

# Skills Development in the Informal Sector: Ghana

## In This Chapter

Since the 1990s, Ghana has seen buoyant and pro-poor growth coupled with broadened access to basic education. Although the share of nonfarm employment has remained stagnant, at about half the population, recent years have seen an increasing and indeed dominant role for the nonfarm informal sector, while public sector employment has diminished as a result of economic reforms. The informal sector is predominantly urban and, unlike formal wage work, dominated by female operators. Informal sector activities have a lower risk of poverty than farm activities, but higher than formal sector activities. A large share of youth build basic skills through apprenticeships and on-the-job training; they have limited access to formal technical and vocational education. Improving the quality of apprenticeship training will be part of a strategy to improve the employment and earnings of those in the informal sector.

## Introduction

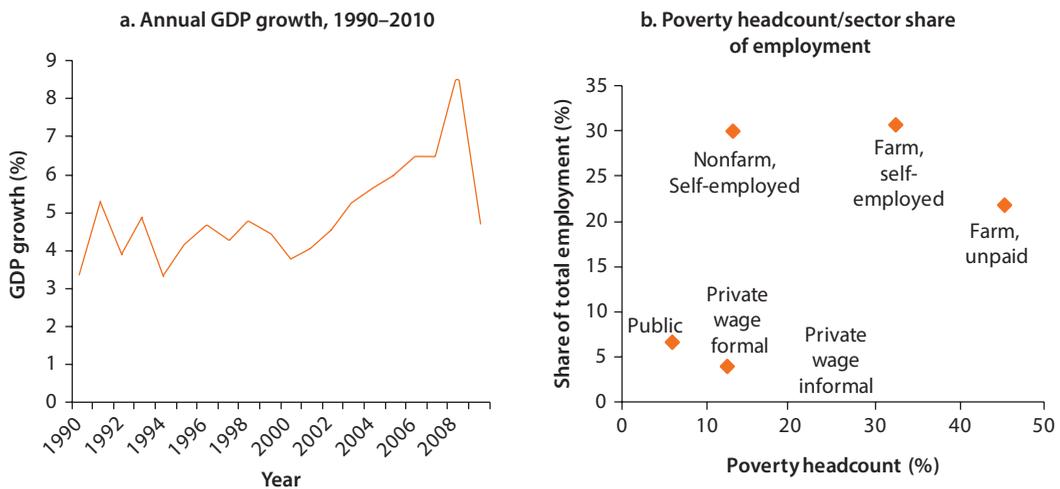
Ghana has seen high growth rates and significant poverty reduction since the 1990s,<sup>1</sup> with growth in gross domestic product (GDP) averaging over 5 percent. The main drivers have been a combination of export opportunities in mining and cocoa, domestic consumption, and public investment, with solid macroeconomic management that has attracted foreign aid and remittances to finance part of the investments. Importantly, decisive productivity improvements were registered in the farm sector. This strong economic performance resulted in substantial poverty reduction, among both nonfarm and farm households: total poverty levels were almost halved between 1991 and 2006.<sup>2</sup>

Despite earnings increases, the broad labor market structure has remained static. Of Ghana's adult population (ages 25–64), nearly half already worked outside the farm sector as of 1990. However, between 1991/92 and 2005/06, the share of adult workers engaged in farming employment did not fall, and in real

numbers, high workforce growth implied that the farm sector actually experienced an increase of 1.2 million workers, compared with 1.5 million in the non-farm sector. Thus, even though employment-to-population ratios are high, poverty is not low, because workers remain concentrated in the sectors with the highest poverty levels, especially farming and trade (figure 5.1).

With half the workers engaged in low-productivity farming, high rural poverty rates, and continued expansion of the working-age population, Ghana still faces important social and economic challenges for the future (table 5.1). Strong achievements—solid economic performance, stable economic management, improved access to education—need to be reinforced with further reforms to improve productivity and earnings and to facilitate worker access to better-earning sectors. Improving skills is one of the key pillars of strengthening

**Figure 5.1 High Economic Growth and Low Earning–High Poverty Occupations in Ghana**



Sources: World Bank 2009, 2010.  
 Note: GDP = gross domestic product.

**Table 5.1 Key Indicators, Ghana**

<i>Indicator</i>	<i>Percentage</i>
Growth 2000–10	
Average GDP	5.8
Average GDP per capita	3.3
Annual working-age population	2.8
Employment-to-population ratio	67.0
Farm, share of employment	49.0
Farm, share of GDP	28.0
Rural Poverty Headcount Index	39.0
Urban Poverty Headcount Index	11.0
Income, share held by lowest 20 percent	5.0

Sources: World Bank 2009, 2012.  
 Note: Data are for 2010 or latest available. GDP = gross domestic product.

productivity of small enterprises and individual workers and for raising Ghana's competitiveness. Although access to formal education has increased, a majority of Ghanaian youth still enter the labor market without having completed basic levels of education. Increasingly, they are engaged in small-scale, informal activities in the nonfarm sector. Without a massive expansion of the formal sector work, the nonfarm informal sector will likely be increasingly important for employment. Better preparing youth and adults for these jobs requires a deeper understanding of the characteristics of this sector, the links between earnings and the sector, and how skills affect earnings indirectly and directly, as well as the options for strengthening the supply of skills.

This chapter provides an overview of nonfarm informal and formal employment in Ghana, with a focus on skills availability and its implication for earnings opportunities. More particularly, the chapter discusses the nonfarm informal sector and how to define it, its key characteristics, skill levels among different types of workers, and how this affects earnings. It also presents an overview of the current supply of education and other forms of training and its effect on the ability of young and adult workers to increase their productivity and earnings.

### **Skills, Employment, and Earnings**

Self-employment has increased in Ghana, and a majority of youth and adults work in the informal sector. This section provides a socioeconomic profile of workers in the formal and informal sectors and analyzes the links between earnings and education. Even though the focus is on nonfarm work, the farm sector is at times included for the sake of comparison.

#### ***Measuring the Informal Sector in Ghana***

Ghana has the advantage of having several household surveys that are broadly comparable over time. This analysis is based on different rounds of the Ghana Living Standards Survey (GLSS) from 1991/92 and 2005/06 (GSS 1991–92, 2005–06). Although data are available for 1998/99, youth employment is not comparable between that survey and the other two, because the former does not account for joint work and school activities. In what follows, the discussion focuses on the most recent outcomes (2005/06) but invokes 1991/92 data for a better understanding of trends. Results for youth and adults are presented separately.

As discussed in earlier chapters, different analytical approaches exist to defining the informal sector; in practice, choices may be constrained by questionnaire and data limitations. A first possible division is between wage and nonwage employment (self-employment and family workers). It may also be possible to distinguish informal forms of wage employment. The GLSSs allow not only for distinguishing between wage and nonwage work, but also for identifying both formal and informal wage employment (here defined as workers without written contracts).

Although the share of nonfarm employment has remained static, self-employment has increased among adult workers within the nonfarm sector.

The share of nonfarm employment is high in Ghana compared with several other and poorer African countries (table 5.2). Nevertheless, adult workers (25–64 years of age) were, in 2005/06, not more likely to work in the nonfarm sector than 15 years earlier. The share of nonfarm work among youth (15–24 years of age) has increased, although active youth are still more likely to work on the farm than older workers. Within nonfarm employment, however, a small shift has occurred away from public and toward private wage and nonwage employment, for both youth and adult workers. In total, three of four youth and three of five adults in nonfarm employment are self-employed.

A vast majority of youth and about two-thirds of adults are involved in informal sector work. Using self-employment as a proxy for informal sector work, two-thirds of Ghana's adult employed population in the nonfarm sector and nearly three-quarters of the equivalent youth population are in the informal sector (table 5.3). If informal wage work—defined as wage workers without a written contract—is included, some 72 percent of adults and 86 percent of youth are in informal activities. With this broader definition, informal sector work increased between 1991 and 2005, for both youth and adults.

**Table 5.2 Share of Employment in Ghana by Occupational Status, Youth and Adult**  
Percent

Occupational status	Workers 15–24 years of age		Workers 25–64 years of age	
	1991/92	2005/06	1991/92	2005/06
All wage	27	28	40	37
Public wage	10	3	26	14
Private wage	17	26	14	23
Formal	7	12	9	14
Informal	10	14	5	9
Self-employed	73	72	60	63
Public	10	3	26	14
Private	90	97	74	86
Nonfarm share of employment	29	39	47	48

Source: Elaborations based on World Bank 2009.

**Table 5.3 Share of Nonfarm Work in Ghana by Formality, Youth and Adult**  
Percent

Formality of employment sector	Workers 15–24 years of age		Workers 25–64 years of age	
	1991/92	2005/06	1991/92	2005/06
Formal	17	15	35	28
Public	10	3	26	14
Private	7	12	9	14
Informal	83	86	65	72
Wage	10	14	5	9
Self-employment	73	72	60	63

Source: Elaborations based on World Bank 2009.

### ***Comparing the Formal and Informal Sectors***

Significant differences emerge between workers in the formal and informal sectors. The informal sector employs more women, and although most are in urban areas, they have a significant rural presence as well. Poverty is lower in the informal sector than in the farm sector, but higher than in the formal sector.

### ***Demographics***

Most of the self-employed in the nonfarm sector are women, and most are based in urban areas. Whereas three of four wage workers are men, three of four self-employed workers are women. Although a majority of self-employment takes place in urban areas, almost 40 percent of the self-employed live in rural areas. Compared with people in wage work, more of the self-employed are located outside Accra, the capital (table 5.4).

Informal sector activities have a lower risk of poverty than farm activities, but higher than formal sector activities. As seen in figure 5.2, poverty is more than twice as high for nonwage workers and informal wage workers than for formal sector workers, whether private or public. Nevertheless, the levels of poverty remain significantly lower than poverty in farm activities; the poverty rate of nonfarm informal workers is one-third that of farm workers. Importantly, since 1991, poverty has fallen among all categories of employed—and more so than among the unemployed or the inactive. The significant reduction in poverty in total thus is related not to a structural shift into occupations that offer less risk of poverty, but to improvements in earnings and reductions in poverty in all categories of work, including farming and informal activities.

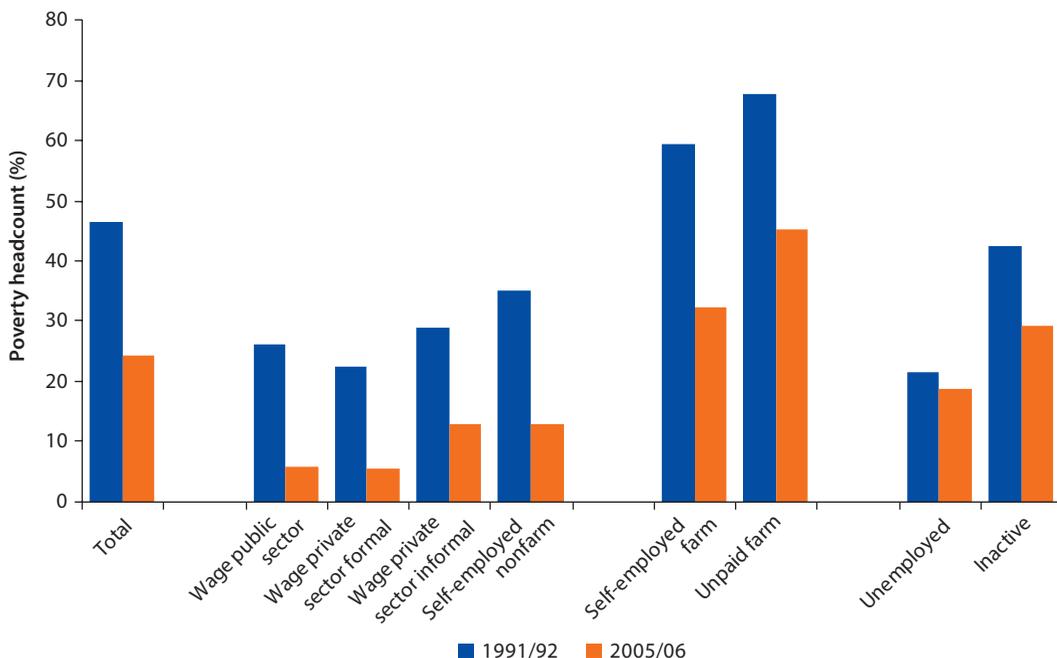
### ***Skills and Access to Different Occupations***

The level of education differs significantly between wage and nonwage workers, and between farm and nonfarm occupations.<sup>3</sup> Education levels are highest in the wage sector, where 1 of 5 workers has been through postsecondary education and where fewer than 1 in 10 has no education at all (table 5.5). Among the self-employed, 1 in 4 remains without any education. However, half the nonwage workers have more than primary levels of education. This stands in contrast with

**Table 5.4 Shares within Sector Employment in Ghana, by Characteristic**  
Percent

<i>Characteristic</i>	<i>Wage</i>	<i>Self-employed</i>	
		<i>Nonfarm</i>	<i>Farm</i>
Age	39	39	43
Female	23	73	38
Urban	73	61	12
Accra	34	21	0
Forest	37	42	48
Coastal	18	19	19

*Source:* Elaborations based on World Bank 2009.

**Figure 5.2 Poverty Rates in Ghana, by Labor Market Status**

Source: Elaborations based on World Bank 2009.

**Table 5.5 Share of Workforce 25–64 Years of Age in Ghana, by Level of Education and Occupation**

Percent

Education	Nonfarm		Farm
	Wage	Self-employed	Self-employed
None	7	24	45
Some primary	4	12	13
Primary	8	14	14
Lower secondary	38	38	26
Technical and vocational education and training	8	4	1
Higher secondary	14	5	2
Postsecondary	21	2	0

Source: World Bank 2009.

the farm self-employed, where less than 30 percent have reached levels higher than primary education and where almost half still have no education.

Access to formal technical and vocational education and training (TVET) is very limited. Table 5.6 shows the share of youth (15–30 years of age) that has been through TVET and apprenticeships, respectively. Overall, only 2 percent of youth 15–30 years of age has been through TVET. As shown, the share is highest in the private formal wage sector, where 8 percent has been through TVET.

**Table 5.6 Share of TVET and Apprenticeships among Youth 15–30 Years of Age in Ghana**  
Percent

<i>Characteristics</i>	<i>TVET</i>	<i>Apprenticeships</i>	<i>Characteristics</i>	<i>TVET</i>	<i>Apprenticeships</i>
All	2	27	All	2	27
Location			Sector of employment		
Urban	4	44	Wage public sector	4	12
Rural	1	20	Wage private formal	8	32
Gender			Wage private informal	2	41
Male	2	27	Self-employed nonfarm	0	51
Female	2	26	Self-employed farm, paid	3	20
Age			Self-employed farm, unpaid	0	9
15–19 years	0	11	Level of education		
20–24 years	2	31	No education	..	9
25–30 years	3	32	Some primary	..	21
Consumption quintile			Primary	..	33
Poorest	1	11	Lower secondary	..	51
Second poorest	1	18	TVET	..	20
Third poorest	1	28	Higher secondary	..	26
Second richest	3	37	Postsecondary	..	7
Richest	4	47			

*Source:* Elaborations based on World Bank 2009.

*Note:* .. = negligible; TVET = technical and vocational education and training.

Women appear to have the same access as men, but TVET is almost exclusively an urban phenomenon and is accessed by students from more affluent families.

Instead, a large share of youth builds basic skills through informal apprenticeships and on-the-job training. The percentage of youth 15–30 years of age participating in an apprenticeship has increased since 1991, and currently, about one of every three youths in this age group has experience as an apprentice. Apprenticeships are more than twice as frequent among urban as rural youth, and both women and men have access to this form of training.

Some minimum level of education appears important to access an apprenticeship, but youth with high levels of education are less likely to use apprenticeships. The likelihood of apprenticeships increases with each level of education at the lower levels of education but peaks in the group with lower-secondary levels of education and is much smaller for those with a higher-secondary or postsecondary education.

Apprenticeships are much more frequent among nonfarm informal sector workers than among formal sector workers. Although workers with an apprenticeship are present in all types of employment, they are more frequently found in nonfarm self-employment and wage employment in the informal sector. Significant numbers also show up in wage employment in the private formal sector.

Education influences earnings indirectly by presupposing access to different sectors. Multinomial logit functions help discern the influence of skills on access to different sectors of occupations while controlling for other personal worker characteristics (sex, age, region, and so on). Largely, these estimations confirm

the importance of higher levels of education in the wage sector compared with the nonwage sector. As shown in table 5A.1, in annex A in this chapter, in urban areas, the likelihood of becoming a wage worker increases with the level of education.<sup>4</sup> Individuals with a basic education, however, are more likely to be self-employed in the nonfarm sector. The larger effect of basic education observed in 2005/06 could reflect the growing importance of this level of education to being able to establish one's own business, but it is also consistent with the hypothesis of expanding numbers of youth completing a basic education who are unable to find wage employment and are left to create their own employment. Family background (which could influence both access to education and access to specific types of employment) does not materially change the results.

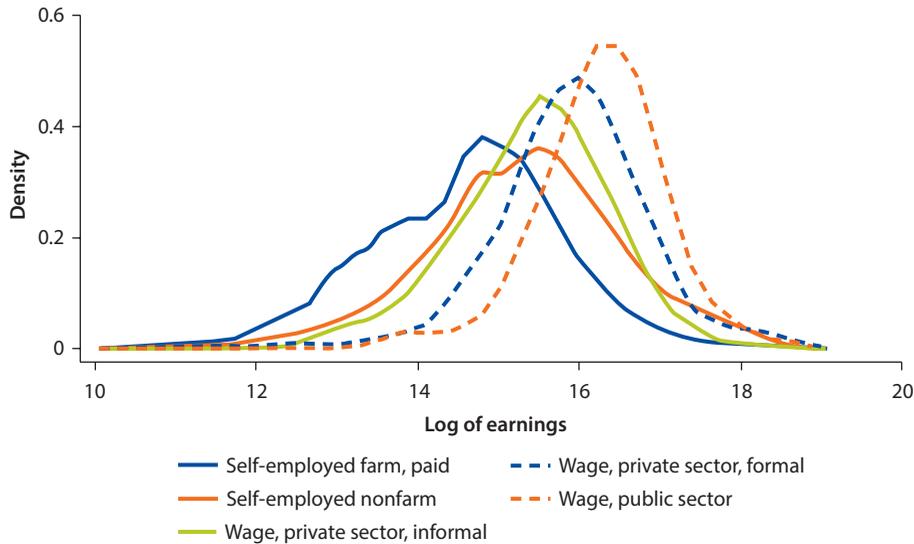
Investing in education is generally associated with moving out of the farm sector to wage or self-employment in the nonfarm sector. The probability of finding wage employment in rural Ghana also rises with the level of education, and in 2005/06, the chances of finding wage employment with a postsecondary education increased sharply (table 5A.2). Though not reported here, the influence of education on the likelihood of becoming self-employed in farming, primarily in subsistence activities, is weaker than for self-employment in the nonfarm sector. In general, having less than a secondary education raises the chances of self-employment in farming, but by substantially less than the chances of self-employment in nonfarming.

TVET exerts a positive influence on wage employment in particular. The likelihood of holding wage employment is slightly higher for those with TVET than for those with a higher-secondary education, although the premium to TVET has fallen over time. The effect on the probability of obtaining wage employment in rural areas is generally lower than that in urban areas, yet it appears to have become a major factor influencing nonfarm self-employment in rural areas.

Apprenticeship offers a pathway to self-employment but is less effective than TVET in opening doors to wage employment. When other factors are controlled for, an apprenticeship does not appreciably increase the chances for wage employment. Evidence indicates that apprenticeship may have this effect for those with low levels of education but not for those with higher levels of education. Formal education is a better investment for increasing the chances of obtaining wage employment. However, an apprenticeship does enhance the probability of becoming self-employed in the nonfarm sector. The relationship has also strengthened over time.

### ***Skills and Earnings***

The difference in poverty across employment categories expresses gaps in earnings opportunities. In Ghana, large gaps in earnings between different types of workers characterize the labor market, with public sector employment paying the highest wages. Figure 5.3 shows a clear hierarchy in wages, with wage workers in the public sector faring best, followed by wage workers in the private formal sector, wage workers in the private informal sector and self-employed workers not in farming, and finally, self-employed workers in farming.

**Figure 5.3 Distribution of Wages and Earnings in Ghana**

Source: World Bank 2009.

Formal sector workers not only have better-paid jobs but also usually bring home other valuable job attributes, such as job security, worker protection, access to pensions, paid leave, and other forms of benefits (a comparison with 1991/92 data also suggests that the public sector wage premium has increased over time).

The informal nonwage sector in particular encompasses both high and low earners. Earnings in informal employment, especially for nonwage workers, are much more heterogeneous, suggesting that this is indeed a sector with a wide variety of opportunities, from distress work to profitable entrepreneurial activities. The groups of wage workers with the highest earnings tend to have a distribution of earnings with a limited spread (less variance in earnings between individuals).

Disparities also are found in earnings by region, socioeconomic group, sector of activities, gender, age, and skills. For example, women earn consistently less than men, regardless of their employment status; the earnings-age profile follows an inverse *U*-shape pattern; in general, earnings increase with education; earnings in the urban sector are higher than those in the rural sector; farm workers have consistently the lowest earnings; and earnings in the manufacturing and trade sectors are at the tail end of the earnings distribution.

Education is linked to higher earnings in wage employment but to a lesser degree in self-employment. For wage workers in urban settings, secondary and postsecondary levels of education generally translate into higher earnings (tables 5A.3–5A.6), but the level and significance of these results depend on area (urban vs. rural) and specification of the estimations.<sup>5</sup> If sample selection is accounted for, the effect of education is less significant for the informal sector and the level of impact is smaller than in the formal sector. Without taking into account sample selection, the effect of secondary and tertiary education, as well

as TVET, is similar across formal and informal sectors. For the self-employed, education has a weaker effect in rural than in urban areas.

There are no private economic returns to primary education in Ghana, pointing to the need for opening up further education opportunities. Evidence in the past has favored primary education over alternative investments in higher levels of education. Continuing to invest in good quality primary education remains important but more from the perspective of the options it opens for postprimary education. Alone, primary education, and in most cases lower-secondary education, does not yield statistically significant earnings gains compared with workers who have no education. However, the additional completion of a higher-secondary education or TVET provides earnings gains for the formal sector in particular. Further gains are found for those with postsecondary education, especially for wage employment, supporting the argument for investment in postbasic education.

Participation in an apprenticeship is not statistically associated with higher earnings in rural or urban areas. Although apprenticeships do increase the chances of becoming self-employed in the nonfarm sector, they do not translate into higher earnings when compared with earnings of the self-employed without an apprenticeship. The relationship is examined for those with an apprenticeship and different levels of education without identifying a positive impact of apprenticeship on earnings. Instead, for the three categories of employment, apprenticeship is frequently associated with having a lower level of earnings when compared with the earnings of people without an apprenticeship.

Beyond education and skills, other socioeconomic factors influence earnings. Men earn more than women, but the gender wage gap is smaller for wage workers than for the self-employed in rural and urban areas. As observed earlier, men are a majority of those employed in the wage sector and farm self-employment. However, only one of four persons in nonfarm self-employment in urban areas is male, yet their earnings are higher than those of women in this employment category and differences are statistically significant. The decline of formal employment, unionization, and public sector employment in the wage sector, earlier, also has implications for earnings. The first two enjoy an earnings premium while holding other factors such as education constant; the declining share of workers in wage employment with these features translates into fewer workers who will realize the higher earnings associated with this employment. Family background—in the form of father's education—does not affect the results on earnings, however.<sup>6</sup>

### **Acquiring Skills for the Job Market in Ghana**

Where do children, youth, and workers get their skills, and what are the key areas in terms of strengthening the skills system? This section presents an overview of key issues in the formal and nonformal education systems. The main conclusion is that access has been expanded, especially at the levels of primary and lower-secondary education, but that a major share of youth still ends up in the labor market with only primary levels of education. Given the very limited supply of

TVET, those who wish to acquire skills are predominantly in traditional apprenticeships, but their quality and relevance may vary significantly.

### **Education**

Ghana has made progress in increasing young people's access to basic education. Gross primary enrollment rates (thus including overage and underage youth) increased from 77 percent in the early 2000s to 106 percent in 2009. With more primary graduates, demand for and access to postprimary levels of education have increased significantly. Gross enrollment rates in lower-secondary education have increased by one-third, from 58 to 78 percent, since 1999. Primary completion rates now reach 88 percent, up from about 70 percent in the early 2000s (table 5.7).

However, national enrollment rates hide disparities across and within regions and to some extent between sexes. Data from 2006/07 show that the Northern and Upper West Regions had primary enrollment rates 10 percentage points below those of the national average. Encouragingly, gender disparities in primary enrollment (whether measured by net or gross enrollment rates) have been eradicated in the past decade; secondary enrollment rates remain slightly higher for males than for females.

The growth in enrollment in public primary schools and higher completion rates have put pressure on the quality of education at both the primary and secondary levels. The expansion in enrollment in public schools has led to higher recruitment of teachers, yet many lack appropriate training. Students in public primary schools also face crowded conditions and poor infrastructure.

Higher-secondary enrollment, likewise, is expanding with conditions similar to basic education. Higher-secondary gross enrollment rates almost doubled between 1999 and 2009 but remain at 35 percent. Regional disparities and some gender disparities also exist, with female gross enrollment trailing behind that of men. Crowding, poor infrastructure of school buildings, and lack of trained teachers remain significant problems at this level, as well.

Quality problems, poverty, and high growth in child and youth populations imply that many children and youth still enter the labor market much before adulthood. Difficult conditions are reflected in the low pass rate for those taking the Basic Education Certificate Examination (BECE) and the Senior Secondary

**Table 5.7 Education Statistics, Ghana**

<i>Indicator</i>	<i>1999</i>	<i>2009 or latest available</i>
Primary gross enrollment rate (%)	77	106
Primary completion ratio (%)	—	88
Out-of-school children, primary (thousands)	1,198	828
Lower-secondary gross enrollment rate (%)	58	78
Higher-secondary gross enrollment rate (%)	19	35
Vocational and technical as percentage of secondary	2	3
Tertiary gross enrollment rate (%)	6	9

*Source:* World Bank 2012.

*Note:* — = not available.

School Certificate Examination (SSSCE). Sixty-two percent passed the BECE in 2005/06, a figure that has been relatively stable since 2002/03 but with great regional variation, and with boys performing better than girls; 59 percent passed the SSSCE. Those failing the BECE and the SSSCE join others who drop out or simply never enroll and who must enter the labor market with limited education and skills. Low pass rates and low enrollment rates at higher-secondary levels imply that a vast majority of individuals younger than 18 years of age are active in the labor market, with weak skills foundations.

### ***Formal and Nonformal Sources of Skills Development***

Beyond the formal education system, the government provides skills training through TVET institutions. These institutions serve the need for intermediate, advanced, and technical skills with entry requirements varying from none to passing the BECE or the SSSCE. There are two main public systems: (a) the Ghana Education Service in Technical Training Institutes under the Ministry of Education, Science, and Sports (MoESS), and (b) the National Vocational Training Institutes run by the Ministry of Manpower, Youth, and Employment (MoMYE). In addition, other technical ministries offer sector-specific training programs, as do community (for-profit and nonprofit) institutions. The number of formal public training institutes is relatively small with some 200 centers, including 26 under the MoESS and 137 under the MoMYE, training approximately 32,500 trainees per year (Darvas and Palmer 2011). A much larger number of private and mostly faith-based centers, both for-profit and nonprofit, enroll a similar number of trainees as the public institutes (430 centers train approximately 34,000 youth per year).

TVET reaches only a small share of the population, making up a marginal share (3 percent) of total enrollment in secondary levels of education. As shown earlier, just over 2 percent of youth 15–30 years of age have been through a TVET program. Access to TVET, like that for secondary and higher education, favors those who come from better-off families.

The upgrading of instructors is important to public and private TVET institutions, as is the improvement of workshops. Only about half of TVET instructors hold the Teacher's Certificate A (from a three-year teacher training college), with a slightly higher percentage in public than in private centers (57 percent, compared with 43 percent). About 84 percent of teachers in public and private centers have obtained the minimum technical qualification of a Technician II Certificate or above. Of the public centers responding, 46 percent of TVET instructors report they hardly ever have in-service training, and another 23 percent say they have this training only once a year. The figures for private TVET institutions are 43 and 23 percent, respectively. Furthermore, in 2005/06, only 12 percent of public training centers and 29 percent of private training centers described themselves as "well equipped." In contrast, 37 percent of public training institutions and 12 percent of private institutions described their facilities as "poorly equipped" or with "no equipment." Public training sites in 2006/07 reported that 18 percent of their classrooms needed major repairs, compared

with 37 percent of those in private institutions. Some public and private institutions offer high-quality training, but they are exceptions.

Programs available for helping youth make the transition to employment are not carefully evaluated. Rigorous evaluations using appropriate control and treatment groups are not available for training programs. Moreover, only a few programs have introduced tracer studies to track placement and earnings of graduates, and those that have lack adequate coverage. The evidence available is largely anecdotal and generally unfavorable. Furthermore, public training capacity in Ghana, like that in many other countries, focuses heavily on the skills needs of the small formal sector and, with few exceptions, does not address the need for entrepreneurial skills in the much larger informal economy.

Given the diversity of TVET providers, finding little coordination in the use of scarce public resources is surprising. Although the National Coordinating Committee for TVET under the MoESS is charged with coordinating public and private providers, it shows little evidence of success, with many different bodies and vested interests involved. The legal framework surrounding the TVET sector is itself fragmented. Recent government actions, supported by donors, have taken steps to strengthen TVET coordination.

### ***Traditional Sources of Skills Development***

Informal enterprises in Ghana are active trainers offering traditional apprenticeships and on-the-job training. As seen previously, apprenticeships in one form or another are a common form of skills development for youth. Traditional apprenticeships consist of private contractual arrangements between a parent or apprentice and a master craftsman. The latter agrees to provide practical training in the workplace, ranging from several months to three or four years, and subsequently to certify the training in return for payment of a fee or payment of reduced earnings to the apprentice while he or she learning.

Enterprise-based training reaches more persons than public training institutions. Although numbers are difficult to come by, Atchoarena and Delluc (2001) report 80–90 percent of all basic skills training comes from traditional or informal apprenticeships in Ghana, compared with 5–10 percent from public training institutions. A 2006 urban-based labor market survey in Ghana, conducted by the Center for the Study of African Economies in conjunction with the Ghana Statistical Office, found one-third of individuals 16–65 years of age had some form of training (Monk, Sandefur, and Teal 2009). Apprenticeship was by far the most common form, with 55 percent being either current or past apprentices. Enterprises in the formal sector also provide short-term training to workers beyond formal apprenticeships, helping upgrade skills and introduce new technologies. On-the-job training was the second most common form of training in the 2006 survey, with 25 percent having received such training. The training offered by enterprises favors those with higher levels of general education (Rosholm, Nielsen, and Dabalén 2007). Formal vocational training trailed in importance, with 16 percent receiving their training from this source. Almost all training programs taken at vocational training institutes can be mastered through traditional apprenticeship.

Because traditional apprenticeships form a major source of skills for youth in Ghana, their quality is an issue. In many countries and business environments, traditional apprenticeships serve the informal sector well, yet are proving too narrowly focused to cope with the increasing pace of technological change, skills upgrading, and expanding markets. Their main strengths lie in their practical orientation, self-regulation, and self-financing. However, traditional apprenticeships in Ghana have many weaknesses: (a) they are gender-biased by occupation, generally with women in lower-paid segments<sup>2</sup>; (b) they exclude applicants from the very poorest households unable to finance modest fees; (c) they are based on traditional technologies because master craftspersons fail to keep up with technological change; and (d) they depend on the master craftsperson for their standards and quality assurance, which vary widely. Almost all apprentices and masters lack formal vocational or technical training, and few have more than nine years of formal schooling (Monk, Sandefur, and Teal 2009).

## Conclusions

The informal nonfarm sector is increasing in importance as a major source of employment for youth and for women. Half of Ghana's adult population, and two in five youth, make their living in the nonfarm sector and particularly in informal activities. A majority of the nonfarm workers are in small, informal activities, and women are especially likely to be self-employed rather than wage workers. Earnings opportunities are higher and poverty rates lower in the nonfarm informal sector compared to farm work. At the same time, poverty rates remain more than double those of informal wage work. Raising the productivity and earnings of this sector is critical to raising the overall well-being and competitiveness in the country. Building means to increase skills is central to this effort, as shown in the payoff to postbasic skills in terms of accessing sectors and raising earnings.

Ghana has taken important steps toward opening access to education and introducing TVET reforms. Although progress has been made in opening access to basic education, quality remains a challenge, because a large majority of youth leave the formal education system without a solid educational foundation. Opportunities for further formal education, however, are limited, and most skills development for youth will, de facto, take place through apprenticeships. The pressure for expansion at postbasic levels is backed by analysis of household data showing that postbasic education opens access to better-paying jobs and higher earnings.

The challenge will be sustaining the gains made in basic education and improving quality while responding to growing demand for postbasic education. Quality notwithstanding, a school-based TVET investment compares well in employment and earnings outcomes with the alternative of a higher-secondary education for those who expect to enter the labor market on completion. Given the expected higher unit cost of these programs, reforms need to focus on strengthening their link with market demand, ensuring a good match of skills and jobs in an economy that is increasingly led by the private sector, and on providing incentives for the efficient use of resources for skills development.

The role of TVET can be strengthened by improving its quality and relevance to enhance its image and outcomes and by improving articulation within the education and training systems. Opening vertical and horizontal pathways between these two systems can provide space for youth to move between general secondary and vocational programs and from TVET to higher levels of education. Curriculum reforms that blend general and vocational content can do this, as can accelerating development of the National Qualifications Framework. The latter will take time, however, and intermediate steps can be taken by engaging employers in setting skills standards and building capacity to test and certify the training available against these standards, including skills in traditional apprenticeships.

Strengthening of the traditional apprenticeships may have positive benefits for earnings. Although traditional apprenticeships have little direct influence on earnings, they offer an entry into nonfarm activities and, as such, to better earnings opportunities. Traditional apprenticeships are probably not the future for skills development in Ghana, with its aspirations for becoming a middle-income country, but they are an important means for improving the current welfare of workers. Care needs to be taken to strengthen the system and increase the productivity of workers with apprentices, without distorting a reasonably well-functioning system. The focus should be on increasing the quality of training and strengthening the value of a completed apprenticeship by (a) bringing literacy to master craftspersons and apprentices; (b) upgrading the technical and pedagogical skills of master craftspersons; (c) opening access to new technologies for master craftspersons; and (d) certifying apprenticeship skills as a guide to their quality.

Greater accountability for performance needs to be introduced, especially within the public sector. Subjecting institutions to competition for public financing and placing public and private institutions on equal footing for receiving this financing can change the incentives for performance. Vouchers, for example, can subject training institutions to competition for resources directly from the beneficiary. Performance-based budgeting is another tool requiring training institutions to compete for public financing where performance may consider such training outcomes as reduced dropouts, higher skill certification rates, and job placement, along with training inputs such as the number of classes and workshops, number of instructors, and number of programs offered. Moving to funding formulas that focus as much on the outcomes and performance of the providers as on the inputs and holding managers accountable for results can change the incentives in a meaningful way to alter the outcomes. Moreover, encouraging public training institutions to earn more revenue through the design and delivery of customized training for employers can further improve incentives for performance.

## **Annex 5A: Tables**

This annex presents the multinomial regression results that explain the effects of different levels and forms of education and training on the sector and type of employment and earnings, for urban and rural areas separately.

**Table 5A.1 Entry into Sectors, Multinomial Logits: Urban Areas**

Variable	Urban, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed, farm	Self-employed, nonfarm	Wage earner	Self-employed, farm	Self-employed, nonfarm	Wage earner	Self-employed, farm	Self-employed, nonfarm
Some primary	1.247 (0.78)	1.718* (1.83)	1.266 (0.85)	1.201 (0.57)	1.009 (0.03)	1.244 (1.05)	1.398 (1.52)	1.425 (1.54)	1.426** (2.17)
Primary	0.991 (0.03)	1.115 (0.37)	0.738 (1.47)	1.760** (2.02)	1.195 (0.75)	1.139 (0.68)	1.321 (1.28)	1.006 (0.03)	1.322* (1.92)
Lower secondary	2.878*** (4.33)	0.815 (0.74)	0.808 (1.08)	4.439*** (5.87)	0.689 (1.48)	1.080 (0.46)	2.706*** (5.63)	0.684* (1.84)	1.133 (0.92)
TVET	14.85*** (4.21)	3.489 (1.54)	1.412 (0.47)	7.856*** (6.15)	0.000 (117.58)	1.360 (1.18)	3.763*** (5.57)	0.166*** (3.61)	0.981 (0.10)
Higher secondary	5.544*** (5.26)	0.575 (0.93)	0.503* (1.85)	7.382*** (6.59)	0.272*** (2.74)	0.903 (0.40)	2.813*** (4.62)	0.365*** (2.87)	0.575*** (2.85)
Postsecondary	5.601*** (5.41)	..	0.175*** (3.57)	11.64*** (7.69)	0.195*** (3.22)	0.676 (1.59)	9.072*** (8.73)	0.091*** (4.24)	0.524*** (2.63)
Apprentice, low education	1.819*** (2.62)	0.749 (1.16)	1.383* (1.89)	1.691** (2.29)	0.657 (1.59)	1.329* (1.88)	1.054 (0.29)	0.746 (1.50)	1.283* (1.71)
Apprentice, medium education	0.909 (0.50)	0.671 (1.38)	2.058*** (4.00)	0.737 (1.53)	0.703 (1.12)	1.927*** (4.22)	0.743** (2.24)	0.656* (1.77)	1.573*** (4.09)
Apprentice, high education	1.617 (1.09)	..	1.401 (0.65)	0.966 (0.09)	1.110 (0.13)	3.349*** (3.37)	1.099 (0.31)	2.429* (1.75)	4.678*** (6.25)
Number of children ages 0–6	1.208 (1.29)	1.169 (0.72)	1.247* (1.78)	0.605** (2.52)	1.188 (0.85)	0.700*** (3.07)	0.796* (1.73)	1.074 (0.36)	1.059 (0.51)
Number of children ages 0–6 squared	0.976 (0.57)	0.969 (0.52)	0.948 (1.51)	1.085 (1.06)	0.953 (0.61)	1.092** (2.16)	1.065 (1.15)	0.946 (0.80)	0.990 (0.23)
Number of children ages 7–14	0.854 (1.40)	0.767** (1.97)	0.896 (1.50)	1.120 (0.76)	0.976 (0.20)	1.074 (0.78)	0.835** (2.25)	0.916 (0.57)	0.944 (0.72)
Number of children ages 7–14 squared	1.005 (0.20)	1.033 (1.44)	1.028*** (2.24)	0.941 (1.48)	0.981 (0.51)	0.991 (0.36)	1.017 (0.81)	1.003 (0.07)	1.003 (0.12)

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**Table 5A.1 Entry into Sectors, Multinomial Logits: Urban Areas** (continued)

Variable	Urban, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed, farm	Self-employed, nonfarm	Wage earner	Self-employed, farm	Self-employed, nonfarm	Wage earner	Self-employed, farm	Self-employed, nonfarm
Age	1.436*** (7.02)	1.277*** (3.47)	1.288*** (5.03)	1.385 (6.57)***	1.245*** (4.37)	1.291*** (7.11)	1.416*** (9.20)	1.472*** (6.63)	1.462*** (11.77)
Age squared	0.996*** (6.52)	0.997*** (3.12)	0.997*** (4.94)	0.996*** (6.22)	0.998*** (3.77)	0.997*** (7.12)	0.996*** (9.26)	0.996*** (6.15)	0.996*** (11.62)
Married	1.853*** (4.16)	1.573** (1.98)	1.570*** (3.69)	1.867*** (3.88)	0.828 (1.23)	1.567*** (4.05)	1.257** (2.16)	1.368* (1.85)	1.201** (2.06)
Men	3.642*** (7.36)	4.024*** (6.01)	0.564*** (4.39)	3.566*** (8.76)	3.872*** (6.59)	0.616*** (3.65)	4.435*** (15.05)	4.400*** (10.57)	0.850* (1.85)
Accra	1.421 (1.10)	0.024*** (3.68)	1.811** (2.04)	1.583* (1.85)	0.241** (2.30)	1.749** (2.19)	2.168*** (3.36)	0.043*** (5.96)	1.387 (1.50)
Forest	1.122 (0.39)	1.195 (0.39)	1.512 (1.48)	1.346 (1.23)	2.080** (1.99)	1.530* (1.70)	1.615** (2.11)	1.610 (1.49)	1.513** (2.03)
Coastal	1.085 (0.28)	1.103 (0.18)	1.549 (1.50)	0.974 (0.10)	1.208 (0.40)	1.254 (0.80)	1.496 (1.50)	1.160 (0.38)	1.353 (1.26)
Father, primary	0.714 (1.08)	0.718 (0.76)	0.734 (1.17)	1.332 (1.05)	0.667 (0.92)	0.984 (0.07)	0.967 (0.17)	1.150 (0.58)	0.803 (1.17)
Father, middle school	0.988 (0.07)	0.437*** (2.89)	0.766* (1.68)	0.974 (0.19)	0.448*** (3.47)	0.790** (2.23)	1.009 (0.09)	0.703* (1.94)	1.092 (0.92)
Father, postmiddle	0.971 (0.13)	0.097** (2.29)	0.838 (0.74)	0.928 (0.32)	0.494* (1.77)	0.880 (0.75)	0.785 (1.70)	0.346*** (3.25)	0.911 (0.70)
Number of observations	2,247			3,104			5,006		

Source: Adams and others 2009.

Note: Urban areas, workers 25–64 years of age. T-statistics in parentheses. .. = negligible; TVET = technical and vocational education and training.

Significance level: \* = 10 percent; \*\* = 5 percent; \*\*\* = 1 percent.

**Table 5A.2 Entry into Sectors, Multinomial Logits: Rural Areas**

Variable	Rural, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Some primary	2.275*** (3.29)	1.446** (2.31)	1.648*** (2.78)	0.556* (1.67)	0.905 (0.79)	1.310* (1.95)	1.851*** (2.74)	1.230* (1.84)	2.261*** (5.65)
Primary	1.437 (1.19)	1.382** (2.12)	1.413* (1.75)	1.021 (0.06)	1.086 (0.62)	1.447** (2.40)	2.188*** (3.23)	1.150 (1.05)	1.794*** (3.91)
Lower secondary	4.055*** (4.74)	1.262 (1.42)	1.735*** (2.85)	3.278*** (3.38)	0.940 (0.46)	1.497** (2.56)	5.280*** (6.91)	1.142 (1.00)	2.418*** (5.58)
TVET	3.971* (1.94)	0.525 (1.35)	1.486 (0.72)	2.201 (1.11)	0.588 (1.48)	0.638 (0.68)	20.12*** (6.67)	0.830 (0.48)	10.54*** (6.10)
Higher secondary	4.866*** (2.83)	0.426* (1.78)	1.101 (0.17)	6.354*** (4.42)	0.636* (1.71)	1.165 (0.43)	13.61*** (8.30)	0.698 (1.35)	2.092* (1.94)
Postsecondary	12.50*** (6.83)	0.082*** (3.88)	0.294 (1.54)	25.14*** (8.34)	0.356*** (3.19)	0.594 (1.28)	68.60*** (11.71)	0.194*** (3.91)	1.884 (1.50)
Apprentice, low education	1.047 (0.17)	0.780 (1.63)	1.277 (1.50)	1.864** (2.11)	1.069 (0.49)	1.706*** (3.64)	4.061*** (6.63)	1.165 (1.30)	2.142*** (5.31)
Apprentice, medium education	0.984 (0.07)	0.838 (0.92)	1.647** (2.43)	0.743 (1.55)	0.887 (0.78)	1.567*** (3.04)	1.425* (1.81)	0.822 (1.32)	1.901*** (3.33)
Apprentice, high education	0.346 (1.31)	0.227 (1.38)	2.375 (0.92)	0.673 (0.91)	1.190 (0.38)	2.284* (1.83)	1.241 (0.37)	1.952 (1.04)	2.948 (1.47)
Number of children ages 0–6	0.758* (1.90)	1.258*** (2.64)	0.908 (1.02)	0.842 (1.30)	1.052 (0.64)	1.087 (0.96)	0.823 (1.49)	0.972 (0.46)	0.941 (0.72)
Number of children ages 0–6 squared	1.031 (0.97)	0.938*** (3.52)	1.019 (0.92)	1.053 (1.41)	1.005 (0.24)	0.968 (1.17)	1.031 (0.93)	0.999 (0.07)	0.982 (0.87)
Number of children ages 7–14	0.859 (1.15)	0.975 (0.33)	0.918 (0.93)	1.035 (0.32)	1.073 (0.97)	0.968 (0.45)	0.769*** (2.64)	0.927 (1.24)	0.869* (1.81)
Number of children ages 7–14 squared	1.013 (0.51)	0.979 (1.46)	1.004 (0.19)	0.986 (0.58)	0.982 (1.09)	1.002 (0.14)	1.044* (1.92)	1.016 (1.12)	1.027 (1.55)

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**Table 5A.2 Entry into Sectors, Multinomial Logits: Rural Areas** (continued)

Variable	Rural, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Age	1.485*** (6.56)	1.175*** (4.35)	1.127** (2.50)	1.429*** (5.76)	1.231*** (7.36)	1.204*** (4.92)	1.319*** (5.17)	1.183*** (6.74)	1.149*** (3.98)
Age squared	0.996*** (6.24)	0.998*** (3.60)	0.999** (2.46)	0.996*** (5.58)	0.998*** (6.49)	0.998*** (5.02)	0.997*** (5.16)	0.998*** (6.18)	0.998*** (4.17)
Married	1.189 (0.79)	0.947 (0.39)	1.136 (0.74)	1.281 (1.23)	0.835** (2.06)	0.970 (0.27)	0.778* (1.67)	1.167* (1.69)	0.981 (0.20)
Men	14.76*** (10.88)	7.560*** (13.19)	0.992 (0.05)	6.723*** (9.12)	3.974*** (12.62)	0.944 (0.44)	7.284*** (12.70)	4.393*** (13.97)	0.481*** (6.24)
Accra	..	..	..	..	..	..	..	..	..
Forest	2.687*** (4.03)	1.930*** (3.89)	0.859 (0.70)	4.214*** (4.55)	2.316*** (4.12)	1.441* (1.66)	2.896*** (4.42)	2.739*** (5.68)	1.494** (2.21)
Coastal	3.203*** (3.88)	1.792*** (2.74)	1.667** (2.11)	7.479*** (6.61)	1.554* (1.87)	2.978*** (4.37)	7.127*** (6.39)	3.925*** (6.22)	3.438*** (5.65)
Father, primary	0.683 (1.11)	0.752 (1.17)	1.152 (0.54)	1.325 (0.90)	0.887 (0.61)	0.921 (0.34)	1.321 (0.98)	1.042 (0.21)	1.277 (1.33)
Father, middle school	0.903 (0.40)	0.547*** (3.35)	1.058 (0.33)	1.222 (1.12)	0.715*** (2.73)	0.927 (0.57)	0.985 (0.09)	1.113 (0.99)	1.251* (1.68)
Father, postmiddle	1.167 (0.38)	0.578 (1.63)	0.624 (1.03)	1.492 (1.54)	0.718 (1.39)	1.663** (2.32)	1.050 (0.16)	0.850 (0.81)	0.756 (1.10)
Number of observations	4,201			5,567			7,973		

Source: Adams and others 2009.

Note: Rural areas, workers 25–64 years of age. T-statistics in parentheses. .. = negligible; TVET = technical and vocational education and training.

Significance level: \* = 10 percent; \*\* = 5 percent; \*\*\* = 1 percent.

**Table 5A.3 Earnings Regressions (OLS): Urban Areas**

Variable	Urban, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Some primary	–0.240 (0.70)	–0.222 (0.59)	–0.125 (0.68)	0.027 (0.08)	0.122 (0.39)	–0.238 (1.70)	–0.004 (0.02)	0.183 (0.76)	0.077 (0.62)
Primary	0.047 (0.16)	0.740 (1.64)	0.161 (0.72)	0.597 (1.63)	0.564 (1.56)	0.025 (0.17)	0.128 (0.80)	0.161 (0.60)	0.018 (0.13)
Lower secondary	0.480 (1.57)	0.143 (0.25)	–0.014 (0.04)	0.537 (1.65)	0.833 (1.44)	0.143 (0.73)	0.329* (1.93)	0.955** (2.39)	0.221 (1.47)
TVET	0.810 (1.57)	–0.199 (0.19)	–0.568 (0.74)	0.000 (0.00)	..	0.000 (0.00)	0.848*** (3.73)	1.494 (1.48)	0.344 (1.53)
Higher secondary	0.916* (1.93)	0.200 (0.16)	0.307 (0.42)	1.036** (2.53)	2.275** (2.11)	0.829** (2.52)	0.839*** (3.57)	0.572 (0.80)	0.448* (1.88)
Postsecondary	1.457* (1.81)	..	1.650** (2.23)	1.182** (2.40)	2.210 (1.54)	0.907** (2.00)	1.904*** (4.46)	0.971 (0.59)	0.771* (1.81)
Apprentice, low education	–0.134 (0.49)	–1.028** (2.38)	–0.184 (0.98)	–0.239 (0.77)	–0.638* (1.90)	–0.068 (0.53)	–0.090 (0.58)	0.238 (0.87)	0.141 (1.27)
Apprentice, medium education	–0.283 (1.08)	–0.626 (1.06)	0.016 (0.06)	–0.246 (1.19)	–0.881 (1.63)	–0.064 (0.40)	–0.082 (0.63)	–0.536 (1.26)	–0.089 (0.71)
Apprentice, high education	–0.021 (0.12)	..	–0.643*** (3.40)	–0.351 (1.16)	–1.437 (1.08)	–0.081 (0.33)	–0.459** (2.11)	0.419 (0.48)	–0.244 (0.83)
Experience	0.070** (2.05)	–0.089 (1.38)	–0.004 (0.12)	0.037* (1.85)	–0.008 (0.13)	0.057*** (2.61)	0.041*** (2.73)	0.038 (0.69)	0.028 (1.46)
Experience squared	–0.001 (1.50)	0.002 (1.74)*	0.000 (0.11)	0.000 (1.30)	0.000 (0.50)	–0.001*** (2.75)	–0.001** (2.39)	–0.001 (0.97)	0.000 (1.38)
Married	0.185 (0.98)	–0.181 (0.60)	–0.058 (0.34)	0.030 (0.29)	0.017 (0.06)	0.096 (0.96)	–0.010 (0.15)	0.259 (1.39)	–0.015 (0.23)
Men	0.186 (0.48)	1.258 (1.38)	0.034 (0.07)	0.353 (1.25)	1.290* (1.64)	0.518** (2.00)	0.414* (1.78)	0.663 (0.92)	0.155 (0.63)

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**Table 5A.3 Earnings Regressions (OLS): Urban Areas** (continued)

Variable	Urban, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Formal job	0.420** (2.36)	-0.265 (0.52)	-0.654** (2.36)	0.217* (1.75)	0.211 (0.41)	0.063 (0.44)	0.180*** (2.81)	..	-0.421 (1.16)
Union	-0.003 (0.03)	..	0.081 (0.32)	0.317*** (4.51)	..	0.039 (0.05)	0.144*** (2.86)	..	-0.183 (0.18)
Public	0.097 (0.85)	..	..	0.078 (1.12)	..	..	0.095 (1.68)	..	..
Accra	0.435 (1.38)	-1.617 (1.25)	0.391 (1.29)	0.462*** (3.16)	-0.421 (0.61)	0.218 (1.41)	0.499*** (3.57)	-0.390 (0.30)	-0.001 (0.00)
Forest	0.116 (0.65)	-0.308 (0.91)	0.054 (0.32)	0.236* (1.87)	0.130 (0.39)	-0.129 (1.01)	0.183 (1.84)	-0.138 (0.60)	0.193* (1.80)
Coastal	-0.017 (0.09)	-0.075 (0.21)	0.261 (1.55)	0.154 (1.30)	-0.392 (1.48)	-0.310** (2.36)	0.253** (2.32)	-0.140 (0.53)	0.116 (0.96)
_m1	-0.149 (0.30)	2.292 (0.95)	-0.645 (0.40)	0.129 (0.37)	1.152 (0.49)	-0.999 (0.85)	-0.204 (0.74)	3.158 (1.55)	-1.090 (1.20)
_m2	-0.499 (0.57)	0.423 (0.47)	-0.852 (0.61)	0.234 (0.33)	-0.018 (0.02)	-1.308 (1.30)	-1.413*** (3.41)	0.313 (0.39)	-0.520 (0.81)
_m3	-0.619 (0.41)	-1.246 (0.34)	0.034 (0.05)	-0.474 (0.55)	-3.522 (1.32)	-0.945** (2.12)	-1.450* (1.87)	1.404 (0.58)	-0.180 (0.46)
_m4	-0.996 (0.82)	5.347** (2.17)	0.299 (0.20)	-0.237 (0.33)	-0.358 (0.18)	-2.334** (2.44)	-1.462*** (2.86)	-0.426 (0.25)	0.149 (0.22)
Constant	1.915 (1.45)	5.930** (1.96)	4.310*** (3.78)	4.149*** (4.42)	3.002 (1.25)	4.605 (6.21)	5.281*** (6.62)	7.067*** (3.40)	7.007*** (11.81)
Number of observations	631	186	817	640	315	1,209	1,413	408	1,745
R <sup>2</sup>	0.289	0.067	0.071	0.246	0.090	0.089	0.319	0.064	0.077

Source: Adams and others 2009.

Note: Rural areas, workers 25–64 years of age. T-statistics in parentheses. .. = negligible; TVET = technical and vocational education and training.

Significance level: \* = 10 percent; \*\* = 5 percent; \*\*\* = 1 percent.

**Table 5A.4 Earnings Regressions (OLS): Rural Areas**

Variable	Rural, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Some primary	0.075 (0.42)	0.137 (1.01)	0.283 (1.14)	0.526** (2.22)	0.225** (2.35)	–0.017 (0.11)	–0.110 (0.47)	–0.044 (0.44)	0.309 (1.26)
Primary	0.128 (0.67)	0.253** (2.02)	0.382 (1.43)	0.308 (1.26)	0.071 (0.66)	0.118 (0.76)	–0.181 (0.82)	0.097 (0.96)	0.142 (0.69)
Lower secondary	0.529** (2.18)	0.654*** (3.42)	0.525 (1.55)	0.399 (1.48)	0.177 (1.20)	0.363* (1.80)	0.341 (1.06)	0.288** (2.25)	0.323 (1.18)
TVET	1.075 (1.28)	1.356** (2.17)	0.691 (1.05)	0.612 (1.00)	0.031 (0.07)	0.234 (0.53)	0.321 (0.55)	0.371 (0.73)	0.772 (0.92)
Higher secondary	0.834* (1.89)	1.870*** (3.73)	0.175 (0.21)	0.482 (1.08)	0.061 (0.17)	0.880* (1.74)	0.628 (1.21)	0.728** (2.11)	0.450 (0.91)
Postsecondary	1.262* (1.66)	2.214** (2.18)	0.199 (0.17)	0.352 (0.47)	0.326 (0.59)	1.102* (1.82)	1.770** (2.09)	1.959** (2.28)	1.226 (1.49)
Apprentice, low education	0.029 (0.17)	–0.038 (0.35)	0.255 (1.20)	0.210 (0.93)	0.083 (0.76)	–0.118 (0.87)	0.349 (1.28)	–0.053 (0.39)	0.230 (0.82)
Apprentice, medium education	–0.123 (0.65)	–0.075 (0.53)	0.177 (0.69)	–0.204 (1.02)	–0.007 (0.06)	–0.013 (0.07)	–0.401* (1.90)	–0.057 (0.32)	0.046 (0.14)
Apprentice, high education	–0.441 (0.86)	–2.009** (2.00)	0.780 (0.77)	0.058 (0.21)	–0.062 (0.15)	0.271 (0.51)	–0.295 (1.06)	–0.468 (0.61)	0.167 (0.35)
Experience	0.043* (1.72)	0.074*** (3.73)	0.044 (1.23)	0.034 (1.41)	–0.032 (1.61)*	0.080*** (2.76)	0.020 (1.05)	0.027 (1.26)	0.002 (0.06)
Experience squared	–0.001* (1.76)	–0.001*** (3.54)	0.000 (1.01)	0.000 (1.01)	0.000 (1.92)*	–0.001*** (3.21)	0.000 (0.57)	0.000 (1.18)	0.000 (0.45)
Married	0.112 (0.95)	–0.040 (0.52)	0.167 (1.25)	0.027 (0.19)	0.114 (1.64)*	0.175* (1.81)	0.134 (1.06)	0.184** (2.06)	–0.052 (0.36)
Men	0.297 (0.65)	1.076*** (3.40)	0.144 (0.26)	0.247 (0.76)	–0.193 (0.93)	0.272 (0.75)	0.697 (1.62)	0.573 (1.35)	–0.426 (0.47)
Formal job	–0.063 (0.33)	0.085 (0.31)	0.039 (0.27)	0.125 (0.87)	–0.195 (0.94)	–0.022 (0.21)	–0.141 (1.18)	0.398 (0.49)	–0.647 (1.40)
Union	0.169 (1.56)	..	..	0.294** (2.20)	..	1.893** (2.19)	0.179* (1.68)	..	–0.758* (1.91)

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**Table 5A.4 Earnings Regressions (OLS): Rural Areas** (continued)

Variable	Rural, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Public	0.077 (0.66)	..	..	–0.167 (1.38)	..	..	0.158 (1.40)	..	..
Accra	..	..	..	..	..	..	..	..	..
Forest	0.171 (0.87)	0.488*** (3.87)	0.385* (1.75)	0.072 (0.32)	0.152 (1.19)	0.051 (0.25)	0.375** (1.97)	0.232 (0.97)	–0.165 (0.44)
Coastal	0.312 (1.51)	0.171 (1.14)	0.763*** (2.88)	–0.196 (0.59)	–0.428** (2.23)	0.091 (0.39)	0.476* (1.81)	0.047 (0.18)	–0.475 (1.04)
_m1	0.297 (1.11)	1.482 (1.57)	0.932 (0.68)	–0.050 (0.13)	–1.097 (1.17)	1.871 (1.44)	–0.331 (0.87)	0.509 (0.56)	–0.577 (0.51)
_m2	0.402 (0.40)	–0.253 (0.76)	0.568 (0.44)	1.677* (1.90)	–0.556 (1.53)	–0.598 (0.50)	–1.361 (1.58)	–0.634 (1.62)	–3.164* (1.65)
_m3	0.320 (0.18)	–1.350 (1.19)	0.710 (1.23)	1.096 (0.91)	0.138 (0.15)	0.102 (0.24)	–2.449* (1.79)	–1.303 (1.45)	–0.248 (0.44)
_m4	–0.102 (0.09)	–1.179 (1.03)	–0.987 (0.51)	–0.655 (0.63)	1.251 (1.46)	0.426 (0.38)	–2.189** (2.37)	–1.186 (1.12)	–0.148 (0.11)
Constant	3.043** (1.97)	1.199 (1.35)	1.912 (0.99)	6.128*** (4.13)	6.589*** (8.15)	4.519*** (4.15)	5.022*** (3.70)	5.847*** (3.85)	6.922*** (5.21)
Number of observations	350	1,838	633	394	2,353	968	488	2,976	1,060
R <sup>2</sup>	0.200	0.088	0.042	0.217	0.107	0.077	0.215	0.056	0.053

Source: Adams and others 2009.

Note: Rural areas, workers 25–64 years of age. T-statistics in parentheses. .. = negligible; OLS = ordinary least squares; TVET = technical and vocational education and training.

Significance level: \* = 10 percent; \*\* = 5 percent; \*\*\* = 1 percent.

**Table 5A.5 Earnings Regressions (Accounting for Selectivity): Urban Areas**

Variable	Urban, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Some primary	-0.250 (0.80)	0.088 (0.50)	-0.109 (0.74)	0.038 (0.12)	0.208 (0.83)	-0.236** (2.02)	-0.028 (0.17)	0.066 (0.35)	0.100 (0.87)
Primary	0.072 (0.34)	0.350 (1.39)	0.181 (1.17)	0.548 (1.46)	0.383 (1.37)	-0.003 (0.02)	0.148 (0.95)	0.074 (0.29)	0.047 (0.35)
Lower									
secondary	0.415*** (2.70)	-0.145 (0.41)	0.095 (0.61)	0.417** (2.00)	0.424 (1.46)	0.057 (0.48)	0.188 (1.59)	0.556** (2.23)	0.340*** (3.02)
TVET	0.539*** (3.27)	-0.164 (0.55)	-0.213 (0.85)	0.525** (2.26)		0.137 (0.78)	0.584*** (4.53)	1.037* (1.83)	0.515*** (3.60)
Higher									
secondary	0.725*** (4.39)	-0.120 (0.18)	0.499* (1.86)	0.838*** (3.86)	1.516** (2.53)	0.460** (2.38)	0.585*** (4.40)	0.006 (0.01)	0.581*** (3.71)
Postsecondary	1.183*** (7.12)		1.719*** (5.44)	0.911*** (4.42)	0.939 (1.51)	0.231 (1.03)	1.302*** (10.01)	0.421 (0.54)	1.001*** (5.28)
Apprentice, low education	-0.165 (0.83)	-0.756*** (3.26)	-0.186 (1.38)	-0.247 (0.79)	-0.474* (1.91)	-0.088 (0.77)	-0.046 (0.34)	0.206 (1.10)	0.127 (1.13)
Apprentice, medium education	-0.277*** (3.27)	-0.061 (0.22)	-0.053 (0.44)	-0.148 (1.43)	-0.318 (0.89)	-0.089 (0.88)	0.031 (0.46)	-0.396* (1.85)	-0.138* (1.74)
Apprentice, high education	-0.183 (1.34)		0.237 (0.79)	-0.241** (2.03)	-0.568 (0.69)	0.041 (0.26)	-0.284*** (3.13)	0.457 (0.72)	-0.221 (1.29)
Experience	0.047*** (3.15)	-0.003 (0.05)	0.010 (0.59)	0.029** (2.11)	0.003 (0.12)	0.035*** (2.76)	0.030*** (2.90)	-0.013 (0.33)	0.047*** (4.06)
Experience squared	-0.001* (1.91)	0.000 (0.47)	0.000 (0.42)	0.000 (1.58)	0.000 (0.14)	-0.001*** (2.91)	0.000** (2.17)	0.000 (0.18)	-0.001*** (3.74)
Married	0.076 (0.83)	0.235 (1.26)	0.016 (0.15)	-0.005 (0.06)	0.180 (1.02)	0.013 (0.17)	-0.011 (0.18)	0.206 (1.36)	0.007 (0.12)
Men	0.090 (1.18)	0.596** (2.38)	0.335*** (3.51)	0.143** (2.26)	0.368** (2.40)	0.389*** (4.91)	0.147*** (3.05)	0.201 (1.15)	0.406*** (7.22)

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**Table 5A.5 Earnings Regressions (Accounting for Selectivity): Urban Areas** (continued)

Variable	Urban, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Formal job	0.427*** (3.44)	-0.188 (0.55)	-0.601** (2.19)	0.218* (1.83)	0.163 (0.30)	0.074 (0.44)	0.201*** (2.94)		-0.362 (1.19)
Union	-0.029 (0.38)		0.149 (0.45)	0.317*** (4.55)		0.046 (0.06)	0.159*** (3.09)		-0.254 (0.26)
Public	0.120 (0.95)			0.106 (1.28)			0.091 (1.52)		
Accra	0.228** (2.48)	-1.722*** (6.06)	0.126 (0.74)	0.434*** (3.90)	0.012 (0.03)	0.061 (0.48)	-0.056 (0.54)	-0.957* (1.77)	-0.240* (1.83)
Forest	0.072 (0.61)	-0.030 (0.08)	0.002 (0.01)	0.203* (1.69)	0.168 (0.43)	-0.170 (1.20)	0.125 (1.20)	-0.372 (1.21)	0.244* (1.94)
Coastal	-0.044 (0.41)	0.143 (0.39)	0.225 (1.30)	0.186 (1.60)	-0.313 (1.02)	-0.319* (1.92)	0.209* (1.75)	-0.303 (0.87)	0.174 (1.16)
Constant	6.364*** (28.27)	6.547*** (8.03)	7.473*** (22.63)	6.430*** (22.71)	6.335*** (11.58)	7.374*** (30.98)	7.099*** (39.44)	7.761*** (10.76)	6.958*** (31.90)
Number of observations	1,413	408	1,745						
R <sup>2</sup>	0.319	0.064	0.077						

Source: Adams and others 2009.

Note: Rural areas, workers 25–64 years of age. T-statistics in parentheses; TVET = technical and vocational education and training.

Significance level: \* = 10 percent; \*\* = 5 percent; \*\*\* = 1 percent.

**Table 5A.6 Earnings Regressions (Accounting for Selectivity): Rural Areas**

Variable	Rural, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Some primary	–0.017 (0.11)	0.059 (0.68)	0.056 (0.32)	0.480** (2.35)	0.134 (1.36)	0.003 (0.02)	–0.016 (0.08)	–0.015 (0.18)	0.364** (2.50)
Primary	0.104 (0.60)	0.182 (2.00)	0.203 (0.97)	0.267 (1.25)	0.126 (1.16)	0.144 (1.08)	–0.120 (0.78)	0.091 (1.01)	0.275* (1.94)
Lower secondary	0.367** (2.37)	0.336 (3.24)	0.185 (0.98)	0.432*** (2.78)	0.329** (2.50)	0.214 (1.47)	0.432** (2.31)	0.200** (2.05)	0.460*** (2.76)
TVET	0.937*** (3.03)	0.928 (1.78)	0.411 (0.82)	0.776 (1.71)	0.030 (0.08)	0.125 (0.33)	0.472** (2.26)	–0.035 (0.15)	0.452 (1.57)
Higher secondary	0.624*** (3.53)	1.060 (3.66)	–0.148 (0.26)	0.770*** (3.90)	0.275 (1.12)	0.324 (1.02)	0.637*** (3.16)	0.326* (1.87)	0.391 (1.20)
Postsecondary	1.023*** (7.30)	0.846 (1.54)	0.244 (0.41)	1.086*** (5.92)	0.675*** (2.65)	0.148 (0.82)	1.230*** (6.26)	0.745* (1.76)	0.221 (0.70)
Apprentice, low education	0.020 (0.14)	0.001 (0.01)	0.176 (1.03)	0.145 (0.63)	0.106 (1.21)	–0.164 (1.55)	0.455*** (3.22)	–0.155* (1.88)	0.208 (1.50)
Apprentice, medium education	–0.131 (0.90)	–0.059 (0.58)	–0.020 (0.15)	–0.253* (1.67)	–0.088 (0.98)	–0.006 (0.05)	–0.256 (1.84)	–0.108 (0.97)	–0.152 (1.11)
Apprentice, high education	–0.302 (1.14)	–1.293 (4.46)	0.605 (0.81)	–0.137 (0.74)	–0.065 (0.23)	0.533 (1.50)	–0.200 (1.09)	–0.298 (0.43)	0.171 (0.54)
Experience	0.029* (1.95)	0.038 (2.86)	0.017 (0.73)	0.019 (1.36)	0.014 (1.17)	0.083*** (5.07)	0.018 (1.14)	0.025** (2.04)	0.036** (1.97)
Experience squared	0.000* (1.79)	0.000 (2.58)	0.000 (0.42)	0.000 (0.95)	0.000 (0.29)	–0.001*** (4.58)	0.000 (0.87)	0.000 (1.45)	–0.001* (1.94)
Married	0.136 (1.26)	–0.012 (0.16)	0.166 (1.31)	0.064 (0.52)	0.084 (1.23)	0.129 (1.37)	0.128 (1.21)	0.209*** (2.73)	0.029 (0.26)
Men	0.004 (0.04)	0.470 (6.50)	0.031 (0.26)	0.073 (0.67)	0.386*** (5.53)	0.329*** (3.35)	0.165 (1.48)	0.436*** (6.15)	0.220** (2.19)

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**Table 5A.6 Earnings Regressions (Accounting for Selectivity): Rural Areas** (continued)

Variable	Rural, age group 25–64								
	1991/92			1998/99			2005/06		
	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm	Wage earner	Self-employed farm	Self-employed nonfarm
Formal job	–0.047 (0.25)	0.108 (0.41)	0.046 (0.20)	0.145 (0.86)	–0.193 (0.89)	–0.010 (0.08)	–0.149 (1.27)	0.510 (0.62)	–0.559 (1.21)
Union	0.169 (1.59)			0.288** (1.96)		1.945*** (3.15)	0.207** (1.99)		–0.805*** (5.30)
Public	0.076 (0.65)			–0.184 (1.10)			0.142 (1.19)		
Accra									
Forest	0.020 (0.21)	0.195 (1.87)	0.287* (1.67)	–0.092 (0.62)	0.427*** (2.86)	0.025 (0.16)	0.069 (0.54)	0.167 (1.43)	0.250* (1.65)
Coastal	0.076 (0.63)	–0.123 (0.93)	0.348* (1.66)	–0.275* (1.76)	–0.302 (1.61)	–0.159 (1.01)	0.084 (0.58)	–0.102 (0.78)	–0.060 (0.36)
Constant	7.099*** (22.29)	6.031*** (24.14)	6.935*** (16.24)	7.129*** (25.83)	6.072*** (23.82)	6.163*** (18.93)	7.276*** (28.55)	6.467*** (28.83)	6.984*** (21.23)
Number of observations	488	2,976	1,060						
R <sup>2</sup>	0.215	0.056	0.053						

Source: Adams and others 2009.

Note: Rural areas, workers 25–64 years of age. T-statistics in parentheses; TVET = technical and vocational education and training.

Significance level: \* = 10 percent; \*\* = 5 percent; \*\*\* = 1 percent.

## Notes

1. This chapter is largely based on World Bank (2009) and Adams and others (2009).
2. However, as noted by Coulombe and Wodon (2007), a possibility exists that the decrease in poverty observed in the Ghana Livings Standard Survey data may have been overestimated because of a weaker increase than expected in the official consumer price data for urban areas outside Accra, which tend to result in relatively low poverty lines for these areas.
3. Note that the terms “lower” and “higher” secondary education are synonymous with “junior” and “senior” secondary education. For the sake of comparisons across the five country cases, the former terms are used consistently in all chapters.
4. The logit function coefficients are relative odds ratios; thus a value of 1.321 for a primary education in the wage earner regressions for 2005/06 means that workers with a primary education have a 32.1 percent higher likelihood of being a wage earner than a worker with no education at all.
5. Both ordinary least squares (OLS) regressions and two-stage regressions taking into account the first stage of selection into sectors are presented in the annex tables.
6. Family circumstances can conceivably influence both access to education and access to specific sectors of employment. For example, families that are more affluent can afford to send children to school and may influence their children’s opportunities in different sectors of employment. High levels of education and access to higher-earning jobs would then be correlated, but not because education directly influences opportunities. If this link is strong, omitting family influence from the estimations may overstate the direct effect of education. To test for this link, results from earnings regressions excluding and including father’s education were compared; however, including the variable does not change the conclusions regarding the effect of education.
7. Labor force data for Ghana in 2000 show that male apprentices were mainly in auto mechanics, carpentry, tailoring, and driving, whereas females were primarily in dress-making, hairdressing, and catering.

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