

Skills Development in the Informal Sector: Rwanda

In This Chapter

In Rwanda, the past decade brought economic growth, poverty reduction, and an increase in employment in the nonfarm sector, most of it in the informal sector. Skills remain in short supply, however. Having some, even limited, education increases the chances of working in the informal sector rather than in farming, but secondary education or more is needed in the formal sector. Education also affects earnings earlier in the informal sector than in the formal sector. Because of the limited reach of public provision, private providers dominate training services in Rwanda's technical and vocational education and training (TVET) system, relying on tuition and other fees. Their popularity bears witness to the willingness to pay for skills acquisition. Programs addressed to informal sector skills development are not thoroughly evaluated, but available information suggests that whereas fostering informal sector skills and productivity is difficult, comprehensive and targeted programs may be more successful.

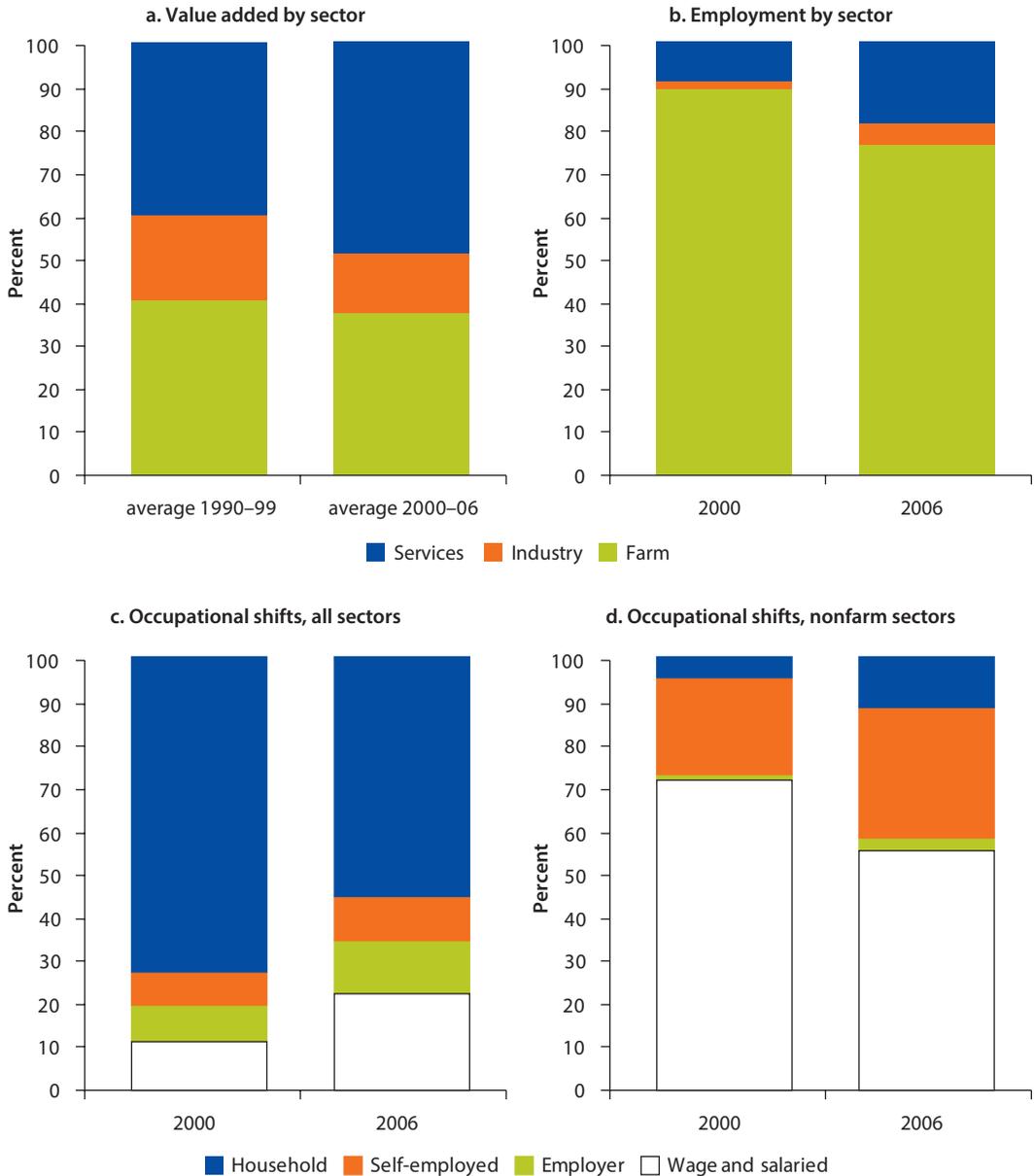
Introduction

Rwanda is a poor, densely populated, and landlocked country.¹ In 2009, the vast majority of the population of around 10 million lived in rural areas (World Bank 2011). Four of five working adults are employed in farming, most of it subsistence farming. Because of the devastating civil war that raged in the country during the 1990s, Rwanda has faced paramount challenges over the past decade: rebuilding trust, securing peace, and reversing the collapse in per capita income, the extremely high poverty levels, and the devastating effects on health, education, and output.

After this lost decade, the Rwandan economy has been growing at a steady pace with real per capita growth in gross domestic product (GDP) reaching 4.4 percent between 2000 and 2009. The main driver of the economic recovery has been the services sector, followed by industry. As a result, the services

sector now accounts for nearly half of GDP (48 percent in 2006), compared with 38 percent for the farm sector (figure 8.1). In parallel to the changing composition of output, the employment structure has undergone an important transformation. Most particularly, and as discussed in detail by the World Bank (Cichello and Sienart 2009), the share of farm employment fell significantly between 2000 and 2006, from 90 percent to 77 percent. Workers shifted into

Figure 8.1 Structural Shifts in the Economy and Labor Markets in Rwanda, 1990–2006



Sources: World Bank 2011; elaborations based on NISR 2007.

the services sector. Simultaneously, more paid than unpaid jobs were created in the nonfarm sector.

New jobs paid better than older ones. Median real earnings increased by an estimated 10 percent between 2000 and 2006 (about 1.7 percent per year). However, earnings fell for all occupational groups except those of household enterprise workers in the farm sector. This apparent puzzle—increases in overall earnings coupled with earnings reductions everywhere except in the poorest-paid category—is explained by the structural shift in employment. New workers flowed into better-paid sectors (nonfarm) and occupations (paid or self-employed), and although these new workers received lower earnings than was the case in 2000, they were still better off than in the lowest-paid occupations left behind.

Poverty rates declined. Higher earnings led to a fall in poverty rates; yet half of rural and one in five urban residents remained in poverty (table 8.1). According to the 2005/06 household survey data, poverty rates are highest among unpaid household workers and among wage workers in farming, although the latter is a very small group (Cichello and Sienart 2009). Because of high population growth following the genocide, Rwanda's population and workforce are very young, even by African standards. Raising earnings for the large cohorts of youth entering the labor market each year, as well as for older workers, is a critical challenge to the country. Farming remains a major employer, but the simultaneous effects of pressures on land and the limited potential to increase productivity and employment mean the nonfarm sector is critical to future gains in earnings.

Raising productivity among the self-employed will be important to future reductions in poverty. As seen in figure 8.1, panel d, some 45 percent of those employed in the expanding nonfarm sector were nonwage workers in small and household enterprises. Raising productivity and earnings in these enterprises will pose a challenge for the future. Studies of small, unregistered, unincorporated firms and household enterprises identify lack of skills and poor education as one

Table 8.1 Key Indicators, Rwanda

<i>Indicator</i>	<i>Percent</i>
Growth 2000–06	
Average GDP	7.1
Average GDP per capita	4.4
Annual working-age population	3.6
Employment-to-population ratio	79
Farm, share of employment	77
Farm, share of GDP	38
Rural Poverty Headcount Index	49
Urban Poverty Headcount Index	22
Income, share held by lowest 20 percent	2.3

Sources: World Bank 2012; World Bank staff calculations.

Note: Data are 2006 or latest available, unless otherwise indicated. GDP = gross domestic product.

of many constraints to expansion (Abbott and others 2010; NISER 2007). Other constraints in the Rwandan context include poor transport and power infrastructure, high cost of financing, and limited markets. Addressing the need for skills will require a significant lead time because such investments typically take a long time to bear fruit.

This chapter provides an overview of the level of skills in Rwanda's labor force and the supply of skills available through different forms of training. The focus is on the nonfarm informal sector where significant growth has occurred. The chapter uses household labor force surveys to describe the growth of the informal sector and its skills profile. The findings stress the importance of skills to the changing structure of the economy and future earnings gains. Programs that address the skill needs of the informal sector are examined and recent innovations are highlighted.

Skills, Employment, and Earnings

Household labor force surveys provide data that help quantify the growth of the informal sector and its socioeconomic characteristics. The data in this chapter come from the Rwanda Integrated Household Living Conditions Survey (Enquête Intégrale sur les Conditions de Vie de Ménage, or EICV1 and EICV2) conducted in 1999/2000 (NISR 2001) and 2005/06 (NISR 2007), respectively. The analysis is based primarily on the most recent survey.² The sample is restricted to individuals between 15 and 65 years of age and focuses on primary activities in the nonfarm sector. Box 8.1 explains how the key variables for education and earnings are constructed for analysis.

Measuring the Informal Sector in Rwanda

Several definitions of the informal sector are constructed to determine what effect different measures may have on the profile of those working in the sector. The definitions use employment status of the worker and characteristics of the firm in terms of its registration and payment of social protection benefits. The comparison of formal and informal sectors is based on the information available in household surveys for these features and takes into account comparability issues across years.

Six potential definitions are summarized in table 8.2. Starting with those employed in the nonfarm sector, workers were asked a number of questions about their employment status, and firm characteristics are used to determine whether they work in the formal or informal sector. No information is available on the size of firms (smaller firms are more likely to be informal). For employers, the self-employed, and household enterprise workers, questions are asked about registration with a government agency and whether the firm keeps accounts. This information is combined to produce the different definitions of the informal sector. Definition 0 starts with all nonwage workers and adjusts this measure for those working in unregistered firms or firms that do not pay social protection benefits. A subjective measure of informal sector employment is also considered.

Box 8.1 Earnings and Education in the Rwanda Integrated Household Living Conditions Survey

Earnings and education levels—two key variables for the analysis—are calculated as follows:

Earnings: For wage workers, earnings include cash, in-kind payments, tips, bonuses, and other extras. For employers, the self-employed, and household enterprise workers, earnings are constructed by reported profits (net income) or by the differences between revenues and costs from the household business. These earnings are divided equally among all household workers. Income is measured in 2001 Rwanda francs (RF) and deflated using regional price deflators. For the sake of completeness, the socioeconomic profile is based on an uncensored sample, while the earnings profile and regressions are based on the sample censored at 5 percent. In the multivariate analysis, income is measured per hour; annual working hours are capped at 4,160 (16 hours a day, 5 days a week, 52 weeks a year); and individuals reporting to work less than two hours per day are dropped from the sample to avoid the effect of outliers. The number of hours worked declined across all jobs between the two surveys, possibly because of changes in the questionnaire. The discrepancy could artificially boost growth in earnings per hour between the surveys. When comparing earnings between surveys, annual earnings are therefore used.

Education: Respondents were asked to report the highest level of schooling completed and the highest certification attained. The questions do not allow us to separate out how many years a person actually spent in school, so that for a respondent reporting to have completed higher secondary, the number of years of schooling is reported as 12, irrespective of whether the person spent two years in every class. The second question provides information on achievement rather than attendance. A discrete measure has been constructed using both of these questions:

- Edu0 → No education
- Edu1 → Some education but less than completed primary education
- Edu2 → Completed primary and some lower-secondary education
- Edu3 → Completed lower-secondary and some higher-secondary or vocational education
- Edu4 → Completed higher-secondary or extended vocational education and above

Table 8.2 Definitions of Informal Sector in Rwanda

Definition 0	Self-employed, employer, and household enterprise worker
Definition 1	Self-employed, employer, and household enterprise worker in enterprise unregistered with government agency
Definition 2	Self-employed, employer, and household enterprise worker plus self-declared informal sector wage worker
Definition 3	Self-employed, employer, and household enterprise worker in enterprise unregistered with government agency plus self-declared informal sector wage worker
Definition 4	Self-employed, employer, and household enterprise worker in enterprise unregistered with government agency plus self-declared informal sector wage workers who get no benefits (medical care/retirement/paid leave)
Definition 5	Self-employed, employer, and household enterprise worker in enterprise unregistered with government agency plus wage workers who get no benefits (medical care/retirement/paid leave)

Note: In 2006, a number of individuals who declare to be nonwage workers in a family enterprise are not listed in the corresponding nonfarm business module of the survey or the household does not report running such a business. In a few cases, there is information about the family enterprise, but the answer about registration with a government agency is missing. In all these cases, the workers are classified as informal.

Table 8.3 Employment Shares of Informal Sector in Rwanda, 2000 and 2006*Percent*

<i>Definition</i>	<i>Share of nonfarm employment</i>			<i>Share of total employment</i>		
	<i>2000</i>	<i>2006</i>	<i>Change</i>	<i>2000</i>	<i>2006</i>	<i>Change</i>
Definition 0	28.5	44.8	16.4	3.0	10.4	7.5
Definition 1	20.9	32.9	12.0	2.2	7.7	5.5
Definition 2	63.5	64.1	0.6	6.6	14.9	8.3
Definition 3	55.9	52.2	-3.8	5.8	12.1	6.3
Definition 4	55.6	52.1	-3.5	5.8	12.1	6.3
Definition 5	77.6	79.5	1.8	8.1	18.5	10.4

Sources: Elaborations based on NISR 2001, 2007.

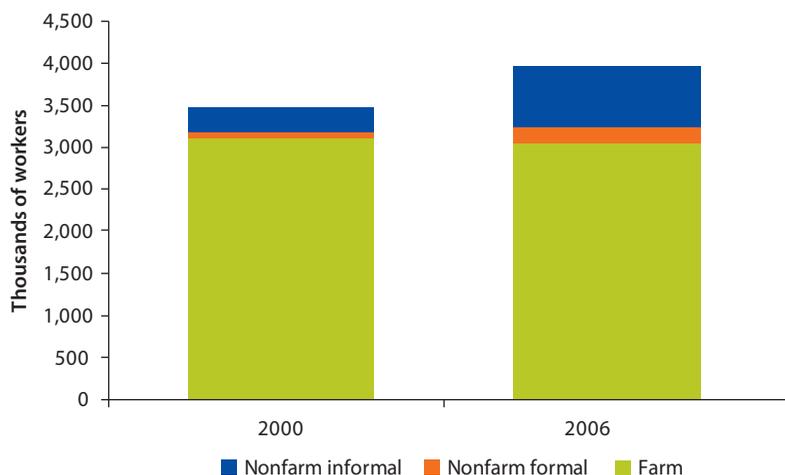
Definitions make a difference in the case of Rwanda. Because of a relatively high share of wage workers without benefits, the choice of definition will, indeed, strongly affect the size and dynamics of the informal sector. Table 8.3 shows the informal sector's share of nonfarm employment varying between one-third (Definition 1) and four-fifths (Definition 5). Partly as a result of the movement of labor toward nonwage work (as described in figure 8.1, panel d), trends also differ depending on whether or not informal wage workers are included. If they are excluded, as in Definitions 0 and 1, informal sector employment would have increased between 2000 and 2006. If they are included, as in Definitions 2–5, the informal sector's share of nonfarm employment stagnated. Thus, nonwage work has increased at the expense of wage work, but among wage workers, informality has fallen.

Using the more comprehensive Definition 5, the informal sector accounts for one-fifth of total employment and four-fifths of all nonfarm employment. The numbers employed in the informal sector have increased with this definition. The increase from 2000 to 2006 represented around 450,000 jobs, while another 100,000 jobs were created in the formal sector (figure 8.2). At the same time, nearly 70,000 jobs were eliminated in the farm sector. In all, the informal sector accounted for 80 percent of all gross job creation between 2000 and 2006, as a measure of its importance to the economy.

Most of the increase in nonwage employment took place in the informal sector. Workers leaving the farm often moved into self-employment. Table 8.4 shows the declining share of employment in farming, dropping from 90 percent to 77 percent between 2000 and 2006. The nonfarm sector thus doubled from 10 to 23 percent. Virtually all the gains in nonfarm employment were concentrated in the informal sector. Gains in the share of wage employment in the informal sector nearly matched the gains in nonwage employment, 5 percent compared with 6 percent, but the growth of nonwage employment outpaced that of wage employment in the informal sector (table 8.4).

Comparing the Formal and Informal Sectors

Who are those employed in the informal sector, and how do they compare with other workers? The findings show that informal sector workers are mostly male,

Figure 8.2 Total Employment by Sector in Rwanda, 2000 and 2006

Source: Elaborations based on NISR 2007.

Table 8.4 Employment in Rwanda by Wage or Nonwage and Sector, 2000 and 2006

Percent

Sector	2000			2006			Change		
	Wage	Nonwage	Total	Wage	Nonwage	Total	Wage	Nonwage	Total
Farm	4	86	90	10	67	77	6	-19	-13
Nonfarm	7	3	10	13	11	23	5	8	13
Formal	2	1	2	2	3	5	1	2	3
Informal	6	2	8	11	8	19	5	6	10
Total	11	89	100	23	78	100

Source: Elaborations based on NISR 2007.

Note: .. = negligible.

although the gender gap is smaller in urban areas. Youth (15–24 years of age) are more likely than adults (25–65 years of age) to be in the informal sector. Overall, the informal sector is associated with lower poverty than farm employment, pointing to its potential for higher earnings and better livelihoods. Education levels are lower in the informal sector, and apprenticeships provide an alternative route to acquiring skills.

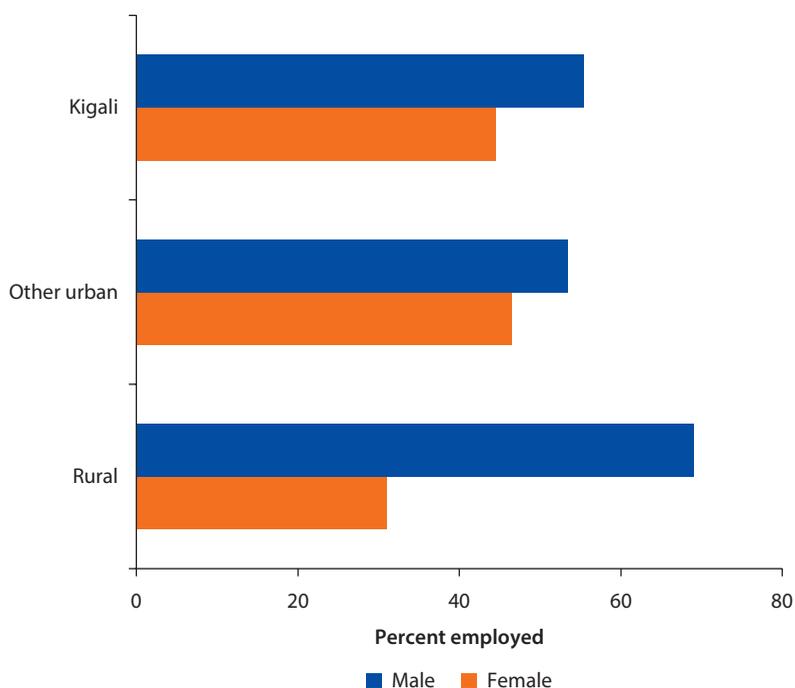
Demographics

In rural areas, women are less likely to be in informal sector work than men, but in urban areas, gender gaps are smaller. Female workers are slightly more likely than male to be in the informal sector (82 percent of female workers in the nonfarm sector are in the informal sector, compared with 78 percent of male workers), but because of higher participation rates among men, nearly two-thirds of the workers in the informal sector are male (table 8.5 and figure 8.3). The differences between men and women are largely driven by differences in rural areas,

Table 8.5 Informal vs. Formal Sector Employment in Rwanda, by Gender

Gender	2000		2006		Change (share)	
	Formal	Informal	Formal	Informal	Formal	Informal
Percentage by gender						
Female	21	79	18	82	-3	3
Male	23	77	22	78	-1	1
Percentage by sector						
Female	34	38	31	37	-4	-1
Male	66	63	70	63	4	1

Sources: Elaborations based on NISR 2001, 2007.

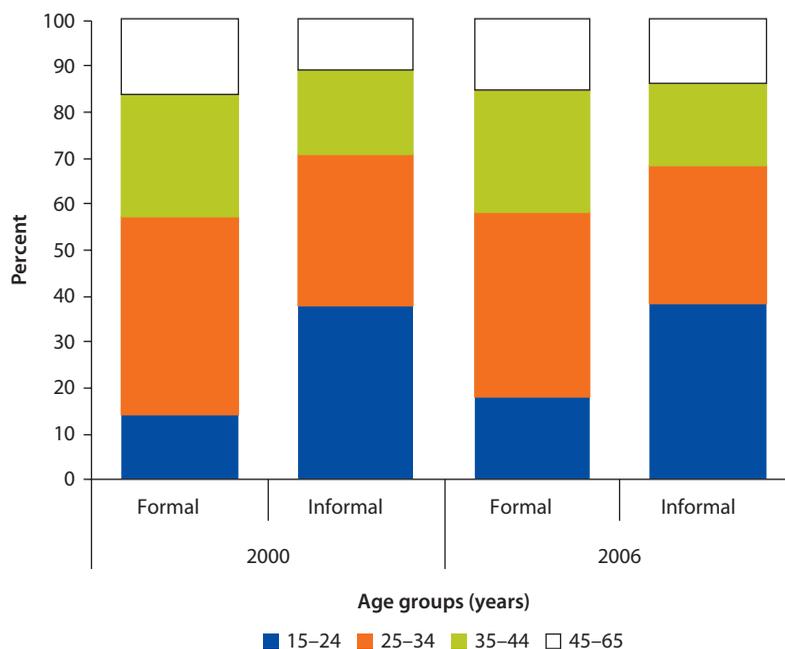
Figure 8.3 Informal Sector Employment in Rwanda, by Gender and Location

Sources: Elaborations based on NISR 2001, 2007.

because women are more likely to be in the farm sector. In fact, in Kigali as well as in secondary cities, the informal sector is made up of almost as many women as men.

Most youth find their way into the labor market through the informal sector. One-third of all workers (15–65 years of age) in the nonfarm sector were under 25 years of age in 2006. However, youth (15–24 years of age) accounted for less than one in five formal workers, compared to two in five informal workers. The share of youth among formal sector workers nonetheless increased between 2000 and 2006 by 4 percentage points (figure 8.4).

Evidence indicates labor mobility between the formal and informal sectors, but more so in urban areas. In urban areas, the share of employment in the informal

Figure 8.4 Workers in the Formal and Informal Sectors of Rwanda, by Age Group

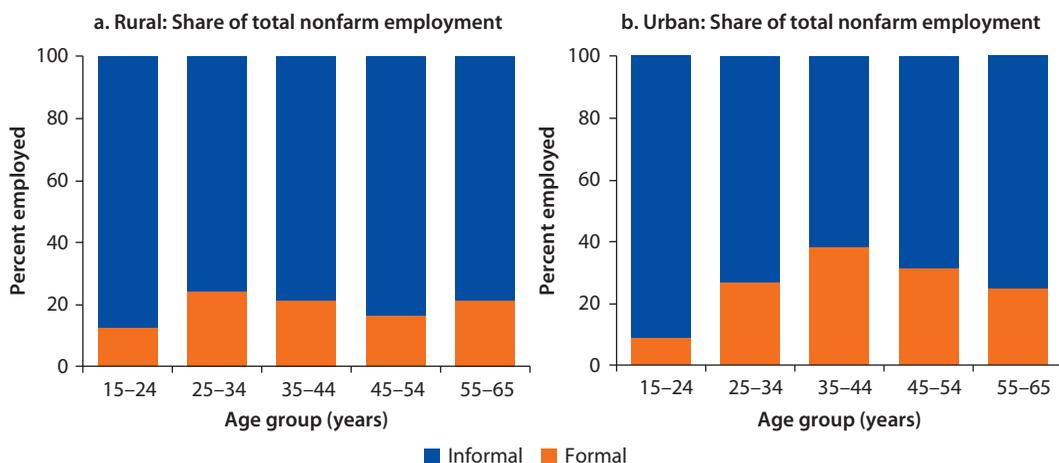
Sources: Elaborations based on NISR 2001, 2007.

sector declines with age up until about 45 years of age, when it begins to rise. The pattern exists but is less pronounced in rural areas. This possibly reflects a combination of separate and distinct patterns of adjustment that are age specific. Youth who start in the informal sector may gradually find their way into a formal sector job, thus leading to a decline in the share of employment in the informal sector. Conversely, those who start in the formal sector after acquiring knowledge and experience on the job may elect to start their own businesses. The urban market appears to be more dynamic in this respect than rural markets (figure 8.5).

Caution is needed in trying to infer patterns of change over time, however. Without panel data, sorting out patterns like the preceding from cross-sectional data is difficult. Whether today's youth will be less likely to enter the informal sector as they grow older, whether women will be more likely to remain there as they grow older, or whether older adults will leave the formal sector to enter self-employment cannot be assessed with confidence from cross-sectional data. The patterns observed in 2006 possibly reflect the realities of what happened to youth and older adults after the civil war. Older adults formerly working in government and other formal sector jobs may no longer have the option for these jobs and may be left with the informal sector as an option. Youth today may face more difficulties in finding a formal sector job and choose instead the informal sector.

The services sector was by far the most important employer in the formal and informal sectors, but with differences between the two (table 8.6). Informal

Figure 8.5 Share of Employed in the Formal and Informal Sectors of Rwanda, by Age Group, Gender, and Geographical Area, 2006



Source: Elaborations based on NISR 2007.

Table 8.6 Distribution of Workers in Rwanda by Sector and Gender, 2006

Sector	Formal		Informal	
	Female	Male	Female	Male
Mining	2	3	1	4
Manufacturing	5	8	6	10
Utilities	1	0	0	0
Construction	1	14	2	14
Commerce	45	32	62	38
Transport, storage, communication	7	6	1	10
Financial, insurance, real estate	3	1	0	0
Public administration	29	5	0	1
Other services	9	31	29	23

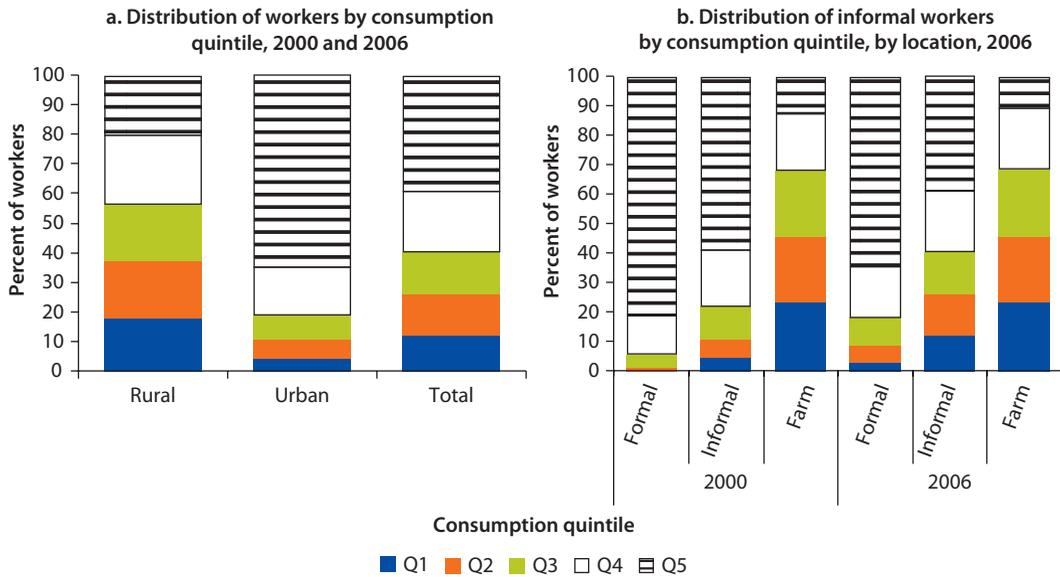
Source: Elaborations based on NISR 2007.

sector workers were more likely to be in construction and “other services” while formal sector workers were more likely to be in commerce and public administration. Within the informal sector, there were also significant differences between women and men. In particular, women were highly likely to be involved in commerce of some sort. Although commerce was also the most important subsector for men, they were considerably more likely than women to be working in the construction or transports/communications sectors.

Poverty

Working in the informal sector lifts more people out of poverty than farming, but not as many as working in the formal sector does. Poverty remains widespread in Rwanda. Nevertheless, sectoral differences are important (figure 8.6).

Figure 8.6 Consumption Levels and Informality in Rwanda



Source: Elaborations based on NISR 2001, 2007.

Some 69 percent of farm workers were living in households among the three poorest quintiles. For the informal sector, this percentage was 40 percent, and for formal sector workers it was 17 percent. The share of informal workers among the poorest quintiles increased between 2000 and 2006. This result is consistent with the drop in earnings for the nonfarm sector over time and with the inflow of workers from the farm to the nonfarm sector. Informal sector work in urban areas offers different opportunities than in rural areas. Only 18 percent of urban informal workers lived in households with consumption levels among the three poorest (national) quintiles, compared with 57 percent for rural areas.

Skills and Access to Different Occupations

Raising productivity in the Rwandan economy will require increasing human capital and will be a significant challenge. In 2006, over half the nonfarm workforce had not completed primary school, and some 12 percent did not have any education at all. (Note that because of the inflow of farm workers to nonfarm activities, the average skill level fell in the nonfarm sector between 2000 and 2006.)

Education levels were significantly higher in the formal sector than in the informal sector. Nearly 2 in 3 workers in the informal sector had less than a primary education or no education at all. Only 1 in 50 (2 percent) had completed higher secondary or higher levels of education. This stands in contrast with the formal sector where more than 1 in 5 has higher levels of education or above, and 3 in 5 had completed at least primary education (table 8.7).

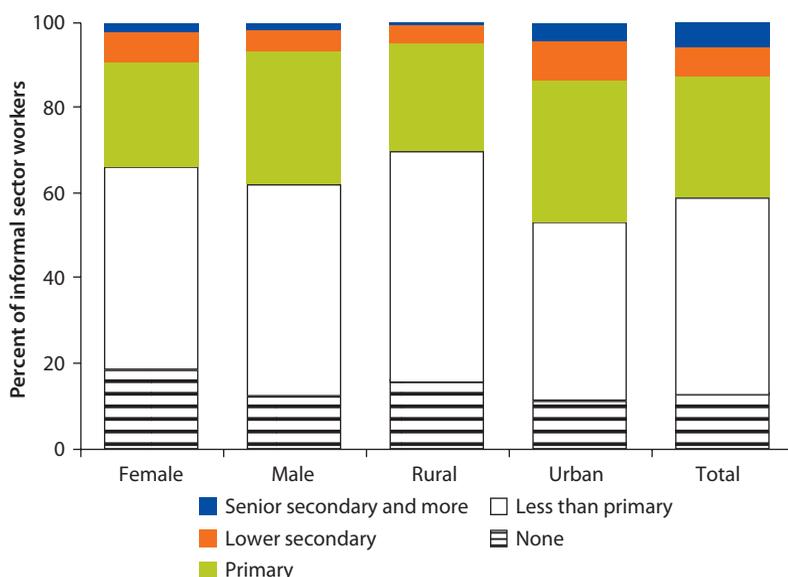
Table 8.7 Education Levels by Formal/Informal, 2000 and 2006

Percent

Education level	2000			2006			Change (share)		
	Formal	Informal	Total	Formal	Informal	Total	Formal	Informal	Total
No education	4	13	11	8	15	12	5	2	1
Less than primary	14	37	32	32	49	42	18	12	10
Completed primary and some secondary	24	26	26	27	28	28	3	2	2
Completed lower secondary and some higher secondary or vocational	24	14	16	10	6	8	-14	-8	-8
Completed higher secondary or extended vocational, and above	35	10	16	23	2	10	-12	-8	-5
Total	100	100	100	100	100	100			

Source: Elaborations based on NISR 2001, 2007.

Note: Columns may not add to exactly 100 percent because of rounding.

Figure 8.7 Education Levels in the Informal Sector of Rwanda by Gender and Location, 2006

Source: Elaborations based on NISR 2007.

Within the informal sector, urban areas have a more educated pool of workers than rural areas. Some 70 percent of rural informal workers did not have any education or at least did not complete primary education, compared with 53 percent for urban areas (figure 8.7). The share of female workers without education was higher than for males, but the share of females with higher levels of education (lower or higher secondary and above) was higher than for males. These patterns point to the importance of policies for improving productivity in the informal sector that distinguish between rural and urban areas by gender.

Table 8.8 Apprenticeships in Rwanda, 2006

Percent

	<i>Frequency of apprenticeships and training, by sector</i>							
	<i>Have been an apprentice in the past</i>						<i>Have attended other training</i>	
	<i>Formal</i>	<i>Informal</i>					<i>Formal</i>	<i>Informal</i>
		<i>Total</i>	<i>Women</i>	<i>Men</i>	<i>Rural</i>	<i>Urban</i>		
Yes	20	21	15	24	19	23	30	14
No	80	79	85	76	81	77	70	68

Source: Elaborations based on NISR 2007.

Table 8.9 Training in Rwanda, 2006

<i>Sector of apprenticeships</i>			
<i>Formal</i>	<i>%</i>	<i>Informal</i>	<i>%</i>
Driver	23	Tailor	23
Mason	22	Mason	15
Other	11	Carpenter	12
Tailor	10	Driver	9

Source: Elaborations based on NISR 2007.

Apprenticeships are an alternative mode of skills acquisition in the formal and informal sectors, especially for male and urban workers. They offer a potential route to developing and adapting skills to labor market needs. In Rwanda, apprenticeships have been a relatively important form of training for both formal and informal sectors. In 2006, the share of informal sector workers who went through apprenticeship was only slightly higher than that of formal sector workers: about one-fifth of workers in each sector reported having had an apprenticeship in the past (tables 8.8 and 8.9). Urban residents and men were more likely to have been apprentices than rural residents or females. Some 37 percent of the informal sector workers reported having paid a fee for the training, suggesting demand and willingness to pay for in-service training.

Apprenticeships offer access to different sectors for men and women. Informal and formal sector workers alike had acquired their apprenticeships in the construction and services sector. Among the informal workers, tailoring was the most common form of apprenticeship (linked to female workers), whereas among formal workers, drivers and masons were the dominating categories of acquired skills. Past apprentices who worked in the informal sector were predominantly employed in construction, commerce, and manufacturing, and they were particularly more prone to work in manufacturing than informal sector workers without apprenticeships or than formal sector workers.

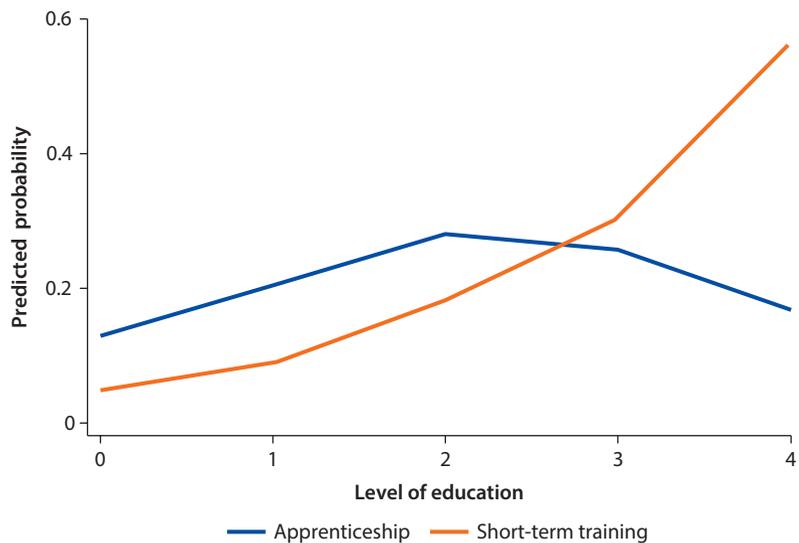
Short-term training is more frequent among formal sector workers and is linked with some level of formal education. A 2006 enterprise survey shows that in a group of 11 African countries, Rwanda is the country with the lowest share of firms in the manufacturing sector offering formal training to their employees.³ On the basis of the household data, short-term training opportunities appear to

be twice as likely in the formal sector as in the informal sector (tables 8.8 and 8.9). Training and formal education also appear to be complements in the informal sector, because workers with higher education were more likely to have gone through training. As an example, less than one in five of those with no education had had training, while one in three with higher-secondary education was likely to have been trained.

The role of formal education differs for apprenticeships and short-term training in the informal sector, as confirmed by multivariate analysis (tables 8A.1 and 8A.2 in the annex to this chapter). Men and workers living in urban areas were more likely to have participated in an apprenticeship, holding other factors constant. People with education at less than a primary level were 13 percent more likely than those with no education to have been apprentices in the past; this increases to 16 percent for those with completed primary. The probability falls, however, for higher levels of education. Some basic education, given its practical orientation, is needed for an apprenticeship, but higher levels of education may not be necessary. For short-term training, in contrast, the probability of receiving training increases monotonically with education (figure 8.8). Education is complementary to short-term training because it increases the chances of training at each education level.

Basic and secondary education (compared with none) open access to the informal sector from farming, while a university-level education increases the likelihood of being in the formal sector. Education and employment opportunities are closely linked. Multivariate analysis (table 8A.3) shows that the likelihood of being employed in the informal sector rises with education but reaches a plateau

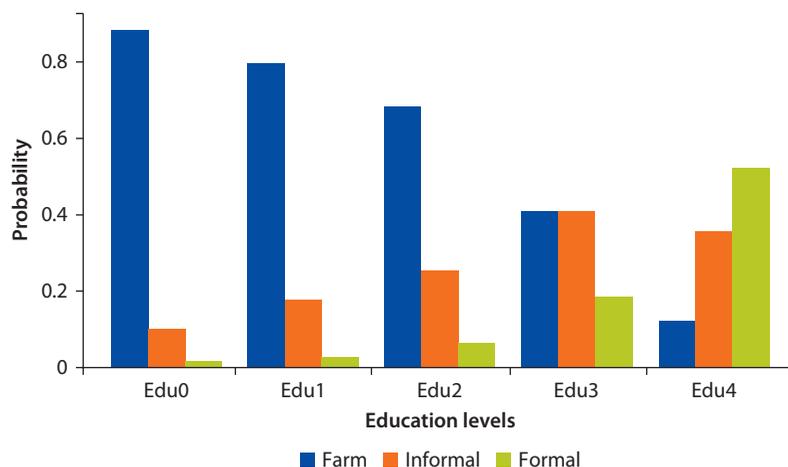
Figure 8.8 Predicted Probability of Apprenticeships and Training for Different Levels of Education in Rwanda



Source: Elaborations based on NISR 2007.

Note: Education levels (0–4) are defined in box 8.1.

Figure 8.9 Predicted Probabilities by Educational Attainment in Rwanda from Multinomial Logit, 2006



Source: Elaborations based on NISR 2007.

Note: Education levels (0–4) are defined in box 8.1.

at higher education (figure 8.9). Employment in the formal sector continues to rise with higher education. For farming, the predicted probability drops with education, from about 80 percent for individuals with no education to less than 20 percent for those with completed lower-secondary education.

Apprenticeships are a path for entry to informal sector jobs. People with an apprenticeship experience are more likely to be in the informal sector than farming but are less likely to be in the formal sector. Technical or vocational training or other forms of training do not significantly affect entry.

Women as primary caregivers may influence access to different sectors. For men, being married increases the probability of formal, informal, and farm work relative to inactivity. However, being married increases the probability of a woman being in farming, though the possibility of being in the informal sector is smaller—in fact, smaller than being in the formal sector. This result can be interpreted as an influence of the multiple roles of women in the Rwandan socio-economic structure. Women who have access to the formal sector can combine a well-paid job with family responsibilities: they may possibly afford child care, household services, and buying rather than growing food. Rurally based women can combine work on the family plot with household chores. The nonfarm informal sector, as an intermediate, may offer more difficult working conditions (less pay than the formal sector, long hours, perhaps more precarious work) that are not compatible with family responsibilities.

Skills and Earnings

The informal sector offers lower earning opportunities than the formal sector—though higher than the farm sector. The earnings hierarchy mirrors the consumption poverty levels discussed previously, and they are of course strongly related;

Table 8.10 Mean Annual Earnings by Sector in Rwanda, 2000 and 2006

Variable	2000 (2001 RF, thousands)			2006 (2001 RF, thousands)			Change (%)		
	Formal	Informal	Farm	Formal	Informal	Farm	Formal	Informal	Farm
Total	6	249	47	273	138	48	-47	-44	2
Gender									
Female	464	220	47	279	106	47	-40	-52	1
Male	544	266	47	270	154	49	-50	-42	4
Area									
Rural	434	199	47	209	106	48	-52	-47	1
Urban	575	281	47	346	177	52	-40	-37	10
Education									
None	520	146	45	159	88	45	-70	-40	0
Less than primary	458	182	47	178	102	46	-61	-44	0
Completed primary	397	263	52	236	124	55	-40	-53	5
Completed lower secondary	500	326	61	322	239	65	-36	-27	5
Completed higher secondary and above	643	481	51	403	344	67	-37	-28	31

Sources: Elaborations based on NISR 2001, 2007.

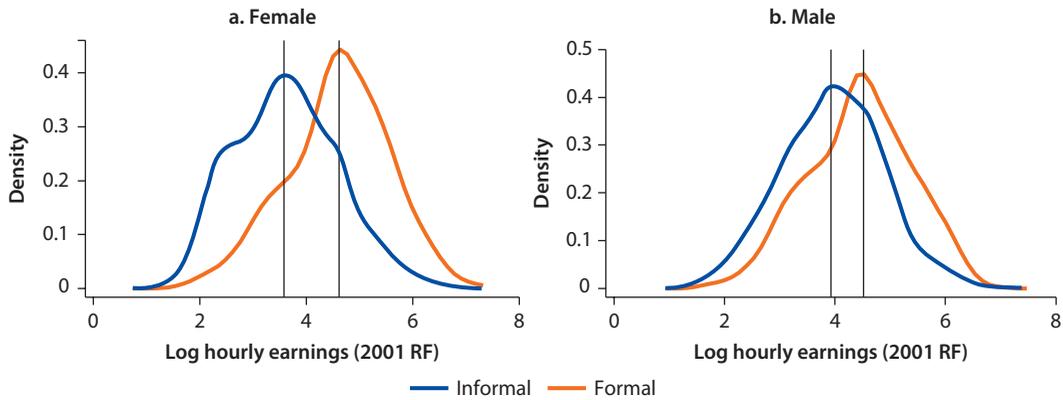
Note: RF = Rwanda francs.

poverty is highest among farm workers because they earn the least from their work. In 2006, mean formal earnings were about twice as high as mean informal earnings (table 8.10). But in turn, informal earnings were almost three times as high as mean farm earnings. In line with the Rwandan earnings and employment structural changes discussed earlier, the earnings in formal and informal sectors (with inflows of workers) fell, whereas those in the farm sector (with outflows) increased marginally. Formal and informal earnings were compressed by nearly half, with the most significant changes occurring for rural areas and for lower levels of education.

In 2006, the earnings of women remained significantly lower than those of men in the informal sector, and there was no earnings gap in the formal or farm sectors. The formal wage premium was consequently significantly higher for women than for men and increased over time, although earnings fell in both formal and informal sectors. In contrast, the urban-rural wage gap was, albeit significant, of the same magnitude for informal and formal sectors.

The payoff to education varies by sector of employment. Additional years of schooling acquired are associated with higher earnings in both formal and informal sectors. However, the returns at each level of education appear to be higher in the formal sector than in the informal sector. The differences between the returns for the formal and informal sectors diminishes at higher levels of education.

Formal sector earnings, at every point of the earnings distribution, are higher than informal earnings, even though some informal workers have comparatively high earnings. The dominance of the formal sector holds for both men and women, but many workers in the informal sector are in fact earning more than those in the formal sector (figure 8.10). The overlap is particularly large for men.

Figure 8.10 Distribution of Log-Hourly Earnings in Rwanda by Gender and Sector, 2006

Source: Elaborations based on NISR 2007.

Note: Vertical lines indicate mean values. RF = Rwanda francs.

A breakout (table 8A.4) shows the following: (a) earnings are higher for men than for women at all levels of education except for women with no education in the formal sector; (b) the gender gap is highest at medium levels of education; and (c) formal sector workers in rural areas earn more than informal sector workers in urban areas at lower and medium levels of schooling but not after completed lower-secondary education.

Apprenticeships and short-term training have an earnings premium, especially in the informal sector. Formal sector workers with some form of short-term training or apprenticeship earn on average 30 percent more than workers with no access to training. In the informal sector, trained workers earn on average 65 percent more than others. Moreover, in the informal sector, the earnings premium for women is higher than for men; the reverse is true for the formal sector. Thus, in the informal sector, women are generally paid less than men and are less likely to have accessed training. When they do, however, it pays off in terms of earnings.

The effect of education on earnings in the informal sector begins at lower levels of education than in the formal sector. Multivariate analysis provides further evidence of the role of education in the informal and formal sectors (tables 8A.5 and 8A.6). In the formal sector, there are no significant returns to lower levels of formal education; the effect starts from lower-secondary schooling. In the informal sector, in contrast, all levels of education carry an important additional premium, although the premium increases with level of education. Apprenticeships and attending a technical or vocational school turn out to be a significant factor for earnings only in the informal sector, and the effects are in magnitude similar to those of getting some education (still less than primary) compared to no education at all. Compared with 2000, in 2006 the returns to education and apprenticeships had fallen slightly in the informal sector, especially at higher levels of education (table 8A.7). Using years of schooling instead of completed levels of education, the return to one additional year is slightly higher in the formal sector than the informal sector (8.3 percent compared with 7.6 percent).

Compared with other countries, smaller differences in returns exist between formal and informal sectors in Rwanda. Set against estimates for seven West African cities (discussed in Kuepie, Nordam, and Roubaud 2006), these results place Rwanda at the lower end for formal sector returns but at the higher end for informal sector returns. Other significant variables behave as expected. Earnings increase with age (but the effect becomes smaller over time); there is an urban premium; and the southern and western provinces of Rwanda offer lower earnings opportunities, all else equal. Moreover, there is an earnings premium for men in the informal sector, while this is not the case for the formal, regulated sector.

In summary, the informal sector has become a growing source of employment for Rwanda, and skills are making a difference to earnings and poverty reduction in the sector. The informal sector is an intermediate point on a continuum between low-productivity agriculture (where the majority of the population still works) and the higher-paying jobs in the formal sector. It includes the self-employed, family workers, and informal wage workers. Several different forms of skills acquisition pay off in the informal sector (i.e., apprenticeships, some formal education, even at lower levels, and vocational training). In the formal sector, higher levels of education are needed for access, and only higher levels of education are associated with higher earnings.

Acquiring Skills for the Job Market in Rwanda

National policy acknowledges, but does not clearly develop, the role of skills development for the informal sector. The importance of the small and household enterprise sector and the role of training for work in this sector are partially acknowledged in the Rwandan national policy framework (that is, Umurenge Vision 2020), the Economic Development and Poverty Reduction Strategy 2008–12, the National Employment Policy, the Action Plans for Youth Employment and for Women's Employment, and the Small and Medium Enterprise Development Policy (GoR 2000, 2007a, 2007b, 2009, 2010). However, it is missing from other key strategies, including the National Youth Employment Policy and the Education Sector Strategic Plan (GoR 2006, 2008a). The Rwanda national TVET policy (GoR 2008b) does not provide a specific objective to target training for the informal sector, although it specifies the importance of improving access to TVET for vulnerable groups and promoting entrepreneurship. Overall, however, few specifics are stated about objectives or policies for training the informal sector.

Education

The education system in Rwanda is based on a 6-3-3-4 system (primary, lower secondary, higher secondary, and university bachelor). Access to schooling has increased significantly at the primary and secondary levels. Almost all children (96 percent) of the relevant age group are enrolled in primary school. Completion rates have increased significantly as well. Yet nearly half the children still do not

Table 8.11 Key Education Statistics, Rwanda

<i>Indicator</i>	<i>1999</i>	<i>2008 or latest available</i>
Primary gross enrollment rate (%)	100	151
Primary net enrollment rate (%)	75	96
Primary completion ratio (%)	28	54
Out-of-school children, primary (thousands)	—	60
Lower-secondary gross enrollment rate (%)	11	28
Higher-secondary gross enrollment rate (%)	8	16
Vocational and technical as a percentage of secondary	25	16
Tertiary gross enrollment rate (%)	1	4

Source: World Bank 2011.

Note: — = not available.

complete primary school and are thus entering the labor market without fundamental capacities (table 8.11).

Enrollment at the postprimary levels has also increased, but only one in six youths is enrolled in higher-secondary education. Lower-secondary school enrollment has nearly tripled, and higher-secondary enrollment has doubled since 1999. Recently, lower-secondary school was made compulsory, but the surge in enrollment preceded this policy change. Women appear to have relatively equal access to school; about half the pupils are females (51 percent for primary levels and 48 percent for secondary levels). Increased school enrollment has, in fact, contributed to lowering employment rates in Rwanda for both youth and children, because more adolescents are studying before entering working life. However, the share of secondary-level students who choose TVET has also fallen.

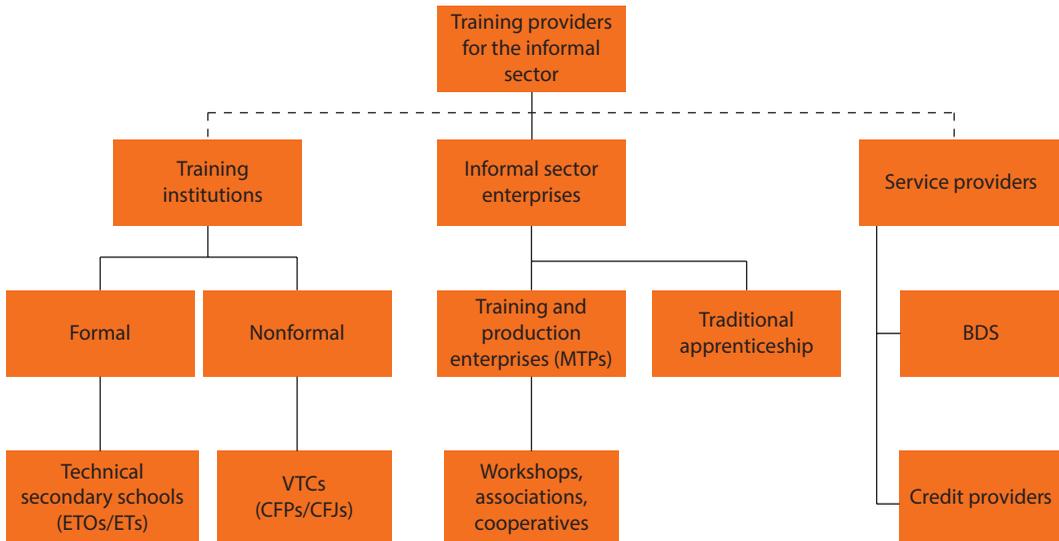
Formal Sources of Skills Development

Three main sources can be identified in Rwanda for informal sector training: training institutions, informal sector enterprises, and service providers. Figure 8.11 shows a typology for informal sector training.

- Technical secondary schools (TSSs) are part of the formal TVET system, cater to upwardly mobile youth, and prepare students both for postsecondary education (though few continue at this level) and entry to the labor market.
- Vocational training centers (VTCs) are institutions mainly for preemployment training for basic education graduates or dropouts. They are terminal in the sense of not feeding graduates into higher levels of education or training.⁴

Two types of informal sector enterprises provide skills for employment in the informal sector.

- Training and production enterprises, including microenterprises, deliver short, intensive, organized curricula mainly to out-of-school youth, combined with practice in producing goods.

Figure 8.11 Typology of Informal Sector Training

Source: Johanson and Kayiranga Gakuba 2011.

Note: BDS = business development services; CFJ = Centre de Formation des Jeunes; CFP = Centre de Formation Professionnelle; ET = École Technique; ETO = École Technique Officielle; MTP = microtraining provider; VTC = vocational training center.

- Traditional apprenticeships cater mainly to young males in the labor market. The training is based on ad hoc assignments given by master craftspersons, is not organized, and is characterized as learning by observing and learning by gradually doing more difficult tasks.
- Service providers of various types also provide business or entrepreneurial skills for self-employment and those wishing to start their own businesses. (This category is not covered here.)

Vocational-level training is provided through VTCs. Currently, the courses are mainly for primary school graduates but are expected to receive graduates of the nine-year cycle of basic compulsory education in the future. These courses typically last from six months to one year and operate at a low skill level in various crafts and trades, such as tailoring, hairdressing, woodworking, electrical installation, and masonry. The VTCs are terminal, in the sense that one cannot then proceed to further education or training.

The enrollment in VTCs and TSSs is low compared with general secondary education. VTCs enroll just over 10,000 trainees, about 4,700 of them in public centers. This number is modest, compared with the total number of students enrolled in the secondary level (exceeding some 400,000, according to the World Bank [2012]), and in relation to the more than 2 million children enrolled in primary school. TSSs (École Technique Officielle for the public sector and École Technique for the nongovernmental sector) operate at the higher-secondary level. They take in graduates of lower-secondary school and provide three years

of training, leading to a craftsperson certificate. Enrollment in TSSs is significantly higher than in VTCs, with some 55,000 students.

A mismatch exists between the TVET supply system and the labor market, including lack of relevant and practical skills and lack of common standards and certification systems that help regulate the quality of private provision. First, the system is not sufficiently connected to labor market needs, with both important skills gaps and overproduction of other skills as a result. The lack of relevant skills produced results from lack of market information about skills demands and trainee absorption into the labor market; lack of links between providers and potential employers; insufficient training in entrepreneurship skills for self-employment and informal sector work; and limited enterprise-based training, owing mainly to weak interest in, and incentives for, training by the private sector. The government is aware of these issues and is now working on addressing them.

In addition, employers tend to see TVET graduates as weak on practical skills, owing to lack of up-to-date curricula, insufficient qualified training personnel, and high attrition caused by low pay, lack of equipment for practice, and no serious testing of practical skills. Dated and nonfunctional equipment is a common challenge for public providers, and no system ensures minimum standards through registration or accreditation of private providers.

Access also remains unequal, with women and low-income groups facing higher barriers. Total enrollment in VTCs represents only about 2 percent of the total population 16–18 years of age. Enrollment in TSSs amounts to about 9 percent of the same age group. The pressure to expand enrollment in VTCs and TSSs is expected to grow substantially with the move toward compulsory lower-secondary education; moreover, VTCs are expected to address in part the backlog of primary school dropouts. Females make up 37 percent of trainees in public VTCs (43 percent in private VTCs) but only 25 percent in public TSSs, and reportedly much less for the technical colleges at the postgraduate level. A strong gender dimension biases the different crafts (similar to apprenticeships in the informal sector) because women make up a strong majority of trainees in tailoring, cooking and food processing, and hairdressing, whereas men dominate in trades such as plumbing and welding, carpentry, and the like (Johanson and Kayiranga Gakuba 2011). Furthermore, school dropouts as well as completers have a low chance to acquire skills in the TVET system relevant to work over the life cycle, and low-income groups cannot access financial support for skills acquisition.

Finally, the TVET system appears underfunded. Although total public expenditure on education amounts to around 4 percent of GDP (World Bank 2011), TVET funding has historically amounted to only about 2–3 percent of the education budget. Private sources are also limited; there is no cost-sharing system with enterprises; and households are in turn limited in what they can afford to pay for tuition. Lack of funding reduces the providers' ability to pay competitive salaries, provide adequate equipment, and regularly update human and physical capital.

Because of the limited reach of public provision, private providers dominate training services in Rwanda's TVET system. They rely on tuition and other fees and operate almost entirely without government support, which demonstrates the willingness of students or their parents to pay for skills acquisition.

Nonformal and Informal Sources of Skills Development

Private providers are the main suppliers of nonformal training and appear to meet the demands of females more successfully. Statistics for the TVET system tend to focus on the main public and private training providers. However, a recent survey of training providers showed that when smaller and microtraining providers (MTPs) are included, the private sector dominates training provision in Rwanda, accounting for about 90 percent of all enrollment in training. These private providers differ from the public providers inasmuch as they accommodate a higher share of female trainees—possibly because one-third focus on tailoring—and have considerably fewer trainees per teacher or instructor. Courses average 12 months, with about 70 percent of the time dedicated to practical activities. The private training providers derive income from trainee fees and from the sale of goods and services.

The majority of training providers were very small scale. MTPs have 12 or fewer trainees enrolled, on average only 6 trainees per provider, and 3 trainees per teacher or instructor. They account for less than 10 percent of total private enrollment registered in the survey but nonetheless enrolled twice as many trainees than the public TVET institutions taken together. They are young institutions (half were established between 2006 and 2009), and half are under individual proprietorships, with the other half being associations or cooperatives. Four of five MTPs derive income through tuition and four of six from sales of goods and services. One can fairly assume that this segment is serving women to a higher extent than any other type of provider, especially because MTPs are concentrated in a few categories: two-thirds of enrollment is in tailoring (45 percent), carpentry (14 percent), and beautician services (8 percent).

These findings indicate that private training providers are responding to strong popular demand for skills acquisition and compensating for weaknesses in public provision. In particular, they appear to compensate for lack of a place for women in public training institutions. They constitute the overwhelming majority of training providers in the country, and their numbers indicate an ease of access for clients. A vast majority is fee based, which suggests people are willing to pay to acquire skills. Two-thirds also derive income from production of goods. They operate, apparently successfully, without government regulation or support.

Household-level data as well as a recent survey of African countries suggest that apprenticeships are less important in Rwanda than in similar African countries. Still, one in five employees in the informal and formal sectors has been an apprentice in the past. Results from a small reverse tracer study, while not nationally representative, suggested that a high share of enterprises do have at least one apprentice, that many of the employers with apprentices pay their apprentices, and that these apprentice earnings are comparatively high (box 8.2).

Box 8.2 Enterprise-Based Training Is Important in the Informal Sector: Findings from a Reverse Tracer Study of Micro- and Small Enterprises

To identify sources of training among informal sector workers, Johanson and Kayiranga Gakuba (2011) conducted a “reverse tracer study,” using a stratified sample of 32 microenterprises. About 32 micro- and small enterprises, with an average of 5.9 employees, of the stratified sample were equally divided between urban and rural areas. Over 70 percent of the enterprises were in tailoring, automobile mechanics, construction, carpentry, metalworking, and catering. The survey covered almost 160 employees with an average age of 30 years, 80 percent of whom were male and two-thirds of whom had received more than primary education. The survey showed the following:

- Apprenticeships were important in the informal firms. First, a vast majority—81 percent—of the enterprises had apprentices, averaging 2.6 apprentices per enterprise with apprentices. Only 23 percent of apprentices were required to pay fees; other apprentices were instead compensated, at an average rate of RF 12,770 per month. Second, some 43 percent of employees had undergone training as apprentices in the past, two-thirds within informal sector enterprises.
- The incidence of apprenticeship, and length of training, varied considerably, pointing to the problem of standardization. Apprenticeship training was most frequent in four occupations: tailoring, welding, automobile repair, and carpentry. They varied widely in length between and within occupations, ranging from a few weeks to several years; in carpentry, the shortest apprenticeship identified was for three months, and the longest for four years. Metal works, information technology training, tailoring, and air conditioning and refrigeration take the lead in terms of having the highest percentage of apprentices.
- Informal firms continued to provide enterprise-based training after apprentices “graduated” into regular employment—especially for male-dominated trades. Some 41 percent of employees interviewed said they had received on-the-job training (OJT) after becoming regular employees. Of these, 30 percent received OJT in training institutions, 56 percent in the enterprises, and 14 percent in other locations. OJT was most prevalent in occupations dominated by males, such as construction, carpentry, and welding. OJT was largely funded by enterprises (38 percent) but also by donors (22 percent) and government programs (16 percent).

Employers remain interested in upgrading their own skills as well as those of their employees. Some 32 employers were also interviewed about training. One-fourth of these had gone through apprenticeships themselves, and another fourth had a TVET background. Almost all employers indicated a strong interest in receiving training themselves, and about 80 percent indicated a willingness to pay for it. Almost 70 percent of the employers stated their willingness to pay for training of their workers. Most employers would pay part but not all of the costs.

Source: Johanson and Kayiranga Gakuba 2011.

These findings suggest that the apprenticeship process has a value for employers. Nearly half of employees had been apprentices in the past. A relatively high proportion of employees also received additional training, nearly half outside the firm—probably by the MTPs discussed previously. This finding again suggests value to the enterprise of further skills development. However, the variation in length in apprenticeships within occupations suggests, among other things, a lack of standardized approach to what is considered a fully learned apprentice.

MTPs differ from traditional apprenticeship in several ways. MTPs market their training services and sometimes even have “training” in the title of the enterprise. They follow an organized curriculum designed by the enterprise itself. Training tends to be shorter and more intensive (average 30 hours per week in training) than traditional apprenticeships. Most (80 percent) charge fees for training services. They offer certificates from the enterprise on completion of training. In contrast, traditional apprenticeship has no established curriculum, involves observation and doing progressively more difficult tasks, usually compensates the apprentice for work performed, is of longer and variable length depending on individual progress, and usually offers no certificates on completion.

Although informal systems of training have strong merits, little information exists about its effect on skills, employment prospects, or earnings. These two systems of training within the informal sector operate successfully with little or no government support or regulation and compensate to some extent for weaknesses in public provision of training (table 8.12). They can be highly relevant to employment because they are linked with actual production. However, little is known about the quality and standards of training provided. Because they depend on individual enterprise owners without minimum standards, one can assume that quality varies considerably.

Table 8.12 TVET System vs. Private, Informal, Small-Scale Providers in Rwanda

<i>Characteristic</i>	<i>Weaknesses in TVET system</i>	<i>MTPs and traditional apprenticeship system</i>
Relevance	Lack of employer involvement Lack of responsive training provision	Training by enterprise producers Relatively short training (MTPs) Training responds to immediate market requirements
Coverage	Low coverage overall Low coverage for females	Wider coverage by MTPs than public VTCs Relatively high enrollment of females in MTPs but not in traditional apprenticeships
Skills taught	Lack of equipment Lack of practical skills	Equipment used because training is practical Useful skills taught Extensive workplace exposure for trainees Venture into less traditional areas (information and communication technology and others)
Financing	Inadequate public financing	Self-financed, often combine fees with production

Source: Johanson and Kayiranga Gakuba 2011.

Note: MTP = microtraining provider; TVET = technical and vocational education and training; VTC = vocational training center.

Programs to Improve Skills Development in the Informal Sector

Raising productivity in the informal sector may call for policy interventions, but policies, projects, and programs face challenges in terms of relevance and outreach. In Rwanda, as in many other African countries, examples of training programs exist that are funded by donors, nongovernmental organizations, and governments and could or should be relevant for the informal sector. Some important programs evaluated for the purpose of this study are presented in box 8.3.

The projects show that training programs have had limited effectiveness and that more rigorous evaluations are needed. First, no data are available on cost-effectiveness,⁵ and what data are available suggest that the effectiveness of most

Box 8.3 Case Studies: Programs Relevant for the Informal Sector

KURET-Rwanda by World Vision: Vocational training for vulnerable youth. The project covered four countries, including Rwanda. The objective was to enable vulnerable youth to be removed from, or avoid, unsafe work environments through acquisition of skills that would raise their incomes. The training reached about 830 youth in Rwanda, of whom about 70 percent are female. Training was provided either through VTCs or informally through local artisans.

CARE-NIPS: Assessment of the impact of vocational training and apprenticeship. The purpose was to increase the incomes of orphans and vulnerable children through acquisition of vocational skills. The project provided vocational training for almost 1,400 youth, of whom 63 percent were female. The training was provided through two different types of providers: apprenticeship training and VTCs.

“Education Offers Perspective” with Dutch assistance. Dutch assistance was provided from 2005 to 2008 to training centers operated by a German nongovernmental organization, SOS Children’s Villages, in three countries: Ethiopia, Kenya, and Rwanda. The goal of the project was to combat poverty by creating sustainable employment through provision of relevant, quality vocational training. The project cost €1.9 million. It targeted preservice training for labor market entrants and upgrading informal sector operators. Informal sector training was delivered into two parts: (a) entrepreneurship, training about 140 vocational training staff in entrepreneurship; (b) training for informal sector enterprises, based on surveys and development and delivery of training modules.

Case study of two vocational training centers located in Nyanza. The youth training center, Centre de Formation des Jeunes (CFJ), caters to preemployment training for youth and ex-combatants. The Centre de Formation Professionnelle (CFP) provides preservice training as well as continuous in-service upgrading for adults in employment. Both provide training for the informal sector. The CFJ provides training to about 200 youth in one-year courses, mainly in traditional trades: masonry, carpentry, welding, plumbing, and tailoring. CFJ also provides occasional training for ex-combatants through separate (donor and government) financing. The CFP provides training to about 500–800 adults per year in three- to-six month courses. Over half the graduates have taken various levels of driver training, followed by automobile repair (24 percent of total).

Source: Johanson and Kayiranga Gakuba 2011.

programs is quite limited, with tracer studies showing poor employment rates for many participants. Pretraining preparation is required. When interviewed, employers commonly indicate a willingness to pay for themselves and their employees to acquire skills (as, for example, in the household surveys and the reverse tracer study in box 8.2). In practice, however, employers may be less appreciative of the potential benefits of training. Initial market surveys that canvass demand for training as well as tracer studies on absorption of graduates are therefore important to determine occupations in demand to avoid market saturation.

The training process itself benefits from sufficient length of time and mix with production and hands-on experience. The process needs to be of sufficient duration to guarantee a minimum of essential skills. The use of competency-based training—allowing different lengths of time to acquire specified skills—could solve this problem and improve information and signaling in the labor market. Where training is combined with production for sale (a common approach in the MTPs discussed above previously), apprentices and trainees have a direct link to goods and services markets that help ensure relevance and quality standards of the work performed. Apprenticeships have a clear advantage in relevance, and may raise earnings, but suffer from quality problems owing to lack of equipment and uneven teaching skills.⁶

The case studies suggest that comprehensive approaches work better and that innovative approaches are needed to ensure their cost-effectiveness. Overall, several programs suffer from low employment rates after training, lack of employment in the sector or occupation the trainees were trained for, and low earnings. The limited evidence suggests that training is incomplete if not part of a wider package—including not only training for self-employment but also assistance with credit and follow-up business services. Innovative models are needed to ensure cost-effective interventions (e.g., linking with financial institutions for arranging credit as part of a graduation package).

In-service training in programs receives little attention. Because many youth enter the labor market very early, they may have very few skills from the outset. As seen in box 8.3, the private sector may provide both apprenticeships and OJT. However, public or donor-funded programs tend to look less at reaching youth or adults after they are employed. In doing so, it will be important to try to alleviate some specific constraints that informal sector business operators face, including the opportunity cost of time (suggesting modular training and flexible timing are needed) and cash flow issues (pointing to need for either subsidies or more flexible payment methods, such as opportunity costs of time, cash flow issues) of the informal sector operators.

Conclusions

The nonfarm informal sector has been expanding in Rwanda, absorbing farm workers. The informal sector is the main employer in the nonfarm sectors, absorbing 80 percent of the nonfarm workforce. Although Rwanda remains

a very rural economy, with almost 80 percent of the total workforce in farming, informal sector employment is taking on a more important dimension in total employment over time, with jobs growing at a rate of about 17 percent per year between 2000 and 2006. In this period, the informal sector absorbed a large share of farm workers who left farming for new opportunities in nonfarm activities. The vast majority of young workers who start in the nonfarm sector enter the labor market through a job in the informal sector—9 in 10 youth who are active in the nonfarm sector (and thus not in the farm sector, school, or otherwise “inactive”) work in the informal sector.

The shift into nonfarm activities is positive for household earnings, because earnings in the informal sector are considerably higher than in the farm sector. Although earnings in all but the farm sector fell between 2000 and 2006, they still offered much better opportunities than subsistence farming. With a rapidly growing working-age population and an economy set to grow rapidly in the coming years, the informal sector is likely to be a fundamental source of income and livelihoods for an increasing share of youth, including in rural areas.

More years of schooling are associated with work in better-paid sectors, pointing to the benefits of increasing access to education. Although the formal sector appears to favor those with highest levels of education, there are significant returns to education at all increments for the informal sector. Reinforcing the education system bottom-up could therefore have a considerable payoff, which implies focusing on quality of education at all levels. Those who are most vulnerable in terms of low and variable income are also likely to have lower levels of education. From this perspective, ensuring that all children at least finish a primary education appears to be vital, while opening up opportunities for further education as well.

The study shows important payoffs to apprenticeships—founded on a minimum education—and vocational and technical training in the informal sector. Ways of increasing technical skills before, or during lifelong work, could clearly raise earnings in this sector. Although apprenticeships are as frequent in the formal sector as in the informal sector, in the informal sector, they visibly affect earnings. Importantly, the premium to any form of training is higher for females than for males in the informal sector.

So where could more labor market–relevant skills come from? A comprehensive and coordinated policy with respect to informal sector skills development is needed in Rwanda as elsewhere. The formal TVET system has institutions that cater to training for the informal sector, but they enroll relatively few, concentrate on youth, and teach little entrepreneurship. Access is a problem: women are in a minority, especially in formal institutions, and low-income groups are also largely excluded, because of the direct and indirect costs associated with training. Virtually no in-service training (programs for people already working in the informal sector and wishing to improve their skills) exists.

The private sector is providing a majority of nonformal training opportunities, especially for the informal sector workers, but more information is needed on effectiveness. The importance of private institutions indicates a willingness of parents and caregivers to finance skills acquisition for youth. However, most skills training for the informal sector comes not from formal training but from within the informal sector itself, in the form of MTPs, traditional apprenticeships, and OJT. These two systems operate without government support or regulation, are linked with actual production, and as such are likely to be relevant. However, little is known about the quality and standards of training provided.

When assisting the informal training systems, care must be taken not to damage or distort their effectiveness, including self-financing. Types of support that might be considered include assistance in identifying market opportunities, access to instructor training (adapted to those without formal training qualifications), development of competency-based training programs, and simple teaching aids. Vouchers may help boost trainee demand from lower-income groups, provided safeguards can be created to avoid collusion.⁷

Training programs need to be comprehensive and integrated with other services. Evidence suggests that unless training programs are comprehensive and cover more than technical skills, they will be ineffective. Similarly, they need to be a sufficient length of time. Moreover, benefits of coupling training to other business development services, like credit, should be explored. For example, programs could provide an integrated services package, with access to start-up capital through links with credit providers well in advance of training and follow-up advice (both technical and business). The value of entrepreneurship training for a large group of workers who will end up as self-employed also needs to be emphasized.

The public sector could assist in improving information flows in an environment of fragmented provision. For example, although training needs analyses or tracer studies are central to successful training for the job market, training providers are unlikely to have the capacity individually to undertake such studies. A central capacity could be established, with outreach of market analysis services to diverse providers. These should also assess more carefully the willingness of employers and workers to pay for training and assist in marketing courses better, including information dissemination among enterprises on the value of training.

Annex 8A: Tables

The tables in this annex contain the multivariate analyses underpinning the findings of the chapter. The analyses address the determinants in Rwanda of apprenticeship, short-term training, sector of employment, and earnings.

Table 8A.1 Determinants of Apprenticeship in the Informal Sector, 2006

<i>Variable</i>	<i>Marginal effect</i>	<i>p-value</i>	<i>Standard error</i>
Male	0.081	***	0.069
Age	0.028	***	0.017
Age squared/100	-0.028	***	0.023
Some education but less than completed primary	0.129	***	0.102
Completed primary and some lower secondary	0.159	***	0.106
Completed lower secondary and some higher secondary or vocational education	0.103	**	0.138
Completed higher secondary or extended vocational and above	0.019		0.145
Urban	0.055	**	0.094
Southern province	-0.039		0.106
Western province	-0.013		0.119
Northern province	-0.038		0.134
Eastern province	-0.004		0.136
Number of observations	2,991		

Source: Elaborations based on NISR 2007.

Note: Estimates account for the complex survey design. Taylor-linearized standard errors are reported next to marginal effects. Dependent variable equals 1 if an informal sector worker reports to have done an apprenticeship in the past and zero otherwise. Reference category: education, no schooling; province, city of Kigali.

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8A.2 Determinants of Short-Term Training in Informal Sector, 2006

<i>Variable</i>	<i>Marginal effect</i>	<i>p-value</i>	<i>Standard error</i>
Male	0.033	**	0.067
Age	0.019	***	0.017
Age squared/100	-0.018	***	0.023
Some education but less than completed primary	0.109	***	0.135
Completed primary and some lower secondary	0.223	***	0.134
Completed lower secondary and some higher secondary or vocational education	0.387	***	0.149
Completed higher secondary or extended vocational and above	0.688	***	0.161
Urban	-0.029		0.111
Southern province	0.008	***	0.137
Western province	-0.018		0.135
Northern province	0.025		0.136
Eastern province	0.073	**	0.133
Number of observations	3,134		

Source: Elaborations based on NISR 2007.

Note: Estimates account for the complex survey design. Taylor-linearized standard errors are reported next to marginal effects. Dependent variable equals 1 if an informal sector worker reports to have done an apprenticeship in the past and zero otherwise. Reference category: education, no schooling; province, city of Kigali.

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8A.3 First-Stage Multinomial Logit Sector Selection, 2006

Variable	Informal			Formal		
	Relative risk ratio	p-value	Standard error	Relative risk ratio	p-value	Standard error
Male	1.064	***	0.020	1.202	***	0.045
Age	0.904	***	0.022	0.779	***	0.039
Age squared/100	1.240	**	0.127	1.603	**	0.323
Some education but less than completed primary	1.496	***	0.167	2.772	***	0.591
Completed primary and some lower secondary	3.583	***	0.839	12.429	***	3.943
Completed lower secondary and some higher secondary or vocational education	8.054	***	2.583	122.360	***	45.485
Completed higher secondary or extended vocational and above	6.421	***	1.107	6.627	***	1.370
Urban	0.175	***	0.039	0.237	***	0.069
Southern province	0.225	***	0.050	0.302	***	0.079
Western province	0.193	***	0.045	0.201	***	0.055
Northern province	0.201	***	0.052	0.222	***	0.070
Eastern province	2.706	***	0.245	1.400	**	0.190
Apprentice	1.279	**	0.146	1.723	***	0.232
Training	1.281		0.256	0.743		0.168
Technical/vocational school	0.960		0.108	1.300		0.247
Married	0.389	***	0.040	0.223	***	0.049
Married*female	0.370	***	0.052	0.878		0.223
Widowed	1.171		0.365	0.692		0.427
Widowed*female	0.579	*	0.190	2.003		1.300
Imidugudu	1.058		0.164	1.116		0.267
Imidugudu*female	1.143		0.201	0.617		0.205

Source: Elaborations based on NISR 2007.

Note: Relative risk ratios are presented instead of coefficients. Base outcome: agriculture. Estimates account for the complex survey design. Reference category: marital status, never married; education, no schooling; province, city of Kigali. The specifications also contain a dummy for whether the individual is part of Imidugudu, a low-cost housing scheme to resettle thousands of people who returned at the end of the genocide of the mid-1990s. In many settlements, the beneficiaries did not know each other well and this resulted in a low level of social cohesion with potentially negative effects on economic activities. At the same time, the cultural institutions are less strong and women have more freedom to perform activities in the labor market that are traditionally reserved to men.

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8A.4 Average Annual Earnings by Sector, Gender/Area, and Education, 2006
2001 Rwanda francs

<i>Weighted mean</i>	<i>Formal</i>		<i>Informal</i>	
	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>
No education	199,975	142,610	76,046	95,557
Some education but less than completed primary	166,014	182,062	73,124	115,525
Completed primary and some lower secondary	214,734	242,329	108,584	171,755
Completed lower secondary and some higher secondary or vocational education	311,833	328,064	145,994	295,733
Completed higher secondary or extended vocational and above	365,774	431,778	316,527	365,851

<i>Weighted mean</i>	<i>Formal</i>		<i>Informal</i>	
	<i>Rural</i>	<i>Urban</i>	<i>Rural</i>	<i>Urban</i>
No education	128,907	241,768	76,898	106,099
Some education but less than completed primary	155,382	229,013	85,556	125,332
Completed primary and some lower secondary	196,120	276,665	124,431	184,552
Completed lower secondary and some higher secondary or vocational education	268,295	360,963	191,248	278,227
Completed higher secondary or extended vocational and above	314,931	465,374	216,291	425,840

Source: Elaborations based on NISR 2007.

Table 8A.5 Earnings Equations (OLS), 2006

<i>Model</i>	<i>Basic</i>		<i>Full</i>	
	<i>Formal</i>	<i>Informal</i>	<i>Formal</i>	<i>Informal</i>
Male	0.09	0.305***	0.074	0.285***
Age	0.076***	0.109***	0.076***	0.100***
Age squared/100	-0.085***	-0.125***	-0.086***	-0.115***
Some education but less than completed primary	0.007	0.227***	-0.005	0.199***
Completed primary and some lower secondary	0.154	0.422***	0.152	0.370***
Completed lower secondary and some higher secondary or vocational education	0.397**	0.716***	0.470***	0.587***
Completed higher secondary or extended vocational and above	0.913***	1.347***	1.072***	1.168***
Urban	0.163*	0.143**	0.159*	0.125**
Southern province	-0.207*	-0.279***	-0.205*	-0.280***
Western province	-0.253**	-0.200***	-0.252**	-0.202***
Northern province	-0.088	-0.082	-0.08	-0.075
Eastern province	0.058	-0.067	0.067	-0.082
Imidugudu	-0.372***	-0.035	-0.370***	-0.033
Imidugudu*female	0.314	-0.058	0.315	-0.04
Apprentice			0.064	0.222***
Training			0.07	0.02
Technical/vocational school			-0.205	0.188**
Constant	2.627***	1.338***	2.631***	1.484***
R-squared	0.26	0.27	0.27	0.28
Number of observations	646	2,292	646	2,292

Source: Elaborations based on NISR 2007.

Note: Dependent variable is the logarithm of hourly earnings (2001 RF). Estimates account for the complex survey design. Reference category: education, no schooling; province, city of Kigali. OLS = ordinary least squares.

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8A.6 Selection-Corrected Earnings Equations (Second Stage), 2006

Variable	Formal sector			Informal sector		
	Coefficient	p-value	Standard error	Coefficient	p-value	Standard error
Male	0.116		0.082	0.400	***	0.050
Age	0.088	***	0.031	0.100	***	0.010
Age squared/100	-0.101	**	0.040	-0.117	***	0.015
Some education but less than completed primary	0.022		0.156	0.229	***	0.073
Completed primary and some lower secondary	0.212		0.182	0.407	***	0.080
Completed lower secondary and some higher secondary or vocational education	0.597	**	0.271	0.649	***	0.113
Completed higher secondary or extended vocational and above	1.308	***	0.422	1.161	***	0.117
Urban	0.220	*	0.129	0.314	***	0.066
Southern province	-0.222	**	0.104	-0.428	***	0.072
Western province	-0.259	**	0.122	-0.327	***	0.079
Northern province	-0.108		0.119	-0.216	***	0.082
Eastern province	0.043		0.124	-0.219	***	0.082
Apprentice	0.047		0.099	0.321	***	0.051
Training	0.098		0.073	0.046		0.058
Technical/vocational school	-0.228	*	0.126	0.235	***	0.090
Imidugudu	-0.363	***	0.120	-0.023		0.074
Imidugudu*female	0.270		0.352	-0.062		0.145
Selection term	0.158		0.227	0.305	***	0.085
Constant	2.015	**	1.029	1.041	***	0.202
Number of observations	646			2,292		

Source: Elaborations based on NISR 2007.

Note: Dependent variable is the logarithm of hourly earnings (2001 RF). Estimates account for the complex survey design. Reference category: education, no schooling; province, city of Kigali.

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8A.7 Comparisons of Returns to Education (OLS), 2000 and 2006

Variable	2000		2006	
	Formal	Informal	Formal	Informal
Some education but less than completed primary	-0.196	0.191**	-0.009	0.199***
Completed primary and some lower secondary	-0.004	0.393***	0.146	0.370***
Completed lower secondary and some higher secondary or vocational education	0.416	0.716***	0.485***	0.588***
Completed higher secondary or extended vocational and above	0.740*	1.304***	1.094***	1.167***
Apprentice	-0.022	0.283***	0.096	0.223***
Training	0.052	0.147*	0.047	0.021
Technical/vocational school	-0.204***	-0.004	-0.208	0.190**

Sources: Elaborations based on NISR 2001, 2007.

Note: Dependent variable is the logarithm of hourly earnings (2001 RF). Estimates account for the complex survey design. Reference category: education, no schooling; province, city of Kigali. OLS = ordinary least squares.

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8A.8 Comparisons of Returns to Education (Selection Corrected), 2000 and 2006

Variable	2000		2006	
	Formal	Informal	Formal	Informal
Some education but less than completed primary	-0.151	0.198**	0.016	0.228***
Completed primary and some lower secondary	0.083	0.404***	0.203	0.406***
Completed lower secondary and some higher secondary or vocational education	0.572	0.739***	0.605**	0.648***
Completed higher secondary or extended vocational and above	0.949*	1.334***	1.316***	1.158***
Apprentice	-0.013	0.292***	0.080	0.318***
Training	0.072	0.158*	0.073	0.047
Technical/vocational school	-0.224**	-0.002	-0.230	0.235***

Sources: Elaborations based on NISR 2001, 2007.

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes

1. This chapter is largely based on Ranzani (2011) and Johanson and Kayiranga Gakuba (2011).
2. Data sets are available in the World Bank Labor Market microlevel database: <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTEMPSHA GRO/0,,contentMDK:22135862~pagePK:148956~piPK:216618~theSitePK:2743783,00.html>.
3. The Rwanda enterprise survey was conducted in 2006. For methodology and data, see <http://www.enterprisesurveys.org/data/exploreconomies/2006/rwanda/>.
4. In the new TVET strategy, VTCs are foreseen to have the same curriculum as TSSs and, therefore, to provide formal training.
5. No rigorous evaluations of training programs are available to date. The following conclusions are based on interviews and other qualitative material and, where available, some tracer studies.
6. The finding is consistent with other reviews that point to uneven quality as one of the weaknesses of traditional apprenticeship training (Johanson and Adams 2004).
7. See the *Jua Kali* project in Kenya (Johanson and Adams 2004).

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