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SHOULD I STAY OR SHOULD I GO?

INTERNAL MIGRATION AND HOUSEHOLD WELFARE IN GHANA

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ABSTRACT

This papers investigates to what extent internal migration contributes to improving households' welfare in Ghana. Using the most recent and nationally representative household survey (Ghana Living Standards Survey 2012/13), the estimates indicate that on average migration increases consumption significantly, and the effect is driven by households migrating from inland regions to the coastal areas of the country. The analysis also finds heterogeneous effects by gender and educational attainment, with migrant households headed by males and highly educated individuals faring significantly better than migrant households headed by females and low-educated individuals. The paper shows convincing evidence that the positive impact of migration on consumption is attributable to a physical mobility effect rather than changes in labor force status or sector of economic activity. However, the migration process in Ghana has important downsides, such as the brain drain and disruption of the social fabric in the communities originating migration. Future research in this area is warranted to have a more comprehensive picture of the social impact of migration in Ghana.

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Should I Stay or Should I Go? Internal Migration and Household Welfare in Ghana

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1 Introduction

"*The UN estimates more than 200 million people in the region [Africa] will live in slums by 2020 (UN-Habitat 2014). […]The expansion of slums in Africa will be driven by migration and population growth, which will drive housing need, and the current lack of infrastructure for both the existing and anticipated future housing stock.*" (Parby et al., 2015) In Ghana, a UN report estimated that 40 percent of the urban population lived in slum areas in 2010 (UN, 2013). World Bank estimates show that Ghana posted an impressive increase in consumption level over the period 1991–2012 that was accompanied by a tremendous structural transformation that brought about a significant shift of the economy out of agriculture towards services, associated with significant population flows from rural to urban areas (Molini and Paci, 2015).[4]

The scope of this study is shedding new light on the relation between internal migration and household welfare. Do internal migrant households fare better than households left behind in terms of consumption? If so, what is this improvement attributable to? Do they gain access to different work opportunities in destination areas?

Internal migration in Ghana has been an important phenomenon since the consolidation of British colonial rule in 1896 and the twin boom of cocoa and mining sectors (Jedwab and Moradi, 2012). Beals and Menezes (1970) argue that temporary migration, motivated by regional variations in the seasonality of agricultural production, fostered economic production and growth, particularly in the agricultural sector. Using data from the 1960 census, Beals et al. (1967) find that inter-regional migration is responsive to income differentials and that education is negatively correlated with migration, remarkably among males. Caldwell (1968) studies rural-urban migration using survey data and estimates a positive effect of households' own income, being a male, being educated and having friends or relatives at destination on the likelihood of migrating, whereas age enters negatively into the migration equation.

Molini and Paci (2015) show that internal migration has gained a continuously increasing role over time: around 1.5 million people moved to urban areas between 1991 and 1998, 1.9 million between 1998 and 2005, and 4.7 million over the period 2005-2012. Internal migration, often times from rural to urban areas, accelerated urbanization: internal migration rates increased from 38.6 percent in 2000 to 43.3 percent in 2010 according to data from the latest two Population Censuses, and the population living in urban areas grew by about 28 percent over the decade starting in 2000 and reached 24 million in 2010. In 2012, according to data from the Ghana Living Standard Survey, the population was equally split between urban and rural areas in contrast with a 7-to-3 ratio in 1991.

[4] Table 1 shows that consumption level increased by 93 percent between 1991 and 2012.

Since the introduction of the Lewis (1954), Sjaastad (1962), and Harris and Todaro (1970) models, it is well acknowledged that migration, particularly rural to urban migration, is key to the process of economic development and instrumental to escape poverty. Economic theory proposes migration as a response to a partial disequilibrium in labor markets: differences in individual earnings matter and are a driver of migration (Smith (1776), Hicks (1932), Harris and Todaro (1970)). A different and more recent strand of literature, known as the "new economics of migration" (Stark and Bloom, 1985), looks at migration as a household decision to diversify its income portfolio, as "a decision to try to hedge against risk and to ease liquidity constraints" (Bodvarsson et al., 2015). Natural disasters and crop prices disturbances might make complete specialization in agriculture a risky choice. In the absence of insurance markets, one way to insure income is to diversify across a number of different income sources (Stark and Levhari, 1982). Migration can be a response and can occur even in case the mean and variance of income are identical in cities and rural areas.

More recent evidence has shown that migrant networks might help reduce the cost of migration. The presence of people at destination, who can assist, makes the movement more likely to occur. Such networks are naturally based on country of origin, which translates into language networks, in the case of international migration, and they might be interpreted as religious, ethnic, and cultural networks in the case of domestic migration. Luke and Munshi (2006), for example, have shown how ethnic networks can be used to reduce employment uncertainty and make receipts of future remittances more stable and secure via migrants' marriages at destination.

De Haan (2007) highlights a lack of studies on the effects of migration on development, inequality, and poverty despite increasing population mobility. Albeit quantitative studies have often been hindered by lack of adequate data to characterize the migration process (De Brauw et al., 2014) and by the inherent impossibility of observing an individual in the two states (migrant and non-migrant), a number of studies have supported the positive impact of migration on living conditions. Lall et al. (2006) conclude that migration can be a beneficial phenomenon and migration restrictions should be avoided. Other recent studies, such as Lokshin et al. (2010), find that work-related migration, both international and domestic, has a positive effect on welfare and reduces poverty in Nepal. Beegle et al. (2011) use a 13-year panel survey in Tanzania and show that migration between 1991 and 2004 increased consumption growth by 36 percentage points.

Coming to the impact of migration on the welfare of Ghanaian households, a series of analyses published by the Ghana Statistical Service in 1995 and based on the 1991 Ghana Migration Survey find that migration induces a decline in household labor supply that is however compensated by additional effort of household members left behind, indicating no loss of output in the short run in over half of the interviewed households and an expectation of no drop in the long run (Tutu, 1995). These studies also point to remittances as an important element in origin rural communities to support the welfare of household members who stayed and to narrow the welfare difference between rural and urban communities (Asante, 1995).

Litchfield and Waddington (2003) estimate a higher consumption level among migrant households, although the difference decreased between 1991/92 and 1998/99, and the finding does not hold when considering non-monetary measures of welfare and the probability of being poor. Tsegai (2007) and Boakye-Yiadom (2008), unlike Litchfield and Waddington (2003), account for

the non-random selection of migrants. The first examines the effect of migration on income in Ghana and finds that migrant households earn more than their non-migrant counterparts. Yet, the analysis is restricted to the Volta Basin and uses income as a welfare metric. The latter, using 1998/99 survey data, concludes that urban migration improved consumption of internal migrants.

Using data from a 2005/06 survey, Ackah and Medvedev (2010) estimate a positive effect of migration on household consumption only if households send migrants to urban areas from where migrants are more likely to send remittances and to do so in larger amounts. They account for the non-random selection of migration, yet the exclusion restriction appears to be flawed by the fact that the migration rate at the district level used is posterior, or at best contemporaneous, to the migration episodes. Adams et al. (2008) use the same data source and find a negative effect of remittances on poverty and a positive impact on inequality. The authors allow for three mutually exclusive states, namely receiving no remittances, receiving remittances from Ghana, and receiving remittances from abroad, thus separating out the effect of international from that of internal remittances. They account for selection by exploiting variations in migration networks among a number of ethno-religious groups and estimate a remarkably larger effect of international remittances. Karamba et al. (2011) study the impact of internal migration on food consumption. They find migration does not affect overall food expenditure per capita and decreases consumption of meat, fish, vegetables, and fruits. They estimate a positive effect of migration on consumption only in regions with significantly higher migration rates. Finally, Adams and Cuecuecha (2013) consider the effect of internal and international remittances on investment and poverty. They show that households receiving remittances spend marginally less on food and marginally more on investment goods, namely education, housing, and health. They also estimate a negative effect on the likelihood of being poor among households receiving remittances.

This paper brings new evidence on the link between internal migration and household welfare using the most recent nationally representative household survey in Ghana conducted between 2012 and 2013. Controlling for region of origin and adopting an inter-regional definition of migration, we identify the impact of migration on the consumption level of households that migrated relative to households that stayed behind in the same region of origin. As is well known in the literature on migration, migrants are typically not a random sample of the population. They might self-select themselves into migration according to their educational and skill level, age, propensity to risk, entrepreneurship, etc. These characteristics affect the future discounted income differential between migrating and staying behind, and as such they increase the propensity to change location. In order to address the selection bias, we estimate a selection-corrected equation, namely an equation for the probability of migrating together with the consumption equation of interest. The idea exploits a simple fact: migrants tend to settle where other migrants from the same village (or town) of origin reside. In a multiethnic country like Ghana, where there are several overlaps between administrative regions and ethnicities, this mechanism is likely to be at work. We make a step forward relative to the existing studies on Ghana by making use of historical migration networks at destination as an exclusion restriction. Specifically, we use district-level information from the 1984 Census to construct the network, measured by the historical internal immigration rate at destination.

We find a positive effect of migration on consumption levels and on the distance from the poverty line. We show that such effect is likely attributable to a physical mobility effect per se that goes beyond the effect associated with moving out of agriculture or moving out of a rural area. In fact most of the migrants do not move to an urban area from a rural location, and the large majority does not change sector of employment at destination. Why then do we not observe more people moving? Our analysis captures the benefits of migrating and does not account for the costs associated with it. Consumption might be a partial measure of the global net welfare benefit of migration. There might be financial constraints, physical mobility fears due to distance to destinations, psychological effect in the form of alienation from the place where one was born and raised, factors that might reduce the overall benefit or simply make some people hold back from such a choice.

The rest of the paper is structured as follows. Section 2 describes the sources of data used in the analysis and presents descriptive evidence on internal migration and consumption. Section 3 introduces our empirical methodology and identification strategy. Section 4 discusses our main findings and heterogeneous effects, and section 5 offers the concluding remarks.

2 Internal Migration in Ghana

2.1 Data

Data used in the analysis are from the 2012/13 Ghana Living Standards Survey (also known as GLSS-6), a nationally representative survey carried out by the Ghana Statistical Office at 7-year intervals. The survey was administered between October 2012 and October 2013 and collects a rich set of information on demographics, health, education, and living conditions, including income, expenditure, savings, credit, and transfers for about 16,700 households. The migration module has information about whether each household member, aged 7 or older, was born in the village (or town) where he was interviewed, and respondents who, at the time of the survey, lived in the place where they were born, are asked whether they ever lived (or moved) away for a year or longer.[5]

The survey also has information, for those who were not born in the village/town where they lived at the time of the survey and for those who were born there yet moved away for a period of at least one year, about the time they moved from the place of birth (or returned to the current place of residence), the place they moved from, the labor market status before moving (education,

[5] In the analysis we use module 5A, albeit GLSS6 also has a module (module 11) on income transfers which include remittances. Our choice is driven by the observation that section 11 restricts the collection of information about earlier migrants (over past 5 years) who used to work while away from home. It does not have any information about all migrants who, albeit away from home, reported to not have worked during their absence. This reduces the small sample size by over half (from 877 observations to 356).

employment, inactivity), main reason for moving, and for those who were employed back then, also industry and sector of employment.

Our key variables of interest are migration and consumption. Our definition of migrant household takes into account the migrant status of the household head. More precisely, we define a household as a migrant household if the head was not born in the village (or town) where he lived at the time of the interview and if he reported to have moved away after he turned 18 years old. By imposing an age threshold, we restrict the analysis to individuals who are presumably less likely to have migrated because of a choice made by other household members. However, this definition of migration could potentially include very short migratory movements: for example, it might well comprise movements to a neighboring village that is likely to share economic conditions similar to those of the village or town of origin. For this reason, and to account for the fact that the sole information available concerning place of birth is region, we qualify our definition of migrant household by imposing a further requirement: a migrant household is a household headed by someone who was born in a region different from the region where he resided at the time of the survey (and he moved when he was 18 years old or above). The objective is to capture relatively long distance relocations, permanent movements, which lead households to areas characterized by substantially different economic conditions and opportunities. By contrast, a non-migrant household is defined as a household headed by someone who was born in the same village (or town) where he resided at the time of the survey and he never moved away for a year or longer. We compare households headed by a person who permanently migrated to a new area with households whose head never moved away from his place of birth for a year or longer.

In order to remove additional confounding factors, we restrict our sample to household heads who were born in Ghana, never had an international migration experience, migrated between 1990 and 2011, and were between 18 and 64 years of age at the time of the survey.[6] Our working sample consists of 6,383 households, of which 1,101 migrants corresponding to about 20 percent of the selected population in Ghana.

2.2 Migration in Ghana: Historical Overview

The start of internal migration in Ghana along the North South axis and in particular towards Kumasi and the Coast dates back to colonial period. In 1896, the British consolidated their control on the whole country and started an ambitious plan of transport infrastructure improvement intended to strengthen military domination and boost trade of palm oil and cocoa beans.

[6] The restriction to the time period 1990-2011 leads to dropping about 5 percent of the sample. The lower bound (year 2011) is motivated by our choice of limiting the migration episode to a time period that precedes the survey by at least one year and it means losing about 214 observations. The upper bound (year 1990) is explained by the choice of limiting bias due to misreporting of events occurred far back in time (we drop 163 observations, some of which dates back to the 1960s). We also exclude migrant household heads who do not report the year of migration, household heads whose reported year of migration is lower than their year of birth, and household heads who do not report the region of birth.

The western corridor (Figure 1) was created to connect the gold fields around Kumasi (Ashanti) to the Port of Sekodi (Western). The discovery of rich and fairly vast deposits of gold, manganese, and diamonds within the area that is now Konongo, Obuasi, Tarkwa, Nsuta, Bogoso, and Prestea fueled massive infrastructural development in road and rail transport, banking, health services, and education in what are now the Western and Ashanti regions. The demand for labor in the mining industry exceeded the local supply of labor force; as consequence, migration flows into these areas from Northern Ghana, which in some cases continue even at present, increased very fast.

The second line, the eastern corridor, was developed to encourage the export of palm oil, rubber and cocoa and the exploitation of the goldfields around Kibi. The first track, completed in 1918, connected Accra to the cocoa producing areas of Tafo; eastern and western corridors were eventually connected in 1923 (see Figure 1). Railways soon became obsolete due to poor management and lack of maintenance and were eventually replaced by roads. Goods and passenger traffic on rail collapsed after 1974, railways now carry three times less than what they could at the time of independence (Jedwab and Moradi, 2012).
Cocoa in particular, had a strong impact on the local economy, even more than mining. Originally introduced in Eastern province, it rapidly expanded throughout most of Gold Coast colony; because of the cocoa revolution forest land (Southern and Central Ghana) increased in value (Austin, 2007). Relative to land, the value of labor fell during the period, and the institutional result was to enable immigrants from the savanna, where land values stayed put being savanna land not suitable for cocoa cultivation, to work the lucrative forest lands as free laborers rather than as slaves, and to remit earnings to their distant homes.

The economic boom generated by the expansion in mining activity and cocoa production had important consequences on population growth and concentration. Ghana's population increased from 1.9 million in 1901 to 3.2 million in 1931. Of this growth, 31.9% took place in the Gold Coast Colony, 10.6% in Ashanti, 21.6% in Northern Territories and 9.0% in British Togoland
The two largest cities became Accra, the national capital, and Kumasi, the hinterland capital; altogether, they have accounted for 9.5% of total urban growth in 1901-1931.

The colonial period created a geographic pattern in economic and population growth that persisted throughout the post-colonial history of Ghana. For example, Jedwab and Moradi (2012), comparing population maps of 1901, 1931 and 2000, show how the pattern of urbanization and increase in population density still follows the two corridors and distributes around the coast concentrating in particular around the Accra area.

Internal migration also follows the same pattern. Figure 2 plots shares of internal migrants by district of destination from the 1984 census, the first census to be captured, processed and store electronically, representative of the whole country with detailed information on the internal migrant population. As it clearly appears, Western region, Greater Accra and Volta basin area are

also those characterized by the highest concentration of migrant population. This is valid in 1984 and, as the Kwankye et al. (2009) suggest, also before independence.

Net migration over time also suggests that the patterns of migration remain constant in direction of migration. Using data from the 1960, 1970, 1984, and 2000 census, Kwankye et al. (2009) notice that in addition to the north-south major migration flow there were some net migration flows within southern regions: from Eastern, Central, and partly Volta regions to Greater Accra and Ashanti regions. The main migration recipients over time were Western, Greater Accra, Brong Ahafo, and Ashanti (except 1984). Over the past 50 decades people migrated from Central, Eastern, Volta (except 1984), Northern (except 1984), Upper East, and Upper West regions.

In section 3 the 1984 census is used as an exclusion restriction for the self-selection equation into migration. Therefore, although relatively close in time to the decision to migrate (in one model 16 years in the other 6), we argue it is a good instrument since it reflects an historical migration pattern that did not change significantly since the colonial period. In other words, had we have access to earlier census data on internal migration, unfortunately not available, the shares of migrant population by district wouldn't be too different from those reported by the 1984 census. Moreover, the construction of the railroad system had as a by-product some areas developing different migration rates than others. This in turn fostered the development of networks of migrants that via lower migration costs leads to different levels of migration rates nowadays.

2.3 Internal Migration and Patterns of Consumption

In Ghana some 56 percent of inter-regional migrants goes to urban areas, yet among this group 2 out of 3 already resided in an urban location before migrating. It is interesting to note that more than 1 out of 3 migrants ending up in rural areas is originally from an urban center. Overall, the large majority of migrants undertake an urban-to-urban path (over 48 percent), followed by some 26 percent that relocate from an urban to a rural location, about 18 percent who stay in a rural area, and only a minority, about 7.5 percent, move to an urban area.

The Greater Accra and Ashanti region together attract over 50 percent of inter-regional migrants, who represent about 33 and 25 percent of the current resident population (in our sample), respectively. About 4 out of 10 migrants select Inland Ghana as their destination as opposed to 60 percent who move to Coastal Ghana (Figure 3). Over 50 percent of migrants are originally from Coastal Ghana: precisely, about 16 percent from the Central region, Volta and Eastern region contribute about 13 percent each, and the Greater Accra and the Western region about 5 percent each. As to the regions of Inland Ghana, Ashanti, Northern, and Brong-Ahafo contribute about 1 out of 3 migrants, whereas just about 16 percent of the migrants move from the two poorest regions in the North (Upper East and West).

Internal migration appears to be related to economic reasons in the migrants' own words. One in two migrants reports to have migrated for a job related reason: some 34 percent cite job search, 17 percent report reasons related to their own business, about 10 percent mention a job transfer, and 1 percent attributes the movement to their spouse's job.[7] Virtually all migrant household heads report to find a job at destination regardless of their initial labor market status: over 99 percent among heads employed or unemployed at origin, and over 95 percent among heads initially inactive. Conditional on being employed both at origin and destination, there is a fairly high persistence in terms of sector of economic activity. Precisely, migrants initially employed in agriculture, utilities, construction, financial, insurance, and real estate services, and public administration tend to find a job in the same sector at destination: the persistence rate is always above 70 percent peaking at 83 percent in the case of agriculture. Migrants originally employed in other sectors including mining, manufacturing, commerce, and transports appear to be more likely to switch sector of employment, in particular they are less likely to move into agriculture compared to other non-agricultural sectors (besides the original one).

Our outcome measure capturing household welfare is annual total consumption expenditure. It is the sum of expenditure on food and non-food durable items, including rental value of housing, is expressed in terms of adult equivalent units, and valued in Ghanaian cedis (2013 prices). A consumption based measure of household welfare is generally believed to be more reliable and accurate than an income-based measure, remarkably in countries with widespread informality and a large share of agricultural employment. In largely agricultural contexts, where farmers receive substantial amounts of cash right after the harvest season and little for the rest of the year, consumption also helps having a smoother welfare measure over time.

While Ghana as a whole has been on a path of increasingly higher consumption levels and poverty reduction (from 52.6 in 1991 to 24.3 percent in 2013, see Table 1), the consumption patterns of migrant and non-migrant households present remarkable differences. Figure 4 illustrates the estimated density of log-consumption separately for migrant and non-migrant households along with the cumulative density function.[8] Figure 5 shows the same plot with migrant and non-migrant households split into two groups based on location of origin: households originally living (or, in case they are non-migrant, still living) in the Ashanti, Brong-Ahafo, Northern, Upper East, and Upper West region are categorized as households from Inland Ghana, while households from Western, Central, Greater Accra, Volta, and Eastern[9] regions fall into Coastal Ghana. Migrant households have a higher consumption level, regardless of location of origin, compared to non-migrant households. The cumulative consumption distribution clearly dominates the one of non-migrant households.[10]

[7] The second most cited is "`other family reasons'" (22.7 percent), which is followed by marriage with 4.8 percent of the migrants reporting it.

[8] In 2013, the average annual consumption of a migrant household was about 2,609 Ghanaian cedis (equivalent to US$1,304) compared with of an average value of 2,006 Ghanaian cedis (US$1,003) of a non-migrant household.

[9] Eastern region is landlocked, however in recent years this has been one of the regions that integrated the most with Greater Accra. Eastern region residents commute daily to Accra and expansion of peri-urban Accra recent beyond the border of Eastern region. Therefore, given the strong economic linkages between these two regions, we considered Eastern as part of the coastal area.

[10] A Kolmogorov-Smirnov test of the equality of the distributions both for Inland and Coastal groups rejects the null hypothesis at 1 percent.

What does drive the positive correlation between migration and consumption? While we postulate a causal link in the following sections, henceforth we can provide descriptive evidence that supports the idea that movement in itself is important. First of all, one possible explanation is that migrants move to less remote, less poor, and more developed areas. Unfortunately, we do not have information about the location of origin except for region of birth. Nonetheless, the evidence provided above confirms that, regardless of the area of origin (Coastal or Inland Ghana), migrants do fare better relative to non-migrants. While this could of course be the result of a selection bias, as we will explain in section 3, the fact that households from the poorest regions of the country do better when they relocate to a different areas hints to the possibility that migrants choose locations with better economic opportunities. Another explanation could reside in the fact that, together with a process of geographical relocation, they also change sector of employment. Earlier in the section we have shown that the vast majority of migrants were employed at origin and so they were at destination. Conditional of being employment in both locations, a substantial share of migrants did not switch sector of employment. However, in Table 2 we show that change in sector of employment is correlated with consumption. In addition to showing that, as we know from Figure 4 and Figure 5, consumption is higher among migrants relative to non-migrants not simply on average but along the entire consumption distribution.

Table 2 illustrates that consumption (log) is higher among migrants who moved out of agriculture (7.668 cedis) or stayed in non-agricultural sectors (8.156 cedis) relative to migrants who stayed in agriculture (7.330 cedis) or switched to agriculture from non-agricultural sectors (7.577 cedis).

As mentioned above and as we will explain in section 3, the simple fact that consumption of migrant households is higher than consumption of non-migrant households might be the results of a selection bias. In other words, migrant and non-migrant households might not be different in terms of observable traits which we control for, but also in unobservable characteristics to the researcher, and therefore they might have had different consumption levels had they migrated or not.

Table 3 reports mean values of observable characteristics of migrant households and tests for the existence of statistically significant differences between migrant and non-migrant households. Unfortunately, the variables are measured at the time of the survey, in other words after the migration episode had taken place. As such, some of them including household demographic characteristics and to some extent educational attainment might not be indicative of differences between migrants and non-migrants at origin. However, migrants differ from those left behind in many ways. Heads of migrant households are predominantly males (83.5 percent compared with 74.6 percent); they are on average more educated (the share of migrants heads with post-secondary or higher education is 5.2 percentage points larger than the same share among non-migrant heads); and they live in smaller households with a larger share of working-age males, a smaller share of working-age females and of elderly. Migrants are attracted to districts historically characterized by larger networks, by smaller shares of population with no schooling, by an average higher numbers of years of education, and by less inequality relative to the districts where non-migrants were born and still reside.

3 Empirical Methodology and Identification Strategy

3.1 Identification

The first challenge we face in estimating the causal impact of migration on household welfare is the possibility of unobserved characteristics of household heads that affect their decision to migrate also playing a role in determining their consumption level. For example, individuals with higher unobserved ability might migrate in order to have more chances of getting access to vibrant labor markets with more high-paying jobs, and earn higher income which translates into higher consumption. The same unobserved ability that makes them more likely to migrate might also have an effect on their consumption level regardless of whether they migrate or not. If the mechanisms at play were the one just described, a simple comparison of migrant and non-migrant households would overstate the gains in consumption deriving from migration. One could also argue that natural disasters, or negative shocks in general, can induce individuals to migrate and at the same time generate a drop in their consumption level, thus leading to a spurious negative correlation between migration and consumption. Therefore, ex-ante, the direction of any selectivity bias is unclear.

Following a well-established branch of migration literature, starting from Card (2001) to recent studies by Ottaviano and Peri (2005), and Rapoport and McKenzie (2011), we use historical district-level immigration rates as an exclusion restriction for the self-selection equation into migration. We derive the historical internal immigration rate using data from the 1984 Population Census and calculate the share of immigrants for each district of Ghana in 1984 as proportion of the population aged 15 and above that reported to be born in a village (or town) different from the one in which they resided at the time of the Census.

Since the variation of the instrument is limited to the district level, we cluster standard errors at that same level to allow for correlation in the error term of household heads within a district. Ghana is administratively divided into 10 regions, 6 metropolitan assemblies and 55 municipal assemblies which are subdivided into 216 districts, each one with its own district assembly. Over time the number of districts has changed: in 1984 there were 141 local authorities which were reorganized into 110 districts in 1989 within a decentralization effort of the government, 28 districts were created by splitting some of the original 110 by 2006, in February 2008 the number was brought to 170. Since then, a further 46 districts were added bringing the total to 216 districts. We were able to map all the changes occurred over time and to match the administrative units of 1984 with the 170 districts available in GLSS-6.[11]

Intuitively, the first stage is meant to capture a simple process: immigrants tend to settle where other immigrants from the same village (or town) of origin reside, and this is remarkably more so in a multiethnic country like Ghana where there is a strong overlap between administrative regions

[11] This number (104) is well above the threshold of 30 clusters that Cameron et al. (2008) find to be the lower bound below which standard asymptotic tests can over-reject the null.

and ethnicities.[12] Immigrant networks are an important factor in the location choices of prospective migrants as networks can facilitate settling down, adaptation to a new geographical environment, job search process. If destination district d has historically hosted a large share of immigrants from origin district o, we expect individuals from district o who decided to migrate to move to district d because of the large share of immigrants coming from the same origin district already residing therein. Therefore, the historical immigration rates gives variation in the number of immigrants in destination districts that is presumably exogenous to current consumption levels. The identifying assumption is that the historical distribution of immigrants across districts is likely to be uncorrelated with consumption patterns of households in the same districts about 6 to 20 years later, depending on the time restrictions we impose on the stock of migrants that defines our immigration variable.[13] Since the identification of the causal effect of migration and consumption relies on this assumption, we consider potential threats to its validity.

One potential threat is that historical inequality and poverty levels that contributed to determine historical immigration rates also affect current levels of consumption due to the inter-generational transmission of poverty. In order to rule out this possibility, we control for a set of historical variables from the 1984 Census that are meant to proxy the historical inequality and poverty levels. The controls include the share of the population aged 6 and above with no schooling and the share of the employed population aged 10 and above engaged in agriculture.

Another threat to the validity of our instrument is that the historically high immigration rates triggered a more rapid development process in high-immigration districts, and this in turn caused changes in the distribution of income and ultimately consumption that are still observed today. Given the lack of information about historical inequality indicators, we include the Gini index of years of schooling among the population aged 6 and above and the average number of years of schooling of the population aged 6 and above, where education aims at capturing individuals' earnings potential.

As argued by McKenzie and Rapoport (2011), historical district level migration network can have a direct impact on current consumption levels, for example due to spill-over effects that persists over time. It is likely that such migration effects on consumption are larger if a household is a migrant household than if someone in the district migrated in the past. In other words, we expect the direct impact of the district network to be second order on the consumption level.

3.2 Estimation Techniques

[12] The Akan, Mole- Dagbani, Ewe and Ga-Dangme are the four main ethnicities that together account for almost 90 percent of the population. Albeit all regions have a considerable number of *"people considered to be 'strangers' in their region, there is a rough coincidence of ethnicity and administrative regions in Ghana"* (Langer, 2009). For example, the Akans, the largest ethnic group, are the majority of the population in five regions (Western, Central, Eastern, Ashanti, and Brong-Ahafo. The Mole-Dagbanis, the second largest ethnic group, are mainly found in the northern regions.

[13] We consider the impact of migration on household welfare by defining three stocks of migrants. The first includes all household heads who migrated between 1990 and 2011 (the year before the survey), between 2000 and 2011, and between 2005 and 2011.

Assume that a household head i is confronted with the decision (denoted by M_i) of whether or not to migrate to a different location. He will migrate only if the benefits expected from migrating are greater than the gains expected from not changing location (which can be normalized to zero for convenience). Let us indicate with M_i^* the unobservable latent variable measuring the gains deriving from the decision to migrate, this decision can be written as follows:

$$M_i = \mu + Network_d\delta + X_i\theta + X_d\tau + \varepsilon_i \quad and \quad M_i = \begin{cases} 1 \; if \; M_i^* > 0 \\ 0 \; otherwise \end{cases}$$

where $Network_d$ is our exclusion restriction, the share of the population aged 15 and above who was not born in the village (or town) they resided in at the time of the 1984 Census, X_i is a set of households' and heads' characteristics, and X_d are district level controls. Household characteristics are assumed to affect the probability of migration; migration is a life-cycle event and as such young people and males are more likely to participate. Following the human capital model, education and skills are likely to affect the probability of migrating as more educated individuals have more chances to get high-paying employment opportunities in destination areas. For these reasons, we include gender, a second-degree polynomial in age, educational attainment, household size, household demographic (share of household members aged between 4 and 14, between 15 and 64 (separately for males and females), and 65 and above) and labor market structure (share of working-age household members who are employed and who are unemployed), current location of residence (urban/rural), and region of birth. The inclusion of region of origin fixed effects implies that we compare non-migrants with migrants from the same region of origin. As explained above, among the district level variables measured in 1984 we include the average number of years of schooling of the population aged 6 and above, the Gini index of years of schooling among the population aged 6 and above, the share of the population aged 6 and above with no schooling and the share of the employed population aged 10 and above engaged in agriculture measured (in logarithm).

Being a migrant is a binary variable and we estimate the selection equation via a probit model. The outcome of interest is the consumption level of migrant and non-migrant households. Consumption is a continuous variable constructed as the sum of total annual household consumption expenditure per adult equivalent, and we use an ordinary least squares estimator.

$$C_i = \alpha + Migrant_i\beta + X_i\gamma + X_d\omega + \varepsilon_i,$$

C_i is the logarithm of consumption level of household i, $Migrant_i$ is a dummy variable taking the value 1 if a household is headed by a migrant and 0 otherwise. We estimate the selection and consumption equations using a multi-equation mixed system that makes use of a conditional mixed process (CMP) estimator and fits a seemingly unrelated regression (SUR) simultaneous equation

model, where errors are correlated through a multivariate normal distribution (Roodman, 2011). The parameters of the SUR system can be estimated equation-by-equation, but their simultaneous estimation takes into account the full covariance structure, and hence it is significantly more efficient.

4 Results

Table 4 presents our benchmark estimates of the annual per adult equivalent consumption and selection equation (column 2, 4, and 6) together with estimates from the OLS estimator (column 1, 3, and 5).[14] Columns 1 and 2 show estimates of the average effect of being a migrant household relative to being a non-migrant one on log-consumption, whereas columns 3 and 4 and 5 and 6 report the estimated impact of migration separately for Coastal and Inland Ghana by comparing migrant households coming from the same geographical area where non-migrant households were left behind.

The coefficients estimated via OLS indicate that migrant households have on average a 17 percent higher consumption level than non-migrant ones, and the effect is significantly larger among households who migrated from Inland Ghana (+22.3 percent) as opposed to household who were originally from Coastal Ghana (+11.7 percent).[15] As we explained in section 3, the coefficient estimated when no correction is made for non-random selection into migration can be biased. Columns 2, 4 and 6 show that the selection-corrected impact of migration on consumption is larger than the one estimated via OLS, thus pointing to a negative selection bias. Overall, the average migrant household has a consumption level that is 77 percent higher than the average non-migrant household. The effect is driven by households migrating from Inland Ghana (+99.5 percent), whereas it is not statistically significant among households migrating from Coastal Ghana, where economic conditions were much better than in other regions of the country.

Our exclusion restriction for the selection equation is positive and statistically significant and indicates that households in districts with a historically larger network have a higher probability of migrating. The correlation coefficient between the selection and consumption equation is always negative and statistically significant (with the exception of the estimates among households from Coastal Ghana). This suggest that unobservable characteristics that are positively correlated with migration are negatively correlated with consumption.

Control variables conform to expectations. Table A 1 reports the coefficient of the full specification. Consumption is concave in age and it monotonically increases with the educational attainment of the household head, with the exception of the coefficient on completed primary

[14] The use of per adult equivalent consumption takes into account the fact that migrant households tend to be smaller relative to non-migrant households and with a different composition as described in section 2.3 (see Table 3), thus our results are not driven by household size and composition.

[15] For small values of β, the interpretation of the coefficient of interest can be approximated by $100 * \beta$. Yet, the correct interpretation of the coefficient attached to a dummy variable when going from 0 to 1 in a log-linear model is $100 * (e^{\beta} - 1)$. In this section, we always report the correct interpretation.

education which is slightly lower than the one of up to incomplete primary education (excluding no schooling at all). For example, consumption of households headed by someone with some primary education is about 19 percent higher than consumption of households headed by someone with no education. Households headed by someone with post-secondary education or above have a consumption level about 91 percent higher than the consumption level of households whose head has no schooling. The household size and composition also plays a role. Consumption level, measured in per adult equivalent terms, reduces with the size of the household, and it is negatively correlated with the share of young household members and positively associated with the share of members in working-age. It is also remarkably higher in households with a larger share of employed members and it is lower the larger the share of family members without a job. Controlling for all the characteristics of households and households' heads, geographical location still plays a relevant role: urban households have a consumption level about 32 percent higher relative to their rural counterparts, and households originally from (or still residing in) Inland Ghana, notably in the remote regions in the North of Ghana (Norther, Upper East, and Upper West), suffer a considerable consumption loss (up to -83 percent) relative to households in the Greater Accra region.[16]

Table 5 presents heterogeneous effects by year of migration. The hypothesis we want to test is whether the effect of migration on current consumption levels fades away over time. For this purpose, we consider two periods of time: the first goes from 2000 to 2011, the second spans between 2005 and 2011, in other words we compare non-migrant households with households that migrated up to a maximum of 11 (7) years before the survey and between 16 and 27 (21 and 27) years before the 1984 census in the first (second) case. We do not find large differences by year of migration. The average migrant household migrated between 2000 and 2011 has a 78 percent higher consumption level relative to the average non-migrant one, and the estimated effect is slightly larger (+80 percent) among households who migrated between 2005 and 2011. Separating out migration from Coastal and Inland Ghana does not change the findings of the main sample: the estimated coefficient is statistically significant only among households originally from Inland Ghana and the effect is about 8 percentage points larger among most recent migrants (100.8 versus 108.5 percent).

Table 6 reports heterogeneous effects by gender of the household head. The effect of migration on current consumption levels is statistically significant only among migrant households headed by a male, both overall and among households moving from Inland Ghana. The point estimates, 0.612 on average and 0.714 among households from Inland Ghana, implies that consumption is about 84 and 104 percent higher than among non-migrant households, respectively. Finally, we also look at the existence of heterogeneity by educational attainment of the household head (Table 7). Because of the relatively small sample size and distribution of individuals by educational level, we use

[16] We perform a robustness check to rule out the concern that lack of common support drives the results. The coefficients in the consumption equations estimated via OLS and with the correction for selection bias are identified from the sample of migrant and non-migrant households that, as described above, have different characteristics. Therefore, we construct a common support and re-run the analysis on the sample of households within the common support. Our estimates are not affected by such restriction. Moreover, we experiment with a number of matching estimators. It is well known that matching techniques allows comparison of observably similar (or identical) observations and come with less binding functional form assumptions. On the other hand, they ignore potential unobservables that drive selection into migration. A number of different matching techniques including nearest neighbor, Kernel (Gaussain and Epanechnikov) with different bandwidth confirms our results. Results are available upon request

completed lower secondary education as threshold. The hypothesis being that household heads with a higher educational level might benefit to a larger extent from migration due to the possibility of getting access to high-paying jobs or to more profitable business opportunities that require a higher skill level. Pooling together migrant households from Coastal and Inland Ghana leads to an estimated impact of migration slightly larger among household headed by someone with up to less than completed junior secondary education (the difference is about 2 percentage points). Breaking down the average coefficient for all Ghana into Coastal and Inland Ghana shows that the impact is statistically significant only among households originally from Inland Ghana and the impact is substantially larger among more educated heads. The differential increase on consumption level is estimated at about 27 percent.

We also test whether migration, a time-varying factor, is a driver of migration, in other words whether migration is the outcome of individuals' effort to increase their educational level. If this is in fact the case, we might be measuring the gains of a migration-education bundle rather than migration in itself (Beegle et al., 2011). As we do not observe the same individual before and after the migration experience, the best we can do is to restrict the analysis to individuals that migrated when they were not simply out of school but also in an age range that makes unlikely any return to school desks. We re-run our analysis on a sample of migrant household heads aged 30 or above at the time of migration and of non-migrant heads aged 30 or above at the time of the survey. The results are significant and very similar to the main estimates indicating that our results are robust to this threat.[17]

In addition to estimating the effect of migration on current consumption levels, we construct a measure capturing the distance in terms of consumption from the national poverty line. This distance, reported as a fraction of the consumption level and set to zero for households above the poverty threshold, is an indicator of the resources needed to bring an average poor household to the level of the poverty line. As it is unlikely that migration *per se* is able to bring households out of poverty, the distance from the poverty line is meant to estimates the extent to which migration can improve the livelihood of those living below the poverty line. Our estimates, reported in Table 8, indicate that overall migration reduces the gap by about 11 percentage points, with no economically significant differential impact by year of migration. The coefficients is also similar among migrant households from Coastal and Inland Ghana: on average it is about 18 percentage points among the first, and 16 percentage points among the latter.

5 Concluding Remarks

This paper investigates the impact of internal migration on household welfare in Ghana. We make use of the most recent nationally representative household survey conducted in 2012/13 and controlling for region of origin and adopting an inter-regional definition of migration, we identify the impact of migration on the consumption level of households that migrated relative to

[17] Results are available upon request.

households that stayed behind in the same region of origin. To account for selection bias, we exploit the well-documented evidence that migrants tend to settle where other migrants from the same village (or town) of origin reside. We make use of historical migration networks at destination as an exclusion restriction: we use district-level information from the 1984 Census to construct our measure of network, captured by the historical internal immigration rate at destination up to 16 years before the migration episode occurred.

Our estimates indicate that migration has a positive impact on consumption levels. On average, migrant households have a consumption level 77 percent higher than non-migrant households, and the effect is driven by households originally from Inland Ghana. In other words, there is a big gain in moving out of the Northern regions of the country. The impact is larger among male-headed households and households headed by higher educated individuals. We also find that migration substantially reduces distance from the poverty line.

We show robust evidence that such impact is attributable to a physical mobility effect that goes beyond the effect associated with moving out of agriculture or moving out of a rural area. Most of the migrants, in fact, do not move to an urban area from a rural location, and the large majority does not change sector of employment at destination. Internal migration in Ghana is beneficial to household welfare, remarkably when migration occurs from Inland Ghana to other regions. Policies aimed at limiting internal migratory flows are not recommended, as migration can bring positive effects and the policies would represent a limitation to individuals' freedom.

At the same time, however, internal migration comes with important social costs that need to be factored in. First, as described in previous sections, those migrating are generally younger, more educated and more entrepreneurial than those deciding to stay. It follows that areas that are already poor see an outflow of important resources that could have contributed to the local development (Awumbila, 2007). True is that via remittances poor areas might eventually get some compensation for this brain drain but the effects can manifest with a certain lag and sometimes the benefits do not offset the loss.

Second, and linked to the previous aspect, is that those who stay might become even poorer after the migration of the youngest and fittest. Awumbila and Ardayfio-Schandorf, (2008) argue that, poverty may also be as a result of migration. In families and communities where husbands and the active productive youth populations have migrated, poverty among children, wives, elderly people and other dependents may be worsened. This line of argument clearly interrogates the poverty migration nexus.

Third, there is increasing evidence that those migrating are not only adults with potentially better economic opportunities, but also kids who might end up being street children. Kwankye et al. (2009), find that migration of children from Northern to Southern Ghana has become a very common phenomenon as, in their survey, almost every household is reported to have a child migrant in Southern Ghana. While not all child migrants become street children, estimates are not encouraging. Using a nationwide survey of 2,314 street children, Kwankye et al. (2009) calculate that over a third of the street children were from the Northern region (38.1 percent) followed by the Upper East (12.1 percent).

Finally, there is increasing evidence on how uncontrolled migration in Ghana can have a negative impact on destination areas. Migration in the last years is putting an excessive pressure on the capacity of urban areas to provide adequate basic services. According to the latest Ghana's poverty assessment (Molini and Paci, 2015), the urbanization process is at a crossroads. Due to internal migration, the population has grown exponentially in Accra and all urban areas have started to see the side effects of rapid urbanization, including congestion, unregulated expansion, and a decline in access to services and affordable housing. To maximize the benefit of migration requires thus a concerted effort of urban planning in order to keep on attracting people to urban areas while at the same time being able to provide an adequate level of services to newcomers.

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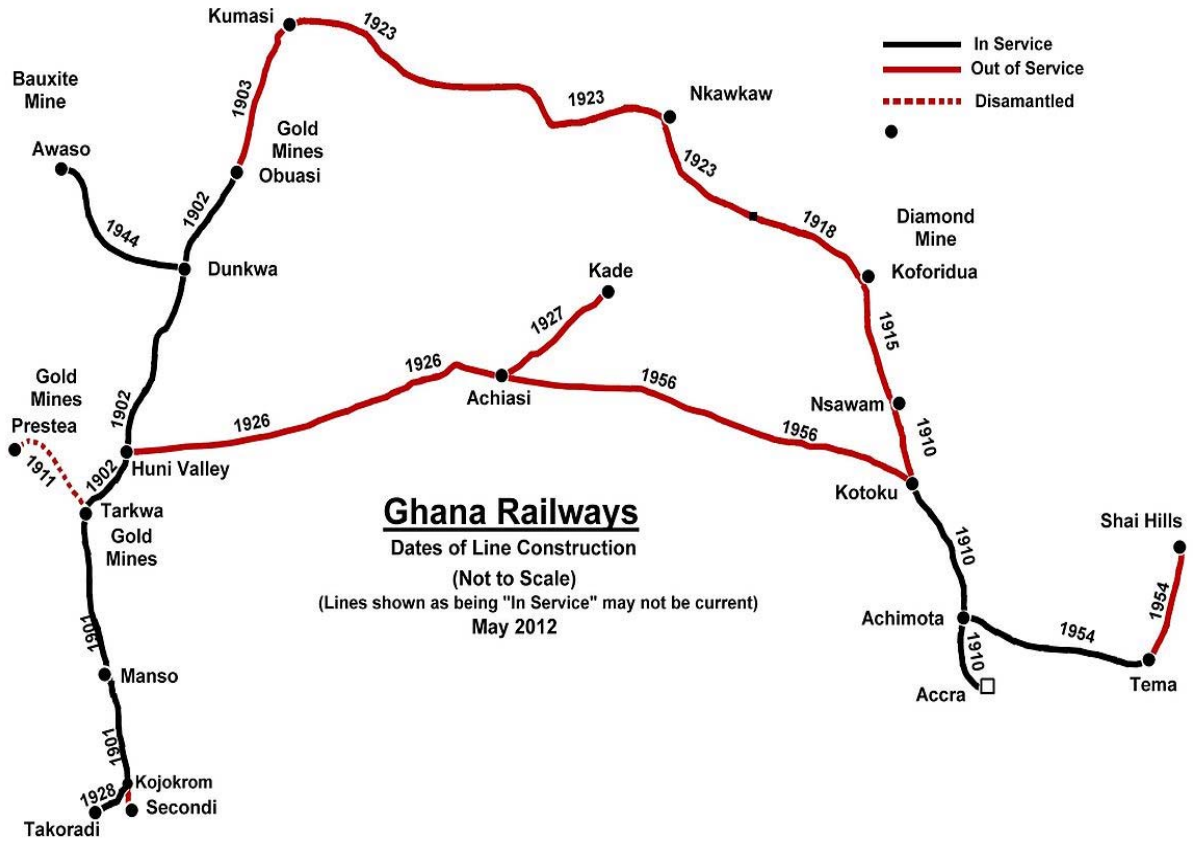
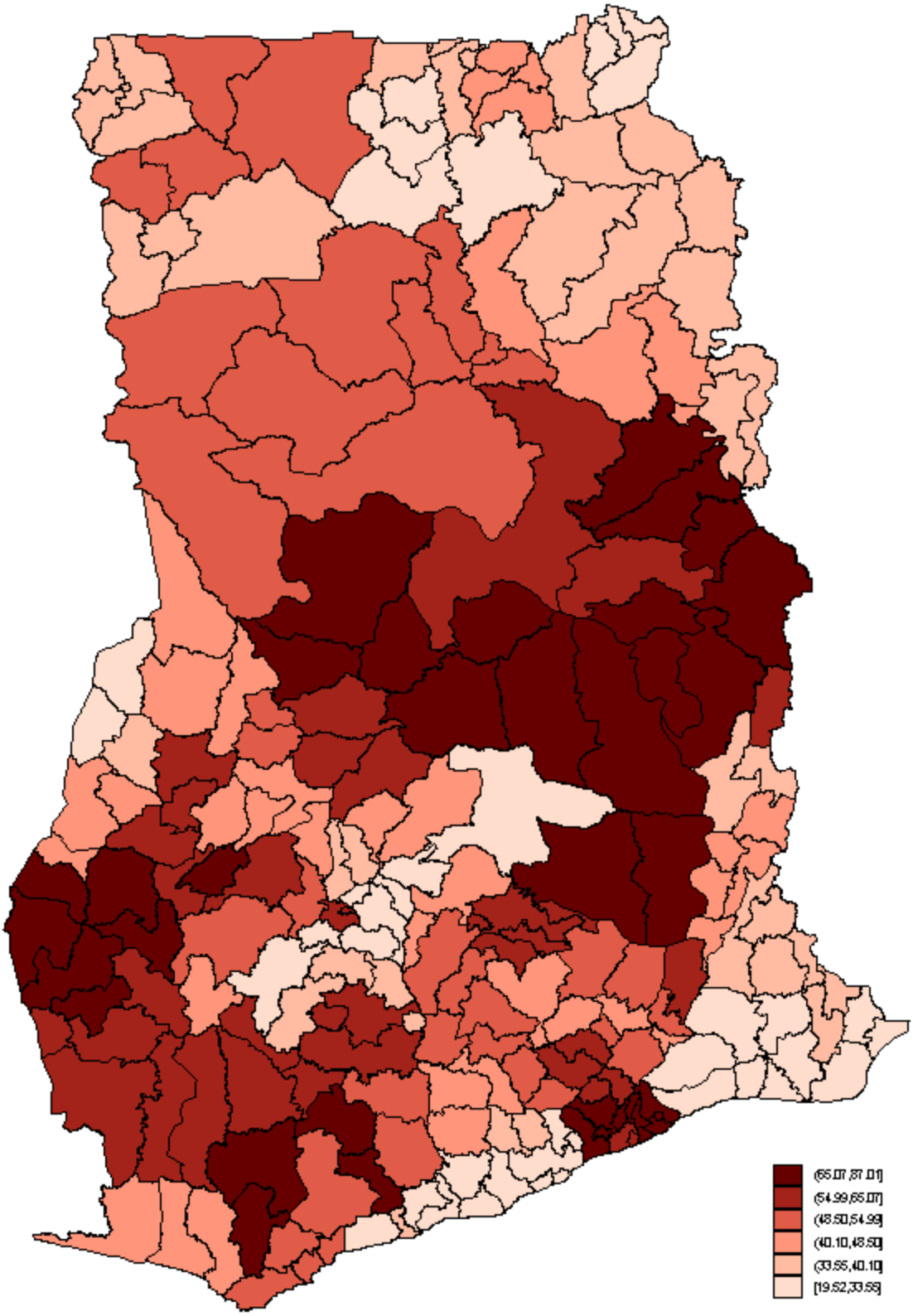
Figure 1: Southern and Central Ghana railways.



Source: Wikipedia.

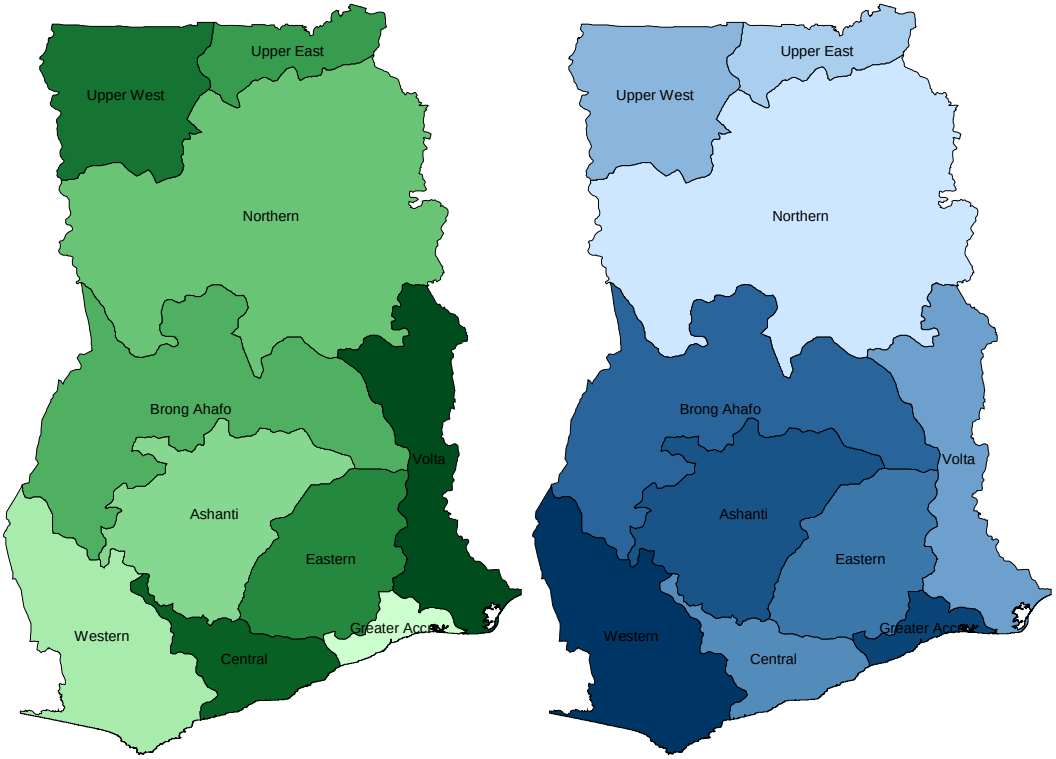
Figure 2: Share of internal migrants by district of destination, 1984.



Source: Author's calculations based on Ghana census 1984

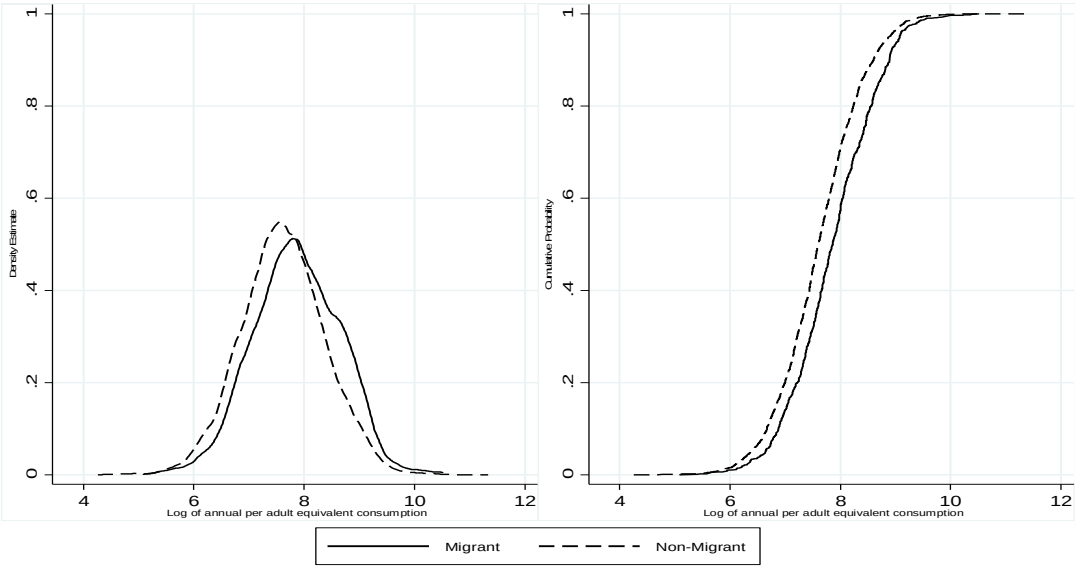
Figure 3. Share of migrants as a percentage of the population aged 15-64.

Panel A: by region of origin *Panel B: by region of destination*



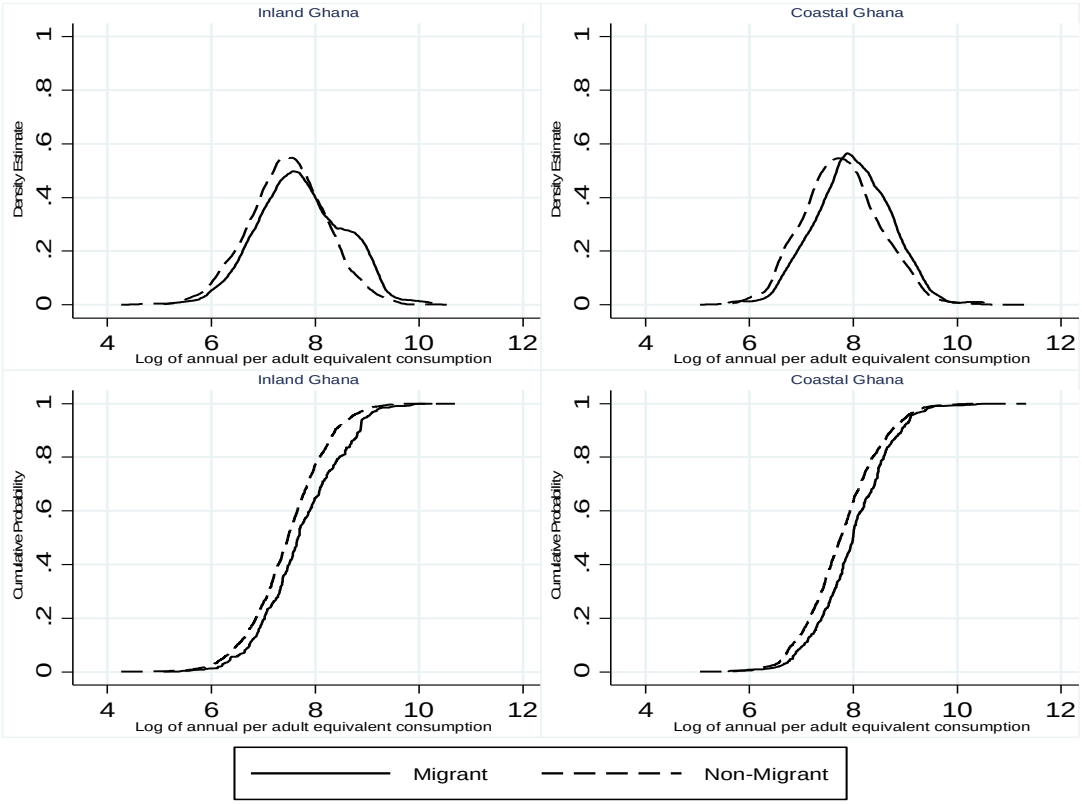
Source: Authors' calculations based on GLSS-6 data.

Figure 4. Kernel-density estimates of log-consumption by migration status.



Source: Authors' calculations based on GLSS-6 data.

Figure 5. Kernel-density estimates of log-consumption by migration status and area of origin.



Source: Authors' calculations based on GLSS-6 data.

Table 1. Headcount poverty rate and median consumption, 1991–2012

Indicator	*1991*	*1998*	*2005*	*2012*
Headcount poverty				
Nationwide	52.6	39.5	31.9	24.3
Inland regions	43.4	31.9	22.4	17.2
Coastal regions	58.8	47.8	38.3	29.7
Median consumption level				
Nationwide	353	438	559	656
Inland regions	407	502	646	788
Coastal regions	317	380	499	578

Note: Consumption is measured in per adult equivalent and real terms (2005 Cedis).
Source: Authors' calculations based on GLSS-3/4/5/6 data.

Table 2. Mean and median consumption (logarithm) by migration status and change in sector of employment.

	Median	**Mean**	**SE**	**95% CI**		**N**
Migrant	7.865	7.867	0.023	7.821	7.913	1,101
Stay in agriculture	7.330	7.367	0.041	7.287	7.447	282
Move out of agriculture	7.668	7.698	0.081	7.538	7.857	69
Move into agriculture from non-agriculture	7.577	7.649	0.080	7.492	7.806	81
Stay in non-agriculture	8.156	8.202	0.027	8.149	8.254	595
Non-migrant	7.604	7.614	0.010	7.593	7.634	5,152

Source: Authors' calculations based on GLSS-6 data.

Table 3. Characteristics of migrant and non-migrant households.

	Mean	Difference in Mean	Mean	Difference in Mean	Mean	Difference in Mean
Migration	Migrant	Migrant - Nonmigrant	Migrant from Coastal Ghana	Migrant - Nonmigrant	Migrant from Inland Ghana	Migrant - Nonmigrant
Share of migrant households (%)	20.2		22.2		18.4	
Log-consumption	7.867	0.252***	7.990	0.216***	7.728	0.259***
Household head characteristics						
Age	42.527	0.050	42.616	0.170	42.428	-0.079
Male	0.835	0.089***	0.810	0.105***	0.863	0.080***
Education						
No schooling	0.174	-0.087***	0.090	-0.058***	0.269	-0.096***
Less than completed primary	0.086	-0.004	0.060	-0.038***	0.116	0.032
Completed primary	0.111	-0.012	0.098	-0.047**	0.125	0.024
Completed lower secondary	0.403	0.030	0.523	0.070**	0.268	-0.032
Completed upper secondary	0.091	0.017	0.073	-0.011	0.112	0.047
Post-secondary and higher	0.107	0.052***	0.141	0.079***	0.070	0.021
Formal adult education and other	0.027	0.004	0.015	0.005	0.041	0.005
Household demographics						
Household size	5.491	-0.324**	5.112	-0.114	5.916	-0.440
Share of household members 4-14 years of age	0.295	-0.006	0.273	-0.020*	0.318	0.010
Share of female household members 15-64 years of age	0.293	-0.015**	0.315	-0.004	0.269	-0.030***
Share of male household members 15-64 years of age	0.286	0.020***	0.298	0.027***	0.272	0.012
Share of household members 65+ years of age	0.004	-0.010***	0.004	-0.006***	0.004	-0.014***
Share of household members employed (15-64)	0.865	0.021	0.845	0.028	0.888	0.020
Share of household members unemployed (15-64)	0.018	0.009**	0.027	0.015**	0.007	0.002
Geographical location						
Urban	0.558	0.063	0.651	0.110**	0.453	-0.000
Region of origin						
Western	0.052	-0.027*	0.099	-0.066**		
Central	0.159	0.060**	0.300	0.093**		
Greater Accra	0.050	-0.070***	0.094	-0.156***		
Volta	0.133	0.051**	0.251	0.081**		
Eastern	0.135	0.036**	0.256	0.048*		
Ashanti	0.120	-0.060**			0.255	-0.091*
Brong Ahafo	0.088	0.014			0.187	0.044
Northern	0.115	-0.045*			0.243	-0.064
Upper East	0.076	0.017			0.162	0.047*
Upper West	0.072	0.025			0.154	0.063**
District level characteristics						
Share of migrants in 1984	58.648	8.630***	59.454	5.646***	57.743	11.207***
Share of population with no schooling	37.669	-11.152***	35.462	-0.905	40.145	-20.112***
Share of employed population working in agriculture	56.616	-0.988	50.315	-3.579	63.685	2.674
Average number of years of education	4.563	0.839***	4.830	0.141	4.264	1.426***
Gini coefficient of # of years of education	0.307	-0.015***	0.303	-0.001	0.311	-0.027***
N	6,253		2,825		3,428	

Source: Authors' calculations based on GLSS-6 data.

Table 4. Migration and Consumption: OLS and selection-corrected equation.

	All		From Coastal Ghana		From Inland Ghana	
	OLS	Selection	OLS	Selection	OLS	Selection
	(1)	(2)	(3)	(4)	(5)	(6)
Logarithm of consumption						
Migrant	0.157***	0.570***	0.111***	0.199	0.201***	0.691***
	(0.031)	(0.129)	(0.040)	(0.145)	(0.057)	(0.161)
Probability of migration						
Share of migrants 1984 (log)		1.176***		1.145***		1.656***
		(0.264)		(0.386)		(0.393)
Gini coefficient of # of years of education (log)		1.883		-0.769		5.180
		(3.041)		(4.281)		(3.747)
Average number of years of education (log)		1.358**		-0.529		1.254*
		(0.584)		(1.147)		(0.647)
Share of population with no schooling (log)		-0.017		-0.177		-1.653**
		(0.573)		(0.959)		(0.698)
Share of employed population working in agriculture (log)		0.225		-0.144		0.559***
		(0.144)		(0.164)		(0.203)
σ		-0.556***		-0.632***		-0.531***
		(0.039)		(0.029)		(0.051)
ρ		-0.470***		-0.101		-0.582***
		(0.145)		(0.156)		(0.172)
N	6,383	6,383	2,921	2,921	3,462	3,462

Source: Authors' calculations based on GLSS-6 data.

Table 5. Migration and Consumption: Heterogeneous effects by year of migration.

	All		From Coastal Ghana		From Inland Ghana	
	2000-2011	2005-2011	2000-2011	2005-2011	2000-2011	2005-2011
	(1)	(2)	(3)	(4)	(5)	(6)
Logarithm of consumption						
Migrant	0.575***	0.588***	0.244	0.253	0.697***	0.735***
	(0.163)	(0.150)	(0.179)	(0.158)	(0.192)	(0.178)
Probability of migration						
Share of migrants 1984 (log)	1.049***	1.022***	1.090***	1.037**	1.421***	1.477***
	(0.290)	(0.307)	(0.397)	(0.412)	(0.388)	(0.416)
Gini coefficient of # of years of education (log)	1.843	2.663	0.517	1.701	3.620	3.523
	(3.428)	(3.700)	(4.570)	(4.799)	(3.915)	(4.332)
Average number of years of education (log)	1.415**	1.626**	-0.218	0.010	1.007	1.271*
	(0.664)	(0.723)	(1.242)	(1.372)	(0.710)	(0.771)
Share of population with no schooling (log)	0.011	0.230	-0.098	0.101	-1.792**	-1.266
	(0.619)	(0.623)	(1.015)	(1.066)	(0.866)	(0.919)
Share of employed population working in agriculture (log)	0.233*	0.194	-0.145	-0.233	0.560***	0.558***
	(0.137)	(0.152)	(0.202)	(0.194)	(0.205)	(0.213)
σ	-0.569***	-0.576***	-0.639***	-0.636***	-0.538***	-0.546***
	(0.041)	(0.036)	(0.032)	(0.029)	(0.054)	(0.052)
ρ	-0.449**	-0.444***	-0.122	-0.131	-0.583***	-0.597***
	(0.176)	(0.151)	(0.194)	(0.167)	(0.195)	(0.179)
N	6,075	5,830	2,760	2,632	3,315	3,198

Source: Authors' calculations based on GLSS-6 data.

Table 6. Migration and Consumption: Heterogeneous effects by gender.

	All		From Coastal Ghana		From Inland Ghana	
	Male	Female	Male	Female	Male	Female
	(1)	(2)	(3)	(4)	(5)	(6)
Logarithm of consumption						
Migrant	0.612***	0.259	0.113	0.282	0.714***	0.290
	(0.138)	(0.195)	(0.170)	(0.187)	(0.164)	(0.317)
Probability of migration						
Share of migrants 1984 (log)	1.164***	1.314***	1.131***	1.274**	1.650***	2.014***
	(0.269)	(0.383)	(0.379)	(0.536)	(0.378)	(0.612)
Gini coefficient of # of years of education (log)	0.860	6.502	-1.885	2.270	4.570	11.030**
	(2.871)	(3.980)	(4.117)	(5.328)	(3.648)	(4.826)
Average number of years of education (log)	1.446**	0.648	-0.680	-0.518	1.426**	0.377
	(0.562)	(0.740)	(1.183)	(1.202)	(0.635)	(0.787)
Share of population with no schooling (log)	0.031	-0.530	-0.255	-0.157	-1.654**	-2.653***
	(0.623)	(0.639)	(1.004)	(1.090)	(0.711)	(0.977)
Share of employed population working in agriculture (log)	0.260*	0.050	-0.147	-0.167	0.629***	0.323
	(0.155)	(0.167)	(0.170)	(0.204)	(0.214)	(0.255)
σ	-0.539***	-0.676***	-0.615***	-0.723***	-0.529***	-0.652***
	(0.040)	(0.035)	(0.025)	(0.044)	(0.048)	(0.057)
ρ	-0.499***	-0.166	0.010	-0.233	-0.591***	-0.199
	(0.157)	(0.218)	(0.179)	(0.214)	(0.169)	(0.367)
N	4,789	1,594	2,040	881	2,749	713

Source: Authors' calculations based on GLSS-6 data.

Table 7. Migration and Consumption: Heterogeneous effects by educational attainment.

	All		From Coastal Ghana		From Inland Ghana	
	Up to less than completed secondary	Completed lower secondary and above	Up to less than completed secondary	Completed lower secondary and above	Up to less than completed secondary	Completed lower seconda and above
	(1)	(2)	(3)	(4)	(5)	(6)
Logarithm of consumption						
Migrant	0.475***	0.463***	-0.006	0.228	0.585***	0.723***
	(0.163)	(0.170)	(0.298)	(0.146)	(0.217)	(0.151)
Probability of migration						
Share of migrants 1984 (log)	1.129***	1.324***	1.049***	1.271***	1.351***	1.893***
	(0.259)	(0.316)	(0.387)	(0.414)	(0.391)	(0.502)
Gini coefficient of # of years of education (log)	-0.305	2.802	2.537	-2.707	-1.261	10.929**
	(2.498)	(3.397)	(4.140)	(4.253)	(2.693)	(4.747)
Average number of years of education (log)	0.786	1.599**	-1.554	-0.120	0.357	2.100**
	(0.488)	(0.739)	(1.062)	(1.191)	(0.518)	(0.817)
Share of population with no schooling (log)	-0.874	0.566	-2.086*	0.761	-2.041***	-1.176
	(0.565)	(0.642)	(1.112)	(0.996)	(0.595)	(0.917)
Share of employed population working in agriculture (log)	0.654***	0.037	0.402	-0.290*	0.736***	0.331
	(0.232)	(0.132)	(0.287)	(0.152)	(0.212)	(0.241)
σ	-0.525***	-0.621***	-0.626***	-0.648***	-0.486***	-0.618***
	(0.042)	(0.040)	(0.037)	(0.033)	(0.055)	(0.054)
ρ	-0.401**	-0.326	0.101	-0.109	-0.558***	-0.548***
	(0.167)	(0.202)	(0.297)	(0.158)	(0.208)	(0.175)
N	3,184	3,199	1,116	1,805	2,068	1,394

Source: Authors' calculations based on GLSS-6 data.

Table 8. Migration and Distance from the poverty line (poverty gap).

	All			From Coastal Ghana			From Inland Ghana		
	1990-2011	2000-2011	2005-2011	1990-2011	2000-2011	2005-2011	1990-2011	2000-2011	2005-2011
	(1)	(1)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Distance from the poverty line									
Migrant	-0.117***	-0.114***	-0.115***	0.186***	0.190***	0.193***	-0.173**	-0.176**	-0.184***
	(0.041)	(0.041)	(0.037)	(0.027)	(0.025)	(0.025)	(0.073)	(0.083)	(0.065)
Probability of migration									
Share of migrants 1984 (log)	1.120***	1.022***	0.977***	0.448*	0.319	0.334*	1.458***	1.270***	1.348***
	(0.272)	(0.287)	(0.310)	(0.246)	(0.215)	(0.193)	(0.490)	(0.450)	(0.427)
Gini coefficient of # of years of education (log)	1.816	1.853	2.609	-1.474	-0.688	-0.055	4.522	2.761	2.386
	(3.017)	(3.420)	(3.699)	(3.674)	(3.557)	(3.417)	(3.526)	(3.711)	(4.049)
Average number of years of education (log)	1.485**	1.503**	1.708**	-1.207	-0.815	-0.540	1.576**	1.209	1.402*
	(0.605)	(0.683)	(0.739)	(1.240)	(1.248)	(1.237)	(0.705)	(0.784)	(0.804)
Share of population with no schooling (log)	0.098	0.069	0.299	-0.819	-0.549	-0.294	-1.121	-1.384	-0.914
	(0.617)	(0.655)	(0.656)	(1.015)	(1.007)	(1.019)	(0.896)	(1.049)	(0.994)
Share of employed population working in agriculture (log)	0.208	0.209	0.161	-0.062	-0.049	-0.057	0.506***	0.509***	0.501***
	(0.143)	(0.137)	(0.149)	(0.133)	(0.142)	(0.135)	(0.196)	(0.197)	(0.193)
σ	-1.847***	-1.851***	-1.848***	-1.906***	-1.928***	-1.949***	-1.713***	-1.714***	-1.717***
	(0.080)	(0.077)	(0.073)	(0.098)	(0.094)	(0.090)	(0.097)	(0.098)	(0.092)
ρ	0.434***	0.402***	0.396***	-1.257***	-1.440***	-1.515***	0.656**	0.633**	0.678***
	(0.152)	(0.142)	(0.117)	(0.135)	(0.110)	(0.114)	(0.275)	(0.289)	(0.216)
N	6,383	6,075	5,830	2,921	2,760	2,632	3,462	3,315	3,198

Source: Authors' calculations based on GLSS-6 data.

Appendix

Table A 1. Consumption Equation corrected for selection – full set of controls.

	All	From Coastal Ghana	From Inland Ghana
	(1)	(2)	(3)
Logarithm of consumption			
Household head characteristics			
Migrant	0.570***	0.199	0.691***
	(0.129)	(0.145)	(0.161)
Age	-0.005	0.018*	-0.018*
	(0.010)	(0.011)	(0.011)
Age squared	0.004	-0.021*	0.017
	(0.011)	(0.012)	(0.012)
Male	-0.021	-0.006	-0.002
	(0.031)	(0.039)	(0.053)
Education			
Less than completed primary	0.176***	0.091*	0.220***
	(0.037)	(0.051)	(0.048)
Completed primary	0.138***	0.059	0.203***
	(0.042)	(0.057)	(0.054)
Completed lower secondary	0.265***	0.215***	0.310***
	(0.036)	(0.044)	(0.054)
Completed upper secondary	0.490***	0.437***	0.497***
	(0.062)	(0.062)	(0.086)
Post-secondary and higher	0.649***	0.644***	0.679***
	(0.054)	(0.089)	(0.063)
Formal adult education and other	0.139	0.230*	0.134
	(0.089)	(0.137)	(0.101)
Household demographics			
Household size	-0.048***	-0.073***	-0.032***
	(0.007)	(0.009)	(0.007)
Share of household members 4-14 years of age	-0.185**	-0.170*	-0.226**
	(0.085)	(0.091)	(0.109)
Share of female household members 15-64 years of age	0.489***	0.388***	0.558***
	(0.101)	(0.110)	(0.122)
Share of male household members 15-64 years of age	0.246***	0.219***	0.228*
	(0.086)	(0.074)	(0.128)
Share of household members 65+ years of age	0.267	0.176	0.309
	(0.232)	(0.227)	(0.366)
Share of household members employed (15-64)	0.092*	0.109*	0.142*
	(0.050)	(0.062)	(0.077)
Share of household members unemployed (15-64)	-0.557***	-0.474**	-0.306
	(0.162)	(0.193)	(0.208)
Geographical location			
Urban	0.278***	0.280***	0.307***
	(0.037)	(0.052)	(0.045)

	All	From Coastal Ghana	From Inland Ghana
Region of origin			
Western			
Central	-0.073	-0.046	
Greater Accra	-0.170**	-0.085	
Volta	-0.249**	-0.125*	
Eastern	-0.228**	-0.142*	
Ashanti	-0.091		
Brong-Ahafo	-0.158		0.543***
Northern	-0.361***		0.476***
Upper East	-0.468***		0.185**
Upper West	-0.607***		0.123
District level controls in 1984			
Gini coefficient of # of years of education (log)	0.332	0.961	-0.685
	(0.772)	(0.676)	(0.962)
Average number of years of education (log)	-0.069	0.448	-0.234*
	(0.112)	(0.344)	(0.133)
Share of population with no schooling (log)	-0.072	0.260	-0.024
	(0.139)	(0.335)	(0.217)
Share of employed population working in agriculture (log)	-0.167***	-0.171***	-0.170***
	(0.033)	(0.038)	(0.056)
Probability of migration			
Share of migrants 1984 (log)	1.176***	1.145***	1.656***
	(0.264)	(0.386)	(0.393)
Gini coefficient of # of years of education (log)	1.883	-0.769	5.180
	(3.041)	(4.281)	(3.747)
Average number of years of education (log)	1.358**	-0.529	1.254*
	(0.584)	(1.147)	(0.647)
Share of employed population working in agriculture (log)	-0.017	-0.177	-1.653**
	(0.573)	(0.959)	(0.698)
Share of population with no schooling (log)	0.225	-0.144	0.559***
	(0.144)	(0.164)	(0.203)
σ	-0.556***	-0.632***	-0.531***
	(0.039)	(0.029)	(0.051)
ρ	-0.470***	-0.101	-0.582***
	(0.145)	(0.156)	(0.172)
N	6,383	2,921	3,462

Source: Authors' calculations based on GLSS-6 data.

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