demand for skills in the formalizing private sector. A significant part of this high return is related to occupation selection; after occupation dummies are introduced, the increment over no education in 2014 falls to 105 percent instead of 176 percent. Women earn 20 percent less than men (model 1), with the gender gap dropping to 13 percent after controlling for the sector of activity (model 4). The wage gap for women seems to be declining over time, as does the premium on age.

Earnings from waged work are higher in industry and services, and highest in skilled occupations. Industry offers the more lucrative jobs on average, along with more technical service occupations (table 6). The average waged worker employed in industry earns about 34 percent more than the average worker in agriculture. This premium remains significant at 30 percent even after controlling for occupations. The increment for

Table 5
Mincerian returns on education

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample
Female	−0.203*** (−6.75)	−0.168*** (−5.43)	−0.188*** (−6.07)	−0.118*** (−3.73)
Individual age	0.059*** (5.98)	0.057*** (5.69)	0.044*** (4.53)	0.049*** (4.98)
Age Squared	−0.000*** (−3.93)	−0.000*** (−3.71)	−0.000*** (−2.75)	−0.000430*** (−3.24)
Primary incomplete	0.127 (1.54)	0.124 (1.52)	0.102 (1.29)	0.129 (1.54)
Primary complete but secondary incomplete	0.425*** (5.33)	0.391*** (4.99)	0.306*** (3.96)	0.383*** (4.73)
Secondary complete	0.894*** (11.12)	0.858*** (10.81)	0.649*** (8.23)	0.817*** (10.00)
Some tertiary/ post-secondary	1.771*** (21.84)	1.741*** (21.71)	1.069*** (11.64)	1.671*** (20.03)

Source: Adapted from 2014 LFS.

service work over agriculture wages is half of the increment for industry work over such wages. An average worker employed in services in 2014 had about 17 percent higher wages than one in agriculture. Given the heterogeneity of service occupations, this premium is mostly explained by selection into occupations. Market sales workers, craft workers, machine operators, and elementary occupations do not have a premium compared with agricultural workers, after controlling for observable characteristics. However, the premiums are significant for other occupations such as senior officials (by 73 percent), professionals (by 79 percent), technicians (by 48 percent), and clerks (by 46 percent), compared with their agricultural counterparts. This finding suggests that Zambia's pathway to more and better jobs depends not only upon the transformation of workers out of agriculture, but also on the creation of more jobs in more skills-intensive technical and clerical occupations. Indeed, as table 6 shows, diversification into commerce (wholesale and retail trade)—unless it is in the modern sector—will not do much for earnings as workers move out of agriculture. And as of 2014, the highest wage premiums were to be found in public utilities, public administration, and mining.

Urban waged jobs enjoy a wage premium, both on average for the same jobs and because of the composition of work in urban areas. Over time, however, wage gaps have narrowed between rural and urban on average, presumably as workers moved to the cities. In 2014 rural wages were 8 percent lower than urban wages, but this gap seems to be mostly due to variation in sectoral distributions in rural versus urban areas (table 7). The only province that seems to have significantly higher returns than Copperbelt is Southern (table 8). An average worker in Southern would earn 29 percent more than an average worker in Copperbelt. This difference remains significant at 27 to 29 percent even after controlling for the sector of activity. It is still 22 percent even after controlling for occupation. In contrast, Central Province has 19 percent lower earnings on average than Copperbelt, and about half of this difference is due to sectoral distribution differences between the regions. Even after controlling for the sector and occupation of workers, the difference remains significant. This means that an average worker employed in the same sector with the same occupation would still earn 14 percent less in Central than in Copperbelt. Lusaka Province also has significantly lower average earnings than Copperbelt; however, the 8 percent difference disappears after one-digit sector dummies are included. This means that differences in the sector composition of jobs in Lusaka explain the wage difference between the two provinces.

Table 6
Mincerian returns with industry and occupation controls

	Model 2 - All sample	Model 3 - All sample
Industry	0.357*** (5.65)	0.310*** (4.70)
Services	0.189*** (3.31)	0.099 (1.69)
Senior officials		0.698*** (5.20)
Professionals		0.758*** (6.48)
Technicians		0.457*** (3.77)
Clerks		0.451*** (3.64)
Service and market sales workers		-0.135 (-1.28)
Craft workers		0 (.)
Machine operators		0.0601 (0.54)
Elementary occupations		0.137 (1.24)
Others		-0.158

Source: Adapted from Zambia Labor Force Survey.

Table 7
Mincerian returns with sector controls

	Model 4 - All sample 1-digit industry
Mining	0.717*** (7.72)
Manufacturing	0.263*** (3.34)
Public utilities	0.688*** (6.25)
Construction	0.288*** (4.15)
Commerce	-0.0498 (-0.78)
Transport and Communications	0.252*** (3.47)
Financial and Business Services	0.209*** (2.66)
Public Administration	0.675*** (8.18)
Other Services	0.191*** (3.20)

Source: Adapted from LFS.

Table 8

Mincerian wage estimations: returns across regions compared with Copperbelt

	Model 1 - All sample	Model 2 - All sample 3 sector dummies	Model 3 - All sample 3-sector dummies and occupations	Model 4 - All sample 1-digit industry
Rural	-0.083** (-2.28)	-0.013 (-0.34)	-0.073* (-1.95)	-0.031 (-0.79)
Eastern	-0.027 (-0.42)	-0.0237 (-0.37)	-0.05 (-0.83)	0.0600 (0.96)
Lusaka	-0.083** (-2.06)	-0.0683* (-1.70)	-0.067* (-1.77)	0.001 (0.03)
Southern	0.287*** (4.24)	0.278*** (4.17)	0.218*** (3.72)	0.269*** (4.05)
Northern	-0.016 (-0.24)	-0.018 (-0.28)	-0.027 (-0.45)	-0.034 (-0.52)
Western	0.100 (1.37)	0.125* (1.72)	0.100 (1.48)	0.175** (2.44)
Central	-0.191*** (-3.44)	-0.145** (-2.58)	-0.140*** (-2.60)	-0.093* (-1.70)
Luapula	0.019 (0.28)	0.048 (0.72)	0.024 (0.35)	0.084 (1.34)
North Western	0.331*** (3.80)	0.365*** (4.11)	0.280*** (3.18)	0.401*** (4.50)



3. EMPLOYMENT DEMAND FROM FIRMS

SUMMARY

This chapter analyzes the demand side of jobs, the firm perspective. The analysis suggests that Zambia's investment climate has been generally favorable to firm entry and hiring for more formal and larger firms. Nothing in the analysis of the structure and dynamics of firms or in the regression analysis of employment, productivity, and wages gives unexpected results or points to obvious unhealthy symptoms of the investment climate. The following findings warrant further analysis, however, and could have implications for a jobs strategy:

Survival of small firms seems low, and yet smaller firms seem to have value added per worker that is similar to larger firms, despite having lower output per worker than larger firms.

Whereas entry and foreign investment in the manufacturing sector has been buoyant, productivity (output per worker) in the sector appears to be lower than in other sectors, in regressions controlling for other characteristics.

Productivity in the largest firms (50 staff members or more) is lower than for small young entrants, after adjusting for other factors.

The distribution of labor productivity across mining, manufacturing, and commerce is bimodal, pointing to asymmetric costs, unfair competition, or (most likely) dualism in these sectors.

There are large (and foreign) firms of all ages across most sectors, mixed in with plenty of smaller and informal firms and self-employed workers. This not only sends the message that Zambia is open for business, but also allows potential scope for connecting large- and small-scale firms in value chains in specific locations.

The most common locations for incumbent firms and for entrants and job creation are in the corridor running from Copperbelt through Lusaka to Livingstone in Southern. This corridor has high crop potential, is densely populated, has good access to markets by road, and also has a high poverty density. A jobs strategy for Zambia should investigate the potential to develop more jobs with higher productivity in the densely populated and poor regions of Eastern and Northern provinces.

DEMAND FOR WORKERS BY FIRMS

This chapter considers jobs in firms—that is, the demand side of the jobs agenda. The first section uses census data to assess the structure of firms and employment in them. The second section considers spatial aspects of firm location, linking the pattern of firms and jobs to patterns in poverty density and employment and drawing conclusions for regional policy as part of a jobs strategy. The third section uses the proxy of firm age to analyze firm dynamics. The fourth deepens the diagnostic by analyzing the distribution of productivity by firms' characteristics and then presenting the results of standardized regressions of firm size (employment), productivity, and wages.

STRUCTURE OF FIRMS AND EMPLOYMENT IN FIRMS

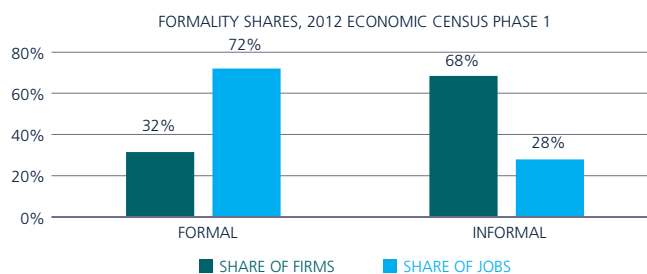
Zambia has a relatively good investment climate, a relatively healthy structure of firm size and age, a good track record in attracting foreign investment, and relatively high formality in employment, in common with other southern African economies. These conditions likely reflect Zambia's history of political stabil-

ity, the traditional urbanized mining sector in Copperbelt, and more recently, stable macroeconomic management and the open and private sector and foreign investor-friendly business environment. The country's ranking in the World Bank's 2017 Doing Business survey was 98th out of 190 countries, 20th out of the 52 lower-middle-income countries and 7th out of 48 economies in Sub-Saharan Africa. The biggest relative weaknesses in its scores are on trade across borders (160th, reflecting long waits rather than high financial costs), registering property (145th), and enforcing contracts (135th). Recent severe power cuts reduced Zambia's score on getting electricity from 109th to 153rd. In contrast, Zambia does very well on getting credit (20th globally) and relatively well on paying taxes (58th). In the 2013 investment climate survey, Zambia scored well relative to other African economies on corruption, but despite its good score on credit, relatively few firms actually seek credit from banks, and collateral requirements and rejection rates are reportedly high relative to those in other countries. A large share of Zambian firms complain about competition from informal firms. The Zambian employers' association regularly complains that overprotective labor regulations create a disincentive for firms to hire. Some employee benefits—annual leave (between 23 and 24 days for a workers with five years of service), maternity leave (126 days), and severance pay (86 weeks for 10 years of tenure)—are high relative to those in other countries in the region.¹⁵ Nonetheless, few firms complained about labor regulations in the investment climate survey. In addition, Zambia performs below regional peers on the regulatory environment.

Most firms are informal, small, and young, but most employment in firms¹⁶ is in formal, larger, and slightly older firms. Zambia's firms share some of the dual economy features reported in the discussion of workers, in that most firms are informal, but most waged jobs are in formal firms. Figure 32 shows that in phase 1 of the 2012 Economic Census, 68 percent of firms were reported as informal and only 32 percent as formal. However, formal firms were much larger on average, accounting for 72 percent of employment in establishments, compared with only 28 percent in informal firms. This result accords with the findings in the 2010 population census (see figure 11 in chapter 2), which recorded that 24 percent of wage workers reported working in the informal sector.

The small number of large formal firms employ significant numbers of workers. Firms with more than 100 employees represent less than 2 percent of firms but account for almost half (46.8 percent) of all jobs in firms. Medium and large firms (20 staff or more) account for over two-thirds of jobs in firms. Figure 33 shows the size distribution of firms and jobs in firms. Those with fewer than 10 employees accounted for 89.4 percent of firms but only 22.3 percent of jobs in firms. In part this is explained by the relatively large average sizes of

Figure 32
Shares of firms and jobs, by formality

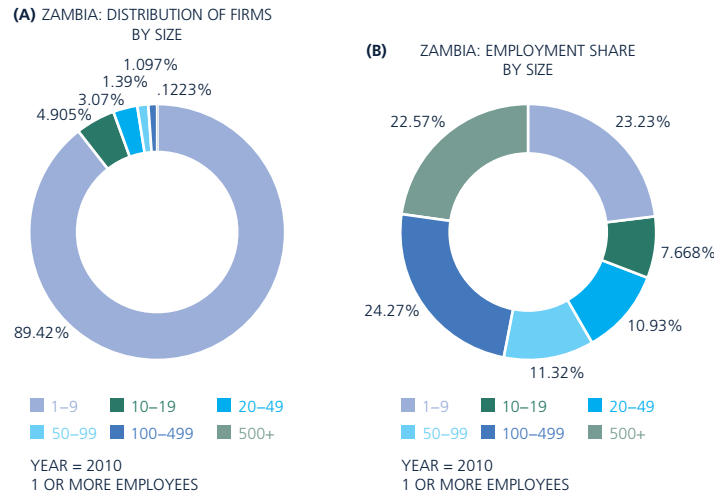


Source: Adapted from CSO 2012 Economic Census, Phase 1.

¹⁵ WDI data, World Bank.

¹⁶ Data for this chapter come from the CSO's 2012 Economic Census, phases 1 and 2. The first phase of the Economic Census was a listing phase, which involved collecting data from all firms across the country that had fixed business premises. The second phase was a national accounts survey of all large and medium firms, as well as a sample of small firms. Total coverage in the first phase was 47,000 firms, whereas in the second phase it was 7,053 firms. Both phases covered all sectors of the economy. Household-based enterprises and self-employed farmers and fishers were not included, although commercial activities in farming and fishing, and informal establishments with fixed premises were included. Data refer to the 2010 business year.

Figure 33
Distribution of firms and employment in firms by size

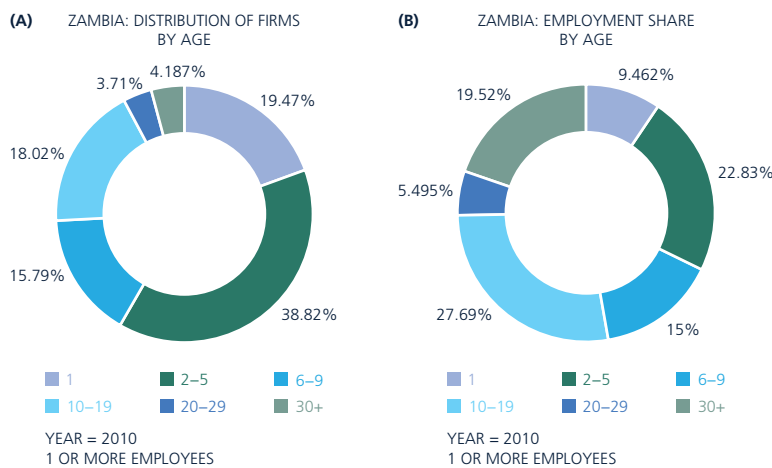


Source: Adapted from CSO 2010 Economic Census.

commercial farms (62 staff members), mining operations (145), and construction firms (52). Together these sectors account for a quarter of employment and only 2.6 percent of firms.

Firms’ age structure suggests symptoms of healthy firm entry; most firms are young, and young firms tend to be smaller. Over half (58.3 percent) of the firms in the Economic Census were under five years old, with 19.5 percent one year old or less (figure 34). Only a quarter of the firms in the Economic Census were more than 10 years old. This suggests a healthy level of new business entry, some undoubtedly due to privatization and private sector–friendly reforms that started in the late 1990s and accelerated with the privatization of the copper mining company ZCCM.¹⁷ But older firms are significant employers: just over two-thirds of jobs are in firms that are more than five years old. Furthermore, although there is no way of analyzing growth over time given that there is only one Economic Census, older firms are larger on average,

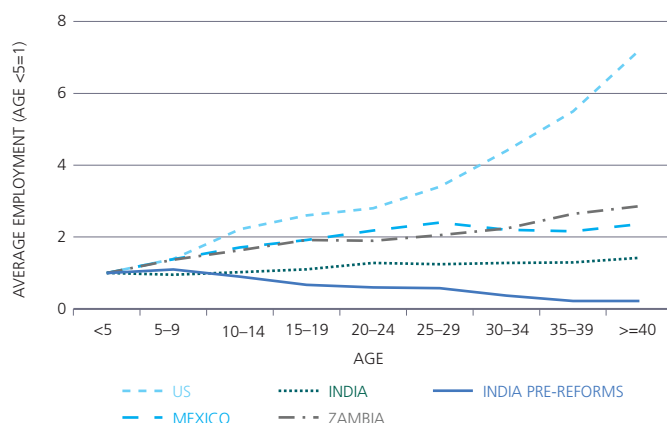
Figure 34
Distribution of firms and jobs by age



Source: Adapted from CSO 2012 Economic Census.

¹⁷Sutton and Langmead [2013].

Figure 35
Age categories and average size of firms compared with firms in other countries



Source: Adapted from Hsieh and Klenow (2014).

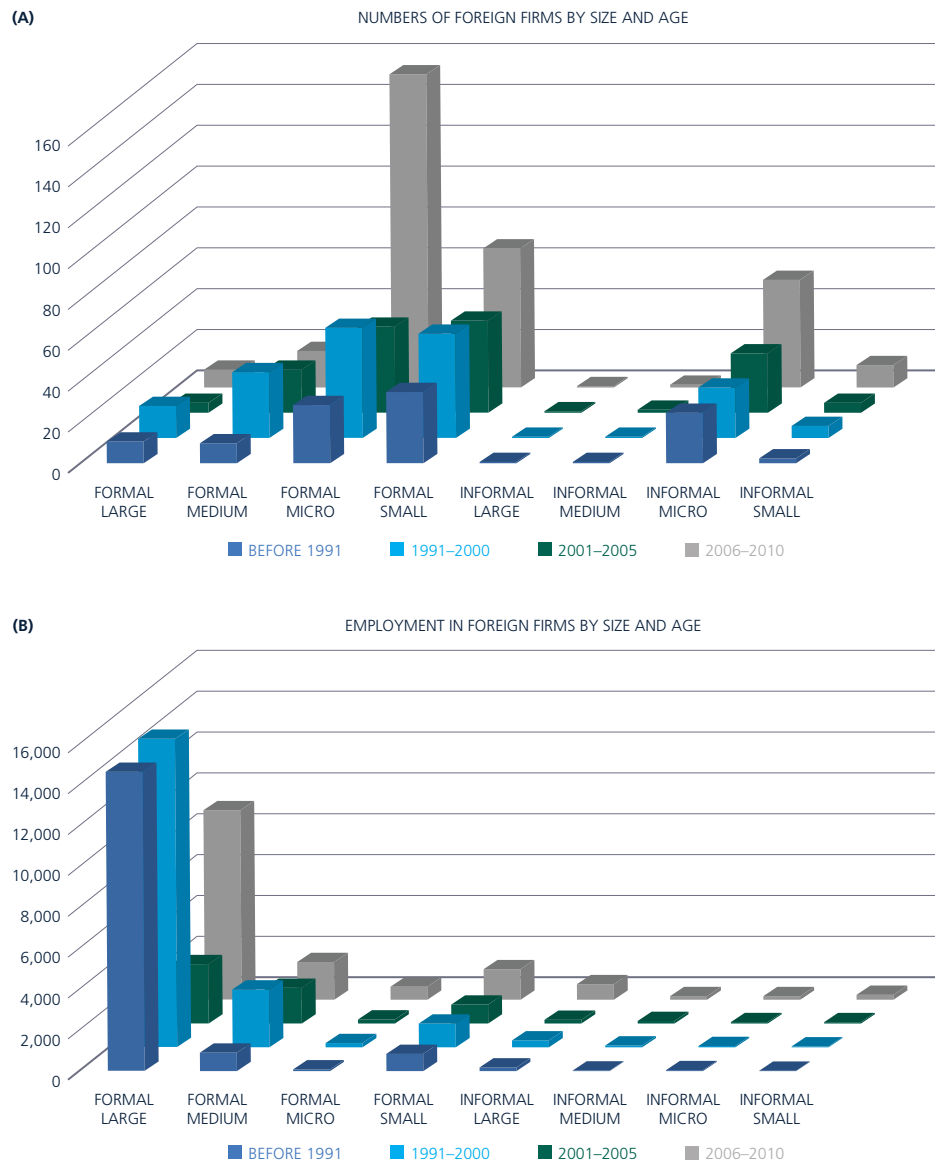
and larger firms are older. Figure 34 shows the distribution of firms and employment by age, and figure 35 shows the age and size relationship for Zambia compared with other countries. Nothing in these results suggests any irregularity in Zambia's firm dynamics.

The structure of firm ownership indicates relatively high foreign investment across age and size categories. As is normal everywhere, the number of foreign firms is much lower in Zambia than the number of domestically owned firms. But these firms are much larger on average, partly reflecting the sectors of foreign investment: mining, manufacturing, construction, transport and communications, and banking all have active foreign companies. There are a healthy number of global firms operating in these sectors, with several foreign investors having taken business interests in Zambia following the privatization reforms in the late 1990s. Consequently foreign firms are present, and employment in foreign firms is high, across a range of age and firm size categories (figure 36).

Most firms and most jobs are in services. Four-fifths (80.2 percent) of firms are in retail (commerce) and hotels and restaurants (figure 37). Service firms are much smaller than the average Zambian firm but quite large compared with the average service firms in East African countries. For commerce, the average firm size is 3.6 employees, and for hotels and restaurants it is 4.9. Consistent with the age and size dynamics, established firms (three years and over) in service sectors are larger than new entrants. For commerce, the average entrant had 2.6 employees compared with 4.2 for established firms. The average new firm in the hotels, bars and restaurants subsector had 3.3 staff members compared with 5.8 for established firms.

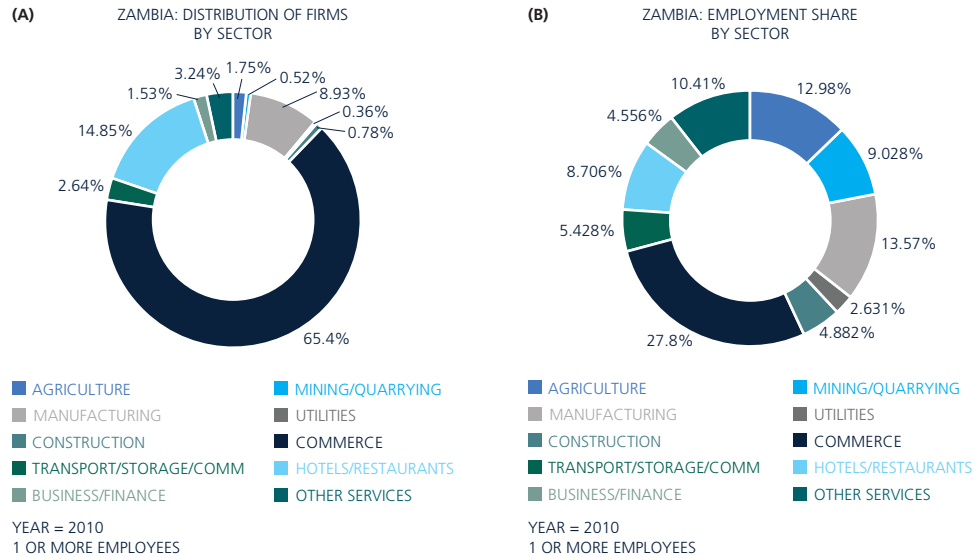
Despite being a predominantly service driven economy, and despite having seen rapid growth in services value added, a significant share of private sector waged jobs is in traded goods, with 52 percent in agriculture and agro-processing in 2010. Commercial agriculture (12.9 percent), mining (9 percent), manufacturing (13.6 percent), and construction (4.9 percent) together account for 40 percent of jobs in firms. Agriculture (commercial farms), mining, and manufacturing made up just 21 percent of jobs in new firms (less than three years old). In contrast to the dominance of services in firm distribution, commerce and hotels accounted for just over a third (36.4 percent) of jobs in firms (figure 36). There are several possible explanations for the relatively low share of jobs in new tradeable firms relative to all firms. One is that tradeable firms survive and grow with age whereas smaller service firms experience more churning and exits. Another is that the service economy was creating more service jobs in and around 2010, and tradeables were growing more slowly with the appreciating kwacha. It is impossible to know with only one census of firms, but whatever the explanation, it will be important for a jobs strategy in Zambia to nurture growth in firms and jobs in non-copper traded products, especially agro-processing, given the potential for backward links to the rural economy and rural poor.

Figure 36
Distribution of foreign firms and jobs in foreign firms by age and size



Source: Adapted from CSO Economic Census.

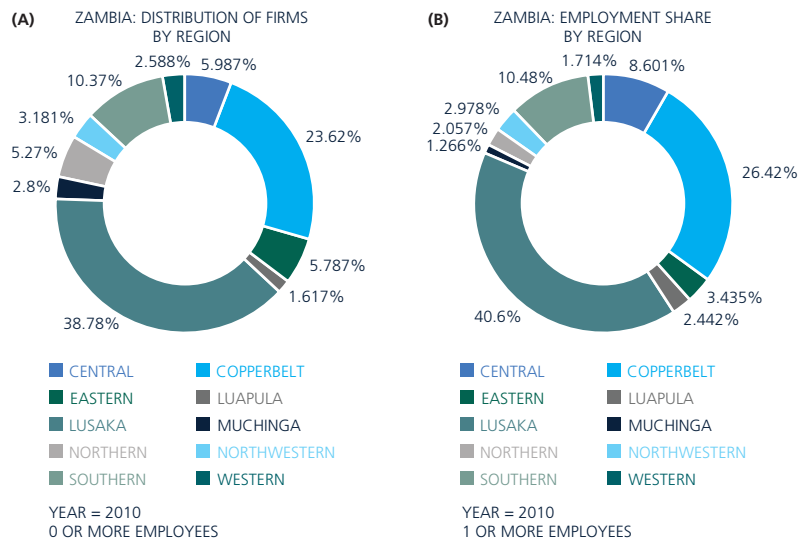
Figure 37
Distribution of firms and jobs by sector



Source: Adapted from CSO 2012 Economic Census.

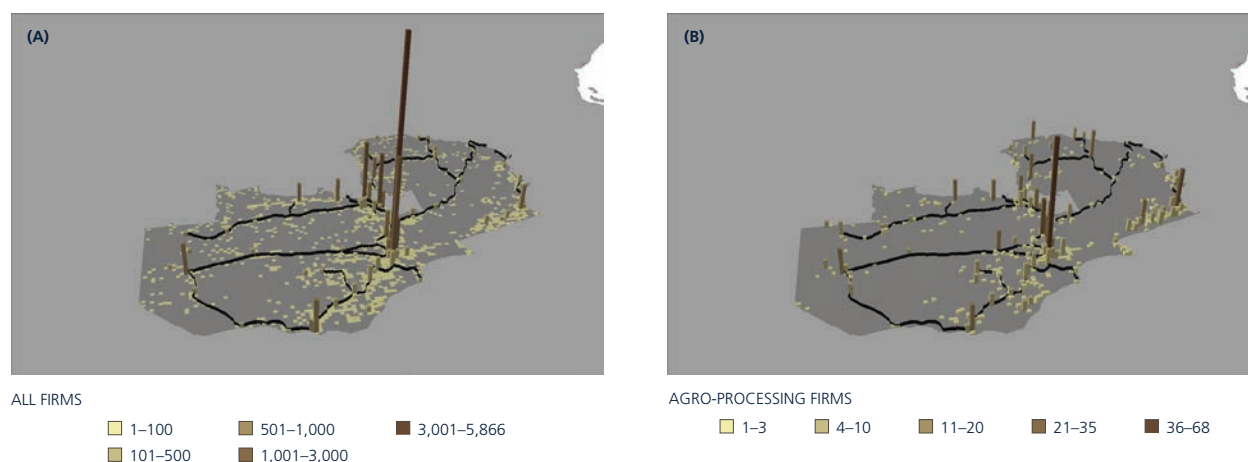
Zambia also exhibits a dual economy structure across locations, with the overwhelming majority of firms and jobs in these firms being in Lusaka and Copperbelt. Most firms and jobs are in the central corridor running from Copperbelt in the north through Lusaka to Livingstone on the southern border with Zimbabwe and Botswana. Two thirds of all firms and all jobs in establishments are in Copperbelt and Lusaka alone. Adding Southern and Central provinces, this rises to over 80 percent of firms and 88 percent of jobs in establishments that are concentrated in the road corridor running through the center of the country (figure 38). A much more dramatic picture emerges when employment is placed in the three dimensional map in figure 39a, with the vast majority being in Lusaka, Copperbelt and Southern provinces, and in particular the main cities and towns of Lusaka, Ndola, Kitwe, Livingstone, Kabwe, Kafue, and Chingola.

Figure 38
Distribution of firms and jobs by sector



Source: Adapted from CSO 2012 Economic Census.

Figure 39
Location of jobs in all firms and location of agro-processing firms



Source: Adapted from CSO 2012 Economic Census.

LOCATION OF FIRMS AND JOBS

Growth in agro-processing could bolster a jobs strategy in Zambia, because agro-firms are colocated with high poverty density, which correlates closely with high concentrations of self-employed and unpaid family workers in agriculture. Figures 40a and 40b show that although the poverty head count is high across most districts, especially in North, Eastern, and Western provinces, poverty is concentrated in parts of the country with high population density. Even though the poverty rate is lower in the central corridor, because population density is highest there, the density of poverty is still high. Other areas of high poverty density include Eastern Province around Chipata and north to Lundazi and through Muchinga, Northern, and Luapula provinces. Figures 40c and 40d show the collocation of self-employed farmers and unpaid family workers in agricultural households with commercial farms and agro-processing firms. Consistent with figure 39, the spatial pattern shows high concentrations of jobs around the cities and towns in the central corridor, but it also shows that agro-firms—especially the smaller ones—are located closer to the areas of high poverty density and where self-employment in farming (and poverty) is most heavily concentrated. Ongoing research by World Bank staff¹⁸ indicates that outside the growth corridor, the Eastern and Northern provinces have the potential to create more jobs in agro-based firms if more commercial farming can be attracted to these provinces, including through investments in transport access and electricity connectivity.

FIRM DYNAMICS

Without panel data, firm dynamics can only be deduced. This section uses firm age (data on the year that a firm was established) to conduct analysis of new and established firms. This makes it possible to check whether the patterns and structure of firm entry offer clues to firm growth dynamics that could reflect weaknesses in the policy and institutional environment or public infrastructure deficits that may need to be dealt with in order to create more and better jobs.

¹⁸ Norman and Merotto [forthcoming].

Figure 40
Colocation of agricultural firms with poverty density and self-employed farming jobs

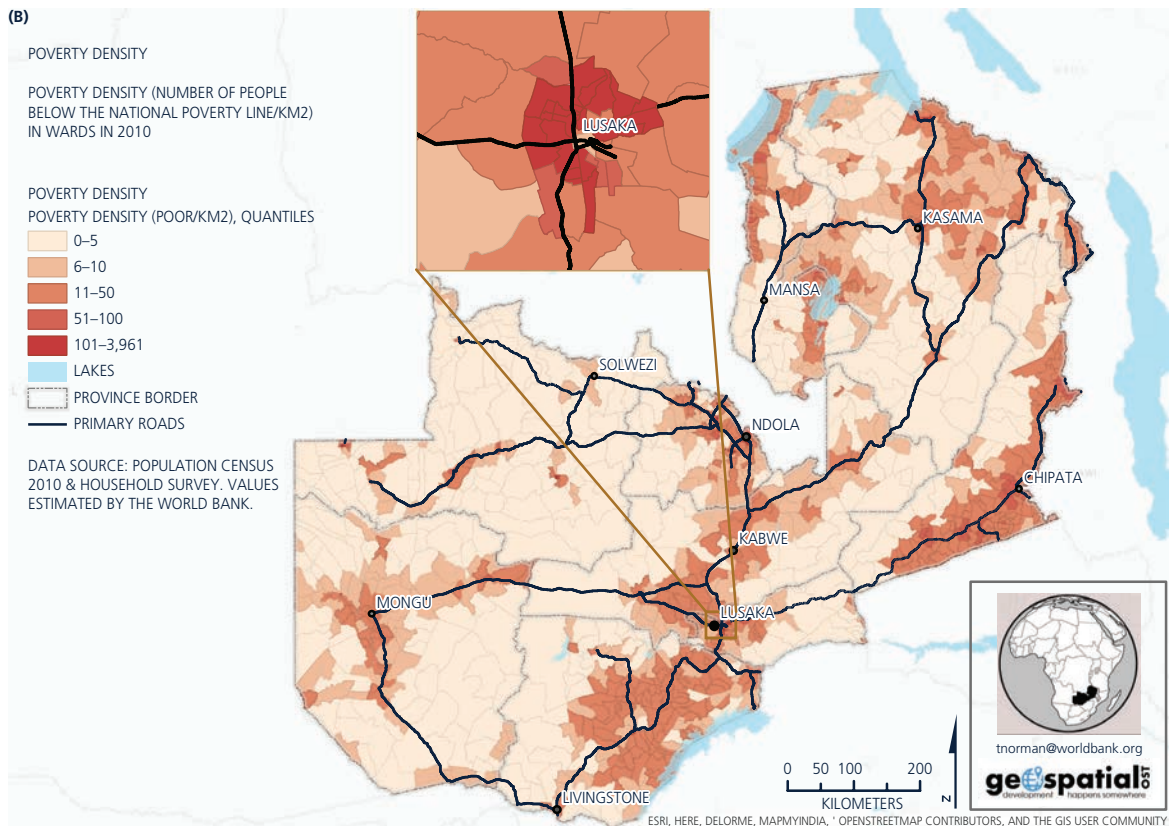
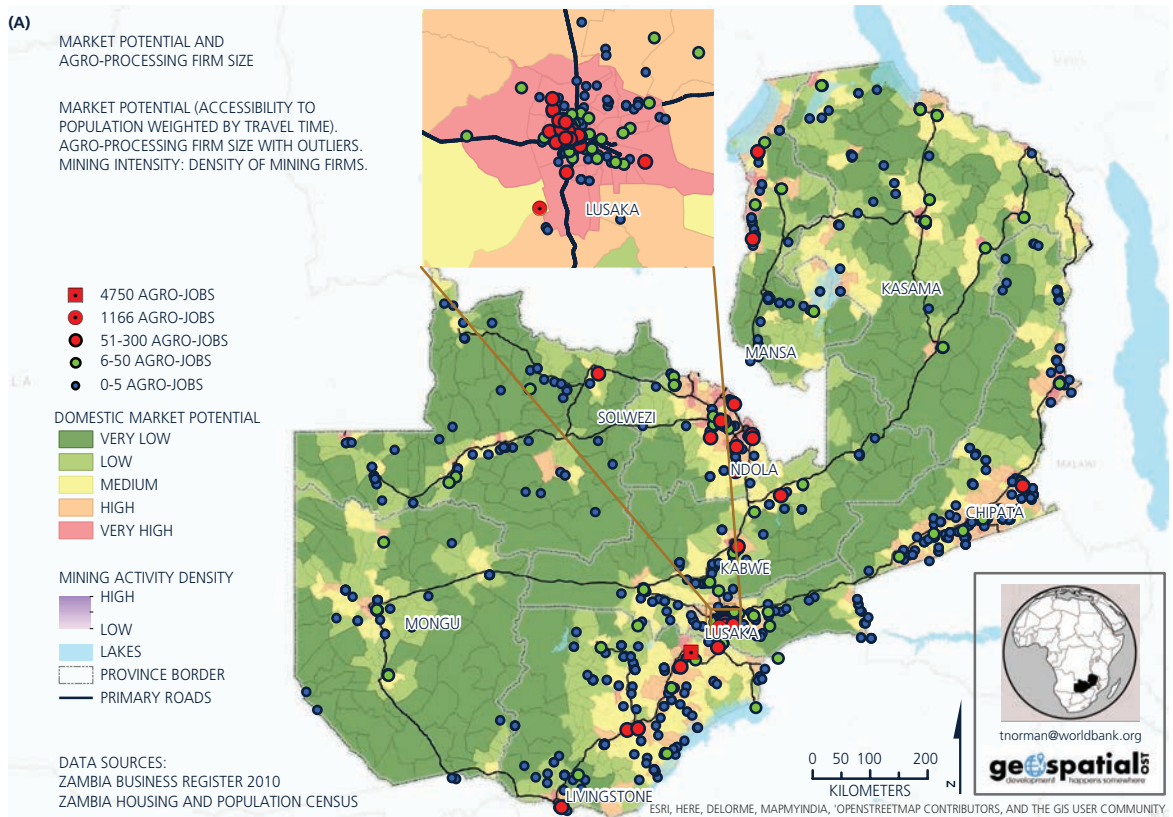
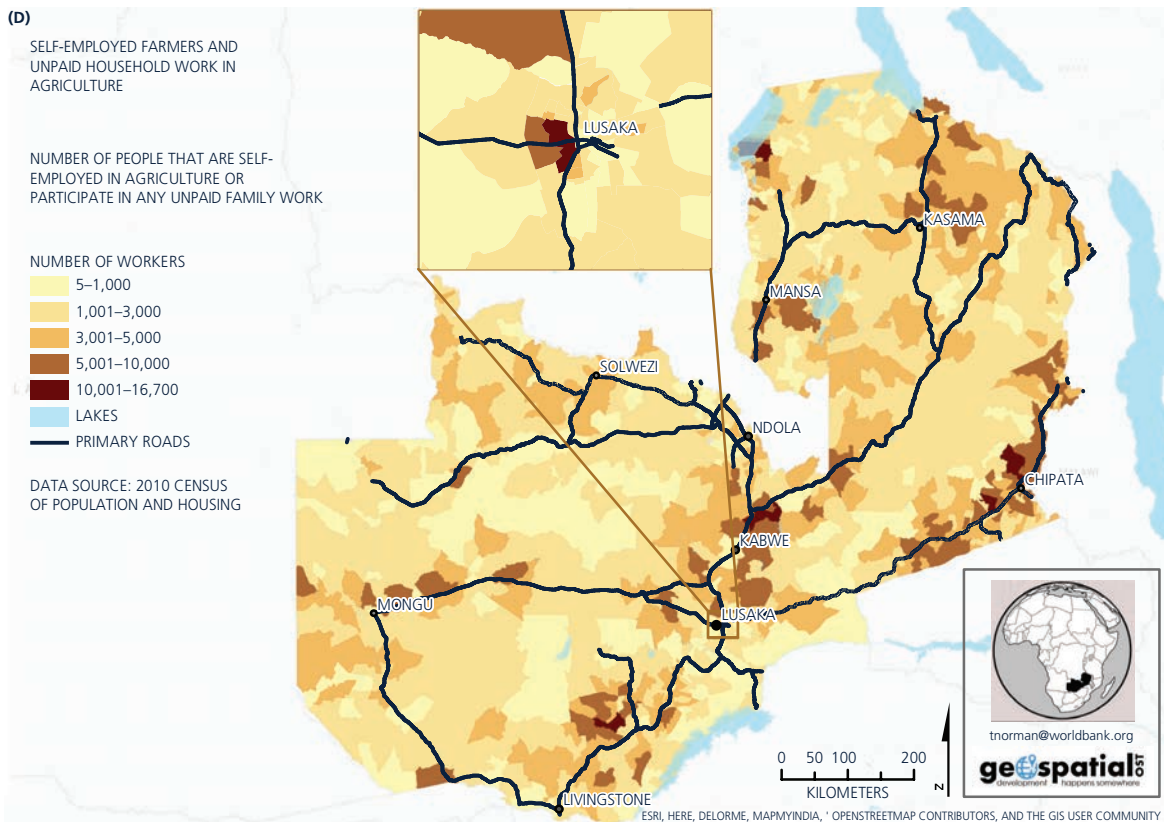
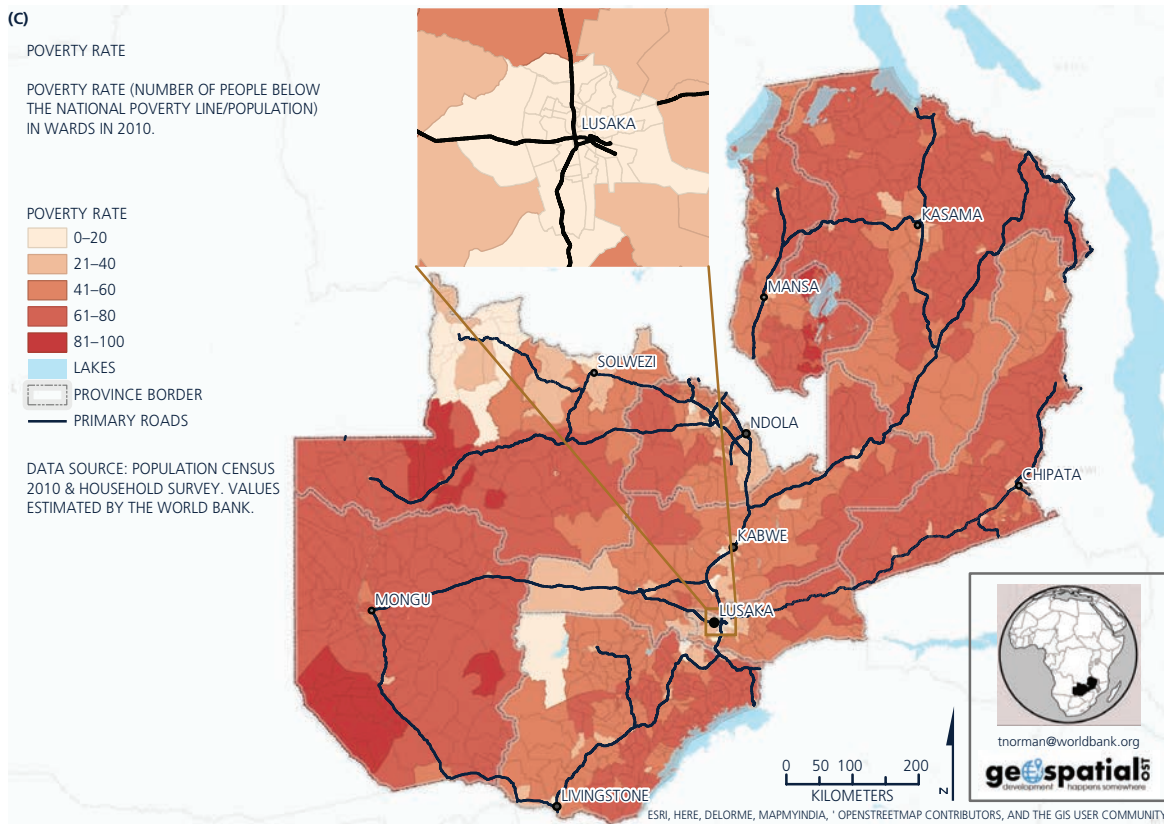


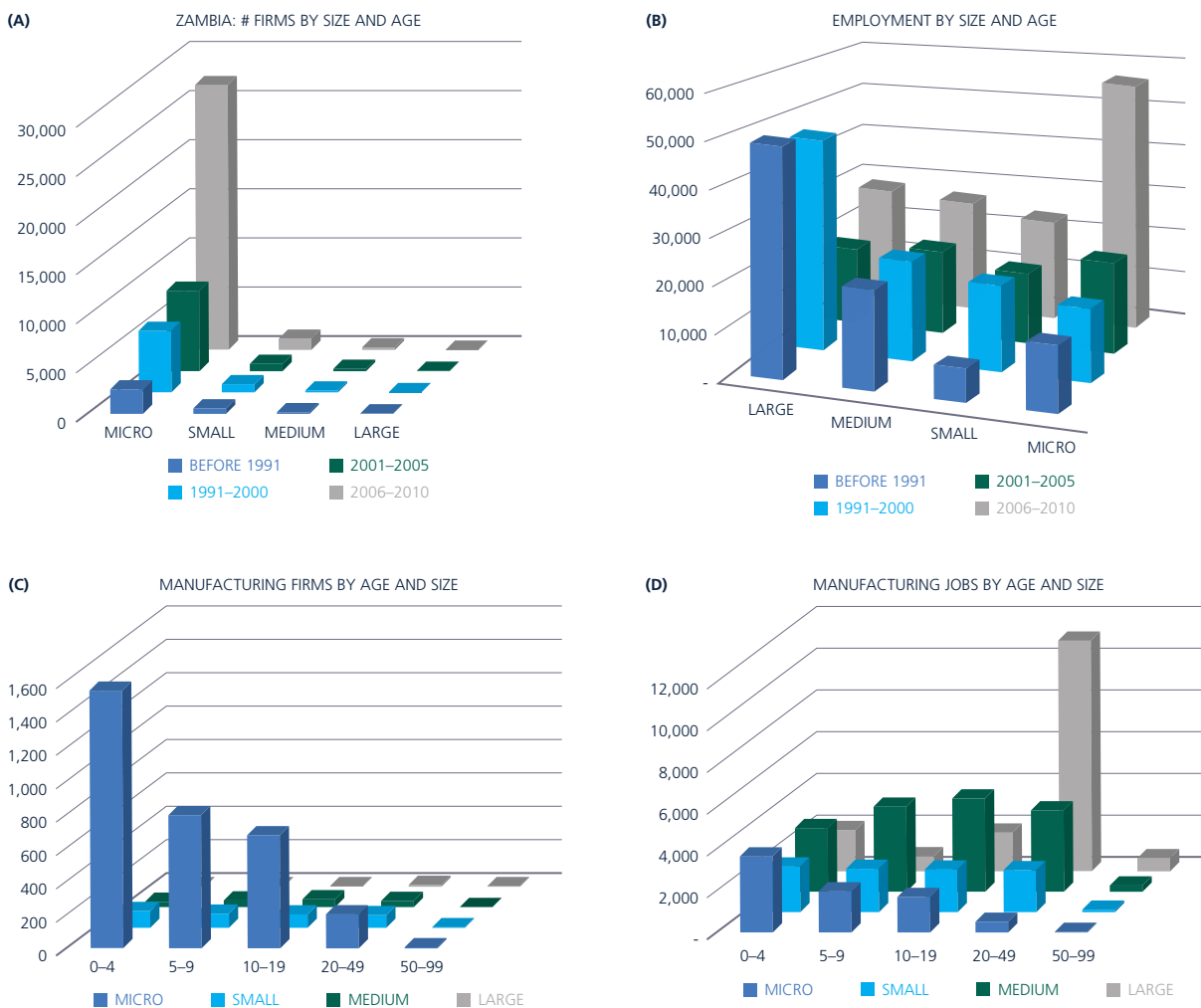
Figure 40 (continued)
 Colocation of agricultural firms with poverty density and self-employed farming jobs



Source: CSO 2012 Economic Census and 2010 Population Census, GOST Mapping (World Bank).

The age and size distribution of firms and jobs suggests that barriers to entry are not a significant constraint. Young and small firms do enter the market, and although firm survival rates seem quite low, firms that survive do seem to grow. Figure 41 shows that although most firms are young micro-enterprises, jobs are in fact spread broadly across firm age and size groups, both for the economy as a whole and for the manufacturing sector. Compared with other African countries, in Zambia most waged jobs are in relatively large and formal firms. Most firms are small and young, especially in services, but large and medium firms are the source of most manufacturing jobs. This means there are already lead firms in most subsectors, suggesting that a job strategy designed around supply chains of large leading firms may be feasible in Zambia. Furthermore, job creation through firm entry looks promising—as evidenced by relatively high shares of entrants (age 0–4) among manufacturing firms and of manufacturing jobs across all firm sizes. Deeper analysis reveals that formal medium and large firms seem to start quite large and then grow. Young, formal, entrant firms fall disproportionately into the medium and large categories but are smaller than incumbent formal firms in the same sectors, on average. Smaller and informal firms seem not to grow over time, on average. Entrants in this category have the same average employment size as incumbents, and the share of entrants among small and informal firms is much higher than for formal firms, suggesting that survival rates in micro and small firms could be low (figure 41).

Figure 41
Age and size distributions of firms and jobs



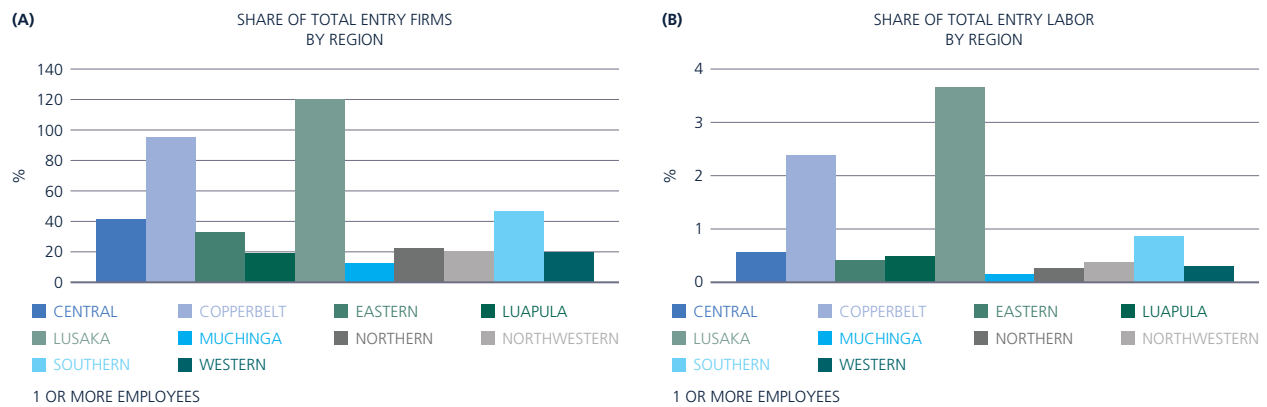
Source: Adapted from CSO 2012 Economic Census.

Entrants tend to follow incumbents by agglomerating in the central corridor, and whereas most entrants are small, informal service firms, there are encouraging signs of entry of manufacturing firms.

The pattern of entrant firms and jobs closely follows the pattern of incumbent firms and jobs, showing strong agglomeration around Lusaka and in the central transport corridor connecting Copperbelt to Livingstone (figure 42). Figure 43 shows that the booming mining sector created a significant number of new jobs in entrant firms in the three years prior to the Economic Census: 9 percent of firms were new, accounting for 11 percent of mining jobs. But otherwise, retail (commerce) accounted for most new entrants and most new jobs. Figure 43 also shows that about 22.5 percent of firms in commerce and about 16 percent of jobs in commerce were in entrant firms (fewer than three years old). Fifteen percent of manufacturing firms and 6.5 percent of manufacturing jobs were in new entrants.

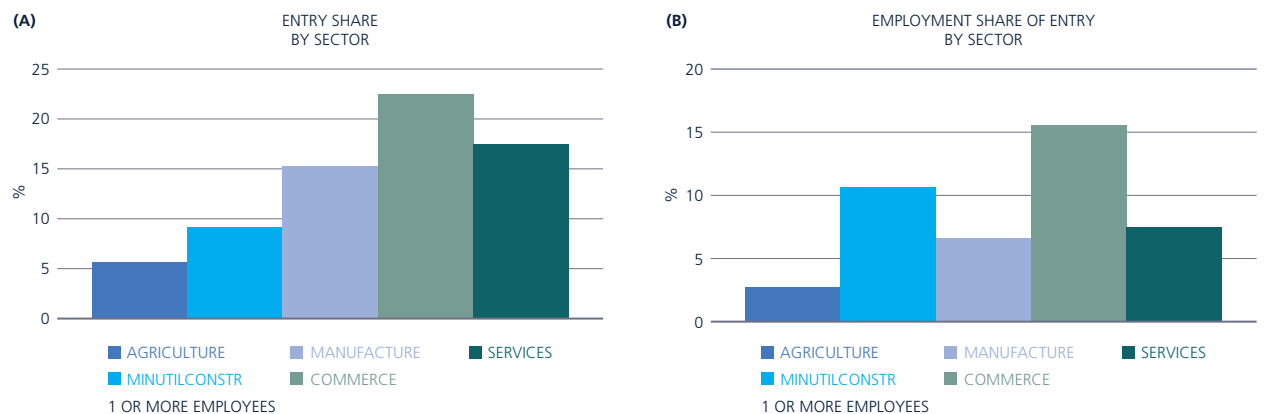
Most of the new manufacturing jobs were in the manufacture of food products, and most of these are in firms located in Lusaka, Copperbelt, and Southern provinces. Nonetheless, there is some evidence that new, smaller agro firms (commercial farms and agro-processors, largely in grain mill products) are entering in Northern and Eastern (around Chipata) provinces. Given the colocation of high densities of poorer, self-employed farmers and good agricultural potential, near markets with high population density, further and

Figure 42
Shares of firm entry and entrant share of jobs by province



Source: Adapted from CSO 2012 Economic Census.

Figure 43
Shares of firm entry and entrant share of jobs by sector



Source: Adapted from CSO 2012 Economic Census.

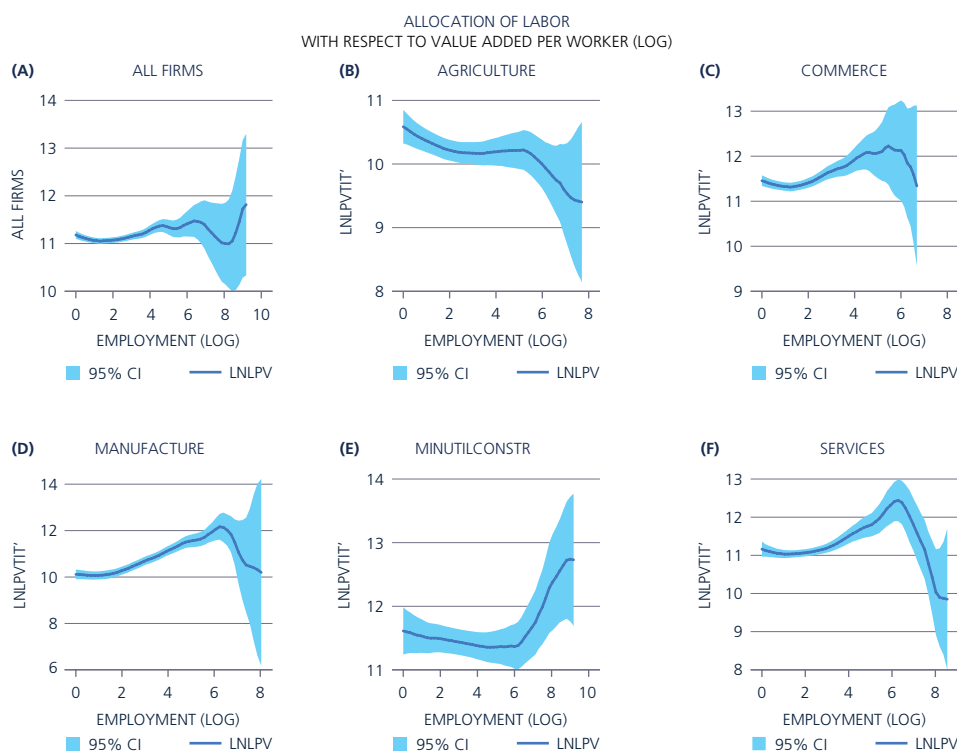
more updated analysis of the nature of new firms in these provinces would be warranted in appraising a jobs strategy for Zambia. On the face of it, there could be potential to generate substantial jobs in commercial farming and agro-processing in these provinces, with possible spillover effects to poor farmers, if value chain links can be encouraged.

PRODUCTIVITY, EMPLOYMENT, AND WAGES

This section presents evidence from standardized analysis of productivity and standardized regressions of productivity, employment and wages using data from phase 2 of the 2012 Economic Census.¹⁹

Employment and labor productivity are positively correlated in all sectors except agriculture, which is a normal and healthy sign for the investment climate. Figure 44 displays standardized plots of the log of value added per worker against the log of employment for firms in phase 2 of the Economic Census for which the necessary data are available. Results are shown for all firms in the economy and then for firms in five main sectors; agriculture, manufacturing, mining and utilities and construction, commerce, and other services. The relationships are broadly healthy—on average, for all firms, larger firms have higher value added per worker, which one would expect given their economies of scale and their access to capital. Manufacturing, commerce, and services seem to hit diseconomies of scale (though confidence intervals widen because of the smaller number of large firms). Mining seems to require a minimum efficient scale before higher productivity can be associated with higher employment (the graph shows an upward slope following an initial downward

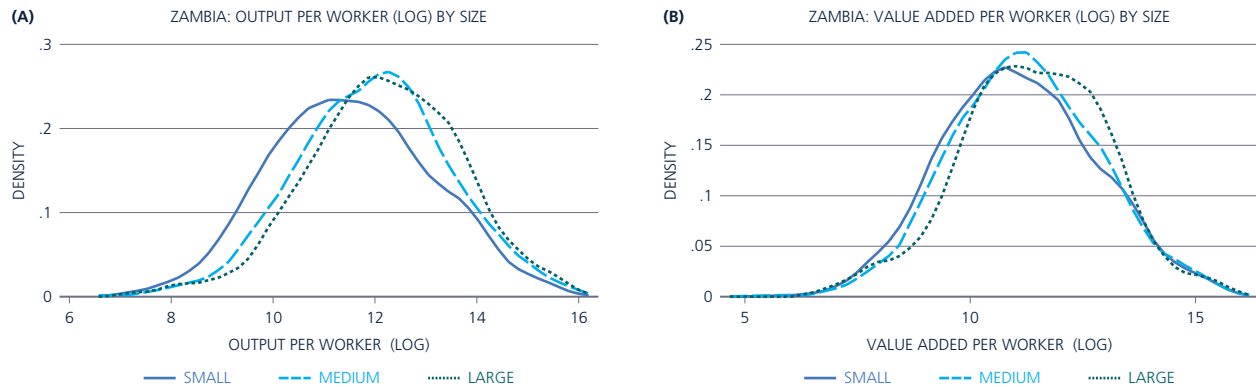
Figure 44
Allocation of labor with respect to value added per worker



Source: Adapted from CSO 2012 Economic Census, Phase 2.

¹⁹ Phase 2 was a representative national accounts survey of over 7,000 firms, which collected information on the balance sheets and operating statements of all large and medium firms and a 10 percent sample of firms.

Figure 45
Productivity distributions by firm size (log)



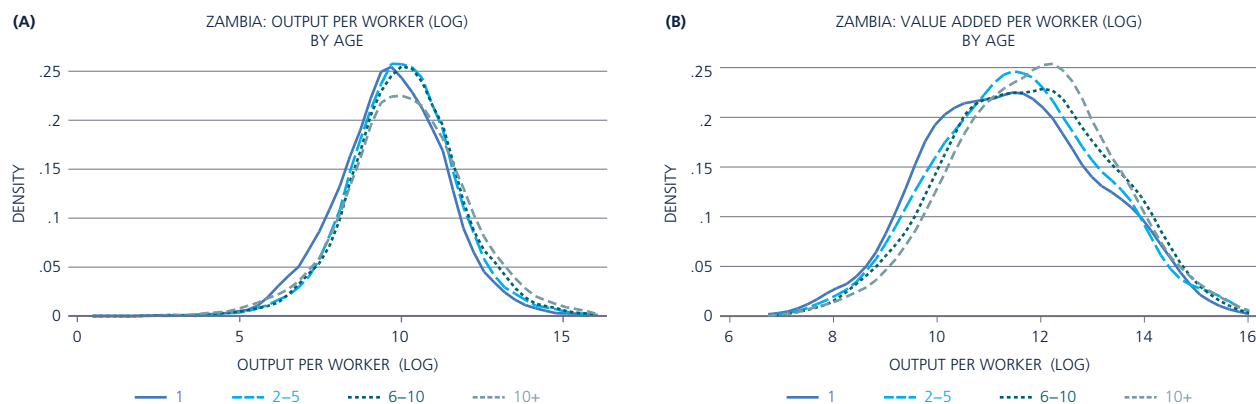
Source: Adapted from CSO 2012 Economic Census, Phase 2.

slope). The patterns between value added per worker and firm employment size are very similar to the patterns for output per worker and firm size (not shown here, for that reason).

Analysis of the distribution of productivity by firm characteristics also suggests general good health in the investment climate. Figures 45–48 show the distribution of value added per worker and output per worker for firms by size, age and sector, and where data were available, the distribution of output per worker by ownership and formality (figure 45). These graphs are unadjusted for firms’ characteristics, so the regression results in the final section of this chapter adjust for their characteristics and locations. As should be expected, firms are more productive with size and age. Foreign firms and exporters are not only larger than domestic firms, but are also more productive. Domestic private firms are more productive than public firms, and formal firms are more productive than informal. All of these results suggest that the business climate is normal and healthy.

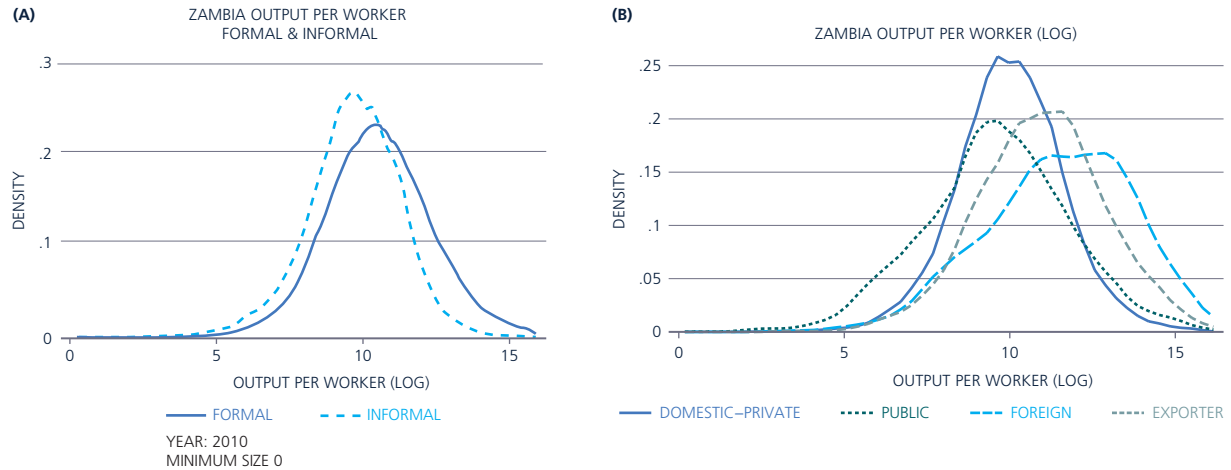
Output per worker is more dispersed across firm age and size than is value added per worker. So whereas larger and older firms are more productive in output per worker, their costs per worker (either materials or else indirect costs of rent, fuel and energy, transportation, utilities, and administration and financing) seem to be higher on average. This is especially true among manufacturing firms (figure 48) and, to a lesser extent, mining.

Figure 46
Productivity distributions by firm age



Source: Adapted from CSO 2012 Economic Census, Phase 2.

Figure 47
Productivity distributions by formality and ownership

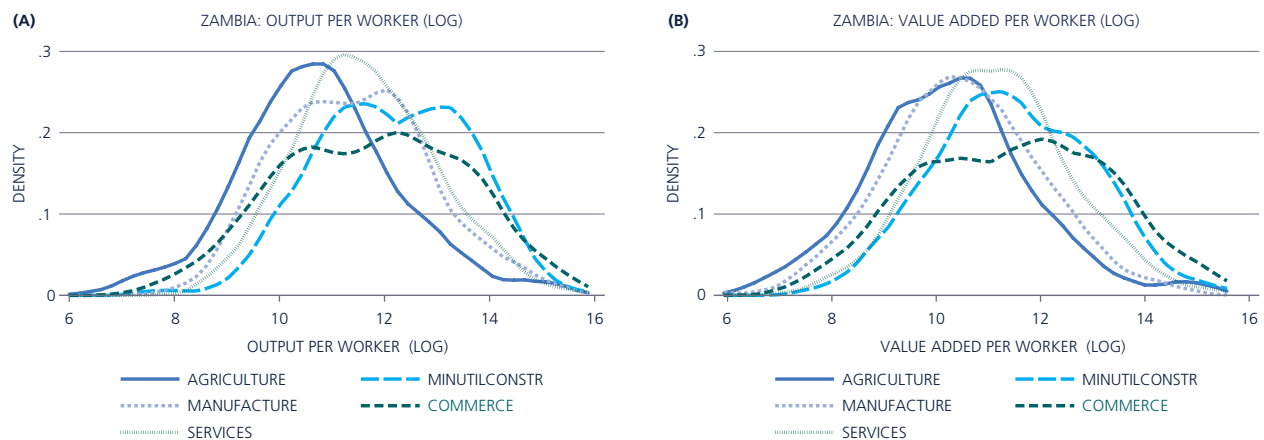


Source: Adapted from CSO 2012 Economic Census.

Firms in commerce and mining are the most productive in terms of both output and value added per worker. Output productivity varies quite broadly within all sectors, as evidenced in the wide distributions of productivity. This once again suggests possible dual economy features may be at work, and/or that the economy may be lacking in spillovers or selection (that is, that inefficient firms can coexist with efficient firms in the same sectors). The evidence for a lack of selection does not seem to be borne out by the findings on entry and firm growth with age—both of which would suggest that firms face incentives through competition and entry to innovate and expand with age. It does seem more likely (and is cited as a competition problem by firms in the 2013 investment climate) that informal firms coexist with formal firms. This may also explain the convergence of value added per worker with size and age compared to output per worker. It does seem likely that smaller informal firms face lower cost structures than larger formal firms. Since larger formal firms certainly create more waged jobs, this aspect of the regulatory environment may need attention as part of a jobs strategy for Zambia.

A jobs strategy for Zambia should seek to exploit the potential for waged work in commercial farming while also seeking to increase productivity and firm entry in other sectors. Labor is very often more

Figure 48
Productivity distributions by sector



Source: Adapted from CSO 2012 Economic Census.

mobile within locations and within occupations than across them, and most workers—and the vast majority of the working poor—are rural people with strong ties to agriculture. And many (commercial) farms in Zambia have higher labor productivity than almost half of all manufacturing and mining companies. Thus, although diversification of labor out of agriculture and into manufacturing and services is a healthy long-term structural transformation, it is nonetheless worth recognizing these implications of the broad range of productivity distributions for a jobs strategy.

Older, foreign, and more productive firms are larger on average than young, domestic private firms, as shown by regression results for firm employment. Firms that are 6–9 years old have 30 percent higher employment on average, and those that are 10–19 years old have 50 percent higher employment. Firms that are 20–29 years old are 77 percent larger on average, and those over 30 years old are 150 percent larger on average. Controlling for exporters and productivity, older firms remain significantly larger on average, and this effect increases after adjusting for sectors. The relationship between age and size still holds, but less strongly, after adjusting for ownership—suggesting again that there is an important role for new foreign firms in Zambia’s jobs story. The robust result for age appears meanwhile to validate the earlier finding that firms in Zambia grow if they survive. Agriculture firms are significantly larger on average, taking into account age. Exporters, especially firms producing traditional exports (mining and agriculture), are larger on average, as are firms in Lusaka (by 50 percent over Central Province), although the coefficient is significant only at the 95 percent confidence interval. A full set of regression outputs is attached in appendix B.

Older, foreign, public, and exporting firms are more productive than small, young, and domestic private firms, as shown by regression results for productivity, adjusted for location and industry fixed effects. Up to medium-size firms (20–47 staff) have higher labor productivity, using value added per worker. But firms with more than 50 staff members tend to be less productive, after controlling for location and industry. Regressions also reveal unsurprisingly that Lusaka, Copperbelt, and Southern provinces are the most productive, controlling for other factors, and Eastern and Muchinga provinces least productive. Firms with market power (sales) are less productive. Perhaps most troubling, manufacturing appears to be the least productive sector in terms of value added per worker, after controlling for other fixed effects. Like value added per worker, output per worker is also negatively associated with the average size of the firm, suggesting that on average, firms do not enjoy economies of scale.

Larger firms appear to pay workers less—consistent with their lower productivity—but older firms pay workers more on average, after adjusting for size. Agriculture pays less than manufacturing. Mining pays more on average, adjusting for size and age. For services the story is more complex: bars and restaurants pay lower wages than manufacturing on average, whereas wholesale and retail, and transport and communications pay more. Wages seem to be negatively related to output (scale) but positively correlated with productivity, whether measured as value added or output per worker.

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ANNEX A: REGRESSION RESULTS FROM CHAPTER 2

Table A1
Logit, 2014

Multinomial logit of labor status: Log odds									
	mlogit_ Istatus_all Employed	Unemployed	Non_LF	mlogit_ Istatus_fem Employed	Unemployed	Non_LF	mlogit_ Istatus_mal Employed	Unemployed	Non_LF
Individual age	0.203*** (10.02)	0.070** (2.53)	0.000 (.)	0.197*** (7.26)	0.071* (1.84)	0.000 (.)	0.186*** (5.85)	0.052 (1.25)	0.000 (.)
Age Squared	-0.002*** (-9.09)	-0.001*** (-2.62)	0.000 (.)	-0.002*** (-6.21)	-0.001* (-1.77)	0.000 (.)	-0.002*** (-5.71)	-0.001 (-1.53)	0.000 (.)
Female	-0.256*** (-3.04)	-0.333*** (-3.02)	0.000 (.)						
Ever Married	0.063 (0.47)	0.285 (1.48)	0.000 (.)	0.010 (0.07)	0.259 (1.12)	0.000 (.)	0.475* (1.87)	0.555 (1.54)	0.000 (.)
Rural	0.393*** (3.97)	-0.352*** (-2.59)	0.000 (.)	0.337*** (2.65)	-0.122 (-0.67)	0.000 (.)	0.495*** (3.10)	-0.560*** (-2.69)	0.000 (.)
Primary incomplete	0.759*** (6.17)	0.518*** (2.78)	0.000 (.)	0.542*** (3.47)	0.303 (1.27)	0.000 (.)	1.198*** (5.88)	0.925*** (3.05)	0.000 (.)
Primary complete but secondary incomplete	0.841*** (6.31)	0.638*** (3.27)	0.000 (.)	0.703*** (4.02)	0.507** (1.97)	0.000 (.)	1.154*** (5.53)	0.896*** (2.93)	0.000 (.)
Secondary complete	0.893*** (6.21)	0.860*** (4.22)	0.000 (.)	0.629*** (3.28)	0.723*** (2.66)	0.000 (.)	1.348*** (6.16)	1.149*** (3.67)	0.000 (.)
Some tertiary/post-secondary	0.944*** (4.09)	0.354 (1.08)	0.000 (.)	0.410 (1.40)	0.003 (0.01)	0.000 (.)	1.819*** (4.78)	1.026** (2.02)	0.000 (.)
Size of Household	-0.256*** (-6.50)	-0.052 (-0.99)	0.000 (.)	-0.195*** (-3.60)	-0.027 (-0.37)	0.000 (.)	-0.321*** (-5.46)	-0.091 (-1.20)	0.000 (.)
Number of children	0.281*** (5.60)	0.062 (0.93)	0.000 (.)	0.207*** (3.01)	0.019 (0.20)	0.000 (.)	0.360*** (4.82)	0.122 (1.26)	0.000 (.)

(continued on next page)

Table A1 (continued)
Logit, 2014

		Multinomial logit of labor status: Log odds									
		mlogit_istatus_all Employed	Unemployed	Non_LF	mlogit_istatus_fem Employed	Unemployed	Non_LF	mlogit_istatus_mal Employed	Unemployed	Non_LF	
Number of youth		0.121** (2.28)	0.065 (0.92)	0.000 (.)	0.082 (1.13)	0.049 (0.50)	0.000 (.)	0.143* (1.82)	0.075 (0.74)	0.000 (.)	
Number of elderly		-0.098 (-1.09)	0.185 (1.56)	0.000 (.)	-0.089 (-0.72)	0.146 (0.88)	0.000 (.)	-0.190 (-1.39)	0.180 (1.03)	0.000 (.)	
Eastern		-0.024 (-0.13)	0.519* (1.93)	0.000 (.)	0.241 (0.88)	-0.411 (-0.93)	0.000 (.)	-0.230 (-0.89)	1.347*** (3.54)	0.000 (.)	
Lusaka		-0.956*** (-7.55)	0.897*** (4.96)	0.000 (.)	-1.116*** (-6.60)	0.356 (1.53)	0.000 (.)	-0.694*** (-3.55)	1.693*** (5.67)	0.000 (.)	
Southern		-0.462** (-2.26)	0.389 (1.30)	0.000 (.)	-0.368 (-1.32)	0.205 (0.53)	0.000 (.)	-0.632** (-2.09)	0.546 (1.13)	0.000 (.)	
Northern		-0.869*** (-4.82)	0.696*** (2.78)	0.000 (.)	-0.880*** (-3.70)	0.194 (0.59)	0.000 (.)	-0.900*** (-3.22)	1.327*** (3.35)	0.000 (.)	
Western		-0.303* (-1.82)	0.280 (1.13)	0.000 (.)	-0.280 (-1.25)	-0.465 (-1.34)	0.000 (.)	-0.348 (-1.38)	1.102*** (2.94)	0.000 (.)	
Central		-0.181 (-0.99)	0.947*** (3.81)	0.000 (.)	-0.341 (-1.46)	0.348 (1.09)	0.000 (.)	0.040 (0.14)	1.754*** (4.36)	0.000 (.)	
Luapula		0.053 (0.24)	0.538* (1.67)	0.000 (.)	-0.210 (-0.75)	-0.077 (-0.19)	0.000 (.)	0.499 (1.27)	1.481*** (2.78)	0.000 (.)	
North Western		-0.643*** (-3.75)	0.758*** (3.18)	0.000 (.)	-0.780*** (-3.50)	-0.299 (-0.89)	0.000 (.)	-0.456* (-1.67)	1.882*** (5.04)	0.000 (.)	
Constant		0.052 (0.13)	-2.092*** (-3.66)	0.000 (.)	-0.001 (-0.00)	-1.884** (-2.56)	0.000 (.)	-0.199 (-0.30)	-2.769*** (-3.07)	0.000 (.)	
Observations		20405			10400			1.0005			
ll		-5.8e+03			-3.1e+03			-2.6e+03			

t statistics in parentheses

** p<0.1 *** p<0.05 **** p<0.01"

Table A2
Mincerian returns to education (relative to no education, 2008)

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample	Model 1 - Male	Model 1 - Female	Model 2 - Male	Model 2 - Female	Model 3 - Male	Model 3 - Female	Model 4 - Male	Model 4 - Female
Female	-0.323*** (-19.79)	-0.333*** (-20.19)	-0.334*** (-20.24)	-0.329*** (-19.58)	0.082*** (13.43)	0.071*** (10.21)	0.080*** (13.15)	0.067*** (9.85)	0.078*** (12.91)	0.067*** (9.84)	0.080*** (13.28)	0.067*** (9.82)
Individual age	0.077*** (16.24)	0.074*** (15.74)	0.073*** (15.57)	0.073*** (15.77)	-0.001*** (-11.65)	-0.001*** (-9.16)	-0.001*** (-11.14)	-0.001*** (-8.49)	-0.001*** (-11.02)	-0.001*** (-8.50)	-0.001*** (-11.19)	-0.001*** (-8.47)
Age Squared	-0.001*** (-14.32)	-0.001*** (-13.46)	-0.001*** (-13.39)	-0.001*** (-13.45)	0.052 (1.18)	0.140*** (3.51)	0.022 (0.51)	0.124*** (3.12)	0.017 (0.39)	0.120*** (3.02)	0.022 (0.50)	0.126*** (3.16)
Primary incomplete	0.106*** (3.47)	0.081*** (2.67)	0.075** (2.48)	0.083*** (2.74)	0.426*** (9.30)	0.487*** (10.46)	0.327*** (7.27)	0.402*** (8.66)	0.312*** (7.00)	0.382*** (8.25)	0.323*** (7.18)	0.405*** (8.71)
Primary complete but secondary incomplete	0.475*** (14.39)	0.382*** (11.68)	0.363*** (11.16)	0.385*** (11.74)	1.057*** (21.35)	1.285*** (22.63)	0.853*** (17.66)	1.121*** (19.64)	0.742*** (15.45)	0.967*** (16.25)	0.829*** (17.06)	1.129*** (19.63)
Secondary complete	1.152*** (30.85)	0.963*** (26.24)	0.839*** (22.83)	0.955*** (25.86)	1.800*** (32.58)	1.924*** (34.00)	1.545*** (27.79)	1.701*** (29.92)	1.231*** (21.01)	1.325*** (19.14)	1.561*** (27.23)	1.732*** (28.04)
Some tertiary/post-secondary	1.874*** (44.72)	1.631*** (38.47)	1.292*** (27.76)	1.660*** (37.16)	-0.765*** (-28.37)	-0.723*** (-21.52)	-0.372*** (-12.20)	-0.375*** (-9.70)	-0.367*** (-12.08)	-0.376*** (-9.75)	-0.351*** (-11.43)	-0.365*** (-9.42)
Rural	-0.748*** (-32.34)	-0.377*** (-14.50)	-0.374*** (-14.43)	-0.360*** (-13.77)	-0.631*** (-13.61)	-0.529*** (-8.68)	-0.607*** (-13.25)	-0.488*** (-8.25)	-0.613*** (-13.50)	-0.496*** (-8.40)	-0.536*** (-11.60)	-0.472*** (-7.98)
Eastern	-0.594*** (-14.94)	-0.566*** (-14.51)	-0.574*** (-14.84)	-0.517*** (-13.13)	-0.075** (-1.99)	0.041 (0.85)	-0.134*** (-3.42)	-0.060 (-1.23)	-0.126*** (-3.28)	-0.042 (-0.88)	-0.042 (-1.07)	-0.050 (-1.04)
Lusaka	-0.027 (-0.87)	-0.104*** (-3.17)	-0.092*** (-2.83)	-0.046 (-1.38)	-0.087** (-2.23)	-0.210*** (-4.48)	-0.052 (-1.31)	-0.176*** (-3.83)	-0.047 (-1.20)	-0.177*** (-3.86)	0.023 (0.56)	-0.166*** (-3.61)
Southern	-0.136*** (-4.09)	-0.101*** (-3.04)	-0.100*** (-3.02)	-0.054 (-1.60)	-0.571*** (-12.84)	-0.679*** (-12.39)	-0.470*** (-10.42)	-0.599*** (-11.25)	-0.458*** (-10.25)	-0.597*** (-11.30)	-0.395*** (-8.68)	-0.589*** (-11.03)
Northern	-0.607*** (-15.54)	-0.517*** (-13.28)	-0.508*** (-13.18)	-0.468*** (-11.89)								

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Table A2 (continued)
Mincerian returns to education (relative to no education, 2008)

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample	Model 1 - Male	Model 1 - Female	Model 2 - Male	Model 2 - Female	Model 3 - Male	Model 3 - Female	Model 4 - Male	Model 4 - Female
Western	-0.211*** (-4.44)	-0.224*** (-4.75)	-0.230*** (-4.95)	-0.156*** (-3.27)	-0.230*** (-4.13)	-0.195*** (-3.15)	-0.239*** (-4.31)	-0.200*** (-3.22)	-0.244*** (-4.52)	-0.204*** (-3.30)	-0.145*** (-2.59)	-0.176*** (-2.84)
Central	-0.243*** (-7.21)	-0.167*** (-4.94)	-0.162*** (-4.83)	-0.122*** (-3.58)	-0.212*** (-5.27)	-0.295*** (-6.14)	-0.121*** (-2.95)	-0.237*** (-5.05)	-0.116*** (-2.84)	-0.233*** (-4.98)	-0.047 (-1.14)	-0.229*** (-4.89)
Luapula	-0.454*** (-9.67)	-0.402*** (-8.69)	-0.403*** (-8.78)	-0.355*** (-7.69)	-0.485*** (-8.95)	-0.393*** (-5.53)	-0.403*** (-7.47)	-0.395*** (-5.64)	-0.402*** (-7.54)	-0.400*** (-5.73)	-0.331*** (-6.16)	-0.385*** (-5.50)
North Western	-0.684*** (-16.19)	-0.592*** (-14.25)	-0.591*** (-14.35)	-0.547*** (-13.14)	-0.663*** (-12.80)	-0.715*** (-12.88)	-0.585*** (-11.47)	-0.609*** (-11.20)	-0.583*** (-11.55)	-0.610*** (-11.26)	-0.519*** (-10.18)	-0.597*** (-10.98)
industry		0.660*** (21.57)	0.238*** (4.84)				0.737*** (22.05)	0.447*** (6.81)	0.312*** (5.73)	0.028 (0.29)		
services		0.742*** (28.59)	0.242*** (5.39)				0.759*** (24.31)	0.718*** (17.89)	0.242*** (4.82)	0.235*** (3.00)		
Senior officials			1.465*** (15.09)						1.517*** (13.25)	1.357*** (8.30)		
Professionals			1.004*** (17.83)						1.007*** (15.01)	0.997*** (10.79)		
Technicians			0.858*** (14.68)						0.838*** (12.45)	0.886*** (8.87)		
Clerks			0.589*** (9.97)						0.556*** (7.73)	0.652*** (6.37)		
Service and market sales workers			0.495*** (10.79)						0.522*** (9.90)	0.474*** (5.87)		
Craft workers			0.404*** (7.85)						0.411*** (7.17)	0.381*** (3.73)		
Machine operators			0.686*** (9.76)						0.680*** (10.05)	0.852** (2.53)		
Elementary occupations			0.266*** (3.70)						0.168* (1.92)	0.387*** (3.53)		

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Table A2 (continued)
Mincerian returns to education (relative to no education, 2008)

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample	Model 1 - Male	Model 1 - Female	Model 2 - Male	Model 2 - Female	Model 3 - Male	Model 3 - Female	Model 4 - Male	Model 4 - Female
Mining				1.121*** (25.52)							1.252*** (25.58)	0.739*** (7.77)
Manufacturing				0.454*** (11.53)							0.514*** (12.17)	0.363*** (4.72)
Public utilities				0.930*** (12.23)							0.920*** (11.83)	1.243*** (5.23)
Construction				0.610*** (13.64)							0.648*** (13.91)	0.414** (2.09)
Commerce				0.830*** (27.42)							0.906*** (23.63)	0.755*** (16.89)
Transport and Communications				0.674*** (14.62)							0.703*** (13.99)	0.753*** (6.53)
Financial and Business Services				0.704*** (12.47)							0.689*** (11.38)	0.832*** (6.47)
Public Administration				0.870*** (12.71)							0.881*** (11.50)	0.975*** (6.10)
Other Services	Un- specified				0.642***							0.627*** (12.86)
Constant	11.226*** (114.35)	10.764*** (108.41)	10.800*** (109.88)	10.715*** (108.78)	11.151*** (85.77)	11.026*** (84.04)	10.654*** (81.61)	10.589*** (80.09)	10.701*** (82.95)	10.610** (80.94)	10.573*** (81.81)	10.581*** (80.43)
Observations	32760	32641	32573	32641	20144	12616	20079	12562	20031	12542	20079	12562
ll	-5.2e+04	-5.1e+04	-5.1e+04	-5.1e+04	-3.2e+04	-2.0e+04	-3.2e+04	-2.0e+04	-3.1e+04	-2.0e+04	-3.1e+04	-2.0e+04

t statistics in parentheses
** p<0.1 *** p<0.05 **** p<0.01"

Table A3

Mincerian returns to education (relative to no education, 2012)

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample	Model 1 - Male	Model 1 - Female	Model 2 - Male	Model 2 - Female	Model 3 - Male	Model 3 - Female	Model 4 - Male	Model 4 - Female
Female	-0.267*** (-5.93)	-0.222*** (-4.88)	-0.229*** (-4.98)	-0.178*** (-3.64)	0.048*** (3.28)	0.108*** (5.10)	0.048*** (3.34)	0.108*** (5.17)	0.042*** (3.03)	0.091*** (4.56)	0.045*** (3.20)	0.108*** (5.08)
Individual age	0.060*** (4.81)	0.060*** (4.93)	0.051*** (4.43)	0.057*** (4.78)	0.048*** (3.28)	0.108*** (5.10)	0.048*** (3.34)	0.108*** (5.17)	0.042*** (3.03)	0.091*** (4.56)	0.045*** (3.20)	0.108*** (5.08)
Age Squared	-0.001*** (-3.10)	-0.001*** (-3.19)	-0.000*** (-2.99)	-0.000*** (-3.10)	-0.000* (-1.84)	-0.001*** (-4.00)	-0.000* (-1.88)	-0.001*** (-4.03)	-0.000* (-1.83)	-0.001*** (-3.61)	-0.000* (-1.81)	-0.001*** (-4.04)
Primary incomplete	0.157* (1.68)	0.143 (1.55)	0.128 (1.39)	0.158* (1.68)	0.172 (1.58)	0.053 (0.33)	0.162 (1.50)	0.027 (0.17)	0.160 (1.49)	0.034 (0.22)	0.187* (1.67)	0.031 (0.20)
Primary complete but secondary incomplete	0.332*** (3.82)	0.277*** (3.23)	0.218** (2.57)	0.286*** (3.26)	0.293*** (2.89)	0.335** (2.20)	0.245** (2.44)	0.254* (1.70)	0.208** (2.08)	0.226 (1.53)	0.261** (2.49)	0.266* (1.78)
Secondary complete	0.962*** (10.91)	0.905*** (10.32)	0.611*** (6.91)	0.878*** (9.86)	0.827*** (8.17)	1.234*** (7.87)	0.778*** (7.66)	1.148*** (7.50)	0.571*** (5.57)	0.671*** (4.23)	0.746*** (7.10)	1.126*** (7.24)
Some tertiary/post-secondary	1.905*** (14.73)	1.849*** (14.23)	1.183*** (8.77)	1.828*** (13.98)	1.879*** (12.64)	1.884*** (8.43)	1.829*** (12.31)	1.801*** (7.78)	1.244*** (7.92)	1.006*** (4.15)	1.792*** (11.92)	1.787*** (8.00)
Rural	-0.167*** (-3.37)	-0.072 (-1.36)	-0.139*** (-2.67)	-0.071 (-1.30)	-0.236*** (-4.57)	0.032 (0.31)	-0.142** (-2.50)	0.113 (1.02)	-0.195*** (-3.52)	-0.004 (-0.03)	-0.151*** (-2.61)	0.099 (0.89)
Eastern	-0.473*** (-4.01)	-0.450*** (-3.92)	-0.480*** (-4.40)	-0.374*** (-3.16)	-0.394*** (-3.13)	-0.748*** (-2.99)	-0.386*** (-3.10)	-0.659*** (-2.81)	-0.431*** (-3.52)	-0.507*** (-2.60)	-0.270** (-2.10)	-0.682*** (-2.90)
Lusaka	-0.150** (-2.56)	-0.113* (-1.96)	-0.107** (-1.96)	-0.058 (-0.98)	-0.177** (-2.51)	-0.088 (-1.02)	-0.140** (-2.03)	-0.037 (-0.42)	-0.153** (-2.33)	0.050 (0.59)	-0.051 (-0.71)	-0.067 (-0.75)
Southern	0.094 (0.93)	0.070 (0.69)	0.005 (0.05)	0.090 (0.88)	0.034 (0.27)	0.285* (1.70)	0.015 (0.12)	0.229 (1.62)	-0.055 (-0.47)	0.197 (1.64)	0.036 (0.29)	0.235 (1.64)
Northern	-0.060 (-0.43)	-0.039 (-0.28)	-0.031 (-0.23)	0.012 (0.09)	0.109 (0.73)	-0.616** (-2.07)	0.121 (0.80)	-0.550* (-1.89)	0.132 (0.89)	-0.523** (-1.99)	0.198 (1.30)	-0.570* (-1.96)

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Table A3 (continued)
Mincerian returns to education (relative to no education, 2012)

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample	Model 1 - Male	Model 1 - Female	Model 2 - Male	Model 2 - Female	Model 3 - Male	Model 3 - Female	Model 4 - Male	Model 4 - Female
Western	-0.332*** (-3.62)	-0.294*** (-3.26)	-0.233*** (-2.64)	-0.234** (-2.54)	-0.328*** (-3.78)	-0.320 (-1.42)	-0.292*** (-3.45)	-0.274 (-1.23)	-0.239*** (-2.87)	-0.184 (-0.82)	-0.205** (-2.35)	-0.266 (-1.15)
Central	-0.077 (-0.96)	-0.022 (-0.28)	-0.048 (-0.63)	0.026 (0.33)	-0.069 (-0.74)	-0.098 (-0.78)	-0.011 (-0.12)	-0.053 (-0.42)	-0.034 (-0.38)	-0.044 (-0.36)	0.059 (0.63)	-0.075 (-0.58)
Luapula	-0.239 (-1.26)	-0.191 (-0.98)	-0.249 (-1.37)	-0.136 (-0.68)	-0.353* (-1.74)	0.341 (1.33)	-0.311 (-1.50)	0.413 (1.55)	-0.355* (-1.81)	0.322 (1.25)	-0.234 (-1.10)	0.390 (1.44)
North Western	0.222 (1.25)	0.238 (1.37)	0.283 (1.64)	0.295* (1.67)	0.181 (1.07)	0.349 (0.77)	0.208 (1.22)	0.324 (0.74)	0.237 (1.44)	0.419 (0.96)	0.291* (1.70)	0.301 (0.68)
industry		0.497*** (6.04)	0.399*** (4.60)		0.452*** (5.14)		0.745*** (3.80)		0.377*** (4.06)	0.600*** (2.70)		
services		0.256*** (3.37)	0.096 (1.21)		0.240*** (2.86)		0.286** (2.00)		0.112 (1.24)	0.053 (0.33)		
Senior officials			1.211*** (5.88)						1.168*** (5.27)	1.155*** (2.73)		
Professionals			0.883*** (5.61)						0.699*** (3.95)	1.312*** (4.26)		
Technicians			0.725*** (4.08)						0.480** (2.47)	1.398*** (4.06)		
Clerks			0.697*** (4.03)						0.420** (2.10)	1.065*** (3.22)		
Service and market sales workers			0.059 (0.40)						-0.067 (-0.43)	0.411 (1.36)		
Craft workers			0.160 (1.04)						0.034 (0.21)	0.546 (1.40)		
Machine operators			0.356** (2.37)						0.222 (1.39)	0.642 (1.63)		

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Table A3 (continued)
Mincerian returns to education (relative to no education, 2012)

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample	Model 1 - Male	Model 1 - Female	Model 2 - Male	Model 2 - Female	Model 3 - Male	Model 3 - Female	Model 4 - Male	Model 4 - Female
Elementary occupations			0.059 (0.41)						-0.050 (-0.32)	0.390 (1.34)		
Others			1.127*** (6.49)						1.001*** (5.25)	1.597*** (5.01)		
Mining				0.793*** (6.88)							0.829*** (6.58)	0.490* (1.82)
Manufacturing				0.496*** (5.15)							0.433*** (4.15)	0.751*** (3.68)
Public utilities				0.632*** (3.91)							0.610*** (3.51)	0.626 (1.54)
Construction				0.356*** (3.39)							0.273** (2.55)	1.144*** (2.81)
Commerce				0.148 (1.63)							0.117 (1.16)	0.167 (0.97)
Transport and Communications				0.384*** (3.98)							0.342*** (3.39)	0.283 (1.05)
Financial and Business Services				0.225** (2.23)							0.085 (0.75)	0.557*** (2.88)
Public Administration				0.512*** (4.89)							0.493*** (4.20)	0.575*** (3.35)
Other Services	Un-specified				0.226***							0.251*** (1.87)
Constant	11.873*** (49.93)	11.572*** (48.12)	11.816*** (45.62)	11.569** (48.26)	12.159*** (43.59)	10.675*** (27.92)	11.878*** (42.88)	10.387*** (25.30)	12.142*** (41.68)	10.497*** (23.08)	11.864*** (43.02)	10.430*** (24.79)
Observations	3063	3063	3063	3063	2252	811	2252	811	2252	811	2252	811
ll	-4.1e+03	-4.1e+03	-3.9e+03	-4.0e+03	-3.0e+03	-1.1e+03	-3.0e+03	-1.0e+03	-2.9e+03	-991.762	-3.0e+03	-1.0e+03

t statistics in parentheses
** p<0.1 *** p<0.05 **** p<0.01"

Table A4
Mincerian returns to education (relative to no education, 2014)

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample	Model 1 - Male	Model 1 - Female	Model 2 - Male	Model 2 - Female	Model 3 - Male	Model 3 - Female	Model 4 - Male	Model 4 - Female
Female	-0.206*** (-6.69)	-0.174*** (-5.50)	-0.195*** (-6.16)	-0.127*** (-3.92)								
Individual age	0.057*** (5.60)	0.056*** (5.50)	0.044*** (4.52)	0.049*** (4.85)	0.059*** (4.77)	0.055*** (3.34)	0.058*** (4.68)	0.055*** (3.32)	0.048*** (4.05)	0.042*** (2.57)	0.049*** (3.98)	0.054*** (3.43)
Age Squared	-0.000*** (-3.65)	-0.000*** (-3.56)	-0.000*** (-2.75)	-0.000*** (-3.15)	-0.001*** (-3.25)	-0.000* (-1.92)	-0.001*** (-3.16)	-0.000* (-1.89)	-0.000*** (-2.62)	-0.000 (-1.36)	-0.000*** (-2.67)	-0.000** (-2.06)
Primary incomplete	0.121 (1.46)	0.116 (1.42)	0.096 (1.21)	0.122 (1.45)	0.108 (1.07)	0.111 (0.86)	0.095 (0.95)	0.117 (0.91)	0.064 (0.66)	0.130 (1.07)	0.086 (0.85)	0.136 (1.06)
Primary complete but secondary incomplete	0.426*** (5.32)	0.395*** (5.02)	0.309*** (3.99)	0.385*** (4.74)	0.367*** (3.86)	0.478*** (3.64)	0.328*** (3.47)	0.488*** (3.86)	0.251*** (2.69)	0.413*** (3.36)	0.285*** (2.98)	0.508*** (3.99)
Secondary complete	0.890*** (11.07)	0.858*** (10.80)	0.651*** (8.25)	0.818*** (10.01)	0.755*** (7.89)	1.190*** (9.10)	0.719*** (7.52)	1.192*** (9.48)	0.545*** (5.75)	0.939*** (7.27)	0.645*** (6.73)	1.175*** (9.10)
Some tertiary/post-secondary	1.765*** (21.66)	1.736*** (21.56)	1.053*** (11.76)	1.663*** (19.94)	1.582*** (16.27)	2.084*** (15.85)	1.549*** (15.88)	2.096*** (16.75)	0.901*** (8.49)	1.430*** (9.23)	1.413*** (14.13)	2.047*** (16.26)
Rural	-0.081** (-2.15)	-0.017 (-0.43)	-0.078** (-2.02)	-0.035 (-0.89)	-0.116*** (-2.60)	0.003 (0.05)	-0.034 (-0.70)	-0.006 (-0.09)	-0.075 (-1.61)	-0.093 (-1.54)	-0.069 (-1.43)	-0.006 (-0.10)
Eastern	-0.035 (-0.53)	-0.026 (-0.39)	-0.044 (-0.71)	0.058 (0.89)	-0.019 (-0.27)	-0.121 (-1.03)	-0.010 (-0.14)	-0.113 (-0.95)	-0.022 (-0.30)	-0.127 (-1.16)	0.127* (1.75)	-0.168 (-1.42)
Lusaka	-0.089** (-2.17)	-0.069* (-1.68)	-0.064* (-1.67)	-0.001 (-0.02)	-0.127*** (-2.69)	-0.007 (-0.10)	-0.099** (-2.11)	0.000 (0.00)	-0.097** (-2.17)	0.028 (0.42)	0.008 (0.16)	0.002 (0.02)
Southern	0.308*** (4.43)	0.294*** (4.31)	0.237*** (3.96)	0.280*** (4.12)	0.318*** (3.87)	0.242** (2.09)	0.294*** (3.65)	0.251** (2.15)	0.259*** (3.58)	0.178* (1.71)	0.270*** (3.35)	0.242** (2.15)
Northern	-0.017 (-0.25)	-0.010 (-0.15)	-0.014 (-0.23)	-0.031 (-0.47)	-0.019 (-0.27)	-0.013 (-0.10)	-0.018 (-0.25)	-0.004 (-0.03)	-0.011 (-0.17)	-0.033 (-0.27)	-0.012 (-0.17)	-0.062 (-0.49)
Western	0.098 (1.32)	0.129* (1.72)	0.107 (1.56)	0.174** (2.37)	0.055 (0.61)	0.164 (1.64)	0.090 (1.00)	0.165* (1.66)	0.072 (0.88)	0.153 (1.36)	0.149* (1.65)	0.194** (2.04)

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Table A4 (continued)
Mincerian returns to education (relative to no education, 2014)

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample	Model 1 - Male	Model 1 - Female	Model 2 - Male	Model 2 - Female	Model 3 - Male	Model 3 - Female	Model 4 - Male	Model 4 - Female
Central	-0.205*** (-3.65)	-0.151*** (-2.64)	-0.138** (-2.54)	-0.100* (-1.79)	-0.184*** (-2.78)	-0.283*** (-2.87)	-0.117* (-1.75)	-0.283*** (-2.82)	-0.112* (-1.74)	-0.240** (-2.47)	-0.040 (-0.61)	-0.273*** (-2.71)
Luapula	0.021 (0.30)	0.056 (0.82)	0.040 (0.57)	0.092 (1.41)	-0.041 (-0.51)	0.170 (1.54)	0.008 (0.10)	0.168 (1.53)	-0.010 (-0.12)	0.162 (1.42)	0.069 (0.89)	0.138 (1.43)
North Western	0.327*** (3.67)	0.364*** (4.04)	0.286*** (3.21)	0.393*** (4.37)	0.307*** (3.20)	0.379** (2.02)	0.354*** (3.66)	0.379** (1.99)	0.286*** (2.97)	0.271 (1.49)	0.402*** (4.16)	0.373** (1.97)
industry		0.338*** (5.24)	0.289*** (4.33)				0.365*** (5.20)	0.158 (1.16)	0.330*** (4.45)	0.078 (0.60)		
services		0.173*** (2.97)	0.082 (1.37)				0.212*** (3.28)	-0.022 (-0.21)	0.150** (2.24)	-0.154 (-1.55)		
Senior officials			0.727*** (5.34)						0.774*** (5.49)	0.582* (1.76)		
Professionals			0.793*** (6.77)						0.786*** (6.58)	0.729*** (2.69)		
Technicians			0.482*** (3.93)						0.545*** (4.31)	0.324 (1.16)		
Clerks			0.455*** (3.64)						0.536*** (3.73)	0.298 (1.11)		
Service and market sales workers			-0.114 (-1.06)						-0.147 (-1.39)	-0.035 (-0.13)		
Craft workers			0.083 (0.73)						0.093 (0.82)	0.083 (0.30)		
Machine operators			0.161 (1.44)						0.148 (1.33)	0.367 (1.08)		
Elementary occupations			-0.132 (-1.29)						-0.102 (-1.00)	-0.144 (-0.57)		

(continued on next page)

Table A4 (continued)
Mincerian returns to education (relative to no education, 2014)

	Model 1 - All sample	Model 2 - All sample	Model 3 - All sample	Model 4 - All sample	Model 1 - Male	Model 1 - Female	Model 2 - Male	Model 2 - Female	Model 3 - Male	Model 3 - Female	Model 4 - Male	Model 4 - Female
Others	1.107*** (5.60)		1.107*** (5.60)		1.081*** (5.14)	1.431*** (5.30)			1.081*** (5.14)	1.431*** (5.30)		
Mining				0.691*** (7.31)							0.750*** (7.42)	0.520** (2.09)
Manufacturing				0.247*** (3.09)							0.263*** (2.97)	0.044 (0.29)
Public utilities				0.639*** (5.73)							0.683*** (5.68)	0.470** (2.12)
Construction				0.267*** (3.77)							0.258*** (3.47)	0.399 (1.62)
Commerce				-0.070 (-1.09)							-0.083 (-1.12)	-0.174 (-1.59)
Transport and Communications				0.238*** (3.22)							0.235*** (2.96)	0.089 (0.51)
Financial and Business Services				0.174** (2.16)							0.126 (1.41)	0.283* (1.94)
Public Administration				0.659*** (7.74)							0.669*** (7.20)	0.648*** (3.86)
Other Services	Un- specified				0.184***							0.292*** (-0.17)
Constant	5.288*** (27.05)	5.108*** (25.96)	5.513*** (25.69)	5.235*** (26.88)	5.381*** (22.89)	4.849*** (15.20)	5.168*** (22.17)	4.858*** (14.67)	5.487*** (23.11)	5.326*** (12.22)	5.355*** (23.05)	4.896*** (15.54)
Observations	4019	4019	4019	4019	2906	1113	2906	1113	2906	1113	2906	1113
ll	-4.6e+03	-4.6e+03	-4.4e+03	-4.5e+03	-3.4e+03	-1.2e+03	-3.4e+03	-1.2e+03	-3.2e+03	-1.1e+03	-3.3e+03	-1.2e+03

t statistics in parentheses
** p<0.1 * p<0.05 *** p<0.01"

ANNEX B: REGRESSION RESULTS FROM CHAPTER 3

Table B1
Employment

Variables	Employment (log)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	e-no dummiBP	-year dumm	and industry	and location	age	Region	Sector
age_6to9	0.309*** (0.0585)	0.309*** (0.0585)	0.171*** (0.0503)	0.300*** (0.0508)	0.172*** (0.0463)	0.172*** (0.0463)	0.231*** (0.0510)
age_10to19	0.506*** (0.0784)	0.506*** (0.0784)	0.367*** (0.0634)	0.473*** (0.0638)	0.358*** (0.0558)	0.358*** (0.0558)	0.417*** (0.0681)
age_20to29	0.767*** (0.116)	0.767*** (0.116)	0.400*** (0.0802)	0.710*** (0.102)	0.380*** (0.0758)	0.380*** (0.0758)	0.533*** (0.0916)
age_30plus	1.494*** (0.189)	1.494*** (0.189)	1.021*** (0.125)	1.432*** (0.154)	1.000*** (0.113)	1.000*** (0.113)	1.151*** (0.139)
Copperbelt						0.365* (0.195)	
Eastern						-0.0681 (0.137)	
Luapula						-0.158 (0.153)	
Lusaka						0.542** (0.224)	
Muchinga						-0.158 (0.129)	
Northern						-0.0159 (0.164)	
NorthWestern						0.209 (0.183)	
Southern						0.190 (0.225)	
Western						-0.119 (0.123)	
Agriculture							1.093** (0.536)

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Table B1 (continued)
Employment

Variables	Employment (log)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	e-no dummiBP	-year dumm	and industry	and location	age	Region	Sector
MinUtilConstr							0.576 (0.595)
Commerce							-0.791* (0.413)
Services							-0.247 (0.452)
xvar							
majority female workers							
Constant	1.507*** (0.104)	1.507*** (0.104)	3.048*** (0.417)	1 189*** (0.269)	2.831*** (0.416)	2.831*** (0.416)	1.632*** (0.408)
Observations	4,334	4,334	4,334	4,334	4,334	4,334	4,334
R-squared	0.088	0.088	0.365	0.141	0.396	0.396	0.263
Sector dummies	NO	YES	YES	NO	YES	YES	NO
Location dummies	NO	YES	NO	YES	YES	NO	YES
Year Dummies	NO	NO	NO	NO	NO	NO	NO

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B2
Productivity

Productivity							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variables	lnLPQ-size-no dummies	lnLPQ-age-year dummies	lnLPQ-age-year and industry dummies	lnLPQ-age-year and location dummies	lnLPQ-age	LHS=lnLPQ-Basic	LHS=lnLPQ-Region
sz_10to19	0.224* (0.119)	0.196* (0.115)	0.346*** (0.0707)	0.0528 (0.112)	0.226*** (0.0853)	0.226*** (0.0853)	0.226*** (0.0853)
sz_20to49	0.508 (0.312)	0.472 (0.308)	0.604** (0.237)	0.366 (0.238)	0.511*** (0.185)	0.511*** (0.185)	0.511*** (0.185)
sz_50to249	0.571* (0.323)	0.525 (0.319)	0.697*** (0.251)	0.354 (0.228)	0.525*** (0.191)	0.525*** (0.191)	0.525*** (0.191)
sz_250to499	0.669* (0.380)	0.624* (0.374)	0.835*** (0.230)	0.453 (0.317)	0.651** (0.272)	0.651** (0.272)	0.651** (0.272)
sz_500plus	0.452 (0.307)	0.409 (0.310)	0.534** (0.231)	0.324 (0.317)	0.400 (0.263)	0.400 (0.263)	0.400 (0.263)
a ge_6to9		0.141** (0.0649)	0.124* (0.0648)	0.157** (0.0624)	0.128** (0.0556)	0.128** (0.0556)	0.128** (0.0556)
age_10to19		0.126** (0.0606)	0.0821 (0.0537)	0.127** (0.0591)	0.0910* (0.0483)	0.0910* (0.0483)	0.0910* (0.0483)
age_20to29		0.173 (0.105)	0.196** (0.0966)	0.190** (0.0939)	0.212** (0.0914)	0.212** (0.0914)	0.212** (0.0914)
age_30plus		0.162 (0.121)	0.245** (0.116)	0.285** (0.113)	0.355*** (0.102)	0.355*** (0.102)	0.355*** (0.102)
Agriculture							
MinUtilConstr							
Commerce							
Services							
xvar							
Constant	11.57*** (0.263)	11.51*** (0.276)	10.83*** (0.252)	10.36*** (0.333)	9.963*** (0.423)	9.963*** (0.423)	9.963*** (0.423)
Observations	4,067	4,067	4,067	4,067	4,067	4,067	4,067
R-squared	0.018	0.020	0.161	0.122	0.266	0.266	0.266
Sector dummies	NO	NO	YES	NO	YES	YES	YES
Location dummies	NO	NO	NO	YES	YES	YES	NO
Year Dummies	NO	NO	NO	NO	NO	YES	YES

Table B3
Wages

Variables	Size	Age	Region	Sector	Sector	xvar=exporter	var=sector tra	xvar=sh fem
sz 10to19	-0.860*** (0.0808)	-0.895*** (0.0812)	-0.895*** (0.0812)	-0.928*** (0.0833)	-0.922*** (0.0825)	-0.912*** (0.0788)	-0.895*** (0.0812)	-0.908*** (0.0802)
sz 20to49	-1.396*** (0.0723)	-1.441*** (0.0735)	-1.441*** (0.0735)	-1.453*** (0.0740)	-1.482*** (0.0687)	-1.476*** (0.0757)	-1.441*** (0.0735)	-1.450*** (0.0717)
sz 50to249	-2.257*** (0.121)	-2.316*** (0.119)	-2.316*** (0.119)	-2.356*** (0.135)	-2.384*** (0.130)	-2.393*** (0.121)	-2.316*** (0.119)	-2.316*** (0.118)
sz 250to499	-2.807*** (0.147)	-2.870*** (0.142)	-2.870*** (0.142)	-2.811*** (0.167)	-2.920*** (0.137)	-2.950*** (0.144)	-2.870*** (0.142)	-2.865*** (0.141)
sz 500plus	-4.924*** (0.343)	-5.001*** (0.355)	-5.001*** (0.355)	-4.844*** (0.354)	-5.062*** (0.329)	-5.106*** (0.347)	-5.001*** (0.355)	-4.986*** (0.353)
age 6to9		0.138* (0.0702)	0.138* (0.0702)	0.153** (0.0667)	0.146** (0.0661)	0.138* (0.0701)	0.138* (0.0702)	0.138* (0.0702)
age 10to19		0.163*** (0.0366)	0.163*** (0.0366)	0.192*** (0.0369)	0.167*** (0.0362)	0.153*** (0.0361)	0.163*** (0.0366)	0.156*** (0.0363)
age 20to29		0.172* (0.0972)	0.172* (0.0972)	0.192* (0.0988)	0.184** (0.0923)	0.171* (0.0986)	0.172* (0.0972)	0.174* (0.0954)
age 30plus		0.290*** (0.0886)	0.290*** (0.0886)	0.309*** (0.0885)	0.326*** (0.0866)	0.294*** (0.0868)	0.290*** (0.0886)	0.285*** (0.0875)
Copperbelt			0.499*** (0.0794)					
Eastern			0.0296 (0.109)					
Luapula			-0.107 (0.172)					
Lusaka			0.726*** (0.0920)					
Muchinga			0.236 (0.180)					

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Table B3 (continued)
Wages

VARIABLES	Size	Age	Region	Sector	Sector	xvar=exporter	var=sector tra	xvar=sh fem
Northern			-0.127 (0.167)					
NorthWestern			0.0242 (0.138)					
Southern			0.349*** (0.0932)					
Western			0.257* (0.139)					
Agriculture				-0.535** (0.210)				
MinUtilConstr				0.266*** (0.0944)				
Commerce				0.360*** (0.0747)				
Services				0.0840 (0.0871)				
xvar						0.291*** (0.0638)	-1.232*** (0.222)	0.622*** (0.214)
Output per Worker (log)								
Output per Worker (log) squared								
Value Added per Worker (log)								
Value Added per Worker (log) squared								
Constant	6.158*** (0.207)	6.049*** (0.207)	6.049*** (0.207)	6.546*** (0.105)	6.614*** (0.0923)	6.055*** (0.209)	7.281*** (0.0920)	6.037*** (0.205)
Observations	3,739	3,739	3,739	3,739	3,739	3,739	3,739	3,739
R-squared	0.385	0.388	0.388	0.349	0.368	0.391	0.388	0.389
Sector dummies	YES	YES	YES	YES	YES	YES	YES	YES
Location dummies	YES	YES	YES	YES	YES	YES	YES	YES
Year Dummies	NO	NO	NO	NO	NO	NO	NO	NO

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1



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