MODELLING LABOUR MARKETS IN LOW INCOME COUNTRIES WITH IMPERFECT DATA

By: Haroon Bhorat*, Morné Oosthuizen, Matthew Sharp, Kezia Lilenstein and Derek Yu.

Development Policy Research Unit, University of Cape Town

*Corresponding author e-mail address: haroon.bhorat@uct.ac.za

Abstract:

There is no clear empirical appreciation of the most appropriate and optimal labour market segments both across and within lower income country labour markets in Africa. This paper compares descriptive labour markets across four African countries: Kenya, Tanzania, Uganda and Zambia, allowing the data to drive the design of the segmentation model. It also provides preliminary results from a two-stage econometric model which is used to analyse participation and earnings in the various labour market segments in Kenya, Tanzania and Zambia. The paper demonstrates the value of a more complex labour market model which considers the full range of observable labour markets segments. It argues that a proper grasp of these labour market segments, and the interactions between them, is necessary to understand unemployment rates, rural-to-urban labour market migration dynamics and the consequences of a lack of structural transformation in low income countries in Africa.

I: Introduction

The origins of labour market segmentation theory can be traced back to Lewis (1954).[1] Lewis conceptualised a dualistic labour market, in which there was a 'traditional' (agriculture) sector and 'modern' (non-agriculture) sector. Lewis assumes that there is an excess supply of labour in the agriculture sector in developing economies. As developing countries industrialise, this excess supply of labour moves to the modern sector. Initially wages remain low in the modern sector, as industrialists can rely on a reliable supply of cheap labour. As the excess supply of labour dissipates in the traditional sector, wages would increase in the modern sector. This wage differential would further incentivise workers to leave the traditional sector. As a result, through economic development, the size of the agricultural sector is greatly reduced, while the modern sector expands substantially.

However, it is evident that these standard Lewis-type dualist models of development do not go far enough in replicating the nature and level of segmentation typically found in low income countries (LICs). Over time, the two-sector model has been augmented through recognising duality, first within the urban economy (i.e. urban formal versus urban informal) and, later, within the informal sector itself. Thus, Fields (2007: 29) suggests four labour market states in LICs, where "[workers] might be employed (be it in wage employment or self-employment) in…the formal sector, the free entry part of the urban informal sector, the upper tier of the urban informal sector, and rural agriculture [and they] might also be unemployed".[2]

There is also recognition that economic activity in rural areas is not confined to the agricultural sector and that there is significant involvement in non-farm enterprises in rural, as well as urban, areas. For example, in Uganda more than 40 percent of households reported income from non-farm enterprises in 2005/6 and a similar situation was found in Tanzania in 2005.[3] Further, the AfDB *et al.* (2012) estimate that 53 percent of young people in rural areas across the continent are engaged not in agriculture, but in other activities.[4] Thus, an alternative pattern of segmentation distinguishes between the formal sector (encompassing both public and private sector employment); the urban informal sector; rural agriculture; rural non-farm enterprises; unpaid family work; and unemployment. This formulation may not be complete and may almost certainly be inexact.

---

[1] Lewis, A. 1954. Economic Development with Unlimited Supplies of Labour, *The Manchester School*, Vol. 28, No. 2, pp. 139-191

[2] Fields, G. 2006. Employment in Low-Income Countries: Beyond Labour Market Segmentation? Retrieved 25/06/2016 from Cornell University, IRL School site: http://digitalcommons.ilr.cornell.edu/articles/455/

[3] Fox, L. & Sohenson, P. 2012. Household Enterprises in Sub-Saharan Africa: Why They Matter for Growth, Jobs and Livelihoods. World Bank Policy Research Paper 6184

[4] AfDB, OECD, UNDP, UNECA. 2012. African Economic Outlook 2012: Promoting Youth Employment, Paris, OECD

The intention of this research is to begin to fill some of the informational gaps relating to low-income country (LIC) labour markets in Africa, for four African countries. An earlier set of papers presented basic descriptive statistics for Kenya (based on the 2005/2006 Kenya Integrated Household Budget Survey), for Tanzania (based on the 2012 Integrated Labour Force Survey) and for Zambia (based on the 2006 Zambian Labour Force Survey), using the latest available labour force data for each of these countries to profile the labour market activities in the economy in a systematic way.[5] Specifically, the data were presented in order to gain insight into the segmented and multi-sectoral nature of the labour market, and establish a robust baseline for future analyses. It is our hope that this approach can be extended to other African LICs when data becomes available. The comparative section of the papers also made use of official summary labour market statistics for Uganda (from the 2009 Ugandan National Panel Survey), so as to have a fourth country for comparison.

The overall project aims to address three key questions:

1. What does the data say are the profiles of segmented and multi-sector labour markets in low-income countries in Africa and how do they differ across countries?
2. Where are the shortcomings in existing surveys in terms of understanding these labour market segmentations?
3. What is the appropriate multivariate method for estimating participation, employment and earnings and what are the initial results from these estimates?

This paper is comprised of three sections: Section II introduces our model of labour market segmentation, Section III compares the descriptive findings across the four countries in our study and Section IV introduces and provides the preliminary results from a two-stage econometric model which is used to analyse participation and earnings across labour market segments in Kenya, Tanzania and Zambia.

II: Segmenting LIC Labour Markets

Our first research question asks, "What do the data say are the profiles of segmented and multi-sector labour markets in low-income countries in Africa, and how do these differ across countries?" As the question suggests, our intention is to be guided by the data available in each of the countries. However, for purposes of comparability across our four chosen countries, as well as for future

---

[5] The papers included 'A Descriptive Overview of the Kenyan Labour Market', 'A Descriptive Overview of the Tanzanian Labour Market' and 'A Descriptive Overview of the Kenyan Labour Market' and were submitted by DPRU to the conference organisers on 18 July 2016.

replicability within other countries, it seems useful to consider a segmentation schema that allows for the full range - or the fullest range feasible - of possible activities.

A detailed segmentation helps to conceptualise low-income country labour markets more accurately. We discuss this here and introduce the full segmentation diagram in Figure 1 below. Although the formal and informal sectors often feature prominently in labour market segmentation models in developing countries, we would argue that informality is just one component of a segmented labour market.

In terms of the characteristics of the enterprise, we include four sets of distinctions. First, we distinguish between enterprises operating in the agricultural sector from those operating in the non-agricultural sector. This key distinction is relevant in most, if not all, labour markets given such issues as seasonality. However, it takes on added importance in low-income countries where the agricultural sector is often one of the dominant employment sectors.

Second, we use the location of the enterprise as a distinguishing characteristic: is the enterprise in an urban or a rural area? The urban-rural divide is a critical one for developing countries, particularly in the context of rapid urbanisation. Enterprises in urban areas face very different challenges and constraints to those in rural areas, while at the same time enjoying some of the benefits derived from higher densities of population and infrastructure.

The third enterprise characteristic relates to ownership: is the enterprise in the private or the public sector? There are a range of potential difference between the public and private sector that are important to consider in this case.

Fourthly, is the enterprise registered with authorities or not? Registration of the enterprise may vary in different contexts but may include registration with taxation authorities or whether the enterprise makes social security contributions on employees' behalf.

In terms of the characteristics of the employment relationship, there are two key distinctions. The first is the relationship to the firm: is the individual an employer, an employee, an own account worker (i.e. self-employed with no employees) or an unpaid family worker. Secondly, we consider the security inherent in the employment relationship: is the individual formally employed (e.g. with a written contract; employed permanently; not employed via a third party) or informally employed?[6]

Combining these various sets of characteristic results in a set of 128 (2x2x2x2x4x2) labour market

---

[6] Unfortunately, due to data constraints, we were not able to carry out this part of the analysis. We will however relook at this issue in future research.

segments related to employment (Figure 1), with two further segments for the unemployed and the economically inactive. This is not, though, particularly amenable to sensible analysis. Importantly, though, some of the resulting segments are either impossible, or highly improbable.

What do we consider 'impossible' segments? These are typically found within the public sector. For example, the combination of public sector and unregistered enterprise is not (or should not be) possible. Similarly, in terms of the employment relationship, it is not possible to be an employer, own account worker or unpaid family worker in the public sector. Further, we argue that the formal-informal employment relationship distinction is not relevant for employers, own account workers or unpaid family workers. What do we consider 'highly improbable' segments? Again, this relates to public sector employment, specifically public sector employment in the agricultural sector. While it is certainly possible that the public sector employs workers in agriculture, it is sufficiently improbable—as far as we know—for us to exclude this from our segmentation. This reduces our number of segments to 44; still a large number, but certainly more manageable than 128.

Figure 1: Detailed labour market segmentation

The above represents our ideal model. However, in analyzing the data for our three countries, we did not observe all of the segments, many of which had insufficient observations or were not possible to neatly define in each country. Only in the case of Zambia were we able to differentiate between employees working for tax registered and unregistered businesses. Moreover, due to data shortcomings, it was generally not possible to accurately differentiate between formal and informal employer-employee relations. For the purposes of cross-country comparison, and allowing the data to drive the analysis, we settled on six segments: rural agriculture, urban agriculture, rural non-agricultural private, urban non-agricultural private, rural public and urban public.

III: Cross-country Comparison

Drawing on the results of our descriptive analysis, this section provides a comparative view across the three countries and Uganda, showing how the countries in question differ in terms of the level and nature of labour segmentation in particular. Where relevant, limitations in the use and application of the data are pointed out.

Table 1 provides a basic economic overview of the four countries.

Table 1: Cross Country Overview

Variable of Interest	Kenya	Tanzania	Uganda	Zambia
Income Level	Low Income	Low Income	Low Income	Lower-Middle
2012 GNI per capita (constant 2005 US$)	622	444	421	952
Real GDP growth p.a. (2007-2014)	5.0%	6.6%	6.4%	7.6%
Agriculture value added (% of GDP)	30% (2014)	31% (2014)	28% (2009)	10% (2013)
Industry value added (% of GDP)	19% (2014)	24% (2014)	20% (2009)	34% (2013)
Services value added (% of GDP)	50% (2014)	44% (2014)	51% (2009)	56% (2013)
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	33% (2005)	46% (2011)	33% (2012)	64% (2010)
Persons employed in the informal sector as a percentage of non-agricultural employment (various dates)	n/a	51.7% (2005/2006)	59.8% (2010)	64.6% (2008)
Urban population (% of total) (2013)	25%	30%	15%	40%

Sources: World Development Indicators 2015 & ILO 2012

All countries have been growing between 5 to 7 percent per year on average since 2007. Uganda, Tanzania and Kenya are all considered low-income countries and have relatively similar economic value added structures: agriculture (30 percent), industry (20 percent), and services (50 percent).

Zambia is the exception and considered a lower-middle income country by the World Bank. This is due primarily to the high resource rents that Zambia has captured through copper mining activities and during the recent global copper price boom. The latter also explains why industry value added as a proportion of GDP is higher and agriculture value added lower in Zambia, compared with Uganda, Kenya, and Tanzania. However, even though high copper mining revenues have created a relatively high GNI per capita figure for Zambia, these revenues have not been distributed evenly throughout the economy. Mining activities in Zambia provide only 1 percent of total employment, while the poverty headcount rate of 64 percent is substantially higher than the rates observed in the other three countries (ranging from 33 percent in Kenya and Uganda to 46 percent in Tanzania).

There seems to be a positive correlation between poverty headcount and urbanisation: Zambia is the most urbanised of the four countries (with an urbanisation rate of 40 percent) and has the highest poverty headcount (64 percent), while Uganda has the lowest rates of urbanisation and of poverty (15 percent and 33 percent, respectively). This indicates that individuals moving from rural to urban environments are finding it difficult to obtain gainful employment.

IIIa: Labour Force Participation, Employment and Unemployment: A Four-Country Comparison

Labour force participation rates are high in Tanzania and Uganda (88.1 and 86.1 percent, respectively) but are much lower in Zambia and Kenya (69.0 percent and 63.7 percent, respectively).[7] Unemployment rates in Zambia and Kenya (8.0 and 8.6 percent, respectively) are higher than in Tanzania and Uganda (3.1 percent and 0.4 percent, respectively). In Uganda, the data show an unemployment rate of 0.4 percent (perhaps an underestimate if we consider the ILO estimate of around 4 percent)[8]. Nevertheless, Uganda's ILO estimates corroborate the relationship between high labour force participation rates and low unemployment levels.

The employment-to-population ratio is highest in Tanzania and lowest in Kenya (85.4 percent and 58.2 percent, respectively). In Tanzania and Uganda, where there is a high level of employment in the agricultural sector (74.7 percent and 71.2 percent, respectively), labour force participation tends to be high and unemployment rates low. Comparatively, in Kenya and Zambia, 59.1 percent and 57.4 percent of the working population are involved in agriculture, respectively. All of this points to the fact that Tanzania and Uganda have a large subsistence agriculture sector, which has low entry barriers and provides employment to large swathes of the population. In Kenya and Zambia, on the other hand, participation in subsistence agriculture is much less, which may be due to a range of

---

[7] The fact that the labour force participation rate was recorded as 77.5 percent in the 1998/1999 Kenya Labour Force Survey but was only officially recorded as 69.5 percent in the KIHBS 2005/2006 – an inexplicable reduction of 8 percentage points - suggests that the latter is underestimated.

[8] World Development Indicators 2013

factors, including the limited availability of rural land, more modernised agriculture sectors, more advanced social protection systems or just a stronger aspiration to find non-agricultural work. In the latter countries, in the absence of finding wage work, people do not tend to go into subsistence agriculture, which explains why labour force participation is low and unemployment is high.

Decompositions by:

- Gender

Labour force participation (LFP) rates are higher for men than for women across all countries, although this difference is substantially smaller in Uganda (1.2 percentage points) and Tanzania (2.6 percentage points) relative to Kenya (17.1 percentage points) and Zambia (12.8 percentage points). Unemployment rates are higher for women than men in Zambia, Tanzania, and Uganda, but are higher for men in Kenya.

- Age

As expected, there is inverted U-shaped relationship between labour force participation and age in all countries. Typically, LFP is relatively high for 25-64 year olds, peaking for 35-44 year olds and dropping off at both ends of the distribution. In all countries, the youth (15-24 year olds) have a substantially higher unemployment rate than all other age cohorts. This is reflective of Africa's youth unemployment crisis, the result of a bulging youth population, poor education systems and a shortage of job opportunities, especially in the formal sector. On the other hand, older groups may be forced to find work, even if this means eking out a living in the informal economy or working for family member without pay.

- Area type (urban/rural)

The urban unemployment rate is substantially higher than the rural unemployment rate in all countries. Decomposing urban and rural unemployment rates by demographic group, there are only minor exceptions to the latter rule: for example, in Kenya, rural unemployment is higher than urban unemployment for those with no education. In Tanzania, youth unemployment is purely an urban phenomenon: unemployment for 15-24 year olds is 19.9 percent in urban areas and only 1.6 percent in rural areas. In Kenya and Zambia, youth unemployment in rural areas is much lower than in urban areas but is still hovers at around 7-9 percent.[9] While in Kenya and Zambia, men and women have similar (high) urban unemployment rates, in Tanzania, the urban unemployment rate for women is more than twice as high as that for men.

---

[9] Unfortunately, information on urban youth unemployment versus rural youth unemployment is not available for Uganda.

The most important takeaway here is that it is not the case, as is often claimed, that unemployment rates are very low in Africa. This analysis shows that unemployment rates in urban areas are substantial in all countries in this study. Clearly the prediction of the Lewis labour market model that migrant workers will eventually be absorbed into the urban labour force does not hold in the case of the African countries in this study. A Harris-Todaro-type model, that predicts the existence of urban unemployment in equilibrium, seems to have more explanatory value. The Harris-Todaro model (1970),[10] posits that industrialisation takes place when individuals migrate from rural to urban areas in search of better paying, non-agricultural jobs. However, these jobs are not always available due to a combination of constrained labour demand and sticky urban wages.

- Educational attainment

In Tanzania and Uganda, where there is more subsistence agriculture, those with lower education levels have much higher rates of labour force participation than in Kenya and Zambia. For example, those with no education and with only primary education have much higher LFPRs in Tanzania (87.3 percent and 89.9 percent, respectively) than in Kenya (66.1 percent and 62.3 percent, respectively). Interestingly, in all four countries, the unemployment rates for those with incomplete secondary education are very similar, all falling between 9.6 percent and 10.3 percent. For individuals with higher levels of education, the picture is more mixed. In Tanzania, there is the expected pattern where unemployment is lower for those with complete secondary and tertiary education than for those with incomplete secondary education (even though those with no education or only primary education have the lowest unemployment rates of all). However, in Uganda and Zambia, it is found that those who have completed secondary education have much higher unemployment rates (26.2 percent and 22.9 percent, respectively) than those with incomplete secondary education (or tertiary education). In Kenya those with tertiary education have a higher unemployment rate than those who only have completed secondary education (8.3 percent versus 3.4 percent, respectively). It would seem then that Uganda, Zambia and Kenya all have serious shortfalls in skilled job opportunities.

Two analytical points should be made here. Firstly, it is usually assumed in labour market models that higher skilled workers are more likely to be employed than lower skilled workers – see, for example, Field's extension of the Harris-Todaro model where he posits preferential hiring of the better educated.[11] The fact that people with higher levels of education sometimes have higher rates of unemployment than those with lower levels of education in some of the countries in this study

---

[10] Harris, J.R. and M.P. Todaro. 1970. Migration, unemployment and development: A two-sector analysis, *American Economic Review*, 60, 126-142

[11] Fields, G. 1975. Rural-Urban Migration, Urban Unemployment and Underemployment, and Job Search Activity in LDC's, *Journal of Development Economics* 2: 165-188

runs counter to this assumption. Secondly, the shortage of skilled job opportunities is, in large part, the result of an underdeveloped manufacturing sector in African countries, which is unable to provide semi-skilled jobs. In fact many African countries have experienced deindustrialisation since the late 1980s.[12]

IIIb: Labour Market Segmentation: A Four-Country Comparison

Graph 1 shows the relative contributions to employment of each of the six main labour markets segments in the four African countries in this study.

Graph 1: Contributions to Employment of Labour Market Segments in Four Countries
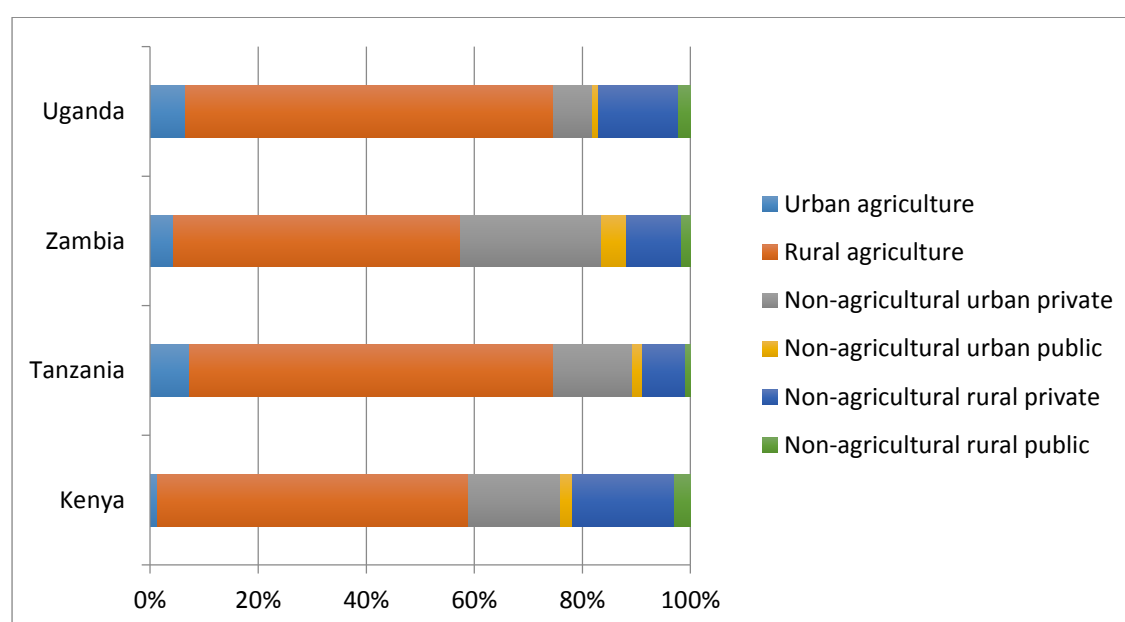
Sources: Kenya IHBS 2005/2006, Tanzania LFS 2006, Zambia LFS 2012, Uganda NPS 2009/2010

Across each of the four countries, agriculture is the dominant source of employment. In Zambia and Kenya, agriculture accounts for 57.4 and 59.1 percent of employment, respectively, whereas in Uganda and Tanzania, this sector accounts for 74.5 and 74.7 percent of employment, respectively. However, agriculture does not only provide employment in rural areas, as is often implied in dualistic labour market models. Urban agriculture also provides a substantial source of employment, especially in Tanzania and Uganda (where it accounts for 7.2 percent and 7.0 percent of total employment, respectively).

Outside of agriculture, a large proportion of people are employed in non-agricultural private work. Private non-agricultural employment is predominantly found in the urban sector in Zambia and Tanzania (26.2 percent and 14.7 percent of total employment, respectively), and in the rural sector in

---

[12] Page, J. 2012. Can Africa Industrialise? *Journal of African Economies*, 21, AERC Supplement 2: 86-125

Kenya and Uganda (18.8 percent and 14.6 percent of total employment, respectively).[13] Not surprisingly, the rural non-agricultural private segment is particularly large in the less urbanised countries (Kenya and Uganda). Clearly labour market models need to take into account the rural non-agricultural private segment.

Public sector employment contributes to 6.4 percent of total employment in Zambia, 5.2 percent in Kenya, 3.4 percent in Uganda and 2.7 percent in Tanzania. There seems to be a positive correlation then between public sector employment and economic sophistication, though of course this does not imply causality and it is quite possible that Zambia and Kenya have bloated public sectors. Indeed, with particularly high urban unemployment rates for high skilled workers, the governments of Zambia and Kenya may be under some pressure to increase public sector employment.

IIIc: Type of Employment, Employment by Industry, Employment by Occupation: A Four-Country Comparison

- Type of employment

Kenya has a higher share of the workforce working as employees (31.3 percent) than Zambia, Uganda and Tanzania (23.1 percent, 19.2 percent 9.8 percent, respectively). The latter countries have a higher proportion of 'vulnerable' workers – i.e. own account and unpaid family workers – who often face uncertain incomes and poor working conditions. Interestingly though, while the share of own-account workers in the workforce is substantially higher than the share of unpaid family workers in Tanzania (77.3 percent and 11.3 percent respectively) and Zambia (52.1 percent and 24.4 percent of the total workforce, respectively), the opposite is true in Uganda (13.3 percent and 69.6 percent, respectively). This is driven by the fact 91.5 percent of workers in the agricultural sector in Uganda classify themselves as unpaid family workers.

In Tanzania, close to 90 percent of those employed in agriculture work for their own account, while in Kenya and Zambia this proportion falls to around 40-50 percent and unpaid family work is a much larger component of employment. In Kenya, 33.9 percent of workers in urban agriculture and 13.9 percent of workers in rural agriculture are employees, reflecting the extent to which farming has been commercialized and industrialized in this country. In Zambia, the proportion of employees in urban agriculture is also fairly high at 17.7 percent, also suggesting commercialization of this sector, but only 3.7 percent of workers in rural agriculture in this country are employees.

It is important to note that the employment type breakdown different in the rural non-agricultural sector as compared to the rural agricultural sector. Within the rural non-agricultural private

---

[13] Kenya however also has a sizable urban non-agricultural private segment (17.0 percent of total employment).

segment, approximately 20 percent of workers are employees in Tanzania and Zambia (with 50-65 percent of workers self-employed),[14] and in Kenya the share of workers that are employees increases to 42.5 percent. It is also noteworthy that own account workers make up a substantial share of employment in the urban non-agricultural private segment (ranging from 31.2 percent in Kenya to 49.0 percent in Tanzania), reflecting the existence of substantial urban informal sectors. Simplistic dualist models that do not consider either an urban informal sector or rural non-agricultural employment are clearly deficient.

Unfortunately, it was only possible to measure whether or not businesses were registered for tax in Zambia. The other countries did not have adequate questions to assess this (for example, in Kenya, a question on the registration status of businesses was only asked of the self-employed and not employees or employers). In all the countries, there was insufficient information to identify the share of employees who were formally and informally employed in terms of the security of their contracts.

- Employment by industry

Disaggregating employment by industry reveals that, across all countries, the primary sector dominates. The primary sector constitutes approximately 60 percent of total employment in Kenya and Zambia, 70 percent in Uganda, and 80 percent in Tanzania. Within the primary sector, over 95 percent of employment is in agriculture, with mining accounting for the remainder. Even in Zambia - a country highly dependent on copper mining revenues - just 3.1 percent of primary sector employment and 1.8 percent of total employment is in the mining sector. Capital intensive mining in countries like Zambia might be good for raising productivity but hardly creates any employment at all.

The secondary sector encompassing manufacturing, electricity, gas and water, and construction comprises less than 10 percent of total employment across all countries, reflecting a lack of industrial development in the countries in this study.

The tertiary sector accounts for 16.2 percent of employment in Tanzania, 20.4 percent in Uganda, 32.1 percent in Zambia, and 32.4 percent in Kenya. Wholesale and retail trade accounts for the largest proportion of employment in the tertiary sector in all countries (ranging from 9.4 percent to 14.2 percent of total employment), reflecting the fact that the countries in this study all have a substantial informal sector. Community, social and personal services also contribute to over 7 percent of total employment in Kenya, Uganda and Zambia, but to only 3.6 percent of employment

---

[14] Unfortunately, this information is not available for Uganda.

in Uganda. This in part reflects the fact that Uganda has the smallest share of public sector employment in all four countries (at 2.7 percent of total employment).

- Employment by occupation

Occupation data reveals relatively similar patterns across countries. The majority of employment in all countries is in what are typically considered to be low-skilled occupations, and this is largely driven by employment in agriculture. Low-skilled occupations account for approximately 80 percent of employment in Tanzania, 78 percent in Uganda, 76 percent in Kenya, and 65 percent in Zambia, which has the most modern, urbanised economy. Semi-skilled jobs account for approximately 20 percent of employment in Tanzania, Kenya and Uganda and approximately 30 percent in Zambia. In Zambia, Tanzania and Uganda, service and sales workers account for the majority of semi-skilled workers, but in Kenya, craft and trade workers also account for a substantial share (equal to that of service and sales workers) of semi-skilled workers. High-skilled occupations account for only approximately 1 percent of employment in Tanzania and Uganda, 4 percent in Kenya and 6 percent in Zambia.

Discussion

Section II began by introducing a segmentation model, drawing on insights from Fields (2007). The model was designed to deepen the understanding of labour markets in Africa, where analysis often misses out on important heterogeneity. This model was used to inform our initial descriptive analysis of each of the labour markets in Kenya, Tanzania and Zambia (for Uganda we did not have access to the raw survey data, though summary statistics were used for the comparison section). This was done by analysing employment and unemployment across a range of segments, sectors, occupations and demographic characteristics. Major observations were compared across the four countries.

One possible weakness of the cross-country comparison was that not all surveys were completed at the same time. The Zambian survey was completed in 2012, the Ugandan survey in 2010 and the Kenyan and Tanzanian surveys were completed in 2006. Some shortcomings in the data were identified. Most notably, it was generally not possible to assess the formal/informal nature of employment relations and businesses.

This section has shown that dual sector models do not fit with the reality in the African countries covered in this study. Reducing everything to an urban non-agricultural private segment and a rural subsistence agricultural segment omits a significant degree of heterogeneity within and across different labour markets in the African context. A proper appreciation of the full range of observable labour markets segments, and the interactions between them, is necessary to understand

unemployment rates, rural-to-urban labour migration dynamics and the consequences of a lack of structural transformation in African countries. Though a Harris-Todaro type model helps to explain the high rates of urban unemployment found in African countries, it falls short in three important respects:

Firstly, the model ignores several other substantive labour markets segments. Most notably, it ignores a rural non-agricultural private segment which can be even larger than the urban non-agricultural private segment (as in Kenya and Uganda) and includes a substantial share of employees as well as own-account workers. Though it was not always possible to directly distinguish between formal and informal businesses in this study, the major contribution of wholesale retail and trade to tertiary employment in all the countries, suggests that the informal sector is very substantial indeed – and that individuals are increasingly working in low wage service sector jobs. Differentiating between private and public sectors is also important, since, as shown, these are qualitatively very different in terms of their demands for skills.

Secondly, unemployment is not only the result of a lack of jobs in the urban private sector. The absence of opportunity to enter into subsistence agriculture – or a lack of willingness to do so – also seems to contribute substantially to the unemployment levels observed in the countries in this study. In Zambia and Kenya, where there seem to be smaller subsistence agriculture sectors than in the other countries, we find low labour force participation rates and higher unemployment rates.

Thirdly, it is not just unskilled migrants that experience high unemployment rates as in Field's extended version of the Harris-Todaro model. Largely as a result of an underdeveloped urban industrial sector in Africa countries, relatively skilled people may also struggle to find work, which is why in some countries the unemployment rates for those with secondary or tertiary education are so high. A key finding of this study is that unemployment among even relatively well-educated youth is a major problem in all four countries.

While the more complicated labour market model we have proposed in this paper cannot be solved analytically, we think it does a much better job than old-fashioned dualistic models in capturing the complexities of the labour markets studied. Building on the analysis in this paper, the next stage of the work will move forward to begin a more detailed empirical analysis of the labour markets in Kenya, Tanzania and Zambia, with a specific focus on the question: "What is the appropriate multivariate methods for estimating participation, employment and earnings and what are the initial results from these estimates?".

IV: Econometric Analysis: A Three-Country Comparison

In this section we undertake an econometric analysis of labour markets in Kenya, Tanzania and Zambia. We first carry out a multinomial probit regression to look at how worker attributes – such as gender, age and education – affect the likelihood of employment in the six segments for each country. Then following Heckman's (1979) two-stage procedure, we use the estimated Mills ratio from the first stage of the econometric analysis to correct for selection bias in the earnings equations. The main aim is to see how workers' attributes as well as their employment in various industries are valued differently in the six segments.

Most labour segmentation models posit two sectors – a formal sector and informal sector – and assume that one sector – the formal sector – is inherently more desirable than the other. Empirical papers then aim to prove that a worker in the lower segment has less than full access to a job in the upper segment held by an observationally identical worker. These papers test for differences in earnings or wage structure among two or more sectors' observationally identical workers. They do this by testing equality of the sets of coefficients of the wage or earnings equations estimated in each sector or by testing for a difference in expected wages or earnings between segments for observationally identical workers.

The first issue with this methodology is that there is mounting evidence that the formal sector is not always the optimal choice in developing countries.[15] Being in the informal sector may be preferred given individuals' preferences, the constraints they face in terms of their level of human capital, and the level of formal sector labour productivity in the country. The second issue is that informal networks – often overlooked – are important in various employment practices such as job search and hiring. Search procedures for urban employment often rely on family and friends, and a popular means of recruiting additional workers is to ask current workers to bring their friends or relatives to an interview. These informal networks will affect the relationship between labour market segments and earnings.[16] These issues undermine the overly-simplistic portrayal of dual labour markets in developing countries, where workers are only ever involuntarily employed in the lower segment and where there is essentially random entry to jobs in the upper segment regulated only by employer demand and the availability of jobs.

---

[15] For example, Maloney, W. 2004. Informality Revisited. World Development Vol. 32 No. 7 pp. 1159-1178
[16] Cohen, B. & House, W. J. 1996. Labor Market Choices, Earnings and Informal Networks in Khartoum, Sudan. Economic Development and Cultural Change, Col. 44, No. 3 pp. 589-618.

Econometric Approach

Our model structure consists of two stages. First, we begin with a full sample of potential labour market participants and estimate an employment probability model. Secondly, we estimate an earnings function. Such a sequential model can be loosely justified by the assumption that labour employment are first choice activities of all potential labour market participants and we are therefore modelling a rationing process. The first stage models the employment allocation process. The second stage models earnings of those who succeed in obtaining employment.

It is now well established in the labour economics literature that the estimates derived in the earnings model may be biased because of the fact that they are based on non-random, reduced versions of the original sample of potential labour market participants (Heckman, 1979). Thus we need to control for the possibility of sample selection problems. We use a probit model to derive employment probability estimates. Then we derive estimated earnings coefficients conditional on the individual characteristics of the earners and conditional on the fact that these earners are a subsample of potential labour market participants. We use the Heckman two-step approach to cope with the sample selection issue. Having estimated the employment probit, we use these estimates to derive our estimate for the inverse Mills ratio (lambda) for inclusion in the earnings equation.

The employment equation only contains information about the personal characteristic of each job seeker (gender, age, education and location). As these variables are all also plausible explanatory factors in the earnings function, this raises a difficult identification issue in terms of the selection lambda that is derived from the employment probit for inclusion in the earnings equation. We try to get around this issue in two ways. First, age would seem to be important in the segment choice equation whereas potential experience (and potential experience squared) would appear to be the more relevant age-related variable for the earnings function. Thus, age effects are specified differently in the two equations. Second, we include a dependency ratio – with dependents including children and the elderly - in the first stage only as this is likely to affect participation in the various labour markets segments but not earnings.

The dependent variable in the wage equation is the natural logarithm of the wage rate. The wage rate is calculated as monthly income in the primary occupation divided by the number of hours worked during the month. We did not consider other sources of income because this might have been made in a different segment or industry from those of the primary occupation. The explanatory variables in the wage equations should control for those differences in wages that are not due to labour market segmentation. We control for personal characteristics, industry and sample selectivity.

Educational attainment variables are splines (except for tertiary education, which is a dummy variable: D = 1 if completed tertiary education; D = 0 otherwise). For age, the reference category is 15-24 year olds. For industries, the reference category is community, social and personal services.

Preliminary Results for Kenya

Probit estimates of labour force participation in Kenya: marginal effects

	Rural Agriculture	Urban Agriculture	Rural NA Private	Rural Public	Urban NA Private	Urban Public
Male	-0.061	0.002	0.059	0.006	0.024	0.002
	(0.008)***	(0.001)*	(0.006)***	(0.002)**	(0.006)***	(0.002)
25-34	0.007	-0.001	0.027	0.021	0.033	0.024
	(0.011)	(0.002)	(0.009)***	(0.006)***	(0.009)***	(0.006)***
35-44	0.069	-0.001	0.036	0.042	0.002	0.036
	(0.012)***	(0.002)	(0.009)***	(0.006)***	(0.010)	(0.006)***
45-54	0.116	0.003	0.004	0.056	-0.021	0.048
	(0.014)***	(0.003)	(0.011)	(0.006)***	(0.011)*	(0.006)***
55-65	0.208	0.003	-0.007	0.025	-0.036	0.037
	(0.018)***	(0.003)	(0.014)	(0.008)***	(0.015)**	(0.010)***
65+	0.314	0.006	-0.036	0.025	-0.075	0.014
	(0.021)***	(0.003)**	(0.018)**	(0.011)**	(0.020)***	(0.009)
Primary or less educ	-0.020	0.000	0.001	0.001	0.021	0.003
	(0.003)***	(0.000)	(0.002)	(0.001)	(0.003)***	(0.001)**
Incomplete secondary	-0.046	0.001	-0.005	0.011	0.016	0.008
	(0.003)***	(0.001)**	(0.002)**	(0.001)***	(0.002)***	(0.001)***
Secondary	-0.017	0.015	-0.035	0.010	0.048	0.014
	(0.047)	(0.005)***	(0.037)	(0.006)*	(0.024)*	(0.006)**
Tertiary	-0.247	-0.002	0.067	-0.001	0.116	0.003
	(0.067)***	(0.007)	(0.047)	(0.008)	(0.031)***	(0.006)
Unspecified educ	-0.083	0.002	0.007	0.005	0.060	-0.008
	(0.022)***	(0.003)	(0.017)	(0.010)	(0.022)***	(0.008)
Dependency Ratio	-0.450	-0.005	0.054	0.021	0.159	0.031
	(0.021)***	(0.004)	(0.016)***	(0.006)***	(0.019)***	(0.008)***
N	23,244	23,244	23,244	23,244	23,244	23,244

* p<0.1; ** p<0.05; *** p<0.01

Gender: Men are significantly less likely (6 percent) to be employed in rural agriculture than women, but are significantly more likely (6 percent) to be employed in the rural NA private segment. Men are also significantly more likely to be employed in the urban NA private segment.

Age: There is positive linear relationship between age and the likelihood of employment in the rural agriculture segment. The relationship between age and the likelihood of employment in the urban agriculture segment is practically and statistically insignificant. There is an inverse U-shaped

relationship between age and the likelihood of employment in the urban and rural NA private segments. In the urban NA private segment, individuals aged 25-34 have the highest likelihood of employment, relevant to the base group of those aged 15-24. In the urban and rural public segments, there is a significant positive relationship between age and the likelihood of employment, at least up until the age of 55.

Education: There is a significant negative relationship between educational attainment and the likelihood of employment in the rural agriculture segment, but in the urban agriculture segment, the coefficients are either statistically or practically significant. There is a significant positive relationship between educational attainment and the likelihood of employment in the urban NA private segment. A person with tertiary employment is 12 percent more likely to be employed in this segment than a person without. In the rural NA private segment, however, the coefficients on the education variables are mostly insignificant. In both the rural and urban public segments, there is a positive significant relationship between education and the likelihood of employment, though the relationship appears to be less strong than in the urban NA private segment.

Dependency Ratio: The dependency ratio is significant at the 1% level in all segments except for the urban agriculture segment. A higher dependency ratio is associated with increased chance of employment, except in rural agriculture where the coefficient is negative.

**Selectivity corrected estimates of earnings functions by segment in Kenya
(Dependent variable: logarithm of hourly earnings)**

	Rural Agriculture	Urban Agriculture	Rural NA Private	Rural Public	Urban NA Private	Urban Public
Male	0.1370	0.1634	0.3047	0.0288	0.1153	0.0323
	(0.0624)*	(0.1757)	(0.0664)**	(0.0791)	(0.0615)	(0.1115)
Primary or less education	0.0960	0.1716	0.0878	-0.0020	0.0403	0.0411
	(0.0196)**	(0.0688)*	(0.0191)**	(0.0896)	(0.0243)	(0.0838)
Incomplete secondary	-0.0016	0.1354	0.1664	0.2115	0.1845	0.1608
	(0.0378)	(0.0568)*	(0.0223)**	(0.0560)**	(0.0187)**	(0.0478)**
Secondary	0.4981	0.4728	0.1826	-0.0044	0.7658	0.3318
	(0.4683)	(0.4117)	(0.3341)	(0.1429)	(0.2672)**	(0.1580)*
Tertiary	2.9527	0.7390	0.9407	0.6320	0.8689	0.4694
	(0.9363)**	(0.5081)	(0.4847)	(0.2060)**	(0.2957)**	(0.2455)
Unspecified education	0.3447	0.2187	0.3242	-0.1100	0.2818	0.2433
	(0.1430)*	(0.4498)	(0.1456)*	(0.6688)	(0.2165)	(0.6221)
Experience	0.0156	0.0510	0.0358	0.0769	0.0431	-0.0120
	(0.0070)*	(0.0228)*	(0.0073)**	(0.0183)**	(0.0073)**	(0.0153)
Experience^2	-0.0002	-0.0006	-0.0004	-0.0013	-0.0006	0.0000
	(0.0001)	(0.0002)*	(0.0001)**	(0.0003)**	(0.0001)**	(0.0002)
Inverse Mill Ratio	0.1022	-0.2415	-0.2136	0.0451	-0.2862	-0.7734
	(0.2065)	(0.5071)	(0.1588)	(0.2472)	(0.1381)*	(0.3709)*
Mining			0.5989		0.1549	-0.0856
			(0.1517)**		(0.2587)	(0.1096)
Manufacturing			0.2940	-0.1928	0.3949	-0.2070
			(0.0953)**	(0.2925)	(0.0966)**	(0.1378)
Electricity, gas & water			-0.5281	0.3795	0.1625	-0.0329
			(0.6807)	(0.3083)	(0.2332)	(0.1320)
Construct			0.4467	-0.3049	0.1168	0.0186
			(0.0928)**	(0.2800)	(0.0995)	(0.1848)
Wholesale & retail trade			0.2815	0.7060	-0.0335	0.0051
			(0.0749)**	(0.4970)	(0.0703)	(0.1746)
Transport, stor. & comm.			0.7113	0.2135	0.3386	0.4218
			(0.0880)**	(0.2887)	(0.0908)**	(0.1339)**
Financial & rel. services			0.8656	0.5802	0.6618	0.5115
			(0.2204)**	(0.2374)*	(0.1208)**	(0.1629)**
Private households			0.1688	0.0885	-0.5512	-0.2188
			(0.1880)	(0.3126)	(0.6461)	(0.4023)
Constant	1.2521	0.8914	0.9970	2.0884	1.9528	3.6745
	(0.2093)**	(0.6583)	(0.1860)**	(0.6589)**	(0.2357)**	(0.7650)**
R^2	0.04	0.35	0.22	0.32	0.33	0.21
N	1,823	255	1,772	439	3,102	750

  * $p<0.1$; ** $p<0.05$; *** $p<0.01$

Note: Dependent variable = natural logarithm of hourly earnings. Independent variables: Educational attainment variables are splines (except for tertiary education, which is a dummy variable: D = 1 if completed tertiary education; D = 0 otherwise). For industries, the reference category is community, social and personal services. Industry results for rural and urban agriculture segments omitted due to collinearity (by construction).

Gender: Men seem to earn significantly more than women in the rural agriculture and rural NA private segments. Otherwise the results are insignificant.

Education: Generally higher educational attainment is associated with higher earnings in all segments. In the rural and urban agriculture segments, an additional year of primary education is associated with higher earnings. Additional secondary education seems to have a positive impact on earnings in all the other segments. Completed secondary education is associated with a significant increase in earnings in the urban NA private segment and the urban public segments. Tertiary education is statistically significant in the rural agriculture and urban NA private segment and marginally significant in the rural public segment. The highest returns to education appear to be in the urban NA private segment.

Experience: Generally an additional year of experience is associated with a significant increase in earnings (except for the urban public segment).

Industry: Wholesale retail and trade workers earn significantly less than workers in a number of other occupations in the rural NA private segment (including transport, financial and related services, manufacturing and mining workers.) The coefficient on the wholesale retail and trade industry is insignificant for the other sectors.

Lambda: The inverse mill's ratio is shown to be significant and negative for earners in the rural NA private segment. There was therefore a sample selection bias, which was corrected for. The sample of earners are not a random selection of people drawn from the pool of participants. The significance of lambda vindicates the selection procedure utilised.

TO BE COMPLETED AFTER RECEIVING FEEDBACK

Table 1: Labour Force Participation, Employment, Unemployment Rates and Labour Force Segmentation in Kenya

Characteristics	LFPR (% Labour Force as of Working Age Population)	Employment to Population Ratio (%)	Unemployment Rate (% of Labour Force)	Segment						Total
				Agriculture		Non-agriculture				
						Urban		Rural		
				Urban	Rural	Private	Public	Private	Public	
Gender										
Male	72.5	64.9	10.5	1.5	51.8	18.9	2.7	21.4	3.6	100
Female	55.4	52.0	6.3	1.3	64.7	14.5	1.8	15.7	2.1	100
Location										
Rural	63.6	59.3	6.8	-	72.7	-	-	23.6	3.6	100
Urban	64.2	54.6	14.9	6.8	-	82.0	11.2	-	-	100
Age Category										
15 - 24	38.5	31.9	17.2	1.4	62.9	15.6	0.2	19.6	0.3	100
25 - 34	80.0	72.7	9.1	1.4	48.5	24.7	2.0	21.4	2.0	100
35 - 44	86.7	82.0	5.4	1.3	50.1	18.4	4.2	20.3	5.7	100
45 - 54	85.8	82.6	3.6	1.6	59.2	11.8	4.8	16.1	6.6	100
55 - 64	77.5	75.4	2.7	1.4	74.3	7.5	1.4	14.5	0.9	100
65+	56.7	55.6	1.9	1.4	85.0	3.4	0.1	9.8	0.4	100
Education Attainment										
No Education	66.1	58.7	11.2	-	45.2	27.0	-	27.8	-	100
Primary	62.3	57.3	8.1	1.2	64.0	13.4	0.6	20.1	0.7	100
Incomplete Secondary	66.6	59.8	10.3	1.7	40.7	27.3	5.2	18.3	6.7	100
Secondary	81.3	78.5	3.4	3.5	19.6	26.6	19.5	8.2	22.6	100
Tertiary	65.7	60.2	8.3	2.4	7.4	50.5	15.7	10.8	13.2	100
Total	**63.7**	**58.2**	**8.6**	**1.4**	**57.7**	**16.9**	**2.3**	**18.8**	**2.9**	**100**

Source: IHBS   2005/200

Table 2: Type of Employment by Labour Market Segment in Kenya

Type of employment	Agriculture		Non-Agriculture				Total
			Urban		Rural		
	Urban	Rural	Private	Public	Private	Public	
Employer	2.9	0.7	5.1	-	3.0	-	1.9
Employee	33.9	13.1	59.3	99.8	42.5	99.9	31.3
Own Account	34.1	42.1	31.2	-	42.2	-	38.0
Unpaid Family Worker	29.1	43.5	3.7	-	11.3	-	28.3
Other	0.1	0.6	0.7	0.2	1.0	0.1	0.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: IHBS 2005/2006
Note: All figures weighted using calibrated person weights.

Table 3: Rural and Urban Unemployment Rates, By Individual Characteristics in Kenya

Characteristics	Urban	Rural
Gender		
Male	15.0	9.0
Female	14.8	4.2
Age Characteristics		
15 - 24	31.9	13.3
25 - 34	13.2	7.3
35 - 44	8.0	4.6
45 - 54	5.5	3.2
55-64	4.3	2.5
65+	7.6	1.6
Educational Attainment		
No education	6.9	12.6
Primary	15.1	6.7
Incomplete Secondary	15.9	7.0
Complete Secondary	3.0	3.7
Tertiary	5.5	13.9
Total	**14.9**	**6.8**

Table 4: Segmented Employment by Industry in Kenya

Industry	Segment												
	Agriculture				Non-Agriculture								Total
	Urban		Rural		Urban				Rural				
					Private		Public		Private		Public		
	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)
Primary Sector														
Agriculture, forestry and fishing	160	100.0	6 547	100.0	-	-	-	-	-	-	-	-	6 707	59.1
Mining	-	-	-	-	13	0.7	-	0.1	55	2.6	-	-	68	0.6
Total Primary Sector	**160**	**100.0**	**6 547**	**100.0**	**13**	**0.7**	**-**	**0.1**	**55**	**2.6**	**-**	**-**	**6 776**	**59.7**
Secondary Sector														
Manufacturing	-	-	-	-	203	10.6	5	1.9	210	9.9	4	1.3	422	3.7
Electricity, gas and water	-	-	-	-	7	0.4	9	3.3	4	0.2	3	0.8	22	0.2
Construction	-	-	-	-	119	6.2	3	1.0	160	7.5	5	1.5	286	2.5
Total Secondary Sector					**328**	**17.1**	**16**	**6.2**	**374**	**17.5**	**12**	**3.6**	**730**	**6.4**
Tertiary Sector														
Wholesale and retail trade	-	-	-	-	750	39.2	1	0.3	853	40.0	5	1.6	1 609	14.2
Transport, storage and communication	-	-	-	-	203	10.6	25	9.6	150	7.0	10	3.2	388	3.4
Financial, insurance and business services	-	-	-	-	81	4.2	10	3.9	30	1.4	10	3.1	131	1.2
Community, social and personal services	-	-	-	-	348	18.2	200	76.3	334	15.7	278	85.7	1 160	10.2
Private Households	-	-	-	-	143	7.5	0.4	0.2	241	11.3	5	1.4	390	3.4
Total Tertiary Sector	**-**	**-**	**-**	**-**	**1 526**	**79.6**	**236**	**90.3**	**1 608**	**75.5**	**308**	**95.0**	**3 678**	**32.4**
Other	**-**	**-**	**-**	**-**	49	2.8	9	3.5	93	4.9	5	1.4	160	1.5
Total	**160**	**100.0**	**6 547**	**100.0**	**1916**	**100.0**	**262**	**100.0**	**2 130**	**100.0**	**328**	**100.0**	**11 343**	**100.0**

Source: IHBS 2005/2006
Note: ISIC revision 4

Table 5: Segmented Employment by Occupation in Kenya

Occupation	Agriculture				Non-Agriculture								Total	
	Urban		Rural		Urban				Rural					
					Private		Public		Private		Public			
	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)	Total (000s)	Share (%)
Highly Skilled														
Legislators, senior officials and managers	3	2.0	4	0.1	67	3.5	17	6.4	39	1.8	19	5.9	149	1.3
Professionals	3	1.9	3	-	105	5.5	60	22.8	46	2.2	58	17.6	275	2.4
Total Highly Skilled	**6**	**3.9**	**8**	**0.1**	**171**	**8.9**	**76**	**29.2**	**85**	**4.0**	**77**	**23.5**	**424**	**3.7**
Semi-Skilled														
Technicians and associate professionals	3	1.6	6	0.1	127	6.6	65	24.9	118	5.5	163	49.6	481	4.2
Clerks	2	1.5	9	0.1	70	3.7	37	14.2	35	1.6	30	9.0	183	1.6
Service and sales workers	0.1	0.0	3	0.1	314	16.4	31	12.0	306	14.3	10	3.2	664	5.9
Craft and trade workers	3	1.6	10	0.1	250	13.0	4	1.6	386	18.1	2	0.8	655	5.8
Operators and assemblers	1	0.4	12	0.2	175	9.1	10	3.7	122	5.7	10	3.0	328	2.9
Total Semi-Skilled	**8**	**5.1**	**39**	**0.6**	**935**	**48.8**	**147**	**56.4**	**966**	**45.4**	**215**	**65.5**	**2 311**	**20.4**
Low Skilled														
Elementary occupations	35	21.8	1 024	15.6	780	40.7	22	8.5	983	46.2	23	6.9	2 868	25.3
Armed Forces	0.0	0.0	3	0.1	10	0.5	14	5.2	27	1.3	11	3.4	66	0.6
Agriculture and fishery workers	110	68.9	5 472	83.6	12	0.6	2	0.7	45	2.1	1	0.2	5 641	49.7
Total Low Skilled	**145**	**90.7**	**6 500**	**99.3**	**802**	**41.9**	**38**	**14.5**	**1 055**	**49.6**	**34**	**10.5**	**8 575**	**75.6**
Other	0.0	0.3	1	-	8	0.4	0.0	0.0	23	1.1	2	0.5	33	0.3
Total	**160**	**100.0**	**6 547**	**100.0**	**1 916**	**100.0**	**262**	**100.0**	**2 130**	**100.0**	**328**	**100.0**	**11 343**	**100.0**

Source: IHBS 2005/2006

Table 1: Labour Force Participation, Employment and Unemployment Rates and Labour Force Segmentation in Tanzania

Characteristics	LFPR (% Labour Force as of Working Age Population)	Employment to population Ratio (%)	Unemployment Rate (% of Labour Force)	Segment						Total
				Agriculture		Non-Agriculture				
						Urban		Rural		
				Urban	Rural	Private	Public	Private	Public	
Gender										
Male	89.5	87.8	1.9	6.7	64.5	16.0	2.3	9.0	1.5	100
Female	86.9	83.3	4.1	7.8	70.2	13.4	1.2	6.9	0.5	100
Area Type										
Rural	90.0	89.3	0.8	-	88.3	-	-	10.4	1.3	100
Urban	83.0	75.0	9.7	30.6	-	61.9	7.5	0.0	0.0	100
Age Category										
15 - 24	79.4	74.5	6.1	6.9	69.7	13.8	0.3	9.2	0.2	100
25 - 34	96.0	93.2	2.9	6.6	62.3	19.4	1.6	9.3	0.8	100
35 - 44	96.2	94.7	1.6	6.9	64.7	16.5	2.6	7.7	1.5	100
45 - 54	95.4	94.3	1.1	7.7	67.1	11.8	4.5	6.1	2.8	100
55 - 64	91.0	90.0	1.0	8.6	74.2	8.9	2.4	4.6	1.4	100
65+	67.4	67.0	0.6	9.9	80.7	4.5	0.3	4.5	0.14	100
Education Attainment										
No education	87.3	86.3	1.1	5.4	85.0	3.7	0.1	5.9	0.1	100
Primary	89.9	87.2	3.1	7.9	65.5	16.4	0.9	8.6	0.7	100
Incomplete Secondary	75.7	68.5	9.6	8.5	25.6	37.3	12.0	9.5	7.1	100
Secondary	85.5	78.5	8.1	5.8	4.2	42.0	38.1	3.7	6.3	100
Tertiary	82.1	77.5	5.5	5.0	11.1	24.5	36.9	4.6	17.8	100
Total	**88.1**	**85.4**	**3.1**	**7.2**	**67.4**	**14.7**	**1.8**	**7.9**	**1.0**	**100**

Source: LFS 2006

Notes: Education level listed as 'unspecified' has been treated as missing and is not reported here.

Table 2: Type of Employment by Labour Market Segment in Tanzania

Type of employment	Agriculture		Non-Agriculture				Total
			Urban		Rural		
	Urban	Rural	Private	Public	Private	Public	
Employee	2.8	1.4	29.8	100.0	18.8	100.0	9.8
Employer	0.1	-	7.6	-	6.9	-	1.7
Own Account	87.0	88.3	49.0	-	54.2	-	77.3
Unpaid Family Worker	10.2	10.4	13.6	-	20.0	-	11.3
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 3: Decomposition of Rural and Urban Unemployment Rates in Tanzania

	Unemployment rate	
	Urban	**Rural**
Gender		
Male	5.8	0.6
Female	13.5	1.0
Age Characteristics		
15 - 24	19.9	1.6
25 - 34	8.5	0.5
35 - 44	4.5	0.6
45 - 54	3.8	0.3
55-64	3.6	0.4
65+	1.6	0.5
Educational Attainment		
No education	4.9	0.7
Primary	9.4	0.7
Incomplete Secondary	13.9	3.0
Complete Secondary	8.8	3.7
Tertiary	8.1	-
Total	**9.7**	**0.8**

Source: LFS 2006

Notes: Education level listed as 'unspecified' has been treated as missing and is not reported here.

Table 4: Segmented Employment by Industry in Tanzania

Industry	Agriculture				Non-Agriculture								Total	
	Urban		Rural		Urban				Rural					
					Private		Public		Private		Public			
	Total ('000s)	Share (%)	Total ('000s)	Share (%)	Total ('000s)	Share (%)	Total ('000s)	Share (%)	Total ('000s)	Share (%)	Total ('000s)	Share (%)	('000s)	Share (%)
Primary sector														
Agriculture, forestry and fishing	1 297	100	12 085	100	-	-	-	-	-	-	-	-	13382	74.7
Mining	-	-	-	-	38	1.4	1	0.2	66	4.7	-	-	105	0.6
Total Primary sector	**1 297**	**100**	**12 085**	**100**	**38**	**1.4**	**1**	**0.2**	**66**	**4.7**	**-**	**-**	**13487**	**75.2**
Secondary sector														
Manufacturing	-	-	-	-	318	12.1	6	1.9	237	16.7	3	1.9	565	3.2
Electricity, gas and water	-	-	-	-	4	0.2	11	3.4	-	-	2	1.0	17	0.1
Construction	-	-	-	-	127	4.8	8	2.4	73	5.1	4	2.2	211	1.2
Total Secondary sector	**-**	**-**	**-**	**-**	**449**	17.1	**24**	7.7	**310**	21.9	**9**	5.1	**793**	**4.4**
Tertiary sector														
Wholesale and Retail Trade	-	-	-	-	1318	50.2	10	3.0	618	43.6	3	1.4	1 948	10.9
Transport, storage and communication	-	-	-	-	167	6.4	25	7.8	62	4.4	3	1.9	258	1.4
Financial, insurance and business services	-	-	-	-	58	2.2	19	5.9	16	1.1	7	3.8	99	0.6
Community, social and personal services	-	-	-	-	179	6.8	238	74.7	64	4.5	161	87.9	641	3.6
Private Households	-	-	-	-	417	15.9	2	0.7	281	19.9	-	-	701	3.9
Total Tertiary sector	**-**	**-**	**-**	**-**	**2139**	**81.5**	**293**	**92.1**	**1042**	**73.5**	**173**	**95.0**	**3648**	**20.4**
Total	**1 207**	**100**	**11 290**	**100**	**2626**	100	**318**	100	**1418**	100	**182**	100	**17927**	100.0

Table 5: Segmented Employment by Occupation in Tanzania

Occupation	Agriculture				Non-Agriculture								Total	
	Urban		Rural		Urban				Rural					
					Private		Public		Private		Public			
	('000s)	Share (%)	('000s)	Share (%)	('000s)	Share (%)	('000s)	Share (%)	('000s)	Share (%)	('000s)	Share (%)	('000s)	Share (%)
Highly skilled														
Legislators, senior officials and managers	-	-	1	-	7	0.3	13	4.0	1	-	9	5.0	31	0.2
Professionals	-	-	-	-	40	1.5	51	16.0	7	0.5	12	6.8	111	0.6
Total Highly skilled	**-**	**0.1**	**1**	**-**	**48**	**1.8**	**64**	**20.0**	**8**	**0.6**	**22**	**11.7**	**143**	**0.8**
Semi-skilled														
Technicians and associate professionals	3	0.2	1	-	79	3.0	97	30.6	27	1.9	110	59.9	318	1.8
Clerks	-	0.1	-	-	34	1.3	26	8.3	6	0.4	5	2.8	72	0.4
Service and Sales Workers	1	0.1	3	-	1 169	44.5	74	23.2	514	36.2	26	14.2	1 787	10.0
Operators and Assemblers	2	0.2	-	-	164	6.3	15	4.8	53	3.7	2	1.0	2356	1.3
Craft and Trade Workers	1	0.1	2	-	504	19.2	20	6.4	337	23.8	9	4.7	874	4.9
Total Semi-skilled	**8**	**0.6**	**7**	**0.1**	**1 951**	**74.3**	**233**	**73.3**	**937**	**66.0**	**151**	**82.47**	**3287**	**18.3**
Low Skilled														
Agricultural and fishery workers	1 246	96.1	11 797	97.6	14	0.5	1	0.4	37	2.6	3	1.5	13098	73.1
Elementary Occupations	42	3.2	280	2.3	613	23.3	20	6.3	437	30.8	8	4.2	1400	7.8
Total Low skilled	**1288**	**99.3**	**12077**	**99.9**	**627**	**23.87**	**22**	**6.8**	**473**	**33.4**	**11**	**5.8**	**14498**	**80.1**
Total	**1 296**	**100.0**	**12085**	**100.0**	**2 626**	**100**	**318**	**100**	**1 418**	**100**	**180**	**100**	**16 263**	**100**

Source: LFS 2006

Table 1: Labour Force Participation, Employment and Unemployment Rates and Labour Force Segmentation in Zambia

Characteristics	LFPR (% Labour Force as of Working Age Population)	Employment-to-Population Ratio (%)	Unemployment Rate (% of Labour Force)	Segment						Total
				Agriculture		Non-Agriculture				
						Urban		Rural		
				Urban	Rural	Private	Public	Private	Public	
Gender										
Male	73.2	67.5	7.8	4.2	48.0	29.7	5.5	10.6	2.1	100
Female	60.4	55.3	8.5	4.4	59.0	22.2	3.8	9.5	1.1	100
Location										
Rural	72.9	70.6	3.2	--	81.9	--	--	15.5	2.6	100
Urban	58.7	49.2	16.2	12.1	--	74.6	13.3	--	--	100
Age Category										
15 - 24	43.3	35.6	17.8	3.2	61.3	21.8	1.3	12.0	0.4	100
25 - 34	81.1	75.0	7.6	3.7	45.8	32.3	6.1	9.9	2.2	100
35 - 44	87.7	84.5	3.7	4.1	47.7	29.7	5.9	10.5	2.1	100
45 - 54	86.1	83.4	3.1	5.4	52.0	24.0	7.2	8.7	2.8	100
55 - 64	79.0	77.3	2.2	7.5	62.9	18.2	3.0	7.5	0.9	100
65+	58.9	58.5	0.7	6.2	76.3	9.2	1.0	7.4	0.0	100
Educational Attainment										
No Education	67.8	66.1	2.5	2.8	65.3	16.5	7.2	7.6	0.5	100
Primary	67.4	63.9	5.2	4.2	67.9	16.0	0.5	11.1	0.3	100
Incomplete Secondary	53.9	48.5	10.0	5.7	40.1	38.2	2.6	12.6	0.7	100
Secondary	77.4	63.0	18.6	4.6	12.6	54.6	14.4	8.7	5.9	100
Tertiary	86.8	82.3	5.2	2.5	2.1	40.3	39.3	2.2	13.6	100
Total	**69.0**	**63.8**	**8.0**	**4.3**	**53.1**	**26.2**	**4.7**	**10.1**	**1.7**	**100**

Table 1: Type of Employment by Labour Market Segment in Zambia[17]

Type of Employment	Agriculture		Non-Agriculture				Total
	Urban	Rural	Urban		Rural		
			Private	Public	Private	Public	
Employee	17.7	3.5	47.3	100.0	19.6	100.0	23.1
Employer	0.2	0.1	0.7	-	0.5	-	0.3
Own Account	58.6	58.9	46.2	-	61.5	-	52.1
Unpaid Family Worker	23.5	37.5	5.9	-	18.3	-	24.4
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Proportion Working in a Tax Registered Enterprise							
Employee	5.7	1.3	27.4	100.0	8.0	100	78.1
Employer	-	-	0.4	-	-	-	1.0
Own Account	1.9	0.9	5.6	-	2.0	-	19.1
Unpaid Family Worker	0.3	0.2	0.3	-	0.3	-	1.8
Total	**7.9**	**2.4**	**33.7**	**100**	**10.3**	**100.0**	**100.0**
Proportion Working in an Unregistered Enterprise							
Employee	12.0	2.1	19.9	-	11.6	-	16.0
Employer	0.2	0.1	0.3	-	0.5	-	0.3
Own Account	56.7	58.1	40.6	-	59.5	-	56.4
Unpaid Family Worker	23.2	37.4	5.6	-	18.0	-	27.3
Total	**92.1**	**97.6**	**66.3**	**-**	**89.7**	**-**	**100.0**

Source: LFS 2012

Table 3: Decomposition of Rural and Urban Unemployment Rates in Zambia

Characteristics	Urban	Rural
Gender		
Male	14.1	3.2
Female	18.9	3.1
Age		
15 - 24	38.0	7.0
25 -34	13.5	2.8
35 -44	6.7	1.5
45 -54	6.4	1.1
55 -64	5.4	0.8
65+	2.8	0.1
Educational Attainment		
No Education	8.7	0.0
Primary	14.6	2.4
Incomplete Secondary	15.9	4.2
Complete Secondary	20.9	11.8
Tertiary	6.2	0.5
Total	**16.2**	**3.2**

---

[17] All individuals who responded "Don't know" to the tax registration question were put into the 'unregistered sector'. This amounted to 3 percent of the total.

Table 4: Segmented Employment by Industry in Zambia

Industry	Agriculture Urban Total (000s)	Share (%)	Agriculture Rural Total (000s)	Share (%)	Non-Agriculture Urban Private Total (000s)	Share (%)	Non-Agriculture Urban Public Total (000s)	Share (%)	Non-Agriculture Rural Private Total (000s)	Share (%)	Non-Agriculture Rural Public Total (000s)	Share (%)	Total (000s)	Share (%)
Primary Sector														
Agriculture, forestry and fishing	205	100.0	2 549	100.0	-	-	-	0.0	-	-	-	-	2 753	57.4
Mining	-	-	-	-	63	5.0	11	4.8	13	2.6	-	-	87	1.8
Total Primary Sector	**205**	**100.0**	**2 549**	**100.0**	**63**	**5.0**	**11**	**4.8**	**13**	**2.6**	**-**	**-**	**2840**	**59.2**
Secondary Sector														
Manufacturing	-	-	-	-	132	10.5	8	3.8	72	14.9	2	2.1	214	4.5
Electricity, gas and water	-	-	-	-	5	0.4	12	5.5	3	0.6	1	1.2	22	0.5
Construction	-	-	-	-	116	9.2	8	3.6	52	10.8	0	0.5	176	3.6
Total Secondary Sector	**-**	**-**	**-**	**-**	**253**	**20.1**	**29**	**12.8**	**128**	**26.4**	**3**	**3.7**	**412**	**8.6**
Tertiary Sector														
Wholesale and retail Trade	-	-	-	-	455	36.2	3	1.2	174	35.9	2	2.9	634	13.1
Transport, storage and communication	-	-	-	-	109	8.6	6	2.5	19	3.9	3	3.5	136	2.9
Financial, insurance and business services	-	-	-	-	129	10.2	24	10.7	42	8.7	6	7.2	200	4.2
Community, social and personal services	-	-	-	-	116	9.2	151	67.5	37	7.6	65	82.6	369	7.7
Private households	-	-	-	-	129	10.3	1	0.1	72	14.8	0	0.0	201	4.2
Total Tertiary Sector	**-**	**-**	**-**	**-**	**937**	**74,5**	**184**	**82.2**	**343**	**70.8**	**76**	**96.0**	**1 541**	**32.1**
Other	-	-	-	-	**5**	**0.4**	**0**	**0.1**	**1**	**0.2**	**0**	**0.2**	**6**	**0.1**
Total	**205**	**100.0**	**2 549**	**100.0**	**1259**	**100.0**	**224**	**100.0**	**484**	**100.0**	**79**	**100.0**	**4 799**	**100.0**

Source: LFS 2012

Table 5: Segmented Employment by Occupation in Zambia

Occupation	Agriculture Urban		Rural		Non-Agriculture Urban Private		Public		Rural Private		Public		Total	
	Total ('000s)	Share (%)	Total ('000s)	Share (%)	Total ('000s)	Share (%)	Total ('000s)	Share (%)	Total ('000s)	Share (%)	Total ('000s)	Share (%)	Total ('000s)	Share (%)
Highly Skilled														
Legislators, senior officials and managers	2	1.0	0	0.0	37	2.9	6	2.7	5	1.0	1	1.3	51	1.0
Professionals	1	0.7	1	0.0	53	4.2	100	44.6	12	2.4	52	65.0	219	4.5
Total Highly Skilled	**3**	**1.7**	**1**	**0.0**	**90**	**7.2**	**106**	**47.3**	**17**	**3.4**	**53**	**66.4**	**270**	**5.5**
Semi-Skilled														
Technicians and associate professionals	1	0.7	1	0.0	39	3.1	25	11.2	5	1.0	2	2.8	74	1.4
Clerks	5	0.3	2	0.1	19	1.5	10	4.5	3	0.5	3	4.0	37	0.8
Service and sales workers	5	2.5	8	0.3	532	42.3	34	15.0	157	32.4	11	13.2	746	15.3
Craft and trade workers	3	1.6	9	0.4	223	17.7	13	6.0	111	23.0	2	2.0	362	7.5
Operators and assemblers	1	0.7	2	0.1	114	9.1	12	5.3	17	3.5	1	1.0	147	3.0
Total Semi-Skilled	**15**	**5.8**	**22**	**0.9**	**928**	**73.7**	**94**	**41.9**	**292**	**60.4**	**18**	**23.3**	**1 366**	**28.3**
Low-Skilled														
Agricultural and fishery workers	165	80.5	2 383	93.5	7	0.6	0	0.2	39	8.1	0	0.4	2 596	54.1
Elementary occupations	25	11.9	133	5.2	233	18.5	20	8.7	135	27.8	5	6.7	550	11.5
Total Low Skilled	**190**	**92.4**	**2 516**	**98.8**	**241**	**19.1**	**20**	**8.9**	**174**	**36.0**	**5**	**7.2**	**3 147**	**65.6**
Other/Unspecified	-	-	8	0.3	0	0.0	4	1.8	1	0.2	3	3.4	16	0.4
Total	**208**	**100.0**	**2 547**	**100.0**	**1259**	**100.0**	**224**	**100.0**	**484**	**100.0**	**79**	**100.0**	**4 799**	**100.0**

Source: LFS 201