

Cities and Rural Transformation

A Spatial Analysis of Rural Youth Livelihoods in Ghana

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7.1 Introduction

Ghana has been rapidly urbanizing in the past two decades. The 2010 Population and Housing Census revealed that for the first time more than half of the population lived in the country's urban areas. However, urbanization and economic structural change in Ghana has not followed the normal historical pathway for the economic transformation of an agrarian country (Osei and Jedwab 2016). In China, and much of Asia, urbanization typically followed a period of substantial growth in agricultural productivity (the Green Revolution) that, amongst other things, freed up labour to move into the urban sectors. At the same time, rapid growth in labour-intensive industries, especially export manufacturing, offered productive jobs to workers leaving agriculture (Timmer 1988, Mellor 1976, Rosegrant and Hazell 2000). The pattern of transformation in Ghana is quite different. Ghana has neither undergone a Green Revolution (Nin-Pratt and McBride 2014) nor an industrial revolution (Jedwab 2013), yet urbanization has nonetheless been rapid without industrialization, which typically leads to the rise of 'consumption cities' dominated by employment in nontradable services (Gollin, Jedwab, and Vollrath 2013). A similar phenomenon has been observed for many African countries (Headey, Bezemer and Hazell 2010, McMillan and Rodrik 2011, Diao, McMillan, and Rodrik 2017).

Ghana is one of the many African countries that have experienced recent youth bulges coupled with increasing concerns from policymakers about youth employment. With manufacturing share of GDP falling from 15 per cent in the early 1980s to less than 5 per cent in recent years (The World Bank 2018), the slow creation of manufacturing jobs has particularly strong implications for youth entering the

Authors of this chapter would like to dedicate the chapter to the memory of Eduardo Magalhaes who sadly and prematurely passed away in August 2017.

labour force. Moreover, youth are entering the workforce with higher educational attainment, leading them to demand a different type of job. As is the case throughout the world, the aspirations of most youth in Ghana lie in urban areas and away from rural lifestyles, especially farming (Anyidoho, Leavy, and Asenso-Okyere 2012). However, not only are jobs scarce, but even many highly educated youth lack the necessary skills for them (Aryeetey and Baah-Boateng 2015). Rapid urbanization has also raised concerns among policymakers about the potential effects of the exit of youth from agriculture and an aging agricultural labour force on production and productivity. As youth leave farming and rural areas with rapid urbanization as a backdrop, this chapter assesses the level of the exit from agricultural employment, to what extent youth are leading this process, and if it is true, what are the effects on the structure of rural economy and livelihoods.

It is important to situate the youth employment discussion within the broader context of urbanization. Much of the literature surrounding urbanization and its effects on the rural nonfarm economy (RNFE) builds off the classic Harris and Todaro (1970) framework, in which higher potential returns encourage labour to move from less productive rural agriculture to more productive urban sectors. According to this theory, increases in agricultural productivity also create a push effect that complements the pull of urban manufacturing in influencing rural–urban migration. The RNFE also develops as a result of agriculture–consumption linkages driven by rising farm incomes—particularly through increases in informal trade and local food processing (Haggblade, Hazell, and Brown 1989). Such linkages may contribute to urbanization by releasing labour from agriculture or result from it as urban sectors absorb excess rural employment and open up land for the remaining farmers. As all of these changes take place, the induced technical change theory developed by Hayami and Ruttan (1970, 1985) predicts that farmers would shift their production practices towards more intensive technologies such as fertilizers, hired labour, and other modern inputs to meet rising market demand while also adopting labour-saving technologies such as mechanization as labour becomes more scarce. Through all these factors working together, it can be expected that urbanization would lead to poverty reduction and a more vibrant economy in rural areas. Ravallion, Chen, and Sangraula (2007) show that this has occurred on aggregate in all regions except for Sub-Saharan Africa, where there is no evidence of a strong association between urbanization and rural poverty reduction overall. However, such trends may have recently developed in many African countries, potentially those with strong economic growth performance and at relatively more advanced stages of economic transformation, including Ghana (Kolavalli et al. 2012).

Ghana has always been relatively urbanized compared to other African countries. This is partially due to the post-independence expansion of the cocoa sector (Jedwab, 2013) and the promotion of state-owned industry in the later 1960s and early 1970s (Ackah, Adjasi, and Turkson 2014). By 2010, Ghana's

urban population—defined as people living in settlements of more than 5,000 people—surpassed 50 per cent of total population for the first time (GSS 2013). While Accra and Kumasi, Ghana’s two megacities, continue to attract migrants, the growth of secondary cities and rural towns has also contributed to Ghana’s urbanization in recent years.

Although Ghana has become a low middle-income country and has been considered an African success story, urbanization in Ghana appears not to be associated with the development of labour-intensive manufacturing as observed in much of Asia. Cocoa, gold, and oil accounted for about 80 per cent of Ghana’s exports in 2013, while manufacturing growth has been minimal (Aryeetey and Baah-Boateng 2015). Such a case of urbanization without industrialization typically leads to the rise of ‘consumption cities’ dominated by employment in nontradable services (Gollin, Jedwab, and Vollrath 2016). Therefore, urbanization in Ghana may not be able to generate sufficient manufacturing jobs although engaging in urban informal economy could still be an alternative to the rural poor. As such, development of the RNFE, which can also be driven by urbanization, may be especially important for growth and poverty reduction in Ghana. In a previous study in Northern Ghana, Owusu, Abdulai, and Abdul-Rahman (2011) show that diversification of farm households into nonfarm work is associated with higher income and greater food security.

Therefore, rather than focusing on the rural to urban migration in understanding the impact of urbanization on Ghana’s economic transformation, we focus on the proximity of rural areas to different sizes of cities to assess the linkages between urbanization and rural economic structural change. Similar to Berdegue et al. (2015) in Latin America, we group districts in Ghana by the size of their largest city into four categories; those with no city, small (3rd tier) cities, medium (2nd tier) cities, and metropolises (big cities). This is because other studies have found a population threshold below which cities do not have a major impact on the RNFE while large metropolises exert much larger impacts (Berdegue et al. 2015, Deichmann, Shilpi, and Vakis 2008). An alternative method of capturing the effect of proximity to cities on rural areas would be to measure urban gravity by the light intensity emanating from urban areas reaching rural villages as Binswanger et al. (2016) do for Kenya; however, the required panel data is not available for Ghana.

Ghana has a well-defined south–north divide, which, amongst other things, reflects spatial differences in agroecological conditions, population density, rural infrastructure, and levels of urbanization. We therefore need to take this south–north divide into consideration when analysing spatial heterogeneity associated with cities of different sizes. Focusing on the geographical divide and spatial heterogeneity associated with cities of different sizes, we analyze recent trends in rural household livelihoods in Ghana with a focus on youth. We use data from the two rounds of Ghana’s Population and Housing Census in 2000 and 2010 (GSS 2003, 2013) and the two rounds of Ghana Living

Standards Surveys conducted in 2005–6 and 2012–13 [GLSS5 (GSS 2008) and GLSS6 (GSS 2014)] in our analysis.

We focus on four broad questions in the analysis. First, are patterns of rural employment changing with urbanization and do these changes have any spatial patterns that are associated with proximity to cities of different sizes? Secondly, what are the impacts of rural transformation on the youth in rural areas? Thirdly, what are the impacts of urbanization on agricultural intensification for youth and non-youth? Finally, what are the welfare or income implications of the rural transformation that has created heterogeneous livelihood opportunities? In the next section we address the first two questions together. The third section turns to the third question and analyses the relationship of urbanization and agricultural intensification. The following section addresses the fourth question and discusses the heterogeneous outcomes of poverty reduction and rising middle-class associated with patterns of rural livelihoods. The final section concludes with a few key policy implications.

7.2 Changing Patterns of Rural Employment and Economic Activities with Urbanization

In Ghana, a steady rise in the share of urban population has been accompanied by a rapid exit from agriculture. As shown in Figure 7.1a, the urban population growth rate is consistently more than triple the rural population growth rate, except during the period of poor economic growth under the import substitution strategy between 1970 and 1984. Meanwhile, the share of agriculture in total employment also drops, down to 41.6 per cent in 2010 according to the 2010 census. In 2000–10, the growth rate of agricultural employment falls to below 1 per cent, or about half the rural population growth rate, while the growth rate of non-agricultural employment rises from 3 per cent to above 5 per cent in the same period (Figure 7.1b). This indicates that a rapid expansion of RNFE in the recent years could be a reason for the larger discrepancy between growth rates in agricultural and non-agricultural employment than that between growth rates in rural and urban population.

We classify rural households into three types based on members' reported primary occupations in both the Census and GLSS data: (1) rural households whose members' primary employment is in agriculture and no family members primarily engaged in non-agriculture, for which we call 'agriculture only' households; (2) rural households of which all members' primary employment is in non-agriculture, which are called 'non-agriculture only' households; and (3) households that have members with primary employment in both agriculture and non-agriculture, called 'mixed' households. There is also a small percentage of rural households that do not report any primary employment (classified as 'no-job' households) that are not covered in the analysis.

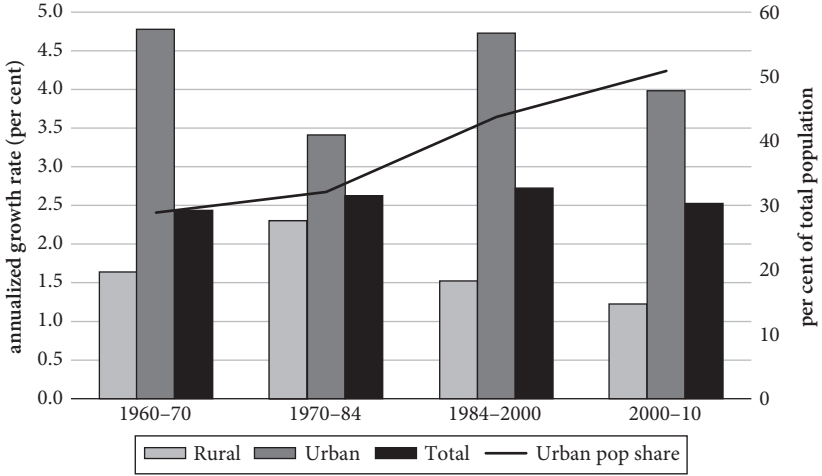


Figure 7.1a. Inter-census population annual growth rate and urban population share in census years

Note: Urban population share is for the census years, which is the ending year of each period in x-axis.

Source: Authors' calculation using data from the five rounds of censuses (GSS 2013).

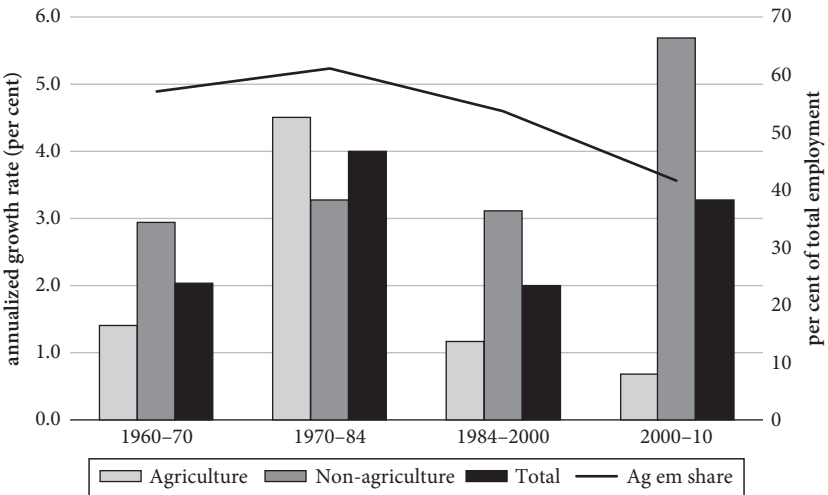


Figure 7.1b. Inter-census employment annual growth rate and agricultural share of total employment in census years

Note: Urban population share is for the census years, which is the ending year of each period in x-axis.

Source: Authors' calculation using data from the five rounds of censuses (GSS 2013).

The groups of households are based on household members' primary employment, which does not imply that agricultural or non-agricultural households do not have incomes created outside their primary jobs. In fact, it is common that some agricultural households have nonfarm income from secondary employment or household enterprises while many rural non-agricultural households also farm. The secondary employment in rural nonfarm activities and nonfarm household enterprises are highly seasonal and unlikely to be households' main income sources. 70 per cent of non-agricultural households who farm have cultivated land less than 2ha, indicating that farming is a part-time activity for most of them. Based on the two rounds of the Census and two rounds of GLSS, Table 7.1 provides the distribution of agricultural and non-agricultural households in the four different survey years. Using data from GLSS5 and GLSS6, the last two columns of Table 7.1 also provide percentages of agricultural and non-agricultural households that have income outside their primary jobs.

Table 7.1 shows the increases in the proportion of non-agricultural households in total rural households alongside a declining share of agricultural households over time according to both the census and GLSS. Somewhat surprisingly, the share of mixed households increased modestly between the GLSS survey years and declined modestly between the two rounds of the census. Compared with the percentage of agriculture-only households in total rural households, shares of agricultural households with nonfarm enterprises are small and declined over time (14.6 per cent versus 11.6 per cent of total rural households in GLSS5 and GLSS6, respectively, see column (5) of Table 7.1). On the other hand, the share of non-agricultural households with cultivated farmland is significant in 2005–6, that is, 9.6 percentage points out of the 19.7 per cent of rural households classified as non-agricultural households do farm. However, in 2012–13, when the share of non-agricultural households increased to 24.8 per cent, the percentage of such households with farmland actually fell (to 8.6 per cent, column (6) of Table 7.1). Table 7.1 seems to suggest a trend in which rural households in Ghana tend to be exiting agriculture altogether rather than diversifying within households. This finding is somewhat puzzling given the extensive literature on intra-household diversification (Owusu, Abdulai, and Abdul-Rahman 2013).

7.2.1 Spatial heterogeneity of rural employment patterns

We now turn to the spatial heterogeneity of rural employment patterns. Ghana has a well-defined south–north divide, which, amongst other things, reflects spatial differences in agroecological conditions, population density, rural infrastructure, and levels of urbanization. We therefore first differentiate between two major regions based on both the north–south divide and agroecological conditions. We define the agriculturally dominant north, which comprises the regions of Brong

Table 7.1. Distribution of rural households by members' primary employment in Ghana (Columns (1)–(4) sum to 100 in each survey year)

Survey	Survey year	Agriculture only	Non-agriculture only	Agriculture and non-agriculture mixed	No job	Agricultural with nonfarm enterprise	Non- agricultural with cultivated farmland
		(1)	(2)	(3)	(4)	(5)	(6)
Census	2000	56.9	15.9	18.3	8.9		
GLSS5	2005/06	58.3	19.7	15.7	6.3	14.6	9.6
Census	2010	51.1	25.0	17.2	6.7		
GLSS6	2012/13	54.2	24.8	16.6	4.5	11.6	8.6

Notes: The type of households is defined according to the household members' primary employment status; column (5) is part of column (1) and column (6) is part of column (2).

Sources: Authors calculation using data of Census 2000 and Census 2010 (GSS 2003, 2013) and GLSS5 and GLSS6 (GSS 2008, 2014).

Ahafo, Northern, Upper East, and Upper West, as the 'North'. The North has a low population density, is relatively far from large cities, and most of its rural households are predominantly engaged in farming. The North also corresponds closely to the Savanna and Transition agroecological zones. The remaining six regions: Ashanti, Central, Eastern, Greater Accra, Volta, and Western, are then grouped into the 'South', which is less reliant on agriculture, is more urbanized, has a higher population density, and has a more developed RNFE. The South corresponds closely to the Forest and Coastal agroecological zones.

Like cities, most rural non-agricultural households are also concentrated in the six southern regions of Ghana. For the South as a whole, 30 per cent of rural households are non-agricultural in 2010, increasing from 18 per cent in 2000. While the North is much more agriculture dominant, the share of non-agricultural households also increases, but more slowly, from a lower base of 10 per cent in 2000 to 13 per cent in 2010.

Combining the north-south divide with the proximity to different sized cities that are considered at district level, we further define types of districts in both regions: (a) 'big city districts' that contain cities of more than 500,000 people; these districts correspond to the cities of Accra and Kumasi and are therefore all located in the South; (b) '2nd-tier city districts' whose largest cities have populations between 100,000 and 500,000; (c) '3rd-tier city districts' whose largest cities have populations between 40,000 and 100,000; and (d) 'no city districts' groups in which there are no cities or towns with populations over 40,000. In summary, there are three district groups in the North (in which there are no big city districts) and four in the South.

Figure 7.2 combines 2010 Census data and spatial data for cities to display the geographic locations of these seven groups of districts.

Although the South covers a much smaller land area than the North, the 2010 census shows that 73 per cent of the total population and 63 per cent of the rural population lives in the South. Moreover, the majority of the total population lives in districts with cities of at least 40,000 people in both types of regions, while about 40 per cent of the rural population lives in such districts. Table 7.2 displays the distribution of rural households by the three groups among the seven types of districts for all households versus youth-headed households. We ignore the small 'no-job' group in the table.

Comparing with the employment patterns for all rural households, the patterns for the youth-headed households in the North are similar but quite different in the South in 2000. This is particularly true for the proportion of rural households engaging in agriculture. In 2000, 60.9 per cent northern rural households could be defined as agriculture only, and the share is even higher, at 62.2 per cent, for the youth-headed in the region. In the same year on the other hand, 55.3 per cent southern rural households are agricultural only, and the share for the youth-headed households in the South is 51.1 per cent. Between the rural total and youth-headed households, the differences in the proportion engaging in

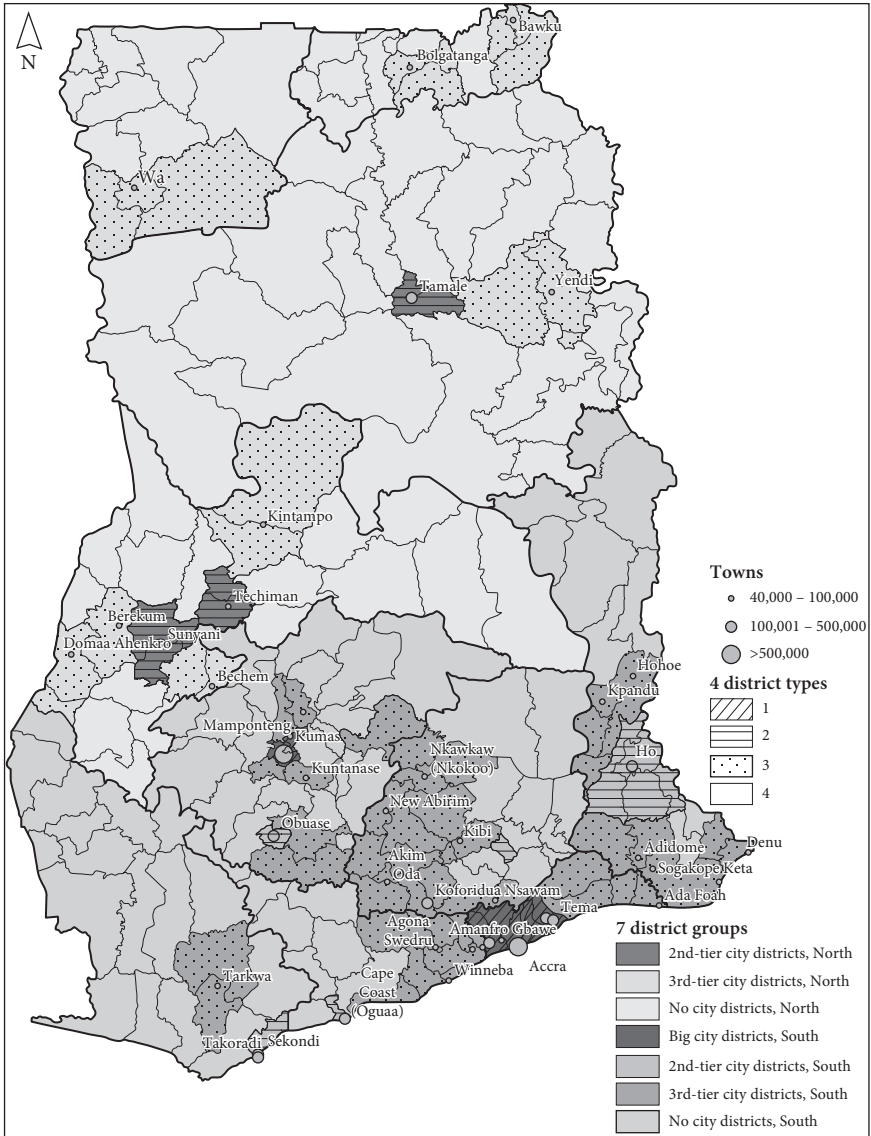


Figure 7.2. Ghana map showing the different types of districts

Source: This map was created by Mekamu Kedir Jemal (IFPRI), combining 2010 Census data with other spatial data including cities and road networks. Spatial data of cities, towns and road network are from University of Ghana—Remote Sensing and Geographic InfoSystems website (accessed on 25 March 2016 and retrieved from <http://www.ug.edu.gh/rsgislab/rs-gis-geonode-app.html>).

non-agriculture are larger than that engaging in agriculture. In 2000, only 9.7 per cent northern rural households engaged in non-agriculture, while the share was 12.7 per cent for youth-headed in the North. In the South, the discrepancy in this share is as high as 7.5 percentage points for all rural households (18.4 per cent) and for youth-headed (25.9 per cent).

Table 7.2. Distribution of rural households by agricultural, non-agricultural, and mixed occupations across district groups—rural total versus youth-headed households

	North			South		
	Ag only	Nonag only	Ag&nonag mixed	Ag only	Nonag only	Ag&nonag mixed
Rural all households						
2000						
Big city districts				27.7	50.3	12.3
2nd tier city districts	53.8	18.2	20.3	38.3	32.4	14.9
3rd tier city districts	58.2	11.2	19.1	50.1	21.1	18.8
No city districts	62.6	8.2	19.0	61.5	13.9	17.9
Total	60.9	9.7	19.1	55.3	18.4	18.0
2010						
Big city districts				9.0	74.1	6.6
2nd tier city districts	37.7	34.9	20.4	14.9	59.7	10.2
3rd tier city districts	63.7	14.5	17.8	39.4	34.1	17.4
No city districts	67.5	10.5	18.6	53.4	23.0	17.0
Regional total	64.7	13.0	18.5	45.6	29.7	16.7
Rural youth-headed households						
2000						
Big city districts				25.1	53.9	9.5
2nd tier city districts	55.4	22.5	12.1	30.4	38.2	11.3
3rd tier city districts	58.5	14.9	14.7	45.2	30.0	14.4
No city districts	64.3	10.7	15.3	58.1	20.4	13.7
Total	62.2	12.7	14.9	51.1	25.9	13.7
2010						
Big city districts				6.3	76.5	4.3
2nd tier city districts	30.6	45.4	9.5	9.1	64.1	4.3
3rd tier city districts	57.0	23.1	12.2	28.8	48.9	11.0
No city districts	64.9	15.9	14.8	45.4	34.3	11.6
Regional total	60.3	20.0	13.7	36.4	42.5	10.9

Note: the households that did not report any primary job are not reported in the table; therefore, the sum of the three groups of households does not equal 100.

Source: *Understanding the Role of Rural Non-Farm Enterprises in Africa's Economic Transformation: Evidence from Tanzania*, Xinshen Diao, Eduardo Magalhaes, et al, *Journal of Development Studies*, May 4 2018, Taylor and Francis, reprinted by permission of the publisher (Taylor & Francis Ltd, <http://www.tandfonline.com>).

Between 2000 and 2010, the share of ‘non-agriculture only’ rural households increased in all district groups in both South and North for all households as well as for youth-headed, though most rapidly in the South and especially in the big city and 2nd tier city district groups, and more so among youth-headed households. This was mirrored by an almost equivalent pattern of decline in the shares of ‘agriculture only’ rural households in the South and in the district group with 2nd tier cities in the North for all households, while for youth-headed households, it happened almost everywhere. For the North as a whole or in its districts that

either have small cities or no cities, the shares of agriculture only households increased in this period for all households but declined for youth-headed (and only in the no-city district group did it keep almost constant). Thus, there has been a sizeable shift from agriculture to RNFE in the South for all rural households but mainly for youth-headed households in the North. In both South and North, the agriculture exits of rural households including youth-headed ones are highly correlated with proximity to cities. Despite this exit, the share of ‘agriculture only’ youth-headed households remains high in the North mainly in its districts without cities. On the other hand, ‘non-agriculture only’ households constitute the majority of southern youth-headed households in 2010 even in the district group without cities.

There has been a modest but surprising decline in the shares of mixed employment rural households across district groups in both North and South both for youth-headed and all households (Table 7.2). These are households where some members have diversified into primary non-agricultural occupations while other members continue to work primarily in agriculture. Thus, while many rural households have switched their primary occupation entirely from agriculture to non-agriculture, a declining share of rural households are straddling the two sectors through their primary occupations. However, Table 7.2 is based on the census data, which does not capture secondary or part time occupations. So it is possible that many more rural households have mixed livelihoods than shown in Table 7.2, although on a part time basis.

7.2.2 Factors Determining the Patterns of Rural Livelihoods

We next try to understand factors associated with the determinants of being a non-agricultural household in the rural areas as well as the changes that have taken place between two rounds of surveys. We pool the two most recent rounds of GLSS together for the analysis. Given the binary nature of the employment outcomes, we estimate a series of probit regressions to investigate the effects of covariates of interest on the probability of household being a non-agricultural household.

Equation (1) provides a general specification of the probit models used throughout this chapter:

$$y = \alpha + \sum_{k=1}^K \beta_k x_k + \varepsilon \quad (1)$$

where y takes the value of 1 if the household is non-agricultural, and zero otherwise. The estimation of y is conditional on observables. In equation (1), α is a constant, x_k and β_k refer to each covariate of interest and its corresponding parameter, and ε is an identically identified and distributed error term assumed to be distributed normally with mean zero and variance Ω .

We consider individual (household), spatial and community characteristics in the analysis. For the individual characteristic variables, the covariates are as follows: whether the household is headed by a young member (15 to 34 years old), by female, and the three levels of education of the household head. The spatial factors are a set of dummies for the seven district types representing the levels of urbanization, while the community factors are a set of public-good variables including accesses to electricity, public transport, and market. Since we have pooled two years of survey data, we also include a year dummy (2012–13) for GLSS6 and two interaction terms: a year dummy interacted with whether the household head is young, and a year dummy interacted with whether the household head is female. We also stratify regressions by the sample of i) youth-headed rural households, and ii) other adult households separately. In all the regressions for the three types of household (all, youth-headed, other-adult-headed), we compare non-agriculture-only households with the rest of rural households (Table 7.3, columns (a)–(c)) as well as with agriculture/non-agriculture mixed households (Table 7.3, columns (d)–(f)). The similar exercise was done also for pooling two rounds of census data for 2000 and 2010, of which the results are provided in the (see Tables 7.A1 and 7.A2).

Starting with Columns (a)–(c) of Table 7.3, we observe an increase in the probability of being a non-agricultural household over time. Yet, mainly youth-headed rural households lead the transition from agricultural to non-agricultural-dominated activities in 2005–12. The finding that youth households have left agriculture more than other adult households is consistent with the descriptive analysis in the previous section.

Being a female-headed rural household also increases the probability of being a non-agricultural household. However, the interaction between the year and gender dummies is negative, implying that, over time, gender becomes a less important factor in the explanation of being a non-agricultural household.

The sign and magnitude of the marginal effects of education on the probabilities of being a non-agricultural household are expected, that is, the more educated a head of household is, the higher the probability for this household to be non-agricultural, regardless of whether the head is young.

The estimation results for district group dummies are more consistent across districts in the South than in the North, that is, the marginal effect on the probability of being a non-agricultural household (relative to northern rural areas without city) is 27.2 per cent in the southern district group with big cities, while the probability is 7.75 per cent and 7.40 per cent, respectively, in the southern districts groups with 2nd tier or 3rd tier cities, and it reduces further to 2.55 per cent for the group of southern districts without a city. On the other hand, in the North, the coefficient is not significant for the 2nd tier city district group and is only weakly significant for the 3rd tier city district group, indicating that proximity to

Table 7.3. Marginal effects of probit model regressions on factors affecting being a non-agricultural household, pooled data of GLSS5 and GLSS6

Independent variable	Comparing with the rest of households (agricultural households and mixed households)			Comparing with mixed households only		
	All households	Youth-headed households	Other-adult-headed households	All households	Youth-headed households	Other-adult-headed households
	(a)	(b)	(c)	(d)	(e)	(f)
Year dummy for 2012–13	0.0232** (0.00921)	0.0677*** (0.0186)	0.00870 (0.0102)	0.0205 (0.0175)	0.0628** (0.0250)	0.000740 (0.0228)
Youth-headed households	0.123*** (0.00908)			0.216*** (0.0166)		
Female-headed households	0.150*** (0.00984)	0.232*** (0.0215)	0.132*** (0.0111)	0.291*** (0.0182)	0.349*** (0.0326)	0.296*** (0.0231)
Year dummy * Youth	0.0487* (0.0209)			0.0552 (0.0552)		
Year dummy * Gender	-0.0548*** (0.0232)			-0.1038*** (0.0355)		
<i>Education level</i> ('no education' omitted)						
Primary completed	0.0802*** (0.0102)	0.0720*** (0.0204)	0.0780*** (0.0115)	0.0545*** (0.0196)	0.00719 (0.0284)	0.0704*** (0.0256)
Secondary completed	0.213*** (0.0156)	0.198*** (0.0283)	0.214*** (0.0187)	0.154*** (0.0287)	0.0303 (0.0395)	0.215*** (0.0371)
University and above	0.411*** (0.0445)	0.560*** (0.125)	0.353*** (0.0490)	0.385*** (0.0677)	0.455*** (0.105)	0.396*** (0.0842)

<i>Type of district group (base is no-city district, North)</i>						
2nd-tier-city districts, North	0.0205 (0.0417)	-0.0241 (0.0733)	0.0382 (0.0458)	0.0637 (0.0763)	0.0845 (0.117)	0.0308 (0.0929)
3rd-tier-city districts, North	0.0290* (0.0161)	0.0398 (0.0347)	0.0194 (0.0170)	0.0649** (0.0329)	0.0373 (0.0509)	0.0790** (0.0389)
Big-city districts, South	0.272*** (0.0428)	0.470*** (0.0855)	0.176*** (0.0494)	0.261*** (0.0815)	0.396*** (0.0928)	0.180* (0.108)
2nd-tier-city districts, South	0.0775* (0.0409)	0.254*** (0.0772)	0.0145 (0.0482)	-0.0353 (0.0729)	0.130 (0.101)	-0.116 (0.0980)
3rd-tier-city districts, South	0.0740*** (0.0129)	0.143*** (0.0262)	0.0462*** (0.0140)	0.0367 (0.0248)	0.0901*** (0.0344)	0.0108 (0.0310)
No-city districts, South	0.0255** (0.0117)	0.0954*** (0.0232)	-0.00721 (0.0130)	0.00189 (0.0235)	0.111*** (0.0326)	-0.0577* (0.0297)
<i>Community variable</i>						
Access to markets	0.0675*** (0.0107)	0.0745*** (0.0218)	0.0603*** (0.0119)	0.0837*** (0.0198)	0.0576** (0.0291)	0.0949*** (0.0255)
Access to public transportation	0.0556*** (0.0106)	0.0799*** (0.0219)	0.0461*** (0.0116)	0.0407* (0.0217)	0.0398 (0.0314)	0.0482* (0.0278)
Access to electricity	0.0665*** (0.0101)	0.112*** (0.0196)	0.0434*** (0.0113)	0.0538*** (0.0199)	0.0687** (0.0284)	0.0403 (0.0260)
Observations	11,245	3,255	7,990	4,202	1,357	2,845

Notes: Only rural households are included in the regressions. Number of the pooled sample obs. is 12,515. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The regressions include only rural households. Number of the pooled sample obs. is 12,515. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: Authors' own estimation using GLSS5 and GLSS6.

cities seems to be less important for determining northern rural households to be non-agricultural. In the South, the consistent patterns persist among youth-headed households, with the magnitude of the marginal effect being even larger, but only hold for the big city districts and 3rd tier city districts for the other adult households. Again, in the North, the coefficients of district group dummies for youth or other adult-headed households are all insignificant. The estimation results for district group dummies seem to indicate that it is the combination of north–south divide and proximity to different sized cities that determines the likelihood of being non-agricultural households in the rural areas. Only in the more urbanized South that proximity to larger sized cities could further increase the likelihood of being non-agricultural households.

The sign and magnitude of the marginal effects for a set of variables representing the infrastructural conditions at the rural community level are also as expected. Better access to market, public transportation or electricity seems to positively contribute to the likelihood of a rural household to be non-agricultural, regardless of whether the household head is young.

In the second panel of Table 7.3 (columns (d)–(f)), non-agricultural households are compared with the mixed group instead of the rest of the households. The purpose for this comparison is that households in the mixed group have also had nonfarm activities. Since some non-agricultural households also farm (not as primary employment), this comparison can help us to see whether these two groups are indeed different or just a way households report their primary employment. The marginal effects of some of the selected variables change in this comparison (in columns (d)–(f)) from those in columns (a)–(c). First, the significance of the coefficients on the year dummy and its interaction with the youth dummy disappear. Second, there are only a few cases in which the signs for the district group dummies are fully consistent. However, the likelihood of being a rural non-agricultural household still increases in southern districts with proximity to cities when it is compared with a mixed household, at least in the big-city and third-tier-city district groups (but not in the second-tier-city districts in the South).

7.2.3 Structure of the RNFE

With rural youth increasingly being engaged in the RNFE, it is important to further examine the patterns of rural non-agricultural employment. It is well known that recent non-agricultural employment growth in many African countries has occurred predominantly in the informal economy (McMillan and Rodrik 2011). This is also the case for Ghana, both in its rural and urban areas, in which 76 per cent and 69 per cent of employment was informal according to the 2010 Census. We define the formal economy as the combination of public sector (including

international organizations and NGOs) and the formal private sector (including foreign companies) and is characterized by formal wage earnings. We define the informal economy as those working on their own businesses or as self-employed. The growth of nonfarm employment in rural areas may support the theory that as the influence of cities spreads to rural areas, their employment structures begin to more closely resemble those of urban areas. As in urban areas, formal employment could also provide better and more reliable livelihood opportunities for rural workers, especially youth.

We consider non-agricultural only household in this sub-section (that is, do not include the mixed group), and classify these households into different non-agricultural employment categories according to all household members' engagement in the formal and informal economies. We classify a rural household as 'formal only' if all the employed household members are in the formal non-agricultural economy. For a household with family members working in both the formal and informal nonfarm economies, we classify it as 'formal/informal combined'. Households with all employed members working in the informal nonfarm economy are classified as 'informal only', which is further grouped as 'informal manufacturing' and 'informal trade' (see Table 7.4).

We focus on a comparison between youth and all rural households first. As can be seen from Table 7.4, while the rural nonfarm sector is largely informal, youth-headed households seem to have fewer chances to be either in the formal only category or in the formal/informal combined category than other adults. This holds in both years, at the national level, as well as in the North and the South. With few exceptions, this is also true across district groups in both years. This is an alarming finding, indicating that while youth are more likely to leave agriculture than other adults, they have much fewer opportunities than other adults to get formal employment jobs. The fact that a majority of youth who exit from agriculture are engaging in the informal sector seems to call a different type of policy emphasizing the improvement of labour productivity and hence income generation for youth in the informal sector rather than focusing on job creation in the formal sector.

For the rural non-agricultural households that engage in the rural informal economy, it seems that the majority of them engage in only one type of informal activity—either informal manufacturing or trade. This is also true for youth-headed households. For rural non-agricultural households as a whole, informal trade is more prevalent than informal manufacturing at the national level, particularly in the South, and more so in 2010 than in 2000. For youth-headed non-agricultural households, there seems to be little difference between these two types of activities at the national level and in the South, while for the northern young households, they are actually engaging more in manufacturing. Essentially, rural manufacturing seems to be dominant in areas that are less urbanized and thus more isolated from the national market, likely because rural informal manufacturing primarily consists of food processing for the local

Table 7.4. Types of different non-agricultural households according to family members' employment

	Rural households, all				Rural youth-headed households			
	Formal only	Inf. mfg only	Inf. trade only	Formal/informal combined	Formal only	Inf. mfg only	Inf. trade only	Formal/informal combined
2000								
North								
2nd tier city districts	30.1	10.5	21.6	23.7	28.1	15.7	23.3	16.7
3rd tier city districts	16.1	27.5	14.0	19.3	11.7	31.7	19.7	7.8
No city districts	21.7	25.6	18.7	15.7	20.8	30.0	23.5	5.5
North total	21.0	24.4	17.6	17.8	19.4	28.3	22.4	7.8
South								
Big city districts	27.7	6.3	15.5	34.5	30.7	10.6	21.2	19.8
2nd tier city districts	24.8	10.1	22.7	27.1	22.8	15.1	28.8	14.2
3rd tier city districts	19.4	16.2	23.6	22.1	16.2	24.0	26.4	9.2
No city districts	23.6	16.8	22.1	20.9	21.1	24.6	25.7	9.9
South total	22.1	15.3	22.2	22.9	19.7	23.1	26.0	10.3
National total	21.9	16.9	21.4	22.0	19.6	24.0	25.4	9.9
2010								
North								
2nd tier city districts	29.2	5.4	20.8	30.0	30.1	17.9	23.6	9.8
3rd tier city districts	24.0	14.7	21.2	21.5	12.5	30.0	22.9	5.4
No city districts	22.9	19.0	22.0	20.4	19.3	29.8	23.3	3.8
North total	24.3	15.6	21.6	22.3	19.0	28.1	23.2	5.1
South								
Big city districts	24.0	6.0	19.5	36.6	26.4	11.3	25.8	17.0
2nd tier city districts	25.4	8.8	20.0	31.9	22.3	16.7	31.7	10.1
3rd tier city districts	20.5	14.5	24.1	24.5	16.0	25.5	24.6	7.4
No city districts	23.6	13.3	25.3	22.4	20.6	26.2	25.8	7.3
South total	22.3	13.2	24.1	24.8	19.2	24.7	25.7	7.9
National total	22.6	13.5	23.7	24.4	19.1	25.3	25.3	7.4

Note: We skip the households that report both manufacturing and trade informal employments or any other informal employment (without formal employment) from the table; therefore, the sum of the four groups of households does not equal 100.

Source: Authors' calculation using data of Census 2000 and 2010 (GSS 2003, 2013).

market, which can take place at the household level. For example, in the northern district group with small cities or without a city, 30 per cent or more youth-headed non-agricultural households fall into ‘informal manufacturing only’ category in both 2000 and 2010. Meanwhile informal trade may signify the opposite, given that trade activities are associated with both agricultural and non-agricultural commodities to meet local demand in rural areas, reflecting greater connectivity with the broader economy. This pattern of non-agricultural activities can be found in the more urbanized South and is particularly true in southern district groups with big and secondary cities both for youth-headed households and rural non-agricultural households in general. This reflects the findings of Haggblade, Hazell, and Brown (1989) and the literature on urban-rural linkages in general.

7.3 Urbanization and Agricultural Intensification

Drawing on the Boserup (1965)–Ruthenberg (1980) theories of farming systems evolution, impact of urbanization on technology adoption in agriculture is mainly through increases in population density and market access, which is expected to lead to more intensive farming practices and adoption of modern technology for improving land and labour productivity (Binswanger and Ruttan 1978, Ruttan 2002, Diao et al. 2014). We examine these relationships in this section.

We use a probit model to test how the probability of using different types of modern inputs is associated with urbanization, while controlling for a number of household and locational characteristics. These characteristics include farm size thresholds, household head characteristics (youth, gender, level of education), the degree of urbanization of the districts in which the households live (using our district typology), and a set of infrastructural variables such as access to markets, public transportation, and electricity at the rural community level. In the regression, we only include the rural households of which agriculture is the primary occupation for all or some family members, since for most households defined as ‘non-agriculture only’ in the section above, agricultural activity, if there is any, appears to be part-time.

As in the second section, we have pooled data together from the two rounds of surveys—GLSS5 and GLSS6 in the regression, and hence we also include a dummy for 2012–13 (GLSS6), as well as the interaction terms for year and youth, and year and gender in the regression. In spite of the limitations of using repeated cross-sections for this analysis, for example, omitted variable bias, the regressions reveal some interesting associations.

In Table 7.5, the regression estimates illustrate that urbanization, as captured through our typology, has significant yet complex links with agricultural intensification. Rural households in all the three district groups in the agriculturally

Table 7.5. Marginal effect of probit model regressions on factors affecting agricultural input use, pooled data of GLSS5 and GLSS6

Independent variable	(1)	(2)	(3)	(4)
	Fertilizer	Herbicides/ Insecticides	Hiring labour	Mechanization
<i>Farm size</i>				
Less than 2 ha	-0.278*** (0.0461)	-0.147*** (0.0449)	-0.223*** (0.0501)	-0.286*** (0.0389)
2-5 ha	-0.140*** (0.0463)	-0.0236 (0.0447)	-0.116** (0.0503)	-0.187*** (0.0388)
5-20 ha	-0.0842* (0.0475)	0.0709 (0.0462)	-0.00961 (0.0519)	-0.0869** (0.0399)
Base is > 20 ha				
Types of district groups				
2nd tier city districts, North	0.250*** (0.0452)	0.174*** (0.0522)	0.177*** (0.0508)	0.0803** (0.0383)
3rd tier city districts, North	0.187*** (0.0184)	-0.172*** (0.0181)	-0.0150 (0.0205)	-0.000881 (0.0172)
No city districts, North	0.139*** (0.0138)	-0.0827*** (0.0137)	0.0103 (0.0154)	-0.00338 (0.0128)
Big city districts, South	0.0217 (0.107)	-0.0730 (0.109)	0.180* (0.103)	0.175** (0.0857)
2nd tier city districts, South	-0.00633 (0.0621)	-0.159*** (0.0587)	0.0604 (0.0669)	-0.0807 (0.0630)
3rd tier city districts, South	-0.0693*** (0.0156)	-0.0404*** (0.0150)	-0.0254 (0.0166)	-0.00712 (0.0140)
Base is no city districts, South				
Year dummy for 2013	0.156*** (0.0108)	0.346*** (0.00876)	-0.0743*** (0.0124)	0.149*** (0.00993)
Youth headed household	0.00104 (0.0134)	0.0234* (0.0134)	-0.0433*** (0.0147)	0.00602 (0.0123)
Female headed household	-0.0695*** (0.0159)	-0.0842*** (0.0155)	0.0612*** (0.0168)	-0.0385*** (0.0144)
Year dummy * Youth	0.0596** (0.0266)	-0.0663** (0.0269)	-0.0200 (0.02904)	0.0295 (0.0245)
Year dummy * Female	-0.00362 (0.02845)	-0.0440 (0.0286)	-0.0184 (0.0303)	-0.0773** (0.0261)
<i>Education level</i>				
Primary completed	0.0265** (0.0134)	0.0647*** (0.0131)	0.0609*** (0.0144)	0.0601*** (0.0121)
Secondary completed	0.0828*** (0.0267)	0.0961*** (0.0276)	0.0833*** (0.0303)	0.0863*** (0.0241)
University and above	0.0130 (0.0894)	0.352** (0.148)	0.184 (0.142)	0.136 (0.143)
Base is no education				
Access to markets	-0.0335** (0.0145)	-0.0276* (0.0143)	0.0314* (0.0161)	-0.0278** (0.0126)

Access to public transportation	0.0418*** (0.0125)	0.103*** (0.0124)	0.0769*** (0.0138)	0.0904*** (0.0116)
Access to electricity	-0.00848 (0.0124)	-0.0381*** (0.0122)	0.0284** (0.0134)	-0.00746 (0.0116)
Observations	13,388	13,340	13,340	13,340

Notes: Farm size is based on cultivated area. Rural households defined as agricultural only or agricultural and non-agricultural mixed households in GLSS5 are included in the regressions. Number of pooled sample obs. is 9,877. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Agricultural only or agricultural and non-agricultural mixed rural households in GLSS5 are included in the regressions. Number of pooled sample obs. is 9,877. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: Authors own estimation using GLSS5 and GLSS6 data.

important North have a higher predicted probability of using fertilizers than households in the South, which may be driven by poorer soil fertility in the North (Houssou et al. 2016). However, besides this agroecological factor for the North, the probit estimation shows that in the North, the higher the urbanization level (measured by the size of cities in different district groups), the higher the predicted probability of using fertilizer. For example, compared with households in the Southern districts without cities, the predicted probability of using fertilizer increases by 25 per cent in the Northern districts with secondary cities, while the marginal effects are smaller in Northern districts with 3rd tier cities or without cities, at 18.7 per cent and 13.9 per cent, respectively. There is no such systematical relationship between the use of fertilizer and proximity to different sized cities in the South.

The marginal effect of urbanization on the use of other inputs is not always consistent with that for fertilizer use. Compared with no city districts in the South, only in the districts with 2nd tier cities in the North or with big cities in the South, the marginal effect of using other inputs is mostly positive and significant. The sign of marginal effect tends to be negative, if significant, for the other types of district groups in both North and South.

In terms of education, the probit analysis shows that for the farm households whose heads are more educated, particularly for those completing secondary education, the probability of use fertilizer increases compared with the less educated ones. On the other hand, the dummy variable for youth headed households only significantly affects the probability of fertilizer use through its interaction with the year dummy; this suggests that youth headed households only started having a higher probability of using fertilizer in recent years. The sign of the marginal effect for the youth dummy is not consistent and often insignificant in the other regressions. This result is somewhat surprising, since younger farmers might be expected to be more open to new technologies and knowledge than older adults.

Among the three variables related to market access or public infrastructure, the marginal effect of input use is positive only for the access to public transportation variable. The probability for any modern input use or labour hiring increases by 4.18–10.3 per cent in the communities with easy access to public transportation, while market access seems to be only positively associated with hiring labour and the sign is negative for the use of other inputs. Market access is measured by whether a rural community has a daily or periodic market. It is also possible that better access to public transportation allows farmers to get access to market through traders who can come to villages directly.

In summary for the focus of youth, while the regression results are unexpected, they at least seem to indicate that the constraints against modern input adoption could be binding for all farmers including youth, and farmers in more urbanized locations. Moreover, the results support the patterns of agricultural productivity growth observed from the macro data. As shown in Figure 7.3, Ghana’s agricultural labour productivity has grown much faster than its land productivity. This tells us that recent agricultural growth in Ghana has been accompanied by more efficient use of labour without significant increases in land intensification. The continuous

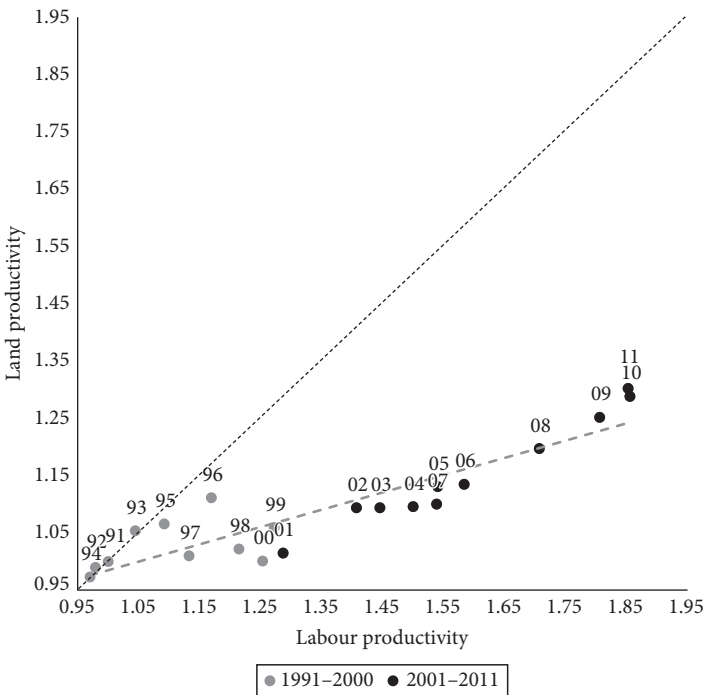


Figure 7.3. Trends in land and labour productivity in Ghana, 1991–2011

Note: In index form with 1991 = 1.0. Each dot in the chart represents an individual year, blue dots are for 1991–2000 and red dots for 2001–2012.

Source: Authors’ calculation using data from GGDC for agricultural value added and agricultural employment (Timmer et al. 2015) and data from FAO (2016) for cultivated agricultural land.

exit of youth from agriculture could further enhance this trend, indicating the importance of labour saving technologies for agricultural intensification in Ghana.

7.4 Welfare Outcomes of Changing Rural Livelihoods

Structural change in the rural economy often leads to rural poverty reduction. Indeed, the data shows that rural youth households appear to be in a better position to benefit from proximity to cities with more engagement in the non-agricultural economy. While the development of a vibrant RNFE can serve as an alternative to migration to major cities, it depends on whether the changes in rural livelihoods can provide positive welfare outcomes. We therefore focus on the effects of the exit from agriculture associated with the proximity to cities and rural nonfarm employment on the level of and change in poverty reduction. We analyse welfare outcomes using both poverty and middle-class measures calculated from the two rounds of GLSS.

Measured by the national poverty line of US\$1.90 per day, the data shows that the rural poverty rate is generally higher among agricultural households than non-agricultural households. This holds for the country as a whole and for both the North and South. While the poverty rate is much higher in the North than in the South, within the North the difference in poverty rate between these two groups of rural households is still considerably visible (Figure 7.4).

The national poverty rate for rural agricultural households is 48 per cent in 2005, compared to 26 per cent for rural non-agricultural households. While the poverty rate falls between 2005 and 2012 for both rural agricultural and non-agricultural households, the gap between them seems to be stable in the South but even wider in the North (Figure 7.4). This result displays the important role of the RNFE, particularly in the North, has played in reducing rural poverty. Moreover, the number of rural non-agricultural households increased while the number of rural agricultural households fell between the two rounds of GLSS, which seems to further confirm this important role of RNFE in reducing rural poverty in 2005–12.

We also want to examine whether rural non-agricultural households are ascending to the middle-class at a faster rate than their agricultural counterparts. For this purpose, we calculated the proportion of rural households whose income (proxied by expenditures) is above US\$3.10 day, a level of income that is often used to define middle-class in Africa (Banerjee and Duflo 2008, Ncube and Shimeles 2013¹). Figure 7.5 presents the result. The difference in the share of

¹ The definition of middle-class is for individuals earning between 2\$ and 10\$ per day. 2\$ is based on 2005 international prices, and has been adjusted by the World Bank to 3.1\$ based on 2011 international prices (World Bank 2016). In this chapter, given that we focus only on rural households, we did not limit middle-class by an upper income threshold.

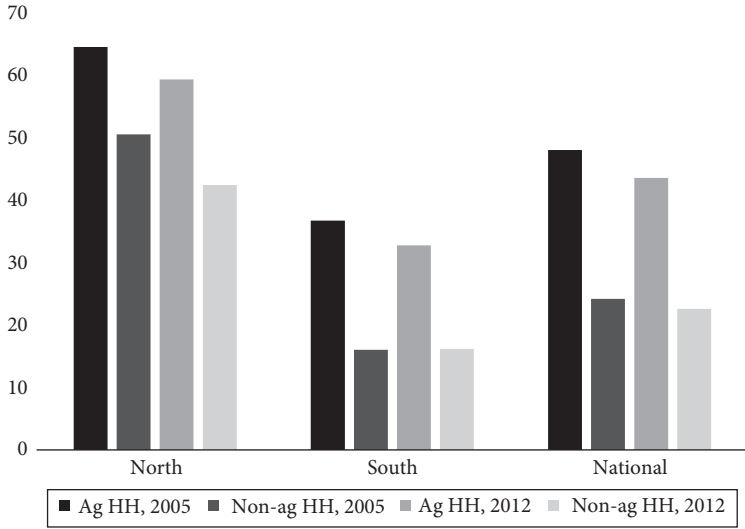


Figure 7.4. Rural poverty rates for agricultural and non-agricultural households
 Source: Authors' calculation using data of GLSS5 and GLSS6 (GSS 2015).

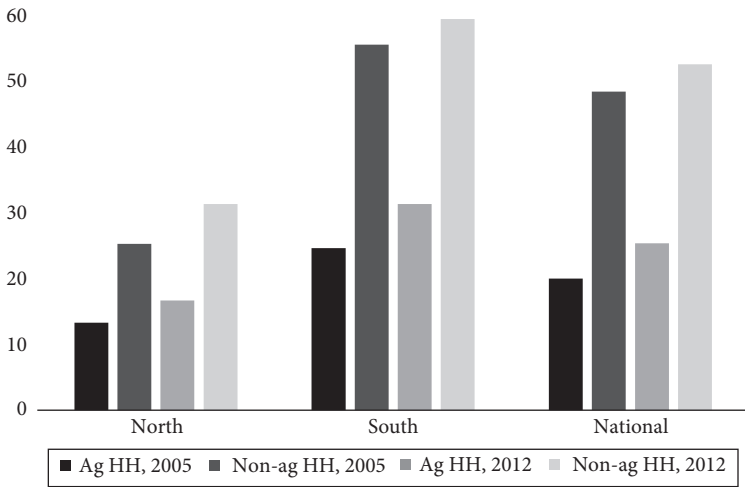


Figure 7.5. Shares of middle-class population (with per capita income more than US\$3.10 per day) in total population for rural agricultural and non-agricultural household groups
 Source: Authors' calculation using data of GLSS5 and GLSS6 (GSS 2015).

middle-class households between agricultural and non-agricultural households is large throughout Ghana but more so in the South than in the North. In the North, fewer rural households belong to middle-class both for agricultural and non-agricultural households, which is expected given that the North is less developed and generally poorer than the South. However, as seen from Figure 7.4, the proportion of Northern non-agricultural households' population that belongs to middle-class is similar to the proportion for Southern agricultural households. This share rapidly increases from a low base for Northern non-agricultural households, from 17 per cent in 2005 to almost one-third in 2012, while the share for Southern non-agricultural households increases slowly from a relatively high base (from 55.5 per cent to 59.4 per cent).

However, the absolute population of rural middle-class agricultural households is still more than the population of rural non-agricultural households in both the North and South, even in 2012. This is because agricultural households are still prevalent in rural Ghana, although the middle-class population is disproportionately higher among non-agricultural households than among agricultural households.

Both Figure 7.4 and Figure 7.5 can only display bivariate relationships between nonfarm engagements and level of poverty rate or proportion of middle-class at the regional level. Again, further insights can be obtained by using regression techniques to unravel more complex multivariate relationships. Similarly, as in the third section, a probit model is used to test how the probability of being a nonpoor or a middle-class household is associated with being a non-agricultural household and some other factors. In addition to use being a non-agricultural household as a dummy, in the regression we include dummies for youth as head of households, female-headed household, level of education, the degree of urbanization of the districts in which the households live (using our district typology), and a set of infrastructural variables such as access to markets, public transportation, or electricity at the rural community level as a set of independent variables, which are all similar to those in the probit model applied in the third section. Again, we pool together GLSS5 and GLSS6 and hence a year dummy for 2012–13 and interactions of the year dummy with being a non-agricultural household, headed by youth and by female are included in the regression. The nonpoor is defined as a household whose per capita expenditure is more than the national poverty line of US\$1.90 per day, while a middle-class household is the one whose per capita expenditure is US\$3.10 and more per day. We focus only on the marginal effect of the regression and Table 7.6 reports the result of the regression.

We first need to note that the data used in the regression for identifying factors of being a middle-class household is a subset of the full sample, containing data for nonpoor rural households only. By excluding poor households from the regression, the data in the second regression should be more homogenous than the full dataset; hence, we may expect the magnitude of the marginal effects of many variables affecting being a middle-class household to be smaller than those

Table 7.6. Marginal effects of probit model regressions on factors affecting being a nonpoor or a middle-class household in rural Ghana, pooled data of GLSS5 and GLSS6

Variable	Nonpoor vs.	Middle-class vs. other	Variable	Nonpoor vs.	Middle-class vs. other
	poor	nonpoor		poor	nonpoor
	(1a)	(2a)		(1b)	(2b)
Non-agriculture only household	0.0681*** (0.0134)	0.118*** (0.0167)	<i>Education level</i>		
Year dummy for 2013	0.0163* (0.00925)	0.0525*** (0.0134)	Primary completed	0.0671*** (0.0105)	0.0351** (0.0149)
Youth headed household	0.102*** (0.0102)	0.0608*** (0.0139)	Secondary completed	0.206*** (0.0219)	0.167*** (0.0244)
Female-headed households	0.0612*** (0.0118)	0.0694*** (0.0160)	University and above	0.424*** (0.0638)	0.337*** (0.0798)
Year dummy × youth	-0.0353* (0.1914)	-0.0356 (0.02758)	Base is no education		
Year dummy × gender	-0.0577*** (0.0217)	-0.02413 (0.0302)	<i>Community level variable</i>		
Year dummy × non-agricultural household	-0.0530** (0.02447)	0.02474 (0.03140)	Access to markets	-0.0109 (0.0118)	-0.00991 (0.0168)
			Access to public transportation	0.0782*** (0.0101)	0.0455*** (0.0160)
			Access to electricity	0.0660*** (0.0101)	0.0298**
<i>Types of district groups (base is non city districts, North)</i>					
2nd tier city districts, North	0.115*** (0.0378)	0.0671 (0.0509)	Access to markets	-0.0109 (0.0118)	-0.00991 (0.0168)
3rd tier city districts, North	0.0236 (0.0149)	0.00773 (0.0278)	Number of observation	11,245	7,030
Big city districts, South	0.209*** (0.0565)	0.0473 (0.0741)	F	78.82	35.98
2nd tier city districts, South	0.169*** (0.0538)	0.0666 (0.0662)			
3rd tier city districts, South	0.175*** (0.0127)	0.0459** (0.0199)			
No city districts, South	0.168*** (0.0108)	0.0498*** (0.0182)			

Notes: The regressions include only rural households. Number of the pooled sample obs. is 12,515. *p < 0.1, ** p < 0.05, *** p < 0.01.

Source: Authors own estimation using GLSS5 and GLSS6 data.

affecting being a nonpoor household. Keeping this in mind, we actually find that the marginal effect of the probability of being a non-agriculture only household on being a middle-class household is considerably stronger (11.8 per cent) than that of being a nonpoor household (6.55 per cent), suggesting that not only is nonfarm employment important in reducing rural poverty, but it also is important in ascending to the middle-class. However, the sign of the coefficient is negative when the variable of being non-agricultural interacted with the year dummy in comparison of nonpoor versus poor and not significant in the case of middle-class versus other nonpoor, indicating that the positive strong relationship of being a non-agricultural household and being nonpoor is possibly weakened over time and being non-agricultural is less time relevant for belonging to the middle-class when more rural households become non-agricultural.

We already saw from Table 7.3 that the marginal effect of youth or female household head is positive for the probability of being a non-agricultural household. Table 7.6 further tells us that this effect is also positive on the probability of being nonpoor and middle-class. However, in both cases and similar as being non-agricultural, the sign of the coefficient is negative when these two variables are interacted with the year dummy in the comparison of nonpoor versus poor and not significant in the case of middle-class versus other nonpoor, which again seems to imply that the youth or gender factor is less time relevant, or at least not further strengthened over time.

The findings that female-headed households are positively associated with the probability of being nonpoor or middle-class requires more attention, since this contradicts conventional perceptions that female-headed households are more susceptible to poverty. Since our regressions control for variables such as livelihood source, education levels, and proximity to cities, this result may be driven by other factors not captured in our regressions. While identifying these factors is beyond the scope of this chapter, more research is important for fully understanding these factors.

We now turn to the location factor. As expected, the location factor matters in the probability of being a nonpoor household. Compared with the no-city district group in the North, the marginal effect of the probability of being nonpoor increases in the 2nd tier city Northern districts and everywhere in the South; the coefficient is largest for the big city district group in the South. However, the difference in probability of being nonpoor is insignificant between being in no-city or small city districts in Northern Ghana. For being a middle-class household, we only see significance for the coefficient of 3rd tier city and no city district groups in the South, while for all other district groups, the coefficients are not significant. It is possible that among the nonpoor households in these districts, the nonpoor households are more homogenous when their number (sample size) is small. Therefore, there is less variation among the households in such district groups, which leads to a lower level of significance.

The significant positive marginal effect for the level of education on the probability of being nonpoor or becoming middle-class is also expected, as well as the order of the magnitude of the marginal effect. Moreover, it is seen as an exponential increase in the value of the marginal effect when the level of education moves from primary to secondary and then to university. Compared with no education, having primary education only increases the probability of being nonpoor by 6.73 per cent and 3.49 per cent for being middle-class, while the probability of being nonpoor increases by 20.6 per cent and 42.2 per cent for secondary and college education, respectively. The probability of being middle-class increases by 16.7 per cent and 33.7 per cent for these two levels of education, respectively.

Community-level infrastructure (but not market access) also plays a role in increasing the probability of being nonpoor and becoming middle-class. The marginal effect of access to public transportation and electricity on the probability of being nonpoor is similar, 7.78 per cent versus 6.53 per cent, and the magnitude of these marginal effects is smaller but still similar for being middle-class, which is possibly due to a more homogenous sample set in the latter case, as we explained before.

In summary, urbanization and city expansion seem to have important effects not only on poverty reduction but also for further moving up the income ladder for rural households that remain in the rural areas and enter the rural nonfarm sector. These effects are stronger in the more urbanized South, for the youth-headed households and especially for households whose heads have higher levels of education.

7.5 Conclusions

This chapter examines the impact of urbanization—measured by a typology of districts according to proximity to cities—on rural livelihoods in Ghana. We classify the country's districts into seven spatial groups according to the size of the largest city in each district in Southern and Northern Ghana. The chapter does not address rural–urban migration but instead focuses on the livelihoods of rural households in each of these seven district groups. We find that proximity to cities affects the patterns of rural livelihoods. Many rural households have shifted from solely agricultural to solely non-agricultural. While these trends are observed across Ghana, they appear to be much stronger among the youth and in the more urbanized South that already had relatively higher shares of non-agricultural households than in the poorer, more agrarian North. Proximity to cities has a strong effect on the exit of rural households from agriculture, and this trend is stronger with increases in the size of the city. This trend holds for both youth-headed and other type of households but more so for the youth. Essentially, diversification in rural livelihood among youth and other adult headed households appears predominantly inter-household, rather than intra-household in which

some members are primarily employed in agriculture and others in non-agriculture. The proportion of this latter type of household in both total and youth-headed rural households has changed little (between the two rounds of GLSS) or fallen (between the two rounds of Census).

While the non-agricultural economy is becoming increasingly important for rural households, informality dominates the rural non-agricultural economy as it does in urban areas. This is alarmingly true particularly among rural youth households. Informal trade and informal manufacturing (mainly agro-processing) are the two most important sectors for rural nonfarm activities. Only in the rural areas close to Accra and Kumasi as well as the mining boom areas in Western Region, do more employment opportunities in the formal non-agricultural sector exist to the rural households. Still, in these areas, youth headed rural households have fewer opportunities of working in the formal sector than other type of households. These results provide a number of policy implications. First, informal non-agricultural activities often have a closer tie with agriculture than the formal ones, and their products and services are also mainly for satisfying local rural demand. In addition to rural-urban linkages that will create opportunities for agricultural growth and for rural employment through migration, it would be worthwhile to further explore agricultural growth opportunities through agricultural and non-agricultural geographic linkages in the areas dominated by rural. Second, given the fact that youth are more likely to exit from agriculture but less likely to engage in the formal sector than other adults, it is important for policies to focus on the improvement of labour productivity and hence income generation for youth in the informal sector (including the RNFE) rather than focusing too much on an unrealistic target of job creation in the formal sector.

While more youth appear to be exiting agriculture, the majority of youth in the North without big and second tier cities still work in agriculture. However contrary to expectations, the results of the probit model did not show greater agricultural technology adoption among the youth particularly in the more urbanized locations. Making agriculture attractive to the youth requires increasing its profitability, which depends on modern technology adoption and agricultural intensification and commercialization. With more rural youth becoming more educated, and more rural households being expected to switch from agriculture to the RNFE in the near future, a different range of technologies would be required from what has been done in the past. Additionally, deepening urbanization means that labour, land, and other capital markets are likely to become more integrated between rural and urban areas. Many non-agricultural policies that would indirectly affect agricultural performance could directly affect the attractiveness of agriculture to the youth. A territorial approach and related policies that integrate secondary cities and small towns with the rural economy deserve more attention such that the diversification of rural livelihoods can become a viable alternative or complement to rural-urban migration for the youth.

Appendix

Table 7.A1. Marginal effects in the probit estimations on the determinants of being a non-agricultural household, pooled data of Census 2000 and 2010

Independent variable	Comparing with the rest HH			Comparing with mixed HH		
	All households	Youth-headed households	Other adult households	All households	Youth-headed households	Other adult households
Year dummy for 2010	0.0123	0.0243	0.00867	0.0154	0.0310**	0.0114
Youth-headed households	-0.0144	-0.0151	-0.0144	-0.0172	-0.0146	-0.0194
Female-headed households	0.0746***			0.170***		
	-0.00489			-0.0064		
	0.126***	0.151***	0.107***	0.196***	0.224***	0.194***
	-0.00747	-0.00796	-0.00665	-0.00894	-0.00873	-0.0104
Year dummy * Youth	0.0250***			0.0418***		
	-0.0057743			-0.00557		
Year dummy * Gender	0.0353***			0.0435***		
	-0.00736			-0.00897		
Types of district groups (base is no city district, North)						
2nd tier city districts, North	0.0933**	0.0867***	0.0901*	0.120***	0.124***	0.110***
	-0.0472	-0.0305	-0.0465	-0.0366	-0.0231	-0.0414
3rd tier city districts, North	0.0375	0.0431	0.0358	0.0726	0.0700*	0.0678
	-0.0419	-0.0438	-0.0401	-0.0567	-0.0405	-0.0623
Big city districts, South	0.279***	0.230***	0.234***	0.286***	0.223***	0.341***
	-0.0424	-0.037	-0.0331	-0.0343	-0.026	-0.0408
2nd tier city districts, South	0.137***	0.0958***	0.143***	0.199***	0.159***	0.219***
	-0.038	-0.0325	-0.0436	-0.0469	-0.0354	-0.0571
3rd tier city districts, South	0.0698**	0.107***	0.0518*	0.0866**	0.0977***	0.0780*
	-0.0276	-0.0261	-0.0283	-0.0355	-0.0226	-0.0403
No city districts, South	0.0144	0.0475**	0.000859	0.0335	0.0603***	0.0177
	-0.0182	-0.0211	-0.0196	-0.027	-0.0203	-0.0297

Education level (no education omitted)						
Primary completed	0.112***	0.137***	0.0988***	0.109***	0.0895***	0.109***
	-0.00548	-0.00575	-0.00541	-0.00745	-0.00715	-0.00788
Secondary completed	0.318***	0.267***	0.268***	0.250***	0.197***	0.270***
	-0.00918	-0.0105	-0.00699	-0.00883	-0.00966	-0.0091
Tertiary and above	0.470***	0.386***	0.350***	0.293***	0.210***	0.330***
	-0.0122	-0.0151	-0.0114	-0.0122	-0.0185	-0.0153
Community variable						
Electricity	0.267***	0.333***	0.239***	0.335***	0.328***	0.334***
	-0.0529	-0.0526	-0.0547	-0.0632	-0.0482	-0.0751
Observations	374,568	116,965	257,603	150,066	50,514	99,552

Notes: The regressions include only rural households. Number of the pooled sample obs. is 403,938. *p < 0.1, ** p < 0.05, *** p < 0.01

Source: Authors' own estimation using Census 2000 and Census 2010 data.

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