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Clotilde Mahé* Wim Naudé†

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Abstract

We investigate whether the occupational productivity and employment status of individuals living in a household with migrants differ from those living in non-migrant households using the sixth round of the Ghana Living Standards Survey (GLSS6) and the Africa Sector Database (ASD). We find that rural households and households with a head in more productive occupations are more likely to have migrant members, and that rural households and households with a head who are waged-employed are more likely to have a migrant than households with members who are self-employed. While these findings are not suprising, we find some more unexpected results. For instance, migrants do not always migrate to more productive occupations; migration can result in downward occupational mobility. Migrants in our sample do not send back much remittances. Migrant-sending households in Ghana are in fact more likely to send remittances to their relatives currently away, than to receive remittances. In an attempt to explain these somewhat puzzling findings, we argue that a motivation for rural households or households with a head in a more productive occupation to send out relatives is to support younger household members to pursue their education elsewhere. Migration is therefore a long(er)-run income-and-occupational diversification strategy of the more productively employed rural households in Ghana.

JEL classifications: O150, O180, R23
Keywords: migration, occupational choice, structural transformation, Africa

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1 Introduction

Most sub-Saharan African (SSA) countries need to undergo the structural transformations associated with modern development – industrialization, urbanisation and demographic shift (McMillan and Harttgen, 2014; Naudé, 2016). Its structural stagnation is evident in slow productivity growth resulting from occupational and geographical immobility of its labour force. Nearly all labour is employed in low-productivity sectors[1] (Gollin et al., 2014) (occupational immobility), and predominantly in rural areas, where productivity is lower than in urban areas (Lagakos and Waugh, 2013) (geographical immobility).[2]

In this regard, a growing literature has made the case for accelerated rural-urban migration in SSA.[3] Migration, either from rural to urban or to rural areas, may indeed be an important mechanism for occupational mobility. In an urbanised location, migrants have a wider set of occupational options available, and could develop their capabilities by pursuing an education. This may, over the longer-run, improve their access to more productive occupations. Furthermore, given that migration decisions are made at the household-level, migration could induce left-behind household members to reallocate their labour into different occupations, for instance away from subsistence activities towards more productive entrepreneurial ventures. In other words, migration could impact on structural transformation through communities left behind.

While some research have examined occupational choice between waged- and self-employment (e.g. Nagler and Naudé (2014)), the issue of labour (re)allocation across productivity level-specific occupations has been neglected. Although it has been found that migrants from rural areas tend to be more productive when they are employed in urban areas and that their remittances can stimulate self-employment of household members left-behind, the dynamics between migration and occupational choices of left-behind household members is not yet well understood. Not much is known about how migration interacts with labour (re-) allocation of left-behind household members into more, or less, productive occupations, despite the importance of the occupational and geographical mobility of labour.

In this paper, we attempt to fill these gaps in the literature by investigating whether the occupational productivity and employment status of individuals living in a household with migrants differ from those living in a non-migrant household. We do so combining the sixth round of the Ghana Living Standards Survey (GLSS6) with the Groningen Growth and Development Center (GGDC) Africa Sector Database (ASD). We find that individuals living in a household with migrant(s) are (i) less likely to be self-employed, more likely to be waged-employed or to contribute to family work; and (ii) more likely to work in a higher-productivity occupation. In particular, the probability of a 16-64 rural household member to be employed in a high-productivity occupation is 2.3 percentage points higher if s/he lives in a household with a current migrant in a rural area; 4.3 higher if s/he is household head. Living in a household with a return migrant is not related to the occupational productivity of non-migrant members, but does seem to increase (decrease) the probability of non-migrating household members to be waged-employed. We also find that when migrants are more likely to be unemployed at destination and when they find work, around 20 percent reallocate to occupations requiring a

[1] In recent years, labour in Africa has increasingly moved out of agriculture (Fox et al., 2013) but, in many cases labour has shifted towards informal service-type of occupations, where growth in labour productivity tend to be slower than farming.

[2] Out-migration rates from rural to urban areas, and international migration have been relatively slow in Africa compared to more productive regions (Naudé, 2010).

[3] See for instance Christiaensen (2007) and Beegle et al. (2011).

lower skill level. Moreover, migrants send back relatively few remittances: a larger proportion of source-households are sending remittances to their relatives currently away, than the proportion of households receiving remittances. A possible explanation may be that the households with members in more productive occupations can afford to invest in their younger members by sending them away to obtain an education.

The rest of the paper is structured as follows. Section 2 reviews the empirical literature on the dynamics between migration and household members left behind in origin communities. Based on theoretical contributions to the economics of migration, Section 3 provides a conceptual discussion about the relationship between migration and time use and occupation of those left behind (TLBs). Data and empirical methods are presented in Section 4; empirical results in Section 5. Section 6 concludes.

2 Literature review

Migration is defined as 'the relocation of people within space that involves their permanent or temporary change of residence' (Mafukidze, 2006, p. 103), that can be either voluntary or forced;[4] international migration takes place when people relocate across international borders. The economics of migration has substantially focused on the extent and determinants of migration, and its impacts on host and sending communities. We are interested in two subsets of this literature. First, the degree to which migration is determined by the need of households to alleviate resource pressures and overcome market obstacles; and second, the impacts of migration on economic choices of left-behind household members.

2.1 Determinants of migration

In early dual-economy (Lewis, 1954; Ranis and Fei, 1961) and rural-urban migration models (Harris and Todaro, 1970; Piore, 1979), workers in rural areas compare the present value of their expected lifetime earnings from either remaining in rural areas or moving to cities. In Lewis (1954) in particular, the choice to migrate has a positive outcome: surplus labour would move from rural to urban areas, where it would be more productively employed; outflows from rural areas would eventually push rural wages upwards and former farm-workers would change their occupation when moving to cities, taking up work in the more productive 'modern' sector. People migrate because of market disequilibria, i.e. internal income or wage differentials, differences in employment rates, which equalises wages, bringing migration to a stop. Lee (1966) was the first to set migration in a push-pull framework, at the individual-level (Hagen-Zanker, 2008), in which migration is driven by push factors from the place of origin, such as poverty or unemployment, and pull factors from potential destinations – better income or job prospects – accounting for obstacles ('intervening factors') or personal factors individuals have to overcome to migrate (King, 2012). In this context, it may be that those migrating are those who are able to do so, or enabled by their non-migrating relatives. Migration itself could thus be viewed as an opportunity, a human capital investment decision to increase productivity (Sjaastad, 1962).[5]

[4] The term 'refugee' refers to people migrating internationally in order to flee political violence, war, civil conflicts and persecution based on race, religion, nationality, or political opinions. When people do so without crossing international borders, they are classified as internally displaced persons (IDPs). In the rest of this paper, we only focus on voluntary migration.

[5] In practice, not all migrants from rural areas find a job at destination. High urban unemployment has been a salient feature of most rural-urban migration experiences in SSA. According to Harris and Todaro (1970), this

However, there may be more to deciding to migrate than comparing expected wages: empirical work has found rates and patterns of rural-urban migration that could not be adequately explained by the Harris-Todaro or Lewis models alone. The New Economics of Labour Migration (NELM) (Stark and Bloom, 1985) sees migrating as a social, strategic decision tied to the household's livelihood and jointly taken by household members. Migrating is decided collectively by related people; not only to maximise expected earnings and status, but also to diversify income, minimise and spread risks, loosen constraints associated with imperfections or absence of market for credit, insurance or education. In this context, families insure themselves by placing members in labour markets outside their community of origin where incomes may be less subject to risk. Risk at the household level is somewhat lowered. The decision to migrate may thus be motivated by a number of reasons, including the desire to improve the educational attainment of younger family members (Harris and Todaro, 1970; Rosenzweig and Stark, 1989; Stark, 1991; *in* Binzel and Assaad, 2011). Indeed, migrants tend very often, especially in the case of internal migration, not to stay permanently away, but to return to their origin household, bringing back better education, experience, networks and accumulated wealth.

2.2 Impacts of migration on those left behind

A growing literature has studied dynamics between migration and welfare of household members left behind. The main strand has focused on the effects of remittances[6] on welfare outcomes, while another has been concerned with (post-migration) time use and reallocation.

In theory, remittances could alter households' expenditure patterns by acting as substitute for incomplete or inexistent markets, absence of collateral, or relaxing household budget constraint. Migrating and soon-to-be-sent remittances can alleviate financial constraints to cope with a poor, stagnant socio-economic and/or institutional system (Lucas and Stark, 1985). In countries with weak financial systems, recipient households could use remittances to tackle credit and liquidity constraints, and invest in small businesses. Empirical evidence is however mixed, suggesting the need to adopt an alternative lens to study the interactions between migration and occupational reallocation of TLBs.

Vasco (2013), for instance, does not find any influence of migration or remittances on the probability of a household to own a rural business in Ecuador. On the contrary, Mesnard (2004) finds that financial remittances can help overcome liquidity constraints of those left behind, and lead them to start their own enterprises; López-Córdova and Olmedo (2006) find that self-employed and small business owners use remittances as a major source of capital for micro-enterprises in Mexico. Wang (2013) argues that social remittances – ideas and networks brought by migrants – can similarly entice family members left behind to enter into entrepreneurship; earlier work by Woodruff and Zenteno (2007) shows that small and medium-sized enterprises (SMEs) established in Mexico take advantage of connections to migrants in the United States (US) for funding; high-tech firms in particular tend to expand faster, confirming that migrant networks can mitigate financial constraints. Using a sample of 61 developing countries for 2002-07, Valeer (2011) also finds that migrant remittances can support recipient households' venture capital funds and start-ups in origin countries, but only when domestic public sectors are relatively small; remittance 'venture-funding' effects decrease when sent by highly educated emigrants.

is explained by people in rural areas migrating as long as their *expected* wage at destination exceeds that in rural areas.

[6] Here, remittances are understood as monetary, non-monetary and social remittances (Levitt, 1998).

In rural areas in particular, Mansuri (2007) shows that receiving remittances tends to increase investments in both human and physical capital in rural Pakistan, but changes in household structure and preferences over time often reduce, or slow, direct resource impacts of migration. Households with return migrants invest significantly more than non-migrant households; households with members currently away invest significantly less than non-migrant households. The cases of El Salvador and China further support this hypothesis. Acosta (2007) shows that overall, remittances reduce credit constraints, in El Salvador rural areas. If labour force is likely to fall among remittances-recipient households, remittances increase the likelihood of entrepreneurial activities among remittances-recipients – self-employment for males, and business management for females. In rural China, Giulietti et al. (2013) find that households with members who have migrated and returned are more likely to be self-employed than households with no members with migration experience, thus bringing additional evidence to the existence of positive spill-over effects of migration found by Mansuri (2007) for Pakistan. But, even before receiving any remittances, while households left behind have to cope with and compensate for the out-migration of (part of) their foregone workforce and income, they may have to bear and reimburse costs induced by migration. Both remittances sent by households left behind – *reverse* remittances – and decrease in household labour supply are likely to affect hours and type of work in migrant sending households.

Another strand of the literature has examined time use and within-household occupation (re)allocation among those left behind. A number of studies have found negative impacts of migration on their labour market participation (Mu and van de Walle, 2011; Lokshin and Glinskaya, 2009). Most frequently, women change occupations, reallocating labour to less productive occupations such as unpaid family work (Binzel and Assaad, 2011; Mendola and Carletto, 2009). Such occupational changes have been described as attempts to cope with family labour constraints in production activities caused by the loss of labour supply units following migration. As Mansuri (2007) however showed, left-behind households – households with member(s) currently living in urban cities – show lower propensity of self-employment than individuals living in non-migrant households. Those left behind might experience a loss of labour force, i.e. potential financial and (entrepreneurial) human resources, not overcome by the receipt of remittances (Giulietti et al., 2013).

Furthermore, in rural areas, in particular of sub-Saharan Africa (SSA), out-migration is often a reaction against the seasonality of farming (Mendola, 2006). (Seasonal or circular) migration may be a short-run strategy to diversify income and (more) efficiently allocate potential surplus labour, despite locl labour market 'disruption' potentially hindering specialisation and productivity gains over the longer term. In this respect, evidence from Ghana shows that households with circular/seasonal migrants come from households of lower farm production compared to non-migrant households, and who do not invest relatively more. Outflows of local labour negatively impact on local labour markets and labour productivity of TLBs by reducing market size, generating labour bottlenecks, and inducing a lack of available skills (Adaku, 2013). These effects are amplified and sustained by the self-reinforcing nature of migration through historical migrant networks of source communities (Hagen-Zanker, 2008).

A sub-strand of the literature on the relationships between entrepreneurship and migration has been concerned with the occupational choice of return migrants. When migrants return to their origin country and left-behind families, they have been found to be more likely to experience upward occupational mobility compared to family members who never migrated, and to start their own enterprises/be self-employed (Carletto and Kilic, 2009; Démurger and Xu, 2011; Dustmann and Kirchkamp, 2011; Ilahi, 1999; Woodruff and Zenteno, 2007). They have even been found to stimulate the entrepreneurship of non-migrant family members, suggesting

spillover effects from the entrepreneurial capital of return migrants to non-migrating family members (Giulietti et al., 2013).

Eventually, migration could be viewed as a longer-run strategy to invest in human capital, as empirical work on education and health outcomes of non-migrating household members has shown. The impacts of migration on school attainment and performance of children left behind might be the most documented dimension, despite endogeneity issues (Démurger, 2015). Remittances are likely to have a positive effect on educational outcomes by relaxing household budget constraints and the need for labour; but potential lack of care or supervision might offset these positive effects, moreover as the possibility of a child's own migration might decrease (increase) education performance if migration is more of a low-skilled (high-skilled) type. In addition, redistribution of decision-making and responsibilities within a household might improve or deteriorate educational outcomes. So far, the empirical literature has provided rather inconclusive, heterogeneous results, depending on gender, age, birth order, and gender and number of absent parent(s).

Impacts on health outcomes have been relatively less studied. Channels are similar to those linking migration and educational outcomes of TLBs (Démurger, 2015). Long-run remittances-induced income effects might improve sanitation, diets, health-seeking behaviours. In the shorter-run, remittances would compensate the absence of, or imperfections on formal health insurance markets. However, time reallocation and task redistribution within households might increase housework load, psychological pressure, worsen diets of left-behind children, and disturb traditional kinships and care systems. A growing literature has found that parental migration leads to better nutrition of very young children; but recent randomized trials, yield inconclusive results.[7] Research on the impacts of the migration of adult children on left-behind parents' health also gives mixed results.[8]

Empirical findings on the dynamics between migration and time use by type of occupation of TLBs are thus rather inconsistent. Timing of migration, migration stages, level and predictability of remittance flows are important determinants of the impacts of migration on occupational choice through remittances and their effects on expenditure patterns, within-household time and occupational (re)distribution, and more indirectly, in a longer-run perspective, on educational and health outcomes. Despite most recent empirical works providing insights on the process of migration, and some having addressed the question of time reallocation through mainly remittances, very few have adopted a comprehensive approach linking migration, the substance of migrants' and their left behind's occupation.[9] Although occupational mobility – switching from lower- to higher-productivity activities – and spatial mobility – traditionally from rural to urban areas – have been argued to be both necessary for development, traditional models and empirical work have often looked at these decisions separately. Most research has overlooked whether household migration experience could affect left behind's occupational choice in terms of the substance of their occupation, i.e. their productivity. This may stem from the fact that traditional occupational choice theory and internal migration theory have developed separately – either occupational choice models neglect spatial dimensions, or rural-

[7] In Ethiopia, households with migrants had healthier parents and better educated children; in Tonga, migration had no effect on relatives left behind (Gibson et al., 2011).

[8] Using instrumental variables and fixed-effects estimators, Antman (2010), for instance, finds that parents left behind in Mexico will often have poorer health due to social isolation from separating with out-migranting children. Borraz et al. (2008) find that families left-behind in Ecuador are less happy than families without a migrant.

[9] Recent empirical research has investigated dynamics between spatial and occupational reallocation and welfare of migrants and migrants' relatives left behind – see for example Beegle et al. (2011), Christiaensen and Todo (2014) – rather than the productivity implications of their occupational reallocation.

urban migration models neglect occupational choices.[10] In practice, this implicit assumption may not hold: spatial moves of labour may affect the occupational choices of those left behind.

3 Conceptual framework

Section 2 shows that while empirical work so far conducted has focused on the impacts of migration on left-behind relatives' educational, health or time use outcomes, dynamics between migration and occupation of non-migrating relatives remain understudied. It has been argued that migration may affect their occupational choice, and so their productivity, although households' socio-economic status does matter for bearing migration costs – for migration to take place.

In this section, we elaborate on these dynamics, investigating why out-migration would affect occupational decisions of left-behind household members, and how occupations of left-behind members would affect migration decison. Based on Section 2, we further explore relationships between migration, remittances, within-household time allocation and occupations.

3.1 Remittances

As mentioned in Section 2, in theory, remittances could alter households' expenditure patterns by acting as substitute for incomplete or inexistent markets, absence of collateral, or relaxing household budget constraint. Remittances could directly influence the occupational choice of those left behind, easing household budget constraints, by (i) increasing reservation wage;[11] and (ii) offering greater opportunities for investments in human or physical capital.

Remittances could indeed affect labour market behaviour of relatives left behind by decreasing their incentives to work: an increase in reservation wage would reduce opportunity costs of leisure, often resulting in a decrease in labour market participation (Antman, 2012), or altering employment composition (Amuedo-Dorantes and Pozo, 2006; *in* Anghel et al., 2015).

Simultaneously, by shifting upward household budget constraint, and so household production possibility frontier, in particular when credit, insurance markets are imperfect, remittances would enable households to overcome financial, risk constraints, and act as insurance policy (Taylor and López-Feldman, 2010). Remittances could also play a buffering role against (productivity) shocks – for household members left-behind or migrants themselves. For instance, if migrants' relatives left behind shift into less productive occupations, remittances may fulfil a compensatory function; if they shift into more productive occupations, current migrants may send less remittances to their relatives, or family members left behind may even send them remittances – *reverse* remittances – to household members currently away.

This is in line with the NELM: the out-migration of household members could induce occupational changes into more productive occupations as remittances would help non-migrating members to overcome liquidity constraints to start their own businesses for example, or more,

[10] Dynamics between urbanization and poverty reduction have been little studied, with some exceptions (see Anand and Kanbur (1985), Ravallion (2002), Fields (2005) or Ravallion and Chen (2007); *in* Christiaensen and Todo (2014)).

[11] Reservation wage is defined as the lowest wage at which someone is willing to accept a job

to enter lucrative markets (Taylor and López-Feldman, 2010). By altering their degree of risk aversion, remittances could indirectly affect left behind relatives' expenditure behaviours, for instance investing in 'riskier' occupations, such as entrepreneurial activities, relatives at origin would move away from farm to off-farm activities, or enhance recipient households' ability to invest in human or physical resources; overall, their productivity. In other words, a secured remittance income would improve households' creditworthiness (Ratha, 2007), and strengthen their resilience against potential shocks and income volatility by smoothing household income (Ratha et al., 2011). Remittances could encourage recipient households to explore income source diversification strategies in case of any (productivity) shock, such as investing in physical capital, as Yang (2011) shows for business activities in the Philippines, but also by investing in human capital, e.g. education or health.

However, recent empirical research has found that rural-urban remittances are often small in amounts. Evidence for rural Ethiopia in particular, suggest that because poverty is one of the main driving factors to migrate, migration (of this type) may not necessarily lead to immediate remittances from out-migrating household members to relatives left behind (World Bank, 2010; de Brauw et al., 2013; *in* Atnafu et al., 2014). Living conditions of migrants may not differ enough from their left behind relatives', or they may not be earning much because they are away studying, explaining their incapacity to remit. Left behind households would benefit from the out-migration of one of their members because they now share household resources between fewer members and not through the receipt of remittances itself, at least in he short term.

3.2 Within-household time reallocation

Migration simultaneously provokes a reallocation of labour within households to replace foregone labour supply units and/or income of migrating members (Amuedo-Dorantes and Pozo, 2006). In this regard, within-household time and occupational reallocation could induce (occupational) productivity switching.

An absent family member earns no wage and provides no time inputs into household production (Gibson et al., 2009): migration represents a decrease in household labour supply units. The out-migration of a household member may increase the burden on those left behind who must make up for less labour supply available within the family unit for household production. Left-behind relatives must now spend more time on work and domestic chores. Care given to dependents (children and elderly) may also be disrupted. Both market and household production are disrupted, which could outweight remittances-induced gains.

Labour supply response of TLBs thus interacts with remittances-induced income effect, and adjust with (changes in) productivity of their labour force within the household unit, following the out-migration of their relative(s). If labour inputs of TLBs are complements of labour inputs of out-migrating relative(s), there would be a decrease in the labour productivity of TLBs at home, since hiring a perfect subsitute of out-migrating members would be relatively costly. But, if their labour inputs are substitutes, the out-migration of household member(s) would make the work of TLBs at home more valuable, which would induce a decrease in labour market participation, and a reallocation towards family work (Lokshin and Glinskaya, 2009). Migration would constrain the labour supply response of non-migrating relatives as, in particular in the case of imperfect labour markets in source communities, foregone labour units may not be easily subsituted on local markets: TLBs may not be able to hire labour to compensate foregone (out-migrating) labour, which might increase labour burden. Scarce human capital at the unit of a household and difficult substitution of labour may hinder any investment and/or reallocation

into more productive activities. This is consistent with empirical evidence: research on labour supply responses to international migration has shown that spouses left behind in particular tend to decrease their labour market participation, and increase unpaid family work/subsistence work (Démurger, 2015).

In parrallel, migration decreases subsistence levels that have to be met by the household. Before the out-migration of one of its members, households might be trapped in unproductive farming, relatively more labour being dedicated to meet subsistence levels (Schultz, 1953; *in* Naudé, 2016). Individuals self-selecting into agriculture to meet their subsistence level before migration, without being inherently good at farming – and so needing to work even more to meet their individual and household needs (McKenzie and Woodruff, 2015) – could reallocate into off-farms jobs *ex-post*. Household members left behind could efficiently reallocate, or at least better allocate, time and occupation within their household.

By moving away from low-productivity agriculture, households would overcome (agriculture-related) hazards, reduce occupational mismatch by capturing off-farm opportunities,[12] but also increase their labour specialisation. Upon the out-migration of a household member, a smaller number of non-migrating and potential workers are left to share relatively more work: labour becomes less scarce among non-migrating members. This is likely to allow for labour specialisation. Land and labour, the assets of the poor, would be more efficiently used than in the presence of occupational mismatch or hazards in (subsistence) agriculture. As more time is dedicated to labour, leisure will be relatively more valued over labour time.

As a result, processes of agricultural, off-farm or informal household enterprises, through occupational diversification and occupational shifts from lower- to higher-productivity sectors would lead to a more efficient allocation of labour force, inducing poverty-reducing labour productivity growth. Productivity may increase in sectors that will make the most efficient use of land and/or labour.[13]

However, migration and remittances may affect left behind household members differently with gender, relation to household head (Haddad et al., 1997), or with the length of migration episode(s). In particular in a society where household and market roles differ between men and women (Binzel and Assaad, 2011). In a country like Ghana, female (spouse), labour supply could be expected to be relatively inelastic to changes in the labour supply of male (head) household members; if they do, the greater part of women's labour supply response will be in non-wage market and subsistence work. Regarding timing, Lucas (1987) shows that emigration from a sample of Central and Southern African countries to South Africa induces a decrease in crop productivity in the short term as household labour units decrease, but improves farm input productivity in the longer run by investing remittances. However, many empirical studies

[12] Off-farm jobs may indeed be more easily accessible to the poor farmers in rural areas (Haggblade et al., 2007; *in* Christiaensen and Todo, 2014). Unskilled and semi-skilled jobs often make the most of employment offers in rural areas, unlike urban areas, where the workforce is dominated by semi-skilled and skilled workers, as found in Ethiopia and Uganda (Dorosh and Thurlow, 2012; *in* Christiaensen and Todo, 2014), and although rural areas may have lower wages, they may exhibit lower unemployment rates than in urban areas, which could be more attractive to the poor.

[13] As Christiaensen et al. (2013) show for Uganda for the 2005-09 time period, off-farm employment generated nearby farming areas, i.e. farms, rural villages, secondary towns, can induce poverty reduction through occupational reallocation. Around half of their sample exited poverty while still dedicating most of their time in farming; 11 percent did so by complementing agricultural income with rural off-farm income. One in four individuals of their sample exited poverty by diversifying their income into rural nonfarm activities (occupational reallocation). However, more than 60 percent of their improvement in wellbeing (consumption growth) took place in households not working in agriculture, either in rural or urban areas, thus confirming the importance of occupational reallocation away from farm activities into non-farm (urban or rural) activities.

have not been able to account for migration episode length, thus averaging short and long run dynamics (Gibson et al., 2009).

To conclude, dynamics between migration and outcomes of family left behind are complex: multi-channeled, context-specific, depending on who migrates, who is left behind, migration duration and reasons for migrating. As explained by Adaku (2013), migration has potentially both positive and negative impacts on origin communities. First, it tends to be the most able who leave, impoverishing sending communities from their human resources. Households with members working in relatively productive occupations would be expected to be more able and (so) to send members away. de Brauw (2014) for instance, using data from the Ethiopia Rural Household Survey covering 1994 to 2009, finds that causality runs from households agricultural productivity to migration, rather than the opposite: households more productive in farming are more likely to send out migrants; migrant-sending household productivity and production are not negatively affected by migration. Second, workforce outflows make labour supply more scarce, which can create labour shortages at peak periods, and can lock sending areas in low-productivity, structural stagnation traps as reduced markets of labour supply would generate smaller markets for local activities. On the other hand, remittances sent by out-migrating relatives could alleviate financial constraints. Both transfers of knowledge and monies may increase investment, trade and technology adoption. Positive remittances-induced effects could counterbalance the loss of labour due to household members out-migrating, moreover as households are left to compete for human capital within non-migrating household members and/or local labour markets that may, in particular in less developed, rural context, be subject to imperfections, if existing at all. Households may actually not be able to adapt to labour shortage, and remittances, not enough to offset potentially negative effects induced by migration. Remittances may actually lead to subsituting leisure for work, and increase in costs of labour. Adding to existing constraints on production and investment, remittances alone may not be enough for switching/investing into productive activities, in particular if migration turns out to be a strategy to cope with low, or a lack of productive investments in rural areas (Wouterse, 2010; *in* Adaku, 2013). Remittances could however be allocated to other types of expenditures, such as in education in order to increase prospects of productive occuptions for future generations, despite being viewed as an unproductive expenditure in the short-run.

4 Methodology and data

The relationship between migration and the productivity of relatives left behind is theoretically ambiguous, as the previous two sections concluded. Migration is likely to impact on occupation, and *vice versa*: the occupations of non-migrating household members can also influence family members to migrate. The subsequent sections of this paper provide empirical evidence for Ghana. Section 4 presents estimation methods and data.

4.1 Methodology

4.1.1 Heckman selection model

A non-migrant household member makes two sequential decisions: first, whether to enter the labour market; second, whether to enter a high- or low-productivity occupation, conditional on working. Based on the GLSS6 and the ASD, occupations in trade services, personal services and

agriculture are assumed to have low levels of productivity, compared to those in manufacturing, government services, mining, construction, business services, transport services or utilities of higher levels of productivity (see Table A3). We investigate whether these decisions are affected by household-level migration experience – living in a household with at least one current or return migrant.

Our benchmark specification is estimated as (a probit model of) the probability of working-age (16-64) individuals to work in a high-productivity industry, with no migration experience, Heckman-corrected for selection into working. A Heckman selection model is used since the probability of working – being active and employed (1) versus being inactive or active and unemployed (0) – determines if workers' industry productivity is observed. If not accounted for, results would be subject to selection into working. The selection stage models the probability of working-age individuals to work. Conditional on the probability to work, the outcome stage models the probability of an individual to work in a high-productivity industry (1) versus working in a low-productivity industry (0). To estimate this model, a cross-sectional sample is used, combining data from the sixth round of the Ghana Living Standards Survey (GLSS6) (GSS, 2014) and the Groningen Growth and Development Centre (GGDC) Africa Sector Database (ASD) (de Vries et al., 2013).

$$z_i^* = M_i\gamma_1 + w_i\gamma_2 + u_i \tag{1}$$

Where z_i^* is a latent variable corresponding to the probability of a non-migrant 16-64 year old individual to work:

$$z_i = \begin{cases} 1 & \text{if an individual is working } z_i^* > 0 \\ 0 & \text{if an individual is not working } z_i^* \leq 0 \end{cases}$$

M_i is our explanatory variable of interest, household migration experience, alternatively measured as a dummy, and as number of migrants per household. w_i is a vector containing control variables. Once the selection equation is estimated, the outcome stage is modelled, with the probability of working in a high-productivity occupation as dependent variable:

$$y_i^* = M_i\beta_1 + w_i\beta_2 + \epsilon_i \tag{2}$$

With:

$$y_i = \begin{cases} y_i^* & \text{if } z_i = 1 \\ \text{not observed} & \text{if } z_i = 0 \end{cases}$$

M_i is our explanatory variable of interest, household migration experience. x_i is a vector of control variables.

Control variables of selection and outcome equations are almost similar, and account for individual – gender, age, education – household – mother's education, household size, child and elderly depend ratios, number of schooled children per household, household agricultural

wealth and entrepreneurial experience – and location characteristics – urban or rural ecological zones. Marital status is used as exclusion restriction in the selection stage: it is assumed to affect the probability of working, but not necessarily sectoral occupational productivity.

First, this model is estimated with alternative measures of household migration experience, lumping together, then distinguishing, individuals living in a household with current migrants from return migrants, using a dummy variable; then, the number of migrants per household. It is subsequently estimated for urban and rural households, and for household head, spouse and children. Eventually, dummy interactions of remittances and household migration experience are used as explanatory variable of interest.

4.1.2 Multinomial logit model

Occupational productivity is also measured by employment status. Not only would non-migrant household members decide to work in an occupation of higher productivity, but they would also choose to be self- or waged-employed. Based on the GLSS6, occupations are classified in terms of employement status to investigate whether these decisions are related to household-level migration experience – living in a household with current or return migrant(s).

Employment status is composed of several possible, mutually exclusive outcomes. The dependent variable y takes value 1 (*not working*), 2 (*self-employed*), 3 (*waged-employed*) or 4 (*contributing family worker*), depending on which of the four mutually exclusive alternative occupations is chosen. An unordered multinomial model such as a multinomial logit (MNL) is approprate in this case, since there is no clear ordering of the outcome variable. Regressors of interest are household-level miration experience – whether a working-age individual who has never migrated is living in a household with at least one current or return migrant. Control variables account for individual, household and location characteristics, as described above.

Benchmark specifications are estimated as a multinomial logit modelling non-migranting 16-64 individuals' choice of employment status, i.e. simultanesouly estimating binary logit regressions for the mutually exclusive outcome alternatives.

$$p_{ij} = \frac{\exp(x_i'\beta_j)}{\sum_{l=1}^{m}\exp(x_i'\beta_l)}, \quad j = 1, ..., m \quad \text{alternatives} \tag{3}$$

Is formally estimated, with l the base category – not working – and x, a vector containing independent and control variables of interest.

Interpretation for the MNL model is relative to the reference (base) category group, here *not working* – *not working* coefficients were normalized to have coefficients equal to zero ($\beta_1 = 0$) – a restriction needed to ensure model identification as $\sum_{j=1}^{m} p_{ij} = 1$. Thus, a positive regression parameter does not mean that an increase in the regressor induces an increase in the probability of alternative m, but compared to the reference category.

We focus on marginal effects on the choice probabilities of a change in the regressor for a given individual, following Cameron and Trivedi (2005), averaged over individuals to give an average marginal effect. We consider the effect on the jth probability of changing by one unit a regressor that takes the same value across all alternatives, that is:

$$\frac{\partial p_{ij}}{\partial x_i} = p_{ij}(\beta_j - \bar{\beta}_i) \tag{4}$$

Where $\bar{\beta}_i = \sum_l p_{il}\beta_l$ is a probability weighted average of the β_l.

As for the Heckman selection model, this specification is first estimated with alternative measures of household migration experience, lumping together, then distinguishing, individuals living in a household with current migrants from return migrants, using a dummy variable; then, the number of migrants per household. It is subsequently estimated for urban and rural households, and for household head, spouse and children. Eventually, dummy interactions of remittances and household migration experience are used as explanatory variable of interest.

4.2 Data

A cross-sectional sample is used to estimate these models, combining data from the sixth round of the Ghana Living Standards Survey (GLSS6) (GSS, 2014) and the Groningen Growth and Development Centre (GGDC) Africa Sector Database (ASD) (de Vries et al., 2013). Tables A1 and A2 provide a description of the variables and their sources.

Based on the World Bank Living Standards Measurement Study (LSMS), the GLSS6 was designed to provide information on the living conditions of households in Ghana, applying the same sampling method,[14] using the same questionnaires, and covering the same range of topics.[15] A nationally and regionally representative sample of 18,000 households in 1,200 enumeration areas (EAs) was covered, out of which 16,772 were successfully enumerated, insuring a response rate of 93.2 percent.

Household migration experience variables, binary and continuous variables, are measured with Part A of Module 5, 'Migration and tourism', and Part E, 'Migration and remittances' of Module 11, 'Income transfer and miscellaneous income and expenditures'.[16] These modules identify household members who have migrated and returned up to a five-year-old migration episode; who are currently away, up to six months of absence; or who have been away for more than six months, but are still part of their hosuehold, such as children going to school in a different location. Household identifiers of these individuals allow determining individuals who have not migrated with or without relatives who are currently away or have returned from migration. Remittances variables are measured with Parts A, 'Transfer payments made by household', and B, 'Transfer payments received by household', of Module 11.

Our dependent variable, a binary variable taking the value 1 if a non-migrant 16 or older

[14] Two-stage stratified sampling design, with 1,200 enumeration areas (EAs) selected at the first stage to form primary sampling units (PSUs), allocated into Ghana 10 regions using probability proportional to population size (PPS). The EAs were further divided into urban and rural localities of residence. A complete listing of households in the selected PSUs was undertaken to form the secondary sampling units (SSUs). At the second stage, 15 households from each PSU were selected systematically hence a total sample size of 18,000 households nationwide (Ghana Statistical Service, 2014).

[15] The GLSS6 includes at the individual-level, information on demographic characteristics, education, health, economic activity, migration, tourism; at the household-level, information on housing characteristics, agricultural inputs, crop production, expenditure, assets, remittances, savings and loans; at the community-level, information on rural community demographic characteristics, economy, infrastructure, education, health and agriculture.

[16] It is necessary to note that, even with this data, variables that could be used for empirical estimation are rather limited because of a big proportion of missing values.

individual[17] works in a high-productivity industry, is built by combining the GLSS6 with the ASD.[18] The ASD provides internationally comparable annual series of value-added, deflators and labour force for ten economic sectors,[19] for eleven sub-Saharan African countries, including Ghana, from 1960 to 2010. The GLSS6 dataset gives sectors of occupation of surveyed individuals using the same classification. To build the productivity probability dependent variable, 2010 ASD labour productivity in constant terms[20] is computed by dividing value-added in constant terms by the number of persons engaged for 2010, for each GLSS6 industry. Sectors are then split between low- and high-productivity. Trade, personal services and agriculture, exhibiting the lowest productivity, are classified as providing low-productivity occupations; mining, manufacturing, utilities, construction, transport, business and government services, exhibiting a higher and the highest productivity, are classified as providing high-productivity occupations. Individuals working in low-productivity occupationsrepresent 75.86 percent (19,141 individuals) of our sample; those working in high-productivity occupations represent 24.14 percent (6,090 individuals) (see Table A3).[21]

4.3 Descriptive statistics

The sample consists of 27,037 working-age (16-64) individuals with no migration experience, after dropping missing values in variables of interest; productivity statistics are based on 23,371 non missing observations. Table 1 gives summary statistics of variables included in the analysis.

[17] Sectoral productivity is built on a sample of 16 or older individuals, in order to get the biggest sample we could. The sample is however limited to 16-64 individuals when running regressions as individuals are legally allowed to work from 16 years old in Ghana, and official statistics tend to record labour activity till 64 years old.

[18] Due to data limitation with GLSS6 data, industry-level labour productivity data are used as proxy of individual-level labour productivity.

[19] International Standard Industrial classification (ISIC), Rev. 3.1.

[20] At constant 2005 prices.

[21] This probability cut-off was imposed to classify industries so that only the 25 percent of our sample of working-age individuals with the greatest 2010 ASD labour productivity would be considered as working in a high-productivity occupation.

Table 1: Descriptive statistics

	Full sample			Non-migrant households		Migrant households		Households with current migrants		Households with return migrants	
	Mean	Std. Dev.	N	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Dependent variables											
Productivity	.255	.436	23,371	.258	.438	.213	.410	.233	.423	.161	.367
Working	.863	.344	27,037	.862	.345	.879	.326	.887	.317	.866	.341
Employment status											
Self-employed	.524	.499	25,836	.524	.499	.534	.499	.553	.497	.484	.500
Waged-employed	.165	.372	25,836	.170	.375	.109	.311	.122	.328	.076	.265
Contributing family worker	.179	.383	25,836	.173	.378	.254	.435	.228	.420	.323	.468
Independent variables											
HM	.069	.254	27,037	-	-	1	0	1	0	1	0
HCM	.049	.216	27,037	-	-	.708	.455	1	0	.084	.277
HRM	.022	.147	27,037	-	-	.319	.466	.038	.191	1	0
Nb. of migrants per HH	.099	.435	27,037	-	-	1.426	.918	1.477	.985	1.441	1.063
Nb. of current migrants per HH	.069	.358	27,037	-	-	1.001	.957	1.414	.843	.107	.432
Nb. of return migrants per HH	.0291	.239	27,037	-	-	.425	.811	.063	.518	1.334	.923
Receiving remittances from HH members	.006	.080	27,037	-	-	.094	.291	.132	.339	.018	.135
Sending remittances to HH members	.027	.163	27,037	-	-	.393	.489	.555	.497	.040	.197
Receiving and sending remittances to HH members	.002	.047	27,037	-	-	.032	.175	.045	.206	.008	.091
Male	.438	.496	27,037	.444	.497	.353	.478	.378	.485	.302	.460
Age	37.391	12.420	27,037	37.220	12.367	39.691	12.896	40.818	12.448	37.176	13.661
Married	.623	.485	27,037	.620	.485	.670	.470	.707	.455	.581	.494
Primary	.102	.303	27,037	.102	.302	.103	.304	.095	.293	.122	.328
Middle	.292	.455	27,037	.294	.455	.273	.445	.284	.451	.253	.435
Secondary	.083	.275	27,037	.085	.278	.056	.229	.057	.231	.052	.222
Tertiary	.057	.231	27,037	.058	.233	.045	.208	.056	.230	.022	.146
Voc., tech., com.	.021	.142	27,037	.021	.142	.020	.141	.020	.141	.020	.141
Currently studying	.066	.248	27,037	.066	.248	.066	.249	.054	.225	.097	.297
HH head	.492	.500	27,037	.502	.500	.350	.477	.391	.488	.258	.438
HH spouse	.352	.478	27,037	.346	.476	.429	.495	.418	.493	.448	.498
HH child	.047	.212	27,037	.046	.210	.059	.236	.047	.211	.092	.290
Mother primary education	.193	.394	27,037	.196	.397	.148	.355	.148	.355	.151	.358
HH size	5.163	3.178	27,037	5.032	3.138	6.933	3.183	6.99	3.195	6.834	3.173
Under 15 dependecy ratio	.348	.246	27,037	.348	.248	.357	.219	.348	.199	.371	.258
Over 65 dependency ratio	.025	.081	27,037	.024	.081	.032	.082	.029	.080	.041	.087
HH agricultural wealth	.655	.475	27,037	.642	.480	.833	.373	.824	.381	.857	.350
HH entrepreneurial experience	.487	.500	27,037	.479	.500	.595	.491	.611	.488	.560	.497
HH schooled children	2.018	1.999	27,037	1.941	1.968	3.043	2.124	3.269	2.157	2.549	1.944
Urban	.428	.495	27,037	.436	.496	.324	.468	.355	.479	.252	.434
Location											
Accra	.100	.300	27,037	.106	.308	.015	.12	.011	.102	.023	.152
Urban coast	.063	.243	27,037	.065	.246	.040	.195	.045	.208	.025	.157
Urban forest	.172	.377	27,037	.173	.379	.151	.358	.168	.374	.111	.314
Urban savannah	.093	.291	27,037	.091	.288	.118	.323	.131	.337	.092	.290
Rural coast	.061	.239	27,037	.062	.241	.050	.217	.034	.181	.0805369	.272
Rural forest	.221	.415	27,037	.218	.413	.255	.436	.255	.436	.270	.444
Rural savannah	.290	.454	27,037	.284	.451	.371	.483	.356	.479	.398	.490
Ecological zone											
Accra	.100	.300	27,037	.106	.308	.015	.121	.011	.102	.023	.152
Coast	.124	.329	27,037	.126	.332	.089	.285	.079	.270	.106	.308
Forest	.393	.488	27,037	.392	.488	.407	.491	.423	.494	.381	.486
Savannah	.384	.486	27,037	.376	.484	.489	.500	.487	.500	.490	.500

Notes: Summary statistics for variables included in the analysis. The sample consists of 16-64 individuals with no migration experience (N=27,037). Productivity statistics are based on 23,371 nonmissing observations. Employment status is a four-level categorical variable; not working being reference category. Skill level is a five-level categorical variable; not working is base category. Location is a seven-level variable. HH stands for household; HM for migrant household; HCM for household with current migrant(s); HRM, for household with return migrant(s). Ecological zone is a four-level variable. Columns displaying statistics for HCM exclude individuals living in households that contain return migrants as well; columns displaying statistics for HRM exclude individuals living in households that contain current migrants as well.

From Table 1, migration propensity appears relatively low among households of this sample. On average, 4.9 percent are working-age, non-migrants living in a household with current migrant(s); 2.2 percent with returnee(s). There are about 7 current migrants per 100 households, and about 3 return migrants per 100 households, around 10 households in 100 having some sort of migration experience. Receiving and/or sending remittances appears to be even more scarce, with *reverse* remittances – sending remittances to relatives currently away – being slightly more significant (2.7 percent) than receiving (0.6 percent) or both receiving and sending remittances (0.2 percent).

Comparing working-age individuals living in a household with migrants to those living in a non-migrant household, individuals living in a household with current migrant(s) are less likely to be men; older; more likely to be married; less educated; predominantly to be spouse of

household head; more likely to be living in a poorer household – based on mother having at least completed primary education – in bigger household; in a household having agricultural wealth, as well as entrepreneurial experience; in a household with a greater number of children at school; less urban, than individuals living in non-migrant households.

These patterns are slightly different when comparing individuals living with returnee(s) to those living in non-migrant households. Working-age individuals living with returnee(s) are less likely to be men; are of a rather similar age; they are less likely to be married; less educated; predominantly spouse of household head; living in a poorer household; more likely to live in a bigger household; in a household with a greater number of elderly; in a household with agricultural wealth, and/or entrepreneurial experience; in household with more schooled children; less likely to live in an urban area, than individuals living in non-migrant households.

In terms of occupation, it should be noted that if 16-64 year old individuals living in a migrant household have a slightly greater propensity to work (87.9 percent) compared to those living in a non-migrant household (86.2 percent), a greater proportion of those living in non-migrant households have an occupation of higher productivity (25.8 percent), who are also more likely to be waged-employed (17), less likely to be self-employed (52.4) or to contribute to family work (17.3), compared to those living in a household with current migrant(s) – respectively 23.3 percent; 12.2; 55.3; and 22.8 – and with returnee(s) – respectively 16.1 percent; 7.6 percent; 48.4; and 32.3.

5 Results

First, results from estimation of occupational productivity, Heckman-corrected for working are reported; then, MNL estimates for employment status. Eventually, we attempt to assess the robustness of the associations found.

5.1 Occupational productivity

Results of Heckman-corrected probit model estimates for productivity are reported in Tables 2 and 3.[22,23] In Table 2 – the outcome stage of the estimation – the dependent variable is a binary variable of productivity, unity if a 16-64 year old individual works in a high productivity industry; null, if not. The independent variables consist of alternative household migration experience dummies, subsequently used, and individual-, household- and location-level control variables. The dependent variable was also regressed on the same set of covariates without correcting for selection into working – coefficient estimates do not differ significantly and thus, are not included in the below tables, but available upon request. In Table 3, the selection stage of the estimation, the dependent variable is working, taking the value 1 if a 16-64 year

[22] Regressions were also run using number of migrants per household instead of a dummy as independent variable of interest. Results differ in magnitude, but coefficient signs are similar. Results are available upon request.

[23] It is worth noting that when the probability of working-age individuals to work in a high productivity industry is estimated without Heckman-correcting for selection into working, probit model results do not appear much different from the Heckman selection model's in terms of significance and magnitude of the coeffcients. However, when Heckman-correcting for selection into working, the hypothesis that these two equations should not be estimated separately cannot be rejected. The results of our Heckman selection model for the probability of working in a high productivity industry thus yields stronger, more robust results, confirming the significance of living in a migrant household for working-age individuals to allocate their time and occupation towards relatively productive activities. Estimates of probit specifications are available upon request.

old individual is working; 0, if not, i.e. a working-age individual is inactive or active but unemployed. The set of covariates on which this dependent variable is regressed is similar as in the outcome stage; marital status, indicating if an individual is married, is added as exclusion restriction. The reported results in the second, outcome stage, can thus be interpreted for all the sample of individuals observed, conditional on working.

Table 2: Heckman-corrected probit estimates for productivity, benchmark results (Outcome equation)

		Heckman correction: Low (0) vs. High (1) productivity (1)	Heckman correction: Low (0) vs. High (1) productivity (2)	Heckman correction: Low (0) vs. High (1) productivity (3)	Heckman correction: Low (0) vs. High (1) productivity (4)	Heckman correction: Low (0) vs. High (1) productivity (5)	Heckman correction: Low (0) vs. High (1) productivity (6)
Outcome equation (productivity)							
Household migration experience							
HM		0.024**					
		(0.010)					
HCM			0.034***		0.032***	0.030	
			(0.012)		(0.012)	(0.020)	
HRM				0.004	-0.002		-0.029
				(0.020)	(0.019)		(0.019)
Individual level							
Male		0.110***	0.110***	0.111***	0.109***	0.083***	0.084***
		(0.005)	(0.005)	(0.005)	(0.005)	(0.020)	(0.020)
Age		-0.002***	-0.002***	-0.002***	-0.002***	-0.001	-0.001
		(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Married		-0.010***	-0.011***	-0.011***	-0.011***	0.025**	0.025**
		(0.002)	(0.002)	(0.002)	(0.002)	(0.010)	(0.010)
Education							
	None/Kindergarden	Base category	Base category	Base category	Base category	Base category	Base category
	Primary	0.028***	0.030***	0.027***	0.028***	0.020	0.021
		(0.010)	(0.010)	(0.010)	(0.010)	(0.034)	(0.034)
	Middle	0.074***	0.075***	0.075***	0.074***	0.058**	0.058**
		(0.007)	(0.007)	(0.007)	(0.007)	(0.023)	(0.023)
	Secondary	0.121***	0.121***	0.123***	0.121***	0.085**	0.086**
		(0.010)	(0.010)	(0.010)	(0.010)	(0.041)	(0.041)
	Tertiary	0.400***	0.399***	0.395***	0.400***	0.553***	0.550***
		(0.011)	(0.011)	(0.012)	(0.011)	(0.064)	(0.065)
	Voc, tech, com	0.177***	0.179***	0.175***	0.177***	0.224***	0.224***
		(0.016)	(0.016)	(0.016)	(0.016)	(0.073)	(0.073)
Currently studying		-0.102***	-0.101***	-0.101***	-0.102***	-0.023	-0.026
		(0.015)	(0.015)	(0.015)	(0.015)	(0.051)	(0.053)
Household level							
Mother primary education		0.019***	0.019***	0.019***	0.019***	-0.012	-0.011
		(0.007)	(0.007)	(0.007)	(0.007)	(0.028)	(0.028)
Household size		-0.008***	-0.008***	-0.007***	-0.008***	-0.012***	-0.012***
		(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)
Under 15 dependecy ratio		-0.033***	-0.035***	-0.032**	-0.033***	-0.004	-0.008
		(0.013)	(0.013)	(0.013)	(0.013)	(0.048)	(0.049)
Over 65 dependency ratio		-0.000	-0.001	-0.008	0.000	0.115	0.118
		(0.038)	(0.038)	(0.039)	(0.038)	(0.122)	(0.123)
Household agricultural wealth		-0.155***	-0.157***	-0.158***	-0.155***	-0.107***	-0.108***
		(0.007)	(0.007)	(0.007)	(0.007)	(0.028)	(0.028)
Household entrepr. experience		0.047***	0.045***	0.045***	0.047***	0.069***	0.069***
		(0.006)	(0.006)	(0.006)	(0.006)	(0.019)	(0.019)
Schooled children		0.011***	0.011***	0.010***	0.011***	0.002	0.003
		(0.003)	(0.003)	(0.003)	(0.003)	(0.007)	(0.007)
Location							
Accra (GAMA)		0.030***	0.031***	0.034***	0.030***	-0.114**	-0.113**
		(0.011)	(0.011)	(0.011)	(0.011)	(0.051)	(0.052)
Urban coast		0.066***	0.066***	0.071***	0.066***	0.036	0.033
		(0.013)	(0.013)	(0.013)	(0.013)	(0.058)	(0.059)
Urban forest		0.057***	0.057***	0.059***	0.057***	0.071*	0.071*
		(0.010)	(0.010)	(0.010)	(0.010)	(0.037)	(0.038)
Urban savannah		0.095***	0.096***	0.104***	0.095***	-0.002	-0.002
		(0.011)	(0.011)	(0.011)	(0.011)	(0.031)	(0.031)
Rural coast		0.101***	0.102***	0.106***	0.102***	0.072	0.073
		(0.013)	(0.013)	(0.013)	(0.013)	(0.049)	(0.049)
Rural forest		-0.015*	-0.015*	-0.007	-0.015*	-0.074***	-0.073***
		(0.008)	(0.008)	(0.008)	(0.008)	(0.023)	(0.023)
Rural savannah		Base category	Base category	Base category	Base category	Base category	Base category
Observations		27,037	26,441	25,712	27,037	1,871	1,871
Uncensored observations		23,337	22,821	22,162	23,337	1,645	1,645
Log likelihood		-19391.71	-18990.4	-18442.22	-19390.64	-1265.281	-1265.219
Wald test		0.000	0.000	0.000	0.000	0.000	0.000
rho		.585	.592	.638	.588	-.982	-.978
		(.125)	(.120)	(.105)	(.123)	(.030)	(.037)
LR test of independent equations (rho = 0): chi2(1)		6.65	7.55	10.30	6.95	4.63	3.92
Prob >chi2		0.010	0.006	0.001	0.008	0.032	0.048

Notes: Dependent variable is working in selection equations; a binary, equal to 0 if an individual works in a low productivity industry, and 1 if an individual works in a high productivity industry, in outcome equations. In Table 2, conditional marginal effects at means are reported; in Table 3, marginal effects at means from probit models are reported. Location is a categorical variable included as factor level. The average marginal effects are thus interpreted as discrete change from the base level. In columns 1, 2 and 3, observations are individuals of 16-64 years old, who have not migrated, living in migrant or non-migrant households. In columns 4 and 5, observations are individuals of 16-64 years old, who have not migrated, living in migrant households. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Heckman-corrected probit estimates for productivity, benchmark results (Selection equation)

		Heckman correction: Low (0) vs. High (1) productivity (1)	Heckman correction: Low (0) vs. High (1) productivity (2)	Heckman correction: Low (0) vs. High (1) productivity (3)	Heckman correction: Low (0) vs. High (1) productivity (4)	Heckman correction: Low (0) vs. High (1) productivity (5)	Heckman correction: Low (0) vs. High (1) productivity (6)
Selection equation (working)							
Household migration experience							
HM		-0.004					
		(0.008)					
HCM			-0.009		-0.008	-0.000	
			(0.009)		(0.009)	(0.015)	
HRM				0.004	0.007		0.009
				(0.014)	(0.013)		(0.015)
Individual level							
Male		0.059***	0.060***	0.062***	0.059***	0.005	0.005
		(0.004)	(0.004)	(0.004)	(0.004)	(0.015)	(0.015)
Age		0.001***	0.001***	0.001***	0.001***	0.003***	0.003***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Married		0.045***	0.045***	0.044***	0.045***	0.032**	0.033**
		(0.004)	(0.004)	(0.004)	(0.004)	(0.014)	(0.014)
Education							
	None/Kindergarden	Base category	Base category	Base category	Base category	Base category	Base category
	Primary	0.023***	0.022***	0.021***	0.023***	0.036	0.037
		(0.007)	(0.007)	(0.007)	(0.007)	(0.025)	(0.025)
	Middle	0.021***	0.020***	0.020***	0.021***	0.043**	0.043**
		(0.005)	(0.005)	(0.005)	(0.005)	(0.018)	(0.018)
	Secondary	-0.007	-0.008	-0.010	-0.007	0.047	0.047
		(0.007)	(0.007)	(0.008)	(0.007)	(0.031)	(0.031)
	Tertiary	0.083***	0.084***	0.084***	0.083***	0.089**	0.089**
		(0.010)	(0.010)	(0.010)	(0.010)	(0.037)	(0.037)
	Voc, tech, com	0.046***	0.044***	0.045***	0.046***	0.074	0.074
		(0.014)	(0.014)	(0.014)	(0.014)	(0.057)	(0.057)
Currently studying		-0.218***	-0.220***	-0.222***	-0.219***	-0.168***	-0.170***
		(0.007)	(0.007)	(0.008)	(0.007)	(0.025)	(0.025)
Household level							
Mother primary education		-0.011**	-0.010**	-0.012**	-0.011**	-0.010	-0.010
		(0.005)	(0.005)	(0.005)	(0.005)	(0.020)	(0.020)
Household size		-0.010***	-0.010***	-0.011***	-0.010***	0.003	0.002
		(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)
Under 15 dependecy ratio		0.024***	0.028***	0.026***	0.024**	-0.027	-0.029
		(0.009)	(0.010)	(0.010)	(0.009)	(0.030)	(0.030)
Over 65 dependency ratio		-0.217***	-0.217***	-0.217***	-0.217***	-0.201***	-0.202**
		(0.021)	(0.021)	(0.022)	(0.021)	(0.078)	(0.078)
Household agricultural wealth		0.084***	0.085***	0.086***	0.084***	0.065***	0.065***
		(0.006)	(0.006)	(0.006)	(0.006)	(0.020)	(0.020)
Household entrepr. experience		0.077***	0.080***	0.081***	0.077***	0.019	0.019
		(0.005)	(0.005)	(0.005)	(0.005)	(0.014)	(0.014)
Schooled children		0.009***	0.009***	0.010***	0.009***	-0.004	-0.004
		(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)
Location							
Accra (GAMA)		-0.062***	-0.060***	-0.063***	-0.062***	-0.153*	-0.156*
		(0.009)	(0.009)	(0.009)	(0.009)	(0.080)	(0.081)
Urban coast		-0.066***	-0.067***	-0.068***	-0.066***	-0.007	-0.008
		(0.010)	(0.010)	(0.011)	(0.010)	(0.035)	(0.035)
Urban forest		-0.041***	-0.039***	-0.043***	-0.041***	-0.033	-0.033
		(0.007)	(0.007)	(0.007)	(0.007)	(0.025)	(0.025)
Urban savannah		-0.048***	-0.046***	-0.048***	-0.048***	-0.060**	-0.060**
		(0.008)	(0.008)	(0.008)	(0.008)	(0.025)	(0.025)
Rural coast		-0.032***	-0.031***	-0.033***	-0.032***	-0.027	-0.028
		(0.009)	(0.009)	(0.009)	(0.009)	(0.034)	(0.034)
Rural forest		-0.002	0.000	-0.004	-0.002	0.004	0.004
		(0.006)	(0.006)	(0.006)	(0.006)	(0.018)	(0.018)
Rural savannah		Base category	Base category	Base category	Base category	Base category	Base category
Observations		27,037	26,441	25,712	27,037	1,871	1,871
Uncensored observations		23,337	22,821	22,162	23,337	1,645	1,645
Log likelihood		-19391.71	-18990.4	-18442.22	-19390.64	-1265.281	-1265.219
Wald test		0.000	0.000	0.000	0.000	0.000	0.000
rho		.585	.592	.638	.588	-.982	-.978
		(.125)	(.120)	(.105)	(.123)	(.030)	(.037)
LR test of independent equations (rho = 0): chi2(1)		6.65	7.55	10.30	6.95	4.63	3.92
Prob >chi2		0.010	0.006	0.001	0.008	0.032	0.048

Notes: cf. Table 2

In the first, selection stage, being a man, and being married statistically significantly increase the likelihood of working. Age is statistically significant and negative: the absolute value of its coefficient estimate being relatively small, between 0.001 and 0.003, age may be negligible in determining the probability of working in this 16-64 year old sample.

Except for having completed secondary education, education dummies are statistically significant. Having completed at most primary, middle, tertiary education or vocational training increases the likelihood of an individual to be working, compared to having no education (base category). Currently studying decreases the probability of a working-age individual to be working.

Our set of household-level control variable shows that a working-age individual is less likely to be working, provided that his mother has at least primary education (indicator of poverty), the bigger his household size, and the greater the number of elderly per household working-age individuals (over 65 dependency ratio). Living in a household that has experience in farming and/or in entrepreneurial activities, the greater the number of children per household working-age individuals (under 15 dependency ratio) and the greater the number of schooled children within a family, the greater the likelihood of a working-age individual to work.

Geographical control variables are statistically significant, which shows how location-specific the probability of working is in Ghana. Living in greater Accra and its metropolitan area (GAMA), in urban or rural coastal area, in urban forest and urban savannah decreases an individual's likelihood to work, compared to living in rural savannah, the base category. Unemployment is indeed a rather urban phenomenon in Ghana, in particular among the youth. Based on 2010 Population and Housing Census data, the unemployment rate among the 15-24 years old was about six times higher in Accra, and at least three times higher in other urban areas than in rural areas; among the 25-35, the unemployment rate was more than eight times higher in Accra, and seven times higher in urban areas than in rural areas (Baffour-Awuah, 2014), a trend consistent with GLSS6 data (GSS, 2014).

At the selection stage, living in a household with at least one migrant, either currently away or a return migrant is not statistically significantly associated with the probability of a working-age individual to work. However, ρ is statistically significant in all regressions, suggesting that the two equations, working and working in a high-productivity industry, should not be estimated separately.

In the second, outcome stage, when the sample is not limited to migrant households, being a man statistically significantly increases the likelihood of working in a high-productivity industry, conditional on the probability of working. Age is significant and negative. The absolute value of its coefficient estimate is relatively small; it may be negligible in determining the probability of working in a high-productivity industry.

Our set of education dummy is statistically significant: having completed at most primary, middle, secondary, tertiary education or vocational training increases the likelihood of an individual to be working in a high-productivity industry, conditionally on the probability to be working, compared to having no education; currently studying however the probability of a working-age individual to work in a high-productivity industry.

Household-level covariates show that a non-migrant, working-age individual is more likely to be working in a high-productivity industry, provided that her mother has at least primary education – i.e. the less poor she is – her household having an enterprise, and the greater the number of

schooled children. However, the bigger her household size, the greater the number of children per household working-age individuals, and provided her household is working in farming, the less she is likely to work in a high-productivity industry, conditional on her probability to work.

Geographical-level control variables are also statistically significant, revealing the greater concentration of high-productivity industry in urban and coastal areas. Living in GAMA, in urban or rural coastal area, in urban forest or urban savannah, all increases her likelihood to work in a high-productivity industry, compared to living in rural savannah, the base category.

Living in a household with at least one migrant, either currently away or a return migrant, is statistically significantly associated with a greater probability of a working-age individual to be working in a high-productivity industry by 2.4 percentage points, conditionally on her probability to be working. Specifically, living in a household with at least one member currently away appears to have a statistically significantly stronger relation, in absolute value, increasing this probability by 3.4 percentage points, than to living in a household with at least one returnee (not significant); a relation confirmed when the sample includes both non-migrant and migrant households (3.2 percentage points).[24]

Estimated separately for urban and rural households (Tables B1 and B2), results show that living in a migrant household in an urban area is not statistically significantly associated with a working-age individuals to work in a high-productivity industry. Only in rural areas, living in a migrant household, specifically with a member currently away, statistically significantly increases the likelihood to work in a high-productivity industry by 2.3 percentage points, confirming location-specific dynamics. rho is not statistically significantly different from zero in the specifications for rural households, meaning that the decisions to work and to work in a high-productivity sector in rural areas, may be two independent decisions.

Estimated separately for different household members (Tables B3, B4 and B5), Heckman-corrected probit model estimates of household migration experience appear statistically significant only for household heads. Living in a household where at least one member has migrated and/or returned increases the likelihood of a household head to work in a high-productivity industry by 4.9 percentage points for a household head living in a migrant household – about 4.3 percentage points for those living in a household with current migrant(s), and 6.3 percentage points for those living in a household with returnee(s).[25] No significant effect of household migration experience was found on the probability of working in high-productivity industry for household spouse or child, confirming non-unitary decision making within households.

Dummy interactions of remittances and the existence of at least one household member currently away are used as explanatory variable of interest in Table B6. No significant relation was found between receiving and/or sending remittances to a household member currently away and the probability of working or/and working in a high-productivity industry. These estimates might cast doubt on traditionally-investigated remittances, and confirm recent findings in rural Africa on the absence of remittances in the short run. They should however be treated with particular caution, as they may be due to the rather low quality of the GLSS6 data used for remittances, and the cross-sectional nature of these data that does not take into account longer-term household strategies migrating is often part of (Atnafu et al., 2014).

[24] When the sample is limited to individuals living in a household with at least one migrant, none are significant, maybe due to the rather small size of the sample itself.

[25] However, this significant association with living in a household with return migrant(s) is no longer significant when living in a household with both current and return migrants are included in the regression, which may question on any statistically significant association with living in a household with returnee(s).

Living in a household with migrant(s) does not affect the likelihood of individuals to work, but is associated with an increase in their likelihood to work in a high-productivity industry compared to those living in a household without any member who has ever migrated (non-migrant households), conditional on working. The subsequent sensitivity analysis shows that this relation exclusively holds for households living in rural areas and for household heads. Although the relation between remittances and occupational productivity was not significant in our sample, these results reassert the existence of time and occupation allocation within a household when one or several members of the same household migrate, and confirm that spatial moves from rural, predominantly agricultural, traditional areas of relatively low productivity are linked to working-age individuals' occupation productivity, confirming the relevance of both non-unitary intra-household decision making process and NELM frameworks.

5.2 Occupational choice

Multinomial logit estimates of employment status (type of occupation) regressed on the same set of covariates used in benchmark regressions (Table 4) confirm a necessary reassessment of the empirical literature.

Overall, living in a migrant household, either with current migrant(s) or returnee(s), tends to statistically significantly decrease the probability of being self-employed; increase the probability of being waged-employed or to contribute to family work.

Table 4: Multinomial logit estimates for occupation, benchmark results

		Not working	Self-employed	Waged-employed	Contributing family worker	Obs.	Log likelihood	Wald test	Pseudo R2
Occup. (emp. st.)									
HH mig. exp.									
(1)	HM	-.013	-.027***	.023***	.016**	25,843	-21705.833	0.000	0.306
		(.008)	(.011)	(.009)	(.007)				
(2)	HCM	-.011	-.022*	.027***	.006	25,277	-21187.566	0.000	0.307
		(.010)	(.013)	(.010)	(.009)				
(3)	HRM	-.009	-.030	.015	.024**	24,577	-20578.804	0.000	0.310
		(.014)	(.020)	(.017)	(.012)				
(4)	HCM	.005	.015	-.001	-.019	1,786	-1523.782	0.000	0.264
		(.015)	(.024)	(.014)	(.021)				
(5)	HRM	-.012	-.023	-.000	.035*	1,786	-1522.619	0.000	0.265
		(.015)	(.023)	(.014)	(.020)				
(6)	HCM	-.014	-.023*	.026***	.010	25,843	-21703.491	0.000	0.306
		(.010)	(.012)	(.010)	(.009)				
	HRM	-.012	-.032*	.013	.032***				
		(.014)	(.019)	(.016)	(.011)				

Notes: Dependent variable is an unordered categorical variable of occupation – not working (inactive and unemployed) (reference category), self-employed, waged-employed and contributing family worker. Marginal effects at means from multinomial logit models are reported. Marginal effects at means of our explanatory variables of interest, household migration experience, are reported to ease result interpretation across the different models. In rows 1, 2, 3 and 6, observations are individuals of 16-64 years old, who have not migrated, living in migrant or non-migrant households. In rows 4 and 5, observations are individuals of 16-64 years old, who have not migrated, living in migrant households. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Sensitivity analysis however shows patterns different from the above estimates. For urban households, only living with return migrant(s) statistically significantly reduces (increases) the probability of a 16-64 year old individual to be self-employed (waged-employed) (Table B1). In rural areas, living in a household with member(s) currently away decreases (increases) his probability to be self-employed (waged-employed); living with returnee(s) increases his probability to contribute to family work (Table B2). Living in a household with current migrant(s) significantly decreases working-age household heads' probability to be self-employed,

but increases their likelihood of beind waged-employed and to contribute to family work (Table B3). No significant relation was found for spouse (Table B4); but living in a migrant household does increase the probability of working-age children to work, to be waged-employed or to contribute to family work (Table B5). Eventually, only sending remittances to household members currently away appears to significantly increase the likelihood of working-age left-behind to be waged-employed (Table B6).

These results suggest that self-employment is a low-productivity occupational choice and waged-employement of higher productivity. This is consistent with evidence from other SSA sountries (McMillan and Harttgen, 2014), but in contrast with results of Mansuri (2007) for rural Pakistan, and Acosta (2007) for rural El Salvador, or Giulietti et al. (2013) for rural China, who report a positive effect of household-level migration experience on entrepreneurial, self-employed activities.

Our findings reaffirm that within-household time allocation and occupation distribution are linked to the out-migration of a household member, to some extent, justifying the relevance of non-unitary household decision-making process. The greater probability of being waged-employed may mean that it is by avoiding self-employment that productivity can be higher. In this sample, self-employment may not contribute to productivity-enhancing structural change. Moreover, because those living in households with current migrants appear to be in relatively more productive occupations – more waged-employed, less self-employed – and living with return migrant(s) increases the likelihood to contribute to family work – presumably of lower productivity than non-family work – in rural areas, return migration in rural areas may be rather experienced by households of lower socio-economic status than in urban areas. Those able to send migrants away at the time of the survey, might be of higher socio-economic status in relative terms in rurl areas compared to households in urban areas, where migration appears to be linked to socio-economic status in the longer term – potentially improving SES of non-migrating members? Migration patterns may thus be different in urban and rural areas.

5.3 Direction of causality

If household-level migration experience has been shown to be correlated to occupational productivity of non-migrating relatives, direction is not yet well understood. In studying the dynamics between migration and relatives left behind, the main methodological issue is, in addition to measurement errors, the endogeneity of migration itself (Antman, 2012). Migration is not random: not only migrants, but also households self-select into migration; among households with migrants, some send a subset, and others migrate as a whole; some migrants decide to return, and if they do, at a specific point in time (Gibson et al., 2009) – there is quadruple selectivity.

The decision to migrate is likely to be linked with the same variables associated with the outcomes of interest for TLBs. Households sending members away are likely to differ from families with no migrants in terms of some observable and unobservable characteristics – characteristics that are likely to be correlated with outcomes of interest. For instance, an unobserved shock on farm assets may make a family less productive, and so poorer, encouraging migration of some, if not all, of its members (Gibson *et al.*, 2009). It is thus difficult to assess if migration is influencing these outcomes, or if another variable is affecting both migration decision and outcomes of interest (Antman, 2012). This is a typical omitted variable problem.

A related problem is reverse causality. For instance, if migrating is costly, only households who

are wealthier (because they are more productive) can afford to send their members away. Family members are 'enabled' to migrate, such as children sent away to complete their education; migrating would be the opportunity to invest in human capital at the household level. The higher a household's socio-economic status, the greater the probability for migration activity: there may be selectivity in deciding to migrate at the household level. Migration could also affect the circumstances of economic development in both origin and destination places, by altering potential push and pull factors. For instance, high migration flows might make labour relatively scarce in communities of origin, which might improve job prospects of relatives left behind, as well as their productivity, as less labour supply units would be available for relatively more work.

In empirical research, outcomes of households with and without migrants are typically compared using household survey data – cross-sectional or longitudinal.[26] Natural experiments and randomization such as migration lottery programmes (e.g. Mergo, 2011; Gibson et al., 2009, 2010), are the key to deal with endogeneity (McKenzie et al., 2009; Akee, 2010). In the absence of randomized trials, some have used non-experimental methods, such as propensity score matching (PSM) methods (Alaimo, 2006; Kuhn et al., 2011; *in* Antman, 2012). However, these approaches assume selection based on observables, and are likely to be biased. Others have used some type of fixed-effects estimators (Antman, 2011a), assuming household- and individual-level omitted variable(s) to be constant over time. Instrumental variables (IV) methods have also been used. A set of the least controversial instruments includes historical migration rates (Hanson and Woodruff, 2003; Hildebrandt and McKenzie, 2005; McKenzie and Rapoport, 2011), and destination area economic indicators (Amuedo-Dorantes and Pozo, 2010; Amuedo-Dorantes et al., 2008; Cortes, 2010; Antman, 2011b; Yang, 2008) (Antman, 2012).

Such instrumental variables are not available in our sample. We resort to comparing who migrates to who is left behind to assess any potential causality from the significant associations found above.

As depicted in Table 5, there is variability in the age of current migrants. Mean age is about 22.15 years old (standard deviation is 11.57); 50 percent of current migrants are 20 or younger; 75 percent are 25 or younger. In comparison, there is more variability in the age of relatives left behind. Average age is about 24.18 years old (standard deviation is 20.31); median is 18, but 75 percent are at most 40 years old. We could infer that current migrants are relatively young, but older than those left behind, who are more heterogeneous in terms of age – there might be relatively more younger and older individuals than the average and median of current migrants, as shown in Figures 1 and 2.

[26] It is worth noting that in the case of omitted variable bias, a cross-sectional comparison of families with and without migrants would catch the influence of higher socio-economic status; not the weight of migration (Antman, 2012). Also, when migration occurred before collecting survey data, the context that has led to migration is observed; not the effects of migration on households' conditions. Longitudinal data may help reducing this issue, although some unobserved time-varying shock may affect both migration decision and outcomes of interest.

Table 5: Age

Current migrants			Relatives left behind		
Mean	Std. Dev.	N	Mean	Std. Dev.	N
22.15	11.57	1,156	24.98	20.31	3,769

Notes: Relatives left behind are individuals living in a household with at least one current migrant, excluding those also living with return migrant(s).

Figure 1: Age distribution of current migrants

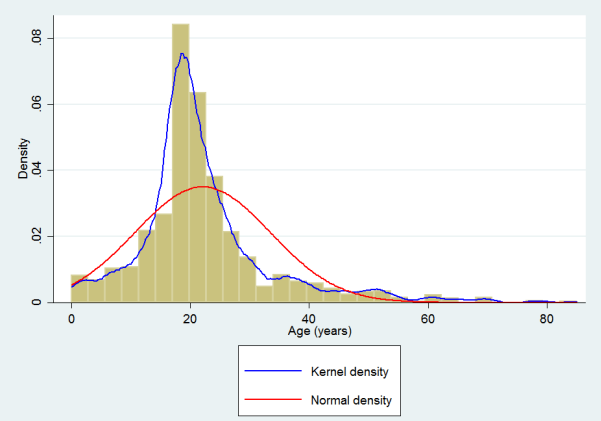
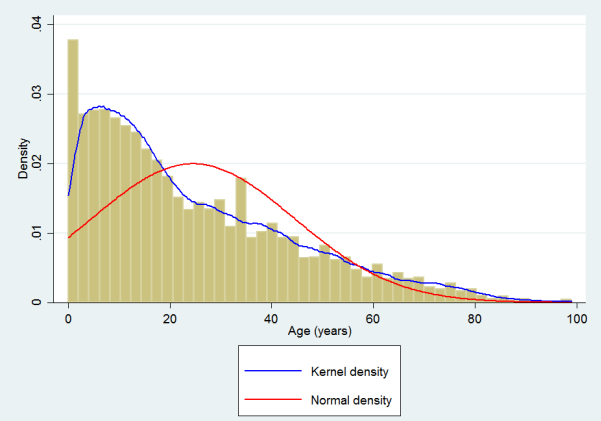


Figure 2: Age distribution of relatives left behind



Looking at relationship to household head (see Table 6), 64.53 percent of current migrants are children, compared to 49.01 percent among those left behind.

Table 6: Relationship to household head

	Current migrants		Relatives left behind	
	N	Freq.	N	Freq.
Relationship to household head				
Head	56	4.84%	647	17.17 %
Spouse	134	11.59%	566	15.02%
Child	746	64.53%	1,847	49.01%

Notes: Only head, spouse and child are included as relationship to household head, other categories being marginal.

Primary reasons for living outside their household (Table 7) confirm this: 59.69 percent of current migrants indicated having migrated because of education. Most of current migrants outside of their household for up to six months or more but still considered part of their household, are actually children who have left their family to pursue their education. This might suggest that the statistically significant relation previously found between living in a household with migrant(s) and high-productivity occupation might go from higher productivity to migration. Individuals working in higher-productivity industries might be able to send household 'children' away to pursue education outside their family's current place of residence. Working in a higher-productivity industry might increase the wealth of households, and so 'enable' children to leave their family to complete their education. Viewed as an opportunity seized by younger family members, the migration decision is likely to be decided by parents. This may explain why our findings are significant for household heads (more likely to take decisions within a household in Ghana) and for households in rural areas (rural areas may lack education opportunities compared to urban areas).[27]

Table 7: Primary reasons for migrating

	N	Freq.
Marriage	24	2.08%
Education	690	59.69%
Work	254	21.97%
Joining parents	38	3.29%
Joining other relatives	74	6.40%
Other	76	6.57%
Total (nonmissing values)	1156	100%

Knowing whether migration is internal of international may further help us understand the relationship between migration, occupational poductivity and education (see Table 8). International migration may require higher productivity of relatives left behind than migrating internally. Unfortunately, information about location is limited: out of 1,156 current migrants, destination is available for only 285; out of 690 household members away for educational purposes, location was provided for only five. Those who moved for reasons other than education, such as marriage, work, joining parents or other relatives, are relatively older (mean age of 27). 37.98 percent are either head of the household or his/her spouse. Out of these individuals, information on destination is provided for 280, most of which (64.56 percent) migrated to urban areas. What can be inferred from this on the direction between household migration experience and destination is thus limited.

Table 8: Migration destinations

	N	Freq.
Urban Ghana	184	64.56%
Rural Ghana	82	28.77%
USA	3	1.05%
Germany	1	0.35%
Belgium	1	0.35%
Nigeria	3	1.05%
Ivory Coast	2	0.70%
Other ECOWAS	3	1.05%
Other	6	2.11%
Total (nonmissing values)	285	100%

[27] However, benchmark regresions were run excluding households with members currently away to pursue their education. Estimates are similar to those including them, showing that the significant relationship between household migration experience and occupational productivity holds without including households with children away for educational purposes. Results are available upon request.

Tables 9 and 10 provide information on occupational productivity and mobility, proxied by skill level,[28] of TLBs and out-migrating members, currently away for reasons other than pursuing their education. Table 9 compares productivity in terms of occupation specific-skill level of current migrants to TLBs', before and after migration. Empirical estimates have shown that households of higher (sectoral) productivity were most likely to have members currently away. If this is the main sense of causality, it may be interesting to investigate who, within a household, is sent out as migrant: the most or the least productive?

Before leaving, 50.77 percent of current migrants were working in occupations requiring the same skills as occupations of non-migrating relatives; 8.46 percent were more skilled; 4.23 percent were less skilled; 18.08 were not active; 8.08 percent were looking for work. After leaving, 50.38 percent were as skilled as non-migrating members; 13.46 percent were more skilled; 21.15 percent were less skilled; 3.46 percent were not active; 5 percent were looking for work. Out-migrating members did not work in an occupation of a skill level necessarily different from their non-migrating relatives' before leaving, and more than a quarter were inactive before leaving. Migration may thus be seen as a household-level income source diversification strategy, and inactivity or unemployment a push factor to migrate. If there is some upward occupational mobility of current migrants compared to TLBs, what is striking is that more than 20 percent of current migrants, who, before leaving, were as skilled as, more or less skilled, inactive or looking for work, end up in occupations of lower skills after leaving, compared to TLBs' occupations; a misallocation of their labour potential also captured by Table 10.

Table 9: Comparison of occupation by skill level of current migrants to relatives left behind

	After migration							
Before migration	Same skill level	More skilled	Less skilled	Full time education	Looking for work	Other activity	No activity	**Total**
Same skill level	90	1	31	0	3	3	4	132
More skilled	2	20	0	0	0	0	0	22
Less skilled	2	0	7	0	0	1	1	11
Full time education	4	5	3	1	3	0	0	16
Looking for work	8	3	1	0	6	3	0	21
Other activity	3	0	2	0	0	6	0	11
No activity	22	6	11	0	1	3	4	47
Total	131	35	55	1	13	16	9	260

Notes: This table was computed with information available from the GLSS6 modules on current migrants (11) and employment (4). Readers should note that information may be reliable only to some extent because of lack of consistency in the data. Skills required for current migrants' occupation are compared to the highest skill level required for the occupations of relatives left behind, before and after leaving, assuming that the later have not changed occupation. That is, if two relatives left behind are working in jobs requiring different skill levels – 1 and 2 – and a member currently away is in an occupation requiring skill level 1, both before and after migration, this current migrant will be classified as having an occupation requiring lower skills than his relatives left behind.

[28] Skill levels are based on the level of skill required by occupation as defined by the International Standard Classification of Occupation (ISCO-) 08.

Table 10: Occupational mobility by skill level of current migrants

Before migration	After migration: Skill Level 1	Skill Level 2	Skill Level 3	Skill Level 4	Full time education	Looking for work	Other activity	No activity	Total
Skill level 1	5	2	0	0	0	0	0	0	7
Skill level 2	36	110	0	1	0	3	5	5	160
Skill level 3	0	0	2	0	0	0	0	0	2
Skill level 4	0	3	1	9	0	0	0	0	13
Full time educ.	3	3	2	6	1	6	0	0	21
Looking for work	2	8	1	1	1	6	4	0	23
Other activity	1	4	0	0	0	0	6	0	11
No activity	9	28	1	1	0	1	3	4	47
Total	56	158	7	18	2	16	18	9	284

Notes: This table was computed with information available from the GLSS6 module on current migrants (11). Readers should note that information may be reliable only to some extent because of lack of consistency in the data.

6 Concluding remarks

Occupational and geographical mobility of its labour force is necessary for structural transformation in sub-Saharan Africa. Individuals' occupational choices can affect their migration decisions and *vice versa*. What is less well understood is how migration interacts with the occupational choice and productivity of left-behind relatives. In this paper, we attempted to fill this gap in the literature using the GLSS6 and ASD databases.

We found that rural households and households with a head working in relatively productive occupations are more likely to send out a household member as migrant, and that self-employment is not a highly productive occupation. In fact, rural households and households with a head who are in waged-employment are more likely to have a migrant than households with self-employed members. These findings are broadly consistent with our expectations, although not necessarily in line with the bulk of the existing empirical literature.

We did however found some more unexpected results. For instance, migrants do not necessarily migrate to more productive occupations, but migration can result in downward, rather than upward occupational mobility. Migrants do not send back much remittances. Indeed, source households in Ghana are more likely to send remittances to their relatives currently away, than to receive remittances.

What could explain these somewhat puzzling findings? Additional empirical evidence suggests that rural households or households with a head in a more productive occupation will tend to send away their younger household members away to pursue their education. This is loosely supported by related evidence on intergenerational mobility in Ghana, where intergenerational mobility was found to be highest, and intergenerational dualism[29] the least pronounced in a sample of five sub-Saharan African countries. Intergenerational mobility is indeed associated with rural-urban migration flows and occupation diversification within localities. Migration being relatively less selective, in combination with education rather widespread, ensures higher intergenerational mobility in Ghana: using migration to improve the education of younger household members, children in Ghana have been found to be less likely to follow their father's occupational trajectory (Bossuroy et al., 2007).

[29] Intergenerational dualism is defined as 'social distance' between agricultural and non-agricultural occupations (Bossuroy et al., 2007).

In conclusion, migration can contribute to occupational mobility in sub-Saharan Africa, as the case of Ghana illustrated. It can initiate a virtuous cycle whereby occupationally productive households send out their younger members to obtain education, which will allow them over time upward occupational mobility and productivity. Migration can reversely lock the least productive households into low-productivity, poverty traps as they may not have the resources to send away some of their members to seize location-specific opportunities. Migration, as found in this paper, would be a potentially productivity-enhancing, longer-run strategy, only those households of higher socio-economic status are taking. For migration to contribute significantly to structural transformation, it would need to be complemented by the following policies. First, policies to improve the quality and relevance of education, as this may be a major motivation for migrating and facilitating occupational mobility. Second, policies that will raise the productivity, waged-employment and consumption of rural households, including for instance measures to enhance the business environment for farming and rural non-farm enterprises, and that provide better (rural) social security. Finally, policies to support and enable greater internal migration will help promote structural transformation. A particular feature of our sample was the low rates of migration. A pertinent question to ask is why migration from rural sub-Saharan Africa is not much higher than it is.

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Appendices

A Sources and definitions

Table A1: Dependent and independent variables

Variable name		Definition
Productivity		Binary variable for labour productivity of sector of occupation of a working-age individual with no migration experience 0 if individual works in a low-productivity industry; 1 if in a high-productivity industry Source: ASD
Working		Binary variable for working status of a working-age individuals 0 if a working-age individual is not working, either inactive or active and unemployed; 1 if individual is (active and) working Source: GLSS6
Employment status		Four-category variable for employment status of a working-age individual with no migration experience 1 if not working; 2 if self-employed; 3 if waged-employed; 4 if contributing to family work Source: GLSS6
Household migration experience	HM	Binary variable for household-level migration experience 0 if an individual lives in a household with no migrant; 1 if an individual lives in a household with a least a migrant, either currently away or who has returned from migration Source: GLSS6
	HCM	Binary variable for household-level migration experience 0 if an individual lives in a household with no migrant or return migrant(s); 1 if an individual lives in a household with a least one current migrant Source: GLSS6
	HRM	Binary variable for household-level migration experience 0 if an individual lives in a household with no migrant or current migrant(s); 1 if an individual lives in a household with a least one return migrant Source: GLSS6
	Number (Nb.) of migrants	Number of migrants, either current or return, per household Source: GLSS6
	Nb. of current migrants	Number of (exclusively) current migrants per household Source: GLSS6
	Nb. of return migrants	Number of (exclusively) return migrants per household Source: GLSS6
	Receiving remittances from household (HH) members	Dummy interaction for an individual living in a household receiving remittances and with at least one member currently away 0 if individual lives in a household with no current migrant, or not receiving remittances from a household member currently away; 1 if individual lives in a household receiving remittances from a household member currently away Source: GLSS6
	Sending remittances to HH members	Dummy interaction for an individual living in a household sending remittances and with at least one member currently away 0 if individual lives in a household with no current migrant, or not sending remittances to a household member currently away; 1 if individual lives in a household sending remittances to a household member currently away Source: GLSS6
	Receiving and sending remittances to HH members	Dummy interaction for an individual living in a household receiving and sending remittances and with at least one member currently away 0 if individual lives in a household with no current migrant, or not receiving and sending remittancesto a household member currently away; 1 if individual lives in a household receiving and sending remittances to a household member currently away Source: GLSS6
Individual level	Male	Binary variable: 0 if female (base category); 1 if male Source: GLSS6
	Age	Continuous variable of the age of non-migrant individuals Source: GLSS6
	Married	Binary variable: 0 if an individual is not married (base category); 1 if s/he is Source: GLSS6
	Primary	Binary variable: 0 if an individual has not completed primary education (base category); 1 if if s/he has Source: GLSS6
	Middle	Binary variable: 0 if an individual has not completed middle education (base category); 1 if if s/he has Source: GLSS6
	Secondary	Binary variable: 0 if an individual has not completed secondary education (base category); 1 if if s/he has Source: GLSS6
	Tertiary	Binary variable: 0 if an individual has not completed tertiary education (base category); 1 if if s/he has Source: GLSS6
	Voc., tech., com.	Binary variable: 0 if an individual has not completed vocational, technical or communication training (base category); 1 if if s/he has Source: GLSS6
	Currently studying	Binary variable: 0 if an individual is not currently studying (base category); 1 if s/he is Source: GLSS6
	HH head	Binary variable: 0 if an individual is not head of his/her household (base category); 1 if s/he is Source: GLSS6
	HH spouse	Binary variable: 0 if an individual is not spouse of his/her household (base category); 1 if s/he is Source: GLSS6
	HH child	Binary variable: 0 if an individual is not child of his/her household (base category); 1 if s/he is Source: GLSS6
Household level	Mother primary education	Binary variable: 0 if an individual's mother has not completed primary education (base category); 1 if an individual's mother has completed at least primary education Source: GLSS6
	HH size	Continuous variable of the size of an individual's household (number of individuals per household) Source: GLSS6
	Children dependecy ratio	Proportion of the number of children (15 years old or younger) by the number of working-age individuals per an individual's household Source: GLSS6
	Elderly dependency ratio	Proportion of the number of elderly (65 years old or older) by the number of working-age individuals per an individual's household Source: GLSS6
	HH agricultural wealth	Binary variable: 0 if an individual does not live in a household working in farming (base category); 1 if an individual does Source: GLSS6
	HH entrepreneurial experience	Binary variable: 0 if an individual does not live in a household with at least one entreprise (base category); 1 if an individual does Source: GLSS6

Table A2: Dependent and independent variables (cont'd)

Variable name		Definition
Location	Urban	Binary variable: 0 if an individual lives in rural area (base category); 1 if in urban area Source: GLSS6
	Seven-level location	Categorical variable for location 1 if an individual lives in Accra (greater Accra and metropolitan area, GAMA); 2 if in urban coastal area; 3 if urban forest area; 4 if urban savannah area; 5 if rural coastal area; 6 if rural forest area; 7 if rural savannah area (base category) Source: GLSS6
	Ecological zone	Categorical variable for ecological zone 1 if an individual lives in Accra (greater Accra and metropolitan area, GAMA); 2 if coastal area; 3 if forest area; 4 if savannah area (base category) Source: GLSS6

Table A3: Computation of outcome variable

Sectoral-level labour productivity (value-added)		Final sample estimation (N=25,231)	Productivity
Trade services	929.869	4,999 (19.81%)	
Personal services	1305.799	1,159 (4.59%)	19,141 (75.86%)	Low
Agriculture	1388.019	12,983 (51.46%)	
Manufacturing	1591.614	2,228 (8.83%)	
Government services	2965.446	1,606 (6.37%)	
Mining	5211.808	317 (1.26%)	
Construction	5515.634	694 (2.75%)	6,090 (24.14%)	High
Business services	7000.022	317 (1.26%)	
Transport services	9168.849	834 (3.31%)	
Utilities	9688.478	94 (0.37%)	

Notes: Labour productivity is computed by dividing gross value added at constant 2005 prices in Ghanaian Cedi by the number of persons engaged for 2010.

B Heckman-corrected estimates of occupational productivity: Sensitivity analysis

Table B1: Heckman-corrected probit estimates for productivity, urban households

	Heckman correction: Low (0) vs. High (1) productivity (1)	Heckman correction: Low (0) vs. High (1) productivity (2)	Heckman correction: Low (0) vs. High (1) productivity (3)	Heckman correction: Low (0) vs. High (1) productivity (4)	Heckman correction: Low (0) vs. High (1) productivity (5)	Heckman correction: Low (0) vs. High (1) productivity (6)
Outcome equation (productivity)						
Household migration experience						
HM	0.030					
	(0.022)					
HCM		0.036		0.032	0.009	
		(0.024)		(0.024)	(0.405)	
HRM			0.025	0.005		-0.026
			(0.045)	(0.043)		(0.368)
Selection equation (working)						
Household migration experience						
HM	0.003					
	(0.015)					
HCM		0.007		0.005	0.007	
		(0.017)		(0.017)	(0.029)	
HRM			-0.002	-0.008		0.004
			(0.029)	(0.028)		(0.028)
Observations	11,568	11,418	11,098	11,568	606	606
Uncensored observations	9,409	9,290	9,010	9,409	507	507
Log likelihood	-9751.554	-9629.071	-9353.005	-9751.6	-472.118	-471.961
Wald test	0.000	0.000	0.000	0.000	0.000	0.000
LR test of independent equations (rho = 0): chi2(1)	8.37	7.32	11.54	8.45	9.71	9.78
Prob >chi2	0.004	0.007	.001	0.004	0.002	0.002

Notes: cf. Table 2.

Table B2: Heckman-corrected probit estimates for productivity, rural households

	Heckman correction: Low (0) vs. High (1) productivity (1)	Heckman correction: Low (0) vs. High (1) productivity (2)	Heckman correction: Low (0) vs. High (1) productivity (3)	Heckman correction: Low (0) vs. High (1) productivity (4)	Heckman correction: Low (0) vs. High (1) productivity (5)	Heckman correction: Low (0) vs. High (1) productivity (6)
Outcome equation (productivity)						
Household migration experience						
HM	0.015					
	(0.010)					
HCM		0.023*		0.022*	0.025	
		(0.012)		(0.011)	(0.022)	
HRM			0.000	-0.001		-0.020
			(0.017)	(0.017)		(0.022)
Selection equation (working)						
Household migration experience						
HM	-0.004					
	(0.008)					
HCM		-0.010		-0.007	-0.010	
		(0.010)		(0.010)	(0.018)	
HRM			0.002	0.008		0.018
			(0.014)	(0.013)		(0.017)
Observations	15,469	15,023	14,614	15,469	1,265	1,265
Uncensored observations	13,928	13,531	13,152	13,928	1,138	1,138
Log likelihood	-9198.556	-8928.669	-8665.512	-9197.73	-750.184	-750.016
Wald test	0.000	0.000	0.000	0.000	0.000	0.000
LR test of independent equations (rho = 0): chi2(1)	0.17	0.32	0.16	0.22	0.87	1.01
Prob >chi2	0.683	0.571	0.693	0.637	0.351	0.315

Notes: cf. Table 2.

Table B3: Heckman-corrected probit estimates for productivity, household head

	Heckman correction: Low (0) vs. High (1) productivity (1)	Heckman correction: Low (0) vs. High (1) productivity (2)	Heckman correction: Low (0) vs. High (1) productivity (3)	Heckman correction: Low (0) vs. High (1) productivity (4)
Outcome equation (productivity)				
Household migration experience				
HM	0.048***			
	(0.017)			
HCM		0.043**		0.038**
		(0.019)		(0.019)
HRM			0.063*	0.042
			(0.038)	(0.036)
Selection equation (working)				
Household migration experience				
HM	0.013			
	(0.011)			
HCM		-0.002		-0.002
		(0.012)		(0.012)
HRM			0.101**	0.105**
			(0.043)	(0.042)
Observations	13,293	13,139	12,775	13,293
Uncensored observations	12,411	12,258	11,919	12,412
Log likelihood	-8689.407	-8605.929	-8358.187	-8685.086
Wald test	0.000	0.000	0.000	0.000
LR test of independent equations (rho = 0): chi2(1)	27.71	27.56	29.34	28.28
Prob >chi2	0.000	0.000	0.000	0.000

Notes: cf. Table 2.

Table B4: Heckman-corrected probit estimates for productivity, household spouse

	Heckman correction: Low (0) vs. High (1) productivity (1)	Heckman correction: Low (0) vs. High (1) productivity (2)	Heckman correction: Low (0) vs. High (1) productivity (3)	Heckman correction: Low (0) vs. High (1) productivity (4)
Outcome equation (productivity)				
Household migration experience				
HM	0.010			
	(0.013)			
HCM		0.019		0.017
		(0.016)		(0.016)
HRM			-0.010	-0.014
			(0.025)	(0.024)
Selection equation (working)				
Household migration experience				
HM	0.004			
	(0.013)			
HCM		0.020		0.022
		(0.017)		(0.016)
HRM			-0.026	-0.022
			(0.020)	(0.019)
Observations	9,516	9,249	8,962	9,516
Uncensored observations	8,366	8,127	7,845	8,366
Log likelihood	-6131.297	-5968.4	-5806.154	-6129.114
Wald test	0.000	0.000	0.000	0.000
LR test of independent equations (rho = 0): chi2(1)	52.87	55.06	51.29	52.87
Prob >chi2	0.000	0.000	0.000	0.000

Notes: cf. Table 2.

Table B5: Heckman-corrected probit estimates for productivity, household child

	Heckman correction: Low (0) vs. High (1) productivity (1)	Heckman correction: Low (0) vs. High (1) productivity (2)	Heckman correction: Low (0) vs. High (1) productivity (3)	Heckman correction: Low (0) vs. High (1) productivity (4)
Outcome equation (productivity)				
Household migration experience				
HM	0.009			
	(0.049)			
HCM		0.017		0.024
		(0.067)		(0.062)
HRM			-0.008	0.001
			(0.076)	(0.069)
Selection equation (working)				
Household migration experience				
HM	0.037			
	(0.045)			
HCM		0.007		0.021
		(0.063)		(0.060)
HRM			0.053	0.062
			(0.065)	(0.062)
Observations	1,277	1,222	1,215	1,277
Uncensored observations	754	716	709	754
Log likelihood	-1014.095	-971.182	-964.816	-1013.784
Wald test	0.000	0.000	0.000	0.000
LR test of independent equations (rho = 0): chi2(1)	0.33	0.31	0.50	0.35
Prob >chi2	0.564	0.580	0.481	0.555

Notes: cf. Table 2.

Table B6: Heckman-corrected probit estimates for productivity, remittances

	Heckman correction: Low (0) vs. High (1) productivity	No correction: Low (0) vs. High (1) productivity	Heckman correction: Low (0) vs. High (1) productivity
	(1)	(2)	(3)
Outcome equation (productivity)			
Receiving remittances from household members			
HCM	0.045		
	(0.031)		
Sending remittances to household members			
HCM		0.002	
		(0.016)	
Receiving and sending remittances to household members			
HCM			0.000
			(0.059)
Selection equation (working)			
Receiving remittances from household members			
HCM	-0.034		
	(0.023)		
Sending remittances to household members			
HCM		0.011	
		(0.013)	
Receiving and sending remittances to household members			
HCM			-0.058
			(0.037)
Observations	27,037	27,037	27,037
Uncensored observations	23,337	23,337	23,337
Log likelihood	-19392.47	-19394.18	-19393.38
Wald test	0.000	0.000	0.000
LR test of independent equations (rho = 0): chi2(1)	7.02	6.74	7.69
Prob >chi2	0.008	0.009	0.006

Notes: cf. Table 2.

C Multinomial logit estimates of employment status: Sensitivity analysis

Table C1: Multinomial logit estimates for occupation, urban households

		Not working	Self-employed	Waged-employed	Contributing family worker	Obs.	Log likelihood	Wald test	Pseudo R2
Occupation (employment status)									
Household migration experience									
(1)	HM	-.023	-.011	.037**	-.003	10,938	-8970.256	0.000	0.314
		(.016)	(.017)	(.018)	(.008)				
(2)	HCM	-.032*	.011	.029	-.009	10,794	-8834.404	0.000	0.315
		(.020)	(.020)	(.020)	(.010)				
(3)	HRM	-.002	-.087***	.085**	.003	10,500	-8627.013	0.000	0.313
		(.030)	(.033)	(.035)	(.014)				
(4)	HCM	.005	.113***	-.120***	-.008	569	-412.708	0.000	0.387
		(.030)	(.039)	(.032)	(.027)				
(5)	HRM	-.002	-.091**	.079**	.014	569	-415.063	0.000	0.384
		(.029)	(.038)	(.031)	(.026)				
(6)	HCM	-.031*	.015	.022	-.007	10,938	-8967.847	0.000	0.314
		(.019)	(.020)	(.020)	(.010)				
	HRM	.002	-.073**	.064*	.007				
		(.028)	(.032)	(.034)	(.013)				

Notes: cf. Table 4.

Table C2: Multinomial logit estimates for occupation, rural households

		Not working	Self-employed	Waged-employed	Contributing family worker	Obs.	Log likelihood	Wald test	Pseudo R2
Occupation (employment status)									
Household migration experience									
(1)	HM	-.010	-.026**	.011	.025**	14,905	-12211.7	0.000	0.248
		(.008)	(.013)	(.007)	(.011)				
(2)	HCM	-.004	-.024	.018**	.011	14,483	-11839.298	0.000	0.250
		(.010)	(.016)	(.008)	(.014)				
(3)	HRM	-.012	-.012	-.012	.036**	14,077	-11452.441	0.000	0.254
		(.014)	(.023)	(.015)	(.018)				
(4)	HCM	.006	-.003	.025*	-.028	1,217	-1035.916	0.000	0.206
		(.016)	(.029)	(.014)	(.027)				
(5)	HRM	-.016	-.015	-.017	.049*	1,217	-1035.472	0.000	0.207
		(.016)	(.028)	(.013)	(.027)				
(6)	HCM	-.008	-.028*	.019**	.016	14,905	-12208.041	0.000	0.249
		(.010)	(.015)	(.008)	(.013)				
	HRM	-.019	-.023	-.005	.047***				
		(.014)	(.022)	(.014)	(.017)				

Notes: cf. Table 4.

Table C3: Multinomial logit estimates for occupation, household head

		Not working	Self-employed	Waged-employed	Contributing family worker	Obs.	Log likelihood	Wald test	Pseudo R2
Occupation (employment status)									
Household migration experience									
(1)	HM	-.017	-.037**	.029*	.025***	12,840	-8059.257	0.000	0.300
		(.012)	(.016)	(.016)	(.004)				
(2)	HCM	-.005	-.044**	.026	.023***	12,691	-7979.995	0.000	0.299
		(.013)	(.018)	(.018)	(.005)				
(3)	HRM	-.105*	.013	.074*	.018*	12,336	-7726.011	0.000	0.300
		(.056)	(.044)	(.040)	(.009)				
(4)	HCM	-.005	-.042**	.022	.026***	12,840	-8053.862	0.000	0.300
		(.013)	(.018)	(.017)	(.005)				
	HRM	-.109**	.025	.059	.025***				
		(.055)	(.043)	(.039)	(.008)				

Notes: cf. Table 4.

Table C4: Multinomial logit estimates for occupation, household spouse

		Not working	Self-employed	Waged-employed	Contributing family worker	Obs.	Log likelihood	Wald test	Pseudo R2
Occupation (employment status)									
Household migration experience									
(1)	HM	-.014 (.014)	.008 (.017)	.010 (.009)	-.004 (.015)	9,274	-8189.694	0.000	0.231
(2)	HCM	-.027 (.018)	.018 (.021)	.011 (.011)	-.002 (.018)	9,015	-7947.621	0.000	0.233
(3)	HRM	.008 (.021)	-.000 (.029)	.007 (.016)	-.015 (.025)	8,730	-7736.226	0.000	0.232
(4)	HCM	-.029 (.018)	.014 (.021)	.012 (.011)	.003 (.018)	9,274	-8188.756	0.000	0.231
	HRM	.005 (.021)	-.010 (.028)	.009 (.015)	-.004 (.024)				

Notes: cf. Table 4.

Table C5: Multinomial logit estimates for occupation, household child

		Not working	Self-employed	Waged-employed	Contributing family worker	Obs.	Log likelihood	Wald test	Pseudo R2
Occupation (employment status)									
Household migration experience									
(1)	HM	-.108** (.047)	-.022 (.030)	.058** (.027)	.072* (.040)	1,147	-991.976	0.000	0.304
(2)	HCM	-.081 (.067)	-.039 (.041)	.039 (.034)	.080 (.057)	1,099	-947.612	0.000	0.306
(3)	HRM	-.101 (.069)	-.002 (.045)	.034 (.049)	.069 (.055)	1,091	-923.831	0.000	0.314
(4)	HCM	-.101 (.065)	-.032 (.039)	.067** (.031)	.066 (.055)	1,147	-990.273	0.000	0.305
	HRM	-.134 (.065)	.002 (.043)	.079** (.039)	.053 (.054)				

Notes: cf. Table 4.

Table C6: Multinomial logit estimates for occupation, remittances

		Not working	Self-employed	Waged-employed	Contributing family worker	Obs.	Log likelihood	Wald test	Pseudo R2
Occupation (employment status)									
Receiving remittances from HH members									
(1)	HCM	.008 (.024)	-.022 (.033)	.024 (.028)	-.010 (.023)	25,843	-21711.711	0.000	0.306
Sending remittances from HH members									
(2)	HCM	-.024* (.014)	-.010 (.017)	.025* (.013)	.009 (.012)	25,843	-21709.701	0.000	0.306
Receiving and sending remittances from HH members									
(3)	HCM	.042 (.034)	-.084 (.054)	.024 (.047)	018 (.03)	25,843	-21710.75	0.000	0.306

Notes: cf. Table 4.

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