Following in their footsteps:
An analysis of the impact of successive migration on rural household welfare in Ghana

Eva-Maria Egger and Julie Litchfield

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About the authors

Eva-Maria Egger works for International Fund for Agricultural Development (IFAD), Rome, Italy. Email: E.Egger@ifad.org. She received financial support in form of a doctoral grant by the Economic and Social Research Council (ESRC).

Julie Litchfield works for Migrating out of Poverty and Department of Economics, University of Sussex.

Abstract

In this paper, we explore repeated migration within a household and consequent welfare outcomes. Specifically, we use a household panel survey collected in 2013 and again in 2015 in rural areas of Ghana. We exploit the rich information about migration experience to understand the diverse patterns of migration within Ghanaian households. We provide evidence that households often have more than one migrant member and that they have different characteristics depending on who moved first. New migrants are more likely to be from a younger generation, they face lower migration costs, and only a few of them remit. We find no effect of sending a new migrant on household welfare, measured with an asset index. We conclude that the different nature of migration of new migrants implies neither an economic gain for the household nor a loss. The reason for the former is that the migrants remit less or not at all and the reason for the latter is that migration becomes less costly with prior experience.

Executive Summary

This paper explores the effect that continued migration of household members has on household welfare. By continued migration we refer to migrants who decide to leave home after one or more of their household has already done so, thus following after the earlier migrants from the family group. We explore the effect that this has on household welfare using a unique panel data set of approximately 1200 rural households in Ghana, interviewed first in 2013 and then followed up in 2015.

We measure household welfare using an asset index for each survey round, match households using baseline characteristics and examine changes in the asset index over time, comparing households with follower migrants with households who had no follower migrants. We find that differences in changes, in the asset index over time, for each group, are small and not statistically significant. We explain this "null" result in two ways.

We find that the costs of migration for the "followers" are lower than those costs incurred by earlier migrants. This suggest that followers learn from earlier migrants about the migration process, perhaps sharing information about travel arrangements and accommodation, how to find a job at destination or sharing contacts that might be useful along the way. Followers may also take advantage of an ever broadening and deepening network of migrants. Our data suggest that male followers were more likely to have a job arranged at destination prior to migrating compared to earlier male migrants, and less likely to use savings and more likely to use remittances to finance migration than earlier migrants. Hence while earlier migration may have the required sale of assets, or diversion of savings from investment to covering migration costs, followers find it less costly to migrate and easier to finance through remittance streams of those already away.

We also find that followers are leaving home at younger ages than earlier migrants, often having only completed primary school. Earlier migrants were older and more likely to have at least some secondary schooling, which perhaps gave them advantages in the labour market. Subsequently it is not surprising to find that a smaller proportion of the new migrants are sending remittances home, and send smaller amounts, compared to those who left earlier. Hence, the potential for asset accumulation through remittance receipt may yet to be realised.

Thus our finding that there is no change in assets over time may signal a change in the nature of migration in Ghana – changes in who migrates, the costs and returns to migration, and in remittance patterns. However, it may be premature to draw such conclusions given the short period spanned by our data. We are following up with another survey of our households in 2018 so we will be able to explore longer-term changes.

1.   Introduction

Internal migration is a common and sizeable phenomenon in many developing countries. An estimated 740 million people live outside their region of birth (Bell & Muhidin, 2009). Differences in regional economic performance induce people to leave poorer areas and move to those where more and better opportunities are located. In Ghana, around 35 percent of people in the population Census of 2010 had moved from their place of birth to another location within the country (Ghana Statistical Service, 2013). Many people move from poorer to richer regions, some move with the whole household, others send a member of the household (Litchfield & Waddington, 2003a; Molini, Pavelesku, & Ranzani, 2016a).

Internal migration plays an important role in poverty reduction and economic development at the individual, household and macroeconomic level. On the one hand, it contributes to structural change in the country when rural workers move into non-agricultural work in urban areas (Harris & Todaro, 1970). On the other hand, migration of a household member can insure the sending household against income shocks in the origin. Such insurance can prevent households from falling into poverty. Moreover, the income earned by the migrant member can raise consumption levels at home or even pay for investments in profitable technologies (Stark & Bloom, 1985). Additionally, geographic mobility offers young people to advance their education and gain new skills if their origins do not provide these opportunities.

Because of its size and relevance for economic development, economists study internal migration, but data limitations and methodological issues remain a challenge. One focus of research is the question whether and how internal migration affects households at origin. This paper contributes to this strand in the literature. We investigate the impact of having a new migrant on the welfare of origin households conditional on their prior migration experience. The outcome variable of interest is an asset index.

The engagement in migration of some village or community members was shown to significantly reduce migration costs for later migrants from that same network. This local migration experience would also increase the probability to be successful at destination in terms of finding a job. Thus, households are more likely to send a migrant if they have access to such a network of migration experience (McKenzie & Rapoport, 2007; Munshi, 2003). Households themselves can gain migration experience through their engagement in migration. Bryan, Chowdhury, & Mobarak (2014) provide experimental evidence that the idiosyncratic migration experience of a household in contrast to that of social networks significantly predicts the repetition of migration within this household. Migration experience at the household level is hence important for future migration decisions and their impacts on the household.

Furthermore, the focus on new migrants is adequate for a setting in which households have several migrant members who move at different points in time. This is revealed by the data available in this paper. We use primary data from a new two-wave household panel survey conducted in Ghana in 2013 and 2015. The surveys were designed with the goal to collect as much information as possible about migration.

Because there is little existing evidence on the consequences of idiosyncratic migration experience of households, we first describe migrants and their households in our new data to explore the dynamic patterns of migration. A comparison of the new migrants to those migrants who left the household before documents that new migrants are from a younger generation within households, such as children or grandchildren of the head. Their migration costs are lower and might be related to family networks and the households' prior engagement in migration. From these observations we derive hypotheses for the impact assessment. Then we estimate how the asset welfare of households with a new migrant changes compared to those without, conditional on the fact that all households have previously had a migrant. We analyse whether there are heterogeneous effects by gender of the migrant and by destination.

We find no effect of sending a new migrant on the change in the asset index of origin households compared to those households who do not engage further in migration in the same period. This result is robust to a sensitivity analysis. Our interpretation is that the returns to migration might not show after the short period of our study. Households in our sample use their savings to finance migration. They hence do not experience a drop in their asset index. However, they also do not experience an increase in their asset index since the new migrant left. This could be, on the one hand, due to their use of savings to cover migration costs instead of investing into more assets and, on the other hand, because new migrants send only rarely and low remittances. We further suggest that due to prior engagement in migration our sample of households does not experience an initial decline in welfare. This could be caused by the migration costs or the loss in labour due to a member leaving (Taylor & López-Feldman, 2010). We however document that migration costs for new migrants are smaller than for prior migration, which indicates that migration experience at the household level reduces the costs of migration. In addition, prior to their move new migrants are either in school or doing unpaid work. It is thus less likely that their migration implies a loss in labour income for the household.

The paper is structured as follows. In the next section, 2, we discuss the literature on impacts of migration on households left behind with respect to methodological challenges, knowledge gaps and evidence for our context. This is followed by the analytical framework for this study in section 3. Then we present the data used for the analysis and describe the sample (section 4) followed by a description of the nature of repeated migration (section 5). In section 6, we explain the methodology to estimate the impact of sending a new migrant on the welfare of origin households. In section 7, we present and discuss the results, before section 8 concludes.

2.   Literature review

2.1. Evidence on the impact of migration on origin households

The research interest of this paper is the short-term relationship between having a new migrant and the welfare of origin households in rural Ghana. Many studies explored the more general question looking at the impact of having a migrant or not on some measure of well-being of the origin household. There exists also research that examines the effect of migration

on the migrant's own welfare, e.g. Beegle, De Weerdt, & Dercon (2008), but this is not the focus of this paper.

Theoretical models such as from the New Economics of Labour Migration (NELM, Stark & Bloom, 1985) cannot predict the direction of the impact of migration on origin households. The reason for this is that the impact depends on counteracting factors. For example, De Brauw & Harigaya (2007) model the impact of migration on consumption growth. It depends at the same time on the loss of farm production incurred by migration and the increase in consumption due to remittance receipt (De Brauw & Harigaya, 2007, p.436) aside from the costs of moving.

Antman (2012) reviews the research that examines the impact of migration on the left behind family members and Mendola (2012) reviews studies looking at rural out-migration and its impacts on sending households. Both summarise mixed results from the literature. The following examples illustrate the inconclusive findings.

Empirical evidence from China by De Brauw & Giles (2012) documents an increase in consumption growth as well as ``increased accumulation of housing welfare and consumer durables'' (p.3). Quisumbing & McNiven (2010) consider the impact of migration and remittances on assets, consumption and credit constraints in the rural Philippines. They find that a larger number of migrant children reduces the values of non-land assets and total expenditures per adult equivalent in the origin households. However, remittances have a positive impact on housing, consumer durables, non-land assets, total (per adult equivalent) and educational expenditures. They find no effect on status of credit constraint. Mendola (2008) finds an increase in investments in agricultural production among the left behind households with international migrants in Bangladesh, but she does not find an effect for internal migration. Taylor & López-Feldman (2010) provide evidence of a positive effect of migration to the US on land productivity of migrant-sending families in Mexico. They also document an increase in per-capita income via remittances. Damon (2010) finds only weak increases in asset accumulation in El Salvador, he finds no impact of migration and remittances on investments in agricultural production.

What gives rise to these mixed results? One explanation is that the counteracting factors of costs and rewards to migration materialize at different speeds (Taylor & López-Feldman, 2010). The loss in labour is felt immediately as are the costs of paying for the migration of a household member. The returns to migration in form of remittances contribute to higher consumption levels. They delay however until the migrant arrived at the destination, found a job and earned enough income to send some of it back home. It might take even longer for remittances to accumulate enough to invest in productive assets. Other aspects that contribute to the mixed results are the different data, definitions for migration and methodologies used. Migrants, or migrant households, are not a random sample of the population, but observable and unobservable factors determine their participation in migration. These factors can affect the outcomes of interest at the same time. In addition, the outcome itself can affect the migration decision. This is especially an issue in cross-sectional data.

Only few studies consider migration experience at the household level. De Brauw & Harigaya (2007) and De Brauw (2010) provide evidence about the impact of seasonal migration on household welfare or agricultural production in Vietnam. While seasonal migration is most likely a repeated event, the authors do not specifically account for the repetition and potential learning process of the household. Bryan et al. (2014) conduct a randomized control trial in a region in Bangladesh that is seasonally affected by famine to understand underused seasonal migration. Their intervention was a cash transfer to vulnerable households conditioned to finance seasonal migration of one household member. The results show significant improvements of consumption levels for the treated households. According to the authors' model, migration results in success or failure in terms of finding a job at destination and sending remittances. Households learn from this experience and it predicts their future engagement in migration. Further evidence for the role of migration experience within the family is provided by Giulietti, Wahba, & Zenou (2014). The authors develop a model that differentiates between `weak' and `strong' network ties and their role for migration decisions. Their findings suggest that networks at community level (weak ties) and prior migration of a family member (strong ties) act complementary, but weak ties have a have a higher impact on the migration decision. No further analysis is conducted to investigate how such different networks might impact migration and household outcomes.

2.2. Migration in Ghana

Ghana is a middle-income country according to the World Bank definition. It has been able to improve living standards remarkably in the past decade. The country's poverty headcount ratio decreased from 31.1 in 2005 to 24.2 in 2012 (World Bank, 2017). Despite these improvements, there remain challenges and small-scale agriculture is still the predominant income source in most regions. This gives rise to internal migration. Based on 2000 Census data Castaldo, Deshingkar, & McKay (2012) map poverty and migration rates at district level and find a clear correlation. Most people move out of the poor and into the richer regions.

Researchers document migration patterns in Ghana using various rounds of the Ghana Living Standards Survey (GLSS). Litchfield & Waddington (2003) show that in early rounds of the Ghana Living Standards Survey (GLSS) (those of 1991/92 and 1998/99) internal migration in Ghana was high and led mostly from rural to rural areas. This pattern is confirmed by Castaldo et al. (2012) for the GLSS5 in 2005. These movements were in most cases for economic reasons, to look for jobs, but around a third of migrants move also for family reasons. Molini et al. (2016) confirm with the latest GLSS6 (2012/13) that families in Ghana move to locations in hope of better prospects. Most migration in this recent survey leads again not only from rural to urban areas, but often from rural to rural areas.

The evidence on impacts of migration on household welfare is mixed also for Ghana. Adams (2006) finds a poverty-reducing effect of internal and international remittances at household level after controlling for selection and the application of an instrumental variable. Adams, Cuecuecha, & Page (2008) show that remittances are not used differently than income from other sources. At the margin, remittance-receiving households do not spend more on consumption or investment than households that do not receive remittances. These results stand in contrast to Adams & Cuecuecha (2013) who find a marginal decrease in food consumption and an increase in investments, particularly in education, housing, and health

for remittance-receiving households. They conduct the same analysis, a multinomial two-stage selection model with an instrumental variable. Their instrument draws on historical railroad networks and employment opportunities in destination countries, whereas Adams et al. (2008) relied on social networks among ethnic and religious groups. The use of different instruments could explain the contrasting results.

Ackah & Medvedev (2010) also use the GLSS5 to define determinants of internal migration at the individual and community level as well as the impact of migration on household expenditure. They apply a Heckman two-stage selection model to control for the non-randomness of migration. Migration drivers are higher education and youth, as well as worse infrastructure in home communities. Households with internal migrants are relatively better off than those without. The effect is, however, only significant for rural to urban migrants and not for those who remain in rural areas. Also applying a Heckman selection model, Mahé & Naudé (2016) find that Ghanaian internal migrants send relatively little remittances and often even receive support from their origin households using the GLSS6 (2012/13) data in combination with the Africa Sector Database (ASD). Their hypothesis is that migration is in this case often a long-term strategy based on the observations that migrants are often young members of the household moving to obtain higher education. Molini et al. (2016), exploit the GLSS6 to compare households who migrated as a whole to those who stayed. They make use of historical migration networks as instrument in a two-stage selection model. The positive impact of migration on consumption that they find is attributed to specific directions of movement, from the inland to coastal areas, and to male headed and better educated households. The authors also emphasize the absence of sectorial change in the migration strategy of households.

This study contributes to the understanding of internal migration in Ghana and its consequences for origin households by using novel data. We utilize its rich questionnaire to document the diverse patterns of migration. We exploit the panel nature of the data and apply a new method from the evaluation literature to reduce concerns of bias. We condition the analysis on prior migration experience. Thus, we contribute to the literature aiming to understand whether households learn from migration and what the implications are for future migration at household level.

3.   Analytical framework

This paper investigates whether having a new migrant is related to a change in the welfare of the migrant's household at origin conditional on migration experience. The analysis is set in two periods, baseline and follow-up. All households have at least one member who is a migrant in the baseline period. Thus, they have previously engaged in migration, which we define as `migration experience'.
A migrant is defined in the surveys as a member of the household who is currently absent, left at least three months ago, but not more than five years.

A new migrant is defined as a household member who is present in the household in the baseline period and who then moves at least to another community and is still away in the

follow-up period.[1] We look at new migrants, because it appears to be common for households to have more than one migrant and to see them move at different times. Thus, we are not interested in just the number of migrants, but in the dynamic aspect of another member migrating. Furthermore, it removes some of the selection bias of households into migration. To give an example, imagine a household as depicted in the following table:

Table 1: Example household with baseline and new migrant

Household member	Migrant in baseline	Migrant in follow-up
A	1	1
B	0	0
C	0	0
D	1	0
E	0	1
Total	2	2

This household has five members. At baseline, member A and member D are away as migrants. In the follow-up period, member A is still away as a migrant, while member D has returned to the household. Now member E is away as a migrant. If we were to compare only the total number of migrants away, we would see no difference between these two periods for this household. However, member D might have returned with money for the household, and will now contribute again to the household production (farm or business), and he or she potentially returned with new skills that could improve the returns to her or his labour. At the same time, for member E to migrate, the household had to incur some costs, maybe by selling assets or using savings. These factors have different impacts on the household welfare, so that we focus on new migrants instead of the total number of migrants. Thus, this example household would be defined as a household with migration experience and a new migrant. Member E would be this new migrant.

Different aspects determine the impact of having a new migrant. First, migration is costly and can initially lead to a decline in welfare due to the costs incurred as well as the loss in labour. Secondly, migration is beneficial when migrants send money back to their origin household and thus create another source of income. Thirdly, migration can be beneficial for the migrant him or herself directly. There might be more and better opportunities to earn an income or pursue further education at destination than at origin. Moreover, the household has one member less to care for and it might derive utility from the fact that the migrant can find a better livelihood somewhere else.

However, it is not clear in which direction the effect should work and which factor dominates. The afore mentioned factors work in different directions. Additionally, in our specific case households have migration experience at baseline before they have a new migrant which can

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[1] It is possible that the new migrant had migrated in the past. In such a case, not only the household as a whole would have migration experience but also the individual migrant. The response rate to the question asking how many times a migrant moved before is unfortunately very low so that we cannot control for this in the analysis.

influence the effect. While sending a new migrant can incur costs, these might be lower conditional on prior migration experience of the household.

Following this discussion, we look at the impact of sending a new migrant conditional on migration experience. The sample is therefore first restricted only to households with migration experience at baseline. Then, households are assigned to a group called `treated' and another one named `control'. Households are in the treated group if they have at least one new migrant between the two periods. The remaining households without a new migrant between the two periods are in the control group.[2] This definition implies that households can have more than one new migrant and they can have several baseline migrants. Our sample is restricted to those households whose new migrants were present members of the household in the baseline period.[3] Obviously, these definitions restrict the sample to a smaller set of observations than the original full survey.

4.   Data

4.1. Data source and sample

The data used for this analysis is a household survey collected in April/May 2013 and again at the same households in April/May 2015. In this way, the households are interviewed during the same season to avoid issues of seasonality between survey waves. The data was collected by the Centre for Migration Studies (CMS), University of Ghana, Legon, through funding from the UK's Department for International Development (DFID) and made available by the Migrating out of Poverty Research Consortium, University of Sussex, UK.

In the first wave, around 1,400 households were surveyed, and in the second wave the team was able to follow up with around 1,100 of them. The households are not nationally or regionally representative, but they were specifically chosen to oversample migrant sending households. While migration is a common phenomenon, it remains difficult to get a feasible sample in most nationally representative surveys.

The survey was conducted in five regions, the Northern region, the Upper East, Upper West, Brong Ahafo, and Volta region. These regions were major source areas for internal migration based on the information in the 2010 Ghana Population and Housing Census (Ghana Statistical Service, 2013). The questionnaire was directed at the household head and asked about the demographics of each household member, their education and employment status, as well as their migration history. The questions about migration are either about current migrants or in an extra section directed towards returned migrants. These sections cover, for example, information on destination, reason for migrating, financing of the move, remittance sending, and occupation at destination.

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[2] We could include households that had a return migrant at baseline, but no current migrant. They also have migration experience. However, there are no such households in our data.

[3] A special case are households that grew overall, which means that they had more members in the follow-up period than in the baseline due to new household formation. This can for example happen, when the son of the household head marries and his new wife and maybe a relative of hers join the household. If any of the newly joined household members then is a migrant in the follow-up period, we drop this household from the analysis. These households might represent a different form of household formation.

In the questionnaire, migrants are members who are currently not living in the household and who have been away for at least three months, but less than ten (in 2013) or five years (in 2015). 60 percent of households in the sample for this analysis have only one new migrant, 25 percent have two, and the remaining 15 percent have three or more new migrants in the study period.

After cleaning the data and making sure that the main variables of interest are available for all households in both survey waves, we are left with a balanced panel of 960 household-year observations. 131 migrant households are in the treated group, and 349 in the control group. The majority of households with a new migrant is located in Brong Ahafo and in the Volta region and the majority of the comparison group live in the Volta and the Northern region (Table 2) and figure 1.

Table 2: Sample of treatment and control households across regions in 2013

Region	Control N	Control %	Treatment N	Treatment %	Total N	Total %
Brong Ahafo	61	17.5	40	30.5	101	21
Northern	93	26.6	19	14.5	112	23.3
Upper East	54	15.5	25	19.1	79	16.5
Upper West	43	12.3	18	13.7	61	12.7
Volta	98	28.1	29	22.1	127	26.5
Total	349	100	131	100	480	100
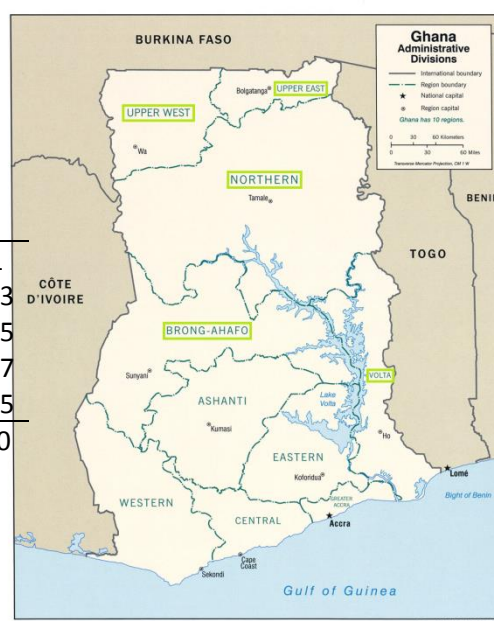
Figure 1: Map of administrative regions of Ghana

4.2. Migrants and households in the sample

We compare those who were migrants in the baseline (2013) and those who moved as new migrants between baseline and follow-up survey (2015). This comparison helps to document how new migrants differ from previous migrants within households with migration experience. In our sample, we have 951 migrants in 2013, and 215 new ones in the follow-up survey. The response rates to the questions about migrants vary. We hence always report the number of responses for each question.

Table 3 provides an overview of the basic demographic characteristics of the migrants by migrant status and gender. Of the 2013 migrants, 38 percent are female, in 2015 the share of women increased to 50 percent. New migrants are on average younger and relatively more

of them are single. They are from a younger generation within the household, often sons or daughters of the household head or even from the third generation. Relatively more of the new migrants have no or only primary education compared to baseline migrants.

Table 3: Demographic information of migrants, by migrant status and gender

	Baseline (2013)		New (2015)	
	Male	Female	Male	Female
Observations (N)	*592*	*359*	*107*	*108*
Age (in years)	32.4	30.7	25.6	26.8
Marital status				
N	*543*	*330*	*95*	*92*
Single	44.6	42.7	68.4	47.8
Married/living with partner	54	50.6	30.5	48.9
Separated/Divorced/Widowed	1.5	6.7	1.1	3.3
Relation to head				
N	*592*	*359*	*107*	*108*
Head	8.3	1.9	3.7	1.9
Spouse / partner	3.4	11.4	2.8	3.7
Child/adopted child	52.4	49	49.5	51.9
Grandchild	4.7	6.7	13.1	12
Niece/nephew	5.6	7	14	13.9
Parent	5.4	2.2	0.9	2.8
Sibling	17.2	12.5	10.3	5.6
Son/daughter-in-law	0.2	2.2	1.9	0
Sibling-in-law	1.2	3.1	0.9	1.9
Parent-in-law	0	2.2	0	1.9
Grandparent	0.2	0.6	0	0
Other relatives	1.2	1.1	1.9	2.8
Not related	0.3	0	0.9	1.9
Education				
N	*520*	*296*	*97*	*89*
None	14	18.6	23.7	31.5
Primary	16.7	18.6	22.7	15.7
Middle/Junior	31	30.4	27.8	22.5
High/Senior	21.5	19.3	15.5	16.9
College/Technical	16.7	13.2	10.3	13.5
Occupation prior to migration				
N	*436*	*232*	*70*	*68*
In school / education	16.7	20.3	32.9	36.8
Paid employee	8.9	4.7	10	5.9
Paid work for self	35.1	27.6	24.3	17.6
Unemployed, looking for job	9.9	7.8	8.6	8.8
Doing unpaid work	24.1	30.2	21.4	27.9
Retired	0.5	0		
Apprenticeship	2.3	5.6	1.4	1.5
Others	2.5	3.9	1.4	1.5

Turning to households, we observe in table 4 that there are some differences between households with a new migrant and the control group when we compare their characteristics

at baseline. They differ in household size, ethnicity and livelihood. Households with new migrants are relatively larger and most live from family farm income. Our sample reflects households in a setting where family farms or businesses are common, as is migration. Migration is mostly long-term and not seasonal, even though repeated migration is not unusual. Households with new migrants have relatively fewer seasonal migrants, more female migrants, more returned migrants and more migrants with a job at destination compared to the control households.

Table 4: Household characteristics at baseline, by group

	Households without new migrants (Control)	Households with new migrants (Treatment)
N	*349*	*131*
Household size (excluding currently absent migrants)	5.6	7.2
Dependency ratio	0.60	0.61
Female-to-male ratio	0.50	0.48
Female head	0.26	0.29
Age of head in years	53.3	54.8
Marital status		
Single	0.06	0.05
Married/ living with partner	0.77	0.73
Separated/ Divorced/ Widowed	0.17	0.22
Ethnicity of head		
Akan	0.13	0.20
Ewe	0.24	0.19
Mole Dagbani	0.29	0.24
Others	0.34	0.37
Education of head		
None	0.41	0.41
Primary	0.09	0.11
Middle/Junior	0.25	0.32
High/Senior	0.12	0.07
College/Technical	0.12	0.08
Highest level of education in household		
None	0.05	0.05
Primary	0.11	0.08
Middle/Junior	0.23	0.23
High/Senior	0.30	0.31
College/Technical	0.31	0.34
Main occupation of head		
employee	0.16	0.15
self-employed	0.52	0.52
unpaid/unemployed	0.23	0.25
inactive etc	0.09	0.08
Main income source		
Public sector	0.12	0.08
Private sector	0.04	0.05
Own business	0.28	0.26
Own farm	0.42	0.51
Private transfers	0.11	0.07
Others	0.03	0.03
Migration experience		
Household has returnee	0.17	0.24
Number of current migrants	1.9	2.1

Number of prior migration spells of current migrants	1.3		0.9	
Share of seasonal migrants	0.16		0.09	
Share of female migrants	0.35		0.41	
Share of migrants with job	0.60		0.66	

5. Descriptive statistics

The rich information about migration in this survey allows us to draw a detailed picture of migration in these areas of Ghana. We explore the differences between baseline migrants and new migrants concerning migration networks, financing and occupations before and after migration and we look at the investment behaviour of households in the study period. From these descriptions we can then move on to the analysis of the welfare impact of having a new migrant in section 6.

We saw before that households with new migrants appear to be successful in terms of the share of baseline migrants that have a job at destination and they are more likely to have a return migrant who potentially transmits important information for future migration. Further details about the migration network and financing are discovered in the data.

Table 5: Migration networks

	Baseline (2013)		New (2015)	
	Male	Female	Male	Female
Contact at destination				
N	*481*	*259*	*87*	*83*
Yes	54.3	69.1	64.4	74.7
Type of contact				
N	-	-	*56*	*61*
Father			10.7	6.6
Mother			7.1	9.8
Siblings			17.9	14.8
Relatives			55.4	55.7
Recruitment agent			5.4	3.3
Other specified			3.6	9.8
Job fixed up prior to moving				
N	*479*	*256*	*85*	*71*
Yes	20.3	19.9	29.4	8.5

Contacts at the destination can provide an important support for migrants as we document in table 5. In our sample, women rely on networks relatively more. For new migrants, we also know which contacts the migrants had at destination. Around 55 percent of times, the migrant had a relative at destination, and 18 percent of men and 17 percent of women had their parent at destination. Earlier we learned that most of these new migrants are second or third generation within the household and often not direct descendants of the household head. It is therefore possible to imagine that nieces and nephews or grandchildren follow their parent who moved in the past. Finally, we also observe whether migrants already had a job agreed before their move. This is less common, especially among female new migrants. In contrast, almost 30 percent of new migrant men state to have a job waiting for them at

destination. At baseline, fewer migrants had a job fixed up prior to their move irrespective of their gender.

Table 6 documents the migration costs and modes of financing. In terms of costs, female migrants pay on average less than male migrants for their move, 212 Ghanaian Cedi (GHS) at baseline and 112 for new migrants compared to 220 and 137 respectively for men. It is worth noting that new migrants pay on average less than baseline migrants do. Previously, we learned that relatively more of the new migrants have a contact at their destination and their household has prior engagement in migration. These observations suggest that costs can be reduced through migration experience.

Table 6: Migration costs and means of financing

| | Baseline (2013) | | New (2015) | |
	Male	Female	Male	Female
Migration costs				
N	*220*	*111*	*65*	*58*
in GHS of 2015	222.5	212.3	137.1	111.6
Financing of migration				
N	*371*	*173*	*79*	*79*
Savings	72	67.6	41.8	38
Formal loan	1.1	1.7	0	0
Loan from family	7	6.9	6.3	5.1
Borrowing from money lender	0.8	0.6	2.5	0
Advance from recruitment agent	1.6	2.3	0	1.3
Sale of assets	12.7	11	10.1	5.1
Gov't schemes	1.6	0	0	0
Scholarship	0.3	0.6	0	0
Remittances from other migrants in the HH	3	9.2	6.3	8.9
Others	0	0	32.9	41.8

The most common way to finance migration in 2013 were savings (70 percent) indicating that migration is an investment under credit constraints. If loans are taken then only from family. In no or very few cases formal sources for credit are used and only in very few cases migrants rely on a moneylender or recruitment agent. Around 12 percent of migration was financed by selling assets. New migrants in 2015 also rely on savings, but less so. Selling of assets is less likely to be used to finance the migration of a new female migrant at only 5 percent. A third of new migrant men and 42 percent of new migrant women state `others' as a source of financing. The specified sources among this category are mainly money from a parent and in some cases from the migrant her or himself. We consider this type of money as individual savings. Another source of financing are private transfers to the household from other migrants, remittances, but they seem less important. Relatively more migrant women finance their move through remittances compared to men.

The average costs of migration for baseline migrants in 2013 was above 200 Ghanaian Cedis (in 2015 prices) compared to on average 120 Ghanaian Cedis for new migrants by 2015 (see table 6). This documents that costs for new migrants are relatively lower than for previous migrants. Using the information on previous migration we find that migrants who move the

first time – independent of whether they are new or baseline migrants – pay on average more than those who moved the second time or more often (see table 7).

Table 7: Migration costs by number of times migrant moved before

	Baseline (2013)		New (2015)	
	in GHS of 2015	*N*	in GHS of 2015	*N*
First time	331	*137*	160	*74*
Moved at least once before	142	*132*	78	*41*

Despite lower costs of migration, the new migrants moved relatively more often to another region in Ghana than to remain in their own district or region which normally is associated with higher moving costs. Female migrants on average stayed closer to their origin than men. This difference could be due to those women who migrate to get married which is often tied to ethnic and family networks that might be closer to the origin community.

Table 8: Migration experience: repetition, seasonality, destination and occupation

	Baseline (2013)		New (2015)	
	Male	Female	Male	Female
Repeated migration				
N	*389*	*203*	*84*	*80*
First time migrants	49.4	59.6	70	65
Seasonal migration				
N	*474*	*259*	*86*	*84*
Seasonal (in contrast to permanent)	15.2	16.6	16.3	9.5
Destination				
N	-	-	*86*	*83*
Same district			10.5	18.1
Other district, same region			29.1	34.9
Other region			60.5	47
Activity prior to migration				
N	*241*	*97*	*42*	*34*
Farming	43.2	34	42.9	26.5
Trading	7.5	35.1	7.1	14.7
Self-employment	10	17.5	2.4	8.8
Teaching	9.1	5.2	7.1	14.7
Others	30.1	8.2	40.5	35.3
Occupation at destination				
N	*353*	*182*	*54*	*51*
Farming	19.8	12.1	14.8	21.6
Trading	15.9	39.6	18.5	21.6
Self-employment	16.1	26.4	1.9	9.8
Teaching	7.9	8.2	9.3	7.8
Others	40.1	13.4	55.7	39.3

At destination, the patterns of occupation change compared to what migrants did prior to their move. Self-employment is much less common among new migrants than baseline migrants. Between 12 and 22 percent of migrants in both years work in farming at destination. This suggests that geographical mobility implies also some occupational mobility. Trading is the most common occupation for baseline migrant women at their origin as well as their destination. For female new migrants, trading is an important activity, but services (in `Others') is the most important sector.

Remittance sending behaviour is different between baseline and new migrants (see table 9). In the baseline group, relatively more men remit money to their families. Among new migrants fewer remit. Baseline migrant men also remit larger amounts than their female counterparts, but they all remit on average at least GHS 100 more than new migrants. When asked how frequently they remit, new migrants remit relatively less frequent, half of them only on special occasions or in emergencies, whereas baseline migrants tend to remit mostly every couple of months or even monthly. New migrants are also less likely to remit goods to their origin household. Among baseline migrants, half of the women send goods back home and even 44 percent of men do so.

Table 9: Remittances

	Baseline (2013)		New (2015)	
	Male	Female	Male	Female
Cash remittances				
N	*448*	*242*	*74*	*70*
Yes	63.8	53.7	40.5	38.6
Amount				
N	*260*	*112*	*29*	*24*
in GHS of 2015	788.7	655.1	607.9	515.2
Frequency of remitting				
N	*267*	*120*	*29*	*26*
Weekly	1.1	1.7	0	3.8
Fortnightly	1.1	0	0	3.8
Monthly	24.3	19.2	17.2	11.5
Every couple of month	43.1	40.8	13.8	15.4
Every six months	5.2	6.7	13.8	3.8
Every year	6.4	9.2	3.4	11.5
Only on special occasions or emergencies	18.7	22.5	51.7	50
Remittance of goods				
N	*427*	*228*	*74*	*71*
Yes	44	49.6	28.4	26.8

From these findings we cannot clearly predict the relationship of migration and household welfare, nor can we hypothesise its direction. In some cases, new migrants might be sent to diversify income sources and it is seen as an investment expecting returns to the household in form of remittances. In this case, we would expect to see a negative impact of the initial investment costs due to our short panel period as remittances usually delay to arrive and materialise in origin households (Taylor & López-Feldman, 2010). In other cases, it could be possible that migrants are already successful at their destination and are sending remittances that improve the household welfare.

Other migrants, financially supported from their families, moved to pursue more education or find new opportunities in other locations. This could be in line with human capital models of migration (Sjaastad, 1962). In these cases, it would be possible to find a negative effect on welfare of origin households due to the incurred migration costs and the loss in labour, but it is also possible that due to prior migration experience there is no impact on the origin households. This could even imply a positive impact as fewer members in the household leave more financial resources available for those who stay.

6.   Methodology

Theoretically, there are no clear answers to the question whether migration has a positive or negative effect on the welfare of left-behind households. As documented in the descriptive part migrants move for different reasons, which might imply different costs and different remittance sending behaviour. Additionally, prior experience with migration at the household level is expected to affect the costs and migrants' remittance behaviour. It remains an empirical question to study how having a new migrant relates to the welfare of origin households conditional on prior migration experience.

The effect of repeated migration on household assets implicitly compares households with new migrants to their counterfactual, meaning, what their asset wealth would have looked like had they not had a new migrant. This counterfactual scenario is however unobservable. Instead, we compare households with new migrants to those without and make the latter look comparable in terms of observables to mimic a counterfactual.

The comparison group is therefore matched to the treated households using propensity score matching (Heckman, Ichimura, & Todd, 1998). Then we estimate the average treatment effect on the treated (ATT) (Rosenbaum & Rubin, 1983) that can be defined as:

$$\text{ATT} = [Y^1_{2015} - Y^1_{2013}|X_{2013}, \text{D=1}] - [Y^0_{2015} - Y^0_{2013}|X_{2013}, \text{D=0}]$$

The change in the asset index of treated households, Y^1, between the two survey years 2013 and 2015 is compared to the change in the asset index of control households Y^0 conditional on a set of variables in the baseline year 2013, X_{2013}, that make these two groups of households look comparable. By taking the difference between survey years for each group, any unobservable characteristics that do not vary over time are controlled for.

Propensity score matching is conducted in two steps: first, we estimate the propensity score in a logit regression. This estimates the likelihood for a household to have a new migrant on several observable households characteristics. We include all variables that we consider important for sending a new migrant as well as for the economic welfare of households (Smith & Todd, 2003, Imbens, 2015). These include household demographics such as the dependency ratio, income generating activities in the household, household wealth in terms of assets, and some local characteristics that captures the economic environment of households. Other important factors for repeated migration are education and social networks. A complete list

of all variables included in the estimation of the propensity score can be found in the appendix table A1.

Then we match treated and control households based on the estimated propensity score using kernel matching. The sample is restricted to households on the common support, meaning that for each treated household in the sample there is at least one comparison household in the matched sample. The matching is repeated for different sub-samples. These are households with female new migrants. The goal of matching is that the households with a new migrant and those without look on average the same at baseline. This can be tested by comparing the characteristics they were matched on after the matching. The figures in appendix A confirm that matching reduced the discrepancies between the two groups so that now they look almost identical.

The outcome variable is household welfare measured with an asset index. Starting from Sahn & Stifel (2000) researchers used the rich information on assets available in many developing country household data sets to construct an index as welfare measure. The main argument for the use of the asset information instead of conventional measures such as consumption or income is that the latter are much more volatile and more difficult to measure. It is important to note that a welfare index is a relative, not an absolute measure. It is very useful for comparisons of welfare between groups and/or over time.

An asset index is a composite measure using information about asset ownership and/or other welfare indicators in survey data. The researcher is interested in one continuous measure that captures the welfare of a household. We apply a statistical method used in the literature to construct the asset index, Factor Analysis. We use assets which are comparable to those found in the most commonly used household surveys in developing countries, the Demographic and Health Surveys (DHS). These are indicators of housing quality. They comprise the number of rooms, dwelling ownership, the presence of a bathroom and a toilet, main source of drinking water, and the floor and wall material.

Figure 2 presents the asset index in 2013 of households with a new migrant and of those without, figure 3 depicts the same for 2015. These figures illustrate that the distribution of the asset index overlap in 2013, but they shift apart in 2015. It seems that households with a new migrant have a higher index along most of the distribution.
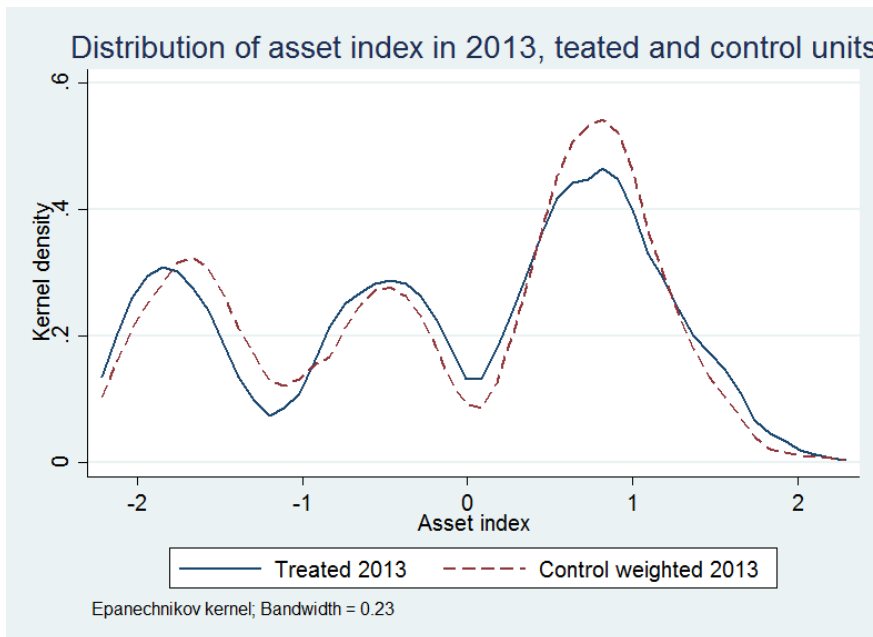
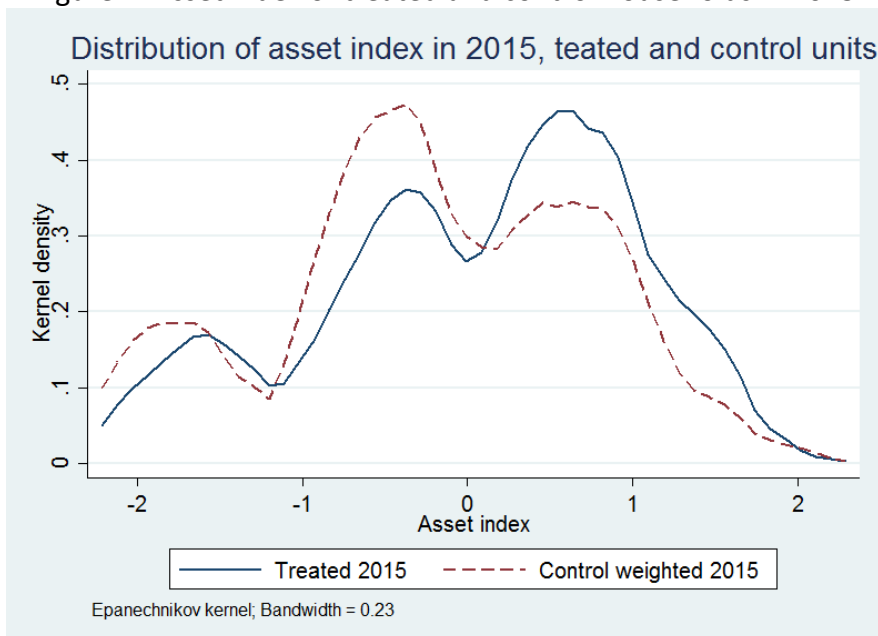Figure 2: Asset index of treated and control households in 2013

Figure 3: Asset index of treated and control households in 2015

7. Results

How does having a new migrant affect the asset welfare of households left behind conditional on prior migration experience? Table 10 presents the results. The estimates capture the average effect on the change in the asset index for households with a new migrant between baseline and the follow-up survey compared to households without a new migrant.

In column 1, we show the main result. On average and everything else constant, sending a new migrant does not change the asset index of households significantly compared to those who do not send another migrant.

Table 10: Impact of having a new migrant on asset index

Average treatment effect on the treated (ATT), without and with baseline matching		
	no matching	with matching
ATT	0.201	0.207
t-statistic	(1.354)	(1.241)

We now look further into the role of migrant characteristics. Table 11 lists the treatment effect for households that have a new female migrant comparing these households to households without any new migrant. Again, the effect is insignificant.

Table 11: Impact of having a new female migrant on asset index

Average treatment effect on the treated (ATT), without and with baseline matching		
	no matching	with matching
ATT	0.259	0.305
t-statistic	(1.505)	(1.576)

There are three possible explanations for the fact that we do not find an impact of having a new migrant on households' asset index. One refers to the outcome variable used, one to the role of migration experience and the other to the sample investigated.

First, considering that asset indices are less volatile than for example consumption measures, it might be due to their stable nature that we do not find a significant effect in the short period of two years. We emphasise that the estimated effect is that of households sending a new migrant compared to those who do not. Hence, even a zero effect does not imply that there was no change in the asset index, but it means that the index of treated households changed in the same direction and magnitude as that of the control group. The distributional graphs of the welfare index (figure 2 and 3 in section 6) indicated some changes in the welfare of households. It appears, however, not to be significantly different between the groups once we control for observable and unobservable household characteristics. Booysen et al. (2008) also point out that because assets are more durable than other consumption goods, they tend to show an increase in asset wealth more than a reduction of the same. As our coefficients are negative, it is possible that we cannot find a significant effect due to this issue.

Secondly, we suggest that migration of a new migrant might be less costly than first-time migration. If we consider migration as an investment, then we would expect an initial decline in welfare and in the longer run an increase (Taylor & López-Feldman, 2010). We do not observe that households with a new migrant experience a decline in welfare that could have been caused by the cost of migration and the loss of a working household member. In the

descriptive statistics we saw that migration is cheaper for those who have moved before and for those who come from a household that had a previous migrant. Similar to the reduction of migration costs with the growth of social migrant networks, the migration experience at the household level itself can reduce costs of migration (McKenzie & Rapoport, 2007). This could be happening through similar channels, such as information transfer and family connections at the destination to find a job.

8. Conclusion

This paper documents the dynamic nature within households of internal migration in rural Ghana. Using a new dataset from 2013 and 2015, we show that many households with migrants at the baseline send a new migrant by 2015. Looking more closely at these migrants and their households, we provide an insight into the nature of such repeated migration. Within the same household, migrants move for different reasons, at different times and their connection with the origin household differs as well.

This motivates the question how households with prior migration experience are affected if they have a new migrant. There are hypotheses for positive, negative or no effect due to the variety of factors involved and their counteracting impacts.

We find that having a new migrant does not have an impact on the welfare measured with the asset index of origin households compared to those without a new migrant. We suggest that this is partially due to the stable nature of such an index over the short period of our analysis. In order to identify an impact, the households in our sample would have needed to invest in their housing to different amounts between treated and control group. However, their investment priorities might lie somewhere else, for example in their farm or business. Unfortunately, the questions about other forms of investment were not consistent between the two survey waves and those that were, had very low response rates so that we cannot provide an answer to this hypothesis.

Another insight we gain is that new migrants pay relatively less for their migration than baseline migrants. This indicates that migration becomes cheaper with the migration experience of the household so that a negative effect of migration incurred by moving costs might not materialize in this case. Furthermore, we observed that new migrants are in many aspects different from baseline migrants. Among the differences are for example the fact that new migrants are from a younger generation, coming straight from school and often not sending any remittances or only for special occasions. This also supports the zero effect we find for the asset index. Households with prior migration experience might not send a new migrant in expectation of future remittances and income diversification. Instead, the new migrants might move primarily to improve their own situation.

These unanswered hypotheses point at the limitations of this study. The effect we estimate is that of only two years or less since a new migrant left the household. The comparison of studies using longitudinal data from longer periods with those of short periods indicates that the positive returns to migration might only present itself after a certain period (Davis, Carletto, & Winters, 2010; Taylor & López-Feldman, 2010). More data collection is required to confirm our results over the longer run.

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Appendix A

Table A1: Variables used for propensity score matching.

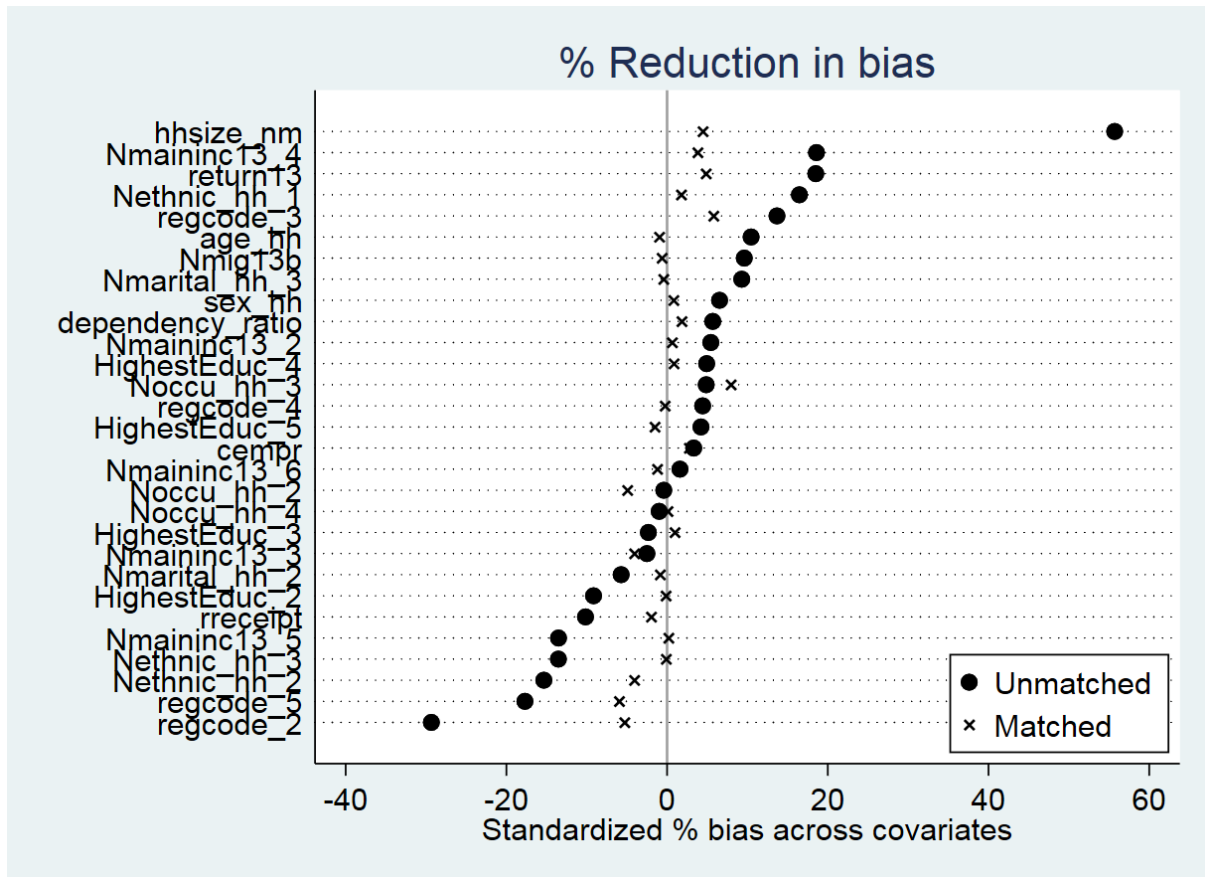| For matching all households with new migrant to control group	For matching households with a new female migrant to control group
Household size (excluding currently absent migrants)	Household size (excluding currently absent migrants)
Dependency ratio	Dependency ratio
Female head	Female head
Age of head in years	Age of head in years
Marital status	*Marital status*
Single	Single
Married/ living with partner	Married/ living with partner
Separated/ Divorced/ Widowed	Separated/ Divorced/ Widowed
Ethnicity of head	*Ethnicity of head*
Akan	Akan
Ewe	Ewe
Mole Dagbani	Mole Dagbani
Others	Others
Highest level of education in household	*Highest level of education in household*
None	None
Primary	Primary
Middle/Junior	Middle/Junior
High/Senior	High/Senior
College/Technical	College/Technical
Main occupation of head	*Main occupation of head*
employee	employee
self-employed	self-employed
unpaid/unemployed	unpaid/unemployed
inactive etc	inactive etc
Main income source	*Main income source*
Public sector	Public sector
Private sector	Private sector
Own business	Own business
Own farm	Own farm
Private transfers	Private transfers
Others	Others
Migration experience	*Migration experience*
Household has returnee	Household has returnee
Number of current migrants	Number of current migrants
Household receives remittances	--
Region	*Region*
Brong Ahafo	Brong Ahafo
Northern	Northern
Upper East	Upper East
Upper West	Upper West
Volta	Volta

Figure A1: Bias reduction in covariates through kernel matching

Table A2: Comparing characteristics of households after matching

Table A2: Balance statistics after matching

	Treatment (N=302)		Control (N=828)		Standardized
	Mean	SD	Mean	SD	mean difference
Dependency ratio	0.66	0.92	0.61	0.67	0.057
Sex of household head	0.30	0.46	0.27	0.44	0.065**
Highest education in household (Base = none)					
Primary	0.07	0.26	0.10	0.30	-0.092
Middle/Junior	0.22	0.42	0.23	0.42	-0.023***
Senior Secondary	0.31	0.47	0.29	0.45	0.049
Higher	0.34	0.48	0.32	0.47	0.042
Ethnicity of household head (Base = other)					
Akan	0.19	0.40	0.13	0.34	0.165
Ewe	0.19	0.40	0.26	0.44	-0.153
Mole Dagbani	0.23	0.42	0.29	0.45	-0.135
Main income source (Base = Public sector					
Private sector	0.05	0.22	0.04	0.20	0.054
Own business	0.27	0.44	0.28	0.45	-0.025
Own farm	0.50	0.50	0.41	0.49	0.186
Private transfers	0.07	0.26	0.11	0.32	-0.135
Others	0.03	0.17	0.03	0.16	0.016
Household size (excluding migrants)	7.30	3.10	5.53	3.25	0.557*
Age of household head	55.28	14.77	53.66	16.17	0.105

Marital status of household head (Base = Single)					
Married/living with partner	0.74	0.44	0.76	0.43	-0.057
Separated/Divorced/Widowed	0.22	0.41	0.18	0.38	0.093
Occupation of household head (Base = Employee)					
Self-employed	0.52	0.50	0.52	0.50	-0.004
Unpaid work / unemployed	0.25	0.43	0.23	0.42	0.049
Inactive/others	0.09	0.29	0.09	0.29	-0.010
Local employment rate	0.09	0.07	0.09	0.07	0.033
Return migrant in 2013	0.25	0.43	0.17	0.38	0.185
Household receives remittances	0.54	0.50	0.60	0.49	-0.102
Number of migrants at baseline	2.09	1.36	1.94	1.68	0.096*
Region (Base = Brong Ahafo)					
Northern	0.14	0.35	0.26	0.44	-0.293***
Upper East	0.20	0.40	0.15	0.36	0.137
Upper West	0.13	0.34	0.12	0.32	0.044
Volta	0.22	0.42	0.30	0.46	-0.177

note: * $p<0.01$, ** $p<0.05$, *** $p<0.1$

About Migrating out of Poverty

Migrating out of Poverty research programme consortium is funded by the UK's Department for International Development (DFID). It focuses on the relationship between migration and poverty – especially migration within countries and regions – across Asia and Africa. The main goal of *Migrating out of Poverty* is to provide robust evidence on the drivers and impacts of migration in order to contribute to improving policies affecting the lives and well-being of impoverished migrants, their communities and their countries, through a programme of innovative research, capacity building and policy engagement.

Migrating out of Poverty is coordinated by the University of Sussex and led by Research Director Dr Priya Deshingkar and Dr Robert Nurick as Executive Director. Core partners are the Centre for Migration Studies (CMS) at the University of Ghana, and the African Centre for Migration & Society (ACMS) at the University of the Witwatersrand in South Africa, Organisation for Social Science Research in Eastern and Southern Africa (OSSREA) at Addis Ababa University, Ethiopia and L'Université Assane Seck Ziguinchor (UASZ) in Senegal. Past partners included the Refugee and Migratory Movements Research Unit (RMMRU) in Bangladesh, the Asia Research Institute (ARI) at the National University of Singapore; and the African Migration and Development Policy Centre (AMADPOC) in Kenya. Please visit the website for more information.

Migrating out of Poverty
University of Sussex, Arts B
Brighton BN1 9QN, United Kingdom
Email: migrationrpc@sussex.ac.uk
Web: http://migratingoutofpoverty.org
Twitter: @MigrationRPC
Facebook: /migratingoutofpoverty
Blogger: migratingoutofpoverty.blogspot.co.uk