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## **Migration and the autonomy of women left behind**

Julia Anna Matz<sup>1</sup> and Linguère Mously Mbaye<sup>2</sup>

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**Abstract:** This paper investigates the impact of migration of male household heads on the autonomy of their spouses. Using panel household survey data from Ethiopia, the methodology mainly relies on an instrumental variables approach that addresses the endogeneity inherent in the relationship using past migration as the instrument and carefully paying attention to the role of remittances. We find consistent evidence that male migration increases female self-determination and decision-making power, and (to a lesser extent) the ability to protect one's interests. As all these variables measure autonomy, our results suggest that migration of husbands offers an opportunity for women to become more autonomous in traditional societies. Furthermore, through comparison with a household fixed-effects model with contrasting findings, our results indicate that a careful treatment of the inherent endogeneity is imperative.

**Keywords:** migration, women empowerment, female autonomy

**JEL classification:** D13, J16, O15

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<sup>1</sup> Center for Development Research (ZEF), University of Bonn, Bonn, Germany; <sup>2</sup> African Development Bank Group, Abidjan, Côte d'Ivoire, and IZA, Bonn, Germany; corresponding author: [l.mbaye@afdb.org](mailto:l.mbaye@afdb.org)

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Katajanokanlaituri 6 B, 00160 Helsinki, Finland

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Male dominated families have become female dominated with the departure of their male heads. (Gulati 1993: 10)

## 1 Introduction

Labour migration is an important strategy to cope with income shocks in developing countries and often occurs in the form of temporary migration of the household head (Dercon 2002). At the same time, efforts to strengthen the level of female autonomy and the female position vis-à-vis their husbands in developing countries have been on the agenda for some time now—for example, with the help of law changes enabling female access to assets (e.g., Brulé 2010; Deininger et al. 2013; Matz and Narciso 2010). While female autonomy is a goal in itself, it has been documented that increased female decision-making and control over assets have positive effects in general (Duflo 2003; Pitt and Khandker 1998; Qian 2008) and that high levels of female power in decision-making are important for reducing fertility, improving maternal health care, or the outcomes of children with respect to health and education (Abadian 1996; Bloom et al. 2001; Dyson and Moore 1983; Furuta and Salway 2006).

Interestingly, the concepts of migration and female autonomy have hardly been linked and there is little empirical evidence on the effect of migration on the autonomy or bargaining power of spouses. If there is, the relationship between migration and female autonomy appears less straightforward than what might be expected, and strongly depends on the characteristics of the migration and on cultural norms with respect to the situation of women (Connelly et al. 2010; De Hass and Van Rooij 2010; Tuccio and Wahba 2015). This paper contributes to the literature in this field by investigating the impact of migration of the male household head on the autonomy of his female spouse that stays behind, using household survey data from rural Ethiopia.

On the one hand, migration and the associated absence of the household head may directly lead to more absolute decision-making power on the part of his spouse, especially in rural areas of developing countries where most decision-making power typically lies with the household head and in situations when decisions need to be made without the possibility of joint discussion. This increase in decision-making power may, over time, increase the spouse's confidence due to the proven ability to make important decisions, as suggested by Gulati (1993), and thereby increase her autonomy and lead to a shift in bargaining power in her favour in general, and possibly also upon the household head's return as she may not be willing to transfer her additional decision-making power back to her husband entirely. On the other hand, it is also possible that the husband takes back the responsibility upon his return or that female autonomy does not even increase to begin with, due to other family members taking on the role of the household head.

De Hass and Van Rooij (2010) look at the effect of male internal and international migration on the position of women left behind in rural southern Morocco. Using qualitative and quantitative data they find that women living in nuclear migrant households have more responsibilities and control over the use of their husbands' earnings than those in non-migrant households. Moreover, these women decide independently regarding the use of remittances, small investments, and purchases, and they have a say in matters related to the education of children. However, their decision-making authority is only temporary and is perceived as a burden rather than a source of emancipation by women themselves. This is due to the fact that men take back the authority when they return, and that women are afraid of being socially excluded by taking on male responsibilities. Thus, De Hass and Van Rooij (2010) argue that migration has an indirect rather than a direct effect on female emancipation. Even though their study is mainly descriptive and presents correlations rather than a causal relationship between migration and women's emancipation, it supports the idea of migration of household heads leading to more autonomy of their spouses that underlies the

current study to a certain extent. In another study, Antman (2015) investigates the effect of male migration from Mexico to the United States on the expenditure on education and clothing for children. She finds the expenditure shares of girls to increase upon migration of the head and those of boys to increase upon his return.

Addressing the endogeneity of migration and subsequent return, other evidence on married women in two rural provinces in China suggests lasting effects of migration on the female position in households, although these effects are not necessarily positive or universal (Connelly et al. 2010). Tuccio and Wahba (2015) have a different focus and investigate whether gender norms from the destination are transferred by return migration, which is a different mechanism through which migration may lead to equality change in gender roles. Interestingly, they find migration to decrease female autonomy, their results being driven by migrants who return to Jordan from conservative Arab countries.

The current research paper differs from the ones described here in numerous aspects. First, we focus on what happens to the self-assessed autonomy of the female spouse when the household head is not present, taking into account and addressing the inherent empirical challenges such as selection, omitted variables, and reverse causality, thereby adding to the existing literature.<sup>1</sup> Second, we aim to provide new evidence and a better understanding of the relationship between migration and female autonomy using a careful quantitative analysis of longitudinal household data from rural Ethiopia. Third, while Antman (2015) argues for the effect of male migration on the expenditure shares for children to be grounded on changes in relative decision-making power, this is an interpretation based on an investigation of male migration and its relation to expenditures for children, not with bargaining power or autonomy as an outcome variable in itself. Our paper, in contrast, investigates the effect of male migration on the reported autonomy and confidence of spouses of household heads, a much more general and direct measure of female autonomy, instead of resorting to proxying autonomy by expenditure on children, female education, age at marriage, or spousal age difference, as suggested by, for example, Abadian (1996).

We use longitudinal data from rounds six and seven of the Ethiopian Rural Household Survey (ERHS), collected in 2004 and 2009, respectively. Our methodology first relies on household fixed effects to account for potential selection into migration and omitted variable bias due to unobservable time-invariant characteristics at the household level. A related difficulty is potential reverse causality. If migration of the household head can affect the autonomy of women left behind, it may also be the case that the decision for migration by the head was influenced by the level of female decision-making power within the household. Consequently, we address this potential source of endogeneity in our main empirical specification by instrumenting current migration of the household head with past migration from the place of residence.

Employing a household fixed-effects model and investigating differences within households over time rather than differences between households, we find evidence for a negative association between migration of the household head and the autonomy of his spouse. Interestingly, when the endogeneity inherent in the relationship is more thoroughly addressed in the instrumental variables approach and when remittances are carefully treated, the reverse is true and we find consistent

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<sup>1</sup> Return migration and female migration are by definition not the scope of our paper. It is also necessary to note that we have extremely limited cases of return migration due to the way the survey allows measuring migration (by observing absence at the time of the data being collected only—that is, we do not have information on absences between survey rounds), which would make it difficult to test the relationship between return migration of the male household head and the autonomy of the female spouse empirically with the data employed here. For the same reason, we are unable to take into account the duration of migration.

evidence for a positive effect of male migration on female self-determination, decision-making power, and (to a lesser extent) the ability to protect one's interests.

The paper is structured as follows: Section 2 presents the existing literature. Section 3 describes the data and presents descriptive statistics. Section 4 discusses the inherent empirical challenges, our identification strategy, and the empirical results. Section 5 concludes.

## 2 Background

We investigate migration in the context of Ethiopia and draw on two strands of the literature. First, we are interested in studies investigating migration as a coping mechanism in developing countries and, second, we focus on studies looking at the determinants of female autonomy.

Starting with the literature on migration, income shocks are a severe risk for rural agricultural households, and the choice and effectiveness of coping strategies is the topic of a rather large body of literature (e.g., Dercon 2002; Hoddinott 2006). Rather than depleting assets as discussed by Rakib and Matz (2016), Kochar (1995) finds additional labour income to be a coping strategy for dealing with shocks in India, and Dercon (2002) mentions migration for employment as a coping strategy in Ethiopia. Similarly to the seasonal migration described by Konseiga (2007), Graves and Graves (1974) mention circular migration—that is, the moving back and forth between the rural place of origin and the urban destination—as a common type of migration with the aim of ensuring livelihoods and earning income in Africa.

Besides being a coping strategy, migration in Ethiopia has been influenced by violence, poverty, famine, and lack of opportunities. In this context, internal migration has been estimated to be more important than international migration, although exact figures are not available (Fransen and Kuschminder 2009). Internal migration flows are mainly composed of: rural–urban migration due to an increasing trend for urbanization in Ethiopia; rural–rural migration mainly due to the migration of women to their husband's community after getting married or perceived as an adaptation strategy to adverse agricultural and living conditions; and resettlement policies due to conflicts and food insecurity (Fransen and Kuschminder 2009; Mberu 2006). According to the World Bank (2011), in 2010 the international migration rate was 0.7 per cent of the Ethiopian population, with the main destinations being Sudan, the United States, Israel, Djibouti, Kenya, Saudi Arabia, Canada, Germany, Italy, and Sweden. Furthermore, in 2015 Ethiopia was listed among the top ten countries of remittance recipients, with US\$0.6 billion in incoming remittances (World Bank Group 2016).

Besides migration, this paper deals with female autonomy defined very similarly as by Dyson and Moore (1983: 45), who describe female autonomy as 'the capacity to manipulate one's personal environment'. Put differently, women are relatively autonomous when they have the ability to make decisions with regard to personal and household affairs. In agrarian societies, female autonomy is shaped by cultural and sociological factors such as the family, kinship, and marital relationships. For instance, societies with exogamic marriage rules, in which women do not maintain strong ties with their kin of origin, have less freedom of mobility, and fewer rights with respect to the inheritance of property; furthermore, these societies have low female autonomy in general (Dyson and Moore 1983). Rahman and Rao (2004) re-examine this idea based on the dichotomy of the demographic situations of northern and southern India with more recent data. They provide a multivariate econometric analysis to assess the impact of not only cultural but also economic factors and policy interventions on female autonomy. Overall, they find that, while cultural factors such as village exogamy and consanguinity matter, they are not the main determinants of female autonomy, which is in contrast to the findings of Dyson and Moore (1983). Public investments, such as

infrastructure and economic factors proxied by higher female wages are found to increase both female mobility and autonomy.

The role of economic opportunities is also emphasized by Anderson and Eswaran (2009). Using data from rural Bangladesh and an instrumental variables approach, they demonstrate that wage income as opposed to unearned income and access to labour markets, measured by employment outside the husband's farm, are key determinants of female autonomy. The latter result reinforces the hypothesis that female autonomy may be greater when the household head has migrated because women have control over family income in the absence of their husbands. Other factors such as education, socioeconomic status, education, age at marriage, and spousal age difference are found to play a role in determining female autonomy (Abadian 1996; Heaton et al. 2005).

### 3 Data and descriptive statistics

#### 3.1 Data

The effect of migration of the household head on the autonomy of his spouse is investigated empirically by using detailed longitudinal household survey data from rural Ethiopia. We use rounds six and seven of the ERHS, a joint project of the Centre for the Study of African Economies (CSAE) at Oxford University, the Department of Economics of Addis Ababa University, and the International Food Policy Research Institute (IFPRI), collected in 2004 and 2009, respectively. The data cover 15 communities with a large sample of households randomly selected within each community. The data are representative of households living in non-pastoralists farming as of 1994 (Dercon and Hoddinot 2004). The use of a longitudinal dataset is crucial in this kind of study as individuals under investigation are not purposefully surveyed in order to investigate migration and as a time dimension is necessary to generate a sample of households with migrated heads of a size sufficient for empirical investigation.<sup>2</sup>

As the questionnaire does not explicitly ask for temporary migration in both rounds, observing short-term migration of household members is difficult unless the individual is absent at the time of the survey. This means that we can only observe migration if a member is absent at the time of the survey, but not if he migrated and returned between two waves of the survey. Any found estimated effect would therefore be subject to a downward bias.

In order to investigate the degree of self-determination of female spouses in response to migration of the male head of the household and due to the bargaining situation in female-headed or polygamous households potentially being inherently different, the unit of observation is the head's spouse and the sample is limited to monogamous households with male heads and female spouses, and to households with female heads from which the male head has (temporarily) left.<sup>3</sup> Naturally, we exclude households in which the head has left because of death.

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<sup>2</sup> The ERHS has extremely small attrition rates, with 7 per cent between 1989 and 1994 and 2 per cent between 1994 and 1995 (Dercon and Krishnan 1998). Over 80 per cent of the households that were interviewed in 1999 were re-interviewed in 2004, and almost 83 per cent of those interviewed in 2004 were re-interviewed in 2009, in addition to more than one-quarter of those who were interviewed in 1999 but not part of the sample in 2004.

<sup>3</sup> Almost 30 per cent of the households in the total sample of the survey are headed by women in round six, with over 60 per cent of them being widowed and over 15 per cent being divorced. Seventeen per cent of them are married, but only under 8 per cent of female heads have co-residing spouses. For the purpose of this paper, households need to consist of both a head and exactly one spouse of the head, but of whom the original head may have migrated and the spouse may have taken on the role of the head during the time of the original head's absence, even if she may not be

## 3.2 Descriptive statistics

Descriptive statistics for the variables used in this study are presented in Table 1. As measuring autonomy is a challenge in itself, a number of variables for female autonomy are investigated. Specifically, we explore the degree to which the respondent, that is, the spouse of the household head, agrees with the following statements: ‘My life is determined by my own actions’, ‘I have the power to make important decisions that change the course of my life’, and ‘I am usually able to protect my personal interests’.<sup>4</sup> These variables are ordinal and range from zero (‘strongly disagree’) to seven (‘strongly agree’), and are used both in this ordinal way and as indicator variables taking a value of 1 if the respondent agrees at least ‘slightly’ (defined in the questionnaire as the ordinal variable taking a value of at least 5), and 0 if she does not. We employ these binary variables as a robustness check due to the non-linear nature of the ordinal variables and in order to facilitate seeing an effect through the use of these coarser categories.

Table 1 contains descriptive statistics for the full sample (columns 1–3), for households in which the respondents’ partners, that is, the household heads, have migrated (columns 4–6), which is a share of approximately 9 per cent of the full sample, and for households in which both the respondent and her partner are present (columns 7–9). In addition, mean-comparison tests to compare the latter two groups are presented in the final column of the table. The discussion here is restricted to key variables of interest and noteworthy differences between the different samples.

The statistically significant differences between the mean values of self-determination and decision-making power indicate that female spouses living in households whose head has migrated enjoy greater self-reported autonomy. Note, however, that a statistically significant difference is not found between the binary measures of self-determination and decision-making power, and that no difference is found between female spouses in households with and without migrated household heads regarding their ability to protect their interests.

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the designated head in the household roster. Note that we use the ‘original head’ when referring to the household head throughout the paper and for our measure of migration, for which the longitudinal nature of the survey is ideal.

The inclusion of female-headed households with co-residing male spouses would likely falsify the results of an analysis of spousal autonomy (despite their extremely small share), which is the reason for excluding this group.

<sup>4</sup> As these questions have not been part of the survey before round six, the data collected before round six may not be used for the investigation apart from providing information on past migration, as explained below.

Table 1: Descriptive statistics

Variable	Full sample			Households with migrated heads			Households with present heads			t-test (4)–(7)
	(1) Mean	(2) SD	(3) <i>N</i>	(4) Mean	(5) SD	(6) <i>N</i>	(7) Mean	(8) SD	(9) <i>N</i>	
Self-determination	4.959	1.504	1,208	5.314	1.288	105	4.925	1.519	1,103	0.390***
Self-determination dummy (binary)	0.712	0.453	1,208	0.771	0.422	105	0.706	0.456	1,103	0.065
Decision-making power	4.741	1.572	1,208	5.019	1.394	105	4.714	1.586	1,103	0.305**
Decision-making power dummy (binary)	0.652	0.476	1,208	0.714	0.454	105	0.646	0.478	1,103	0.068
Protecting interests	4.570	1.558	1,208	4.686	1.423	105	4.558	1.570	1,103	0.127
Protecting interests dummy (binary)	0.622	0.485	1,208	0.629	0.486	105	0.621	0.485	1,103	0.008
Age (years)	40.700	11.221	1,208	43.000	12.601	105	40.481	11.062	1,103	2.519*
Head born in village (binary)	0.765	0.424	1,208	0.752	0.434	105	0.766	0.424	1,103	-0.014
Spouse born in village (binary)	0.498	0.500	1,208	0.552	0.500	105	0.492	0.501	1,103	0.060
Off-farm employment (binary)	0.079	0.269	1,208	0.105	0.308	105	0.076	0.265	1,103	0.029
Value of assets (Ethiopian birr)	2,068.327	9,163.790	1,208	4,563.942	13,221.004	105	1,830.757	8,650.446	1,103	2,733.185**
Remittances (Ethiopian birr)	93.138	429.419	1,208	206.612	718.402	105	82.336	389.770	1,103	124.276*
Number of children	2.143	1.546	1,208	1.695	1.374	105	2.186	1.555	1,103	-0.491***
Number of adult males	4.015	2.189	1,208	3.381	1.783	105	4.075	2.215	1,103	-0.694***
Number of adult females	4.077	2.352	1,208	3.152	1.669	105	4.1650	2.389	1,103	-1.013***
Formal education (binary)	0.211	0.408	1,195	0.190	0.395	105	0.213	0.410	1,090	-0.022

Note: Two-sample *t*-tests for the equality of means for unpaired data with unequal variances in all cases. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Source: authors, based on ERHS rounds six and seven.



Respondents in households with migrated household heads tend to be, on average, three years older than their counterparts in households with co-residing husbands. Interestingly, households whose heads have migrated are wealthier: the self-reported value of assets as well as the amount of remittances are higher, both in a statistically significant fashion. In contrast, households whose heads have migrated tend to have families of smaller size, with fewer children, and fewer male and female adults than households in which the head is present. Even though it is not possible to use this variable in the estimation, it is interesting to see that there is no statistically significant difference between the two groups in the shares of spouses having received formal education.

## 4 The impact of migration on the autonomy of women left behind

### 4.1 Household fixed effects

One empirical challenge associated with an investigation of migration of the household head and autonomy of the spouse lies in the possibility of selection into migration and in migration and the outcome variable being determined by a common factor. To be precise, it may be the case that heads who migrate come from households in which the spouse has a relatively large share of decision-making power, irrespective of whether the head migrates or not, or that another factor influences both the decision to migrate and female autonomy. The panel nature of the dataset is helpful in this regard due to the possibility of controlling for the unobserved heterogeneity across households investigating changes within households over time, rather than investigating average effects across households. As a first step in addressing the issue of selection into migration and the possible omitted variable bias, we estimate the following household fixed-effects model:

$$y_{it} = \alpha + \mathbf{X}'_{it}\boldsymbol{\beta} + \gamma \text{head gone}_{it} + \delta v_t + \mu_i + \varepsilon_{it} \quad (1)$$

where  $y$  represents female autonomy in household  $i$  at time  $t$ . More precisely, we are interested in three different statements, which are: ‘My life is determined by my own actions’; ‘I have the power to make important decisions that change the course of my life’; and ‘I am usually able to protect my personal interests’. The dependent variable  $y$  is an ordinal variable ranging from 1 if the spouse of the household head strongly disagrees with the statement, to 7 if she strongly agrees. We use the ordinal variables both in the way they are reported and in the form of binary measures for whether the respondent agrees at least ‘slightly’ to each of the statements (or not) in order to ensure robustness of the findings. We use standard household fixed effects as the estimation method for both types of dependent variables.<sup>5</sup> While all three dependent variables are measures of the concept of autonomy and mutually enforcing results of using each one may be expected, we believe that each of the statements is important in itself, measures a specific aspect of autonomy, and should be considered individually. Besides these different foci, the non-linear nature of the ordinal variables is, furthermore, the reason for investigating each of them separately rather than combining them into a joint measure.

*Head gone* is a binary variable equal to 1 if the male head of household  $i$  has migrated and is absent at the time of the survey, and 0 otherwise. Vector  $\mathbf{X}$  includes time-variant characteristics of the

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<sup>5</sup> With the nature of the dependent variable being ordinal or binary, the use of an (ordered) Probit model naturally springs to mind. However, as the use of fixed effects is imperative here to address the inherent endogeneity, and this being extremely difficult with both regular and ordered Probit models, we resort to using a standard fixed-effects approach. The nature of the dependent variables should be kept in mind when interpreting the results, however, as a meaningful interpretation of the magnitude of the coefficients is not possible in this case, so only the sign of the coefficients should be interpreted alongside their statistical significance. With these results being only a first step towards the main empirical approach using instrumental variables, we believe these shortcomings can be tolerated.

respondent, the household head, and the household. To be specific, we control for age of the spouse and for whether she is active in off-farm employment.<sup>6</sup> At the household level, we control for the logarithmic value of asset holdings to proxy the level of wealth of the household and for the amount of remittances received by the household during the past 12 months, both in Ethiopian birr. Remittances need to be carefully controlled for in order to capture that part of the income of the household coming from migration and, most importantly, to control for the fact that female temporary household heads may also become more autonomous because of the receipt of additional income, not only because of migration itself. In the latter case, female autonomy as a result of migration would simply correspond to an income effect, not to actual empowerment.

In addition, we include variables for the composition of the household, such as the number of adult males and females and the number of children, as it may be the case that another household member (partly) takes on the position of the household head during the original head's absence.<sup>7</sup> In extreme cases, migration of the household head may even worsen the female situation in terms of decision-making power due to the absence of the household head's protection—for example, when women find themselves under the authority of their fathers or brothers-in-law, or even mothers-in-law when their husbands are gone. Therefore, migration of the household head may even worsen the female situation in terms of bargaining power due to the absence of the household head's protection (De Hass and Van Rooij 2010). Note that time-invariant characteristics of the head and his spouse, such as education, may not be included as we investigate changes within households over time.

The household fixed effects are denoted by  $\mu_i$  and allow controlling for the selection discussed above and for unobservable time-invariant characteristics of the household.<sup>8</sup> Furthermore, we control for time effects by inclusion of a survey round fixed effect  $\nu_t$ . The disturbance terms  $\varepsilon_{it}$  are assumed to be normally distributed and are clustered at the household level to allow for potential correlation of the error variances across households.<sup>9</sup>

The results of estimating Equation (1) are presented in Table 2, with the ordinal and binary measures for self-determination presented in columns 1 and 2, respectively, the ordinal and binary measures for decision-making power shown in columns 3 and 4, respectively, and the ordinal and binary measures of whether spouses are able to protect their interests displayed in columns 5 and 6, respectively. Overall, these empirical findings suggest that migration of the household head is associated with female autonomy in a *negative* and statistically significant way, which is contrary to expectations. That is, controlling for the unobserved heterogeneity across households and, thus, investigating changes within rather than across households, we find migration of the household head to be associated with a weaker feeling of agreement for the statements measuring self-determination, the power to make important decisions that change the course of one's life, and the protection of one's own interests on the part of the respondents.

Furthermore, we find that a higher value of household assets, a measure of household wealth, increases the various measures of female autonomy, while age of the spouse exhibits evidence of a

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<sup>6</sup> Note that age of the head and age of the spouse may not be included simultaneously due to a correlation of almost 80 per cent.

<sup>7</sup> We define children as individuals below the age of 15 and, thus, adults as those of at least 15 years of age.

<sup>8</sup> In this setting household fixed effects are identical to couple or individual fixed effects as the unit of observation in the spouse of a monogamous household head.

<sup>9</sup> All results are robust to using heteroscedasticity-robust errors instead of clustered standard errors. These results are not reported but available from the authors upon request.

negative association. Note that, as discussed above, the use of fixed effects addresses the empirical challenges we face only to a certain extent.

Table 2: Male migration and female autonomy—household fixed-effects estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Self-determination	Self-determination (dummy)	Decision-making power	Decision-making power (dummy)	Protecting interests	Protecting interests (dummy)
Head gone	-2.469*** [0.167]	-1.100*** [0.052]	-2.800*** [0.170]	-1.238*** [0.050]	-3.583*** [0.171]	-1.138*** [0.053]
Age spouse	-0.027** [0.012]	-0.004 [0.004]	-0.036*** [0.011]	-0.012*** [0.004]	-0.025** [0.012]	-0.004 [0.004]
Off-farm employment	-0.221 [0.257]	-0.110 [0.084]	0.194 [0.255]	-0.001 [0.074]	0.053 [0.267]	-0.098 [0.090]
Log (value of assets)	0.317*** [0.089]	0.081*** [0.027]	0.260*** [0.093]	0.079*** [0.028]	0.178* [0.097]	0.029 [0.032]
Remittances	-0.000 [0.000]	-0.000 [0.000]	-0.000* [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Number of children	0.164 [0.112]	0.007 [0.034]	0.126 [0.117]	-0.001 [0.035]	0.181 [0.121]	0.034 [0.036]
Number of adult males	0.009 [0.113]	-0.022 [0.036]	-0.003 [0.131]	-0.040 [0.038]	0.049 [0.132]	0.014 [0.041]
Number of adult females	0.132 [0.108]	0.009 [0.036]	0.035 [0.122]	-0.025 [0.037]	0.046 [0.114]	0.008 [0.036]
<i>N</i>	1,208	1,208	1,208	1,208	1,208	1,208
<i>R</i> <sup>2</sup>	0.069	0.038	0.101	0.076	0.067	0.046

Note: Standard are errors clustered at the household level and presented in brackets. Household and time fixed effects are included in all estimations. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Source: authors' calculations based on ERHS rounds six and seven.

## 4.2 Instrumental variables

Although a household fixed-effects model helps to deal with two sources of bias, as discussed above, it does not solve all problems of endogeneity we face. As mentioned above, reverse causality between migration and female autonomy is possible. For example, if migration of the household head can affect the autonomy of women left behind, it may also be the case that the decision for migration of the head is influenced by the level of female decision-making power within the household to begin with. Consequently, in addition to controlling for remittances as already done in the fixed-effects model to disentangle the effect of the missing household head from the one of the receipt of remittances, we also address the reverse causality by developing an instrumental variables (IV) approach that relies on past migration from the district of residence, which is also a proxy for migrant networks, as an instrument for migration of the household head. On the one hand, migrant networks increase the likelihood of migrating by lowering migration costs through the fact that they provide information on opportunities at destinations or help newcomers find employment (Carrington et al. 1996; Munshi 2003; Winters et al. 2001), for instance. On the other hand, past sources of migration are correlated with current ones, which is the rationale for past migration having been used in the literature to instrumentalize current migration (e.g. Alcaraz et al. 2012; McKenzie and Rapoport 2007; Woodruff and Zenteno 2007).

We use migration in round five (1999)—that is, from five years before the collection of the survey data on which our estimation is based—to ensure we do not consider contemporaneous migration. To be specific, we calculate the ratio of the number of migrants from a *woreda* (district) in 1999 to the district’s population in 1999 for each of the 22 *woredas* covered in the sample, which is the measure of past migration used in this study.

Summary statistics for *head gone* and for the migration rate in round five are presented in Table 3 and indicate that the husbands of almost 9 per cent of the respondents are absent from the household at the time of rounds six and/or seven of the survey. The migration rate in 1999—that is, in round five—has a mean value of approximately 10 per cent.

Table 3: Descriptive statistics for variables related to migration

Variable	Mean	Min.	Max.	SD	<i>N</i>
Head gone	0.087	0.000	1.000	0.282	1,208
Migration rate 1999	0.103	0.063	0.172	0.031	1,208

Source: authors’ calculations based on ERHS rounds five, six, and seven.

Besides past migration being a good proxy for current migration, this instrument satisfies the exclusion restriction as it appears unlikely that past migration affects female autonomy in any other way than through its direct effect. To be specific, while one may be concerned that past migration could affect current female autonomy through the remittances sent, we control for the receipt of remittances very carefully. The first stage of the instrumental variables approach relates migration of the household head to the migration rate of *woreda j* in 1999:

$$head\ gone_{ijt} = \alpha + \mathbf{X}'_{ijt}\boldsymbol{\beta} + \gamma\ migration\ rate\ 1999_j + \delta v_t + \varepsilon_{ijt} \quad (2)$$

Vector  $\mathbf{X}$  is the same as in Equation (1) but, in addition, we control for indicator variables for whether the head and the spouse were born in the village they currently reside in, as it may play a

role for the spouse's situation if she is surrounded by her husband's or her own family when he is absent, as discussed above.<sup>10</sup>

The results of the first stage are presented in Table 4 and indicate that past migration increases the probability of current migration of the household head in a statistically significant way, which supports the choice of instrument. As discussed above, remittances may be a channel through which migration of the household head could increase the autonomy of the spouse, which is why careful treatment of this variable is crucial. To demonstrate that the instrument is valid and that remittances are not the channel through which male migration influences female autonomy, all results of the instrumental variables technique are also run on the sample of households that do not receive any remittances.<sup>11</sup> The results of estimating this first stage for this subsample are presented in column 2 of Table 4.

Table 4: First stage: past migration and current migration of the household head

	(1)	(2)
	Head gone	Head gone
Migration rate 1999	1.077*** [0.301]	1.676*** [0.391]
Age spouse	0.001 [0.001]	0.001 [0.001]
Head born in village	-0.006 [0.021]	0.025 [0.025]
Spouse born in village	0.018 [0.017]	0.003 [0.020]
Off-farm employment	0.041 [0.032]	-0.005 [0.040]
Log (value of assets)	0.023*** [0.007]	0.023*** [0.008]
Number of children	-0.012** [0.005]	-0.011* [0.007]
Number of adult males	-0.013*** [0.004]	-0.011** [0.004]
Number of adult females	-0.013*** [0.003]	-0.011*** [0.004]
Remittances	0.000 [0.000]	
<i>N</i>	1,208	810
<i>R</i> <sup>2</sup>	0.142	0.190

Note: the sample used in column 2 is a subsample of the full one and includes only households that do not receive any remittances. Standard errors are clustered at the household level and presented in brackets. Time fixed effects are included in all estimations. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Source: authors' calculation based on ERHS rounds five, six, and seven.

<sup>10</sup> Interestingly, the results do not structurally differ when subsamples of households are used, depending on whether the spouse was born in the village the household currently resides in or not. Furthermore, although an indicator variable for having received formal education may not be included in the instrumental variables approach as it is often used as a proxy for autonomy, for the sake of robustness we have included this variable in all our instrumental variables estimations, and the results are robust.

<sup>11</sup> Of the households that do not receive remittances, 9.4 per cent have a head that was absent at the time of the survey, which is very similar to the share of households with migrated heads in the full sample, as presented in Table 3.

The second stage of the instrumental variables approach is similar to Equation (1), apart from using the estimated values of the key explanatory variable from the first stage, and the household fixed effects not being included:

$$y_{it} = \alpha + \mathbf{X}'_{it}\boldsymbol{\beta} + \gamma \text{est}(\text{head gone})_{it} + \delta v_t + \varepsilon_{it} \quad (3)$$

Vector  $\mathbf{X}$  is the same as in Equation (2). Results of estimating Equation (3) are presented in Tables 5–7. The dependent variables in Table 5 are the ordinal and binary measures for female self-determination, those in Table 6 are the ordinal and binary measures for decision-making power, and those in Table 7 are the ordinal and binary measures for the respondent's ability to protect her own interests. In all of these tables, the amount of remittances is a control variable in columns 1 and 2; the sample used in columns 3 and 4 contains only households that do not receive remittances. The F-statistics of the first stages exhibit values larger than 10 in all specifications, confirming, in conjunction with the statistical significance of the instrument in the first stage and our argumentation, the validity of our instrument.

Table 5: Male migration and female self-determination—IV estimates

	(1) Self-determination	(2) Self-determination (dummy)	(3) Self-determination	(4) Self-determination (dummy)
Head gone	5.785*** [2.010]	1.248** [0.511]	3.885*** [1.460]	0.970** [0.410]
Age spouse	-0.009 [0.008]	-0.002 [0.002]	-0.004 [0.008]	-0.001 [0.002]
Head born in village	-0.068 [0.163]	0.001 [0.044]	-0.088 [0.170]	0.005 [0.051]
Spouse born in village	-0.184 [0.130]	-0.035 [0.034]	-0.080 [0.131]	-0.016 [0.038]
Off-farm employment	-0.215 [0.245]	-0.027 [0.063]	0.235 [0.247]	0.118* [0.069]
Log (value of assets)	0.039 [0.072]	0.004 [0.019]	0.048 [0.072]	-0.001 [0.020]
Number of children	0.083* [0.050]	0.018 [0.014]	0.055 [0.049]	0.009 [0.015]
Number of adult males	0.110** [0.044]	0.022* [0.011]	0.069* [0.042]	0.014 [0.011]
Number of adult females	0.061 [0.043]	0.017 [0.012]	0.038 [0.038]	0.012 [0.012]
Remittances	-0.000 [0.000]	-0.000 [0.000]		
<i>N</i>	1,208	1,208	810	810
<i>F-statistic of the excluded instrument</i>	12.80	12.80	18.37	18.37

Note: the sample used in columns 3 and 4 is a subsample of the full one and includes only households that do not receive any remittances. Standard errors are clustered at the household level and presented in brackets. Time fixed effects are included in all estimations. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Source: authors' calculation based on ERHS rounds five, six, and seven.

As, when using an instrumental variables approach, the magnitudes of coefficients do not have a straightforward explanation in the case of ordinal dependent variables due to the non-linearity in their measurement (see columns 1 and 3 of Tables 5–7) and due to a linear model not being able

to fully deal with binary dependent variables (see columns 2 and 4 of Tables 5–7), we restrict the interpretation of the coefficients to statements about sign and statistical significance in what follows. Because the use of instrumental variables is imperative here due to the above-mentioned empirical challenges and because of the absence of comparable results, we believe that strong and robust statements about the existence and direction of an effect is still meaningful, even if we cannot draw conclusions about the size of an effect.

To begin, the results in Table 5 suggest that migration of the head is consistently associated with the feeling of self-determination on the part of his spouse in a positive and statistically significant way. This is the case in the full sample (columns 1 and 2), but also in the sample of spouses in households that do not receive remittances. With the effect still being present in this subsample, our choice of instrument is, again, supported as this shows that it is not possible that the effect of migration on female autonomy exclusively works through the channel of remittances.

Interestingly, while the number of children yields a statistically significant and positive coefficient in one column, there is rather consistent evidence that the number of adult males in the household is positively associated with the spouse's feeling of self-determination.

Table 6 presents the results of the instrumental variables approach for whether respondents feel they have the power to make decisions that determine the course of their own lives as the outcome variable. Similarly to Table 5, there is again consistent evidence for a positive and statistically significant effect of migration of the household head on the autonomy of their spouses. Again, this evidence is found in the full sample, but also when the sample is restricted to households that do not receive remittances. In addition, the number of adult males in the household again appears to be positively associated with female autonomy.



Table 6: Male migration and female decision-making power—IV estimates

	(1) Decision-making power	(2) Decision- making power (dummy)	(3) Decision- making power	(4) Decision- making power (dummy)
Head gone	5.765*** [2.135]	0.984* [0.512]	4.684*** [1.687]	1.010** [0.455]
Age spouse	-0.012 [0.008]	-0.002 [0.002]	-0.009 [0.008]	-0.002 [0.002]
Head born in village	0.025 [0.171]	0.022 [0.042]	-0.005 [0.186]	-0.000 [0.052]
Spouse born in village	-0.140 [0.138]	-0.043 [0.034]	-0.049 [0.146]	-0.027 [0.040]
Off-farm employment	-0.093 [0.242]	-0.005 [0.062]	0.291 [0.273]	0.064 [0.084]
Log (value of assets)	0.063 [0.074]	0.024 [0.019]	0.083 [0.075]	0.023 [0.021]
Number of children	0.095* [0.053]	0.018 [0.013]	0.067 [0.054]	0.009 [0.015]
Number of adult males	0.107** [0.048]	0.024** [0.012]	0.103** [0.050]	0.028** [0.013]
Number of adult females	0.063 [0.043]	0.004 [0.011]	0.051 [0.039]	0.005 [0.012]
Remittances	-0.000* [0.000]	-0.000 [0.000]		
<i>N</i>	1,208	1,208	810	810
<i>F-statistic of the excluded instrument</i>	12.80	12.80	18.37	18.37

Note: the sample used in columns 3 and 4 is a subsample of the full one and includes only households that do not receive any remittances. Standard errors are clustered at the household level and presented in brackets. Time fixed effects are included in all estimations. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Source: authors' calculation based on ERHS rounds five, six, and seven.

When the respondent's ability to protect her own interests is the outcome, in Table 7, the results are weaker. A positive and statistically significant effect of migration of the head on the spouse's autonomy is found, but only when the ordinal measure is the dependent variable (columns 1 and 3), not when its conversion into an indicator variable is the outcome (columns 2 and 4). Note that, despite the evidence being weaker, the results are consistent between the full and restricted samples.

Table 7: Male migration and female interests—IV estimates

	(1)	(2)	(3)	(4)
	Protecting interests	Protecting interests (dummy)	Protecting interests	Protecting interests (dummy)
Head gone	4.650** [1.889]	0.624 [0.467]	3.749** [1.519]	0.585 [0.419]
Age spouse	0.001 [0.007]	0.002 [0.002]	0.007 [0.008]	0.004* [0.002]
Head born in village	0.113 [0.140]	0.025 [0.036]	0.035 [0.168]	0.017 [0.047]
Spouse born in village	-0.238* [0.124]	-0.057* [0.031]	-0.100 [0.138]	-0.030 [0.038]
Off-farm employment	0.018 [0.215]	0.011 [0.058]	0.140 [0.264]	-0.015 [0.083]
Log (value of assets)	0.061 [0.065]	0.032* [0.017]	0.061 [0.070]	0.021 [0.019]
Number of children	0.093* [0.049]	0.012 [0.012]	0.078 [0.053]	0.018 [0.015]
Number of adult males	0.055 [0.041]	0.003 [0.010]	0.005 [0.042]	-0.009 [0.012]
Number of adult females	0.067* [0.040]	0.015 [0.011]	0.045 [0.039]	0.012 [0.012]
Remittances	-0.000 [0.000]	-0.000 [0.000]		
<i>N</i>	1,208	1,208	810	810
<i>F-statistic of the excluded instrument</i>	12.80	12.80	18.37	18.37

Note: the sample used in columns 3 and 4 is a subsample of the full one and includes only households that do not receive any remittances. Standard errors are clustered at the household level and presented in brackets. Time fixed effects are included in all estimations. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Source: authors' calculation based on ERHS rounds five, six, and seven.

## 5 Conclusions

This paper investigates the impact of migration of male household heads on the autonomy of their spouses left behind using data from rural Ethiopia. We address potential selection and a potential bias grounded in omitted variables first by using a household fixed-effects model and, in our main results, using an instrumental variables approach with past migration as the instrument for current migration of the household head to deal with potential reverse causality in addition to the aforementioned empirical challenges.

While the results from investigating changes within households over time suggest a negative relationship between migration of the household head and female autonomy, the reverse is true when the endogeneity of migration and the potential reverse causality are thoroughly addressed in the instrumental variables approach. To be specific, when past migration is used to instrument for current migration of the household head, we consistently find strong evidence for a positive effect of male migration on female autonomy, especially when measured as self-determination or self-

assessed decision-making power. The evidence is weaker when the spouse's ability to protect her interests is the outcome.

Naturally, a potential concern is that the channel for this effect may be remittances and, thus, the effect not representing female empowerment but simply an income effect. Besides controlling for the amount of remittances received in all specifications, our key results are robust when only households that do not receive remittances are investigated, which supports the result in general and the choice of instrument in particular.

Taken together, our results suggest that the relationship between migration of the male household head and autonomy of the spouse left behind is complex and less straightforward than often expected. Moreover, thoroughly addressing the endogeneity of migration is crucial as it may, otherwise, lead to biased conclusions with respect to the effect of migration on female autonomy. From a policy perspective, this study suggests that migration of household heads offers an opportunity for their spouses in terms of autonomy in traditional societies.

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