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Modelling Labour Markets in Low Income Countries with Imperfect Data

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ABSTRACT

Modelling Labour Markets in Low Income Countries with Imperfect Data

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 three African countries: Kenya, Tanzania and Zambia, allowing the data to drive the design of the segmentation model. It also analyses earnings in the various labour market segments in Kenya, Tanzania and Zambia, including a comparison of the returns to education across these countries. 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.

JEL Classification:
J21, J42, J64, O18, R11, R23, Y1

Keywords:
Africa, low income countries, labour markets, data, segmentation models, unemployment rates, rural-to-urban labour market migration dynamics, structural transformation

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1 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 Tanzania, more than 40 percent of households reported income from non-farm enterprises in 2005.[3] Further, the AfDB *et al.* (2012) estimate that 53 percent of young people in rural areas across the continent are engaged in other activities besides agriculture.[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 be incomplete, and may almost certainly, be inexact.

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[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 objective of this research is to fill some of the information gaps relating to LIC labour markets in Africa, for three 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 aim that this approach can be extended to other African LICs when data becomes available.

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 are the initial results from a multivariate estimate of the relationship between employment segment and earnings, and how does this differ across countries?

This paper is set out as follows: Section 2 introduces our model of labour market segmentation, Section 3 compares the descriptive findings across the three countries in our study, while Section 4 introduces and provides the preliminary results from an econometric model, which is used to analyse the relationship between segment and earnings in Kenya, Tanzania and Zambia. Finally, a conclusion is made in Section 5.

[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', which were submitted by the DPRU to the conference organisers on 18 July 2016.

2 A Segmentation Framework for LIC Labour Markets

Our first research question suggests that the analysis is to be guided by the data available in each of the countries. However, for purposes of comparability across the countries under review, as well as for future 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 in Figure 1 below. Although the formal and informal sectors often feature prominently in labour market segmentation models in developing countries, we 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 issues such 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, namely; 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 scale and agglomeration advantages.

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

Fourth, 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, or self-employed (an own account worker with no employees, or an unpaid family worker)? We include both own-account and unpaid family workers in the category "self-employed" because it is not always clear how these workers are classified into these categories. The question on type of worker is asked before any questions about the enterprise and the individual's role in it. Therefore, two people working in the

same enterprise may be classified as an own-account or unpaid family worker, and it is not clear what instructions the numerators get to inform this decision. This may be clarified in surveys that contain separate enterprise sections, which contain details of the number of household enterprises, and each household member's role within them. Of the three countries examined here, only the Kenyan survey contains a household enterprise section. Furthermore, this questionnaire only allows for two household members to own the business.

Second, 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 characteristic sets results in a set of 96 (2x2x2x2x3x2) labour market 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, 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 36; still a large number, but certainly more manageable than 96.

The above represents our ideal model. However, in analysing 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 not possible to accurately differentiate between formal and informal employer-

[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.

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.

Figure 1: Detailed labour market segmentation

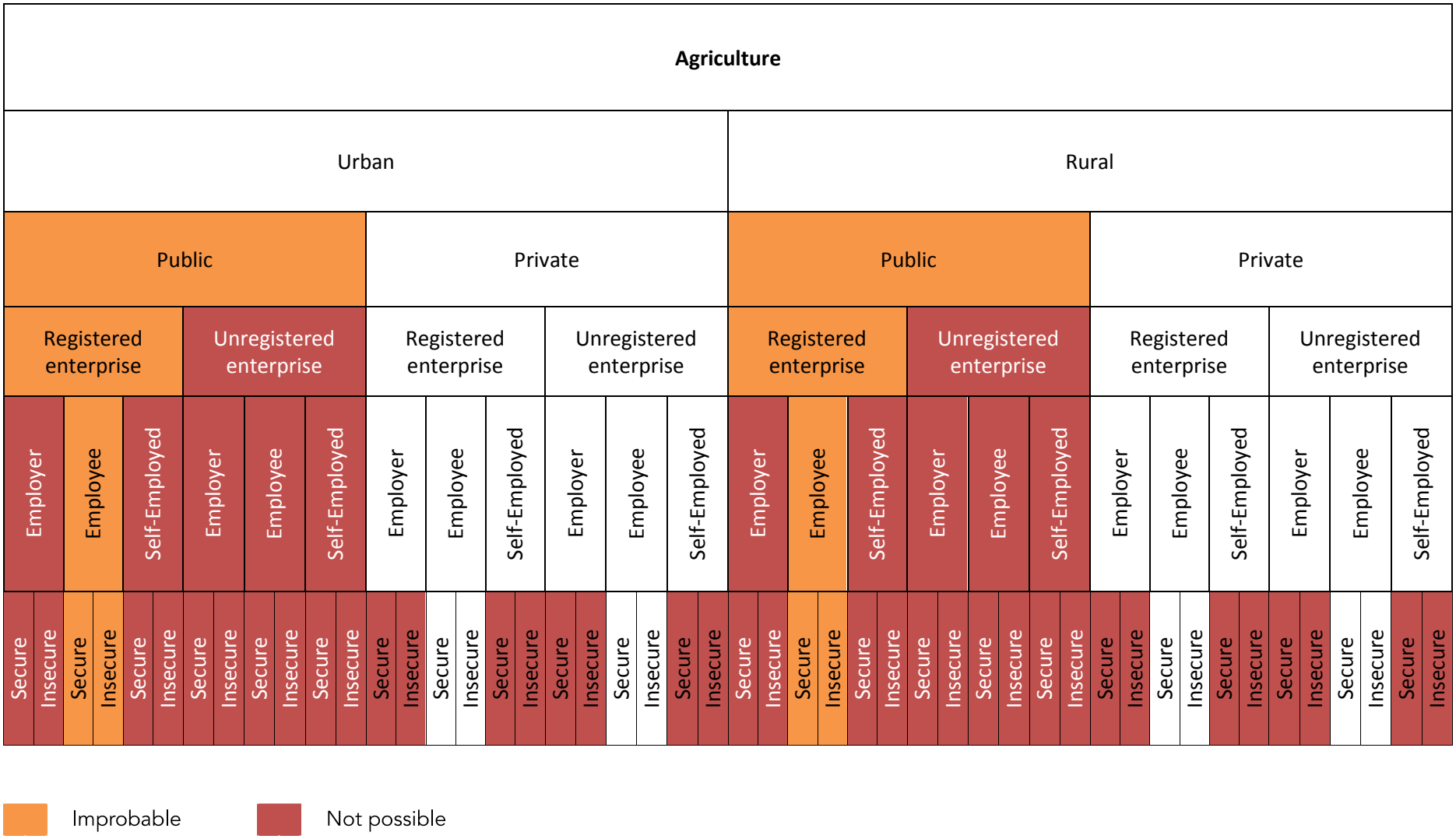
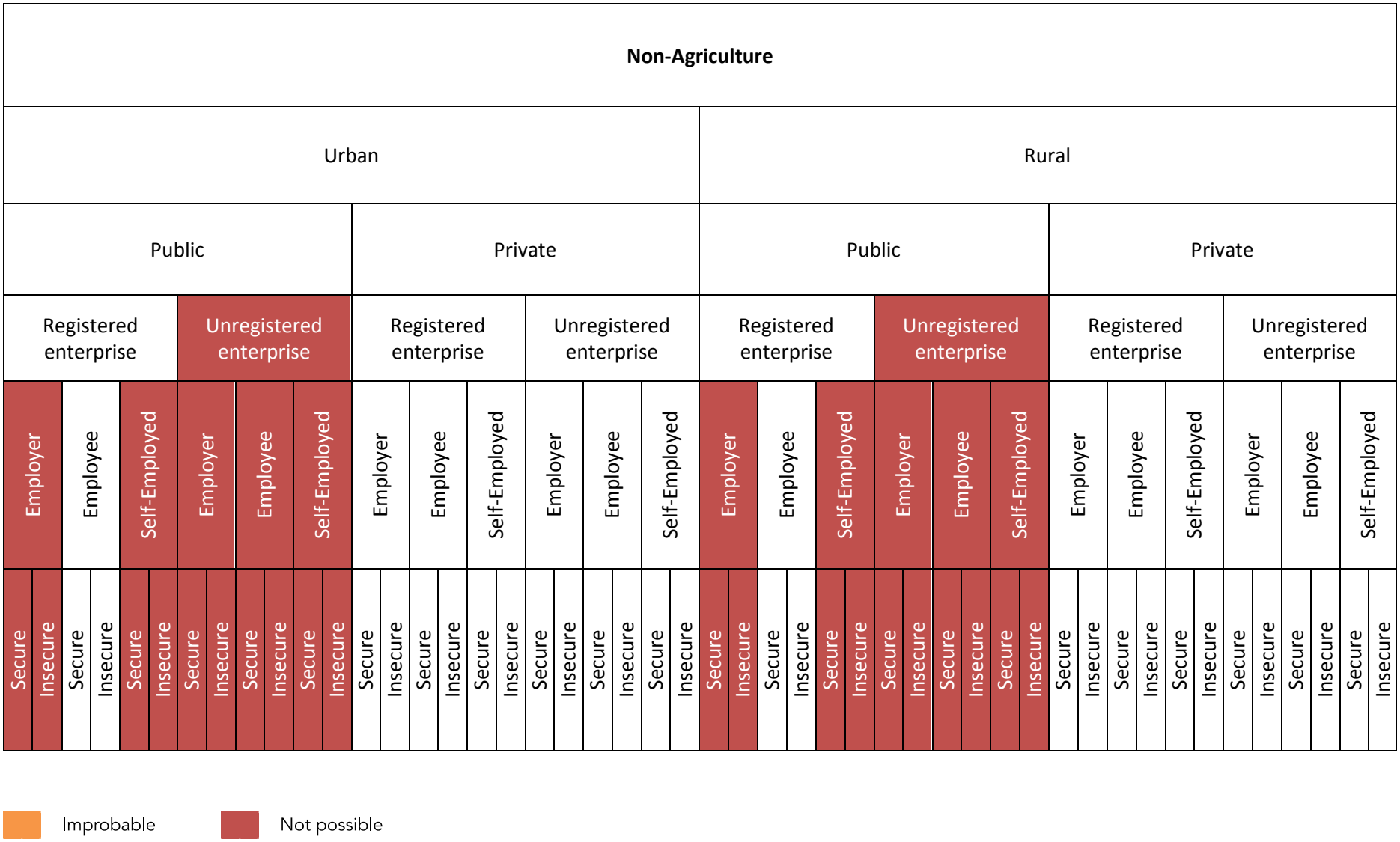


Figure 1: Detailed labour market segmentation (cont.)



3 Applying the Segmentation Framework to Three African Countries

Drawing on the results of our segmentation framework, this section provides a comparative view across the three countries, showing how the countries in question differ in terms of the level and nature of labour segmentation. Where relevant, limitations in the use and application of the data are highlighted. Table 1 provides a basic economic overview of the three countries.

Table 1: Cross Country Overview by Selected Characteristics

Variable of Interest	Kenya	Tanzania	Zambia
2015 Population	46.1m	53.5m	16.2m
Income Level	Low	Low	Lower-Middle
2010 GNI per capita (constant 2010 US$)	753	623	974
Real GDP growth p.a. (Average: 2005-2015)	5.3	6.6	7.0
Agriculture value added (% of GDP) (2015)	32.9	31.1	5.3
Industry value added (% of GDP) (2015)	19.5	26.1	35.3
Services value added (% of GDP) (2015)	47.5	42.9	59.4
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	33.6 (2005)	46.6 (2011)	64.4 (2010)
Informal employment (% of total non-agricultural employment)	n/a	76.2 (2006)	69.5 (2008)
Urban population (% of total) (2015)	25.6	31.6	40.9

Source: World Development Indicators, 2015.
Notes: Years in brackets refer to the survey year for each country.

All countries have been growing between 5 to 7 percent per year, on average, since 2005. Tanzania and Kenya are considered low-income countries and have relatively similar economic value added structures: agriculture (31 to 33 percent), industry (20 to 26 percent), and services (43 to 48 percent). Zambia as the exception is 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 to Kenya and Tanzania. However, even though high copper mining revenues have created a relatively high GNI per capita figure for Zambia, these revenues have been unevenly distributed throughout the economy. Mining activities in Zambia account for only 1 percent of total employment, while the poverty headcount rate of 64 percent is substantially higher than the rates observed in the other two countries (34 percent in Kenya and 47 percent in Tanzania).

There seems to be a positive correlation between poverty headcount and urbanisation: Zambia is the most urbanised of the three countries (with an urbanisation rate of 41 percent), and has the highest poverty headcount (64 percent), while Kenya has the lowest rates of urbanisation and of poverty (26 percent and 34 percent, respectively). This indicates that individuals moving from rural to urban environments are finding it difficult to obtain gainful employment.

3.1. Labour Market Overview

Labour force participation rates are high in Tanzania (88.1 percent), 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 (3.1 percent). Therefore, while the unemployment rate for Zambia and Kenya is similar to the average for sub-Saharan Africa (which fell from 8 to 7 percent between 2005 and 2015[8]), the unemployment rate in Tanzania is substantially lower.

The employment-to-population ratio is highest in Tanzania and lowest in Kenya (85.4 percent and 58.2 percent, respectively). In Tanzania, where there is a high level of employment in the agricultural sector (74.7 percent), 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 has 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 lower, which may be due to a range of factors, including the limited availability of rural land, more modernised agriculture sectors, advanced social protection systems, or just a stronger aspiration to find (or availability) of 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.

[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, 2015.

Table 2: Labour Force Participation, Employment and Unemployment Rates in Kenya, Tanzania and Zambia

	Kenya			Tanzania			Zambia		
Characteristics	**LFPR (Labour Force as % of Working Age Population)**	**Employment to Population Ratio (%)**	**Unemployment Rate (% of Labour Force)**	**LFPR (Labour Force as % of Working Age Population)**	**Employment to Population Ratio (%)**	**Unemployment Rate (% of Labour Force)**	**LFPR (Labour Force as % of Working Age Population)**	**Employment to Population Ratio (%)**	**Unemployment Rate (% of Labour Force)**
Gender									
Male	72.5	64.9	10.5	89.5	87.8	1.9	73.2	67.5	7.8
Female	55.4	52.0	6.3	86.9	83.3	4.1	60.4	55.3	8.5
Location									
Rural	63.6	59.3	6.8	90.0	89.3	0.8	72.9	70.6	3.2
Urban	64.2	54.6	14.9	83.0	75.0	9.7	58.7	49.2	16.2
Age Category									
15 - 24	38.5	31.9	17.2	79.4	74.5	6.1	43.3	35.6	17.8
25 - 34	80.0	72.7	9.1	96.0	93.2	2.9	81.1	75.0	7.6
35 - 44	86.7	82.0	5.4	96.2	94.7	1.6	87.7	84.5	3.7
45 - 54	85.8	82.6	3.6	95.4	94.3	1.1	86.1	83.4	3.1
55 - 64	77.5	75.4	2.7	91.0	90.0	1.0	79.0	77.3	2.2
65+	56.7	55.6	1.9	67.4	67.0	0.6	58.9	58.5	0.7
Education									
No Education	66.1	58.7	11.2	87.3	86.3	1.1	67.8	66.1	2.5
Primary	62.3	57.3	8.1	89.9	87.2	3.1	67.4	63.9	5.2
Incomplete Secondary	66.6	59.8	10.3	75.7	68.5	9.6	53.9	48.5	10.0
Secondary	81.3	78.5	3.4	85.5	78.5	8.1	77.4	63.0	18.6
Tertiary	65.7	60.2	8.3	82.1	77.5	5.5	86.8	82.3	5.2
Overall	**63.7**	**58.2**	**8.6**	**88.1**	**85.4**	**3.1**	**69.0**	**63.8**	**8.0**

Source: IHBS 2005/2006 (Kenya); LFS 2006 (Tanzania); LFS 2012 (Zambia).

Note: All figures weighted using calibrated person weights. Education categories for each country are as follows:

1) Kenya: No Education; Primary (Std1-Std8); Incomplete Secondary (Form 1-5); Complete Secondary (Form6); Tertiary (University).

2) Tanzania: No Education; Primary (Preschool-Std8); Incomplete Secondary (Form 1-5); Complete Secondary (Form6); Tertiary (University).

3) Zambia: No Education; Primary (Grade1-8); Incomplete Secondary (Grade 9-11); Complete Secondary (Grade 12/GCE); Tertiary (Certificate/University).

3.1.1. Gender

Labour force participation (LFP) rates are higher for men than for women across all countries, although this difference is substantially smaller in 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 and Tanzania, but are higher for men in Kenya.

3.1.2. Age

As expected, there is an 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, 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 a family member without pay.

3.1.3. Geographical Area

The urban unemployment rate is substantially higher than the rural unemployment rate in all three countries. Decomposing urban and rural unemployment rates by demographic group (see Table 3), reveals that 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. While in Kenya and Zambia, men and women have similar (high) urban unemployment rates, and in Tanzania, the urban unemployment rate for women is more than double that for men.

Table 3: Rural and Urban Unemployment Rates, by Individual Characteristics

Characteristics	Kenya		Tanzania		Zambia	
	Urban	Rural	Urban	Rural	Urban	Rural
Gender						
Male	15.0	9.0	5.8	0.6	14.1	3.2
Female	14.8	4.2	13.5	1.0	18.9	3.1
Age						
15 - 24	31.9	13.3	19.9	1.6	38.0	7.0
25 -34	13.2	7.3	8.5	0.5	13.5	2.8
35 -44	8.0	4.6	4.5	0.6	6.7	1.5
45 -54	5.5	3.2	3.8	0.3	6.4	1.1
55 -64	4.3	2.5	3.6	0.4	5.4	0.8
65+	7.6	1.6	1.6	0.5	2.8	0.1
Educational Attainment						
No Education	6.9	12.6	4.9	0.7	8.7	0.0
Primary	15.1	6.7	9.4	0.7	14.6	2.4
Incomplete Secondary	15.9	7.0	13.9	3.0	15.9	4.2
Complete Secondary	3.0	3.7	8.8	3.7	20.9	11.8
Tertiary	5.5	13.9	8.1	-	6.2	0.5
Total	**14.9**	**6.8**	**9.7**	**0.8**	**16.2**	**3.2**

Source: IHBS 2005/2006 (Kenya); LFS 2006 (Tanzania); LFS 2012 (Zambia).
Note: All figures weighted using calibrated person weights.

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),[9] 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.

3.1.4. Educational attainment

In Tanzania, where the proportion of subsistence agriculture is greater, 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 LFP rates in Tanzania (87.3

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

percent and 89.9 percent, respectively) than in Kenya (66.1 percent and 62.3 percent, respectively) and Tanzania in (67.8 percent and 67.4 percent, respectively). Interestingly, in all three 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 Zambia, 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 Zambia and Kenya have serious shortfalls in skilled job opportunities.

Two analytical points should be made here. First, 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.[10] 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 runs counter to this assumption. Second, 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.[11]

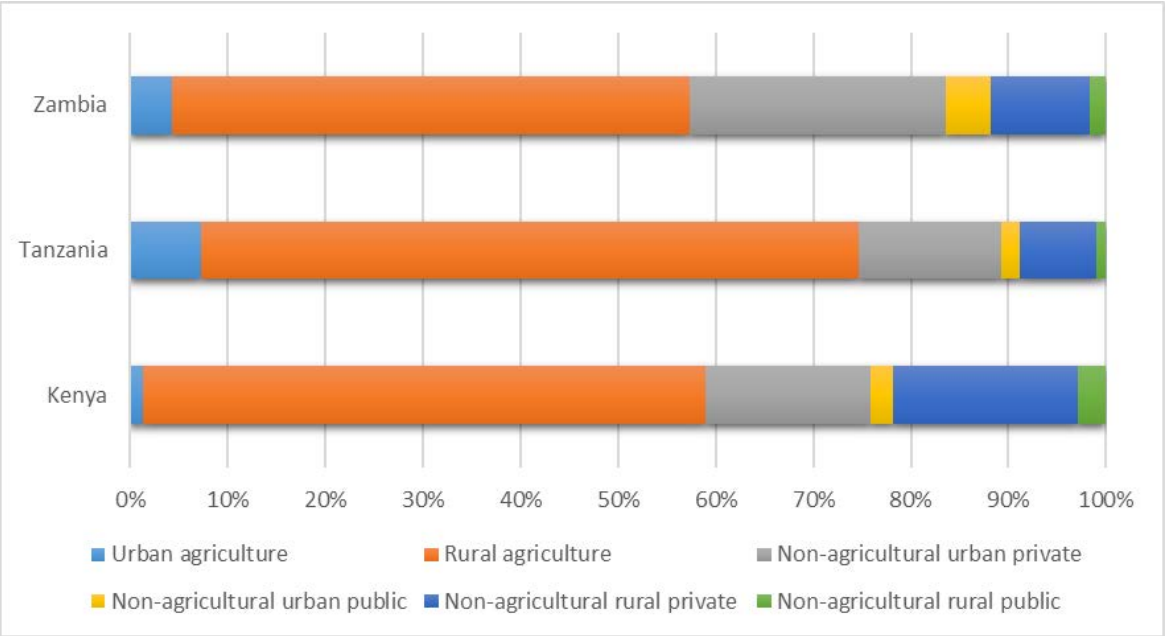
3.2. Share of Employment by Labour Market Segments

Figure 2 shows the relative contributions to employment of each of the six main labour market segments in the three African countries in this study.

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

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

Figure 2: Employment Share by Labour Market Segments in Three Countries



Source: Kenya IHBS 2005/2006, Tanzania LFS 2006, Zambia LFS 2012.

Across each of the three 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 Tanzania, this sector accounts for 74.7 percent of employment. Women are more likely than men to be employed in agriculture activities, across both rural and urban agriculture in all three countries. There is also a systematic relationship between age and employment in rural agriculture across all three countries – youth aged 15-24 are more likely to be employed in rural agriculture than those aged 25-34, 35-44 and 45-54, but less likely than those aged 55-64, and 65 and older. Furthermore, our findings suggest that in all countries under review, individuals aged 65 and older have the highest incidence of employment in rural agriculture than any other age group. 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 where it accounts for 7.2 percent of total employment.

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 Kenya (18.8 percent of total employment).[12] Not surprisingly, the rural non-agricultural private

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

segment is particularly large in Kenya which is less urbanised relative to Zambia and Tanzania. 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, 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 highly skilled workers, the governments of Zambia and Kenya may be under some pressure to increase public sector employment. However, public sector employment for youth (who face the highest unemployment rates) is low across all three countries, with 0.2 to 0.4 percent of youth employed in the rural public sector, and 0.2 to 1.3 percent of youth employed in the urban public sector. Interestingly, public sector employment rates are low for individuals with no education except in Zambia, where 7.2 percent of these individuals are employed in the urban public employment segment.

Table 4: Labour Force Participation, Employment and Unemployment Rates in Kenya

Characteristics	Segment						
	Agriculture		Non-agriculture				Total
			Urban		Rural		
	Urban	Rural	Private	Public	Private	Public	
Gender							
Male	1.5	51.8	18.9	2.7	21.4	3.6	100
Female	1.3	64.7	14.5	1.8	15.7	2.1	100
Location							
Rural	-	72.7	-	-	23.6	3.6	100
Urban	6.8	-	82.0	11.2	-	-	100
Age Category							
15 - 24	1.4	62.9	15.6	0.2	19.6	0.3	100
25 - 34	1.4	48.5	24.7	2.0	21.4	2.0	100
35 - 44	1.3	50.1	18.4	4.2	20.3	5.7	100
45 - 54	1.6	59.2	11.8	4.8	16.1	6.6	100
55 - 64	1.4	74.3	7.5	1.4	14.5	0.9	100
65+	1.4	85.0	3.4	0.1	9.8	0.4	100
Education Attainment							
No Education	-	45.2	27.0	-	27.8	-	100
Primary	1.2	64.0	13.4	0.6	20.1	0.7	100
Incomplete Secondary	1.7	40.7	27.3	5.2	18.3	6.7	100
Secondary	3.5	19.6	26.6	19.5	8.2	22.6	100
Tertiary	2.4	7.4	50.5	15.7	10.8	13.2	100
Overall	**1.4**	**57.7**	**16.9**	**2.3**	**18.8**	**2.9**	**100**

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

Table 5: Labour Force Participation, Employment and Unemployment Rates in Tanzania

Characteristics	Segment						
	Agriculture		Non-agriculture				Total
			Urban		Rural		
	Urban	Rural	Private	Public	Private	Public	
Gender							
Male	6.7	64.5	16.0	2.3	9.0	1.5	100
Female	7.8	70.2	13.4	1.2	6.9	0.5	100
Location							
Rural	-	88.3	-	-	10.4	1.3	100
Urban	30.6	-	61.9	7.5	0.0	0.0	100
Age Category							
15 - 24	6.9	69.7	13.8	0.3	9.2	0.2	100
25 - 34	6.6	62.3	19.4	1.6	9.3	0.8	100
35 - 44	6.9	64.7	16.5	2.6	7.7	1.5	100
45 - 54	7.7	67.1	11.8	4.5	6.1	2.8	100
55 - 64	8.6	74.2	8.9	2.4	4.6	1.4	100
65+	9.9	80.7	4.5	0.3	4.5	0.14	100
Education Attainment							
No Education	5.4	85.0	3.7	0.1	5.9	0.1	100
Primary	7.9	65.5	16.4	0.9	8.6	0.7	100
Incomplete Secondary	8.5	25.6	37.3	12.0	9.5	7.1	100
Secondary	5.8	4.2	42.0	38.1	3.7	6.3	100
Tertiary	5.0	11.1	24.5	36.9	4.6	17.8	100
Overall	**7.2**	**67.4**	**14.7**	**1.8**	**7.9**	**1.0**	**100**

Source: LFS 2006.
Note: All figures weighted using calibrated person weights.

Table 6: Labour Force Participation, Employment and Unemployment Rates in Zambia

Characteristics	Segment						
	Agriculture		Non-agriculture				Total
			Urban		Rural		
	Urban	Rural	Private	Public	Private	Public	
Gender							
Male	4.2	48.0	29.7	5.5	10.6	2.1	100
Female	4.4	59.0	22.2	3.8	9.5	1.1	100
Location							
Rural	--	81.9	--	--	15.5	2.6	100
Urban	12.1	--	74.6	13.3	--	--	100
Age Category							
15 - 24	3.2	61.3	21.8	1.3	12.0	0.4	100
25 - 34	3.7	45.8	32.3	6.1	9.9	2.2	100
35 - 44	4.1	47.7	29.7	5.9	10.5	2.1	100
45 - 54	5.4	52.0	24.0	7.2	8.7	2.8	100
55 - 64	7.5	62.9	18.2	3.0	7.5	0.9	100
65+	6.2	76.3	9.2	1.0	7.4	0.0	100
Education Attainment							
No Education	2.8	65.3	16.5	7.2	7.6	0.5	100
Primary	4.2	67.9	16.0	0.5	11.1	0.3	100
Incomplete Secondary	5.7	40.1	38.2	2.6	12.6	0.7	100
Secondary	4.6	12.6	54.6	14.4	8.7	5.9	100
Tertiary	2.5	2.1	40.3	39.3	2.2	13.6	100
Overall	**4.3**	**53.1**	**26.2**	**4.7**	**10.1**	**1.7**	**100**

Source: LFS 2012.
Note: All figures weighted using calibrated person weights.

3.3. Employment

3.3.1. Type of employment

Kenya has a higher share of the workforce classified as employees (31.3 percent) than Zambia and Tanzania (23.1 percent and 9.8 percent, respectively). The latter countries have a higher proportion of 'vulnerable' workers – i.e. self-employed workers – who often face uncertain incomes and poor working conditions.

In Tanzania, 88.6 percent of those employed in agriculture work are self-employed, while in Kenya and Zambia this proportion falls to 66.3 and 76.5 percent, respectively. 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 commercialised and industrialised in this country. In Zambia, the proportion of employees in urban agriculture is also fairly high at 17.7 percent (similarly suggesting commercialisation 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 classification differs between the rural non-agricultural sector and the rural agricultural sector. Within the rural non-agricultural private segment, approximately 20 percent of workers are employees in Tanzania and Zambia, while this figure is much larger in Kenya, at 42.5 percent. It is also noteworthy that self-employed workers make up a substantial share of employment in the urban non-agricultural private segment (ranging from 34.9 percent in Kenya to 62.6 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.

Table 7: Employment by Nature of Employer across Labour Market Segments 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
Self-employed	63.2	85.2	34.9	-	53.5	-	66.3
Other[13]	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.

[13] Includes apprentices, those who did not state an employment type, and those who did not fall into the category of employer, employee, or self-employed.

Table 8: Employment by Nature of Employer across Labour Market Segments in Tanzania

Type of employment	Agriculture		Non-Agriculture				Total
	Urban	Rural	Urban		Rural		
			Private	Public	Private	Public	
Employer	0.1	-	7.6	-	6.9	-	1.7
Employee	2.8	1.4	29.8	100.0	18.8	100.0	9.8
Self-employed	97.2	98.7	62.6	-	74.2	-	88.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: LFS 2006.
Note: All figures weighted using calibrated person weights.

Table 9: Employment by Nature of Employer across Labour Market Segments in Zambia[14]

Type of employment	Agriculture		Non-Agriculture				Total
	Urban	Rural	Urban		Rural		
			Private	Public	Private	Public	
Employer	0.2	0.1	0.7	-	0.5	-	0.3
Employee	17.7	3.5	47.3	100.0	19.6	100.0	23.1
Self-employed	82.1	96.4	52.1	-	79.8	-	76.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: LFS 2012.
Note: All figures weighted using calibrated person weights.

3.3.2. Employment by industry

Disaggregating employment shares by industry reveals that, across all countries, the primary sector is the most dominant. The primary sector constitutes approximately 60 percent of total employment in Kenya and Zambia, 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 creates hardly 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 low level of manufacturing employment in all three countries is notable, as the manufacturing sector is often viewed as a key industry to boost economic growth in Africa. This is because it is both labour intensive and export oriented, providing the

[14] 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.

international market necessary to sustain high growth levels which small domestic markets are unable to achieve (Söderbom & Teal, 2003).[15]

The tertiary sector jointly accounts for 16.2 percent of employment in Tanzania, 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 10.9 percent of total employment in Tanzania to 14.2 percent in Kenya), 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 and Zambia, but to only 3.6 percent of employment in Tanzania. This in part reflects the fact that Tanzania has the smallest share of public sector employment in all three countries (at 2.8 percent of total employment).[16]

[15] Söderbom, M, & Teal, F. 2003. How Can Policy Towards Manufacturing in Africa Reduce Poverty? A Review of the Current Evidence from Cross-country Firm Studies. Centre for the Studies of African Economies, University of Oxford, 2003.
[16] See Table 5.

Table 10: Share of Employment by Industry across Labour Market Segments in Kenya

Industry	Segment												Total	
	Agriculture				Non-Agriculture									
	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: 1. All figures weighted using calibrated person weights.
2.ISIC revision 4.

Table 11: Share of Employment by Industry across Labour Market Segments in Tanzania

Industry	Segment												Total	
	Agriculture				Non-Agriculture									
	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

Source: LFS 2006.

Note: 1. All figures weighted using calibrated person weights.
2. ISIC revision 4.

Table 12: Share of Employment by Industry across Labour Market Segments in Zambia

Industry	Segment												Total	
	Agriculture				Non-Agriculture									
	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	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.

Note: 1. All figures weighted using calibrated person weights.
2. ISIC revision 4

3.3.3. Employment by occupation

Occupation data reveals relatively similar patterns across countries. The majority of the labour force across the three countries are employed in low-skilled occupations, and this is largely driven by the employment share of agriculture. Low-skilled occupations account for approximately 80 percent of employment in Tanzania, 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 and Kenya, and approximately 30 percent in Zambia. In Zambia and Tanzania, 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, 4 percent in Kenya, and 6 percent in Zambia.

Table 13: Share of Employment by Occupation across Labour Market Segments in Kenya

Occupation	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 (%)
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														
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
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
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.
Note: All figures weighted using calibrated person weights.

Table 14: Share of Employment by Occupation across Labour Market Segments in Tanzania

Occupation	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 (%)
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
Craft and trade workers	1	0.1	2	-	504	19.2	20	6.4	337	23.8	9	4.7	874	4.9
Operators and assemblers	2	0.2	-	-	164	6.3	15	4.8	53	3.7	2	1.0	2356	1.3
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														
Agriculture and fishery workers	42	3.2	280	2.3	613	23.3	20	6.3	437	30.8	8	4.2	1400	7.8
Elementary occupations	1 246	96.1	11 797	97.6	14	0.5	1	0.4	37	2.6	3	1.5	13098	73.1
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.
Note: All figures weighted using calibrated person weights.

Table 15: Share of Employment by Occupation across Labour Market Segments in Zambia

Occupation	Segment													
	Agriculture				Non-Agriculture									
	Urban		Rural		Urban				Rural					
					Private		Public		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	**-**	**-**	**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 2012.

Note: All figures weighted using calibrated person weights.

Section 3 has highlighted similarities and differences in the labour market segmentation between Kenya, Tanzania and Zambia. While agriculture is the largest employer in all three countries, Tanzania has the largest subsistence agriculture segment, which appears to have lower entry barriers and to contribute to a lower unemployment rate, compared with the other two countries. The urban unemployment rate is substantially higher than the rural unemployment rate in all three countries. This is especially pronounced for youth – in Tanzania, youth unemployment is purely an urban phenomenon. Furthermore, higher skilled workers are not always more likely to be employed than lower skilled workers. The shortage of skilled job opportunities indicates an underdeveloped manufacturing sector, which is unable to provide sufficient skilled and semi-skilled jobs to absorb more highly educated individuals. This is highlighted by the prominence of the primary sector in all three countries, and the relatively low contribution of the secondary sector to overall employment levels.

The following section aims to evaluate the determinants of wages in Kenya, Tanzania and Zambia. To do this, we assess whether wages differ significantly depending on the labour market segment in which the worker is employed. Additionally, we evaluate whether returns to education differ across labour market segments.

4 Econometric Analysis

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.[17] 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 nominate friends or relatives for an interview. These informal networks will affect the relationship between labour market segments and earnings.[18] 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.

However, the data does not allow for modelling entry into the labour market segments posited here. There are no plausible variables, which would predict entry into one of the labour market segments over the others. The simplest and most plausible analysis will review whether earnings are systematically different between the labour market segments.

4.1. Estimating a Wage Equation: Two Specifications

In this section, we undertake an econometric analysis of earnings in Kenya, Tanzania and Zambia. First, we use a standard Mincerian wage equation to look at how worker and job characteristics – such as gender, age, industry and education – affect earnings in each country. Of particular interest is whether returns to education differ across the three countries. Also included as an explanatory variable, is the

[17] For example, Maloney, W. 2004. Informality Revisited. *World Development,* 32(7) pp. 1159-1178.
[18] Cohen, B. & House, W. J. 1996. Labor Market Choices, Earnings and Informal Networks in Khartoum, Sudan. *Economic Development and Cultural Change*, 44(3) pp. 589-618.

segment in which the worker is employed, in order to ascertain whether there are statistically significant differences in earnings between segments. If there are, this provides further evidence for the necessity of a multi-level system of segmentation in these countries. Second, we interact years of education with segment of employment in order to assess returns to education for workers in each segment, across the three countries.

Table 16 indicates that, on average, males earn higher wages than females in Kenya, Tanzania and Zambia. This ranges from 12 percent in Tanzania to 26 percent in Zambia. Looking at returns to labour market segments, we use those individuals employed in the rural agriculture segment as the reference group. Comparing rural agriculture to rural non-agricultural employment, wage returns differ depending on whether the employment segment is public or private. Those employed in the rural non-agricultural private segment earn 55 percent higher wages than those employed in rural agriculture in Kenya. This increases to 66 percent in Tanzania, and the relationship is not significant in Zambia. In Kenya, returns to employment in the rural non-agricultural public segment are particularly high, with these individuals earning 107 percent higher wages than those employed in rural agriculture. This figure is 46 percent in Tanzania, and 43 percent in Zambia.

In both Kenya and Tanzania, those working in urban agriculture earn higher wages than those working in rural agriculture. The returns are largest in Kenya, with these individuals earning 58 percent more than their rural counterparts. Looking at the urban non-agriculture private segment, these individuals earn substantially higher wages than those working in rural agriculture in both Kenya and Tanzania, although results are not significant for Zambia. In Kenya, individuals employed in the urban non-agriculture private segment earn 98 percent more than those working in rural agriculture. This decreases but remains high in Tanzania, at 61 percent. Returns to employment in the urban non-agriculture public segment are also high and significant across all three countries. Individuals working in the urban non-agriculture public segment earn on average 128 percent higher wages than those in rural agriculture in Kenya, decreasing to 70 percent in Tanzania, and 52 percent in Zambia.

Overall, in both Kenya and Tanzania, individuals working outside of the rural agriculture segment earn consistently higher wages. Results are more mixed in Zambia, where only returns to public sector employment (both rural and urban) are significantly different from returns to rural agriculture employment.

Furthermore, our analysis summarised in Table 16 uses an education spline in order to assess wage returns to education across the three countries. This table indicates highly significant and strictly increasing returns to education in both Kenya and Zambia. In Kenya, a year of primary school education is associated with 4 percent higher wages, on average. This increases to 12 percent for a year of

secondary education, with complete secondary education associated with 29 percent higher wages. Returns to a year of tertiary education are 64 percent. In Zambia, returns to education are very similar to Kenya's calculated levels, with coefficients on educational return estimates differing by between 0 and 2 percent. In Tanzania, returns to completed secondary education are almost double that of the other two countries, at 56 percent higher wages. Interestingly, returns to a year of tertiary education are not significant. Interacting education with employment segment may provide some explanation, as returns to education may be different for individuals employed in different segments.

Examining industry effects, the results indicate that in Zambia, wages are lower for individuals employed in the secondary industry, tertiary industry or private households, compared with those employed in the primary sector. This indicates the presence of a wage premium for those employed in the mining industry, as employment in agriculture has already been controlled for in the employment segment variables. As expected, this premium is largest in Zambia, where the high resource rents from the copper mining industry make up a substantial proportion of GDP. Those in semi-skilled occupations earn more than those in low-skilled occupations (the reference group) in all three countries, with a calculated premium of 17 percent in Tanzania, 69 percent in Zambia, and 84 percent in Kenya. The wage premium on high-skilled occupations is only significant in Kenya, where these workers earn on average 17 percent higher wages than those working in low-skilled occupations. Finally, returns to experience[19] are positive and increase at a decreasing rate in all three countries.

[19] Experience is estimated by (age – years of schooling – 6).

Table 16: Wage Determinants: Kenya, Tanzania and Zambia: Specification 1

Log of Hourly Wage	Kenya	Tanzania	Zambia
Male	0.178***	0.120***	0.255***
	[0.032]	[0.025]	[0.033]
Segment: Urban Agriculture	0.581***	0.162***	0.007
	[0.091]	[0.045]	[0.074]
Segment: Urban NA Private	0.982***	0.614***	0.036
	[0.136]	[0.107]	[0.081]
Segment: Urban NA Public	1.281***	0.704***	0.524***
	[0.145]	[0.113]	[0.092]
Segment: Rural NA Private	0.554***	0.663***	-0.005
	[0.132]	[0.104]	[0.087]
Segment: Rural NA Public	1.073***	0.457***	0.426***
	[0.144]	[0.120]	[0.106]
None/Primary Education	0.043***	0.042***	0.043***
	[0.007]	[0.005]	[0.009]
Incomplete Secondary Education	0.116***	0.076***	0.118***
	[0.011]	[0.010]	[0.018]
Complete Secondary Education	0.288***	0.562***	0.308***
	[0.106]	[0.081]	[0.064]
Tertiary Education	0.638***	-0.111	0.626***
	[0.133]	[0.124]	[0.056]
Secondary Industries	-0.138	-0.345***	-0.507***
	[0.135]	[0.099]	[0.076]
Tertiary Industries	-0.242*	-0.133	-0.662***
	[0.133]	[0.096]	[0.070]
Private Households	-0.737***	-1.301***	-0.661***
	[0.138]	[0.116]	[0.102]
Semi-Skilled Occupations	0.754***	0.079	0.625***
	[0.074]	[0.070]	[0.074]
Highly Skilled Occupations	0.176***	-0.045	-0.041
	[0.038]	[0.041]	[0.046]
Experience	0.031***	0.043***	0.038***
	[0.003]	[0.003]	[0.003]
Experience Squared	-0.000***	-0.001***	-0.000***
	[0.000]	[0.000]	[0.000]
Constant	1.340***	4.536***	7.075***
	[0.074]	[0.064]	[0.076]
R^2	0.38	0.10	0.20
N	7,990	13,016	11,624

Source: Kenya IHBS 2005/2006, Tanzania LFS 2006, and Zambia LFS 2012.

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

1. Dependent variable = natural logarithm of hourly earnings. Independent variables: Education is in the form of a spline, except for tertiary which is a dummy. For industries, the reference group is primary industries. For occupations, the reference group is unskilled occupations.

In Table 17, we present a second specification of the wage equation where we interact years of education with the labour market segment. This will indicate whether an additional year of schooling results in differentiated returns depending on the segment in which the worker is employed. The reference group is the interaction of years of education with employment in the rural agriculture segment.

Table 17: Wage Determinants in Kenya, Tanzania and Zambia: Specification 2

Log of Hourly Wage	Kenya	Tanzania	Zambia
Male	0.201***	0.121***	0.250***
	[0.034]	[0.025]	[0.033]
Segment: Urban Agriculture	0.076	0.080	-0.250*
	[0.257]	[0.088]	[0.144]
Segment: Urban NA Private	0.403**	0.747***	-0.438***
	[0.193]	[0.120]	[0.114]
Segment: Urban NA Public	1.240***	0.458***	0.011
	[0.267]	[0.153]	[0.157]
Segment: Rural NA Private	0.363*	0.937***	-0.122
	[0.190]	[0.125]	[0.135]
Segment: Rural NA Public	0.776***	-0.046	0.325
	[0.267]	[0.192]	[0.242]
Years of Education	0.067***	0.074***	0.059***
	[0.015]	[0.008]	[0.008]
Urban Agriculture # Education	0.065**	0.012	0.046**
	[0.027]	[0.014]	[0.018]
Urban NA Private # Education	0.069***	-0.023**	0.070***
	[0.017]	[0.010]	[0.010]
Urban NA Public # Education	0.020	0.022*	0.075***
	[0.022]	[0.013]	[0.013]
Rural NA Private # Education	0.029	-0.050***	0.025
	[0.018]	[0.013]	[0.015]
Rural NA Public # Education	0.041*	0.047***	0.042**
	[0.022]	[0.016]	[0.020]
Secondary Industries	-0.162	-0.352***	-0.534***
	[0.146]	[0.099]	[0.075]
Tertiary Industries	-0.274*	-0.136	-0.671***
	[0.144]	[0.096]	[0.070]
Private Households	-0.713***	-1.316***	-0.647***
	[0.150]	[0.116]	[0.104]
Semi-Skilled Occupations	0.843***	0.172**	0.693***
	[0.070]	[0.071]	[0.073]
Highly Skilled Occupations	0.173***	-0.042	-0.036
	[0.039]	[0.041]	[0.045]
Experience	0.035***	0.043***	0.035***
	[0.004]	[0.003]	[0.003]
Experience Squared	-0.000***	-0.001***	-0.000***
	[0.000]	[0.000]	[0.000]
Constant	1.155***	4.451***	7.112***
	[0.127]	[0.066]	[0.072]
R^2	0.38	0.10	0.19
N	7,146	13,016	11,624

Source: Kenya IHBS 2005/2006, Tanzania LFS 2006, and Zambia LFS 2012.

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

1. Dependent variable = natural logarithm of hourly earnings. Independent variables: Education is in the form of a spline, except for tertiary which is a dummy. For industries, the reference group is primary industries. For occupations, the reference group is unskilled occupations.

In Kenya, an additional year of education in the urban agriculture and urban non-agriculture private segments provides higher returns than an additional year of education for those in the reference group (rural agriculture). In both cases, returns to a year of education are 7 percent higher than returns for those working in rural agriculture. Similarly, in Zambia, returns to a year of education are higher in all segments, except the rural non-agriculture private segment, when compared to returns to education for the reference group. This ranges from 4 percent for those working in the rural non-agriculture public segment, to 8 percent for those working in the urban non-agriculture public segment. In Tanzania, returns to an additional year of education are larger for those working in the rural non-agriculture public segment than for those working in rural agriculture; at 5 percent. However, this figure is negative for those working in both the rural and urban non-agriculture private segments, where returns to a year of education are 5 percent and 2 percent lower, respectively.

Overall, there do appear to be significant differences in labour market returns between sectors, providing additional justification for the multi-segment labour market model. Furthermore, returns to education differ between segments, with a year of education correlated with the highest average returns in the urban private segment.

5 Discussion

Section 2 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. This was done by analysing employment and unemployment across a range of segments, sectors, occupations, and demographic characteristics. Major observations were compared across the three 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, 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 experienced by 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:

Firsty, the model ignores several other substantive labour markets segments. Most notably, it ignores a rural non-agricultural private segment which can be larger than the urban non-agricultural private segment (as in Kenya), 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 and retail 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.

Second, 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.

Third, 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 three countries.

Lastly, it appears that there are wage differentials associated with working in different employment segments. In both Kenya and Tanzania, individuals working outside of the rural agriculture segment earn consistently higher wages. Returns to a year of education also differ across the employment segments, with a year of education correlated with the highest average returns in the urban private segment.

Therefore, 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.