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Sub-Saharan Employment Developments: The Important Role of Household Enterprises with an Application to Rwanda

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SSA Employment Developments: the Important Role of Household Enterprises with an Application to Rwanda

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Abstract

This paper documents the structural transformation in employment that has taken place in Sub-Saharan Africa (SSA) over the past 15 years. In contrast to Asian economies, where at least half of the labor flows out of agriculture have gone into industry, in SSA, most of the workers have ended up in the service sector, especially household enterprises. Rwanda has been one of the stellar performers in SSA in terms of structural transformation with the strongest movement of workers out of agriculture. Contrary to conventional wisdom, except for the very top of the distribution of consumption in Rwanda, families in household enterprises now consume as much as non-agricultural wage earners.

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I. Introduction

There is an ongoing discussion of whether the movement of workers from agriculture to services rather than to manufacturing can be a lasting feature of economic transformation. The process that began among advanced economies many centuries ago and has been followed by emerging economies, and more recently, low income countries (Duarte and Restuccia, 2010) has been characterized as a movement from agriculture to manufacturing and eventually to services. One of the differences in the process experienced among low income countries outside Asia over the past two decades is that the movement from agriculture has mainly been into services rather than into industry (Fox et al. (FT hereafter, 2013), Mcmillan and Rodrik (2011), Rodrik (2014)). However, many authors question the ability of LICs to continue growing at high rates without a transformation of manufacturing employment (Rodrik, 2014 is a typical example).

This paper questions the conventional view that the only way to grow in Sub-Saharan (SSA) countries is through salaried employment by showing the favorable performance of household enterprises (HEs), predominantly providing services, over the past decade. In this vein it complements the findings of FT and Fox and Sohnesen (2012) with more updated household survey data and a special focus on Rwanda, a country which has experienced the most rapid structural transformation over the past 15 years among SSA economies. The paper confirms the view of FT that growth in HE services employment will continue strongly given the demographic bulge projected to take place. Moreover, it also strengthens the finding of Fox and Sohnesen (FS) that, controlling for education, the welfare of families in the household enterprise sector is comparable to that of salaried workers in a number of SSA countries. For Rwanda, however, there remains some disparity at the top end of the distribution of consumption in favor of salaried workers.

The paper is organized as follows. The second section describes the structure of the labor market in SSA and compares changes in sector employment over time across SSA countries. In the third section, Rwanda is used as a case study given the strong movement of employment out of agriculture over the past decade. The section compares the distribution of employment in Rwanda with the rest of low income SSA and shows a similar pattern of HEs playing an ever increasing role in its economy. Section 4 confirms the finding that the economic position of families employed in HEs has improved tremendously in recent years. By 2011, except for those at the top of the distribution, the welfare of HE families in Rwanda was comparable to those of families with public sector employees and only slightly lower than families with private non-agricultural workers.

II. SECTOR EMPLOYMENT CHANGES

We begin by defining the landscape of the labor market among SSA countries distinguishing between agricultural workers and HEs and wage employment in both industry and services. We then use this database to develop the notion of structural transformation and ascertain the speed at which workers have left the agricultural sector in favor of higher incomes in the industry and services sectors. The analysis makes use of new employment data based on an extensive project carried out by FT to collect unit record data from as many relevant household surveys as possible. The surveys were collected from 28 of 47 countries in SSA over the period 2000 and 2010 and cover 73 percent of the estimated 2010 labor force for the region as a whole. The surveys are nationally representative, and data is collected at the household level on individual member's labor force participation, employment status (employed or unemployed) and if employed, sector of activity (1-digit ISIC) and type of employment.

Definition of Employment Categories

The labor market classification of FT focuses on the employment category of the main occupation although it recognizes that a substantial fraction of the labor force reports more than one economic activity over a twelve month period. The focus on the main occupation facilitates the consistency of analysis over time and across countries.[1] The structure of employment can be analyzed across two main dimensions: (i) sector of activity, such as agriculture, industry or service and (ii) type of employment, such as wage employment, or non-wage employment (household farm or business). Since wage employment in agriculture as a full-time activity is quite low in SSA, we separate agriculture completely and split non-agricultural employment between HEs and wage employment in industry or services.[2] Our employment categories are:

- *Agricultural employment* – predominantly farmers working on small holdings and consuming a significant share of their production, but including more commercialized farmers as well. Wage work in agriculture as a primary activity is included in this category as well as fishing and primary forestry (collecting wood and other forest products).

- *Household enterprise employment* - HEs are unincorporated, nonfarm businesses owned by households. This category includes self-employed people running

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[1] This may underestimate the employment transformation as farmers often move into the non-farm sector on a part time basis; see Fox and Pimhidzai, (2011).

[2] We prefer to refer to household enterprises rather than to informal employment because the surveys are not able to tell whether the household enterprise work is taxable. Obviously, some HE work such as lawyer and some construction work would normally be taxable.

      unincorporated businesses (which may or may not employ family or other workers) and family members working in those businesses.

- *Wage employment (industry or services)* - includes all labor force participants who report working outside the agricultural sector and receiving a payment for their work from an unrelated individual. It includes the public and private sectors. This category is divided into the industry and service sectors as the relationship between output growth and employment is expected to be different. The former is more likely to be tradable, while the latter is more likely to be the public sector.

The employed are defined as those who worked for some of the time in the past year while labor force participants not employed are unemployed. This is a generous definition of the employed and is used in this paper to achieve consistency across countries in the definition.

Structural Transformation

In SSA countries over the 2000-10 decade workers have moved out of agriculture, where relative productivity levels are low, into the service and manufacturing sectors. This picture reverses the findings of McMillan and Rodrik (2011) who analyzed an earlier period (up to 2000) and found workers moving into lower-productivity sectors. This movement embodies the notion of structural transformation defined as the movement of workers from low productivity activities to activities that yield higher productivity and is shown in figure 1a below. The updated calculations are based on combining sectoral output levels with corresponding sectoral employment levels from the most recent household surveys in a sample of countries to derive labor productivity estimates. The figure plots annual changes in employment shares over the 2000-10 period against relative productivity levels for agriculture, industry, and services in the initial year (2000). Points in the lower left quadrant show sectors with below average productivity in the initial year and declining employment shares, while those in the upper right quadrant indicate sectors with above average productivity and rising employment shares.

The figure shows that in most countries, the share of agriculture has declined over time, with workers moving mostly into the services sector (blue and green symbols). Indeed, the only sub-Saharan African countries that did not embody the process of structural transformation because of increases in the agriculture employment share were Cote d'Ivoire and Mozambique.

Figure 1a. Selected Countries: Labor Productivity and changes in Employment Shares: 2000-10
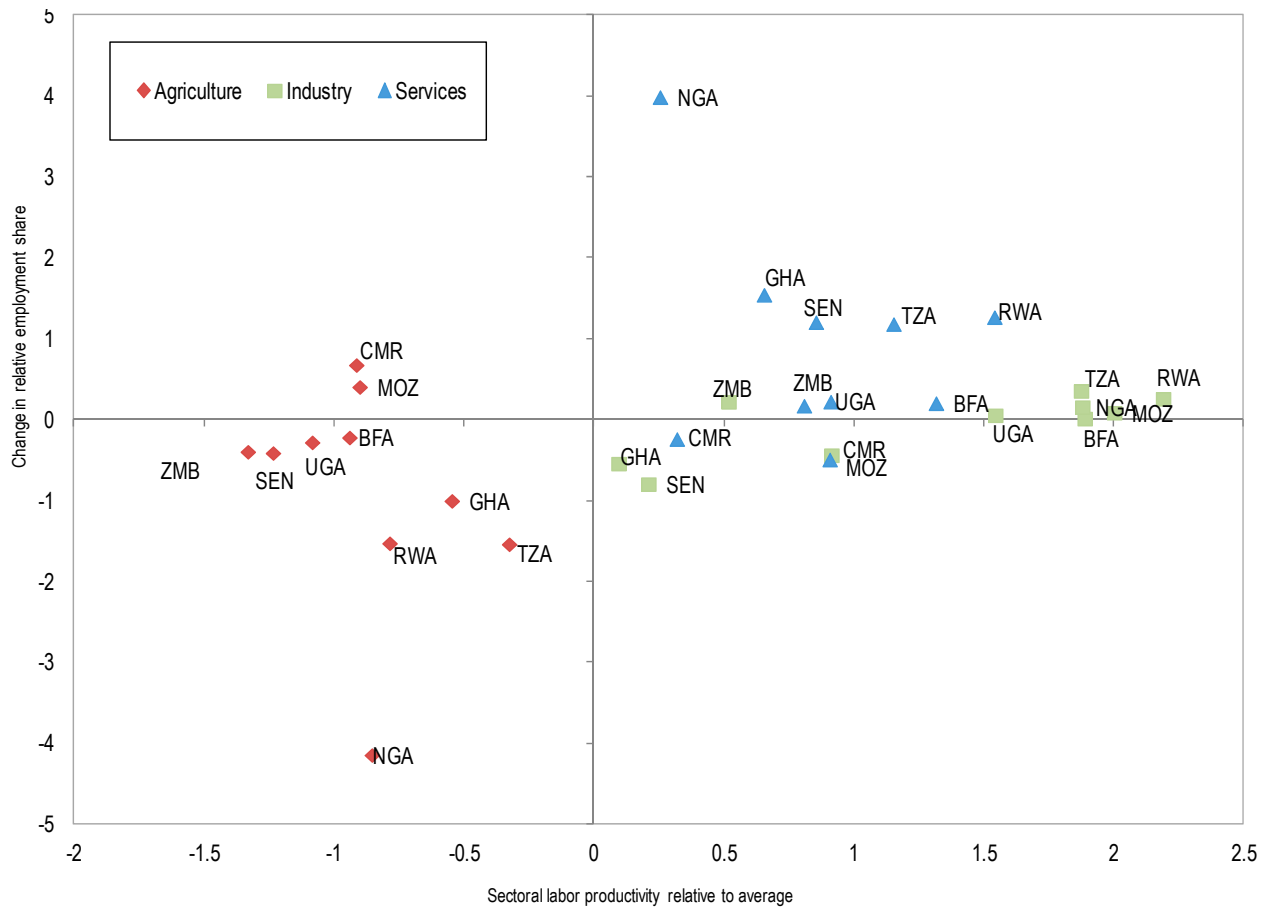
Sources: SSA household surveys, IMF sector national accounts and staff estimates

Figure 1b shows the distribution of employment across low income SSA countries between agriculture, HEs, and wage employment in the industry and services sectors. The figure shows a gradual decline in the ratio of agricultural workers over time with most of the decline being made up by an increase in employment in the HE sector. Indeed, the employment ratio for HEs rises from 15 percent of the labor force in 2005 to about 21 percent of the labor force in 2020.

On a country level, the largest reduction in agricultural employment occurs in Rwanda, and, like many other countries, most of Rwanda's labor flows out of agriculture end up in services employment (Figure 1a and Ronnas and Scheja (2014)). How much of the flow of labor out of the agricultural sector has gone into HE services employment in Rwanda and what is the per capita consumption disparity between households employed in HEs and those employed as non-agricultural wage workers? These questions are answered in the next two sections.

Figure 1b. SSA Employment Distribution
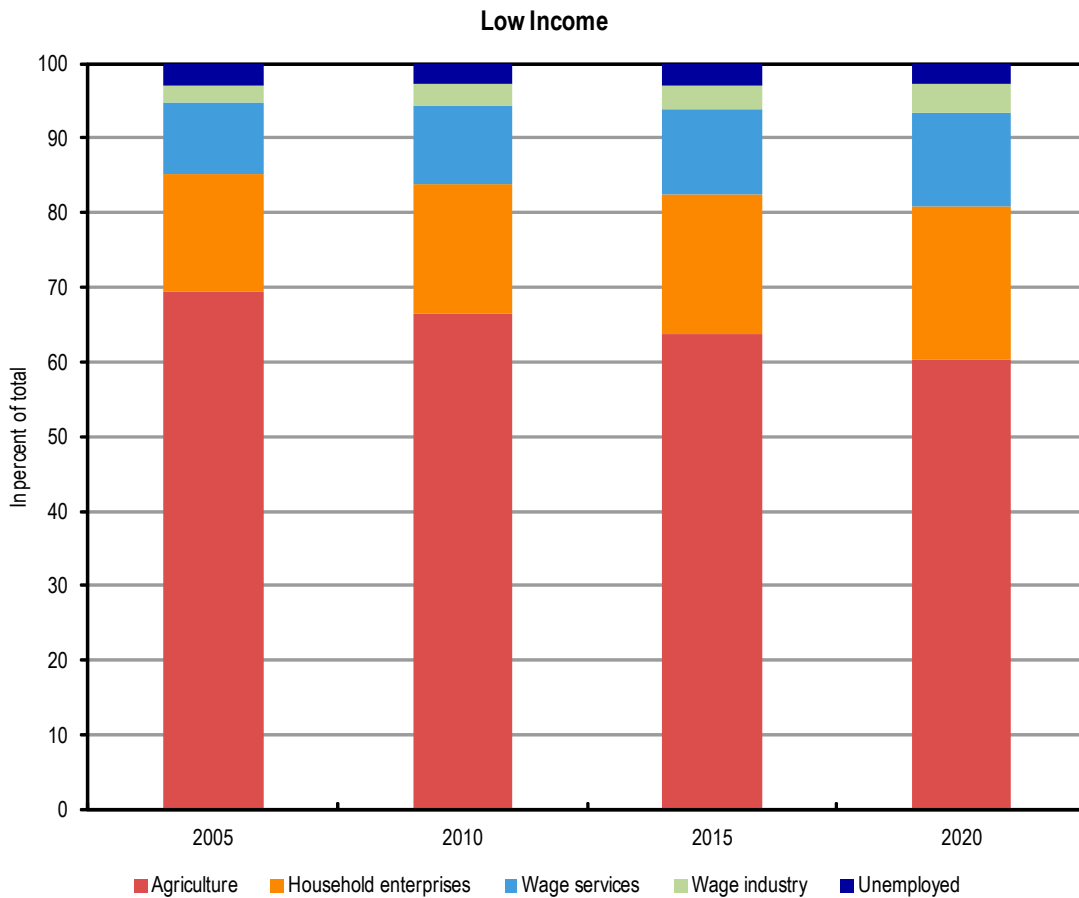
Low Income

Sources: SSA household surveys and staff estimates

III.   RWANDA TRENDS ACROSS EMPLOYMENT CATEGORIES

Rwanda is a low income country in the East African Community block with limited natural resources. It has grown at a more rapid rate than most countries in the region over the past two decades (almost 10 percent per annum compared to 5 percent) and therefore it is interesting to consider how its labor market dynamics have evolved compared to other non-resource low-income countries.

To facilitate this type of comparison, the FT employment data is divided into groups according to whether the country is resource rich and by their level of income per capita. The resource rich countries are those whose ratio of resource exports to total exports was above

80 percent between 2008–12 (Table 1). [3] The non resource rich countries are separated according to the level of per capita income in 2012 with threshold levels at 4,036–12,475 U.S. dollars (upper middle income), 1,026–4,035 U.S. dollars (lower middle-income), and 1,025 U.S. dollars and below (low-income).

Table 1. Sub-Saharan Africa: Country Groups

Resource Rich	Upper Middle-Income	Lower Middle-Income	Low-Income		
Angola	Botswana*	Cameroon*	Benin*	Guinea-Bissau	Rwanda*
Chad	Cape Verde*	Côte d'Ivoire*	Burkina Faso*	Kenya*	Sierra Leone*
Congo, Dem. Rep.*	Gabon*	Ghana*	Burundi*	Liberia*	Somalia
Congo, Rep.	Mauritius*	Lesotho	Central African Rep.	Madagascar	Tanzania*
Guinea	Namibia*	Mauritania	Comoros*	Malawi*	Togo*
Nigeria*	South Africa*	São Tomé and Príncipe*	Eritrea	Mali	Uganda*
Sudan	Equatorial Guinea	Senegal*	Ethiopia*	Mozambique*	Zimbabwe*
Zambia*	Seychelles	Swaziland	Gambia, The	Niger*	

Note: Sudan includes South Sudan due to data availability.* signifies employment estimates based on actual household surveys.

In Rwanda, the importance of HEs in terms of the share of the labor force has risen by 50 percent since 2000 while wage earners have also risen by a comparable magnitude. By 2011, HEs account for about 10 percent of the labor force, wage earners in services represent about 11 percent of the labor force, wage earners in industry account for about 5 percent of the labor force and the unemployed have remained below 1 percent (table 2). The influx of workers into HEs and wage employment has come from the agriculture sector with the share of the labor force in the latter falling by about 12 percentage points to almost 73 percent in 2011.

The employment distribution in 2011 is supported by population census data concluded in 2012. Census data reveals that the size of the agricultural sector is slightly less than estimated in the household survey and the industry mix between wage and non-wage employment is more tilted toward the non-wage segment. The situation in services is the opposite because this sector has a considerably greater wage presence in the census compared to the household survey while the unemployment rate is slightly higher in the census. HEs remain at about 9 ½ percent of the labor force.

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[3] This definition is consistent with other work at the Fund categorizing resource-based economies (Regional Economic Outlook April 2014). Botswana is excluded from this group and rather categorized as a upper middle income country because its other labor market features (e.g. high unemployment rate) are more similar to the middle income group.

Table 2: Rwanda Household Survey (2001 & 2011) and Census (2012)

Table 2

	2001	2011	2012
	Rwanda household survey		Rwanda census
Agriculture	82.2	72.6	70.2
wage industry	2.2	5.3	3.6
non-wage industry	1.1	0.1	1.9
wage services	9.0	11.5	14.4
non-wage services	5.2	9.8	7.4
Household enterprises	6.3	9.9	9.3
Total Employment	99.7	99.4	97.5
Unemployed	0.3	0.6	2.5
Labor Force	100.0	100.0	100.0

Sources: Rwanda household surveys and staff estimates

How do these figures compare with those for low income countries as a whole and how are they expected to change over time? While the agricultural share of employment was initially higher in Rwanda than the average for LICs, the shares have gradually converged over time. Moreover, with current levels of agricultural and wage employment in Rwanda higher than for the average non-resource LIC country, HEs are less prevalent than in other countries. However, over time the ratios converge. By 2020, agricultural employment in Rwanda is projected to fall below the 60 percent of the labor force projected for the rest of SSA based on IMF sector growth projections and employment elasticities derived from FT. The industry and service wage and HE sectors are projected to continue to displace employment in the agricultural sector in Rwanda as well as other LIC countries. By 2020, HEs represent 15 percent of the labor force in Rwanda and 21 percent of the labor force in low income non-resource SSA countries in general.

In sum, HEs on Rwanda have grown at roughly the same speed as wage workers outside the agricultural sector over the past ten years, but the question remains whether the welfare of HE employment opportunities is comparable to that of wage employment. We now turn to this issue.

Figure 2. Employment Distribution
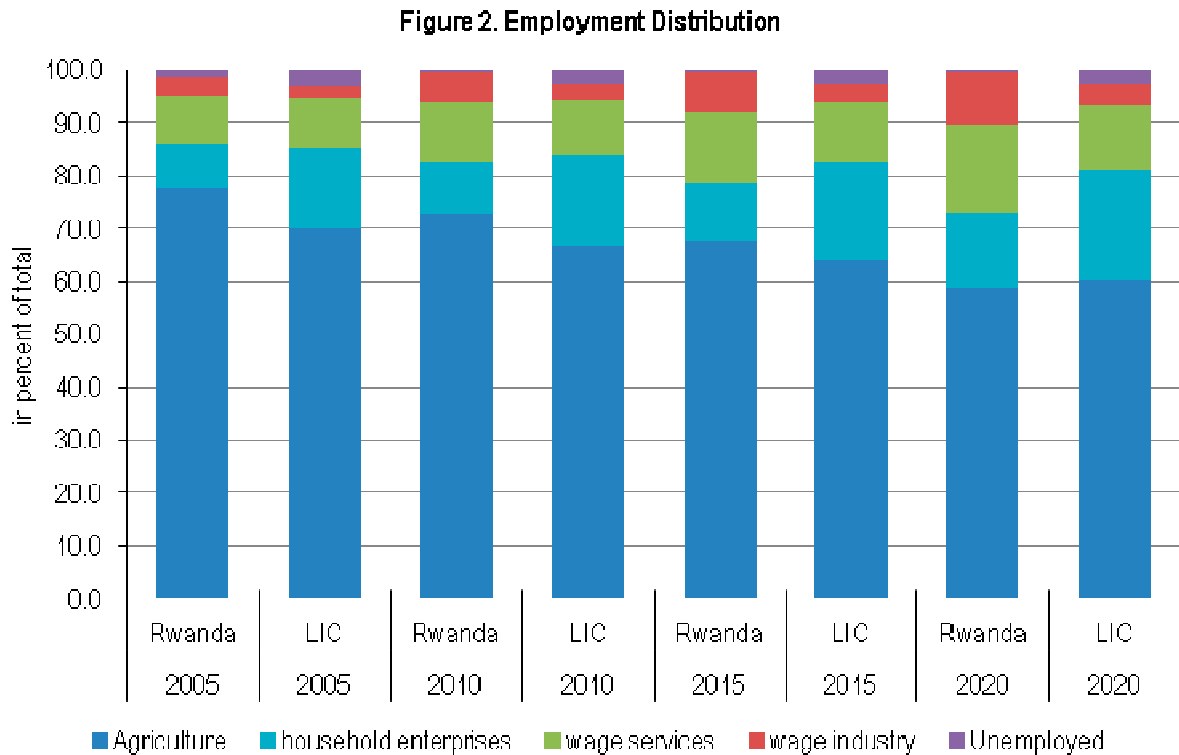
Sources:SSA household surveys and staff estimates

IV. RWANDA'S CONSUMPTION PROFILE ACROSS EMPLOYMENT CATEGORIES

Updated analysis of Rwanda below shows that the distribution of consumption of families employed in HEs is almost identical to the consumption distribution of families employed as salary workers at least up to the highest consuming quintile. This finding contrasts one of the premises of development that wage employment is the ultimate goal because the income received from jobs in non-agricultural wage employment is generally higher than in the HE sector. Indeed, the findings of this paper corroborate recent work by Fox and Sohnesen (2012) showing that, controlling for the level of education, workers in HEs consume as much if not more than workers in wage employment. Before providing supporting evidence for this view, we first discuss some descriptive statistics of the education attainment of the broad categories of employment, with special focus on HEs.

The household enterprise sector is an integral part of the labor market in developing countries, and, with the demographic bulge projected to take place in Sub-Saharan Africa over the next few decades, it will be a major source of employment creation as indicated in section 2. The sector is defined as small trading enterprises comprised of 1-3 persons.

Education levels among HEs are lower than for those in non-agricultural wage employment but those in HEs have a greater propensity to retrain. Table 3 highlights average education

levels across agriculture, wage workers and HEs in 2006 and 2011 in Rwanda and shows a sharp increase in the average education level of those in HEs. In the most recent survey year about 28 percent of heads of HEs have completed either primary or lower secondary education compared to only 19 percent five years earlier. Moreover, workers in HEs are more likely than other types of workers to go back to school to enhance their training for the type of activity or service that they offer. This is supported by the fact that the share of workers who take adult education is highest for those running HEs although differences across categories are fairly small. Finally, those with upper secondary or university level diplomas are most likely to be non-agricultural wage workers.

**Table 3. Education levels across work types**

(highest level attained)

	Primary Not Completed	Primary completed	Lower secondary completed	Upper secondary completed	University	Adult education
			2006			
Agriclutural worker	77.1	14.9	3.2	0.7	0.1	4
Household Enterprise	73.2	14.2	5	2.2	1.1	4.3
Wage worker	69.1	15.4	5.9	4	2	3.6
			2011			
Agriclutural worker	79.1	16.4	3.4	0.7	0.3	
Household Enterprise	67.4	21.3	6.6	2.7	1.9	
Wage worker	70.9	17.3	5.3	3.3	3.1	

Sources: Rwanda household surveys and staff estimates

One of the major issues in this paper is whether the welfare of workers who switch from the agricultural sector to the HE sector rather than to private non-agricultural wage employment is comparable. To address this issue we compare household consumption functions for three categories of workers (agricultural, HEs and nonagricultural wage workers) based on the three recent waves of household survey data (2000, 2005/06, 2010/11). For 2006 and 2011, these are presented in figures 3 and 4 with the distributions capped at 440,000 RWf per year.

In 2006 the mode of the distribution is very similar for the three categories but the distribution is very narrow for agricultural workers (Figure 3). The consumption pattern of subsistence laborers (ag) trails off quickly compared to the other two categories (naw and he). Once we are past 100,000 Rwf per person (US$200 per annum) the density of the wage earners is also above that of HEs.

Figure 3. Rwanda Consumption Distribution in 2006
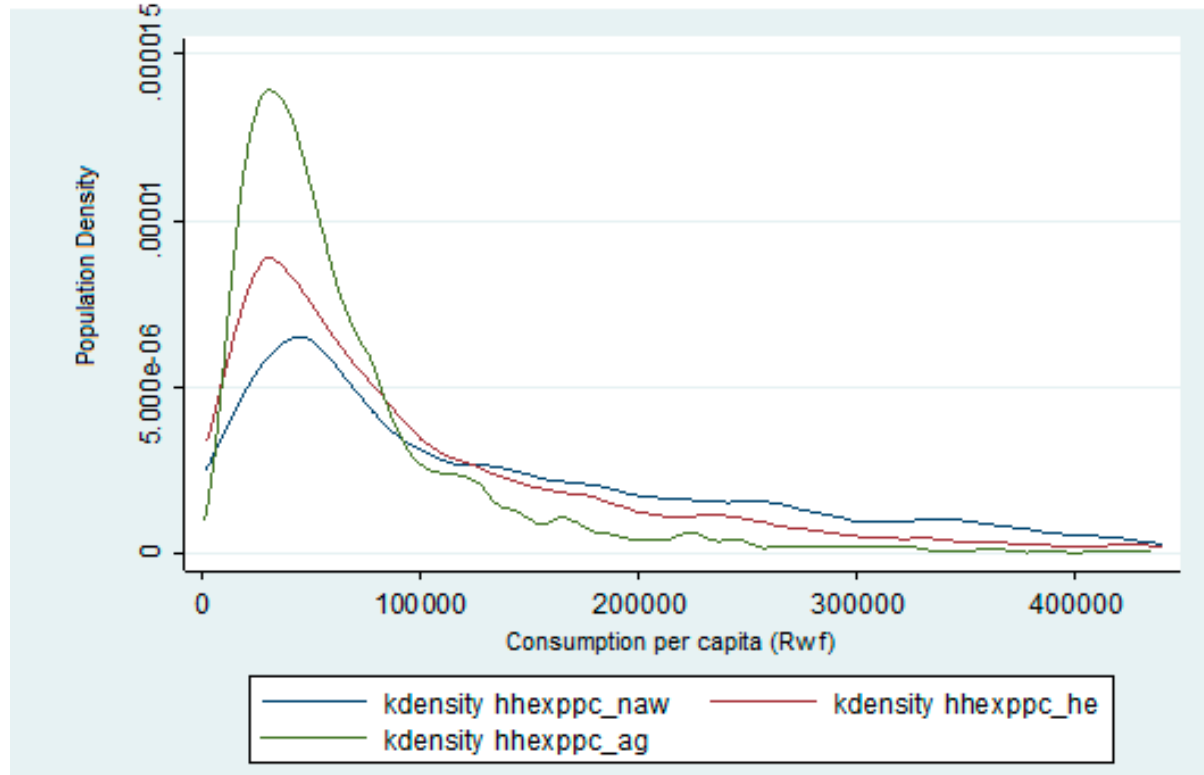
Sources: Rwanda household surveys and staff estimates

The welfare of households running HEs improves strongly over time because by 2011 the per capita consumption distribution of those running HEs completely overlaps that of wage workers up to a ceiling of 300,000 RWF (Figure 4). This amount represents about 85 percent of the cumulative distribution of household consumption. On average, over this segment of the distribution and holding all characteristics constant, workers in HEs consume as much as wage workers in the non-agricultural sector. At the other extreme, splitting up those in the agricultural sector between wage workers and others reveals that the agricultural wage worker represents the poorest segment of the population. A household head that is a agricultural wage worker likely does not own his own establishment whereas the agricultural non-wage category likely represents a landowner.

Figure 4. Rwanda Consumption Distribution in 2011
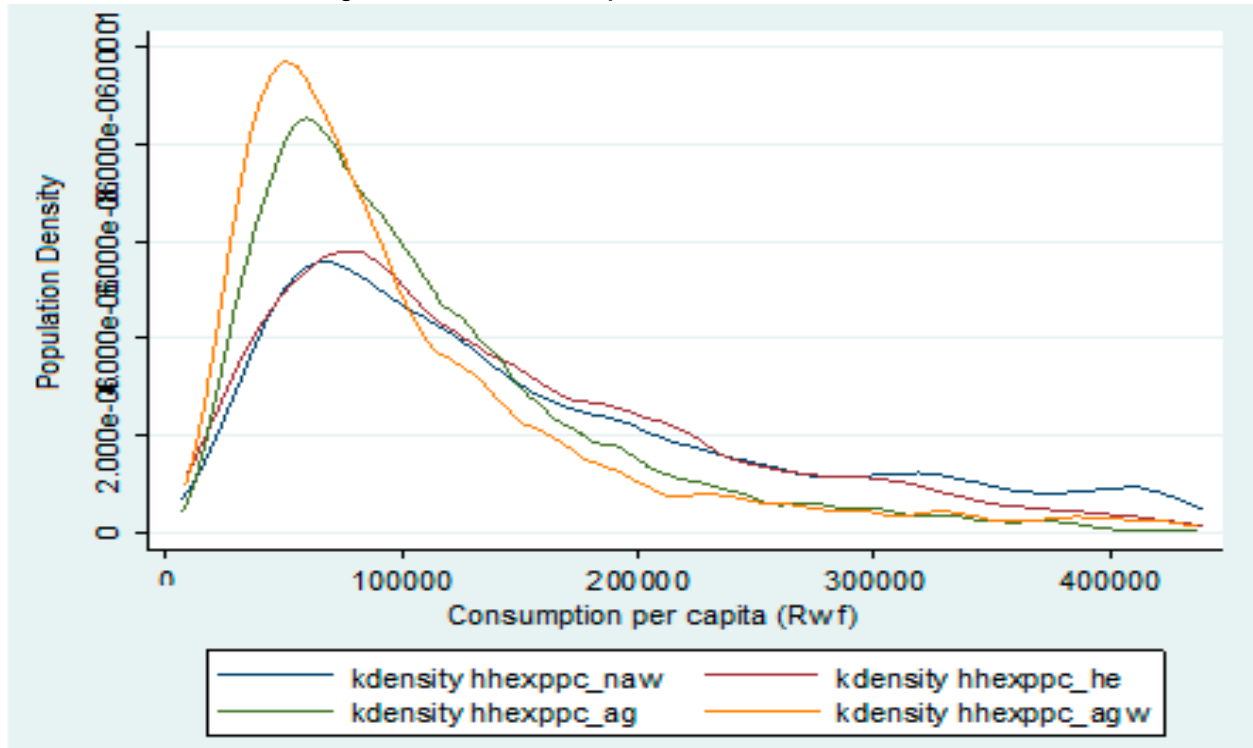
Sources: Rwanda household surveys and staff estimates

Does the same analysis hold up in a regression analysis controlling for various factors? As indicated earlier FS have shown that, controlling for the level of education, workers in HEs earn as much if not more than workers in wage employment. A similar analysis to the work of FS with updated data is presented below. The analysis is conducted by OLS given the large sample size and the exogeneity of the regressors with respect to household consumption.

The main hypothesis that we wish to test is whether the per capita consumption of families employed in HEs has converged to the per capita consumption level of families in salaried employment, either in the public or private sector. Since HE work is the omitted employment category (Table 4a), this test can be conducted by looking at the coefficient on government sector and private sector salaried employment and noting whether it has reduced toward zero (the implicit coefficient of those working in HEs), controlling for location, education and gender characteristics. This would imply that the per capita consumption of the excluded category (HEs) has converged toward the consumption of those in salaried employment.

Table 4a. Log Household Consumption Determinants for Rwanda over time

	excuding top 15% centile			all observations	
	2000	2005	2011	2005	2011
Household size (log)	0.86 ***	0.93 ***	0.87 ***	0.9 ***	1.04 ***
Age (log)	-0.002	0.00	-0.01 **	-0.004	0
Male head of household	0.02 **	0.01	0.01 ***	0.02 **	-0.002
Employment dummy	0.62 ***	0.08 ***		0.12 ***	
Agriculture sector dummy	-0.64 ***	0.00	-0.06 ***	-0.09 ***	-0.16 ***
Manufacturing sector dummy[2]	-0.36 ***	-0.02	-0.04 **	-0.07 ***	-0.2 ***
Government sector dummy	-0.02	0.12 ***	0.02	0.22 ***	0.18 ***
Salaried employment dummy	-0.09 ***	0.05 ***	0.03 **	0.18 ***	0.18 ***
Primary schooling	0.22 ***	0.08 ***	0.08 ***	0.09 ***	0.16 ***
Lower secondary schooling	0.6 ***	0.24 ***	0.21 ***	0.39 ***	0.46 ***
Upper secondary schooling		0.43 ***	0.35 ***	0.73 ***	0.68 ***
College/nursing/teacher training	1.08 ***	0.40 ***	0.43 ***	1.22 ***	1.22 ***
Urban dummy	0.73 ***	0.17 ***	0.06 ***	0.3 ***	0.29 ***
Diagnostic statistics					
Number of observations	15857	14692	28901	17974	35364
R-squared	0.71	0.65	0.68	0.66	0.59

Sources: IMF staff estimates based on data from various household surveys.

Note: ***,**,* indicate statistical significance at the 99 percent, 95 percent, and 90 percent levels, respectively.

While the position of salaried workers has improved considerably in Rwanda over the past decade, the premium over HE employment has fallen to almost zero over most of the distribution of consumption (excluding the top 15 percentile). To mimic the visual profile of the consumption distributions for 2006 and 2011 encountered in figures 3 and 4, we first consider the determinants of consumption for the lower 85 percent of the distribution of consumption (columns 2 and 3 of Table 4). This grouping covers per capita consumption up to a cut off of about 300,000 RWF. The results indicate sizeable government and private sector salaried employment premiums of 12 and 5 percent respectively in 2006 that converge to almost zero (2-3 percent) by 2011. This finding is consistent with the work of FS. However, at the top end of the distribution of consumption, the disparity in consumption between public and private sector salaried employment and services employment remains high because the coefficients stay at 0.18 -0.22 for the salaried employment categories when all the sample is used (columns 4 and 5). This implies a salary premium over those in HEs of between 18 and 22 percent for this type of worker.

Finally, there has been a convergence in consumption between males and females over time because the male coefficient has turned insignificant. Moreover, there has also been a large improvement in the consumption of agricultural households because the disparity with

households offering services is at 16 percent in 2011 compared to 64 percent in 2000. In contrast, and perhaps surprisingly, no improvement has been shown in the return to education over the past decade with the education coefficient estimates staying pretty stable. On the other hand the education coefficients are among the highest in the sample of countries especially at the college level (see Table 4b).

Cross country data reveals a development comparable to the Rwandan experience with that families whose household head is an agricultural worker consuming considerably less than families with household heads working in other sectors. While the disparity has converged over time (time series results not shown to conserve space), the per capita consumption shortfall for agricultural families differs across countries ranging from 23-26 percent (Ghana and Tanzania) to almost parity (Zambia). Interestingly, families with household heads employed in manufacturing also consume less than the omitted category (private services) while families with government sector workers generally consume considerably more, especially in East Africa, with premiums over private service work up to 15-18 percent. Finally, a slight consumption premium for male heads of households persists as well as a rising consumption profile as the household head becomes more educated and higher consumption in urban regions (at about 20-30 percent consistently across countries).

Table 4b. Log Household Consumption Determinants for a Variety of Countries

	Ghana 2005		Cameroon 2007		Rwanda 2011		Uganda 2009		Mozambique 2008/09		Tanzania 2007		Zambia 2010 [2]	
Household size (log)	0.37	***	0.29	***	1.04	***	0.24	***	0.26	***	0.31	***	0.3	***
Age (log)	0.13	***	0.18	***	0		0.20	***	0.16	***	0.02		0.1	***
Male head of household	0.03	***	0.01		-0.002		0.08	***	0.04	***	0.06	**	0.03	***
Employment dummy	0.16	***	0.04	**			0.02		0.07	***	0.21	***	0.11	***
Agriculture sector dummy	-0.23	***	-0.15	***	-0.16	***	-0.09	***	-0.12	***	-0.26	***	-0.03	**
Manufacturing sector dummy[1]	-0.08	***	-0.03	**	-0.2	***	-0.10	*	-0.11	***			0.12	***
Government sector dummy	-0.12	***	0.19	***	0.18	***	0.16	***	0.02		0.15	***	0.06	***
Primary schooling	0.07	**	0.08	***	0.16	***	-0.14	***	0.12	***	0.13	***	-0.15	***
Lower secondary schooling	0.16	***	0.16	***	0.46	***	-0.04		0.22	***	0.44	***	-0.04	*
Upper secondary schooling	0.38	***	0.29	***	0.68	***	0.01		0.56	***	0.71	***	0.18	***
College/nursing/teacher training	0.69	***	0.59	***	1.22	***	0.87	***	1.00	***	1.23	***	0.63	***
Urban dummy	0.24	***	0.21	***	0.29	***	0.20	***	0.12	***	0.23	***	0.22	***
Diagnostic statistics														
Number of observations	7280		10416		35364		6117		9836		9332		17679	
R-squared	0.68		0.69		0.59		0.63		0.66		0.66		0.69	

Sources: IMF staff estimates based on data from various household surveys.

Note: ***,**,* indicate statistical significance at the 99 percent, 95 percent, and 90 percent levels, respectively.

[1]For Zambia, the manufacturing dummy refers to nonagriculture, nongovernment salaried employment.

[2]The 2010 data excludes education, health and recreation expenses because they showed large declines compared to 2006

V. CONCLUSION

This paper has considered the structure of the labor market in Rwanda and has underscored the following points:

Although wage employment is often mentioned as the ultimate objective in employment policy, household enterprise employment is most likely to provide the bulk of new jobs in SSA going forward. Indeed, the sector is like to reach 20 percent of total employment by 2020. Fortunately in Rwanda, and in a few other LICs, per capita household consumption in families running HEs is comparable to per capita household consumption in families with salaried employment, controlling for education. Therefore the household enterprise sector is likely to be a durable feature of the employment landscape among SSA economies going forward.

It will be interesting to assess whether this convergence in per capita consumption between those employed in HEs and those in salaried employment continues in the future as SSA countries try to attract more FDI to help relieve the balance of payments constraint and recruit better quality salaried workers. A related issue that has not been considered in this paper is why it appears so difficult in SSA countries to expand the size of HEs beyond 3-4 people and convert them into larger, profitable enterprises. This is the subject of future work.

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