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Does Internal Migration Improve Overall Well-Being in Ethiopia?

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ABSTRACT

Standard economic models suggest that individuals participate in migration to improve their well-being, whether those decisions are made at the individual or the household level. However, explicit and implicit barriers to movement both within and between countries can hinder migration, potentially affecting welfare improvement. In this paper, we use a unique panel dataset of tracked migrants and non-migrants that originate from 18 villages in Ethiopia to examine the welfare impacts of internal migration. Using a number of techniques and various objective and subjective measures, we measure the impacts of migration on the welfare of migrants versus non-migrants. We find large gains to objective welfare measures such as consumption, around 110 percent. Gains are larger among male and urban migrants. However, we also find that relative to household heads subjective welfare measures are similar for migrants. The large welfare gains to migration suggest that barriers exist, even within countries such as Ethiopia, against the free movement of people to places where they would be objectively better off.

Keywords: migration, living standards, tracking study, Ethiopia

1. INTRODUCTION

Individuals normally participate in migration to improve their well-being, whether those decisions are made at the individual or the household level (Lipton 1980; de Haan 1999). Standard models of migration predict that migrants move due to wage gaps between rural and urban areas (Lewis 1954; Harris and Todaro 1970). One would expect that internal migration from rural to urban areas should occur until wages equilibrate, holding the cost of living constant. More recent models suggest migration is part of an overall household livelihood strategy, which can also affect how potential migrants perceive the wage gap (Lucas and Stark 1985). Whereas migration can allow households to improve the welfare of all of their members, it can also help reduce the overall riskiness of the household income portfolio (Rosenzweig and Stark 1989). As a consequence, one might expect to observe rural–urban migration even if the real rural–urban wage gap is narrow.

If wage gaps persist between rural and urban areas within a country, it is likely that explicit or implicit barriers to movement within countries hinder migration. For example, in China the *hukou* system explicitly limited movement from rural to urban areas (e.g. Fan 2008). Other policies, such as those related to land tenure, can also create implicit barriers (e.g. Yang 1997; de Brauw and Mueller 2012). Gaps can be informational as well, as potential migrants may lack information about employment in distant areas. They may therefore perceive migration as too risky, particularly if most opportunities in urban areas are informal, as in sub-Saharan Africa (Fox and Gaal 2008). Governments concerned about food security, which coincide with countries vulnerable to macroeconomic shocks, can implement policies that foster agricultural production to the detriment of worker movement.

A recent study in the *Review of Economics and Statistics* attributes an average increase in welfare to internal migration of 43 percentage points or 0.36 log-points, in a data set collected in Tanzania (Beegle, de Weerdt, and Dercon 2011). Estimated returns were as large as 94 percent, when focusing on the welfare gains from moving to well-connected areas. Migration is attractive for and practiced by a specific group of people, and examples in which impacts of migration can be cleanly measured are not common.[1] Migration is not given as much weight in strategizing development—despite the extensive research done in the past and the present on migration—because studies fail to convincingly demonstrate improvements in living standards (Lipton 1980; de Haan 1999). Additional development strategies warrant further consideration, particularly in areas facing severe land constraints, such as removing explicit policies that hinder movement or increasing employment opportunities outside of the agricultural sector.[2] Providing additional quantitative evidence on the direct gains from internal migration may influence and broaden the orientation of national economic policies.

We replicate the basic results in the Beegle, de Weerdt, and Dercon (2011) study to provide additional evidence to the returns to internal migration in Africa, using a unique panel data set originating from 18 villages in Ethiopia. The most recent rounds of the Ethiopian Rural Household Survey (ERHS) were collected in 2004/05 and 2009. We augment the ERHS with a migrant tracking survey that followed migrants from the 2004/05 survey round. Similar to the Tanzania study, we have two types of information that most migration impact studies lack: (i) information on the migrant's outcomes after he or she leaves the village, and (ii) information on the migrant and his household prior to the move. The

[1] While it exists, random variation that causes either internal or external migration in cases when data are available is very rare—the exception being the McKenzie, Stillman, and Gibson (2010) study of the returns to international migration.
[2] For a philosophical treatment of the rationale to lower international barriers to migration, see Clemens (2010).

advantage of tracking individuals who move and stay in the villages over time is that we can measure changes in welfare over time for individuals that stay and move from a fixed place conditioning on a number of changes in individual and household level characteristics.[3]

Despite the advantages of following migrants and non-migrants over time, our study still faces the standard migration selection problem. If the migration decision is made at the household level to maximize income or reduce the risk in the household income portfolio, household selection into migration may depend upon several observable or unobservable factors, such as human capital levels, unobserved asset shocks, or even openness to trying new experiences. Further, decisions are made about who migrates, which depend on a household member's qualifications for off-farm employment or his or her marginal productivity of labor on the farm. Without accounting for the non-random selection process into migration, empirical estimates of the returns to migration may be biased. We approach this problem by first replicating the initial household fixed effects (IHHFE) model employed in Beegle, de Weerdt, and Dercon (2011), using instruments that proxy labor demand conditions and historical migration rates at the baseline to control for migrant selectivity. We also compare the IHHFE results to those using a difference-in-difference matching estimator, which performs relatively well in comparison to ideal experimental measures (McKenzie, Stillman, and Gibson 2010).

A second distinction in our study is that both the ERHS and the migrant tracking survey asked a set of subjective welfare questions, so we can measure differences in subjective well-being between migrants and non-migrants. A set of subjective welfare measures was asked among household heads in the ERHS and among the migrants in the migrant tracking survey. To frame our findings on subjective welfare, we first discuss some of the relevant literature on the use of subjective welfare measures in determining welfare in general and among groups such as migrants. Our analysis is limited by the fact that subjective welfare questions were only asked to the household head in the ERHS, implying that the comparison of subjective welfare measures between migrants and household heads really compares answers among two different groups of people. Still, we try to control for factors such as age differences between migrants and household heads in our empirical modeling.

The estimates in the paper suggest real objective benefits to internal migration, but subjective measures of welfare among migrants and household heads are similar. Estimated migration impacts on objective welfare are robust to controlling for the endogeneity of migration and different measures of welfare. We estimate a much larger improvement in consumption from migration than prior work, 110 percent, in our context. We further examine what factors related to migration contribute to the massive welfare gains. Interestingly, we find no evidence that migrants consider themselves better off subjectively than household heads. In fact, by a few measures, migrants may consider themselves worse off. Controlling for individual and households characteristics in an empirical model, however, renders statistical significance of prior differences in most cases obsolete.

2. DATA

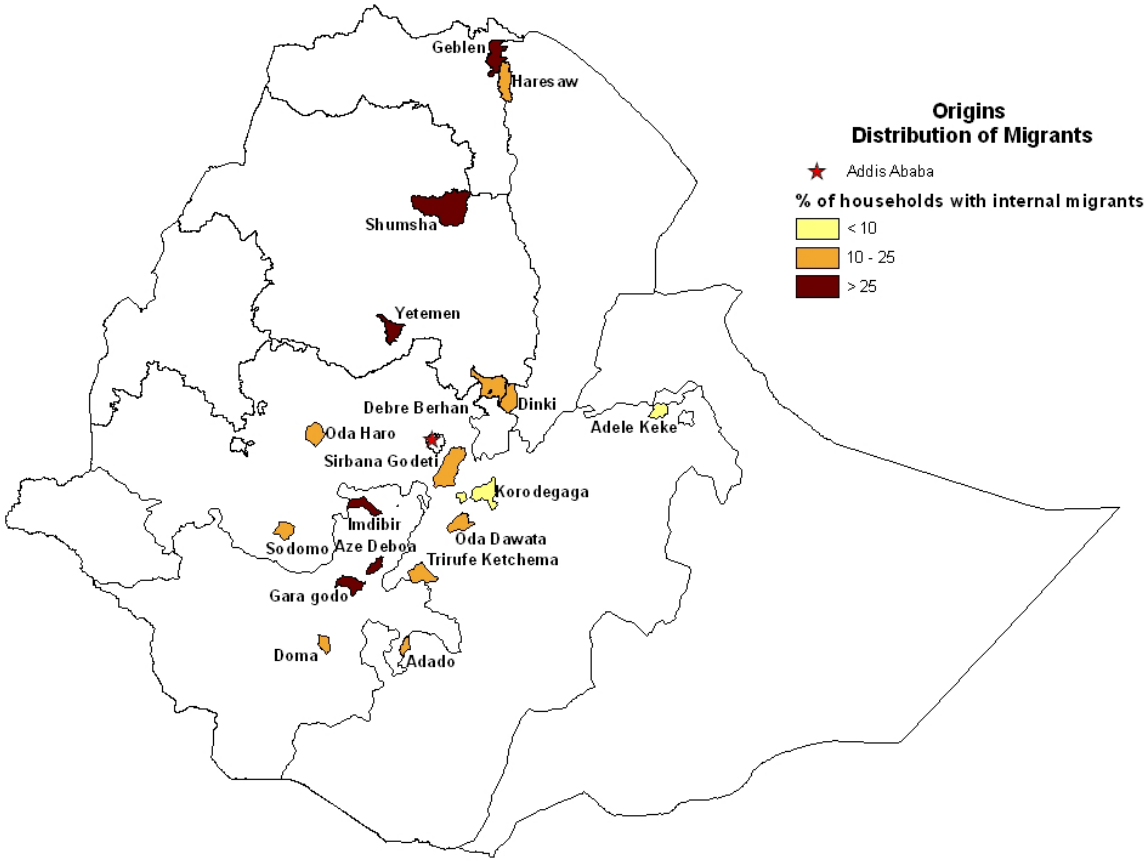
We match data from the ERHS, a panel survey, with data from a migrant tracking survey conducted among migrants from the ERHS households and villages in late 2009. The migrant tracking survey was specifically designed to track the type of migrants more likely to be employed and who therefore would be more likely to remit. In this section, we describe how we constructed the sample of matching households and migrants used in this paper.

2.1. Ethiopian Rural Household Survey

The ERHS is a unique, longitudinal household dataset collected by Addis Ababa University, the University of Oxford, and the International Food Policy Research Institute. It follows households from fifteen villages from 1994 to 2009. Three additional villages were added to the 2004 round (and were surveyed in 2005). The 2009 round then included all eighteen villages. The villages were initially chosen to account for the diversity of farming systems in Ethiopia. The survey includes modules, among others, on household characteristics, agriculture and livestock, food consumption, health, and women's activities. The ERHS has been used for a large number of papers studying various aspects of risk and poverty dynamics in Ethiopia (for example, Dercon, Hoddinott, and Woldehanna 2007; Fafchamps, Kebede, and Quisumbing 2009; Kadiyala et al. 2009). We focus on the latest two rounds of the panel, which occurred in 2004/05 and 2009. We use data from the expanded 18 village sample for our analysis (Figure 2.1).

[3] The benefits of this type of approach for the case of Haiti is discussed in Clemens and Pritchett (2008).

Figure 2.1—Map of ERHS villages and migration prevalence by village, Ethiopia



Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.

2.2. Migrant Tracking Survey

Approximately three months after the completion of the primary ERHS survey in 2009, all 18 ERHS villages were revisited to conduct a short migrant tracking survey. Enumerators were given household rosters based on the 2004/05 survey and were asked to identify the location of all household members that were enumerated in that round. After locating the household, the enumerator would ask the household head to identify individuals who no longer lived in the household. If the household head was not found but the household was identified in the village, the census was administered to another household member who was deemed most knowledgeable about the household's members. In cases in which whole households had moved out of the village, enumerators asked village leaders about the present whereabouts of each household member and the reason for leaving. We were able to identify 1,595 households out of 1,606 households originally sampled in 2004/05.

The focus of the migrant tracking study was to learn about migration and remittance behavior in Ethiopia. Therefore, we asked the tracking survey respondent several detailed questions to further restrict our sample of migrants to those who likely migrated for the purpose of employment rather than, for example, marriage. We initially asked households to list all household members aged 10 years and above who had moved out of the ERHS village to another peasant association for at least three months. To further filter the sample, household heads were asked to specify the reason why each migrant left the household. Based on these responses, we restricted the sample for tracking to individuals who moved due to the loss of land, for employment, or for schooling and who stayed in their destinations for employment, to follow another family member, or for a resettlement program. Finally, we instructed enumeration teams only to follow family members of the household head, since relatives are more likely to send remittances.[4] When the entire household had moved out of the village, we followed entire households that community leaders reported had left primarily for economic reasons.

[4] In pilot testing the questionnaire, we found that households had a difficult time helping us with finding non-family members, as they paid less attention to their whereabouts after leaving the household.

Based on our tracking protocol, we found that 473 migrants were eligible to be tracked. Of those migrants, 85 were overseas, leaving a total of 386 possible to track.[5] We successfully tracked 313 from 244 source households, a tracking success rate of 81 percent.[6] Of those 244 households, 22 were full households, where all members of the household had migrated out of the ERHS village to another destination.

From the perspective of studying changes in well-being in a manner similar to that in Beegle, de Weerdt, and Dercon (2011), the tracking rules actually present an important challenge. To truly understand the returns to migration, the best possible comparison is between individuals who left for work and those that stayed behind but are otherwise equivalent, in both observable and unobservable ways. The comparison in well-being would be between individuals who left for work and those individuals who essentially considered leaving for work, but did not. Individuals who left for work were positively selected on traits that are associated with higher wages; therefore even when controlling for original household fixed effects, our estimates for welfare levels among migrants might be biased upward. To deal with this potential bias, we initially test our IHHFE results for robustness using instrumental variables. It is difficult to find convincing instruments in this case, however, so we also test whether the results are robust to estimation by matching methods.

A further problem is that a third group exists—individuals who moved out of the original households but were not tracked. Since such individuals did not leave the original ERHS households for employment, they may have lower consumption levels than individuals who left for employment. This point is important as it affects the interpretation of our results, and to some extent limits the comparisons we can make. Our primary results should be thought of as the additional returns, in terms of welfare, to moving out of the village to work, rather than to moving out of the village in general.

2.3. Welfare Measures

Our primary goal is to measure the difference in welfare levels between stayers in the ERHS and movers who were included in the migrant tracking study. To do so, we must first measure welfare levels among individuals who stay and individuals who migrate. Objective and subjective welfare measures can be constructed for both types of individuals from the two surveys.

The primary measure of welfare available in the ERHS is per capita consumption, which is computed by valuing all of the food consumed by the household in the past seven days, scaling that measure up to a month, and then adding expenditures on other items purchased by the household in a typical month. The value of any of the household's own production that is consumed is imputed using the median price paid for that good by other households in the same *woreda*, or district. The consumption aggregate has been collected in each round of the ERHS, and the consumption values can then be spatially deflated to ensure they are comparable over space and time. Therefore, the ERHS provides a relatively complete picture of the way living standards have been changing in rural Ethiopia over time (Dercon, Hoddinott, and Woldehanna 2012).

Prior to the 2004/05 round, inflation was quite low in Ethiopia, and so nominal and real values of consumption in the ERHS are quite comparable. However, significant inflation occurred between the 2004/05 and 2009 rounds, fueled in part by rapid increases in grain prices worldwide. Although a measure of inflation can be computed from the 2009 ERHS, it does not apply to tracked migrants, who face different prices at the destination. Therefore, we need an alternative source of data on inflation to properly deflate consumption figures among tracked migrants relative to individuals who stayed in the village.

One possible deflator is the national consumer price index (CPI), which is published monthly by the Ethiopia Central Statistical Agency (CSA). The CPI has two drawbacks, however. First, it does not differentiate between locations, so the CPI misses spatial differences in changing prices apparent from the deflator that can be computed from the ERHS. Second, it is based on a fixed market survey, and all of the markets included in the survey are either urban or peri-urban, so it may not properly reflect changes in rural prices, particularly if they have converged with urban prices over time, therefore rising faster than urban prices. We instead use deflators that are based on the 2005 and 2010 Household Income, Consumption, and Expenditure Survey (HICES) data, also collected by the CSA. With the HICES, we constructed a spatial index that reflects changes in prices for both food and other goods for rural and urban areas within each region of Ethiopia. We then apply those deflators to consumption aggregates computed from the 2009 ERHS and

[5] The majority of international migrants were in the Middle East (Saudi Arabia or Dubai).

[6] Because we knew that we would not find some migrants, we randomly allocated households to two different tracking strategies to attempt to identify any sources of attrition bias; unfortunately, the two strategies were equally successful. From the individual perspective, the only variable we found that had a significant relationship with an indicator variable for successful tracking was whether or not the migrant had a cell phone number. At the household level, there are a few additional statistical differences between households with and without tracked migrants. Tracked migrant households have more adult sons, have a lower propensity to be Muslim, had fewer months in the last year that they were unable to satisfy food needs in the household, and are older. However, the first three differences are only statistically significant at the 10 percent significance level.

migrant tracking survey. The main drawback to the HICES deflators is that high inflation continued through 2009 into 2010, and where this inflation differed spatially our deflator may understate or overstate inflation somewhat for specific locations. That said, the HICES is the best choice of deflator for this purpose.[7]

Another important point is that there is a discrepancy between the way food consumption was measured in the ERHS and in the migrant tracking survey, and as a consequence we need to make an important assumption to compute food consumption among migrants. Unlike the ERHS, the migrant tracking survey did not include a food expenditures module meant to capture consumption in the home. Therefore food purchases were only enumerated in the migrant tracking survey when meals were taken away from home at the destination, as was the frequency of consumption of specific types of foods.[8] To estimate food consumption among migrants, we assign them the value of food consumed within the source household, except for migrants who never ate meals at home (who were assigned a value of zero for home consumption), and add that value to consumption away from home. We then test our results for robustness to this assumption. We test robustness by first estimating impacts on non-food consumption categories that are similar between the two surveys. Second, we make an adjustment to the value of food consumption in the diet. The migrant tracking survey also asked about the frequency of consumption of food over the past seven days among migrants, which was a module also asked in the ERHS. We use the ERHS data and regress consumption on several indicator variables for different types of consumption in the food frequency tables that should indicate higher consumption. We find that households with more meat and animal product consumption generally have higher levels of consumption, and so we adjust migrant consumption based on the coefficient estimates from that regression to account for differences in consumption among migrants. Finally, as an alternative welfare measure, we use whether or not migrants consume more meat or animal products, and the frequency of consumption, which would suggest larger availability of protein and micronutrients in the diet.

Second, we use the rich modules on subjective welfare included in both the 2009 ERHS and migrant tracking surveys. We are particularly interested in how an individual's location relative to a previous location would affect his/her subjective welfare. Several recent papers have measured the way that location might affect subjective welfare measures. For example, Luttmer (2005) suggests both absolute and relative consumption enter the utility function, as panel data from the National Survey of Families and Households show higher local levels of income are associated with lower levels of happiness (controlling for individual household income). Fafchamps and Shilpi (2009) demonstrate subjective welfare measures decrease in Nepal as people become more isolated, controlling for consumption expenditures or mobility (defined by the birthplace of household heads). Finally, Knight and Gunatilaka (2010) find that when comparing averages in rural and urban areas, happiness measures are quite similar, despite a large rural–urban wage gap.

A limitation of using subjective welfare measures from the ERHS is that the questions were not asked to all household members. They were only asked to the household head and the spouse, if the latter was available. The same battery of questions was asked in the migrant tracking survey. Thus, we can compare answers to the same questions among household heads and migrants. Given that we cannot measure changes in individual subjective welfare due to moving, we initially illustrate this comparison descriptively. As we present regression results on whether migrant status affects subjective welfare measures, we consider the motivation for such differences drawing on concepts from the subjective welfare literature, such as frame of reference and heterogeneity in traits. However, migrants are quite different than household heads, potentially biasing estimates, even after conditioning on differences in individual and household characteristics. Because of these large differences, our comparisons of subjective welfare measures should be interpreted with caution.

3. WELFARE GROWTH AND SUBJECTIVE WELFARE BY MOBILITY

In this section, we describe how internal migration affects welfare growth, as measured by differences in per capita consumption between individuals that stayed in the village and moved out of the village (in the aggregate, and distinguishing by destination type). These measures are contrasted with the subjective welfare differentials between individu-

[7] We have estimated the results in the paper using alternative deflators (the national CPI and the internal deflator for ERHS households), and the results in the paper are robust to this choice.

[8] There were two reasons why we did not administer the same consumption module as that included in the ERHS. First, the consumption module asks about household consumption. Many migrants are students who might share homes, but do not necessarily share meals with the remaining household members. Additionally, this same demographic might be less inclined to cook or eat meals at home. For example, when asked whether they eat meals inside of their home that is not purchased, 24 percent of our tracked migrants indicated they did not eat meals at home. Second, some of the migrant destinations span different regions as well as cities (whereas the ERHS is predominantly rural). Due to the differences in the composition of food bundles in these alternative locations, we would need to consider changing the consumption module (originally administered by the ERHS) to include additional food items. However, by doing this, the consumption measures across data sets (ERHS panel and migrant tracking survey) would not be comparable as we did not administer the same framing of questions to those households in the ERHS.

als that stayed in and moved out of the village in 2009 to provide a more complete picture of how internal migration affects living standards.

First, we measure average monthly consumption per capita among individuals who stayed and tracked migrants (Table 3.1). Average consumption rose dramatically between 2004/05 and 2009 for migrants, whereas it slightly changed for individuals who stayed in the village. The difference between food consumption among migrants and non-migrants, however, is not significant, likely due to the omission of food consumed or produced at the home among migrants. Therefore, clearly the measured growth in per capita consumption among migrants comes from a substantial rise in non-food expenditures.[9]

Table 3.1—Average monthly consumption per capita, by mobility, Ethiopia

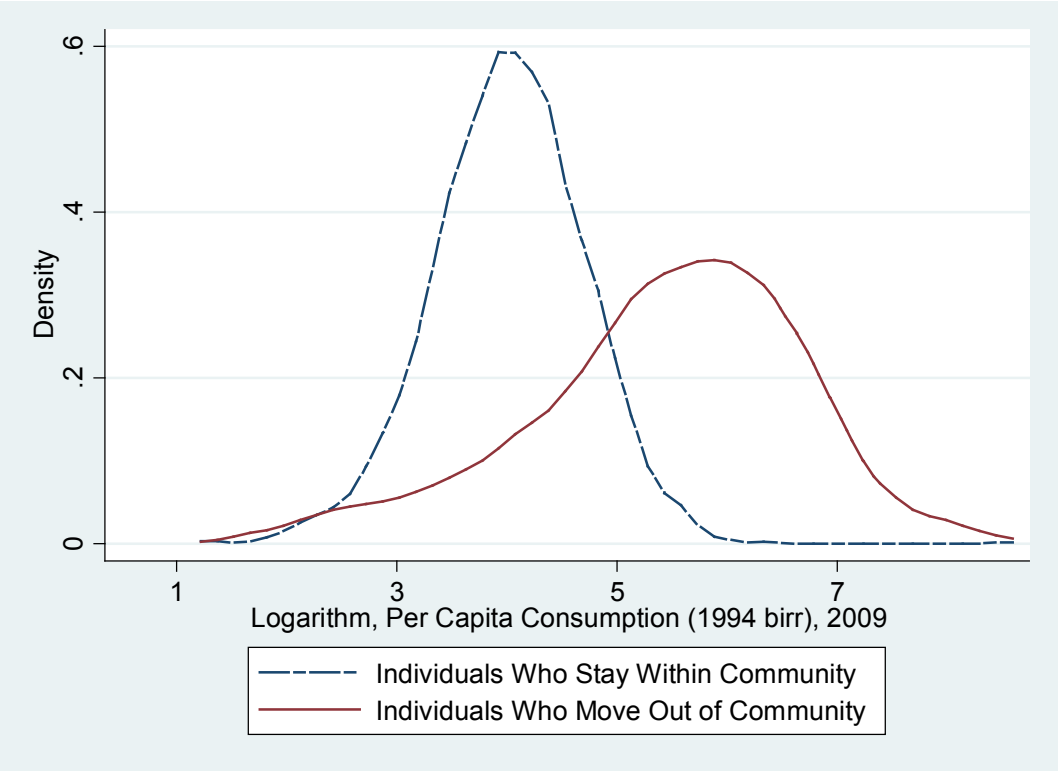
	Average, 2004/05	Average, 2009
Total consumption per capita (1994 Birr)		
All Individuals	68.95	78.25
	(2.91)	(4.13)
Individuals stayed in village	68.95	72.42
	(2.88)	(4.05)
Individuals moved out of village	69.13	192.18
	(5.32)	(18.70)
p-value, movers=stayers	0.964	<0.001
Non-food consumption per capita (1994 Birr)		
All Individuals	4.06	17.13
	(0.20)	(1.23)
Individuals stayed in village	4.06	14.33
	(0.20)	(0.93)
Individuals moved out of village	3.95	71.6
	(0.46)	(13.80)
p-value, movers=stayers	0.796	<0.001

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Consumption figures are reported in 1994 Birr; for reference, the poverty line in 1994 Birr is 50 Birr per capita. Standard errors clustered at the neighborhood level in parentheses. P-values report whether the change in averages for specific groups of movers is statistically different than the change among individuals who stayed in the village. 6,215 total observations; of those, 303 are migrants.

As measured, per-capita consumption is not only higher at the average among migrants, the difference in consumption occurs throughout the distribution (Figure 3.1). The kernel density of the logarithm of consumption in 2009 for migrants is shifted to the right relative to those remaining in the village. We then consider whether migrants consume more animal source foods than household members remaining in the village in 2009 (Table 3.2). We find that a far larger proportion of migrants reported eating meat in the past seven days than household members; 41 percent of migrants ate meat while only 18 percent of those remaining in the village did so. Conditional on consumption, migrants ate meat slightly fewer times per week (2.18 times in the past week versus 2.5 times). The same pattern holds true for all animal products, including products such as eggs and milk (rows 3 and 4). Whereas migrants more frequently reported eating animal products in general (68 percent of migrants versus 47.5 percent of non-migrants), migrants consumed animal products 4.5 times per week while non-migrants consumed them 5.8 times per week conditional on consumption. The latter finding is not surprising, as households self-consume their production in rural areas. If a household owns chickens, they are likely eating eggs daily. Since migrants are substantially more likely to consume animal products and therefore protein and important micronutrients, these results are highly suggestive of improvements in objective living standards.

[9] To ensure that the increase in non-food expenditures was not solely among goods that become necessary for daily life at the destination, such as rent, utilities, and transportation to the place of employment, we do the following. First, we omit rent and utility expenditures from the calculations of per capita consumption, as much of the increase in rent and utilities for migrants is a monetization of goods that the source household could not access (utilities) or had no need to pay (e.g. rent). Second, we disaggregated non-food consumption among tracked migrants, and found that increased averages are spread across several categories that clearly indicate improvements in living standards (phone, health care, personal goods). Consequently, we feel comfortable concluding that the increase in non-food expenditures reflects a real increase in living standards.

Figure 3.1—Per capita consumption (in 1994 Birr), 2009, by whether individuals stayed or moved between 2004/05 and 2009, ERHS villages



Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.

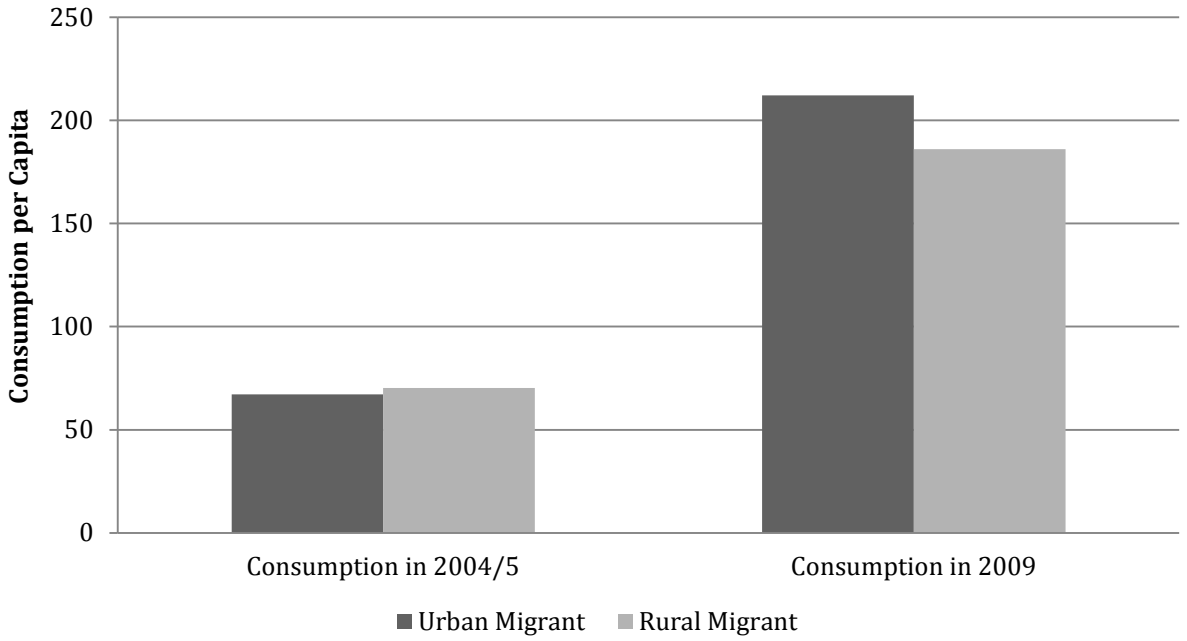
Table 3.2— Proportion and number of times consuming meat or animal products in the past seven days, by migrant status, Ethiopia

	Migrants	Non-Migrants
Proportion of individuals consuming meat, past 7 days	0.413	0.182
	(0.028)	(0.018)
Number of times, conditional on consumption	2.08	2.50
	(0.15)	(0.15)
Proportion of individuals consuming animal products, past 7 days	0.680	0.475
	(0.031)	(0.023)
Number of times, conditional on consumption	4.54	5.84
	(0.34)	(0.28)

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Standard errors clustered at the neighborhood level in parentheses. Animal products are inclusive of meat; non-meat animal products include milk and eggs. Individuals could report eating animal products up to three times per day.

A further question is whether a difference exists in living standards among migrants who went to rural and urban areas. We therefore next examine average per capita consumption in both the 2004/05 and 2009 rounds, disaggregating by rural/urban status (Figure 3.2). Whereas we find only a small difference between the two in 2004/05, there is a sizeable difference in expenditures by 2009; urban migrants appear better off than rural migrants. We return to this difference in the regression section of the paper.

Figure 3.2—Consumption per capita among migrants, 2004/05 and 2009, by type of destination (rural or urban)



Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.

3.1. Subjective Welfare

While the aforementioned statistics suggest substantial benefits to migration, they do not account for the way that migrants or those left behind might perceive their standard of living. Individuals were asked to either agree or disagree with the following statements: "Taken all together, these days I am very happy"; "My food consumption over the past month was more than adequate for my needs"; "Concerning my housing, it was more than adequate for my needs"; "Concerning my health care, it was more than adequate for my needs"; "In general, I would describe myself as doing well, able to meet my needs by my own efforts"; and "I am a lot richer compared to my father at about the same age". In general, both household heads and migrants seldom agree with these statements (Table 3.3). One such answer suggests that migrants are comparing themselves to a new group. For example, although we observe above that their food consumption has improved relative to non-migrants along one quality dimension (animal source proteins), they answer the question related to adequate food consumption affirmatively at the same rate as household heads. That said, migrants tend to answer questions related to health care and being able to meet one's own needs slightly more affirmatively than the household heads in the ERHS.

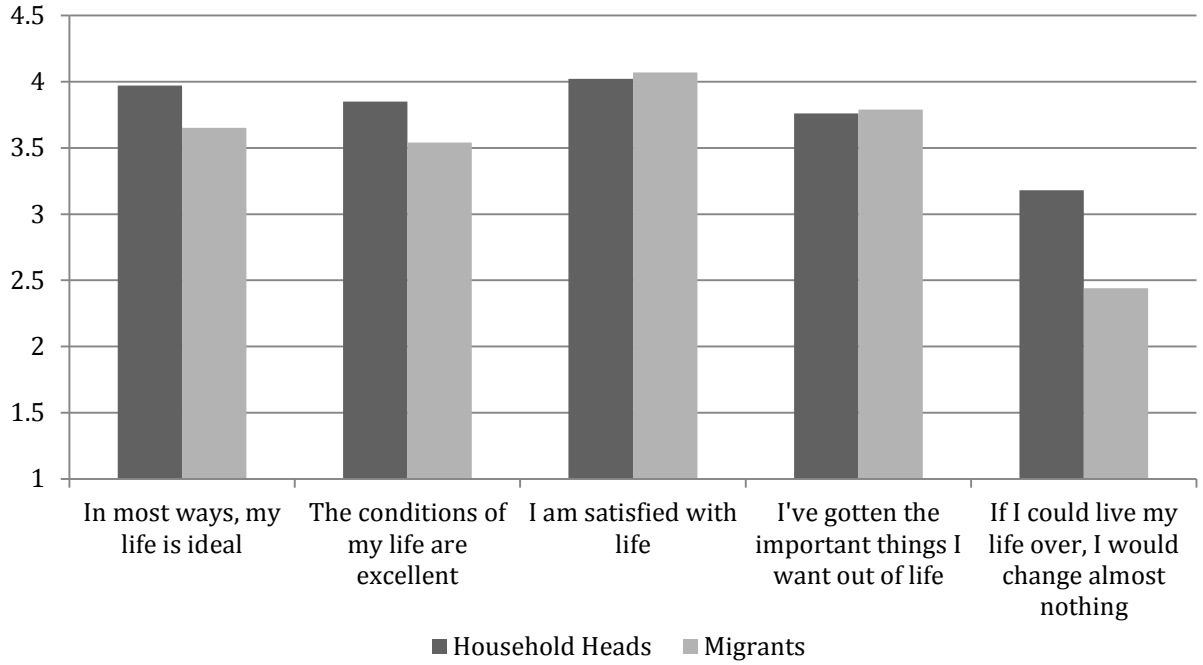
Table 3.3—Questions measuring happiness or subjective welfare, proportion agreeing with statement, by mobility, Ethiopia, 2009

Subjective Happiness Statement Sample or subsample	Individuals staying in village	Individuals moving out of village	p-value, difference in proportion
Taken all together, these days I am very happy	0.16 (0.01)	0.17 (0.03)	0.732
My food consumption over the past month was more than adequate for my needs	0.06 (0.01)	0.06 (0.02)	0.652
Concerning my housing, it was more than adequate for my needs	0.08 (0.01)	0.08 (0.02)	0.988
Concerning my health care, it was more than adequate for my needs	0.08 (0.01)	0.13 (0.02)	0.039
In general, I would describe myself as doing well, able to meet my needs by my own efforts and making some extra	0.08 (0.01)	0.13 (0.02)	0.007
I am a lot richer compared to my father at about the same age	0.07 (0.01)	0.05 (0.01)	0.374

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: p-values report whether proportions for specific groups of movers are statistically different than the proportion agreeing among individuals who stayed in the village.

The surveys further asked about several ordinal measures of subjective welfare. Here, we report on reactions among household heads and migrants to five specific statements, which were rated on a scale from "strongly disagree" (1) to "strongly agree" (7).[10] The statements are "In most ways, my life is ideal"; "The conditions of my life are excellent"; "I am satisfied with life"; "I've gotten the important things I want out of life"; and "If I could live my life over, I would change almost nothing". We compare average answers among household heads and migrants (Figure 3.3), and find that if anything, migrants have lower numerical answers to those questions than household heads. Some of the answers to these questions may particularly be susceptible to the frame of reference (Kahneman and Varey 1991). For example, someone who lives in a village might agree differently "I am satisfied with life" given the alternatives within the village than someone who has seen a lot more of the world. Nonetheless, the preliminary evidence suggests that although objective measures of welfare appear significantly higher among migrants than non-migrants, subjective welfare measures suggest that migrants do not necessarily perceive their lives as any better than household heads who have stayed in the village.

Figure 3.3—Average answers to ordinal subjective welfare questions, household heads and migrants, Ethiopia, 2009



Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.

In summary, we find large differences in living standards when we examine objective measures of well-being, but we find almost no differences when we examine subjective well-being. Further, there are a few questions for which migrants appear to actually have lower levels of subjective well-being, at least on average. The latter result may have to do with the fact that household heads in the ERHS are substantively older and less educated than our sample of tracked migrants, and therefore are generally at different stages of their life cycle. We will attempt to control for these differences in the next section.

4. METHODOLOGY AND RESULTS

We have shown by objective measures that welfare among migrants has increased relative to individuals staying in the village. However, the difference could be due to differences in human capital levels, for example, and not due to migration. To initially measure the gains to migration in Ethiopia in a more robust framework, we follow the methodology of Beegle, de Weerdt, and Dercon (2011). We specify a model as follows:

$$\Delta \ln C_{iht+1,t} = \alpha_h + \beta M_{it+1} + \gamma \boldsymbol{X_{it}} + \varepsilon_{it} \qquad (1)$$

[10] Further measures of subjective well-being are available in both surveys; we use the questions reported here as they represent a diversity of different possible reactions.

where $\Delta \ln C_{iht+1,t} = \ln C_{iht+1} - \ln C_{iht}$, or the change in the logarithm of monthly per capita consumption for individual *i* originally in household *h* at time *t* (or *t+1*). In the above specification, ***X*** represents individual characteristics measured in the initial period, *M* is an indicator variable for an individual who migrates out of the household between *t* and *t+1*, and α_h represents a household-specific fixed effect. By including initial household fixed effects (IHHFE in the terminology of Beegle, de Weerdt, and Dercon 2011), we identify within household differences in consumption growth, therefore controlling for initial growth paths. A further advantage of this model is that we can control for individual differences through the vector **X**, which includes categorical variables for age, gender, and educational status.

Although equation (1) controls for individual level characteristics and household fixed effects, other variables at the individual level that are unobserved likely still affect migration. For example, if individuals who are more risk seeking are more likely to migrate, then even controlling for individual level observables and household fixed effects, the results might at least partially reflect returns to risk seeking rather than returns to migration. Because there is no source of truly exogenous variation that causes migration in this setting, we use two techniques to attempt to control for any potential remaining bias in our estimates of the impacts of migration on measures of well-being.

First, we apply an instrumental variables approach. We identify variables that should affect the opportunity to migrate, but not the growth in per capita consumption except through individual migration. In this setting, if we can identify a set of instruments that are both strongly statistically related to migration and not otherwise related to growth in consumption, then we can estimate the impacts of migration without bias, at least among individuals likely to respond to changes in the instruments (Angrist and Krueger 2001). Following the argument in Beegle, de Weerdt, and Dercon (2011), we use three indicator variables as instruments: whether the individual was the household head or spouse in the baseline, and whether the ERHS household head was of Oromo or Gamo ethnicity interacted with whether the individual was in the age category of 5 to 15 years.

Social relationships, push-pull factors, and historical migration rates or networks are strong predictors of migration and have been used in the literature as instruments for migration (McKenzie and Rapaport 2007; Beegle, de Weerdt, and Dercon 2011). In particular, labor demand characteristics are possible candidates for instruments as they reflect the economic opportunities in a given location. Like Beegle, de Weerdt, and Dercon (2011), we focus on a specific demographic, young adult males (age 5 to 15 years old at baseline), since these individuals are more marketable in migrant occupations that require physical exertion (such as hired rural labor) as well as specific service jobs.[11] To reflect historical migration rates (and network potential), we interact the age variable with the ethnic background of the ERHS household head at baseline. Historical policies such as the resettlement policy of the Derg regime bore impact on migration rates. Though the premise for resettlement was to mitigate vulnerability to famine, scholars suggest an alternative political motivation to subdue national movements driven by ethnic groups (Woldemeskel 1989). The current regime actively promotes an ethnic democracy, which includes attracting former refugees into ethnic-based federated regions (Mberu 2006). The policies underlie movement patterns within Ethiopia and suggest the use of ethnic background interacted with demographic characteristics of the individual as instruments for migration.

Finally, we use a third variable based on the argument that norms and social circumstances are likely to affect migration, but not unobserved characteristics related to changes in well-being. Specifically, we expect that the household head and the spouse of the head are less likely to migrate than others. As such, we include as an instrument an indicator variable for individuals who were the head or spouse in the 2004/05 survey round.[12]

While intuitively we discussed the predictive power of the instrumental variables on migration behavior, the use of the variables is subject to the exclusion restriction being satisfied. We do not expect the proposed instrumental variables to be correlated with changes in welfare outside of the migration channel for two reasons. The majority of the households within the ERHS villages are from the same ethnic group. This precludes excluding individuals from the network by definition, rendering the value of this form of social capital negligible. Next, heads of households and their spouses are more likely to remain in the household, and together their role is less likely to bear direct consequences on welfare changes irrespective of their fixed position in the household. We later challenge the exclusion restrictions by testing whether they are satisfied statistically.

Our second approach is to use covariate matching to estimate impacts of migration (e.g., Ham, Li, and Reagan 2011), to provide alternative estimates when identified instruments are weakly correlated with migration. Because we have a differenced outcome variable and a number of baseline characteristics as covariates, under standard assumptions matching estimates should be low bias estimates of the average effect of migration on living standards (Heckman,

[11] Driving and security jobs were very common among migrants surveyed in Addis Ababa (World Bank 2010).
[12] Empirical results are not materially different if this instrument is removed from regressions.

Ichimura, and Todd 1997; Heckman et al. 1998).[13] We estimate matching models using covariate matching with a bias adjustment and robust standard errors, using the procedure developed in Abadie and Imbens (2008). A concern one might have is that some of the migrants might have very different characteristics than people they end up matched to in the remaining households. To check the robustness of our main results to this potential concern, we also estimate propensity scores using individual and household characteristics, and we trim the sample used in matching to only include migrants and individuals in the ERHS who are in the region of common support.

4.1. Results: Consumption per Capita

We estimate equation (1), sequentially adding groups of explanatory variables (Table 4.1).[14] We find large, stable coefficient estimates for the impacts of migration on consumption. These estimates are reasonably consistent whether we only control for the age and gender of the individual (column 1), age, gender, and education (column 2), or all individual level variables plus initial household fixed effects (column 3).[15] The latter estimate suggests a 0.74 log point increase in consumption due to migration, which corresponds to a 110 percent increase in consumption among individuals who migrated. This increase is quite consistent with the descriptive statistics reported in Table 3.1 and substantially larger than the average results reported by Beegle, de Weerdt, and Dercon (2011) for migrants in Tanzania, though it is reasonably close to their finding for migration to well-connected areas. The results clearly suggest consumption per capita increases for migrants, controlling for other factors and accounting for spatial price differences. In columns 4 through 6, to effectively test the robustness of our results to using non-food consumption categories common to both papers, we estimate a coefficient of 1.1 on migration, suggesting even larger gains in non-food consumption.

Table 4.1—Impacts of migration on change in consumption and non-food consumption per capita, Ethiopia

	(1)	(2)	(3)	(4)	(5)	(6)
Migrant? (1=yes)	0.714***	0.702***	0.743***	1.268***	1.239***	1.103***
	(0.102)	(0.099)	(0.086)	(0.162)	(0.161)	(0.151)
Male	0.003	-0.007	0.012**	0.001	-0.008	0.012
	(0.018)	(0.020)	(0.005)	(0.028)	(0.032)	(0.009)
Aged 5 to 15	0.182***	0.184***	-0.023	0.150	0.175*	-0.041
	(0.062)	(0.063)	(0.016)	(0.095)	(0.105)	(0.025)
Aged 16 to 25	0.186***	0.186***	-0.011	0.155	0.157	-0.016
	(0.058)	(0.059)	(0.015)	(0.093)	(0.099)	(0.029)
Aged 26 to 35	0.146***	0.143**	-0.023	0.083	0.071	-0.039
	(0.062)	(0.061)	(0.018)	(0.103)	(0.108)	(0.031)
Aged 36 to 45	0.173***	0.178***	-0.024	0.197*	0.216**	-0.033
	(0.066)	(0.063)	(0.015)	(0.101)	(0.105)	(0.026)
Aged 46 to 55	0.146***	0.150***	-0.019	0.233**	0.246**	-0.041
	(0.068)	(0.068)	(0.017)	(0.096)	(0.098)	(0.030)
Aged 56 to 65	0.132	0.137	-0.032	0.077	0.093	-0.032
	(0.083)	(0.082)	(0.024)	(0.119)	(0.120)	(0.030)
Education less than 8 years		0.037	0.016**		0.017	0.019
		(0.052)	(0.007)		(0.069)	(0.013)
Education between 8 and 12 years		-0.009	0.046		0.153	0.137***
		(0.077)	(0.029)		(0.119)	(0.044)
Education is 12 years		0.218	0.054		0.276	0.105
		(0.088)	(0.043)		(0.159)	(0.067)
Initial household fixed effect?	no	no	yes	no	no	yes
Observations	6,133	6,054	6,054	6,130	6,050	6,050
R-squared	0.030	0.032	0.358	0.044	0.046	0.315

Source: ERHS and the Migrant Tracking Survey.
Notes: Standard errors clustered at the village level in parentheses. *** indicates significance at the 1 percent level; ** indicates significance at the 5 percent level; * indicates significance at the 10 percent level.

[13] The differenced matching estimator does rely on the additive separability of error terms (Heckman et al. 1997), which is not required of cross-sectional matching estimators.
[14] Descriptive statistics of the regressors included in the regression models are provided in Appendix Table A.1.
[15] Markedly the most consistent significant determinant of both consumption and income is primary and secondary education. For income, this finding is consistent with or without the inclusion of the household fixed effect. For consumption, the finding surfaces only in the household fixed effect model. The discrepancy in findings across models is not too surprising given that consumption is more largely determined by the demands specific to the household, hence the reason for drawing mainly on findings from the initial household fixed effects model.

On the other hand, it is likely that migrants remain positively selected on some unobservable individual characteristics. To the extent that positive selection exists, we overestimate the impact of mobility on per capita consumption. As described above, we next use both IV methods and difference-in-difference matching to attempt to control for positive selection bias. The results of this exercise (Table 4.2) are largely consistent with the previous findings.[16] We use IVs both without and with individual characteristics (columns 1 and 2, respectively). We estimate cluster-corrected F statistics of better than 18 in both cases, suggesting that weak-instrument bias is minimal, and Hansen J statistics suggest that overidentification is not a concern. In both specifications the point estimates for the coefficient on migration are somewhat larger than for ordinary least squares (OLS), suggesting negative rather than positive selection of migrants.

Table 4.2—Association of migrant status with change in consumption per capita, estimated with instrumental variables and covariate matching techniques, Ethiopia

Explanatory variables	Instrumental variables		Covariate matching	
	(1)	(2)	(3)	(4)
Migrant indicator	0.91***	0.78***	0.73***	0.72***
	(0.10)	(0.23)	(0.08)	(0.08)
Individual characteristics?	No	yes		
Trimmed sample?			no	yes
Observations	5,971	5,801	5,856	4,945
Kleibergen-Paap F statistic (weak instruments)	44.71	18.73		
Hansen J Statistic	1.72	1.14		
(overidentification; p-value)	(0.42)	(0.57)		

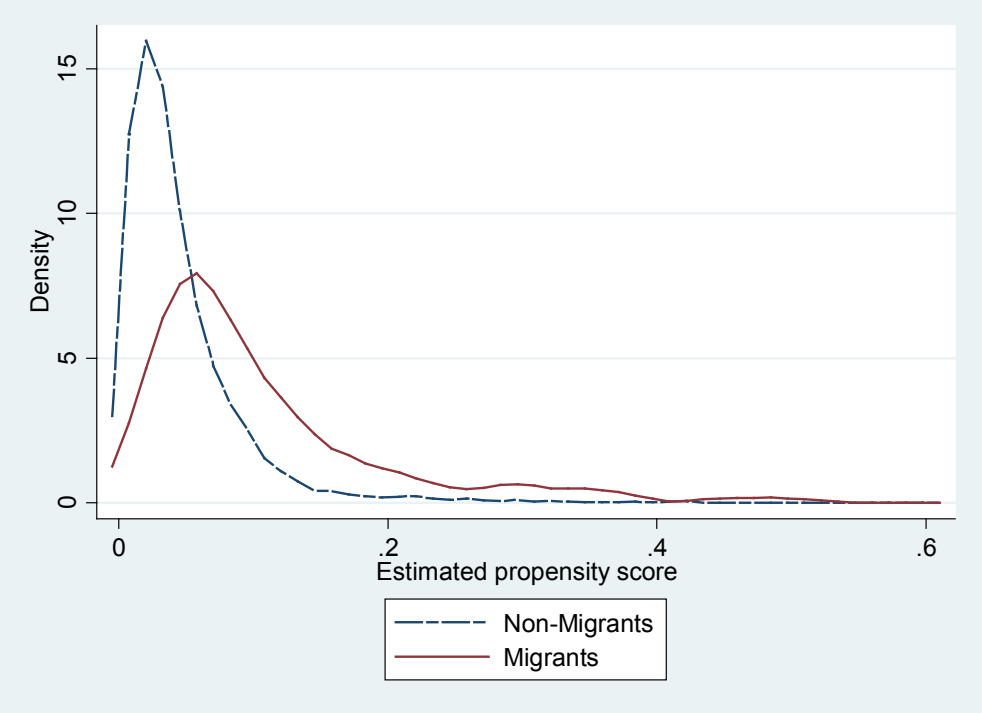
Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Columns (1) and (2) estimated using instrumental variables; first stage results can be found in Appendix Table A.2. Columns (3) and (4) estimated using covariate matching; column (4) is initially trimmed using propensity scores to include the region of propensity scores between 0.02 and 0.2. Standard errors clustered at the village level in parentheses in columns (1) and (2); robust standard errors in parentheses in columns (3) and (4). *** indicates significance at the 1 percent level. All Kleibergen-Paap F statistics are significant at the 1 percent level or better.

To provide further evidence that the results are not being driven by unobserved characteristics, we use difference-in-difference matching methods. We begin by estimating the propensity score for migration, using a probit model for migration selection which includes a large set of observed individual and household level characteristics, including the age, gender, and education level of the migrant, age and education of the household head, and proxy variables for the source of the household's wealth (the logarithm of landholdings and the number of tropical livestock units).[17] We use the results of the probit to first predict propensity scores, and then we ensure overlap in the propensity scores by plotting kernel densities of the propensity scores both among migrants and non-migrants (Figure 4.1). The figure demonstrates a concentration of non-migrants around zero; in part because the overall migration rate is fairly low in the sample. Second, we find lower density beyond propensity scores of approximately 0.2. Although there are observations in both the migrant and non-migrant groups with propensity scores above 0.2, it is worth testing whether results are sensitive to removing such individuals. Therefore, in estimating matching models, we test the robustness to trimming the lower and upper tails of the distributions, to ensure better matches.

The matching approach produces migration impact estimates largely consistent with the OLS results rather than the IV results (Table 4.2, columns 3 and 4). The untrimmed estimate (column 3) suggests a 108 percent increase in consumption due to migrating. The trimmed coefficient estimate (column 4) is nearly the same as the untrimmed estimate (105 percent), suggesting that matching performed well. As with the IV estimates, matching estimates suggest that positive selection in the data is minimal. The coefficient estimate is again large in magnitude, consistent with other findings. Together, these results suggest large and strong gains to migration in Ethiopia.

[16] We include first stage results in Appendix Table A.3.
[17] The probit model results are in Appendix Table A.4.

Figure 4.1—Estimated density of propensity to migrate, by tracked migrant status in 2009, Ethiopia



Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.

As a robustness check, we estimate a version of equation (1) that replaces the dependent variable with whether or not the individual ate meat or animal products and the number of times the individual ate meat or animal products in 2009 during the past seven days (Table 4.3), again including initial household fixed effects. We find that migrants were 27.3 percentage points more likely to eat meat (column 1), and ate meat 0.385 times more often than non-migrants in 2009 (column 2). Both coefficients are statistically significant at the 5 percent level or better. Migrants were also 26.4 percentage points more likely to eat animal products in the past seven days than non-migrants (column 3), though the estimated coefficient on the "number of times" variable was not significantly different from zero. In the final row, we report coefficients on the migrant variable estimated through the covariate matching method described in Table 4.2, using the trimmed estimator. All of the matching coefficients are consistent with the results described above. Taken together, these results provide strong evidence that diets and food consumption have improved among migrants, and potentially suggest we may be understating overall consumption gains to migration in Table 4.1.[18]

[18] We also attempt to adjust the food consumption at home to account for additional animal product consumption (placing a value on meat and other animal production consumption using a regression) in Appendix Table A.2; we then estimate a coefficient of 0.90 on the migration indicator, nearly consistent with the estimate for non-food consumption alone.

Table 4.3—Impacts of migration on consumption of meat and animal products, Ethiopia

Dependent Variable	Meat		Animal Products	
	(1)	(2)	(3)	(4)
Migrant? (1=yes)	0.273***	0.385**	0.264***	0.376
	(0.043)	(0.175)	(0.061)	(0.499)
Male	-0.004	0.003	-0.004	-0.045
	(0.004)	(0.013)	(0.005)	(0.033)
Aged 5 to 15	-0.009	-0.003	-0.010	-0.089
	(0.007)	(0.028)	(0.013)	(0.092)
Aged 16 to 25	-0.001	0.024	-0.002	-0.060
	(0.010)	(0.023)	(0.015)	(0.087)
Aged 26 to 35	-0.013	-0.003	-0.006	-0.184
	(0.010)	(0.036)	(0.015)	(0.099)
Aged 36 to 45	-0.020**	-0.035	-0.022*	-0.186
	(0.008)	(0.024)	(0.014)	(0.089)
Aged 46 to 55	-0.015	-0.020	-0.016	-0.156
	(0.009)	(0.029)	(0.015)	(0.096)
Aged 56 to 65	-0.007	0.031	-0.002	-0.069
	(0.009)	(0.038)	(0.014)	(0.094)
Education less than 8 years	-0.008	-0.030	-0.001	-0.040
	(0.006)	(0.019)	(0.007)	(0.045)
Education between 8 and 12 years	0.028	0.053	0.010	0.115
	(0.022)	(0.066)	(0.024)	(0.190)
Education is 12 years	0.099	-0.080	0.008	-0.252
	(0.078)	(0.403)	(0.046)	(0.565)
Initial household fixed effect?	yes	yes	yes	yes
Observations	3,959	3,959	3,959	3,959
R-squared	0.184	0.03	0.132	0.009
Covariate Matching Coefficient				
Migrant? (1=yes)	0.278***	0.481***	0.286***	0.571
	(0.043)	(0.138)	(0.044)	(0.424)

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Standard errors clustered at the village level in parentheses. *** indicates significance at the 1 percent level; ** indicates significance at the 5 percent level; * indicates significance at the 10 percent level. Columns (1) and (3) use an indicator variable for consumption as the dependent variable; columns (2) and (4) use the frequency of consumption over the past 7 days.

4.2. Heterogeneous Effects

We next examine whether the magnitude of the estimated coefficient on migration varies by migrant characteristics associated with the returns to human capital and the transferability of migrant skills. We focus on an OLS specification as other models rendered similar results (Table 4.4). We initially estimate separate coefficients for male and female migrants (column 1). We find that in terms of per capita consumption, welfare among males improves relative to females. We estimate a coefficient of 1.03 on consumption among males, versus 0.58 among females. We reject the null that the coefficients are the same at the 5 percent level. Nonetheless, the magnitudes of the coefficient estimates continue to suggest large consumption gains to migration among both males and females.

We next allow for migration effects on welfare to vary by migrant destination, as we compare the effects of migrants who moved to a rural versus an urban *woreda*, defining *woredas* with populations over 50,000 as urban. Differentiating the migration effects by destination poses additional challenges in identification, because you might expect the magnitude of selection among urban migrants to be greater than that of rural migrants since the barriers to urban migration are greater and require additional financial or network support to overcome. For example, to obtain an urban registration card allowing access to services and formal employment, one must establish residence through homeownership or a formal endorsement from one's landlord. Therefore, it would not be surprising given the potential for greater positive selection among urban migrants to see a larger effect. Sure enough, we estimate a larger coefficient among urban (1.08) than rural (0.73) migrants.

Table 4.4—Impacts of migration on change in consumption per capita conditional on migrant characteristics, estimated with ordinary least squares, Ethiopia

	Consumption	
	(1)	(2)
Male migrant	1.03***	
	(0.09)	
Female migrant	0.58***	
	(0.08)	
Rural migrant		0.73***
		(0.09)
Urban migrant		1.08***
		(0.10)
Chi-squared test:		
Male=Female (p-value)	<0.001	
Chi-squared test:		
Rural=Urban (p-value)		0.003
Observations	6,054	6,054

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: All equations are estimated including individual characteristics and initial household fixed effects. Standard errors clustered at the village level in parentheses. *** indicates significance at the 1 percent level.

4.3. Subjective Welfare Effects

In this sub-section, we provide regression results that initially estimate correlates with improvements in subjective welfare among migrants and household heads, respectively. There are some important aspects of the study of subjective welfare that warrant discussion prior to introducing methodology. First, one must consider how heterogeneity in traits across individuals can affect answers to subjective welfare questions and importantly how comparisons might be affected across individuals (Ravallion and Lokshin 2001). In our study, we expect subjective welfare estimates to differ when using the samples of household heads and migrants, since at the very least one could argue they are at difference stages of the life cycle. However, it is also possible that we face within-sample heterogeneity, particularly within the sample of migrants, which can further obfuscate interpretation. Second, individual frames of reference might affect answers to subjective welfare questions (Kahneman and Varey 1991). With regards to latent heterogeneity, Beegle, Himelein, and Ravallion (2012) use vignettes about households in the 2007 Tajikistan National Household Survey to anchor subjective welfare measures. They find that a frame of reference effect exists, but it is not an important source of bias in modeling the objective determinants of subjective welfare. Similarly, Ravallion and Lokshin (2010) show that relative deprivation affects individuals in Malawi, but the effect is primarily found among richer individuals. Thus, any measured subjective welfare differences between migrants and non-migrants could stem from frame of reference variations. Third, a regression estimating the relationship between present subjective welfare and present consumption may be biased if unobserved variables that affect both outcomes are omitted.

For the six binary indicators of subjective well-being, we run a regression of the form:

$$U_{it}^{*} = \alpha + \alpha_m M_i + \beta_h \boldsymbol{X}_{it-1} + \beta_m M_i \boldsymbol{X}_{it-1} + \gamma_h C_{it} + \gamma_m M_i C_{it} + u_{it} \qquad (2)$$

where U* is a latent variable representing the subjective welfare outcome, **X** are individual and household characteristics measured in the 2004/05 survey, M indicates migrants, and C is present consumption, which we include as a proxy for ordinal well-being.[19] We estimate equation (2) using a probit model. Because we find few similarities between migrants and non-migrants, we estimate separate coefficients between migrants and non-migrants.[20]

We initially regress the six indicator variables on age, gender, two education categories (the left out category is no school attendance), household landholdings, livestock holdings (in tropical livestock units), the number of sons and daughters of the household head, and present consumption (Table 4.5). All of the variables are interacted with migrant status, including the constant, and we test whether the coefficients are jointly significant. Because the migrant coefficients are additive, we present coefficient estimates rather than marginal effects.

[19] Cross-country studies typically use income (Easterlin et al. 2010). We follow the subjective welfare literature in less developed countries and use consumption in lieu of income (Fafchamps and Shilpi 2009; Ravallion and Lokshin 2010), as income is particularly variable in developing countries (Deaton 2000).

[20] See Appendix Figure A.1 which illustrates the probability of being a migrant among both the migrant group and the household heads, based on a probit model. In the language of propensity score matching, we find no common support between the two groups.

Table 4.5—Estimating correlations with answers to discrete subjective welfare questions, by migrant status, subsample of household heads and migrants, controlling for present consumption, Ethiopia

Dependent variable	Taken all together, these days I am very happy	Food consumption over the past month adequate for my needs	Housing was more than adequate for my needs	Health care was more than adequate for my needs	Meeting own needs and making some extra	Richer than father at same age
Household head characteristics						
Age (in years)	-0.035	0.017	-0.004	-0.059	-0.049	0.027
	(0.031)	(0.038)	(0.046)	(0.044)	(0.042)	(0.037)
Gender (1=male)	0.108	0.165	0.132	0.029	-0.109	0.162
	(0.103)	(0.164)	(0.143)	(0.120)	(0.123)	(0.122)
Education less than 8 years	0.010	0.004	0.060	0.015	0.386***	0.117
	(0.101)	(0.111)	(0.105)	(0.107)	(0.116)	(0.141)
Education over 8 years	-0.150	-0.345	-0.396	-0.009	0.375	0.395*
	(0.182)	(0.257)	(0.263)	(0.223)	(0.246)	(0.222)
Logarithm, Landholdings	-0.012	0.017	-0.107	0.007	0.084	-0.131
	(0.072)	(0.063)	(0.049)	(0.066)	(0.071)	(0.050)
Tropical Livestock Units	0.010	0.009	0.026**	0.023*	0.057***	0.048***
	(0.013)	(0.013)	(0.013)	(0.012)	(0.014)	(0.012)
Number of sons, HH Head	0.050	0.114***	0.008	0.041	0.063*	-0.032
	(0.027)	(0.033)	(0.036)	(0.032)	(0.034)	(0.051)
No. of daughters, HH Head	0.043	0.026	-0.029	-0.037	-0.023	0.027
	(0.033)	(0.044)	(0.032)	(0.038)	(0.031)	(0.037)
Log Consumption, 2009	0.228***	0.221**	0.003	0.189***	0.256***	0.319***
	(0.070)	(0.089)	(0.081)	(0.070)	(0.082)	(0.090)
Interaction with migrant indicator						
Migrant (1=yes)	-0.483	-1.963**	-0.909	0.969	-0.482	1.718**
	(0.646)	(0.914)	(1.010)	(0.821)	(0.781)	(0.709)
Age (in years)	0.192*	0.016	-0.035	-0.070	-0.055	-0.094
	(0.100)	(0.117)	(0.120)	(0.114)	(0.086)	(0.093)
Gender (1=male)	0.020	-0.288	-0.193	0.086	-0.008	-0.143
	(0.180)	(0.373)	(0.305)	(0.257)	(0.237)	(0.335)
Education less than 8 years	0.104	-0.460	-0.291	0.109	-0.215	-0.108
	(0.268)	(0.363)	(0.321)	(0.279)	(0.264)	(0.428)
Education over 8 years	0.411	-0.346	-0.295	-0.081	-0.492	0.050
	(0.416)	(0.530)	(0.460)	(0.367)	(0.403)	(0.537)
Logarithm, Landholdings	-0.089	0.249*	0.276**	0.007	0.029	-0.147
	(0.122)	(0.137)	(0.128)	(0.126)	(0.143)	(0.090)
Tropical Livestock Units	-0.042	-0.190***	-0.051	-0.019	-0.080**	-0.018
	(0.037)	(0.068)	(0.038)	(0.029)	(0.035)	(0.039)
Number of sons, HH Head	-0.153**	0.028	0.032	-0.095	0.026	0.040
	(0.060)	(0.081)	(0.076)	(0.062)	(0.078)	(0.092)
No. of daughters, HH Head	0.069	<0.001	0.053	0.054	0.106	-0.011
	(0.064)	(0.097)	(0.081)	(0.082)	(0.067)	(0.104)
Log Consumption, 2009	-0.007	0.537***	0.276	-0.160	0.157	-0.384**
	(0.112)	(0.172)	(0.178)	(0.150)	(0.158)	(0.186)
Number of Obs.	1,677	1,674	1,673	1,673	1,652	1,586
Log-Likelihood	-708.8	-364	-443.4	-488.7	-446.9	-359.1
Chi-Square, interactions	21.23	55.41	12.27	5.08	11.98	21.17
p-value, Chi-square	0.019	<0.001	0.267	0.886	0.268	0.020

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Migrant variables are interacted with migration indicator and coefficients should be interpreted as additive. Chi-square test tests the hypothesis that coefficients on all migrant variables are jointly zero. Standard errors clustered at the village level in parentheses. * indicates significance at the 10 percent level; ** indicates significance at the 5 percent level; *** indicates significance at the 1 percent level.

We find household level characteristics are correlated with high subjective well-being among the household heads. Markedly, we find that consumption is almost always positively correlated with affirmative statements; only in the case of the statement about housing is it not significant. Further, households with more livestock (in 2004/05) are often more likely to agree with the welfare statements. Therefore, it appears that wealth is often correlated with higher subjective well-being among household heads.

Analyzing the additive coefficients among migrants, we find few statistically significant coefficients. A couple of exceptions do occur; the migrant indicator is positive and significant for the "richer than father at same age" statement, suggesting that migrants are more likely to answer in the affirmative, holding other things constant. We also estimate negative coefficients on the livestock holdings variable for two of the six questions. Because these coefficients are additive, they act to negate the positive coefficients among household heads. We also find one negative and significant coefficient on the number of sons the household head has, as well as one on consumption.

Though few individual coefficients on interaction terms are statistically significant, we can reject the joint significance of coefficients on the migrant interactions and the migrant indicator for three of the six dependent variables at the five percent level or better. Since it is not very plausible that several of these variables would affect migrant subjective well-being in the present (e.g. landholdings in 2004/05 among the household), the fact that we reject all coefficients being jointly zero strongly suggests that answers to subjective well-being questions are systematically different among migrants from answers among household heads. These systematic differences are likely due to a difference in the frame of reference. Consequently, when we estimate models to explain the ordinal measures, we estimate separate models for migrants and household heads.[21]

For the ordinal subjective welfare measures that take on values from 1 to 7, we modify equation (2) slightly and estimate:

$$Y_{it}^{*} = \alpha_j + \beta \boldsymbol{X_{i,t-1}} + \gamma C_{it} + u_{it} \quad (3)$$

Where we index X by t-1 to note that these variables are all measured in the 2004/05 survey. We also now estimate separate break points α_j for each transition j in the dependent variable (from 1 to 2; 2 to 3; etc.). In all cases, we cluster standard errors at the village level. Following the subjective welfare literature, we estimate equation (3) by ordered probit.

We estimate equation (3) for all five ordinal measures of subjective welfare separately for migrants and household heads (Table 4.6). Among migrants, we find only a few statistically significant correlations. Specifically, we find that male migrants give a higher score to the statement, "In most ways, my life is ideal" than female migrants, whereas males give a lower score to the statement "If I could live my life over, I would change almost nothing". We also find a positive correlation between the number of daughters the household head has and the score given to the statement "I am satisfied with life". Among household heads, we find more statistically significant correlations. Notably, we find that older household heads give a higher score to the statement "If I could live my life over, I would change almost nothing". Higher landholdings and livestock holdings lead to higher scores among household heads, as does higher consumption levels; clearly, better off household heads tend to associate higher scores to these five statements.

Taking these results together, we can conclude that migrants have a different frame of reference than household heads. This finding might not be surprising for a number of reasons. Migrants are younger and more educated than household heads. They may be less satisfied in general with life, or alternatively less easy to satisfy; this reasoning may have led them to migrate in the first place. Their frame of reference may have changed on an alternative dimension as well. Household heads may compare themselves to others in their village, as suggested by Fafchamps and Shilpi (2009). Migrants, on the other hand, likely either compare themselves more to people in the destination or their peers. Consequently, it is perhaps not surprising that we find higher objective welfare measures among migrants but similar subjective welfare measures.

[21] While we cannot address problems of latent heterogeneity or potentially the changing frame of reference with our data, we can address the primary concern about explaining subjective well-being status, which is the endogeneity of consumption. We do so by replacing present consumption (C_{it}) with the previous period consumption (C_{it-1}) to serve as a more exogenous measure of objective well-being (Appendix Table A.5). We find that coefficients drop slightly in magnitude among household heads and lose significance; the additive coefficients for migrants are never significant. Since these results do not differ much, we estimate further models in the paper using present consumption.

Table 4.6—Estimating correlations with answers to ordinal subjective welfare questions, by migrant status, subsample of household heads and migrants, controlling for present consumption, Ethiopia

Dependent variable	In most ways, my life is ideal		My food consumption over the past month was more than adequate for my needs		I am satisfied with life		I've gotten the important things I want out of life		If I could live my life over, I would change almost nothing	
Covariate	Migrant	Household heads	Migrant	Household heads	Migrant	Household heads	Migrant	Household heads	Migrant	Household heads
Age (in years)	0.064	0.004	-0.026	-0.002	-0.065	0.013	-0.036	0.040*	0.060	0.101***
	(0.057)	(0.020)	(0.071)	(0.021)	(0.089)	(0.021)	(0.076)	(0.022)	(0.072)	(0.026)
Gender (1=male)	0.364***	0.102	0.102	0.096	0.145	0.056	0.001	0.027	-0.293**	0.075
	(0.129)	(0.063)	(0.114)	(0.063)	(0.113)	(0.063)	(0.143)	(0.060)	(0.124)	(0.058)
Education less than 8 years	0.104	-0.025	0.105	-0.030	-0.075	0.037	0.023	-0.006	-0.187	0.044
	(0.168)	(0.062)	(0.192)	(0.069)	(0.193)	(0.062)	(0.160)	(0.069)	(0.135)	(0.080)
Education over 8 years	0.181	-0.407***	0.285	-0.278***	0.105	-0.097	0.085	-0.227*	-0.177	0.025
	(0.218)	(0.147)	(0.191)	(0.108)	(0.199)	(0.111)	(0.206)	(0.126)	(0.193)	(0.154)
Logarithm, Landholdings	-0.011	0.041	-0.023	0.121*	-0.077*	0.125**	0.066	0.143**	0.042	0.131**
	(0.052)	(0.043)	(0.073)	(0.062)	(0.046)	(0.058)	(0.067)	(0.056)	(0.078)	(0.052)
Tropical Livestock Units	-0.001	0.037***	-0.038**	0.043***	-0.012	0.029**	0.005	0.028**	0.014	-0.001
	(0.022)	(0.010)	(0.018)	(0.011)	(0.019)	(0.011)	(0.018)	(0.012)	(0.027)	(0.012)
Number of sons, Household head	0.028	-0.002	<0.001	0.016	-0.053	0.013	0.038	0.006	0.070*	0.002
	(0.039)	(0.021)	(0.045)	(0.022)	(0.045)	(0.020)	(0.053)	(0.020)	(0.041)	(0.019)
No. of daughters, Household head	0.080**	0.005	0.015	0.047**	0.078**	0.023	0.032	-0.019	<0.001	-0.027
	(0.037)	(0.022)	(0.049)	(0.020)	(0.039)	(0.020)	(0.038)	(0.017)	(0.060)	(0.023)
Log Consumption, 2009	0.036	0.221***	0.121*	0.393***	0.020	0.366***	-0.062	0.223***	-0.176**	-0.043
	(0.068)	(0.055)	(0.084)	(0.064)	(0.072)	(0.058)	(0.080)	(0.051)	(0.077)	(0.063)
Number of Obs.	292	1,383	293	1,382	293	1,381	293	1,384	293	1,383

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Estimation method in all cases is ordered probit. All explanatory variables are measured in 2004/05. Standard errors clustered at the village level in parentheses. * indicates significance at the 10 percent level; ** indicates significance at the 5 percent level; *** indicates significance at the 1 percent level.

5. CONCLUSION

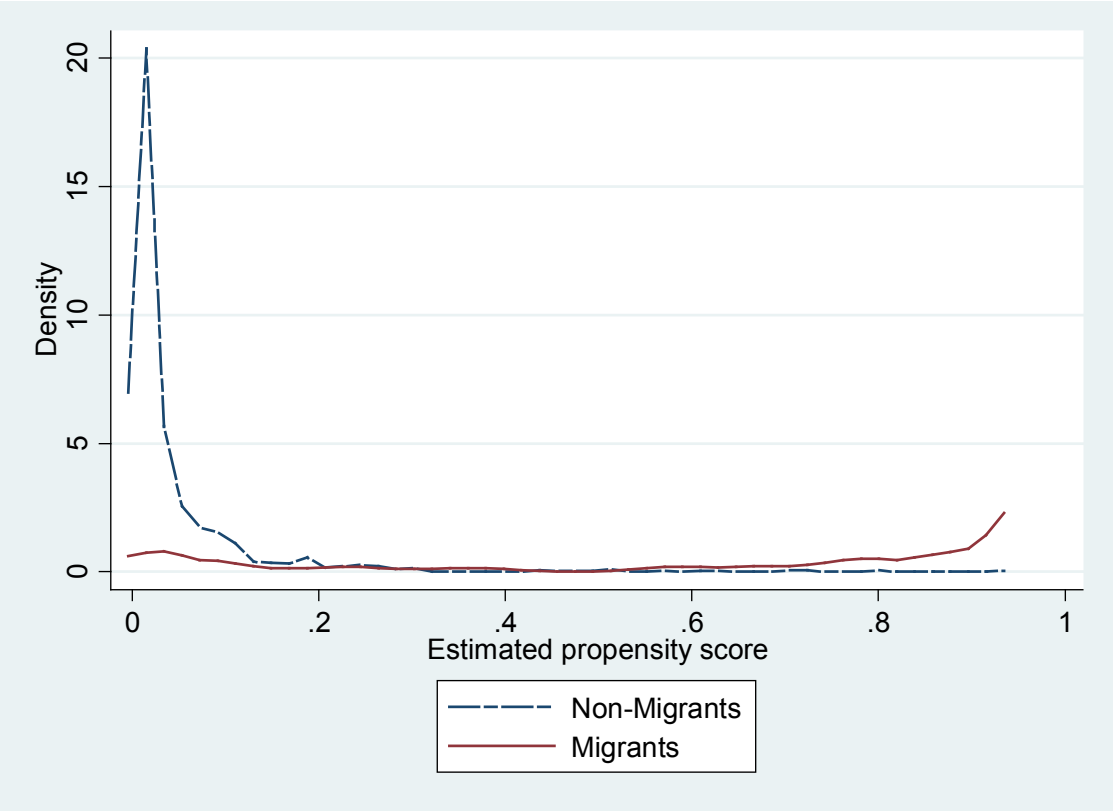
In this paper, we use a five-year panel of individuals to identify the benefits of moving out of rural villages. By tracking a set of individuals who stayed and left the village over time, we can include more control variables to improve measurement of the gains to migration than most studies. With a focus on employment migration, our results are larger than gains found to mobility in Tanzania (Beegle, de Weerdt, and Dercon 2011) and robust to various specifications and outcomes. We find that consumption per capita increases by 110 percent in our primary estimate among migrants; the results are similar using alternative methods, which suggests that positive selection does not appear to be a large concern. We find larger benefits to male migrants than females, though the benefits to females remain substantial. We also find that the frequency of meat and animal source food consumption increases among migrants, which points to a real increase in their diet and therefore standard of living. In partial equilibrium terms, an increase in internal migration in Ethiopia would appear to lead to large gains in the standard of living.

In descriptive analysis we do not find substantial differences between subjective measures of welfare among migrants and household heads despite the fact that they have very different characteristics. Though we cannot put a causal interpretation on these results, it is notable that migrants do not necessarily perceive their lives as any better than household heads who have stayed in the village, contrary to earlier work in Europe and Asia (Simpson, forthcoming). This result could be due to the fact that migrants have a different frame of reference; someone who lives in a village might agree differently with “I am satisfied with life” given the alternatives within the village than someone who has seen a lot more of the world. These hypotheses may be linked to the fact that we find strong correlations between objective and subjective welfare measures among household heads, but not among migrants.

From a policy perspective, it is important to further disseminate studies that measure the impacts of population mobility. Recent work suggests substantial gains to movement out of rural subsistence farming. Adding quantitative evidence on the individual welfare impacts of migration can shed light on alternative strategies to subsistence farming, particularly in areas facing severe land and environmental constraints.

APPENDIX

Appendix Figure A.1—Probability of being a migrant, predicted from a probit model, subsample of household heads and migrants, Ethiopia, 2009



Source: Migrant Tracking Survey, 2009.

Appendix Table A.1—Descriptive statistics for variables included in regressions

	Number	Mean	Standard deviation
Moved out of community	6,227	0.05	0.21
Individual baseline characteristics (2004/05)			
Male	6,148	0.50	0.50
Some primary education	6,142	0.49	0.50
Completed primary education	6,142	0.06	0.24
Completed secondary education	6,142	0.02	0.13
Age 5–15 years	6,224	0.28	0.45
Age 16–25 years	6,224	0.27	0.44
Age 26–35 years	6,224	0.14	0.35
Age 36–45 years	6,224	0.12	0.33
Age 46–55 years	6,224	0.08	0.27
Age 56–65 years	6,224	0.06	0.24
Baseline excluded instruments			
Head or spouse	6,221	0.40	0.49
Head's ethnicity is Oromo*Age 5–15	6,063	0.10	0.30
Head's ethnicity is Gamo*Age 5–15	6,063	0.01	0.08

Source: Migrant Tracking Survey, 2009
Notes: Demographic variables are measured in 2004/05.

Appendix Table A.2—Impacts of migration on change in consumption per capita, using an alternative measure of consumption adjusted for animal product consumption, Ethiopia

	(1)	(2)	(3)
Migrant	0.878***	0.871***	0.903**
	(0.105)	(0.103)	(0.100)
Male	0.001	-0.008	0.012
	(0.017)	(0.020)	(0.005)
Aged 5 to 15	0.185***	0.189***	-0.019
	(0.062)	(0.063)	(0.016)
Aged 16 to 25	0.184***	0.187***	-0.008
	(0.058)	(0.059)	(0.014)
Aged 26 to 35	0.150**	0.152***	-0.020
	(0.062)	(0.061)	(0.018)
Aged 36 to 45	0.174**	0.181***	-0.022
	(0.066)	(0.063)	(0.015)
Aged 46 to 55	0.155**	0.160**	-0.014
	(0.068)	(0.068)	(0.016)
Aged 56 to 65	0.137	0.142	-0.029
	(0.083)	(0.082)	(0.026)
Education less than 8 years		0.034	0.017**
		(0.051)	(0.008)
Education between 8 and 12 years		-0.020	0.036
		(0.076)	(0.020)
Education is 12 years		0.158	0.008
		(0.091)	(0.051)
Initial household fixed effect?	no	no	Yes
Observations	6,133	6,054	6,054
R-squared	0.058	0.059	0.421

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Standard errors clustered at the village level in parentheses. *** indicates significance at the 1 percent level; ** indicates significance at the 5 percent level; * indicates significance at the 10 percent level.

Appendix Table A.3—First stage regressions, relationship between migration and proposed instruments, Ethiopia

Variable	(1)	(2)
Male		0.004
		(0.006)
Aged 5 to 15		-0.003
		(0.018)
Aged 16 to 25		0.051***
		(0.016)
Aged 26 to 35		0.036**
		(0.017)
Aged 36 to 45		0.011
		(0.013)
Aged 46 to 55		0.001
		(0.014)
Aged 56 to 65		0.018
		(0.014)
Education less than 8 years		0.013**
		(0.006)
Education between 8 and 12 years		0.087***
		(0.022)
Education is 12 years		0.242***
		(0.059)
Head or spouse	-0.072***	-0.048***
	(0.008)	(0.011)
Head is of Oromo ethnicity*Age 5–15 years	-0.050***	0.001
	(0.013)	(0.015)
Head is of Gamo ethnicity*Age 5–15 years	-0.133***	-0.087**
	(0.035)	(0.036)
Observations	5,971	5,801
R-squared	0.03	0.07
F statistic, Instruments	44.70	18.73

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Columns correspond to IV estimates in Table 4.4. Standard errors clustered at the village level in parentheses. * indicates significance at the 1 percent level; ** indicates significance at the 5 percent level; *** indicates significance at the 10 percent level.

Appendix Table A.4—Probit underlying propensity scores used to ascertain appropriateness of matching methods for estimating impact of migration on consumption, Ethiopia

Explanatory Variable	Estimated Marginal Effect
Age of Individual (/10)	0.018
	(0.010)*
Age, squared (/100)	-0.004
	(0.002)**
Gender (1=Male)	0.014
	(0.005)***
Education less than 8 years	0.010
	(0.005)**
Education between 8 and 12 years	0.085
	(0.022)***
Education is 12 years	0.236
	(0.070)***
Age of Household Head (/10)	0.007
	(0.002)***
Years of Education, Household head	-0.010
	(0.003)*
Log, Land per capita, Household	-0.010
	(0.003)***
Tropical Livestock Units owned	-0.0002
	(0.001)
Number of Sons, Household head	-0.001
	(0.001)
Number of Daughters, Household head	0.001
	(0.002)

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Standard errors clustered at the village level in parentheses. Estimates are reported as marginal effects, evaluated at the mean of the independent variable when variable is continuous. . * indicates significance at the 1 percent level; ** indicates significance at the 5 percent level; *** indicates significance at the 10 percent level.

Appendix Table A.5—Estimating correlations with answers to discrete subjective welfare questions, by migrant status, subsample of household heads and migrants, controlling for previous consumption, Ethiopia

Dependent Variable	Taken all together, these days I am very happy	Food consumption over the past month adequate for my needs	Housing was more than adequate for my needs	Health care was more than adequate for my needs	Meeting own needs and making some extra	Richer than father at same age
Household head characteristics						
Age (in years)	-0.030	0.024	-0.004	-0.054	-0.041	0.032
	(0.031)	(0.038)	(0.047)	(0.044)	(0.041)	(0.037)
Gender (1=male)	0.083	0.131	0.125	-0.004	-0.154	0.113
	(0.102)	(0.163)	(0.143)	(0.119)	(0.123)	(0.118)
Education less than 8 years	0.034	0.023	0.058	0.027	0.409***	0.151
	(0.103)	(0.111)	(0.104)	(0.106)	(0.115)	(0.138)
Education over 8 years	-0.108	-0.306	-0.403	0.009	0.408	0.446**
	(0.192)	(0.255)	(0.258)	(0.222)	(0.255)	(0.219)
Logarithm, Landholdings	0.031	0.061	-0.119	0.039	0.138*	-0.095
	(0.075)	(0.069)	(0.054)	(0.070)	(0.074)	(0.056)
Tropical Livestock Units	0.017	0.010	0.022*	0.024**	0.060***	0.050***
	(0.015)	(0.013)	(0.013)	(0.012)	(0.014)	(0.013)
Number of sons, HH Head	0.037	0.110***	0.021	0.041	0.050	-0.036
	(0.028)	(0.033)	(0.036)	(0.030)	(0.035)	(0.051)
No. of daughters, HH Head	0.031	0.024	-0.015	-0.036	-0.028	0.027
	(0.033)	(0.044)	(0.033)	(0.038)	(0.032)	(0.040)
Log Consumption, 2004/05	0.007	0.094	0.114**	0.097	0.044	0.130*
	(0.055)	(0.063)	(0.051)	(0.057)	(0.068)	(0.068)
Interaction with migrant indicator						
Migrant (1=yes)	-0.828	0.289	0.674	0.853	0.668	0.270
	(0.899)	(0.853)	(0.922)	(0.739)	(0.781)	(0.916)
Age (in years)	0.108	-0.022	-0.044	-0.060	-0.055	-0.083
	(0.102)	(0.103)	(0.113)	(0.115)	(0.084)	(0.109)
Gender (1=male)	0.108	-0.066	-0.090	0.136	0.178	-0.115
	(0.176)	(0.340)	(0.268)	(0.243)	(0.224)	(0.311)
Education less than 8 years	0.099	-0.282	-0.221	0.109	-0.166	-0.168
	(0.268)	(0.338)	(0.318)	(0.282)	(0.262)	(0.436)
Education over 8 years	0.431	0.074	-0.114	-0.069	-0.322	-0.040
	(0.412)	(0.491)	(0.455)	(0.360)	(0.391)	(0.501)
Logarithm, Landholdings	-0.170	-0.058	0.217	-0.025	-0.088	-0.191**
	(0.139)	(0.131)	(0.134)	(0.140)	(0.128)	(0.087)
Tropical Livestock Units	-0.045	-0.127**	-0.035	-0.018	-0.063**	-0.026
	(0.039)	(0.053)	(0.035)	(0.031)	(0.031)	(0.038)
Number of sons, HH Head	-0.137**	-0.043	0.000	-0.099	0.002	0.049
	(0.060)	(0.072)	(0.076)	(0.062)	(0.077)	(0.094)
No. of daughters, HH Head	0.093	0.024	0.050	0.052	0.108	-0.004
	(0.064)	(0.084)	(0.086)	(0.083)	(0.069)	(0.104)
Log Consumption, 2004/05	0.142	0.102	-0.084	-0.136	-0.08	-0.038
	(0.171)	(0.191)	(0.169)	(0.145)	(0.171)	(0.205)
Number of Obs.	1,674	1,671	1,670	1,670	1,649	1,583
Log-Likelihood	-706.8	-374.7	-443.7	-490.4	-456.8	-364.2
Chi-Square, interactions	14.57	19.61	6.77	6.42	13.42	16.18
Chi-square p-value	0.149	0.033	0.747	0.779	0.201	0.095

Source: ERHS 2004/05 and 2009, and Migrant Tracking Survey.
Notes: Migrant variables are interacted with migration indicator and coefficients should be interpreted as additive. Chi square test tests the hypothesis that coefficients on all migrant variables are jointly zero. Standard errors clustered at the village level in parentheses. * indicates significance at the 10 percent level; ** indicates significance at the 5 percent level; *** indicates significance at the 1 percent level.

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The Ethiopia Strategy Support Program II is an initiative to strengthen evidence-based policymaking in Ethiopia in the areas of rural and agricultural development. Facilitated by the International Food Policy Research Institute (IFPRI), ESSP II works closely with the government of Ethiopia, the Ethiopian Development Research Institute (EDRI), and other development partners to provide information relevant for the design and implementation of Ethiopia's agricultural and rural development strategies. For more information, see http://www.ifpri.org/book-757/ourwork/program/ethiopia-strategy-support-program or http://essp.ifpri.info/ or http://www.edri.org.et/.

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