



This is a repository copy of *The Complexity of Marriage in Rural Ethiopia: Parental Transfers and Postmarital Residence Choices*.

White Rose Research Online URL for this paper:
<http://eprints.whiterose.ac.uk/100797/>

Version: Accepted Version

Article:

Kedir, A.M. and Oterová, A. (2016) The Complexity of Marriage in Rural Ethiopia: Parental Transfers and Postmarital Residence Choices. *Journal of Development Studies*. ISSN 0022-0388

<https://doi.org/10.1080/00220388.2016.1178381>

Reuse

Unless indicated otherwise, fulltext items are protected by copyright with all rights reserved. The copyright exception in section 29 of the Copyright, Designs and Patents Act 1988 allows the making of a single copy solely for the purpose of non-commercial research or private study within the limits of fair dealing. The publisher or other rights-holder may allow further reproduction and re-use of this version - refer to the White Rose Research Online record for this item. Where records identify the publisher as the copyright holder, users can verify any specific terms of use on the publisher's website.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

The Complexity of Marriage in Rural Ethiopia: Parental Transfers and Post-marital Residence Choices

ABBI KEDIR* & ANDREA OTEROVÁ**

*Department of Management School, University of Sheffield, Sheffield, UK, **Independent author

5

(Final version received February/2016; final version accepted March/2016)

ABSTRACT *This paper examines the relationship between parental transfers and post-marital residence of children in rural Ethiopia. We investigate whether asset transfers to children are an avenue which parents use to secure old age. We model post-marital residence and transfers simultaneously in a two-stage probit least squares estimation framework. We find a positive relationship between transfers and post-marital residence, a proxy for old age support. Children who receive more assets are more likely to stay at birth place after marriage and vice versa. In conditions of scarce or lacking social security mechanisms, parents make strategic transfers to ensure better old age.*

10

1. Introduction

In this paper, we argue that in rural Ethiopia, investments in children, transfers to them and the post-marital residence location of children are three very important interrelated welfare decisions that households have to make. Economic factors, as well as cultural factors and strong family ties in traditional societies, determine how life is organised across generations. In countries with high poverty levels, parents are willing to alter their preferences with regard to own current consumption and make intergenerational transfers in the form of cash, land, cattle and other assets in order to secure their future consumption. In an environment where there is virtually no state support for the elderly, children's economic support replaces lacking old age security mechanisms, scarce insurance options and missing welfare provision by governments (Hoddinott, Dercon, & Krishnan, 2005). Therefore, parents' fertility, as well as child investment/transfer decisions, are geared towards old age security. For parents, one way to secure their old age support is by keeping their children in close proximity when they are old. In order to influence this, parents may endow their children with assets¹ anticipating a reciprocal support from their children at a later stage in their life. The provision of transfers to children is not only a strategic avenue for securing old age support, through keeping their children close after they marry, but also a way of securing the future welfare prospects of their children within marriage and financially.² Anthropological and other studies of Ethiopia show that critical resource transfers in the form of land, livestock and other wealth bearing assets have a significant effect on marital success of children and mobility of children after marriage (Fafchamps & Quisumbing, 2002, 2005a, 2005b; Gibson & Gurm, 2011; Gopal, 1998). In Ethiopia, there is a lifetime pattern of

15

20

25

30

Correspondence Address: A. M. Kedir, Management School, University of Sheffield, Conduit Road, Sheffield, S10 1FL, UK.
 Email: andrea.oterova@hotmail.com

An Online Appendix is available for this article which can be accessed through the online version of this journal available at <http://dx.doi.org/10.1080/00220388.2016.1178381>

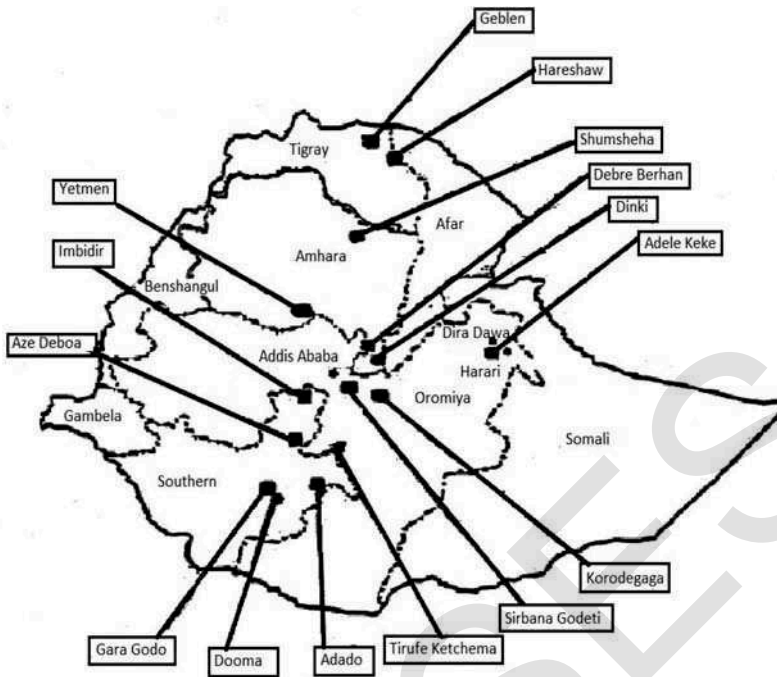


Figure 1. Regional Map of Ethiopia and Survey Sites
Source: Bevan and Pankhurst (1996)

interactions of support (mediated through investment and transfers) between parents and their children. In addition, rural Ethiopia is prevalently virilocal.³ Hence, parents tend to invest more in their sons than they do in their daughters. A study on assets at marriage in rural Ethiopia suggests that ‘Gender differences in inheritance can be understood in the context of old age support patterns in Ethiopia: sons are traditionally responsible for their parents’ care in their old age, although recently daughters who are employed increasingly contribute to their parents’ support as well’ (Fafchamps & Quisumbing, 2005a, p. 366).

In this paper we aim to study the relationship between inheritance transfers to children and old age support proxied by the post-marital residence of children. Within this context, we aim to explore whether virilocal post-marital residence patterns may be one of the drivers of gender asset inequality in rural Ethiopia. Therefore, the key relationship of interest in our research is the responsiveness of the probability of staying or moving at marriage to parental transfers. We analyse this by using a subsample of individuals from the Ethiopian Rural Household Survey dataset (ERHS). Since our dataset does not provide information on actual measures of old age support such as material, financial or time transfers to parents, we use post-marital residence (a dummy with a value of one if the children stay at their birthplace at marriage) as a proxy for old age support. In conditions of very primitive transport infrastructure, existent in the sample at the time of the survey, and of labour intensive subsistence farming, it is plausible to assume that children who live in close proximity to their parents are more likely to provide old age support to them in financial terms, in the form of non-monetary transfers and/or time assistance. In many cases, distances between villages and even within villages are considerable and modes of transport limited. Therefore, it makes a very big difference for parents whether their child stays living close to them when they become elderly. Moreover, in prevalently rural areas, subsistence farming is the main source of livelihood and therefore physical presence of the children is much more important for old age welfare relative to its importance in the developed world.

We argue that decisions about parental investments/transfers in the form of inheritance and the post-marital residence of children are made simultaneously. This is a plausible assumption because many marriages in rural Ethiopia are arranged when the children are still very young or even before they are born. This is particularly the case in the Amhara region (Asrese & Abebe, 2014; Emire, 2005). Moreover, parents may later adjust inheritance to the post-marital location of the child. In rural Ethiopia, parents endow their children with bequests at marriage or shortly after marriage. Due to the fact that children marry very young, parental decisions about transfers, including inheritance, are made before or at the time of marriage. According to Ezra (2003):

In Ethiopia, theoretically, age at first marriage for girls is determined by three sets of codified formal rules (setting age at first marriage at 9, 12 and 15). However, neither of these laws have any meaningful interpretation, demographically speaking, because marriages are not performed upon producing a birth certificate to prove that the minimum age requirement has been reached. (p. 511).

Alliance between the two families who are looking for each other for marital relationship starts early on when the would-be partners are still children and at times even before they were born. (p. 513).

Our empirical results support our hypothesis. Children in rural Ethiopia who receive more transfers are more likely to live at their place of birth after marriage and vice versa. This paper is organised as follows. Section two reviews the relevant literature, Section three introduces the dataset we use and the empirical model adopted to test our hypothesis. Section four discusses the results of the empirical analysis. Finally, the paper concludes in Section five by briefly providing the implications of our findings.

2. Related Literature

There are two main strands of literature that relate to our work. The first strand has a number of studies that analyse transfers between parents and children and the motives behind these transfers (Becker, 1993; Bernheim, Shleifer, & Summers, 1985; Cox, 1987; Hoddinott, 1992; Lillard & Willis, 1997; Lucas & Stark, 1985; Willis, 1979). The second strand focuses on the analysis of the determinants and the effects of post-marital residence patterns and the variation of cultural norms between the north and the south (Baker & Jacobsen, 2007; Korotayev, 2003; Rosenzweig & Stark, 1989).

To the best of our knowledge, the current literature on the relationship between inheritance transfers and post-marital residence patterns in Ethiopia is of descriptive character but it does not test this relationship empirically/analytically. The extant literature includes, among others, Asrese and Abebe (2014), Colclough, Rose, and Tembon (2000), De Brauw and Mueller (2012), Ezra (2003), Ezra and Kiros (2001), Fafchamps and Quisumbing (2005a, 2005b, 2008), Emire (2005), Gibson and Mace (2005), Gibson and Sear (2010), Gibson and Gurm (2011) and Rose and Al-Samarrai (2001). We aim to create a bridge between the two strands of the literature and make a contribution to the existing literature by empirically testing the relationship between asset transfers and post-marital residence, which, due to the data limitations, we use as a proxy for old age support.

Childhood investments and bequest behaviour can be driven by a variety of motives. Transfers are benevolent when they are driven by an altruistic motive (parental affection and love for the child) for bequeathing (Becker, 1993). As argued in this paper, parental transfers can also be used in a strategic manner to induce certain actions from children in favour of parents so that vulnerability to old age insecurity is reduced. At times, parents can use the threat of disinheritance or of lowering the amount of transfers as a way of influencing the actions of their children (Bernheim et al., 1985). The strategic motive supports bequests as a medium of exchange for 'attention'⁴ from children (Cox, 1987).

Hoddinott's study (1992) of Western Kenya finds support for the strategic motive. They find that parental land ownership (expected inheritance) increases transfers from children to parents. In addition, children do not compensate parents who are worse off in terms of widowhood or wealth. On the contrary, wealthier parents in terms of savings and livestock ownership receive more transfers from children. In Lucas's and Stark's study (1985) of Botswana, children remit more to families who are worse off but they prefer to send more remittances to vulnerable households which own more cattle, a potential source of inheritance. Therefore, children themselves are strategic in terms of the transfers and support they give to parents and the size of these depends on the level of expected inheritance. These findings suggest a combination of the altruistic and strategic motive driving intergenerational transfers. Lillard and Willis' study (1997) on Malaysia finds that children's educational attainment has a strong effect on the financial transfers they provide to parents. However, support in the form of time is unaffected by the educational attainment of children. They also find that transfers are predominantly given from the younger to the older generation. These findings support the repayment and old age security hypotheses. According to Willis (1979), children are 'the poor man's capital' (p. 25). Parents invest in their children to secure old age support. In addition, fertility decisions are closely associated with old age insurance. We depart from investigating fertility decisions and focus exclusively on parental decisions about investments in children, or quality of children rather than quantity (Becker & Tomes, 1976). Specifically, we investigate the relationship between parental transfers and the post-marital residence location of their children which we use as a proxy for old age support.

Studies that focus on analysing post-marital residence patterns include Rosenzweig and Stark's study (1989) of marriage migration in India. This study focuses on examining the roles that post-marital location and marriage play in consumption smoothing. Korotayev (2003) studies the relationship between patridominant and matridominant subsistence farming and post-marital residence rules (patrilocal and matrilocal). Baker and Jacobsen (2007) examine the determinants of fixed post-marital residence rules (patrilocal or matrilocal) relative to choice post-marital residence rules (neolocal or ambilocal) without accounting for transfers. They instead focus on determinants such as agricultural development, skilled and unskilled labour and enforceability of marriage contracts. They conclude that in premodern societies, fixed rules are implemented because they mitigate the problem of uncertainty leading to underinvestment in human capital.

To our knowledge, there is only one paper which analyses virilocal post-marital residence patterns in relation to childhood investments in developing countries. This is Levine and Kevane's (2003) study, which is based on Indonesia. It analyses the effect of virilocal post-marital residence on fertility decisions, health, education, and inheritance investments in children. The authors find that, in virilocal regions, daughters are less likely to inherit relative to sons. We extend their study by using African data and by controlling for endogeneity of transfers and post-marital residence, in order to account for unobserved preferences and the potential simultaneity between post-marital location and transfers. In addition, we account for post-marital residence realised by each household rather than the custom prevalent in the region.

3. Data and Empirical Specification

For our analysis, we use the Ethiopian Rural Household Survey (ERHS). The ERHS was conducted by the International Food Policy Research Institute (IFPRI) in collaboration with the Department of Economics of Addis Ababa University (Ethiopia) and the Centre for the Study of African Economies (CSAE), University of Oxford. It collected data from 15 rural villages covering all agro-climatic zones of the country and about 1500 households.⁵ The villages were selected with the purpose of covering the ethnic, religious and farming system diversity of the country.⁶ The sample of surveyed households is distributed across four administrative regions representing the four most populous ethnic groups in the country (the Oromo, the Amhara, the Tigre and the Gurage) and also other ethnic groups in every farming zone covered by the survey.

We focus on analysing data from the 1997 survey round which provides extensive information on intergenerational transfers, marriage markets, individuals' socioeconomic profiles, family composition before and after marriage and demographic characteristics. The questionnaire used includes modules on intrahousehold resource allocation at marriage and after marriage, parental demographic and socioeconomic characteristics, transfers at marriage and residence at birth and after marriage. 155

In terms of parental transfers of assets, it is important to understand the role of the Ethiopian Land Reform of 1975 implemented by the socialist government of that time. The '*Land to the Tiller*' reform abolished all private ownership of land and led to land redistribution. Following the reform, land should be provided to individuals who till the land in the households irrespective of their gender. However, in practice, land allocations are based on headship to the household, which is mostly taken by males. Moreover, land allocation is often biased towards individuals who have connections with Peasant Associations' (PA)⁷ official members. As Fafchamps and Quisumbing (2005b) state: 'Young couples typically obtain land through their parents, either directly (gift or land loan) or indirectly by having their parents lobby the PA' (Fafchamps & Quisumbing, 2005b, p. 13). 'The absence of land sale markets implies that land purchases, which could be an avenue for couples to accumulate land during their lifetime, are not possible' (Fafchamps & Quisumbing, 2005a, p. 352). These facts complicate the formal redistribution process of this vital productive asset. Therefore, parents have always played a determining role in acquiring land for or transferring land to their children once they got married. 160

Young couples typically obtain land through their parents in three different ways. One route is directly through a land transfer or gift at marriage. The other routes of land acquisition are either inheriting land or obtaining land indirectly through the lobbying power of their parents in relation to the PA administration in charge of land allocation. Overall, parents play a crucial role in ensuring land acquisition for newly formed households in rural Ethiopia. 170

Our analysis focuses on decisions made by parents prior to, at the time of, or shortly after the marriage of their children. Therefore, the final analysis sample is restricted to 531 households with 1062 individuals who are in their first marriages. We proxy old age support by the post-marital residence of children, that is the place of residence of the brides and grooms after marriage. We have variables which show whether a child lives away or at her/his birthplace at the time of the first marriage. In the context of lacking transport links in rural Ethiopia at the time of the survey, using post-marital residence location of children as a proxy for old age support is sensible. When the post-marital residence of an offspring is close to the parents, it is much more likely that he or she will provide old age support to their parents financially as well as in terms of time and energy devoted to working on the parents' plot. However, it would be optimal to extend this research once better measures of old age support, such as time or money transfers, become available. Table 1 provides the distribution of post-marital residence across our sample. 175

As Table 1 shows, post-marital residence is mainly bilocal or virilocal. Out of the total sample of households, 44 per cent of grooms and brides stay in their birthplace after marriage, 33 per cent of households are virilocal and the rest are neolocal or uxorilocal. However, in line with the prevalently virilocal customs of marriage in our sample, it is plausible to assume that in cases where the grooms and brides both stay at birthplace at marriage, the bride lives in the village of her parents but moves to live with the groom's family within that village, increasing virilocality to 77 per cent.⁸ Overall, 49 per cent of brides and 77 per cent of grooms stay at their birthplace at marriage. 180

Table 1. Post-marital residence patterns

Post-marital Residence	Bride Stays	Bride Moves	Total
Groom stays	235	174	409
Groom moves	26	96	122
Total	261	270	531

Table 2. Descriptive statistics: individual data

Summary statistic	Brides			Grooms		
	Mean	St. dev.	Median	Mean	St. dev.	Median
Number of observations	531			531		
Stays with parents (binary-%)	49	-	-	77	-	-
Number of sisters	2	1.8	2	2	1.8	2
Number of brothers	2	2	2	2	2	2
Age at the time of the survey	35	12.5	32	43	14.8	40
Received some education (%)	47	-	-	67	-	-
Average years of education	1.4	2.3	0	2.6	2.9	2
Received some inheritance (%)	11.8	-	-	54.6	-	-
Inherited assets (ETB)	231.5	2068.6	0	1995.2	6128.3	132.6
Household consumption (ETB)	563.2	498.8	418.6	563.2	498.8	418.6
Educated mothers (%)	1.5	-	-	1.8	-	-
Educated fathers (%)	6	-	-	6	-	-
Size of father's land (ha)	2.2	5.5	1	2.7	8.4	1
Size of mother's land (ha)	0.4	2.3	0	0.6	4.5	0
Households in rich PAs (%)	22	-	-	22	-	-
Households-PA-good soil (%)	54	-	-	54	-	-

The background and socioeconomic characteristics of the sample are shown in [Table 2](#). The average ages of the grooms and brides in the sample are 43 and 35 respectively. We can see that there is a significant gap in the incidence and amount of inheritance transfers. Only 12 per cent of brides compared to 55 per cent of grooms receive inheritance from parents. In absolute terms, the median amount inherited for the brides is 0 Ethiopian Birr (ETB), while it is 133 ETB for the grooms, pointing to the prevailing gender bias against girls in terms of parental transfers.

On average, grooms receive nine times the value of inheritance that brides receive. In addition, a significant amount of grooms receives land from the PA. On the contrary, brides only exceptionally receive this. This asset gap in the sample is also exacerbated by a gender bias in education. The difference between the average level of education of the brides and grooms is approximately one year and it is significant at the 1 per cent level. Only 47 per cent of brides, compared to over 67 per cent of grooms, have acquired some education. This difference in education could also be explained by the significant age gap between the brides and grooms. Grooms are on average 10 years older than brides (unsurprising in developing countries such as Ethiopia). However, regardless of gender, school attainment in rural Ethiopia is very low. For instance, as [Table 2](#) shows, brides and grooms in our sample have acquired, on average, 1.4 and 2.6 years of education respectively.

Average monthly household consumption expenditure (on food and non-food items) is 563 Birr. Even though most sample households produce food for own consumption, nearly all of their consumption expenditure is spent on purchased food items (only 10% is used for non-food items). The summary statistics on the relationship between inheritance values and the post-marital residence of children (that is brides/grooms) show that those who stay close to their parents receive more inheritance. Brides who stay at their birthplace at marriage receive on average 383 ETB relative to those who leave their birthplace and receive only 85 ETB. The values that grooms receive are much larger. Those who stay attract 2300 ETB compared to 1000 ETB that is transferred to those who move away from their birthplace at marriage. In addition, children of parents with more wealth are more likely to stay at their birthplace after marriage. Therefore, as is expected by parents who have an old age support motive for transfer provision, they are more likely to reciprocate. Once again, in the case of rural Ethiopia, this strategic transfer does not rule out altruistic and non-selfish parental transfers.

We can also see a significant regional variation of transfers. Inheritance transfers to the brides increase as we go from the south to the north of the country. This variation reflects the heterogeneity in

cultural norms surrounding inheritance practices, with stronger patrilinearity in the south of the country. As Quisumbing and Hallman (2003) argue: ‘women’s status is relatively higher in the North but declines as one goes to the South’ (p. 19). This is in line with the customs prevalent in the country,⁹ whereas there is a higher gender gap in human capital and asset transfers in the south of the country.¹⁰ In the case of the grooms, we see a big difference in average inheritance values between Tigray in the north and the rest of the regions but we do not see such a clear north-south divide. This may be due to the fact that Tigray is in the north and the customs there make it more likely to transfer inheritance assets both to boys and girls as opposed to the south (for example, the Selti Gurages). It could also be a result of the higher population density in the other regions relative to Tigray, leading to land scarcity. Wherever they are, females are generally discriminated against economically.

When tabulating values of household consumption (food and non food expenditure) and post-marital location, we can see that grooms and brides who stay at their birthplace are better off, in terms of monthly household consumption, compared to those who leave. These differences are approximately 120 ETB and 15 ETB for the grooms and the brides respectively. The latter further highlights the fact that in conditions of rural Ethiopia, families are an important support factor that replaces the role of scarce or inexistent social security systems.

3.1 Estimation Framework

In the presence of simultaneity, indirect least squares (ILS) and two-stage least squares (2SLS) methods are adopted to get unbiased and consistent parameter estimates. Both of these standard approaches are applicable when the endogenous variables are continuous across equations. However, in our context we have post-marital location as a binary/dichotomous outcome, while parental transfers are continuous. Under such circumstances, the appropriate method is two-stage probit least squares.¹¹ We hypothesise that parental transfers and post-marital residence decisions are jointly determined, and we therefore adopt this method to generate our estimates.

The generalised representation of the two equations of interest can be presented as follows (Keshk, 2003):

$$y_1^* = \gamma_1 y_2^* + \beta_1' X_1 + \varepsilon_1 \tag{1}$$

$$y_2^* = \gamma_2 y_1^* + \beta_2' X_2 + \varepsilon_2 \tag{2}$$

Equation (1) represents our transfer (y_1^*) equation while Equation (2) is the post-marital residence (y_2^*) equation. The continuous dependent variable y_1^* is measured by inheritance transfers in ETB (land and livestock) and the dichotomous dependent variable y_2^* has the value of 1 if the groom or bride lives close to their parents, at their birthplace, after marriage. The X’s constitute vectors of all the relevant explanatory variables included in the model such as sibling composition, age, wealth of parents, soil quality, wealth of the Peasant Association of post-marital residence, region of residence and ethnicity of the individuals. We choose variables for the model by gradually testing exclusion restrictions using Wald tests for the joint significance of a group of variables and tests on single variables excluded.¹² The two LHS variables are observed as follows (Maddala, 1983):

$$\begin{aligned} y_1 &= y_1^* \\ y_2 &= 1 \quad \text{if } y_2^* > 0 \\ y_2 &= 0 \quad \text{otherwise} \end{aligned} \tag{3}$$

We do not have a theoretical expectation that neither γ_1 nor γ_2 is equal to zero. Therefore, we do not use standard procedures that lead to biased and inconsistent estimates in the presence of simultaneity.

We implement a two stage estimation technique where in the first stage transfers and post-marital residence are fitted using all the exogenous variables, by running an OLS estimation of transfers and a

probit regression of post-marital residence, to predict the values of the dependent variables of the two equations. In the second stage, the endogenous variables are replaced by their fitted values from the reduced form regressions. Therefore, we have Equations (1) and (2) where the explanatory variables y_1^* and y_2^* are replaced by their predicted values from the first stage regressions. In the final step, the standard errors are corrected by recalculating them based on the appropriate original values of the endogenous variables rather than the predicted ones. Empirical estimation is performed using Stata 11. 265

3.2 Choice of Instruments

We suspect two sources of endogeneity in our model; reciprocal causation/simultaneity and omitted variable bias. The first one arises from the simultaneous character of the decision making about transfers and post-marital residence. The second cause of endogeneity emanates from unobserved factors that we cannot account for such as parental preferences about asset transfers. In order to address this, we use instrumental variables for both endogenous variables in the model, that is, we instrument the dummy of post-marital residence (which is one if the groom or bride resides at their birthplace at marriage and zero otherwise) in Equation (1) and the continuous variable depicting parental inheritance transfers in Equation (2). 270 275

We instrument location in the transfer Regression (1) with the soil quality and wealth in the location of post-marital residence.¹³ We can see from the reduced form equations in the two-stage probit least squares that these variables are significant determinants of post-marital residence and are not correlated with the inheritance transfers received by the grooms and brides. In addition, to further test the validity of the instruments, we run a two-stage least squares estimation of the transfers' equation (Table 5 in Online Appendix Section 2) with post-marital residence as the endogenous variable. The results show that the instruments are correlated with the endogenous variable and are orthogonal to the error term in the structural equation.¹⁴ 280 285

We instrument the inheritance transfers of the individuals in the post-marital Regression (2) with the inheritance transfers of their spouses. We also use the number of brothers of the grooms as an additional instrument for the transfers of the grooms.¹⁵ We chose spousal transfers as an instrument because of the assortative character of marriage market matching in our sample, meaning that brides and grooms who bring more assets to the marriage will most likely be matched with partners who have more assets as well (Fafchamps & Quisumbing, 2002, 2005a, 2005b). Transfers of the grooms and brides are strongly correlated. Furthermore, spousal transfers do not affect the post-marital residence of the individual and are therefore not correlated with the error term in the post-marital residence regression function. The validity of this instrument is further reinforced by the fact that decisions about inheritance transfers and post-marital residence are taken mostly prior to the time at which the post-marital residence is realised. Parents have certain expectations about whether their child will move away after marriage or not, and they can then adjust inheritance once the post-marital residence is realised, as a simultaneous process. As for the siblings' instrument, there is evidence on male sibling rivalry in terms of inheritance in rural Ethiopia.¹⁶ We do not expect that the number of brothers of the grooms will affect the post-marital residence of the groom directly and our coefficients confirm that. 290 295 300

The validity of our instruments is also confirmed by the significant coefficients in the reduced-form regressions. In addition, we looked at the overidentification test statistics in the instrumental variables probit estimation (Table 4 in Online Appendix Section 2). The instruments are correlated with the transfer variable and meet the orthogonality condition.¹⁷ 305

4. Findings

As can be seen from the empirical results in Table 3, our findings confirm our hypothesis. In rural Ethiopia, decisions about asset transfers and post-marital residence are interrelated household choices. Table 3 reports the coefficients for the two-stage probit least squares for the subsamples of the grooms

Table 3. Two-stage probit least squares

	Grooms		Brides	
	OLS-Log Inheritance	Probit-Stays Home	OLS-Log Inheritance	Probit-Stays Home
Inheritance (log+1)	-	0.407*** (0.112)	-	0.438** (0.143)
Spousal Inheritance (log+1)	0.364*** (0.099)	-	0.114*** (0.027)	-
Stay with parents (yes-1)	0.999*** (0.220)	-	0.391 (0.168)	-
Number of sisters	-0.103 (0.116)	0.489 (0.071)	0.019 (0.054)	-0.053 (0.046)
Number of brothers	-0.233** (0.112)	0.107 (0.070)	-0.026 (0.045)	0.004 (0.039)
Age	0.001 (0.013)	-0.004 (0.008)	-0.001 (0.008)	-0.013** (0.006)
Child from previous marriages (1=yes)	0.357 (0.446)	-0.204 (0.263)	-0.345* (0.195)	0.078 (0.171)
Parental wealth (1-Rich or Very Rich)	0.236 (0.430)	-0.107 (0.250)	0.093 (0.210)	-0.106 (0.173)
Mother's landholdings (hectares)	-0.022 (0.045)	-0.008 (0.025)	0.156*** (0.036)	-0.058 (0.039)
Father's landholdings (hectares)	0.004 (0.192)	0.003 (0.011)	0.008 (0.011)	-0.026* (0.014)
Farming experience (1=yes)	1.028 (0.708)	-0.576 (0.433)	-0.164 (0.211)	0.294* (0.159)
Received land from PA (1=yes)	-	-0.043 (0.030)	-	- ^a
PA wealth (1-average)	-	0.093** (0.413)	-	0.341* (0.198)
PA wealth (2-rich)	-	0.397 (0.378)	-	-0.269 (0.251)
PA soil quality (1-good)	-	-0.642** (0.012)	-	0.156 (0.154)
Regional Effects	Yes	Yes	Yes	Yes
Log pseudolikelihood	-	-195.82	-	-296.53
F statistic (p-value)	9.04*** (0.000)	-	8.99*** (0.000)	-
R-squared	0.199	-	0.200	-
Adjusted R-squared/Pseudo R-squared	0.178	0.267	0.178	0.108
LR chi squared (p-value)	-	142.53*** (0.000)	-	71.96*** (0.000)
Observations	486		480	
		Marginal Effects (Probit Regression)		
Inheritance (log+1)	0.471*** (0.141)		0.254*** (0.085)	

Notes: * significant at 10 per cent, **significant at 5 per cent, ***significant at 1 per cent. ^a Less than 10 per cent of the brides receive land from the PA.

and the brides, respectively. In the first column we have the results for the transfer Equation (1) and the second column provides the results for the post-marital residence Equation (2).

As for the simultaneity of transfers and post-marital residence decisions, in the two-stage probit least squares estimation, the reciprocal effect is only confirmed in the case of the grooms but it does not apply to the brides as can be seen from the insignificant coefficient on the location variable. However,

Table 4. The determinants of post-marital residence: instrumental variables probit

	Grooms		Brides	
	Maximum-likelihood estimation	Newey's two step efficient estimator	Maximum-likelihood estimation	Newey's two step efficient estimator
Inheritance (log+1)	0.136* (0.072)	0.137 (0.087)	0.304*** (0.099)	0.344** (0.147)
Number of sisters	-	-	-0.044 (0.035)	-0.050 (0.043)
Number of brothers	-	-	-0.004 (0.030)	-0.004 (0.036)
Age	-0.009* (0.005)	-0.009* (0.005)	-0.012** (0.006)	-0.014** (0.006)
Child from previous marriages (1=yes)	-0.074 (0.167)	-0.075 (0.179)	0.050 (0.137)	0.056 (0.164)
Parental wealth (1-Rich or Very Rich)	-0.072 (0.163)	-0.074 (0.173)	0.094 (0.145)	-0.106 (0.163)
Mother's landholdings (hectares)	-0.017 (0.016)	-0.018 (0.016)	-0.038 (0.034)	-0.043 (0.038)
Father's landholdings (hectares)	0.007 (0.007)	0.007 (0.007)	-0.023* (0.008)	-0.026* (0.015)
Farming experience (1=yes)	-0.219 (0.254)	-0.222 (0.292)	0.242* (0.130)	0.274* (0.149)
Received land from PA (1=yes)	-0.034*** (0.012)	-0.035 (0.027)	-	-
PA wealth (1-average)	1.551*** (0.351)	1.609*** (0.284)	0.378* (0.210)	0.428** (0.216)
PA wealth (2-rich)	0.602** (0.246)	0.623*** (0.235)	-0.221 (0.191)	-0.251 (0.231)
PA soil quality (1-good)	-0.669*** (0.205)	-0.693*** (0.186)	0.106 (0.124)	0.120 (0.145)
Regional effects	Yes	Yes	Yes	Yes
Log pseudolikelihood	-1486.26		-1254.82	-
Wald chi squared statistic (p-value)	118.85 (0.000)	96.73 (0.000)	93.48 (0.000)	51.66 (0.000)
Wald test of exogeneity (p-value)	0.366	0.369	0.025	0.028
Observations	491	491	485	485
		Marginal Effects (Probit regression)		
Inheritance (log+1)	0.137* (0.072)		0.303*** (0.099)	

Notes: * significant at 10 per cent, **significant at 5 per cent, ***significant at 1 per cent.

when we run the two-stage least squares, GMM and OLS estimations of transfers (Table 5 in Online Appendix Section 2) we see that, post-marital residence of the brides also affects transfers. It can, thus, be concluded that this effect is significant for both, females/brides and males/grooms in the sample, supporting our expectation of simultaneity.¹⁸

Our results confirm our hypothesis, that is, asset transfers affect the post-marital residence of children. The larger the inheritance received by brides and grooms, the more likely they are to stay at their birthplace with their spouse after marriage. In other words, if parents invest more in their children, the children are more likely to live close to them after marriage. Hence, children are more likely to provide financial or non-financial support to their parents in old age. In

Table 5. The determinants of transfers: 2SLS and OLS

	Grooms		Brides	
	Two-stages least squares	OLS	Two-stages least squares	OLS
Stay with parents (yes-1)	4.232*** (0.074)	1.966*** (0.358)	3.190** (1.378)	0.298* (0.166)
Number of sisters	-0.132 (0.102)	-0.116 (0.095)	0.050 (0.057)	0.034 (0.045)
Number of brothers	-0.244** (0.096)	-0.196** (0.089)	-0.043 (0.048)	-0.056 (0.037)
Age	0.002 (0.012)	0.005 (0.011)	0.012 (0.010)	-0.028 (0.006)
Child from previous marriages (1=yes)	0.201 (0.398)	0.338 (0.359)	-0.282 (0.224)	-0.221 (0.169)
Parental wealth (1-Rich or Very Rich)	0.225 (0.386)	0.252 (0.364)	0.125 (0.262)	-0.024 (0.211)
Mother's landholdings (hectares)	-0.008 (0.028)	-0.015 (0.029)	0.168*** (0.055)	0.160*** (0.042)
Father's landholdings (hectares)	0.010 (0.013)	0.002 (0.013)	0.006 (0.005)	-0.002 (0.002)
Farming experience (1=yes)	0.974 (0.623)	0.891 (0.608)	-0.430 (0.301)	0.187 (0.190)
Regional effects	Yes	Yes	Yes	Yes
Wald chi-squared statistic (p-value)/F-statistic	101.06 (0.000)	10.06 (0.000)	44.56 (0.000)	5.46 (0.000)
R-squared	0.07	0.15	-	0.13
Observations	486	522	480	516
First-stage F-statistic (p-value)	72.30*** (0.000)	-	7.091*** (0.099)	-
Endogeneity test Robust score chi-squared (p-value)	12.65*** (0.000)	-	6.925*** (0.009)	-

Notes: * significant at 10 per cent, **significant at 5 per cent, ***significant at 1 per cent

addition, children who stay at their birthplace after marriage receive larger inheritance transfers, confirming our expectation of simultaneity.

Apart from this main result of interest, we also provide some additional important findings. We control for time effects with a variable capturing the age of the individuals at the time of the survey. We find that older brides are less likely to stay in close proximity to their parents at marriage. This may be due to changes in the life of their parents. For instance, if parents are deceased, children will have less social, economic and cultural binding obligations to stay at their birthplace. Also, females/brides who were born during the previous marriages of their fathers receive less inheritance. This may signal a gender asset transfer bias in favour of girls born into the most recent marriage of the father. Brides whose mothers own more land receive more inheritance transfers, suggesting a stronger bargaining power which mothers with more land exert, in terms of choices about providing transfers to daughters. In addition, females/brides whose fathers own more land are less likely to stay at their birthplace after marriage. The latter probably also indicates parental preferences. Both the former and the latter findings may also be a consequence of the fact that brides from wealthier households in terms of land ownership might have more flexibility in terms of location and life opportunities away from their birthplace.¹⁹

325

330

335

Table 6. The determinants of post-marital residence: probit estimation

	Grooms	Brides
Inheritance (log+1)	0.069*** (0.021)	0.055* (0.033)
Number of sisters	-0.005 (0.047)	-0.050 (0.184)
Number of brothers	0.038 (0.039)	-0.017 (0.033)
Age	-0.007 (0.005)	-0.016*** (0.005)
Child from previous marriages (1=yes)	-0.091 (0.173)	-0.064 (0.140)
Parental wealth (1-Rich or Very Rich)	-0.780 (0.166)	-0.110 (0.149)
Mother's landholdings (hectares)	-0.020 (0.017)	0.001 (0.025)
Father's landholdings (hectares)	0.007 (0.007)	-0.024*** (0.009)
Farming experience (1=yes)	-0.163 (0.266)	0.241* (0.136)
Received land from PA (1=yes)	-0.032*** (0.010)	-
PA wealth (1-average)	1.754*** (0.224)	0.619*** (0.177)
PA wealth (2-rich)	0.633*** (0.244)	-0.227 (0.204)
PA soil quality (1-good)	-0.759*** (0.172)	0.078 (0.130)
Regional effects	Yes	Yes
Log-pseudolikelihood	-204.97	-303.57
Wald-chi-squared-statistic (p-value)	110.65 (0.000)	64.79 (0.000)
Pseudo-R-squared	0.246	0.096
Observations	491	485
	Marginal Effects (Probit Regression)	
Inheritance (log+1)	0.019*** (0.006)	0.022* (0.013)

Notes: * significant at 10 per cent, **significant at 5 per cent, ***significant at 1 per cent

Our results also suggest that grooms who receive more land from the PA of their post-marital residence (the new PA) are less likely to stay at the PA where they were born, suggesting that they move to other villages which will provide them with land at marriage. In rural Ethiopia, land is an important immobile factor of production and household formation and it is therefore a crucial determinant of post-marital residence decisions. Acquisition of land from PAs leads to better prospects in the marriage market. In some cases, PAs endow individuals (mostly grooms) with land when they marry or after they marry in order to give the newlyweds a good start in their new family setting. This suggests that some grooms move to another PA before or at marriage in order to acquire land and therefore increase their chances in the marriage market.²⁰ Finally, grooms are more likely to move into PAs with better soil quality and more likely to stay in villages with more wealth. This is unsurprising given the fact that land and its quality are intrinsically linked and they constitute very important factors in household welfare in rural Ethiopia due to the prevalence of subsistence farming.

5. Concluding Remarks and Discussion

Our empirical results show that transfers and the post-marital residence of grooms and brides in rural Ethiopia are two interrelated decisions. Grooms and brides who receive more transfers from their parents are more likely to stay at their birthplace after marriage. Due to the fact that post-marital residence patterns in rural Ethiopia are prevalently virilocal, our findings shed some light on one of the potential causes of the prevailing gender gap in parental investments. This is due to the fact that virilocal marriages lead to the transfer of childhood investments and female productive labour from the bride's family to the groom's family at marriage. In some instances, educational investments in children might limit the payoffs to parents at a later date if children move away from the location of their parents' residence, limiting the chances of having them for continual support for household labour and other essential activities in the farming villages (Gibson & Sear, 2010).

We also find that customs, community characteristics, wealth, land provided by the Peasant Associations and soil quality, are additional factors affecting post-marital residence decisions. Also, brides with richer mothers (in terms of land ownership) receive more transfers. Brides from households with wealthier fathers are more likely to move away after marriage. Finally, fathers seem to exert less preference for daughters from previous marriages.

In summary, our data shows an interesting empirical regularity that needs to be highlighted as a contribution to the intergenerational transfer literature. Our findings give an insight into the motives behind intergenerational transfers in developing economies where institutional social security mechanisms are scarce or absent, transport links are undeveloped and production is highly labour intensive. In addition, they provide some explanation for the existing gender bias in asset transfers in rural Ethiopia. We highlight the importance of considering household transfer decisions jointly with post-marital residence choices and, if appropriate data becomes available, with old age support choices as well. Due to the importance of asset ownership for the position of females in their marriage and in society (Fafchamps, Kebede, & Quisumbing, 2009; Fafchamps & Quisumbing, 2002; Gopal, 1998), this research provides an insight into potential initiatives for improving the position of females in Ethiopia. Given that, in rural Ethiopia, there is a prevalence of marriages where the bride moves away, the relation we find somewhat explains an asset transfer gender bias in such households. Once concrete data for old age support (material, time or monetary transfers to parents) becomes available, our hypothesis can be further tested and lead to more concrete interventions. The latter could include initiatives for further promoting equal land transfers and inheritance norms. Finally, and most importantly, measures aimed at reducing old age poverty, increasing education, implementing old age security mechanisms and raising awareness about inheritance and property rights could also lead to a lower gender bias in asset ownership and transfers.²¹

Acknowledgements

We would like to thank Prof G. de Fraja and Prof A. McKay for their support, encouragement and valuable comments. We are also grateful to the Department of Economics, Addis Ababa University for providing the data used in this study.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. The two most important indicators of household wealth in rural Ethiopia are land and livestock ownership. Therefore, we analyse these two types of asset transfers. We focus on inheritance transfers, which mostly take place at marriage or shortly after marriage.

2. Evidence suggests that Ethiopian females who own more land or are more educated are more likely to have a higher social status, improved access to credit, and better marriage and remarriage possibilities (Gopal, 1998). Different studies prove the importance of asset ownership of females for their own well-being within the marriage and the well-being of their children. Females, who bring more assets to the marriage and are more educated, have higher control over household production. In addition, they have higher claim rights over asset division upon divorce which is often reflected in higher bargaining power within the marriage (Fafchamps & Quisumbing, 2002, 2005a, 2005b; Gopal, 1998). 400
3. Virilocality describes a custom where after the wedding, the bride moves to the family home of her groom or to the groom's house often located close to his parents.
4. Any type of attention such as visits or care.
5. The ERHS has six rounds covering the years 1989, 1994, 1997, 1999, 2004 and 2009. 405
6. Online Appendix Section 1 provides a map of the study sites.
7. Peasant Associations, also named Kebeles, are regional entities parallel to towns or villages.
8. The data does not provide information on within village marriage migration but our assumption is based on the prevalently virilocal custom of marriage formation in the sample at the time of the survey.
9. Culture and marriage, which vary by region and/or ethnicity, have an important impact on the role of females in the households and therefore on their decision making power (Coclough, Rose and Tembon, 2000; Ezra, 2003; Fafchamps & Quisumbing, 2002; Rose & Al-Samarrai, 2001). 410
10. This is also linked with the fact that women in the south receive fewer assets at marriage and after marriage relative to men. In addition, 'rules regarding divorce and inheritance vary across locations, with more patriarchal rules prevalent in the Muslim and Protestant South and more egalitarian rules prevailing in the Orthodox North' (Fafchamps & Quisumbing, 2002, p. 51). 415
11. In order to check for robustness of our findings and to generate necessary tests of endogeneity and validity of instruments, we also perform instrumental variables probit and a probit estimation of the post-marital regression function (Tables 4 and 6); and an OLS and two-stage least squares estimation of the transfers' equation (Table 5). The results are displayed in Online Appendix Section 2. 420
 We have also performed a generalised method of moments (GMM) regression for the transfers for comparison and in order to test the robustness of our model. The results are compatible and qualitatively similar to the two-stage least squares.
12. Prior to proceeding with the regressions, we also perform basic tests for heteroskedasticity (Breusch-Pagan) and multicollinearity (using variance inflation factors and pairwise correlations). We do not find serious multicollinearity in the model. However, and as expected due to inter-cluster heterogeneity, we find heteroskedasticity in the model. The two-stage probit least squares methodology we use (Keshk, 2003) does not allow the application of robust standard errors in the second stage regression. However, a paper by Keshk, Pollins, and Reuveny (2004) compares the standard errors generated by this procedure to the White/Newey and West standard errors and finds little difference between the two techniques. Due to having a reasonably large sample, we generate estimates with heteroskedasticity-robust standard errors (Asteriou & Hall, 2007; Huber, 1967; White, 1980; Wooldridge, 2006) in the additional regressions, that is the two-stage least squares, two-stage probit least squares, OLS and probit regressions. 425
13. The village wealth is a categorical variable which records poor villages vulnerable to famine with a zero, mixed villages, that is villages which are migration-dependent with category one and rich villages in the last category. The variable depicting soil quality is a dummy, which is one for good soil quality (lem) or fertile soil conditions in the village and zero otherwise. 430
14. We use Wooldridge's score test and Hansen's J statistic for the overidentification tests in the two-stage least squares and GMM estimations, respectively. In both, the former and the latter, we do not reject the null hypothesis, that is, the model is overidentified. Additionally, first stage statistics confirm that the instruments are strong. Finally, we test the endogeneity of the post-marital residence in the transfers' regression and in all the cases; we reject the null hypothesis of exogeneity, supporting our endogeneity assumption. We do this by using Wooldridge's score test in the case of the two-stage least squares and the difference-in-Sargan C statistic (Hayashi, 2000, p. 220) in the GMM. 435
15. Prior to choosing these instrumental variables we have also tried additional instruments for transfers. These include parental land, whether the parents have been divorced before and could therefore acquire more assets to transfer to the child, or own land brought to the marriage by the bride or groom. In this context, Fafchamps and Quisumbing (2005b) find that females who were previously married own more land and livestock (or exert more user rights over land). As they state, 'they (previous marriages) affect asset accumulation before a new marriage, particularly for women' (Fafchamps & Quisumbing, 2005b, p.15). 440
16. Fafchamps and Quisumbing (2005b) look at the determinants of inheritance in rural Ethiopia. They find that additional brothers decrease the amount of inheritance provided to the groom. On the other hand, the number of brothers has no effect on the inheritance of the brides (Fafchamps & Quisumbing, 2005b). In addition, Gibson's and Gurm'u's (2011) study of an Ethiopian agropastoralist society finds that having older brothers decreases the quality of inherited land parcels. A study of Arsi Oromos in rural Ethiopia suggests that, in terms of childhood investments, older brothers decrease the probability of a son being educated but daughters are a drain on the patrilineage and are not competition for brothers in terms of educational investments (Gibson & Sear, 2010). 445
17. We test the validity of our instruments for the transfer variables using the Ameniya-Lee-Newey minimum chi2 statistic and we do not reject the null hypothesis of overidentification. 450

AQ58

AQ59

AQ60

AQ61

AQ62

18. In order to further look at the simultaneity, we have also tried adding a dummy variable to see if we find a difference for those who have received inheritance before the marriage and those who have received it after. We have created a dummy variable with a value of 1 when the bride or groom has received inheritance before the marriage. This was created from two variables, one is the year of marriage and the other is the year when the inheritance was bequeathed. However, there are many missing values, mainly for the brides. We have tried adding the variable alone and as an interaction with inheritance and it is insignificant. 460
19. We have also tried inserting the ratio of father's to mother's land but found no significant effect.
20. Often previous ancestry to a village or locality is enough to claim land and be entitled to receive it from the PA at marriage. This is another reason why people marry at a very early age (Kidane, 1989, pp. 516–517). Also, often PAs allocate land to households after their formation (Fafchamps & Quisumbing, 2002). 465
21. The Land Registration Program which started in rural Ethiopia in 2003 was a huge leap in this direction and has already proven positive results for the position of females. As an example, a paper from Kumar and Quisumbing (2015) finds that women who participate in the process of Land Registration are more likely to shift their perceptions towards equal division of assets upon divorce. Other positive outcomes of the documented provision of land rights include higher land related investments and the reduction of conflict potential in terms of land plot disputes (Deininger, Ali, Holden, & Zevenbergen, 2008). 470

References

- Asrese, K., & Abebe, M. (2014). Early marriage in South Wollo and East Gojjam zones of the Amhara Region, Ethiopia. *Humanities and Social Sciences*, 2(2), 11–16. doi:10.11648/j.hss.20140202.11 475
- Asteriou, D., & Hall, S. G. (2007). *Applied econometrics: A modern approach*. New York, NY: Palgrave Macmillan.
- Baker, M. J., & Jacobsen, J. (2007). A human capital-based theory of post-marital residence rules. *Journal of Law, Economics and Organisation*, 23(1), 208–241. doi:10.1093/jleo/ewm009
- Becker, G. S. (1993). *A treatise on the family- Enlarged edition*. Cambridge, MA: Harvard University Press.
- Becker, G. S., & Tomes, N. (1976). Child endowments and the quantity and quality of children. *The Journal of Political Economy*, 84(4), 143–162. doi:10.1086/260536 480
- Bernheim, B. D., Shleifer, A., & Summers, L. H. (1985). The strategic bequest motive. *Journal of Political Economy*, 93(6), 1045–1076. doi:10.1086/261351
- Bevan, P., & Pankhurst, A. (1996). *Ethiopian village studies*. Addis Ababa: Department of Sociology, Addis Ababa University.
- Colclough, C., Rose, P., & Tembon, M. (2000). Gender inequalities in primary schooling: The roles of poverty and adverse cultural practice. *International Journal of Educational Development*, 20(1), 5–27. doi:10.1016/S0738-0593(99)00046-2 485
- Cox, D. (1987). Motives for Private Income Transfers. *The Journal of Political Economy*, 95(3), 508–546. doi:10.1086/261470
- De Brauw, A., & Mueller, V. (2012). Do limitations in land rights transferability influence mobility rates in Ethiopia? *Journal of African Economies*, 21(4), 548–579. doi:10.1093/jae/ejs007
- Deininger, K., Ali, D. A., Holden, S., & Zevenbergen, J. (2008). Rural land certification in Ethiopia: Process, initial impact, and implications for other African countries. *World Development*, 36(10), 1786–1812. doi:10.1016/j.worlddev.2007.09.012 490
- Emire, G. (2005). *Early Marriage and Its Effects on Girls' Education in Rural Ethiopia: The Case of Mecha Woreda in West Gojjam, North-Western Ethiopia* (Unpublished Doctoral Dissertation). Georg-August University of Goettingen.
- Ezra, M. (2003). Factors associated with marriage and family formation processes in Southern Ethiopia. *Journal of Comparative Family Studies*, 34, 509–530. 495
- Ezra, M., & Kiros, G. E. (2001). Rural out-migration in the drought prone areas of Ethiopia: A multilevel analysis. *International Migration Review*, 35(3), 749–771. doi:10.1111/j.1747-7379.2001.tb00039.x
- Fafchamps, M., Kebede, B., & Quisumbing, A. (2009). Intrahousehold Welfare in Rural Ethiopia. *Oxford Bulletin of Economics and Statistics*, 71(4), 567–599. doi:10.1111/obes.2009.71.issue-4
- Fafchamps, M., & Quisumbing, A. (2002). Control and ownership of assets within rural Ethiopian households. *The Journal of Development Studies*, 38(6), 47–82. doi:10.1080/00220380412331322581 500
- Fafchamps, M., & Quisumbing, A. (2005a). Marriage, bequest, and assortative matching in rural Ethiopia. *Economic Development and Cultural Change*, 53(2), 347–380. doi:10.1086/425373
- Fafchamps, M., & Quisumbing, A. (2005b). Assets at marriage in rural Ethiopia. *Journal of Development Economics*, 77(1), 1–25. doi:10.1016/j.jdeveco.2004.02.003 505
- Fafchamps, M., & Quisumbing, A. (2008). Household formation and marriage markets in rural areas. *Handbook of Development Economics*, 4, 3187–3247.
- Gibson, M. A., & Gurm, E. (2011). Land inheritance establishes sibling competition for marriage and reproduction in rural Ethiopia. *Proceedings of the National Academy of Sciences of the United States of America*, 108(6), 2200–2204. doi:10.1073/pnas.1010241108 510
- Gibson, M. A., & Mace, R. (2005). Helpful grandmothers in rural Ethiopia: A study of the effect of kin on child survival and growth. *Evolution and Human Behavior*, 26(6), 469–482. doi:10.1016/j.evolhumbehav.2005.03.004
- Gibson, M. A., & Sear, R. (2010). Does wealth increase parental investment biases in child education? Evidence from two African populations in the cusp of the fertility transition. *Current Anthropology*, 51(5), 693–701. doi:10.1086/655954

- Gopal, G. (1998). *Implementing the Ethiopian national policy for women* (Working Paper No. 17704). Washington, DC: The World Bank. 515
 AQ82
 Hayashi, F. (2000). *Econometrics*. Princeton: Princeton University Press. 515
 AQ85
 Hoddinott, J. (1992). Rotten kids or manipulative parents: Are children old age security in Western Kenya?. *Economic Development and Cultural Change*, 40(3), 545–565. doi:10.1086/451960
 AQ83
 AQ84
 AQ86
 AQ87
 AQ88
 Hoddinott, J., Dercon, S., & Krishnan, P. (2005). *Networks and Informal Mutual Support in 15 Ethiopian Villages. Institutional economics perspectives on African agricultural development*, 273. IFPRI, University of Oxford and Cambridge University. 520
 Huber, P. J. (1967). The behavior of maximum likelihood estimates under nonstandard conditions. *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability*, 1(1), 221–233.
 Keshk, O. M. G. (2003). CDSIMEQ: A program to implement two-stage probit least squares. *Stata Journal*, 3(2), 157–167.
 Keshk, O. M. G., Pollins, B. M., & Reuveny, R. (2004). Trade still follows the flag: The primacy of politics in a simultaneous model of interdependence and armed conflict. *Journal of Politics*, 66(4), 1155–1179. doi:10.1111/j.0022-3816.2004.00294.x 525
 AQ40
 AQ41
 AQ43
 Kidane, A. (1989). Demographic consequences of the 1984–1985 Ethiopian famine. *Demography*, 26(3), 515–22.
 Korotayev, A. (2003). Division of labor by gender and postmarital residence in cross-cultural perspective: A reconsideration. *Cross-Cultural Research*, 37(4), 335–372. doi:10.1177/1069397103253685 530
 Kumar, N., & Quisumbing, A. (2015). Policy reform toward gender equality in Ethiopia: Little by little the egg begins to walk. *World Development*, 67, 406–423. doi:10.1016/j.worlddev.2014.10.029
 AQ89
 Levine, D., & Kevane, M. (2003). Are investments in daughters lower when daughters move away? Evidence from Indonesia. *World Development*, 31(6), 1065–1084. doi:10.1016/S0305-750X(03)00050-0
 AQ42
 Lillard, L. A., & Willis, R. J. (1997). Motives for intergenerational transfers: Evidence from Malaysia. *Demography*, 34(1), 115–134. doi:10.2307/2061663 535
 AQ43
 AQ44
 AQ45
 Lucas, R., & Stark, O. (1985). Motivations to remit: Evidence from Botswana. *Journal of Political Economy*, 93(5), 901. doi:10.1086/261341
 AQ46
 AQ47
 AQ48
 AQ49
 Maddala, G. S. (1983). *Limited-dependent and qualitative variables in econometrics*. Cambridge, MA: Cambridge University Press. 540
 Quisumbing, A., & Hallman, K. (2003). *Marriage in transition: Evidence on age, education, and assets from six developing countries* (Working Paper No. 183). New York: Policy Research Division, The Population Council.
 Rose, P., & Al-Samarrai, S. (2001). Household constraints on schooling by gender: Empirical evidence from Ethiopia. *Comparative Education Review*, 45(1), 36–63. doi:10.1086/447644
 AQ50
 AQ51
 Rosenzweig, M. R., & Stark, O. (1989). Consumption smoothing, migration, and marriage: Evidence from rural India. *Journal of Political Economy*, 97(4), 905–926. doi:10.1086/261633 545
 AQ52
 AQ54
 AQ55
 AQ56
 White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48(4), 817–838. doi:10.2307/1912934
 Willis, R. J. (1979). *The old age security hypothesis and population growth* (Working Paper No. 372). Cambridge, MA: National Bureau of Economic Research. 550
 Wooldridge, J. M. (2006). *Introductory econometrics. A modern approach*. Mason, OH: South Western.