Does Migration Improve Living Standards of Migrant-Sending Households? Evidence from Rural Ethiopia

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Abstract

This paper aims to evaluate the impact of migration on household welfare, in particular the consumption expenditure in Ethiopia, using cross-sectional data collected from 1,200 rural households from four different regions in 2014. We estimate a counterfactual distribution of household consumption per capita, using a Heckman selection model to control and test for selection bias, to analyse to what extent households have gained from having a migrant. Our results suggest that on average, migration has a positive impact on the rural living standards but that gains are not distributed evenly across the consumption distribution. We find that poorer households in fact experience a decline in living standards by having a migrant..

Keywords: Migration, Remittances, Counterfactual analysis, Heckman model, Consumption, Welfare

Executive Summary

This paper reports on preliminary attempts at estimating a counterfactual for households with migrants: what might their household consumption level been had one or more of their members not actually migrated. This is a simulated or predicted scenario as it is impossible to observe the counterfactual in practice. We use data from our MOOP Ethiopia Household Surveys collected in 2014, from a sample of 1200 households.

Our methodology involves using a model of the determinants to consumption of households without migrants to predict the counterfactual consumption of households with migrants. We address the potential for selection bias using a two-stage Heckman model, modelling first the probability of being a household without migrants and then exploring the determinants of consumption. We compare the predicted counterfactual consumption distribution with the actual distribution observed for households with migrants. The paper also provides a critique of our methodology.

We draw four main findings from our preliminary research. First, we find that selection bias is found to be statistically insignificant. This implies that the bias resulting from estimating the counterfactual consumption expenditure; based on the observable characteristics of the households without migrants, selected at random, would be very small. While this is at first sight surprising, ours is not the only study that finds that selection bias is not statistically significant (e.g. Barham and Boucher (1998) and Adams (2006b).

Secondly, both the OLS and selection-corrected Heckman model estimates are, for the most part, consistent with the hypothesis that migration has a positive impact on consumption expenditure. Comparing the estimated counterfactual consumption expenditure with the actual consumption expenditure implies that, on average, had the migrant member stayed at home, household consumption expenditure would have been 7% lower.

Thirdly, there is substantial variation around the average. The counterfactual consumption expenditure is higher than the actual consumption expenditure for households at the bottom of the distribution. This suggests that poorer households are made worse off by migration. However, actual consumption exceeds counterfactual consumption expenditure on average, and so we see that migration has improved the welfare of households along the middle and upper distribution of consumption expenditure.

Finally, we observe a string association between a household receiving remittances from its migrant(s) and the likelihood that it experiences a welfare gain from migration.

Based on our findings the following recommendations might be considered. Firstly, policy-makers should consider removing *de jure* and *de facto* restrictions on migration, such as land tenure policies that prevent households from selling or mortgage agricultural land. Efforts to reduce the costs of migration and in particular the costs of sending remittances, perhaps through opening up the remittance market, may help households to reap more of the potential benefits of migration. Secondly, given a large proportion of our sampled migrants are women, who have migrated to the Middle East to work as domestic workers, where they are generally less well-paid than other migrant workers, policy-makers could examine the migrant recruitment industry and consider how it may support prospective migrants pre-departure in their job search and negotiations over pay and working conditions and/or lobby for change in policies and practices at destination to protect current migrants.

1. Introduction

1.1 Background to the research

With 37% of its population living on less than $1.25 a day, Ethiopia is one of the poorest countries in the world (UNDP, 2016). As demonstrated by Table 1.1, over the past three decades the volume and direction of international migration flows has been changing. The literature on Ethiopian migration and history highlights three specific phases: firstly, political migration sparked by the 1974 revolution and unstable political climate. This was followed by economically oriented migration in the 1980s. Environmental degradation, poverty, famine and stagnation in the agricultural sector were all push factors for outward migration in Ethiopia. In 1994, Eritrea gained its independence from Ethiopia, which resulted in the resettlement and migration of large numbers of Ethiopians (Migration Policy, 2007).

Table 1.1: International Migration Patterns in Ethiopia from 1985-2015

	1985-90	1995-00	2005-10	2010-15
Average annual rate of change	3.3	2.9	2.7	2.6
Annual rate of natural increase*	29.2	30.3	26.9	25.6
Crude net migration rate*	3.5	-1.0	-0.1	-0.1
Total net migration ('000)	780	-306	-50	-60

*Per 1,000 population

***Source*: United Nations International Children's Emergency Fund (UNICEF) database (2016)**

According to the *new economics of labour migration* (NELM), migration is a household strategy for "migrating out of poverty". It can loosen investment and production constraints and overcome market failures, such as imperfect insurance and credit markets through remittance flows and by spreading risk across diverse activities and sectors (Taylor, 1999). Migration can increase the welfare of households; it does this by increasing their consumption and investment via the receipt of remittances in order to compensate for the loss of the number of members of working age that have left the household, and also for households with international migrants by offering a stable source of foreign exchange revenues.[1]

However, despite sustained economic growth in Ethiopia in recent years, Ethiopia remains a poor country, as evidenced by the indicators highlighted in Table 1.2.[2] Current issues, such as

[1] Remittances are the sum of personal transfers of migrants, including transfers in cash or in kind, between resident and non-resident individuals. Both internal and international remittances can have a profound impact. At the macroeconomic level, remittances increase fiscal income, sustain investment and consumption during downturns. This is because they are countercyclical and act as shock absorbers, increase foreign reserves and achieve economic growth. At the microeconomic level, remittances improve the living conditions of recipients by increasing household expenditures on categories considered as particularly important for economic development, and by reducing poverty.

[2] Over the last decade, Ethiopia experienced an average GDP growth rate of 11 %, which is about double the average growth for Sub- Saharan Africa in 2012/13, thus making it one of the fastest growing non-oil producing African countries (UNDP in Ethiopia, 2016).

low paid jobs, rising cost of living, fast-climbing youth unemployment at 17.4% in 2015 (CSA, 2016), job insecurity and the economy's overreliance on the agricultural sector, all act as push factors of migration.[3] Hence, maximizing the benefits from migration is a potentially viable mechanism to alleviate unemployment and poverty.

Table 1.2: Main development and economic indicators for Ethiopia (1990-2015)

	1990	2000	2010	2013
GDP per capita (PPP in thousands of US dollars)	396	465	985	1139
Annual CPI Inflation Rate (%)	5.2	6.2	33.5	7.2
Unemployment Rate (%)	6.2	7.5	5.2	8.1
Life expectancy at birth	46.9	52.2	61.5	63.6
Adult literacy rate (ages 15 and older)	27.0	35.9	39.0	49.1
Combined gross enrolment ratio in education (%)	20.4	29.1	55.5	57.4
Human development index (HDI)	-	0.27	0.39	0.40

***Source*: International Monetary Fund (IMF) and World Economic Outlook (WEO) database**

The top destination countries of international Ethiopian migrants are Sudan, the US, Israel, Djibouti, Kenya, Saudi Arabia, Canada and Germany (World Bank, 2011).[4] However, internal migration is also common, as evident in the declining percentage of rural population over time as reported in Table 1.3, for the purpose of marriage and as an adaptation mechanism and survival strategy to poor agricultural and living conditions (Fransen and Kuschminder, 2009).

Table 1.3: Rural and urban population distribution in Ethiopia

	1990	2000	2010	2013
Males ('000)	23,961	32,965	43,566	47,073
Females ('000)	24,081	33,059	43,530	47,027
Total ('000)	48,043	66,024	87,095	94,101
Percentage urban population	13	15	17	18
Percentage rural population	87	85	83	82

***Source*: United Nations International Children's Emergency Fund (UNICEF) database (2016)**

[3] Agriculture is the largest sector in the Ethiopian economy contributing over 40% to Gross Domestic Product (GDP), 60 percent of exports, and employing approximately 85% of the country's population (World Bank, 2016).
[4] In 2010, the total Ethiopian migrant stock was 620,000, which was 0.7% of the 82.8 million population. Of these, 61% migrated to Sudan, the US and Israel, 11.2% and 4.6% resided in Western Europe and Saudi Arabia respectively (World Bank, 2016).

This paper tests the hypothesis that migration benefits households left behind in rural areas, using 2014 household survey data from *Migrating out of Poverty (MOOP) Research Programme Consortium (RPC)*. A counterfactual consumption distribution is constructed to explore to what extent households are better or worse off having experienced migration. We use both OLS and a Heckman two-stage model approach to estimate consumption expenditure under the counterfactual scenario had the migrant stayed at home.

1.2 Organization of the study

The structure of this paper is outlined as follows. The next section provides an overview of the theoretical and empirical literature relating to the impacts of migration on household welfare for sending regions. Section 3 presents the conceptual framework. Section 4 describes the data source and provides descriptive statistics. This is followed by the methodology section, which details the OLS and Heckman two-stage section models and outlines, *inter alia*, the methodology used to control for selection bias. Section 6 provides a discussion of the results and the penultimate section summarizes limitations of the study and areas for further research. The final section summarizes the main findings and overall conclusions together with relevant public policy recommendations.

2. Literature review on the impacts of migration

The current literature that evaluates the impact of migration on the welfare of households is largely inconclusive and findings vary from study to study. This section reviews the prevailing theories of migration and emphasizes the key methods and findings in the literature that are relevant to the analysis undertaken in the dissertation.

2.1 Theoretical foundation of migration impacts

Four main theories dominate the migration literature: the neo-classical equilibrium theory (migration optimists), the historical-structural theory (migration pessimists), the new economics of labour migration (NELM) theory, and network theory.

On one hand, neoclassical migration theory tends to see migration in a positive light. It views migration as an investment where the income gains and benefits that accrue from migration must exceed the costs associated for migration to take place (Borjas, 1989). Todaro (1969) explains migration within the context of rural-urban migration by perceiving it as a process of price equalization. This is where the free movement of labour is expected to lead to increasing scarcity of labour, which will then result in higher wages and increasing marginal productivity in migrant sending communities. However, such models rely heavily on the role of wage differentials. From an international migration perspective, migration is viewed as an essential transfer of investment capital. The flow of remittances, skills, knowledge and experience that migrants acquire whilst abroad are expected to be invested in their country of origin. Thus, return migration is viewed as a vital agent for change. This is a highly optimistic view as it assumes that all migrants return: that may not always be the case.

On the other hand, the historical-structural theory views migration as more negative. It contends that the sum of remittances that migrants send home is too small to make a meaningful contribution to the national economy. Additionally, it argues that it is generally not the poorest in society that choose to migrate. The resulting remittances further widen the inequality within the communities of origin (Lipton, 1980). Remittances are mainly spent on conspicuous consumption and unproductive investments (Lipton, 1980), causing inflationary pressures (Russel, 1992). Furthermore, brain drain (Adams, 1969) from the loss of relatively educated migrants is significant, so is typically blamed for causing labour shortages and the development of remittance-dependent communities (Lipton, 1980). It also contends the unequal distribution of wealth and inequality between the North and South due to the exploitation of migrants from the South. However, the pessimistic view, which sees international migration as a win-lose situation, does not take into consideration the role of migrants and households in the decision to migrate. Table 2.1 summarizes the opposing views of these two schools of thought on migration and development.

Table 2.1: Opposing views on migration and development

Migration optimists		Migration pessimists
Functionalist	⟷	Structuralist
Neo-classical	⟷	Neo-Marxist
Modernization	⟷	Disintegration
Net North-South transfer	⟷	Net South-North transfer
Brain gain	⟷	Brain Drain
More equality	⟷	More inequality
Remittance investment	⟷	Consumption
Development	⟷	Dependency
Less migration	⟷	More migration

***Source*: De Haas, (2008)**

The NELM approach pioneered by Stark and Bloom (1985), takes into account the critical joint role of the migrant and the family in the decision to migrate. Migration is perceived as a "household risk spreading strategy in order to stabilise income" (De Haas, 2008)[5] and a source of investment capital to overcome market constraints. Hence, unlike the neoclassical equilibrium and historical structuralism approach, NELM considers remittances as "one of the most essential motives for migrating" (De Haas, 2008), which are motivated by pure altruism, pure self-interest or elements of both. This approach is more appealing as there is credible empirical evidence to support it and because it considers the wider social context.

Finally, the network theory of migration contends that migrants gravitate towards places where their friends and family have migrated to reduce potential risks of the unknown and to

[5] In other words, migration is perceived as a household response to income risks since migrant remittances serve as a form of income insurance for the origin households by diversifying earnings (Lucas and Stark, 1985).

have a social support network upon arrival (De Haas, 2008).[6] However, this theory does not account for structural or individual factors that may promote or hinder migration.[7]

This paper strives to analyse the impact of migration on consumption expenditure by taking into account the different stakeholders; migrants, migrants' families, and regions of origin. Although each theory described above explains different challenges and opportunities of migration, the NELM "pluralist" approach is applied due to its comprehensive nature.[8]

2.2 Empirical evidences of migration impacts

The literature on migration covers not only the overall impact of migration on poverty, but also examines specific channels, such as remittances. This paper does not formally model the transmission mechanisms of, for example, remittances. Hence, the literature on remittances is only briefly mentioned as interesting insights on methodology can be drawn from them. However, the bulk of this literature review centres on the aggregate impact of migration on poverty that addresses the question; is migration good for poverty reduction?

On the whole, the literature supports the view that migration and remittances increase the income of migrant households and reduce poverty, however, the impact on income inequality is more contested.[9] However, one should be cautious of such findings as the poverty-reducing impact depends on the country and type of migration flow: remittances are more likely to have a poverty-reducing effect when received by poorer households (Gupta *et al*, 2009). In addition, not all migrant-sending households receive remittances. Hence, migration does not always have positive and poverty-reducing impacts on household levels.[10]

The four main methodological problems encountered by any economic research on migration and its impact on consumption expenditure are as follows. Firstly, selection bias, which refers to the selectivity of people who tend to migrate. For instance, if more educated and wealthier households are more likely to produce migrants ("positive selection") or less likely to produce migrants ("negative selection"), then it would be wrong to identify the effects of migration by simply comparing the consumption expenditure of migrant and non-migrant households. Secondly, the omitted variable problem, which commonly arises, as households may produce migrants on the basis of unobservable characteristics: these are difficult to obtain so are omitted from the analysis resulting in biased results. The third problem is reverse causality. While migration may help improve households' consumption expenditure, the level of consumption expenditure may also influence whether the household produces migrants.

[6] There are other theories such as the life cycle model, which shows that life course events such as the beginning of a job or retirement (Mincer, 1978) influence the decision to migrate.
[7] It is also often criticized for not providing insight into the mechanisms that lead to the weakening of migration networks (Massey *et al.,* 1998).
[8] The NELM theory approach is applied and tested by taking into account the following characteristics and more in the estimated models: the household, household head, regional, etc. These are listed in Table 5.2.
[9] On average most of the literature finds that when remittances are included in household income the share of people living in poverty in a country falls, on average, by 3-5%, which is fairly modest.
[10] Similarly, not all households that receive remittances have migrants; they might receive remittances from non-household members.

Thus, it is essential to consider reverse causality; otherwise, this may lead to erroneous results. Fourth, many decisions on migration and consumption are made simultaneously. Hence, variables that "cause" migration also "cause" changes in household consumption expenditure (Adams, 2011)

Few empirical papers relate the impacts of migration directly to consumption expenditure. This literature review focuses on the three most relevant papers, which employ different solutions to address the methodological problems mentioned above. To examine the income gains from international migration, McKenzie *et al*. (2006) use household survey data for 438 households in Tonga. To address potential selection bias, the authors use a migrant lottery system whereby New Zealand allows a certain quota of Tongans to migrate each year.[11] The authors find that migrants are positively selected in terms of both their observable and unobservable skills. Using distance from the New Zealand consulate in Tonga as an instrument for migration when looking at impacts on the migrant in New Zealand, provides better estimates of the income gains from migration. This is the only randomized experiment to be conducted thus far and overcomes the methodological issues highlighted earlier as it yields unbiased estimates.

To examine the impact of international migration on income distribution, Barham and Boucher (1998) use household survey data from 152 Nicaraguan households. However, since migration and remittances may be endogenous, the authors estimate counterfactual incomes for migrants had they stayed and worked at home, while controlling for selection bias using a two-stage Heckman procedure. The authors find no evidence of selection bias in the migration process, suggesting that migrants are randomly selected from the population. This is a popular approach adopted by Adams (2006a, 2006b). However, in most cross-sectional datasets, it is proven to be quite difficult to identify an exogenous variable in the first stage selection model that 'causes' migration, but has no direct impact on income/consumption in the second stage equation. Regarding income inequality, authors find that income inequality is higher when international remittances are included in the household income. However, this study does not control for selection in the receipt of remittances and imputes migrant incomes at home, which is not easy.[12]

Beegle *et al.* (2011) evaluate the impact of migration on poverty and wealth by using a panel dataset covering periods 1991-2004, by tracking internal and international migrants in Tanzania before and after migration. The authors address unobserved heterogeneity by producing a difference-in-difference estimation of the impact of migration by constructing fixed effects regressions to control for any fixed individual factors that affect consumption. Second, they control for initial household fixed effects (IHHFE) in the growth rate of consumption, hence identifying the impact of migration on income using within household

[11] This allows the authors to estimate the income gains from migration by comparing the incomes of: those who did not apply, to apply to the lottery; those who were selected in the lottery, but did not migrate; and those who were selected and migrated.

[12] An alternative method of constructing a counterfactual is using "propensity score matching" (PSM), which awards "points" to migrant and non-migrant households with similar observed characteristics in order to compare a household with a migrant to an "identical" household without a migrant. We hope to explore this approach in further research.

variation in migration. The authors extend the analysis to 2SLS estimates, to deal with potential endogeneity, using three types of variables as instruments for the decision to migrate: pull factors (age), push factors (economic shocks) and social relationships (household head). Results show that migrants experienced a large and robust 36-percentage point higher consumption growth compared with those who stayed behind. This approach addresses many possible sources of heterogeneity.

Table 2.2 reports a summary of the main studies, including, to the author's knowledge, only two empirical papers that cover Ethiopia (Anderson, 2014; Berhe, 2012).

Table 2.2: Summary of studies on impact of migration and remittances on welfare outcomes

Paper	Data source & time period	Data type	Estimation methods	Key relationship	Relevant Key Findings
Adams and Page (2005)	Household surveys in 71 developing countries	Cross-sectional dataset	Instrumental variables approach using distance between remittance-sending and receiving countries to instrument for remittances.	Impact of International remittances and poverty	On average, and after controlling for the possible endogeneity of international remittances, a 10% cent increase in per capita international remittances leads to a 3.5% decline in the share of people living on less than $1.00 per person per day.
Acosta *et al.* 2008)	Household survey for ten Latin American and Caribbean (LAC) countries.	Cross-country panel dataset	Two-stage Heckman model	Impact of remittances on poverty	International remittances have a positive, albeit 'modest' impact on poverty in Latin America: on average, poverty headcounts in Latin America fall by 0.4% for each percentage point increase in the remittances to gross domestic product (GDP) ratio.
Lokshin e*t al.* (2010)	Nationally-representative household survey from Nepal	Panel dataset	Instrumental variables approach and a full information maximum likelihood model	Impact of international migration and remittances on poverty	Migration reduces poverty in Nepal: almost 20% of the decline in poverty between 1995 and 2004 in Nepal can be attributed to increased internal and international migration.
Anderson (2012)	IS Academy: A World in Motion Migration and Development household survey for 1,280 Ethiopian households	Cross-sectional dataset	Propensity score matching (PSM) approach	Impact of remittances on household's subjective wellbeing and assets.	A strong positive effect of remittances on household subjective wellbeing. No statistically significant effect of remittances on current household productive asset holdings or accumulation
Beyene (2014)	Ethiopian Urban Socio-economic Survey (EUSS) of 1,400 households from 2004	Cross-sectional dataset	Two stage Heckman Model	Impact of remittances on poverty and inequality in Ethiopia	A significant reduction in poverty while inequality does not change. The head count, the poverty gap and the squared poverty gap ratios decreased by 2.5%, 1.1% and 0.6% respectively.
Beegle *et al.* (2011)	The Kagera Health and Development Survey (KHDS) 1991 and 2004	Panel dataset	Difference-in-difference model, households fixed-	Impact of migration on living standards	Migrants experienced 36 percentage points higher consumption growth compared with those who stayed behind.

	(13 years) survey of 915 households in Tanzania	effects estimator, 2SIS estimates and IV estimates

3. Conceptual framework

In order to investigate whether migration improves household welfare of migrant-sending households we compare consumption for households with and without migrants. A crude comparison however of observed consumption levels of the two groups however is not satisfactory as this merely tells us if, currently, households with migrants are worse or better off than households without migrants. Such a comparison would not tell us how households with migrants had improved or worsened their standard of living through the act of having a migrant. The conceptual problem is understanding the counterfactual: what might household expenditure have been if their migrant had not migrated? This is not something that can be observed – it is a hypothetical scenario of an outcome that has not actually taken place. Therefore, researches need to consider methodologies that allow them to construct a counterfactual, and the literature review has hinted at some of the options available.

Most would agree that the best option is to collect and use panel data on households, and compare the trajectories of households as they experience migration episodes. This method is not without its difficulties as it is not plausible to assume that households who go on to have a migration episode were necessarily on the same original trajectory as households without migrants. There are econometric methods for handling this, for example using propensity score techniques to match households with and without migrants on their observable characteristics, simulating a treatment and control group. However, panel data with large enough sub-samples of households with migrants is rare, so usually researchers are faced with adopting a methodology that works with cross sectional data, as we have for Ethiopia.

One way of thinking about the counterfactual is to approach it from a selection angle: households with migrants have observable and unobservable characteristics that make them more likely to have a migrant. For example, they might have higher savings which permits them to finance migration, or higher levels of human capital which makes it more likely they move to take up higher paid employment. Alternatively, they may be less well endowed, with low levels of assets, which are not productive enough to support their families; there may be market failures, which mean poorer families lack access to credit, with remittance being the only source of finance. These characteristics, which influence the likelihood of someone migrating, or a household having a migrant, are likely to be correlated with consumption expenditure, this failure to account for the selection process, may result in biased estimates of the determinants of consumption and the role of migration.

In this paper we adopt a common solution for addressing the problem of selection bias by using a two-stage Heckman model, which first models the probability of a household having a migrant and then uses these probabilities to a model of consumption. We compare the results obtained from the selection-corrected method with those that are uncorrected. More details on the methodology are provided below.

4. Data and descriptive statistics

4.1 Data

This paper presents new evidence utilizing recent data from the 2014 *Migrating out of Poverty (MOOP) Research Programme Consortium (RPC),* which collects detailed household data. The survey covers 7,876 individuals from 1,200 rural households, in four main regions out of the nine administrative regions of Ethiopia: Tigray, Amhara, Oromiya and SNNP (Appendix 2), which are subdivided into *woredas* and *kebeles*[13]. The sample was distributed evenly across the four regions as 23.4%, 23.26%, 26.52% and 26.82%, respectively (Appendix 3), with *woredas* and *kebeles* chosen at random to represent both highly connected rural areas and more distant areas. Households in each *kebele* were rapidly screened by the fieldwork teams, with advice from local officials, into two lists of households with migrants and households without migrants, and then sampled at random from those two lists. The sample is not nationally representative, nor representative of each region as a whole, but can be seen as being representative of the rural population in each region.

From the 1,198 households, 404 have no current migrant family member and 794 have at least one migrant family member. Out of the 794 migrant households, 231 have an international migrant, 446 have internal migrants, and 117 have both categories of migrants (Appendix 4). Migration is a common phenomenon within Ethiopian communities in both rural and urban areas especially to the Middle East. Of international migrants, 26% migrate to the Middle East or an Arab country, as shown in the distribution of migrants by their destination in Appendix 5. Moreover, about 56% of households with migrants have more than one migrant member (Appendix 6).

The purpose behind the survey was to identify and examine households with and without migrants, so it includes detailed information on all the individuals resident at home and currently away. A migrant is defined as a former member of the household in which the interview is being conducted who is not currently living in the household and who has moved away from their *kebele* during the past ten years, and has been away for at least three months or is expected to be away for three months or more.[14] Based on the NELM theory assumption that the decision to migrate is a collective family decision, the analysis is conducted at the household level. Hence, all variables employed are at the household level, with each observation representing one household.

4.2 Descriptive statistics

Households are classified as households with migrants and households without migrants. Table 4.1 and Figure 4.1 present the annual consumption[15] of both types of household.

[13] Ethiopia is ethnically administratively divided into nine regional states and two chartered cities (Addis Ababa and Dire Dawa), 68 zones, 550 *woredas* (districts) and many *kebeles* (the smallest administrative unit in Ethiopia, translated as "neighbourhood").

[14] This excludes much short-term, temporary and circular migration.

[15] Consumption includes a range of food and non-food items, including food produced by the household for own consumption and gifts, and is annualised and expressed in per capita terms. The full set of items covered

Surprisingly, they show that total consumption and per capita consumption are statistically significantly larger on average for households without migrants compared to households with migrants, implying that households without migrants are on average better off than households with migrants. However, this does not demonstrate that migration is a "bad thing" as this simplistic comparison does not tell us anything about the condition of households prior to migration occurring.

Table 4.2 compares the core characteristics of migrants and non-migrants in the sample. The statistics displayed show that migrants are more likely to be single, sons/daughters of the household head and better educated than non-migrants, which all suggest a positive selection process. Interestingly, very few household heads[16] seem to migrate.

Table 4.3 describes the demographic characteristics of household heads that have migrants and households without migrants. The two categories of households have statistically significant differences in their observed characteristics. Individuals are more likely to migrate if the household head is male, approximately 70% and 80% of households with migrants and households without migrants, respectively, are headed by males. Females head almost 30% of households with migrants compared to only 20% of households without migrants, so one can argue that having a female-headed household appears to increase the probability of having a migrant. However, it can be difficult to understand the results as it is not known if females are "real" female-headed households or if there is an absent spouse.[17]

Table 4.4 reports summary statistics for the main variables used in the analysis, and The summary statistics suggest, *a priori*, that households without migrants seem slightly better off, not just in terms of their per capita consumption expenditure, but in most of the dwelling characteristics. A significant difference is that households with migrants receive 38 times more remittances than households without migrants.

Based on Table 4.5, which demonstrates the annual per capita expenditure by region, which allows for regional analysis, Amhara has consumption levels above average while Tigray, Oromiya and SNNP consume below average of the total sample. This supports the inclusion of regional variables in the analysis, as there is clearly a consumption expenditure gap among the different regions.

can be seen in the questionnaire and data set available on the MOOP website http://migratingoutofpoverty.dfid.gov.uk/

[16] The household is defined using the "common pot" approach commonly adopted, and the head is identified by the household respondents.

[17] The direction of causality is not clear because this may be due to the "real" head leaving to become a migrant and the spouse becoming the head as evidenced in Table 5, which shows that approximately 30% of migrants are married.

Table 4.1: Summary of consumption for households with and without migrants

	Households with migrants	Households without migrants	All Households
Total Annual Consumption (in Birr)	23,264	21,749	22,757
	(13,173)	(12,346)	(12,916)
Total Annual Consumption Per Capita (in Birr)	3,365.19	4,551	3,762
	(1,867)	(2,825)	(2,302)

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Notes: Standard deviations given in brackets. The conversion rate of 1 US Dollar in terms of Ethiopian Birr is 20.20 Birr as at 31st December 2014.

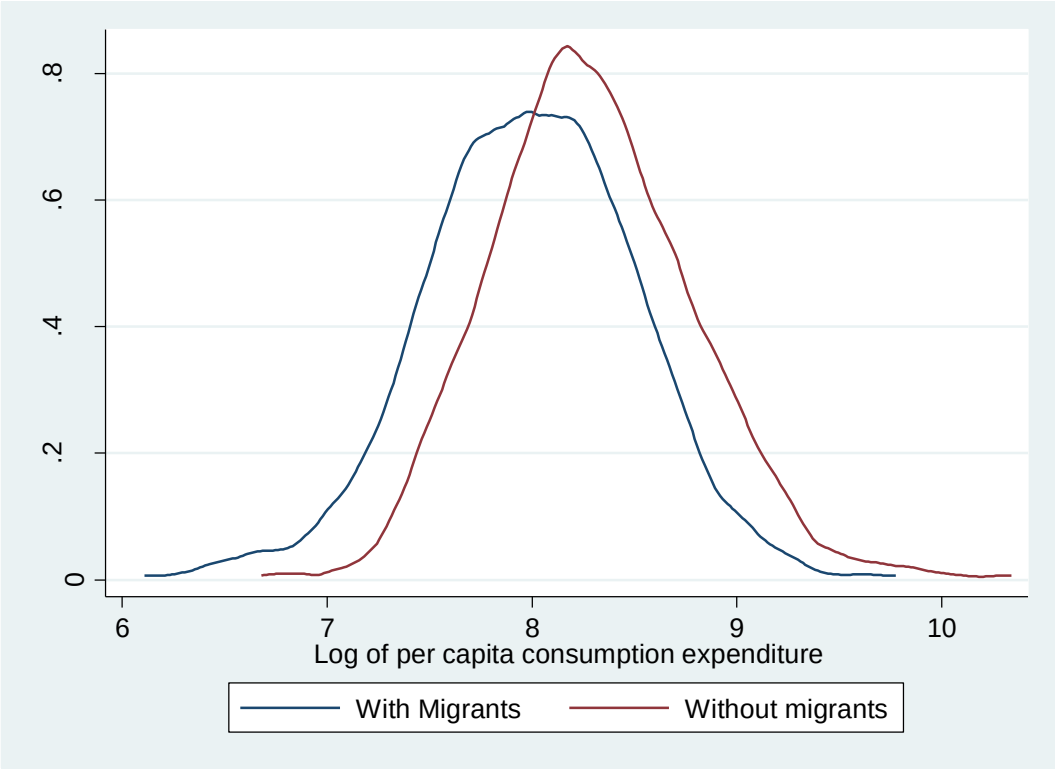


Figure 4.1: Comparison of distribution of Migrant and Non-migrant Households
***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Table 4.2: Migrants and non-migrants characteristics

Variable	Migrants	Non-migrants
Gender (%)		
Male	52.2	50.1
Age		
Mean Age	25.2	24.7
Relation to household head (%)		
Household head	0.7	18.9
Spouse	4.4	13.1
Child/Adopted Child	90.9	57.6
Grandchild	0.9	6.6
Sister/Brother	1.1	0.5
Other family	2.9	3.3
Civil status (%)		
Single	65.1	52.8
Married	29.9	39.1
Divorced	4.1	2.2
Separated	0.5	0.6
Widowed	0.5	53
Education (%)		
Incomplete primary	22.0	63.8
Incomplete secondary	54.5	27.6
Secondary or higher	19.0	2.1
Other	4.4	6.5
Observations	1530	6,346

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Table 4.3: Descriptive summary of demographic characteristics of household heads

Variable	All Sampled Household		Households with migrants		Households without migrants		Difference in Mean		P-value
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	Std. Err	
Aged of HH head	52.2	15.2	55.6	13.7	45.5	15.8	10.1	0.9	0.000***
HH size	6.53	2.4	7.2	2.24	5.2	2.1	2.0	0.1	0.000***
Characteristics	**All Sample HHs**		**Households with migrants household head**		**Households without migrants household head**				**χ^2 (P) value**
Sex of HH head	N	%	N	%	N	%			
Female	320	26.7	242	30.5	78	19.3			17.2
Male	877	73.3	551	69.5	326	80.7			(0.000***)
Total	1197		793		404				

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Note: *, ** and *** represent significance at the level of 10 percent, 5 percent and 1 percent, respectively using a two tailed test.

Table 4.4: Summary statistics of main explanatory variables for migrant and non-migrant households

	Type of household					
	With Migrant		Without Migrant		All	
	Mean	Std.Err	Mean	Std.Err	Mean	Std.Err
Household Characteristics						
Household size	7.2	0.1	5.2	0.1	6.5	0.07
Household size excluding migrants	5.3	0.1	5.2	0.1	5.3	0.06
Gender ratio	0.5	0.006	0.5	0.01	0.5	0.005
Dependency ratio	0.1	0.004	0.2	0.01	0.2	0.005
Percentage of self-employed (%)	0.7	1.6	0.7	0.02	0.7	0.01
Remittance	0.6	0.02	0.1	0.02	0.4	0.01
Land ownership (control group: own land in urban area)						
Own land in village	1.0	0.003	1.0	0.01	1.0	0.004
Own agricultural land	1.0	0.006	1.0	0.01	1.0	0.005
Own commercial land	0.02	0.005	0.03	0.008	0.02	0.004
Household Head Characteristics						
Male household head	07	0.02	0.8	0.02	0.7	0.01
Marital Status	0.7	0.02	0.8	0.02	0.7	0.01
Muslim	0.4	0.02	0.4	0.03	0.4	0.01
Age of household head	55.6	0.5	45.5	0.8	52.2	0.4
Age of household head squared	3,283.0	55.1	2,317.8	83.3	2,957.3	47.9
Human Capital Characteristics						
Maximum education level of household	5.4	0.2	5.8	0.4	5.5	0.2
Region (control group: SNNP)						
Tigray	0.3	0.02	0.3	0.02	0.3	0.01
Amhara	0.3	0.02	0.3	0.02	0.3	0.01
Oromiya	0.2	0.02	0.3	0.02	0.3	0.01
Household Dwelling Characteristics						
Ownership of House	1.0	0.004	1.0	0.01	1.0	0.004
Number of rooms pp	0.3	0.01	0.4	0.02	0.3	0.01
Access to electricity	0.3	0.02	0.2	0.02	0.3	0.01
Fuel	0.1	0.003	0.2	0.009	0.2	0.004
Wood wall material	0.1	0.003	0.2	0.008	0.1	0.003
Mud floor material	0.2	0.003	0.2	0.008	0.2	0.004
Public well	0.1	0.003	0.1	0.007	0.09	0.003
Pit toilet	0.1	0.003	0.2	0.008	0.2	0.003

# of Observations	793	404	1,197

***Source*: Constructed by author using Migrating out of Poverty (MOOP) Household Survey**

Table 4.5: Annual per capita consumption expenditure by region

	Type of Household		
	Migrant	**Non-migrant**	**All**
Tigray	3339	4460	3341
	(195)	(223)	(117)
Amhara	3116	4319	4474
	(116)	(265)	(169)
Oromiya	4023	5341	3514
	(165)	(366)	(122)
SNNP	2987	4054	3713
	(128)	(224)	(102)
All	3365	4551	3762
	(66)	(140)	(66)

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Notes: Standard deviations in parenthesis

Concerning the motivations behind migration, the survey revealed that the majority of migrants are seeking work or a new/better job, in an attempt to increase their income. The frequencies of reported reasons for migration are shown in Table 4.6.

Table 4.6: Reasons for migration

	Frequency	**Percent**
Job transfer	13	0.9
New Job	638	41.7
Seek Work/Better Job	624	40.8
Study/training	112	7.3
To get married and follow the spouse	110	7.2
Family dispute	5	0.3
To accompany family	9	0.6
Marriage breakdown	6	0.4
For medical treatment	3	0.2
To experience a different lifestyle	3	0.2
Others	7	0.5
Total	1530	100

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

5. Empirical models and estimation methods

5.1 OLS estimation

One of the earliest attempts to estimate counterfactuals was employed by Adams (2006b) for Ghana using GLSS 1999 data, focusing on the effect of *remittances* on consumption.[18] In this dissertation, Adams' approach is adapted in order to study the impact of *migration* on consumption. Consumption of households is first modelled with no migrants; those predicted parameter estimates are used to predict what consumption might have been for households with migrants, adjusting for their household characteristics to those prior to migration (where possible). The factors associated with differences between the actual and counterfactual estimates of consumption are explored using a probit regression.

The consumption expenditure model for the subsample of households with no current migrants in equation (1) is estimated as follows:

$$Ln(PREX_{ij}) = \alpha_0 + \sum_{i=1} \beta_i X_i + \sum_{i=1} \gamma_i H_i + \sum_{i=1} \alpha_i K_i + \sum_{j=1} \theta_{ij} R_{ij\,j} + \sum_{i=1} \delta_i D_i + \mu_i \qquad (1)$$

where $Ln(PREX_{ij})$ is the log of per capita household consumption expenditure on food and non-food items of household i in region j (Appendix 7)[19]. X_i is a vector of household characteristics (demographic and land ownership), H_i is a set of household head characteristics (age, gender and religion), K_i is a set of human capital characteristics (maximum education) of the household, R_j is a set of regional fixed effects, D_i is a set of household dwelling characteristics, and μ_i represents random shocks and possible unobserved heterogeneity in consumption expenditure.

Household consumption expenditure on food and non-food items were selected as dependent variables, instead of household income, for three main reasons. Firstly, expenditures are more accurate to measure than income because a majority of the labour force in households surveyed are self-employed in agriculture, which raises many inherent problems in measuring their income. Secondly, due to fluctuations in income, people tend to use savings to smooth their consumption, so expenditure is a more accurate reflection of an individual's welfare overtime as it is less prone to shocks. Thirdly, respondents may be less diffident at providing this information than income (Adams, 2006b). On the other hand, two drawbacks of per capita consumption expenditure are the assumption that everyone within the household receives an equal allocation of items consumed irrespective of gender or age, and by using per capita we ignore potential economies of scale.

[18] Data for the study came from a Ghana Living Standards Survey (GLSS) conducted by the Ghana Statistical Service over a 12-month period, April 1998 to March 1999 (Adams, 2006b).

[19] Per capita household consumption expenditure is logarithmically transformed as the nominal amount is heavily skewed, so taking the log transforms the variable into an approximately normal distribution.

The coefficient estimates obtained from the model show the extent to which each characteristic of their households predicts their consumption expenditure for households without migrants.

The coefficient estimates are applied to households with migrants to impute their consumption under a "no migration" scenario. This gives an estimate of what the consumption of households with migrants would have been if their migrant(s) had not migrated. Moreover, adjustment had to be made for some of the household characteristics such as household size, maximum education and demographic composition in order to accurately simulate the counterfactual scenario had the migrant actually stayed at home.[20] Then, the counterfactual consumption expenditure for households with migrants was compared to the actual consumption expenditure. A probit regression was estimated with the binary response variable denoted as $DIFFERENCE_{ij}$, which is set equal to 1 if the counterfactual is greater than the actual (i.e. households are made worse off by migration) and 0 otherwise. The difference is regressed onto all the independent variables to investigate what differences are attributed to as given by equation (4):

$$DIFFERENCE_{ij} = \alpha_0 + \sum_{i=1} \beta_i X_i + \sum_{i=1} \gamma_i H_i + \sum_{i=1} \alpha_i K_i + \sum_{j=1} \theta_{ij} R_{ij_j} + \sum_{i=1} \delta_i D_i + \mu_i \qquad (2)$$

Estimating equation 1 by OLS does not control for the selection problem involved with the migration decisions as described above and in Adams (1989).[21] Hence, this approach can be problematic leading to biased and inconsistent regression estimates.[22] Therefore, a common method applied for 'correcting' for this bias is a Heckman two-stage selection model (Heckman, 1979). The following section outlines a detailed overview of the Heckman method and procedure.

5.2 Heckman model

The majority of the literature on migration acknowledges the existence of selection bias. Therefore, to resolve the selection bias, a two-stage Heckman selection model was applied in order to capture the impact of migration on consumption expenditure. The Heckman two-stage selection model is based on two equations: first, a choice equation that captures the migration decision; second, a household per capita consumption expenditure equation, which measures household consumption for households, using just the sample of households that do not have a migrant.

The first-stage choice function is of the probability that a household does not have a current migrant and, given the binary nature of the dependent variable, is estimated with a probit

[20] For instance, household size was adjusted to include the migrant, similarly with the calculation of the dependency and gender ratio, the ratios had to be adjusted to include the migrants.

[21] Using the estimates obtained under OLS assumes households with and without migrants are drawn randomly, rather than self-selected, from the population. The estimated household consumption expenditure levels might conceal differences in expected household consumption expenditure of migrants that could be due to variations in unobserved characteristics that affect the probability of migration(Barham and Boucher, 1998).

[22] If households with migrants are positively or negatively selected, OLS estimates will be biased, potentially leading to over or under-estimation of the counterfactual expenditure level of household with and without migrants.

model, across all households in the sample. The second stage equation, which only applies to households without migrants, estimates the per capita consumption expenditure of the household as a function of all the relevant explanatory variables, described above. In order to identify the model, we require at last one variable to be included in the first stage equation that does not appear in the second stage, that is, one variable that we believe is correlated with the probability of being a household with no migrants but is not correlated with the consumption outcome. The literature suggest a number of potential identifying variables, commonly capturing migrant networks. We use two variables, the share of households at the *kebele* level which receive remittances (@in the style of add ref here) and, following Adams (2006b) in his study of Ghana, the age of the household head and its square. Those two variables were used on the basis that households with older household heads would have more members that are adults, which increases the probability of selecting into migration. The squared variable is included as the propensity to migrate is nonlinear to age. It peaks during the mid-twenties and declines over time (Plane, 1993).[23] In addition, Adam (2006) argues that the age of the household head has no direct impact on consumption after controlling for other relevant variables, such as the dependency ratio. With that in mind, the first stage choice function of the probability of a household having no migrant is given by equation (5).

$$M_H^* = \alpha_0 + \sum_{i=1} \beta_i X_i + \sum_{i=1} \gamma_i H_i + \sum_{i=1} \alpha_i K_i + \sum_{j=1} \theta_{ij} R_{ij\,j} + \sum_{i=1} \delta_i D_i + \sum_{i=1} \eta_i Z_i + \mu_i \quad (3)$$

$$M_H = \begin{cases} 1, & if\ M_i^* > 0 \\ 0, & if\ M_i^* \leq 0 \end{cases}$$

where M_H^* is the probability of not having a migrant member, Zi is the vector of identifying variables, and the rest of the explanatory variables are defined as in equation 1.

The rationale for including most of the above variables is in line with the logic presented in the standard literature on migration. The larger the household size, the higher the costs of moving and therefore the lower the probability of moving, *ceteris paribus*. Land ownership may also influence the decision to migrate, as legally passing on rights of access to land is a potential additional cost that may deter members from making the decision to migrate (Marré, 2009). A higher dependency ratio mainly lowers the probability of migrating for women because they tend to take on reproductive and care responsibilities (Awumbila *et al*., 2015). [24]

The variable religion, which is a dummy variable for Muslim households, is included as it can be hypothesized that due to Islam being the predominant religion in the Middle East, which is a crucial destination for Ethiopian migrants, Muslim households will have larger or stronger networks with the Middle East. Therefore, Muslim households might be more likely to send a

[23] From the perspective of human capital theory, the expected future net benefits of migration are likely to decrease over time as the individual has less potential time to spend working.

[24] Similarly, the higher the gender ratio that is defined as the ratio of women relative to the household size, the less likely will the women migrate for the reasons mentioned above, plus the income gain from female migration is believed to be lower relative to the income gains from sending a male member of the household.

migrant member abroad (Beyene, 2014).[25] According to the literature, human capital characteristics, such as maximum education, affect migration, because more educated people are more likely to find greater job opportunities that match their skill-level in destination areas (Greenwood 1997; Todaro, 1977).[26] Additionally, regional variables are included in the model, since it is likely that the region of residence within Ethiopia will affect the probability of migration.[27]

Estimation of Equation 3 yields a selection term, the inverse Mills ratio, which is entered into the second stage model, equation 4. If the coefficient on this term is statistically significant in equation 4, then we can conclude that selection bias exists. The second stage consumption function can be estimated by Ordinary Least Squares (OLS) as given by equation (4):

$$Ln(PREX_{ij}) = \alpha_0 + \sum_{i=1} \beta_i X_i + \sum_{i=1} \gamma_i H_i + \sum_{i=1} \alpha_i K_i + \sum_{j=1} \theta_{ij} R_{ij\,j} + \sum_{i=1} \delta_i D_i + \lambda IMR_i + \mu_{2i}$$

(4)

The two-stage Heckman model has been adequately identified as the number of explanatory variables in the first stage choice function exceeds the consumption function by two variables (age of household head and its square as identifying variables). If the coefficient of the inverse Mills ratio λ is zero, then the OLS regression will give consistent estimates. However, if $\lambda \neq 0$, OLS will not give consistent estimates as this implies that the error terms in the selection and outcome equations are correlated *i.e.* there is selection bias.

Table 5.1 provides a full description of the variables used in the analysis. The regressors are grouped conceptually into six categories: household characteristics, household head characteristics, human capital characteristics, regional characteristics, household dwelling characteristics and gender interactions.

[25] It was decided to construct a dummy equal to 1 for Muslim households and 0 otherwise, as the literature and empirical evidence supports the view that Muslim households are more likely to produce international migrants.

[26] Despite the fact that early work on the human capital model found that migration propensities increase by education attainment (Greenwood, 1999; Todaro, 1977), later empirical work in Mexico (Taylor, 1987) and the Arab Republic of Egypt (Adams, 1993) found that migrants are not necessarily positively selected with respect to education.

[27] For example, if the region of origin has a high unemployment rate relative to the destination region, then individuals may be encouraged to migrate in search of jobs, so local labour market characteristics within each region may influence the migration behaviour of individuals. We capture regional effects simply via regional fixed effects but future work might capture specific outcomes such as unemployment

Table 5.1: Variables used in estimation of OLS and Heckman two-stage selection model

Variable name	Variable	Description	Hypothesized value in the consumption model
Dependent Variable:			
Log of per capita consumption expenditure	*PREX*	Natural logarithm of annual per capita consumption expenditure on food and non-food items	Dependent Variable
Independent Variables:			
Household Characteristics			
Household size	*HSIZE*	Number of household members	$\beta_1 < 0$
Household size squared	*HSIZE2*	Squared term of household's size	$\beta_2 > 0$
Gender ratio	*GENDRAT*	Number of females relative to household size	$\beta_3 < 0$
Dependency ratio	*DEPENDRAT*	Number of children (under 5) and elderly (over 60) relative to household size	$\beta_4 < 0$
Number of children	*CHILDREN*	Number of children in household aged ≤ 14 years	$\beta_5 < 0$
Number of elderly	*ELDERLY*	Number of elderly in household aged ≥ 60 years	$\beta_6 < 0$
Percentage of self-employed	*SELFEMP*	Percentage of household in self-employment	$\beta_7 > 0$
Remittance	*REMIT*	1 if the household receives any cash remittance, 0 otherwise	$\beta_8 > 0$
Land ownership (control group: own land in urban area)			
Own land in village	*OWNLVILL*	1 if household has access to homestead land in village	$\beta_9 < 0$
Own agricultural land	*OWNLAGRI*	1 if household has access to agricultural land	$\beta_{10} < 0$
Own commercial land	*OWNLCOMM*	1 if household has access to commercial land	$\beta_{11} > 0$
Household Head Characteristics			

Male household head	*HHMALE*	Gender of household head: 1 if household head is Male; 0 if female	$\gamma_1 > 0$

Table 5.1: Variables used in estimation of OLS and Heckman two-stage selection model

Variable name	Variable	Description	Hypothesized Value in the consumption model
Marital status	*HHMARITAL*	1 if widowed, divorced or separated and 0 otherwise (married or single)	$\gamma_2 > 0$
Muslim household head	*HHMUSLIM*	Religion of household head: 1 if Muslim; 0 otherwise (base group)	$\gamma_3 > 0$
Age of household head	*HHAGE*	Age of household head	$\gamma_4 < 0$
Age of household head squared	*HHAGE2*	Squared term of age of household head	$\gamma_5 > 0$
Human Capital Characteristics			
Maximum education level of household	*MAXEDUC*	Maximum level of education within the household	$\alpha_1 > 0$
Regional Characteristics (control group: SNNP)			
Tigray	*TIGRAY*	1 if the household head resides in Tigray, 0 otherwise	$\theta_1 > 0$
Amhara	*AMHARA*	1 if the household head resides in Amhara, 0 otherwise	$\theta_2 > 0$
Oromiya	*OROMIYA*	1 if the household head resides in Oromiya, 0 otherwise	$\theta_3 > 0$
Household Dwelling Characteristics			
Ownership of house	*OWNSHOUSE*	1 if the household owns the house living in, 0 otherwise	$\lambda_1 > 0$
Number of rooms per person	*ROOMS*	Number of rooms in the house per person	$\lambda_2 > 0$
Access to electricity	*ELECTRICITY*	1 if the household has electricity, 0 otherwise	$\lambda_3 > 0$

Fuel	*FIREWOOD*	1 if firewood purchased or collected is the main type of fuel used for cooking, 0 otherwise	$\lambda_4 > 0$

Table 5.1: Variables used in estimation of OLS and Heckman two-stage selection model

Variable name	Variable	Description	Hypothesized Value in the consumption model
Wood Wall material	*WOODWALL*	1 if the main wall material if wood and mud, 0 otherwise	$\lambda_5 > 0$
Mud Floor material	*MUDFLOOR*	1 if mud/dung is the main floor material, 0 otherwise	$\lambda_6 > 0$
Public Well	*PUBLICWELL*	1 if public well is the main source of drinking water, 0 otherwise	$\lambda_7 > 0$
Pit toilet	*PITOILET*	1 if pit toilet is the type of toilet facility, 0 otherwise	$\lambda_8 > 0$
Interaction Terms			
Male×[Children in Household: Aged ≤14]	*MALE*CHLDRN*	Interaction between the number of children in the household and a dummy variable that takes the value 1 if the household head is male.	$\delta_1 < 0$
Male×[Elderly in Household: Aged≥60]	*MALE*ELDRLY*	Interaction between the number of elderly in the household and a dummy variable that takes the value 1 if the household head is male.	$\delta_2 < 0$
Male×Marital Status	*MALE*MARTL*	Interaction between the household head being widowed, divorced or separated and being male.	$\delta_3 < 0$

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

6. Results

The principal hypothesis being investigated is that migration significantly improves household welfare by leading to higher levels of consumption expenditures.[28] Hence, this section analyses the relationship between migration and household consumption expenditure. Empirical results from the methodology outlined in Section 5 above follow. The first set of results are from the standard OLS without controlling for section bias. The second set models the two-stage Heckman procedure.

6.1 OLS estimates without controlling for selection bias

Table 6.1 reports the OLS regression results obtained from the estimation of equation (3), which helps to understand factors associated with variations in consumption expenditure amongst the sub-sample of households with no migrants. The table contains five different specifications (I-V), each including a wider set of variables.[29] As more controls are imposed on the consumption expenditure model across the five model specifications, the adjusted R^2 increases from 20%-31%, indicating that the explanatory variables improve the goodness of fit. The adjusted R^2 is considered reasonable for cross-sectional survey data, which in the existing literature tends to lie in the range 0.30-0.40. Since the dependent variable in these regressions is a logarithmic transformation, the column of each specification gives the marginal effect of a unit change in each variable on the absolute value of per capita household consumption at the mean of each household.[30]

Most of the coefficients take their hypothesized signs stated in Table 5.1. The dependency ratio and gender ratio have expected signs and are significant at 5% and 1%, respectively. This implies that the higher the ratio of elderly and children relative to the household size and the higher the ratio of females to the household size, the lower the annual per capita consumption expenditure. This is in line with theory as they may have lower income generating opportunities and thus have lower levels of consumption expenditure. The household dwelling variables, indicating access to electricity, wood wall material and a pit toilet, *ceteris paribus*, increase per capita consumption expenditure on average by 16%, 60% and 55%, respectively.[31]

[28] I test the following hypothesis as migrants might contribute very little to household income if they stay at home due to a lower marginal productivity of labour. Therefore, by leaving they are reducing the burden on households by being one less mouth to feed.

[29] Heteroscedasticity robust standard errors are used instead of the usual standard errors, even though the normality test indicates that the errors are normally distributed.

[30] The formula employed to obtain this is as follows: our regressions are of the form ln $(lprex_{ij})$= $\beta\chi_i$ thus the marginal effect of x on ln(lprex) is given by dln(lprex)/dx = β. Using the logarithmic approximation dln(lprex) ≈ d(lprex)/(lprex), the marginal effect of x on y is thus given by d(lprex)/dx = βy.

[31] The dummies for whether households have access to agricultural land or land in a village have negative signs. This implies that income is higher from urban land, the reference category, as it is more commercial, relative to agricultural and village land.

Table 6.1: Ordinary Least Squares Regression Results of Annual Per Capita Household Consumption Expenditure Estimates for Households without migrants

Variables	Log of Per Capita Consumption Expenditure (OLS Estimate)				
	(I) OLS without remittance, regional variables, dwelling characteristics and gender interactions	(II) OLS without remittance, dwelling characteristics and gender interactions.	(III) OLS without dwelling characteristics and gender interactions.	(IV) OLS without gender interactions.	(V) OLS with all variables
Household Size	-0.178***	-0.165***	-0.161***	-0.0784	-0.0740
	(-2.73)	(-2.76)	(-2.69)	(-1.06)	(-1.01)
Household Size squared	0.00789*	0.00664	0.00650	0.00187	0.000900
	(1.67)	(1.53)	(1.52)	(0.37)	(0.18)
Dependency ratio	-0.466**	-0.456**	-0.431*	-0.392*	-0.518**
	(-1.98)	(-2.04)	(-1.86)	(-1.83)	(-2.38)
Gender ratio	-0.236*	-0.271**	-0.269**	-0.257**	-0.295***
	(-1.98)	(-2.28)	(-2.28)	(-2.51)	(-2.71)
Number of children	0.0162	0.0139	0.00926	0.0105	0.0367
	(0.32)	(0.30)	(0.19)	(0.23)	(0.59)
Number of elderly	-0.0244	-0.0114	-0.0106	0.0124	0.271**
	(-0.35)	(-0.17)	(-0.15)	(0.19)	(2.11)
% of self employed	-0.00914	0.125*	0.127*	0.163**	0.168**
	(-0.18)	(1.81)	(1.84)	(2.42)	(2.54)
Own land in village	-0.0848	-0.0459	-0.0406	-0.110	-0.126
	(-0.89)	(-0.50)	(-0.44)	(-0.86)	(-0.90)
Own agricultural land	0.0340	0.000615	-0.00701	-0.00828	-0.00699
	(0.34)	(0.01)	(-0.08)	(-0.10)	(-0.09)
Own commercial land	0.298**	0.160	0.150	0.0494	0.0733
	(2.26)	(1.21)	(1.13)	(0.35)	(0.54)
Male household head	0.115	0.111	0.104	0.0861	0.261*
	(1.30)	(1.23)	(1.17)	(1.03)	(1.66)
Marital Status	0.163	0.149	0.151	0.294	0.399
	(0.67)	(0.62)	(0.64)	(1.18)	(1.31)
Muslim household head	0.382**	0.407**	0.429**	0.327*	0.342*
	(2.27)	(2.36)	(2.52)	(1.79)	(1.93)
Maximum education level of household	0.00245	0.00211	0.00232	0.00248	0.00305
	(0.78)	(0.71)	(0.78)	(0.86)	(1.04)
Tigray		0.114	0.125*	0.206***	0.214***
		(1.77)	(1.93)	(3.14)	(3.30)

Amhara		-0.0498	-0.0478	-0.0741	-0.0649
		(-0.74)	(-0.71)	(-1.02)	(-0.91)
Oromiya		0.264***	0.270***	0.326***	0.324***
		(3.19)	(3.25)	(3.94)	(4.02)
Remittance receipt			-0.0757	-0.0820	-0.0962
			(-0.99)	(-1.12)	(-1.38)
Ownership of house				0.108	0.115
				(0.77)	(0.79)
Number of rooms per person				0.114	0.0729
				(0.87)	(0.56)
Access to electricity				0.155***	0.160***
				(2.86)	(2.94)
Fuel				-0.383	-0.419
				(-1.51)	(-1.60)
Wood Wall material				0.657***	0.597**
				(2.72)	(2.49)
Mud Floor material				-0.211	-0.189
				(-0.49)	(-0.44)
Public well				0.221	0.234
				(1.26)	(1.33)
Pit toilet				0.540***	0.553***
				(2.83)	(2.97)
Male*Marital Status					0.0131
					(0.08)
Male*Children					-0.0137
					(-0.31)
Male*Elderly					-0.284**
					(-2.43)
Constant	9.189***	8.994***	8.983***	8.394***	8.302***
	(37.23)	(38.48)	(38.42)	(26.57)	(24.91)
Observations	404	404	404	404	404
R^2	0.230	0.272	0.274	0.344	0.357
Adjusted R^2	0.202	0.240	0.240	0.299	0.307

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Notes:

i. ***, ** and * denote statistical significance from zero at the 0.01, 0.05 and 0.10 level respectively using two-tailed tests.

ii. t statistics in parentheses and standard errors are robust on all t statistics computed.

The counterfactual annual per capita household consumption expenditure is estimated for households with migrants using the regression coefficients obtained from the final column of Table 6.1which contains the most generous model specification. This provides an estimate of what the expenditure level of households with migrants would have been had the migrant stayed at home, after adjusting for certain characteristics highlighted in the methodology to

stimulate the counterfactual situation had the migrant stayed at home.[32] Table 6.2 compares the counterfactual with the actual per capita household consumption expenditure.

Table 6.2: Comparison of actual and counterfactual consumption expenditure and the distribution characteristics

	Migrant Households		
	Counterfactual	**Actual**	**Difference between counterfactual and actual ($\widehat{prex} - prex$)**
Mean	2262.3	3370.3	-1108***
1% Percentile	687.2	725.1	-37.9
10% Percentile	1195.2	1573.3	-378.1
25% Percentile	1565.4	2100.7	-535.3
Median	2097.1	2980.4	-883.3
75% Percentile	2751.6	4143.1	-1391.5
90% Percentile	3490.0	5587.4	-2097.4
99% Percentile	5686.8	9522.7	-3835.9
Skewness	1.8	2.2	-
# Observations	792	792	792

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Results presented in Table 6.2 show that, on average, counterfactual consumption is statistically lower than the actual observed household consumption expenditure. This implies that, had the migrant stayed at home, the household consumption expenditure would have been lower than the current household consumption expenditure, namely that migrants improve the average household consumption expenditure. We can see that the counterfactual distribution lies uniformly to the left of the actual distribution. This is shown graphically in Figure 6.1, which by the extension of the blue tail further long the x-axis of the distribution of actual consumption expenditure of migrant households, shows that households with migrants are better off with a migrant than if they had not experienced migration.

[32] The household size was adjusted to include the migrant members who were currently away. The dependency ratio was also adjusted to include the migrant members if they were over 60 years old and under 5 years old. Similarly, the gender ratio was adjusted to include the gender of the migrant member if they were female to the sum of females within the household and to include the migrant members into the household size. The percentage of self-employed was adjusted in order to include the migrant member into the sum of self-employed if they were self-employed/working on their own land before they left to live outside the village. The maximum level of education was adjusted to factor in the highest level of education that the migrant(s) has completed with the highest level of education that the rest of the household has completed.

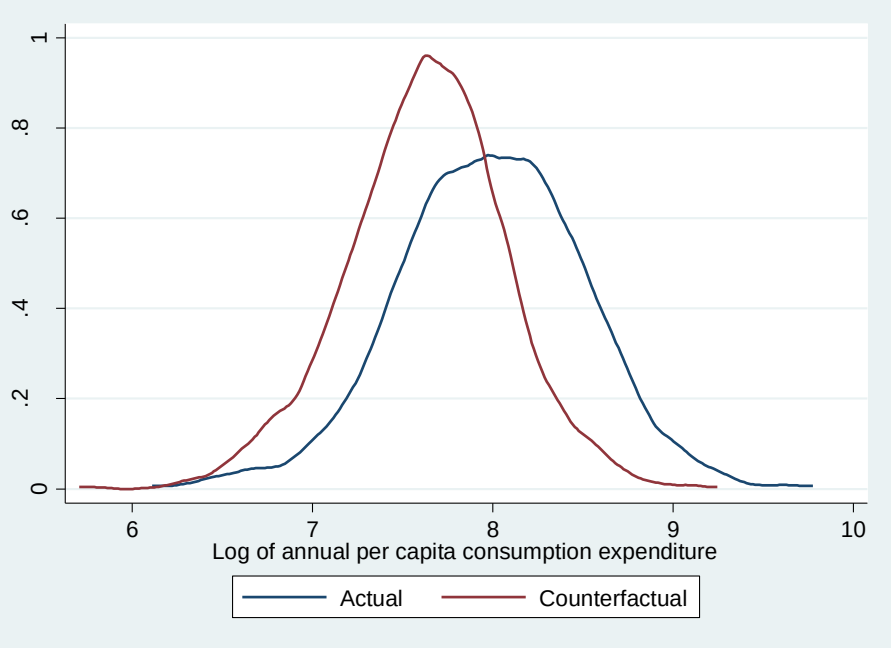


Figure 6.1: Comparison of actual and counterfactual consumption expenditure distribution
***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

The table and figure above do not tell us whether individual households were made better or worse off however, merely that the distribution has shifted up because of migration. Figure 6.2 plots the difference variable against the log of actual per capita consumption expenditure, showing that households with lower per capita consumption levels are more likely to prefer the counterfactual scenario (i.e. they would have had a higher per capita consumption had the migrant not moved), while the households in the middle and high end of the consumption expenditure distribution will experience higher levels of consumption as a result of migration.

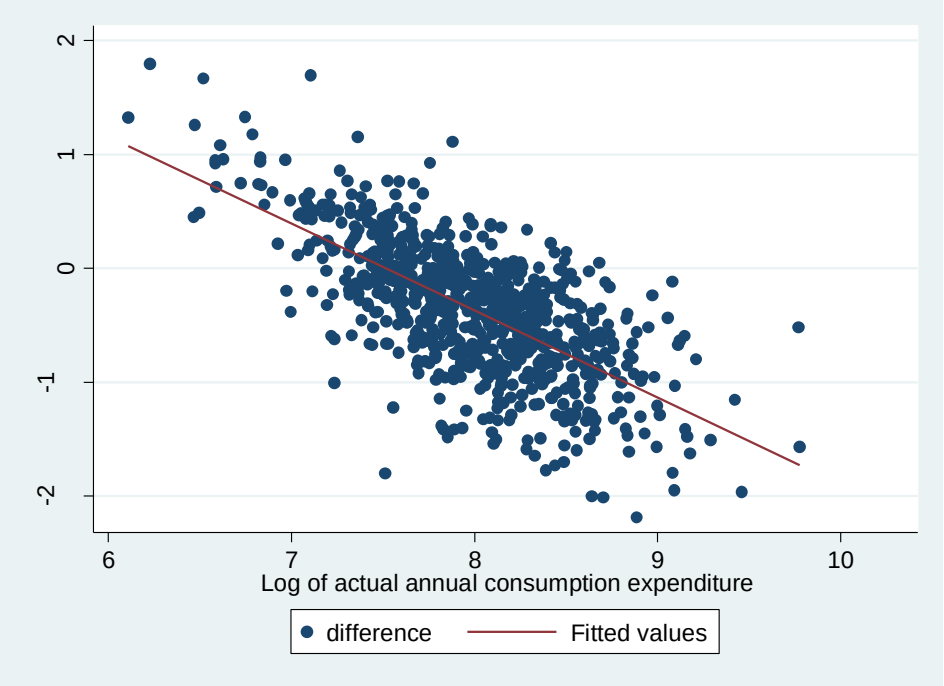


Figure 6.2: Distribution of difference variable against the log of actual consumption expenditure
***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Table 6.3 shows the average annual per capita consumption of households that win and lose from migration. Almost one quarter of households, 204 out of the 803 migrant households lose from migration; meaning that their consumption expenditure had the migrant stayed at home would have been higher, than their actual consumption expenditure. This is also evident by the comparison of the annual per capita consumption, which shows that the households that benefitted have a statistically significantly higher average per capita consumption expenditure relative to the losers.

Table 6.3: Average annual per capita consumption expenditure of winners and losers from migration

	Number of households	Annual per capita consumption expenditure
Winners	599	3814.3
Losers	204	3710.9

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Furthermore, an analysis on the net gains and losses from migration response to questions linked to their perceptions of quality of life, demonstrated in table 6.4, shows that households

for whom migration has resulted in gains are the ones more likely to perceive migration as something good which has improved their daily lives while the losers are more of the opinion that it worsens their daily life. The difference in responses between the winners and losers is statistically significant. A comparison of households (with and without migrants) perceptions of quality of life is illustrated in Appendices 8 and 9.

Table 6.4: Difference in winners and losers response to the question: "How would you describe the household's daily life now compared to before your household member moved away?"

	Improved	Stayed the same	Worsened	Total
Winners	98	79	27	204
Losers	323	177	99	599

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

We conclude our analysis by exploring what features of households and their migrants are associated with net gains and losses. Table 6.5 reports results of the probit regression of being a net gaining household versus a net losing household. The significant coefficient on gender ratio at 5% implies that an increase in the ratio of females relative to the household increases the predicted probability of being better off from migration. Similarly, the highly statistically significant coefficient of remittance implies that an increase in remittances increases the predicted probability of being made better off by migration, as the remittance receipt will contribute to the household consumption expenditure.

Table 6.5: Probit regression of limited dependent variable model of the difference between the counterfactual and actual consumption expenditure

Binary dependent variable: Difference dummy, 1 for gain (counterfactual is greater than the actual), 0 for loss	
Variables	**Difference between Counterfactual and actual consumption expenditure**
Household Size	-0.0323
	(-0.13)
Household Size Squared	-0.00223
	(-0.16)
Gender Ratio	0.901**
	(2.61)
Dependency Ratio	-1.023
	(-0.92)

% of self employed	-0.326* (-1.86)
Remittance	0.491*** (3.85)
Number of Children	0.282 (1.64)
Number of elderly	1.075*** (3.46)
Own land in village	0.681 (1.00)
Own agricultural land	0.585* (1.80)
Own commercial land	0.424 (1.07)
Male household head	-0.351 (-1.18)
Marital Status	-0.0923 (-0.09)
Muslim household head	-0.544 (-0.71)
Maximum education level of household	-0.0125 (-1.24)
Tigray	0.741*** (3.62)
Amhara	0.525** (2.97)
Oromiya	0.207 (0.99)
Ownership of house	0.205 (0.35)
Number of rooms per person	-0.0857 (-0.74)
Access to electricity	-0.252*

	(-1.77)
Fuel	-0.986
	(-0.96)
Wood Wall material	2.795**
	(2.96)
Mud Floor material	-2.000
	(-1.04)
Public Well	0.0826
	(0.13)
Pit toilet	0.841
	(0.90)
Male*Children	0.126
	(1.43)
Male*Elderly	0.452
	(1.55)
Male*Marital Status	-0.639*
	(-1.57)
Male Migrant	-0.286
	(-1.64)
Female Migrant	-0.241
	(-1.53)
Internal Migration Destination	-0.335
	(-1.59)
International Migration Destination	0.0358
	(0.19)
Migrant Time Away	0.0103
	(1.23)
Migrant Time Away Squared	-0.0000908
	(-1.15)
Constant	-1.372
	(-0.88)
N	792
Pseudo R2	0.246
Prob>chi2	0.000
Robust Standard errors	Yes

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Notes:

(i) t statistics in parentheses

(ii) * p < 0.10, ** p < 0.05, *** p < 0.01

(iii) All coefficients reported are marginal effects.

6.2 Estimation results for two-stage Heckman model

The results in Section 6.1, while interesting, do not control for the fact that migrants might be self-selected, so that households with migrants might not be comparable directly with the rest of the sample with no migrants. Therefore, if the migrants are young, less risk averse and better educated, we might expect there to be positive selection bias. If there is significant positive selection bias, this would suggest that the OLS method underestimates their counterfactual. As discussed in section 5, the two-stage Heckman Selection model is applied to construct the counterfactual consumption expenditure function for households with migrants. The first stage choice function presented in equation (5) is applied for all households and estimates the probability that a household has no migrant. The identifying variables are *age of household head* and its *square*, and the *share of households that receive remittances per Kebele*. The second stage selection presented in equation (6) adjusts all relevant characteristics to include migrant members. Therefore, the results of the first stage probit model will be presented first, followed by the second-stage consumption expenditure function.

Table 6.6: Probit model (marginal/impact effects), selection-controlled regression used for counterfactual consumption expenditure function

Binary dependent variable= M{Probability of no migration}

Variables	**Probability of no migration**
Household size	-0.309
	(-1.37)
Household size squared	0.00349
	(0.27)
Gender Ratio	0.186
	(0.59)
Dependency Ratio	2.780**
	(3.26)
% of self employed	0.167
	(1.06)
Remittance	-1.606***
	(-12.51)
Number of Children	-0.0778
	(-0.46)
Number of elderly	0.352
	(1.19)
Own land in village	-0.730
	(-1.35)
Own agricultural land	0.0354

	(0.11)
Own commercial land	0.0361
	(0.10)
Male household head	1.006**
	(2.72)
Marital Status	2.049*
	(1.73)
Muslim household head	-0.0729*
	(-0.12)
Maximum education level of household	0.0251**
	(2.98)
Tigray	-0.00981
	(-0.05)
Amhara	0.0972
	(0.56)
Oromiya	0.190
	(0.98)
Ownership of house	0.325
	(0.65)
Number of rooms per person	-0.0833
	(-0.39)
Access to electricity	-0.212
	(-1.55)
Fuel	0.337
	(0.43)
Wood Wall material	-0.606
	(-0.77)
Mud Floor material	0.934
	(0.69)
Public Well	0.238
	(0.45)
Pit toilet	0.0974
	(0.13)
Male*Children	0.126
	(1.36)
Male*Elderly	-0.573**
	(-2.38)
Male*Marital Status	-1.335***
	(-2.91)
Age of household head	-0.0491*
	(-1.92)
Age of household head squared	0.000231
	(0.98)
Share of households which receive remittances per Kebele	0.262**

	(3.26)
Constant	1.5
	(1.6)
N	1197

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Notes:

(i) The table reports the marginal effects of a variable on the probability of a household not having a current migrant member

(ii) ***, ** and * denote statistical significance from zero at the 0.01, 0.05 and 0.10 level respectively using two-tailed tests.

(iii) t statistics in parentheses

Based on the marginal effects from estimating the probit model in Table 6.6, the statistically significant results imply that having a male household head, a higher level of education, a higher the dependency ratio and a higher share of households that receive remittances per *kebele*, lower the probability of migration. Additionally, being Muslim increases the probability of migration; this is consistent with our expectation. Being widowed, divorced or separated reduces the probability of migrating, however, the highly significant marginal effect of being either widowed, divorced or separated and male increases the probability of migration. Similarly, an increase in remittance increases the probability of migration. Finally, the older the household head the higher the probability of migration; this is consistent with our expectation and the literature. Age of household head and its square and the share of households that receive remittances per *kebele* are not included in the second stage consumption expenditure function hence they identify the selection equation.

Table 6.7 reports the results of the regression for the sample selection corrected consumption expenditure function estimates presented in equation (6). There are no statistically significant differences between the selection corrected results in Table 6.7 and the OLS results in Table 6.1. As hypothesized in Table 5.1, the dependency ratio has a negative sign and is statistically significant.[33] Similarly, the gender ratio is negative and statistically significant. So, as the ratio of females relative to the household size increases, this reduces the per capita household consumption expenditure. Moreover, households from Tigray and Oromiya are statistically significantly associated with higher per capita consumption expenditure compared to the reference category SNNP.

The most crucial finding in Table 6.7 is that λ_i is insignificant. This implies that the effect of selection bias on the coefficient estimates in Table 6.1 does not seem to be severe and that selection does not bias the effect of migration and consumption expenditure.

[33] This implies that households with more children and/or elderly relatives to adults leads to lower consumption expenditure. This may be due to the fact that the very young and elderly are unable to contribute significantly to household consumption expenditure.

Similar to Barham and Boucher (1998) who report “no selection bias” in their study of migrant households in Nicaragua and Adams (2006b) in Ghana, this finding opposes the widespread view in the literature that migrants “select” into migration. It is plausible however that we have simply failed to identify the correct selection mechanisms. It is possible that selection will be more subtle than we have modelled it in the is paper, and different, opposing selection processes may work for different groups of migrants. One possibility is gender: men and women might respond differently potential drivers of migration. We know in our sample women are more likely to be international migrants, while men are more likely to remain in Ethiopia. There may be other sources of heterogeneity in our sample, such as legal status at destination, or histories of migration at the household or local level.

Table 6.7: Annual per capita household consumption expenditure estimates (selection corrected) for non-migrant households

Dependent variable= Log of per capita consumption expenditure

Variables	Log of per capita consumption expenditure
Household size	-0.0451
	(-0.50)
Household size squared	0.000411
	(0.07)
Gender Ratio	-0.307**
	(-2.66)
Dependency Ratio	-0.563**
	(-2.28)
% of self employed	0.162**
	(2.77)
Remittance	-0.0283
	(-0.26)
Number of Children	0.00226
	(0.36)
Number of elderly	0.260*
	(2.22)
Own land in village	-0.109
	(-0.65)
Own agricultural land	-0.00927
	(-0.08)
Own commercial land	0.0783
	(0.57)
Male household head	0.219
	(1.28)
Marital Status	0.363
	(0.97)
Muslim household head	0.319*
	(1.73)
Maximum education level of household	0.00221
	(0.69)
Tigray	0.210**
	(3.08)
Amhara	-0.0596
	(-0.90)
Oromiya	0.316***
	(4.35)
Ownership of house	0.113
	(0.70)
Number of rooms per person	0.0798
	(0.66)
Access to electricity	0.169**
	(2.99)
Fuel	-0.414
	(-1.56)

Wood Wall material	0.622**
	(2.91)
Mud Floor material	-0.164
	(-0.36)
Public Well	0.236
	(1.43)
Pit toilet	0.543**
	(3.01)
Male*Children	-0.0169
	(-0.4)
Male*Elderly	-0.265*
	(-2.49)
Male*Marital Status	0.0609
	(0.30)
Constant	8.291***
	(23.32)
N	404
Lambda	-0.0821
	(0.102)
rho	-0.205
sigma	0.401

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Notes:

(i) Dependent variable is log of annual per capita household consumption expenditure that is used to construct counterfactual consumption.

(ii) ***, ** and * denote statistical significance from zero at the 0.01, 0.05 and 0.10 level respectively using two-tailed tests.

(iii) t statistics in parentheses

Coefficients estimated in Table 6.7 are used to construct the counterfactual consumption function for migrant households. Table 6.8 summarizes the actual and counterfactual annual per capita household consumption expenditure. The main finding reported in Table 6.6 is that households with migrants would have had average expenditure levels 7% less if their members had not migrated. So ultimately, had the migrant stayed the household would have been worse off. This is graphically illustrated by the kernel density plot in Figure 6.20 by the red counterfactual line that shows lower consumption expenditure in the event of no migration, in comparison to the blue line representing the actual consumption expenditure. As the selection term is insignificant, and the coefficients estimated by the Heckman model in Table 6.7 and by OLS in Table 6.1, are all very similar, the probit analysis is not repeated.

Table 6.8: Summary statistics of monthly per capita consumption expenditure for actual and counterfactual; households with and without migrants and all sampled households

Variable	Mean	Std. Dev.
Households with migrants (Actual)	3370.3	66.6
Households without migrants (Actual)	4551.4	140.6

All sampled households (Actual)	3762.2	66.3
Households with migrants (counterfactual)	3136.0	46.5

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

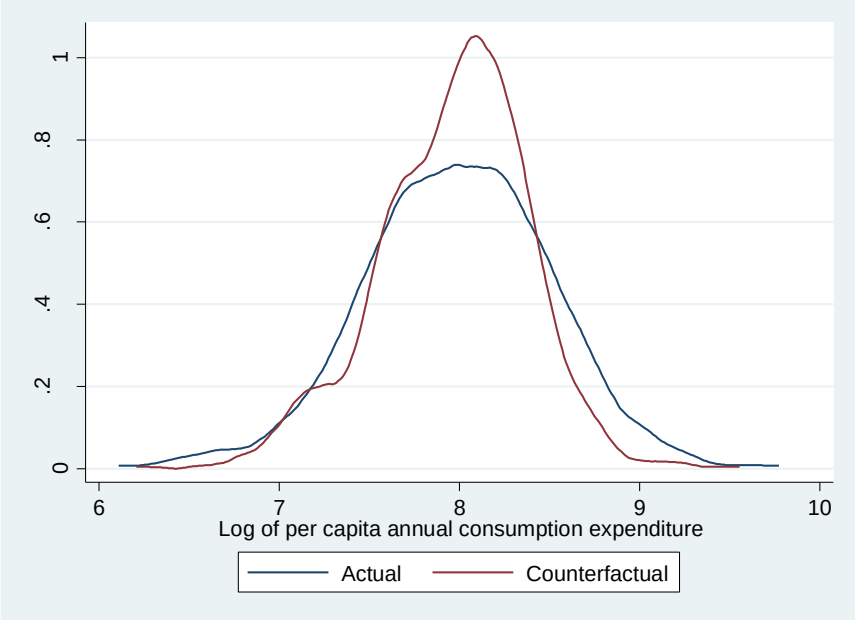


Figure 6.3: Simulated distribution of per capita household expenditure in the scenarios of the actual and of no migration counterfactual for households with migrants
***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

7. Limitations of study and areas for further research

The cross-sectional nature of our data set imposes constraints on our methodological choice set, leading us to adopt a method which requires us to identify variables that are associated with the probability of a household being a migrant but not with the outcome of interest, consumption. In practice this is a difficult, although there is a rich field of candidate variables, ranging from the presence of Western Union agents at a local level, as in Amuedo-Dorantes and Pozo (2006), to historical local migration rates as in Card (2001), Ottaviano and Peri (2005), and Rapoport and McKenzie (2011). We intend to explore a wider set of potential instrumental variables in further research. It is not implausible that our results are sensitive to the choice of instrumental variable. In addition, we hope to add a second round of the survey so we can explore alternative approaches.

Additionally, parts of the analysis are constrained by the nature of the data available as some important information regarding the migrant and remittances were missing. For instance, the year of migration[34] or when the household started receiving remittances are not known. This

[34] Too few households were able to recall or willing to report how long their member had been away. We may be able to improve this with further data cleaning, or with recall data from a second round of the survey.

may be because of difficulties in translating the Ethiopian calendar to a Western calendar, as well as more general problems of recall. This is important, as migrants who have been away for many years (always less than ten years however) before the survey was conducted will exhibit different behaviours compared to those migrants who have migrated less than a year prior to the survey.

Our analysis also focussed on household consumption as the welfare outcome of interest. While our consumption module was quite detailed and enumerators were carefully trained in how to collect this data, it is possible that for various reasons, consumption is mis-reported. Some further cleaning of our data is needed (particularly on non-food items) but we also intend to complement the analysis conducted here with another outcome. Our survey contains data on ownership of various assets, characteristics of the dwelling as well as poverty perceptions.

Finally, we aim to link the results on consumption to poverty outcomes and poverty transitions. This requires us to be more confident in our consumption estimates than the preliminary estimates used in this paper.

8. Conclusions and policy implications

The purpose of this paper is to investigate whether migration affects the welfare of households, specifically household consumption expenditure, using household survey data from the Migrating of Poverty Research Consortium collected in Ethiopia 2014. We present a methodology drawing on Adams (2006a,b) and the wider literature on instruments for migration, that can be applied to other similar small cross-sectional datasets. Notwithstanding the caveats described above, four key findings emerge.

First, we find that selection bias is found to be statistically insignificant. This implies that the bias resulting from estimating the counterfactual consumption expenditure based on the observable characteristics of the households without migrants, selected at random, would be very small. While this is at first sight surprising, ours is not the only study that finds that selection bias is not statistically significant (e.g. Barham and Boucher (1998) and Adams (2006b).

Secondly, both the OLS and selection-corrected Heckman model estimates are, for the most part, consistent with the hypothesis that migration has a positive impact on consumption expenditure. Comparing the estimated counterfactual consumption expenditure obtained from with the actual consumption expenditure implies that, on average, had the migrant member stayed at home, household consumption expenditure would have been 7% lower.

Thirdly, there is substantial variation around the average. The counterfactual consumption expenditure is higher than the actual consumption expenditure for households at the bottom of the distribution. This suggests that poorer households are made worse off by migration. However, actual consumption exceeds counterfactual consumption expenditure on average,

and so we see that migration has improved the welfare of households along the middle and upper distribution of consumption expenditure.

Finally, "success" of migration is associated with receiving remittances from the migrant. Households receiving remittances have a much higher probability of having a gain from migration.

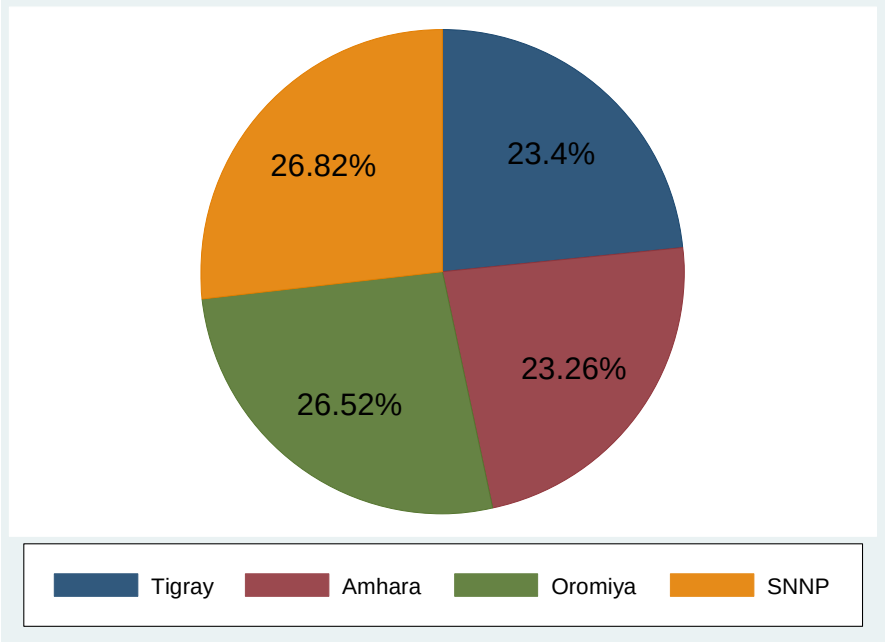
Based on our findings the following recommendations might be considered. Firstly, policy-makers should consider removing *de jure* and *de facto* restrictions on migration. It could be argued that the current land tenure policy, which provides usufruct rights, but not the right to sell or mortgage agricultural land, makes it difficult for poor rural households to raise capital for investments or funds for migration (see Atnafu, Oucho and Zeitlyn, 2016). Costs of migrating, and costs of sending remittances, may also prevent households from reaping the potential benefits of migration. Our survey suggests migrants use a range of sources of finance, including selling off assets or taking loans.[35] Relieving credit constraints and reducing the cost of sending remittances by encouraging competition in the remittance market might facilitate migration and remittance behaviour.

Secondly, a large proportion of our sampled migrants were women who migrated to the Middle East to work as domestic workers. According to the International Labour Office (ILO) (2005), Ethiopian female migrants working in GCC countries earn far less than other migrants. Policy-makers could examine the migrant recruitment industry and consider how it may support prospective migrants pre-departure in their job search and negotiations over pay and working conditions and lobby for change in policies and practices at destination to protect current migrants.

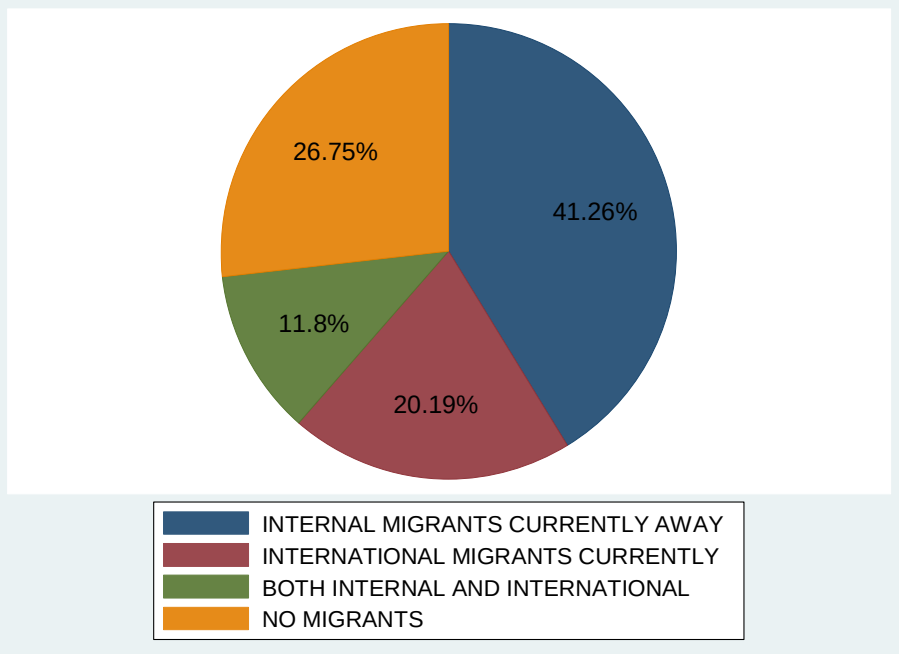
[35] When households were asked about how migrants financed their most recent migration, 21% received finances from family, 23% used family savings, 19% used personal savings and 20% sold assets (Appendix 7). The reliance on family members for funding is notable, and in line with reaesrach n the importance of family networks in the migration process (Yaro et al, 2011, and Kwankye and Anarfi, 2011).

Appendices

Appendix 1: Map of Administrative Regions within Ethiopia
Source: Mapsof.et, (2016)



Appendix 2: Region of Sampled Households
***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**



Appendix 3: Migrant status of sampled households

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

Appendix 4: Current destination of migrant

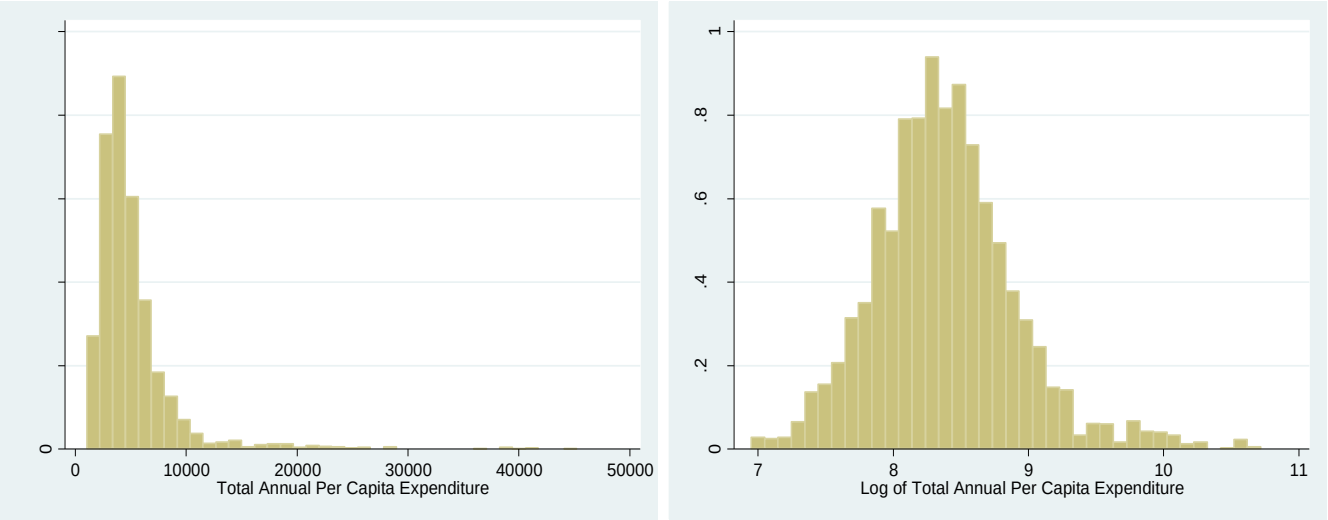
	Frequency	Percent
In different kebele with in the woreda	175	11.4
In other woreda with in the zone	199	13.0
In other woreda with in the regions	306	20.0
In other region |	275	18.0
International: Middle East /Arab country	403	26.3
International: Other African country	32	2.1
International: Outside Africa and Middle East	9	0.6
Addis Ababa	131	8.6
Total	1530	100

***Source*: Constructed by author using Migrating out of Poverty (MOOP) Household Survey**

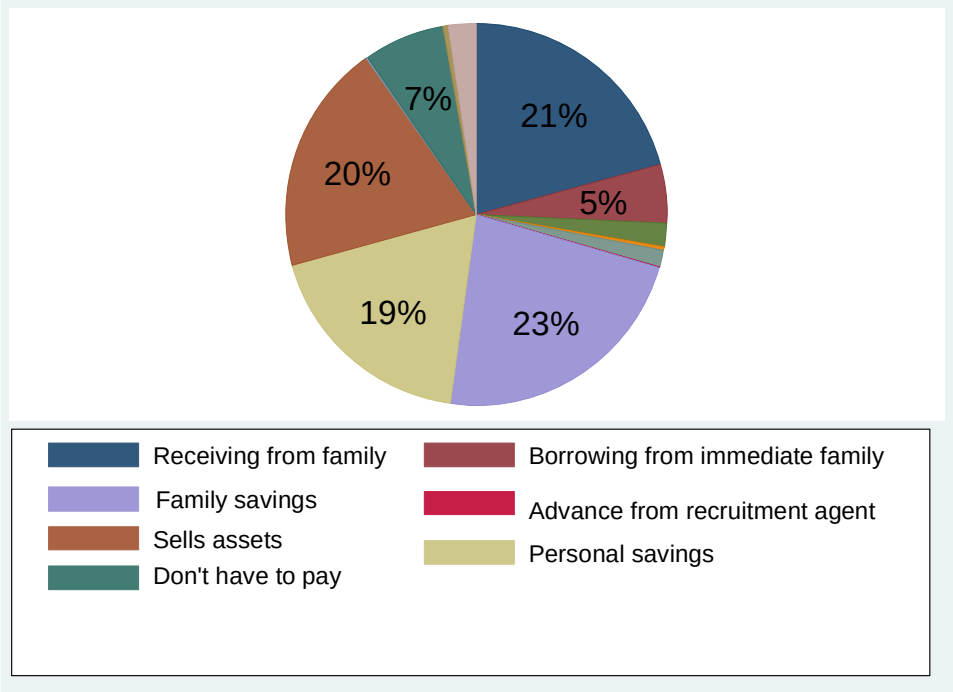
Appendix 5: Number of migrant household members

	Frequency	Percent
One	2,545	44.1
Two	1,545	26.8
Three	1,016	17.6
Four	371	6.4
Five	194	3.4
Six	76	1.3
Seven	22	0.4
Total	5,769	100

***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**



Appendix 6: Histograms-Distribution Shapes of the Nominal and Log of Total Annual per Capita Expenditure
***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**



Appendix 7: How migrants financed their most recent migration
***Source*: Constructed by authors using Migrating out of Poverty (MOOP) Ethiopia Household Survey 2014**

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About the Migrating out of Poverty Research Programme Consortium

Migrating out of Poverty is a research programme consortium (RPC) 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 - and is located in five 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 countries, through a programme of innovative research, capacity building and policy engagement. The RPC will also conduct analysis in order to understand the migration policy process in developing regions and will supplement the world-renowned migration databases at the University of Sussex with data on internal migration.

The ***Migrating out of Poverty*** consortium is coordinated by the University of Sussex, and led by CEO Professor L. Alan Winters with Dr Priya Deshingkar as the Research Director. Core partners are: the Refugee and Migratory Movements Research Unit (RMMRU) in Bangladesh; the Centre for Migration Studies (CMS) at the University of Ghana; the Asia Research Institute (ARI) at the National University of Singapore; the African Centre for Migration & Society (ACMS) at the University of the Witwatersrand in South Africa; and the African Migration and Development Policy Centre (AMADPOC) in Kenya.

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