

ESSAYS ON LAND ACCESS IN KAGERA, TANZANIA:
MARKETS, MIGRATION, AND BEQUESTS

By

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ABSTRACT

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In rural sub-Saharan Africa, access to land is an important determinant of both individual and household welfare. This dissertation focuses on three topics related to land access in the Kagera Region of northwestern Tanzania, where residents tend to access land through either inheritance or the land market. We therefore explore bequest motives and land market dynamics to better understand what drives patterns of land distribution, and to derive policy lessons for improved land access. This work draws from a unique household survey conducted in 2013-14, as well as qualitative data collected at the study site.

The first essay explores the drivers of parents' bequest decisions for land and non-land assets, drawing primarily on the strategic bequest (exchange) model to evaluate whether parents divide their estate with the intent to solicit care from their children. We use a sibling-group fixed effects model to find a preference for sons within intended bequests. However, women generally narrow the gap between male and female children. Consistent with predictions of the exchange model, parents tend to favor children who have recently remitted income or contributed labor to the household, and parents with greater needs seem to exhibit a preference for children who will likely provide care. Results indicate that parents in Tanzania exhibit multiple motives of bequest, belying any broad generalizations of their priorities and preferences.

The second essay explores how land sales and rental markets function to bring about a new distribution of operational landholdings. Specifically, we question whether the market exacerbates or improves inequality of landholdings, and whether it offers women an alternative (and less gendered) means of land access, compared to customary systems of allocation. Results indicate that the land market, which is characterized by widespread participation, enables households to secure a landholding or

adjust their farm size to compensate for a small inheritance. While female heads similarly use the market to enhance a small land endowment left from their marriage, they are somewhat marginalized in terms of market participation, and we substantiate this result with qualitative evidence. Our results generally do not point to a local land market characterized by elite capture, wherein those privileged in their initial land holdings dominate the market. However, the market remains out of reach for some women.

The third essay assesses the relationship between the land market and rural-to-rural migration flows to understand whether and how this market facilitates labor mobility across the rural landscape. The Kagera Region is characterized by large population movements between villages. Within a mixed-methods (qualitative-quantitative) framework, we find that household decisions to migrate are likely influenced by the ease of market-based land access in their new communities, as well as the opportunity to sell or lease land in their villages of origin. Narrative evidence serves to contextualize this finding, with a discussion of how land market restrictions seem to hinder labor mobility. Rural-to-rural migration by smallholder farmers is an often-overlooked form of migration in developing countries, and this paper is among the first to examine this process.

Taken together, these essays reveal a complex system of land allocation in the Kagera Region, whereby access to land is mediated by numerous factors. These include the strategic and/or altruistic motives of parents, the central role of migration in the rural economy, and a burgeoning land market that provides, for some, a less traditional avenue of land access. Overall, this dissertation sheds light on the diverse and sometimes unexpected ways in which people gain access to land, with implications for how policies can facilitate more equitable land access.

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KEY TO ABBREVIATIONS

CBLA	Community-based legal aid
CF	Control function
CFA	Control function approach
FE	Fixed effects
FRM	Fractional response model
FHH	Female-headed household
HH	Household
IPW	Inverse probability weights
MHH	Male-headed household
NGO	Non-governmental organization
OLS	Ordinary least squares
SD	Standard deviation
SE	Standard error
SUR	Seemingly-unrelated regression
TSh	Tanzanian shillings

1. ALL IN THE FAMILY: BEQUEST MOTIVES IN RURAL TANZANIA

1.1 Introduction

Parental bequests are an important determinant of an individual's wealth (Cooper 2010; Quisumbing 2009).¹ Yet women are often excluded from an equal share of inheritance, despite the long-term welfare implications of their access to bequests (Cooper and Bird 2012). In this paper, we explore what drives differential bequest decisions on the basis of children's and parents' characteristics in Kagera, Tanzania. We draw primarily from predictions of the strategic bequest model (Bernheim et al. 1985) to assess whether parents divide their estate with the aim of soliciting services or remittances from their children. Particular attention is given to gender in order to understand whether mothers and fathers exhibit differential preferences for their sons and daughters, and whether this is explained by an exchange motive. We also refer to the wealth (altruism) (Becker 1974; Becker and Tomes 1986) and egalitarian (Platteau and Baland 2001) models of bequest to test whether these motives are observed empirically. In this manner, we follow the lead of Light and McGarry (2003) who note that "we do not need a single 'correct' theoretical model. Instead, we need additional evidence on when and for whom alternative motives drive intra-family transfer decisions."

Why is it important to understand the motives of bequest? First, in rural Africa, inheritance is widely recognized as a determinant of lifetime well-being. Inheritance can take place upon a parent's death or earlier, and in Kenya, for example, the size of marriage gift at the time of household formation is found to be a strong determinant of household welfare in subsequent years (Muyanga et al. 2013). Land is the basis of an agricultural livelihood, and where land markets are absent, inheritance may be the only way to access this factor of production. Second, patterns of bequest can affect the level of inequality among siblings, particularly between brothers and sisters. If daughters are consistently excluded from inheritance, a gender gap in welfare may be evident in the next generation. On the other hand, if parents

¹ This essay is co-authored with Lenis Saweda Liverpool-Tasie.

are guided by altruism in their bequest decisions, they will actively seek to equalize the welfare of their children and reduce wealth inequality (Horioka 2009).

Third, where decisions of bequest are guided by strategic intent, bequests can serve as a tool to ensure that children care for their parents. In the absence of a strong social safety net, such behavior may indicate that bequest rights are necessary for parents to induce this sort of attention as they age. Fourth, the motives of intra-family giving have implications for the effectiveness of public redistribution efforts. In the presence of altruism, public transfers to poor adult children crowd out private transfers as their parents respond by adjusting down their giving behavior. At the same time, a rise in social security benefits will lead to greater transfers from parents to children, resulting in Ricardian equivalence (Barro 1974). Most studies of bequest motives are concentrated in developed country settings (see Arrondel and Masson (2006) for a comprehensive review of the literature). However altruism- and exchange-motivated bequests may be of greatest importance in developing countries with limited public redistribution.

This paper explores patterns of intended bequest in the Kagera Region of northwestern Tanzania, where it is not uncommon for both men and women to inherit land and exercise some discretion in bequests. The paper makes several contributions to the literature: First, we exploit a rich data set to delineate patterns of intended bequest and identify heterogeneous bequest motives within the population. The data set contains information on intended bequests of both land and non-land assets, as well as information on the parents' and children's welfare and other characteristics. In addition, while most tests of the strategic bequest motive rely on observations of children's caring behavior, paired with their parents' bequeath-able wealth, we are able to explore the potential for exchange from the parent's perspective by directly collecting information on their bequest intentions across potential heirs. To our knowledge, just one other study in a developing country context uses data on entire sibling groups to explore the strategic bequest motive (see Goetghebuer and Platteau 2010), and this is the first in sub-Saharan Africa to do so. The focus on intended bequests allows us to observe the intentional part of parental bequests. Finally, many studies of bequest motives consider just one axis of welfare (e.g. the parent's or child's income level) in order to test for evidence of exchange or altruism. Given the wealth of

data at our disposal, we are able to look for evidence of bequest motives across a range of axes. This breadth of focus enables us to comment on the heterogeneity of motives within the population, which would not be possible with a narrower lens.

The remainder of the paper is organized as follows: Section 1.2 outlines the set of motives that may drive bequest decisions, with particular attention to the strategic bequest motive. Hypotheses are specified in section 1.3. A description of the data and study site is given in section 1.4, with summary statistics offered in section 1.5. Section 1.6 provides results from our econometric analysis, and section 1.7 concludes with a discussion of key findings.

1.2 Conceptual framework

This paper will focus on several rules of bequest that parents may employ when dividing their estate among potential heirs. We draw mostly on the strategic bequest motive, in which parents exchange the promise of future bequest for care or services provided by a child (Bernheim et al. 1985). We also refer to the wealth (altruism) motive, wherein parents give preferential treatment to a child who is more vulnerable than her siblings (Becker 1974). According to these two motives, the allocation of parental bequests should depend on the characteristics or behavior of each child. However, we also explore whether bequests simply reflect a preference for egalitarianism, wherein a parent seeks to divide the estate equally among all children. Under this last rule, the allocation of bequests should not depend on the children's characteristics.

The strategic bequest model assumes that parents transfer wealth to children in return for 'merit goods', such as companionship, care, and support in their old age (Bernheim et al. 1985). In a developing country context, it is reasonable for a merit good to also take the form of remittances (Hoddinott 1992; Lucas and Stark 1985). In the spirit of exchange, parents manipulate their children's behavior by committing themselves to a publicly known rule of bequest division according to the amount of merit goods provided by their children. The complete derivation of this rule introduced by Bernheim et al. (1985) is given in Appendix 1A.

In abbreviated form, the model includes a parent and child with consumptions c_p and c_k , respectively, and the parent makes a transfer (bequest) to the child. The child provides a merit good, a , which enters the utility functions of both parent and child: $U_p[c_p, a, U_k(c_k, a)]$ and $U_k(c_k, a)$. With some basic assumptions about the shape of these utility functions (i.e. both initially rise with a but then fall beyond a certain threshold, and the child tires of a before the parent), we note that whenever U_k is not decreasing with a , U_p is increasing with a . The parent always wants more a than the child would prefer to offer. How can the parent induce a higher level of a from the child? If the parent can choose to disinherit the child, the child would be left with a lower consumption level, $\bar{c}_k$. The parent can use this threat of disinheritance to demand a higher level of a that leaves the child at least as well-off as the disinheritance scenario, but still lies on a higher indifference curve of the parent. Note that a credible threat of disinheritance requires there to be at least two potential heirs.

Within the framework of this model, the optimal division of a parent's property varies with the characteristics of the children, and we should see a positive relationship between size of bequest and children's giving behavior. Furthermore, the intensity of caring behavior should vary with parental wealth. For this reason, most tests of the exchange model are based on the relationship between child-provided services and the size of expected inheritance (Bernheim et al. 1985; Lucas and Stark 1985). The model also suggests that a parent with greater needs, such as illness or old age, would favor a child that is best-placed to meet his/her needs. Because wealthier children are more able to provide certain services to their parents, a positive relationship between children's wealth and size of bequest is consistent with a strategic bequest motive (and inconsistent with altruism) (Cox 1987). This is particularly true when the service being provided takes the form of remittances. However, it is also possible that a parent is more likely to 'purchase' services from a less wealthy child because the cost of that child's time is lower than her siblings. Thus, a negative relationship between a child's wealth and bequest size may also be consistent with strategic bequest, where the service being provided takes the form of attention or labor.

In developed country settings, the evidence on strategic bequests is decidedly mixed (e.g. Perozek (1998) in the U.S. and Horioka (2009) in Japan). In countries with strong public systems of old-age support, parents may feel less need to behave tactically. However, the few studies that have tested the predictions of strategic bequest in developing countries have generally found strong evidence in support of this motive. In Ghana, La Ferrara (2007) shows that when parents can credibly threaten to disinherit their sons (as per the customs of the Akan tribal group), they are more likely to receive monetary transfers from them. In Botswana, Lucas and Stark (1985) find that sons remit more money to households with greater wealth, which is consistent with a strategy to secure their bequest. Similarly in Kenya, migrant children tend to provide greater support for wealthier parents and less support when they do not expect a large inheritance (Hoddinott 1992). In Peru, Goetghebuer and Platteau (2007) find that within a family, relative shares of intended bequests are at least partially explained by the children's caring behaviors.

In sharp contrast to strategic bequest, the wealth model (Becker 1974; Becker and Tomes 1986) posits that parents are motivated by altruism, with their utility increasing with respect to their child's welfare. According to this model, parents aim to maximize a utility function spanning multiple generations and allocate inheritance across children in order to equalize their marginal utilities.² The largest transfers are therefore given to the least wealthy children, such that parental transfers are compensatory (Wilhelm 1996). The parent seeks to maximize the following constrained utility function:

$$\text{Max } U(C_p, y_{1p}, y_{2p}, \dots, y_{Kp})$$

$$s. t. \quad y_{kp} = h_{kp} + b_{kp}$$

$$C_p + \rho \sum_{i=1}^K y_{kp} = Y_p$$

where C_p is the consumption of the parent, y_{kp} is the lifetime wealth of child k , and K is the number of children. y_{kp} is comprised of h_{kp} , the endowment of child k , and b_{kp} , the parent's bequest for child k .

² Note that the wealth model does not simply require that children's utility levels enter the parent's utility function. Rather, it explicitly assumes that parents aim to equalize marginal utilities across their children, and therefore give preference to the least well-off children.

Parental wealth, Y_p , is comprised of the parent's consumption and the sum of children's lifetime wealth.

The first-order condition produces the following equality:

$$y_{kp} = f(Y_p, \rho)$$

where y_{kp} is equal across all children. Thus, a child with a smaller endowment will receive a larger bequest, and vice versa.

In both the U.S. and Sweden, little evidence has been found for post-mortem bequests to serve a compensatory role, favoring the child with lower income (Wilhelm 1996; Erixson and Ohlsson 2014). This may reflect the existence of public transfer programs that render kin-based altruism less necessary. There is generally more evidence in support of *inter vivos* (pre-mortem) transfers playing this role (McGarry 1999). In the Philippines, a setting with a particularly weak public safety net, Cox et al. (2004) find an interesting pattern in which transfers appear to be compensatory at low income levels, but after a certain wealth threshold, transfer patterns are consistent with strategic intent. The authors conclude that the potential for Ricardian equivalence (Barro 1974) is real, as government aid to poor households could be offset by reduced support from kin.

While both strategic and altruistic bequests are driven by the children's characteristics, an alternative rule of bequest may be pre-determined and therefore not contingent on the welfare or behavior of a child. For example, an egalitarian division involves equal sharing among all children. Equal inheritance rules are prevalent in Africa, possibly because of the strong intra-family solidarity found within lineage-based societies (Platteau and Baland 2001), or a lack of economies of scale that would support a system of impartible inheritance. Within an egalitarian division framework, it is possible that parents assign post-mortem bequests depending on the gifts already given to each child. This is because, in many societies, a substantial portion of intergenerational wealth transfer occurs upon marriage, and this *inter vivos* transfer constitutes an advanced inheritance (Fafchamps and Quisumbing 2005). A child who has already received such a gift may receive a relatively smaller bequest, but the outcome is ultimately an equal division of the parental holdings.

To summarize the three models discussed above, the strategic bequest model assumes an exchange between parent and child, wherein the promise of bequest is traded for elder care or other forms of assistance. This predicts that a parent will provide a larger bequest to a child who is wealthier and/or provides remittances, a child who provides labor to the parent's household, or a child who is likely to provide care to a needy parent. It further predicts that a parent with greater needs, such as those associated with old age, will more intensely favor a child that is able to assist. The wealth model assumes that a parent aims to equalize marginal utilities across all children, which implies that a less wealthy or more vulnerable child will be favored. This pattern does not definitively reveal altruism, though the absence of such a pattern does indicate that altruism is not a driving force in bequests. Finally, an egalitarian division rule predicts that inheritance is divided equally among all children, with bequest sizes inversely related to the size of prior gifts.

How does a child's gender relate to bequest motives? First, custom often dictates that sons or daughters are the primary caretakers for elderly parents. In turn, parents may favor whoever has this role. Second, where daughters tend to receive a smaller share of inheritance, it may be in response to a pattern in which daughters move near their in-laws after they wed, leaving them less able to contribute to their parents' household. In a study of various ethnic groups in Indonesia, Levine and Kevane (2003) find a negative correlation between such patterns of marriage migration and bequests for daughters. In Tanzania, Weiss (1996) further indicates that women are more likely to sell their inherited land, and this may prompt parents to favor their sons if they desire to keep the land in their family.

How does a parent's gender relate to bequest motives? Mothers and fathers may exhibit different preferences or strategies, or they may be differentially more reliant on children of one gender for support in old age. Such preferences in terms of investments in children have been observed across many settings, with mothers often favoring their daughters and fathers favoring their sons (e.g. Lillard and Willis 1994; Raley and Bianchi 2006; Thomas 1994). This may be because daughters spend more time with their mothers and are likely to help with female tasks, while sons similarly help fathers with male tasks. For example, if women are traditionally responsible for collecting water, a daughter would be likely to assist

her mother. It is also possible for mothers and fathers to simply display diverging preferences for gender equality (Alderman and King 1998). It should be emphasized that the models explored in this paper make few predictions of different bequest motives for mothers and fathers, and no predictions of how two parents may behave cooperatively or strategically in their respective bequest decisions. However, empirical patterns with potentially valuable insights can still be explored.

It should further be noted that these are not the only proposed motives of bequest, and indeed, the literature is replete with variations on these models. Baker and Miceli (2005) address the relative merits of using discretion versus a pre-determined rule in the division of estate. They conclude that discretion is preferable when rent-seeking among potential heirs is not expected to be intense, as heirs can anticipate their future wealth and optimize their investments in human capital. Estudillo et al. (2001) evaluate why sons and daughters in the Philippines receive differing allocations of land and education. They conclude that parents consider the varying returns to men and women in possession of these two assets, and allocate bequests to maximize their children's lifetime earnings. In a study of early childhood health investments in Tanzania, Adhvaryu and Nyshadham (2011) find that parents focus investments on a sibling of greater cognitive endowment, essentially reinforcing the life chances of their more successful children. In bequests, as well, parents may favor their more successful (and wealthier) children. Cox et al. (2003) emphasizes the importance of biology in driving the differential transfers of mothers and fathers. The three bequest rules analyzed in this paper are limited to those that can be explored with the available data.

1.3 Hypotheses

In general, efforts to determine which motive dominates bequest decisions have produced mixed results, and it can be difficult to distinguish between the models (Light and McGarry 2003). As Bernheim et al. (1985) note, "no single tractable analytical model can capture as varied a phenomenon as

intergenerational transfers.” However the set of models discussed in section 1.2 serves as a framework for interpreting bequest patterns in Tanzania.³

We test the following hypotheses regarding the characteristics of parents and children in bequest motives.

- (1) Parents with greater needs will allocate bequests to favor children who are able to provide assistance. This would be consistent with the exchange motive, even as we have no *a priori* expectation regarding which children will be favored.
- (2) Mothers will favor their daughters that live at home or in the vicinity. This would be consistent with the exchange motive, as proximity is considered a proxy for the likely provision of gendered labor assistance.
- (3) Parents will favor a child who has recently remitted income to the household or directly to the respondent. This would be consistent with the exchange motive.
- (4) Parents will favor a child that is widowed or separated. This would be consistent with altruism, as being single is assumed to indicate income vulnerability. Note that this would also be consistent with exchange if the child has a lower opportunity cost for providing assistance to her parents.
- (5) Parents will allocate less to a child who has already received a sizable *inter vivos* transfer. This would be consistent with an egalitarian rule of bequests.

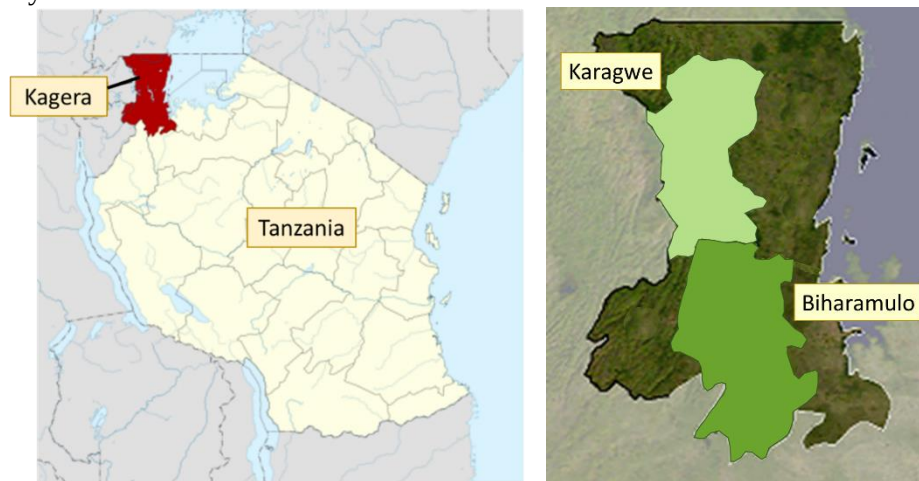
In the process of testing for these bequest motives, we also provide evidence regarding parental preferences based on gender, even when these cannot be explained by theories of bequest motives.

³ This paper focuses on intended post-mortem bequests partly because the promise of a future bequest can be used by parents in exchange for continual care from their children. It thus serves a different role than *inter vivos* transfers, which cannot be held out as a reward for continued ‘good behavior’ on the part of their children, for as long as it is needed. As well, while not all parents are able to allocate a sizable gift to their children when they are still alive (i.e., they must hold onto their small farms for their own survival), decisions around bequest are relevant for most residents of the study site.

1.4 Study site and data

The study region of Kagera is located in the northwestern corner of Tanzania and shares a border with Uganda, Rwanda, and Burundi (Figure 1.1). The local economy is dominated by agriculture, along with some trade in agricultural products (de Weerd 2010). Most land is held under individualized tenure with families able to retain their property over generations, and the diversity of tribes makes it difficult to generalize about a dominant regime of customary property rights. While women (and particularly wives) tend to have more limited bequest rights than men, it is not uncommon for both men and women to inherit land and to exercise bequest rights. For example, Weiss (1996, pg. 199) confirms that Haya women in the Kagera region inherit land upon their parents' death. While women who move for marriage have some difficulty bequeathing land they have inherited, they can sell their inheritance in order to purchase new land that can be bequeathed with no restrictions.⁴

Figure 1.1 Study site



We use data collected during a community-based legal aid (CBLA) program evaluation in Kagera, which was conducted by the International Food Policy Research Institute in 2013 and 2014. The program was carried out in two districts of Kagera, namely Karagwe and Biharamulo. In May 2013 and August 2014, 140 out of all 150 villages in these districts were surveyed, including one village located in

⁴ Also in the Iringa region of southwestern Tanzania, Hehe women widely report the right to inherit land, and elderly men confirm this pattern (Odgaard 2006). However, while fathers seem to be supportive of their daughters' rights to inherit, women's land claims are challenged most fiercely by their brothers.

a town.⁵ A listing was conducted in a randomly selected hamlet of each village to stratify the selection of 12 households per village equally by the gender of household head. After the 2013 survey was administered, a random subset of 70 villages received the CBLA treatment, in which a local volunteer received training on women's rights (with an emphasis on land rights) in order to serve as a 'paralegal' in their community. In total, 1,442 households were interviewed in both 2013 and 2014, resulting in a weighted household-level attrition rate of 10.18%. Individual interviews were conducted with 1,242 women and 634 men, although the sample is often limited in this paper to respondents with multiple children who intend to (and have the right to) allot a positive bequest to their children (for land bequests, 782 women and 471 men; for non-land bequests, 996 women and 457 men).

The survey included a community-level questionnaire administered to village representatives. At the household-level, a general questionnaire was administered to each household head to obtain information on the household's demographic composition, landholdings, and assets. Within each household, individual surveys covering the topics of time use and bequest allocations were also administered to the head and his/her primary spouse. Specifically, respondents listed all children (biological and non-biological) of the household head. They were then asked to consider the event of their own death, and to estimate the percent of the monetary value of any land and other assets that would be received by their spouse (if married), each potential child heir, and anyone else.⁶ Land and non-land assets are considered separately because, while land is the most valuable property owned by rural households in this region, we aim to discern whether children who receive less land are compensated with non-land bequests. In 2014, information was also collected on the child heirs, including their occupation, marital status, remittance behavior over the previous year, prior gifts received, and location of residence.

Because this paper relies on information collected in 2014, we draw only from the 2014 data and verify that the preceding CBLA intervention did not influence the results. Population weights at the

⁵ One rural village refused to be surveyed, and the remaining villages in these districts (2 rural and 7 urban) were randomly omitted from the 2014 survey.

⁶ The survey questions were phrased, "If you were to die... what share of the total value of land will [*individual's name*] inherit from you? What share of the total value of money and non-land assets will [*individual's name*] inherit from you?"

individual level are used in all analyses and are adjusted with inverse probability weights (IPW) to reflect the likelihood of an individual remaining in the sample (Wooldridge 2002; Appendix 1B). In 2014, the exchange rate was approximately 1,500 TSh for US \$1, and when providing information on prior gifts given to their children, respondents were asked to estimate their value in 2014 shillings.

1.5 Summary statistics

The definitions of key variables used in this paper are provided in Table 1.1. Table 1.2 provides a description of the study respondents, while Table 1.3 describes their households and families. Women generally work more hours per week than men (46.8 versus 32.1 hours, on average). Thus, women may be more likely to benefit from the exchange of bequests for labor assistance to reduce their workload. Women are also less likely to have personal income or savings, and this could represent a higher level of income vulnerability. Men are much more likely to have brought their own land or non-land assets to the marriage, partly because men are more likely to receive large wedding gifts. While 92.2% of men report some land bequest rights, just 64.6% of women claim to have any such rights (60.3% of married women and 88.1% of female heads). Table 1.3 shows that respondents allocate bequests among an average of 5.4 potential child heirs.⁷ Just 10.2% of household heads have a primary occupation that is non-agricultural, underscoring the importance of land access in this context.

⁷ There exists adequate variation within sibling groups with at least two potential heirs, in terms of age range (mean = 13.9 years), gender diversity (85.7% of groups contain both boy and girl children), and location of residence. 52.7% of groups contain at least one child residing inside and one child outside the village. This value is 32.0% for girl children, specifically, and 24.1% for boy children.

Table 1.1 Key variable definitions

Household characteristics	
Adult equivalents	Adult equivalents of household members, weighted by time spent at home over the previous year
Dependency ratio	Proportion of household comprised of dependents (ages <15 or >59)
Value of assets	Value of farm equipment, livestock, and non-farm assets
Parent characteristics	
Work hours	Total number of hours worked by respondent in the week prior to interview, including own-farm work, domestic work, self-employment, and employment by others
Has land bequest rights	1= Respondent reported the right to bequeath land in either the 2013 or 2014 survey round ^a
Equal division of estate	1= Respondent intends to divide estate equally among all potential heirs (not defined if the parent will not allot any portion of the estate to child heirs)
Boy-girl gap	Difference in average percent of children's bequests allocated to boy child and average percent allocated to girl child (defined only for sibling groups with both brothers and sisters)
Coefficient of variation	Coefficient of variation in bequests among potential child heirs
Heir characteristics	
Step child	1= Heir is either adopted or a step child of the respondent
Widowed/ separated	1= Heir's marital status is widowed, divorced, or separated
Works in non-agricultural sector	1= Primary occupation of heir is not as a farmer
Resides in village	1= Heir either lives in the respondent's household or has an independent household in the same village
Resides outside of village	1= Heir resides elsewhere in the district, region, country, or outside of Tanzania
Has remitted income	1= Non-resident heir has sent to the household (or respondent) money or in-kind gifts within the previous year
Has received income	1= Non-resident heir has received financial assistance from household (or respondent) within the previous year
Has received gift of land	1= Child heir has received a sizable gift in the form of land from the respondent, at any time in the past
Has received gift	1= Child heir has received either land or a non-land gift from the respondent, at any time in the past
Value of gifts received	Estimated value of all gifts received in 2014 Shillings

^a It seems there was a problem with the collection of this information in 2014, with an unrealistically sharp drop in reported rights to bequeath or sell land, as compared with one year earlier. We therefore refer to the maximum of the two survey rounds.

Table 1.2 Summary statistics of male and female respondents

	Men		Women	
	Mean	SD	Mean	SD
Age	43.464	(15.808)	40.088	(14.952)
No. years schooling	4.980	(3.101)	4.063	(3.283)
1=Origin is current village	0.472	(0.500)	0.214	(0.410)
No. work hours in previous week	32.093	(19.451)	46.754	(20.094)
No. domestic work hours in previous week	5.293	(8.587)	24.132	(12.721)
No. farm work hours in previous week	19.243	(12.978)	18.879	(11.731)
1=Has spouse	0.936	(0.245)	0.847	(0.360)
1=Polygamous union	0.124	(0.330)	0.142	(0.349)
1=Brought land to marriage (if ever married)	0.577	(0.494)	0.068	(0.252)
1=Owned non-land assets at marriage	0.444	(0.497)	0.108	(0.311)
1=Has personal income or savings	0.777	(0.416)	0.585	(0.493)
1=Has right to bequeath some land ^a	0.922	(0.269)	0.646	(0.478)
Area of land respondent can bequeath (acres) ^b	4.861	(7.758)	0.991	(4.423)
Area of land respondent can bequeath (acres), among those with positive bequest rights	5.274	(7.946)	1.534	(5.427)
1=Has non-biological child among potential heirs	0.104	(0.306)	0.177	(0.382)
Obs.	634		1,242	

^aThis information is not available for non-land assets.

^bThis value is derived by aggregating the sizes of plots that respondents report they can bequeath, although this should be interpreted as an *upper bound estimate*. Respondents may not be able to bequeath the entire plot.

Table 1.3 Family composition and household characteristics

	Mean	SD
Family		
No. heirs in family	5.373	(3.802)
No. heirs < 18 years	3.158	(2.650)
No. heirs >= 18 years	2.215	(3.359)
Sons	2.632	(2.284)
Sons residing in village	2.024	(1.867)
Sons residing outside of village	0.607	(1.361)
Daughters	2.742	(2.210)
Daughters residing in village	1.830	(1.794)
Daughters residing outside of village	0.912	(1.496)
Household		
Adult equivalents	3.576	(1.842)
Dependency ratio	0.438	(0.245)
1=Head's primary occupation is non-agricultural	0.102	(0.303)
1=Household owns no land	0.077	(0.267)
Land owned (acres)	4.583	(6.770)
Value of assets (10,000s TSh)	457.454	(1,643.818)
1=Iron roof	0.737	(0.441)
1=Cement walls	0.198	(0.399)
Obs.	1,442	

We next explore patterns of intended bequests. Note that from this point forward, all respondents with fewer than two potential heirs are dropped from the analysis in order to ensure that the parent can credibly threaten to disinherit one child. Respondents who choose not to allocate any of their estate to their children are similarly dropped, as this paper focuses on how bequests are distributed among siblings. In addition, in all analyses regarding land bequests, the sample is limited to respondents who reside in a land-owning household and report some bequest rights over land. Table 1.4 outlines the degree of inequality among children's bequests for all respondents, showing that 43% of men and 39% of women intend to divide their land estate equally among all children. For men, the gap between the size of average intended bequest for a girl child and a boy child constitutes 7.2% of the total land allocated to children, while women exhibit a significantly narrower gap at 3.4%. Among respondents who choose to divide their land unequally, this boy-girl gap is 12.5% for men and 5.7% for women. Thus, while both women and men seem to favor their sons, women exhibit a somewhat weaker preference. These patterns are closely mirrored for non-land assets, and econometric analysis is needed to discern whether they reflect preferences for gender or other characteristics that differ along gender lines.

How often are children favored or penalized in (intended) inheritance? Children are categorized by whether they (a) receive neutral treatment (what they would receive with an equal division among all siblings), (b) are favored (receive a greater share than under neutral treatment), or (c) are disfavored (receive a lesser share). Table 1.5 presents the proportion of heirs slated for such treatment with respect to land bequests. (Although not reported here, the patterns in non-land bequests are very similar.) It seems that non-biological children are more likely to be disfavored by women, and this is statistically significant at the 1% level. Both men and women are likely to favor a child who has remitted income to the household within the past year, and men seen particularly receptive to such financial assistance, although this is not significant at the 10% level ($p=0.12$). As expected, boys are more likely to be favored than girls, and this is true for both mothers and fathers.

Table 1.4 Patterns of intended bequests

	Men			Women			t-test
	Mean	SD	Obs.	Mean	SD	Obs.	Men = Women
Land							
1= Equal division of estate	0.477	(0.495)	471	0.443	(0.497)	782	
Boy-girl gap	7.158	(15.119)	413	3.399	(12.909)	696	***
Coefficient of variation	0.280	(0.431)	471	0.329	(0.465)	782	
Assets							
1= Equal division of estate	0.505	(0.501)	457	0.474	(0.500)	996	
Boy-girl gap ^a	6.178	(15.098)	394	1.670	(13.238)	875	***
Coefficient of variation	0.253	(0.423)	457	0.323	(0.507)	996	***
Among respondents with unequal division of estate:							
Land							
Boy-girl gap	12.537	(18.239)	247	5.652	(16.208)	463	***
Coefficient of variation	0.536	(0.465)	264	0.591	(0.483)	495	
Assets							
Boy-girl gap	11.404	(19.020)	226	2.954	(17.505)	560	***
Coefficient of variation	0.512	(0.479)	244	0.615	(0.556)	604	**

*** p<0.01, ** p<0.05, * p<0.1

^a The boy-girl gap is only defined for sibling pools that contain both brothers and sisters.

Table 1.5 Rates of favoritism in land bequests (proportions favored or disfavored)

Heir category	Men		Obs.	Women		Obs.	t-tests	
	(a) Disfavored ^a	(b) Favored		(c) Disfavored	(d) Favored		a = c	b = d
Biological child	0.303	0.246	2,795	0.357	0.259	4,414	*	
Non-biological child	0.321	0.230	87	0.786	0.073	374	***	*
Girl	0.431	0.140	1,512	0.438	0.177	2,313		
Boy	0.163	0.363	1,373	0.274	0.346	2,215	***	
Below age 18	0.289	0.249	1,827	0.301	0.242	1,816		
Age 18 or older	0.331	0.240	1,058	0.430	0.282	2,709	**	
Has remitted income	0.345	0.470	85	0.302	0.354	365		+
Has received income	0.508	0.197	70	0.372	0.249	111		
Resides at home or in village	0.291	0.264	2,138	0.318	0.258	2,930		
Resides outside of village	0.345	0.190	747	0.460	0.264	1,598	**	**
Widowed/ divorced/ separated ^b	0.383	0.249	44	0.521	0.285	160		
Primary occupation is non-agricultural	0.336	0.305	161	0.390	0.378	409		

*** p<0.01, ** p<0.05, * p<0.1, +p<0.12

^a The remaining children in each category who are neither favored nor disfavored are treated neutrally.^b Just 31 of the 204 observations of children who are widowed, separated, or divorced are male.

This analysis also incorporates past transfers between children and their parents in order to gauge whether parents are privileging those who contribute to the household. Table 1.6 summarizes the proportion of non-resident male and female children that have provided some type of assistance within the past year. Mothers and fathers were asked individually to report on these transfers. Men report that 6.1% of children have remitted income to the household, including 6.6% of sons and 5.6% of daughters. At the same time, 6.0% of children have received assistance from the household. For women, these figures are similar. Because remittances to the household may be less relevant for the individual bequest decisions of parents, we also focus on those transfers handed directly to the respondent, although a smaller percent of children exchanged money in this manner.

Finally, in order to understand whether parents consider past gifts given to their children when making bequest decisions, we collected information on any large gifts already received (Table 1.7). The most common (and most valuable) gift was land. Men report that 8.7% of their sons and 2.7% of their daughters have received a gift from them, and for women, these figures are 4.1% and 1.3%. Consistent with the patterns of Table 1.2, it seems that sons are more readily given large gifts earlier in life, probably at the time of marriage.

Table 1.6 Frequency of transfers with non-resident children

		Men		Women	
		Proportion	Obs.	Proportion	Obs.
Monetary transfers with household (binary)					
All	In	0.061	1,478	0.071	3,744
	Out	0.060	1,478	0.038	3,744
Monetary transfers with respondent (binary)					
All	In	0.028	1,478	0.025	3,744
	Out	0.030	1,478	0.013	3,744
Boys	In	0.026	714	0.024	1,806
	Out	0.025	714	0.011	1,806
Girls	In	0.030	764	0.026	1,938
	Out	0.035	764	0.015	1,938

Table 1.7 Frequency of large gifts for children

	Men			Women		
	Mean	SD	Obs.	Mean	SD	Obs.
Received gift from respondent (binary)						
All	0.056	(0.004)	4,980	0.026	(0.002)	9,980
Boys	0.087	(0.007)	2,387	0.041	(0.004)	4,571
Girls	0.027	(0.004)	2,593	0.013	(0.002)	5,409
Received gift of land from respondent (binary)						
All	0.054	(0.004)	4,980	0.023	(0.002)	9,980
Boys	0.087	(0.007)	2,387	0.038	(0.004)	4,571
Girls	0.023	(0.004)	2,593	0.009	(0.002)	5,409
Value of gifts (10,000s TSh) ^a						
All	101.004	(96.238)	243	93.407	(83.392)	340
Boys	108.174	(97.422)	195	99.458	(90.679)	274
Girls	76.224	(88.542)	48	69.494	(35.521)	66

^aThe value of gifts was reported as ‘unknown’ for 12 children.

1.6 Results and discussion

While the descriptive statistics of section 1.5 point to a diversity of bequest motives, regression analysis is needed to understand the drivers of bequests. We use the 2014 data at heir-level with the following equation:

$$Y_{ij} = \beta_0 + \beta_1 X_{ij} + \beta_2 [J_i * X_{ij}] + \alpha_j + \varepsilon_{ij} \quad (1)$$

where Y_{ij} is the percent of all bequests given to children (either land or non-land assets) allocated to child i of respondent j , X_{ij} is a vector of heir characteristics, $[J_i * X_{ij}]$ is the interaction of X_{ij} and a characteristic of the parent (e.g. gender), α_j is the respondent fixed effect, and ε_{ij} is the stochastic error term. Identification comes from the variation in a respondent’s bequests across siblings, a within-family approach that has been used by several authors (Goetghebuer and Platteau 2010; McGarry 1999; Wilhelm 1996). In all regression analyses, the standard errors are clustered at respondent level to account for the fact that all bequest decisions of a given respondent are correlated.⁸ Models of land bequests are limited to respondents with both land and bequest rights, such that the number of observations is less than that of

⁸ When standard errors are clustered at heir level to account for the fact that husbands and wives often report their intended bequests for the same children, the results are generally consistent with those reported in this paper. As well, when household-level fixed effects are used to account for the possibility that spousal decisions may be correlated, the results remain consistent with those reported. All robustness checks are available from the authors upon request.

non-land assets.⁹ Unfortunately, the use of a cross-sectional data set precludes controlling for heir fixed effects. This opens the possibility for omitted variable bias if unobserved heir characteristics are correlated with our key regressors and also influence parental bequest decisions. We seek to address this by triangulating results from a number of different models – a ‘convergence of evidence’ approach.

We first estimate model (1), controlling for key characteristics of the heir (age, gender, and biological relationship with the parent) as well as several proxies of income vulnerability. Years of education and a primary occupation that is non-agricultural are regarded as indicators of high income (current or future), while being widowed, separated, or divorced is assumed to indicate low or uncertain income. Under an altruistic bequest rule, a parent will favor a child with low income or high vulnerability. Unfortunately, the data set does not include information on heirs’ income or wealth level. Results are given in Table 1.8. Across both land and non-land assets, girls are disfavored in bequests and are estimated to receive at least 2.5% less than their brothers. As expected, younger children are privileged while step- or adopted children are penalized. Contrary to hypothesis no. 4, which posits that parents will favor a child who exhibits income vulnerability, column 1 shows that our indicators of vulnerability do not exert an independent influence on bequests. These characteristics explain 54.9% of the within-respondent variation in child bequests.

In columns 2 and 4, heir characteristics are interacted with the female indicator. This is intended to capture how the gender of parents may influence bequest patterns, with mother and fathers exchanging the promise of bequest for gendered labor assistance or perhaps exhibiting diverging preferences for gender equality. The results indicate that, relative to the preferences exhibited by men, women in Tanzania prefer their daughters. This is consistent with earlier works finding that fathers tend to favor sons while mothers favor daughters (Lillard and Willis 1994; Raley and Bianchi 2006; Thomas 1994). However, although mothers significantly narrow the gap between sons and daughters, they still disfavor girls. Women also do not exhibit altruism in terms of marital status or non-agricultural income.

⁹ As a robustness check, several key models are re-run using two alternative nonlinear regressions, including an ordered probit model and a fractional response model (Appendix 1D). Though these do not incorporate respondent fixed effects, results are quite consistent with those of section 1.6.

Table 1.8 Intended bequests and heirs' income vulnerability

	(1) % Land	(2) % Land	(3) % Assets	(4) % Assets
Heir's age	-0.117*** (0.040)	-0.127** (0.054)	-0.104*** (0.027)	-0.089** (0.040)
Step child	-12.379*** (1.637)	-5.487** (2.133)	-11.267*** (1.487)	-4.370** (2.020)
Girl	-4.059*** (0.446)	-5.180*** (0.643)	-2.542*** (0.400)	-4.225*** (0.606)
Heir is widowed/ separated	1.995 (1.603)	3.587 (2.360)	0.482 (1.492)	2.792 (3.153)
Heir works in non-agricultural sector	0.462 (0.718)	0.182 (0.776)	0.083 (0.732)	0.322 (0.941)
Years education	0.148* (0.084)	0.155* (0.084)	0.013 (0.065)	0.013 (0.065)
Female*Girl		2.459*** (0.874)		3.027*** (0.800)
Female*Heir's age		0.018 (0.066)		-0.028 (0.053)
Female*Step child		-10.135*** (2.832)		-9.237*** (2.699)
Female*Heir is widowed/ separated		-3.342 (3.277)		-3.843 (3.466)
Female*Heir works in non-ag sector		0.447 (1.313)		-0.309 (1.370)
Female*Years education		0.499 (0.669)		-0.386 (0.786)
Constant	21.098*** (0.601)	21.158*** (0.581)	21.073*** (0.501)	21.160*** (0.493)
Respondent FE	Y	Y	Y	Y
(Girl + Female*Girl)		-2.721		-1.197
P>F(Girl + Female*Girl = 0)		0.000		0.000
Observations	7,410	7,410	8,532	8,532
Adjusted R-squared	0.549	0.556	0.532	0.539

Standard errors in parentheses, clustered by respondent; *** p<0.01, ** p<0.05, * p<0.1

Note: Although results are not reported here, no further patterns emerge when these indicators of vulnerability are interacted with the child's gender.

The next several tables explore whether differential bequests for children are a reflection of the exchange for labor, assistance, or money. Proximity of heirs' residence can be understood as a proxy for

the likely provision of services to respondents.¹⁰ In Table 1.9, we include indicators of whether the male and female heir lives in the respondent's village (whether at home or in an independent household) or outside of the village. The base group is male children residing within the village. The results indicate that girls are disfavored, whether they live in the village or elsewhere, and the coefficient for a boy who resides outside of the village is consistently negative. With land bequests, women strongly favor their daughters who live in the village (column 2), relative to the preferences exhibited by men. With land bequests, they also favor their more distant daughters, although the coefficient is significant only at the 10% level.

Table 1.9 Intended bequests and heir residence

	(1) % Land	(2) % Land	(3) % Assets	(4) % Assets
Heir's age	-0.080** (0.034)	-0.081** (0.034)	-0.094*** (0.027)	-0.096*** (0.028)
Step child	-12.407*** (1.630)	-12.380*** (1.615)	-11.224*** (1.483)	-11.165*** (1.484)
Boy who resides outside of village	-1.101 (0.738)	-1.479 (1.109)	-1.305* (0.681)	-1.197 (0.769)
Girl who resides in village	-4.231*** (0.508)	-5.453*** (0.719)	-2.804*** (0.466)	-4.619*** (0.693)
Girl who resides outside of village	-4.202*** (0.580)	-5.121*** (0.858)	-2.765*** (0.527)	-3.757*** (0.873)
Female*Boy outside village		0.855 (1.509)		0.023 (1.256)
Female*Girl in village		2.766*** (0.998)		3.396*** (0.927)
Female*Girl outside village		1.974* (1.166)		1.792 (1.123)
Constant	21.265*** (0.639)	21.273*** (0.639)	21.232*** (0.525)	21.236*** (0.528)
Respondent FE	Y	Y	Y	Y
Observations	7,410	7,410	8,532	8,532
Adjusted R-squared	0.548	0.550	0.532	0.535

Standard errors in parentheses, clustered by respondent; *** p<0.01, ** p<0.05, * p<0.1

¹⁰ Note that it is possible for heirs to select their residence in anticipation of a promised bequest, settling near their parents if they expect a sizable inheritance. However, as land can be readily liquidated in this region (Wineman 2015), we do not expect the anticipated percent of a parent's estate to necessarily dictate a child's place of residence. Moreover, we expect that a child who is proximate is likely to provide services to their relatives, irrespective of their underlying motive for living nearby.

Can these preferences based on location be explained by the likely exchange for assistance? In Table 1.10, we interact these location terms with indicators of the parent's needs, including age,¹¹ the number of hours worked in the past week, and an indicator that the parent's household has a farm size in the lowest tercile of this population. These three variables capture different aspects of the need for assistance or labor, with a small land size indicating income vulnerability, a respondent's age indicating a need for personal care, and a respondent's work load indicating a need for relief. The results for land bequests (columns 1-3) indicate that older parents favor their girl children that live in the village. This may be because girls living nearby are better able to (or more willing to) provide care for their parents as they age. Elsewhere in Tanzania, Odgaard (2006) has also found that fathers are willing to allocate bequests to their daughters because, as the men claim, daughters are more willing to provide elder care to their parents. Patterns for non-land bequests (columns 4-6) are somewhat more muted.¹²

Earlier we saw that mothers favor their daughters, although it is still not clear whether this reflects the exchange of bequests for gendered labor or a more general preference for gender equality. Recall that women work more than men (on average, 46.8 versus 32.1 hours in the previous week), with domestic chores comprising a majority of their work load (24.1 hours). This suggests a gendered division of labor, and if mothers with higher needs for labor are seen to particularly favor their nearby daughters, this would point to an exchange motive with daughters. To test this, we add several more terms to the models of Table 1.10, with triple interactions of mother, hours worked, and the child's location of residence. Only the coefficients of these added terms are presented in Table 1.11. The results indicate that mothers with a higher work burden are more likely to favor their within-village daughters, and for land bequests this is significant at the 5% level.

¹¹ Although not reported here, the use of an indicator for a respondent being too old or sick to work produces results consistent with the age of the respondent. Both are intended to capture the need for personal care. Similarly, a measure of how many months a respondent does not have a spouse residing in the household is considered to be an alternate indicator of labor needs. 15.3% of women and 6.4% of men do not have a spouse at all. An additional month without a spouse on hand is significantly associated with a preference for nearby daughters.

¹² The survey also collected information on whether non-resident heirs had contributed labor to the household in the past year. Although just 2% of non-resident heirs were reported to provide labor, a robustness check using this more direct measure of recent labor exchange produces results that are generally consistent with our conclusions regarding the likely existence of an exchange motive in bequests. Given the small number of observations, the results are not reported here.

Table 1.10 Intended bequests and parents' needs

	(1) % Land	(2) % Land	(3) % Land	(4) % Assets	(5) % Assets	(6) % Assets
Heir's age	-0.076** (0.035)	-0.081** (0.034)	-0.085** (0.035)	-0.088*** (0.028)	-0.095*** (0.028)	-0.096*** (0.030)
Step child	-12.477*** (1.619)	-12.394*** (1.634)	-12.347*** (1.672)	-11.214*** (1.471)	-11.214*** (1.483)	-11.221*** (1.562)
Boy who resides outside of village	-1.504 (4.344)	-1.851* (0.975)	0.279 (0.995)	-4.978 (3.707)	-0.872 (1.077)	-0.579 (0.722)
Girl who resides in village	-9.107*** (2.217)	-3.613*** (0.820)	-4.443*** (0.628)	-6.349*** (2.016)	-2.641*** (0.892)	-3.067*** (0.622)
Girl who resides outside of village	-7.989*** (2.888)	-3.127*** (0.948)	-3.870*** (0.700)	-6.784** (2.711)	-2.147* (1.101)	-2.569*** (0.615)
Age*Boy outside village	0.017 (0.072)			0.074 (0.062)		
Age*Girl in village	0.110** (0.045)			0.082* (0.042)		
Age*Girl outside village	0.075 (0.051)			0.080 (0.049)		
Work hours*Boy outside village		0.023 (0.026)			-0.012 (0.031)	
Work hours*Girl in village		-0.017 (0.021)			-0.004 (0.024)	
Work hours*Girl outside village		-0.033 (0.029)			-0.018 (0.030)	
Small farm*Boy outside village			-3.732** (1.575)			-1.907 (1.586)
Small farm*Girl in village			0.444 (1.137)			0.617 (0.997)
Small farm*Girl outside village			-0.969 (1.335)			-0.511 (1.311)
Constant	21.126*** (0.649)	21.274*** (0.637)	21.354*** (0.669)	21.059*** (0.535)	21.236*** (0.525)	21.256*** (0.595)
Respondent FE	Y	Y	Y	Y	Y	Y
Observations	7,410	7,410	7,410	8,532	8,532	8,523
Adjusted R-squared	0.627	0.625	0.626	0.533	0.532	0.532

Table 1.11 Intended bequests and parents' gendered labor needs

	(1) % Land	(2) % Assets
Female*Boy outside village	-1.368 (2.337)	0.409 (2.314)
Female*Girl in village	-0.056 (1.754)	1.029 (1.929)
Female*Girl outside village	-0.577 (2.151)	0.234 (2.316)
Female*Work hours*Boy outside village	0.057 (0.061)	-0.001 (0.064)
Female*Work hours*Girl in village	0.096** (0.046)	0.083* (0.050)
Female*Work hours*Girl outside village	0.097 (0.065)	0.065 (0.069)
Respondent FE	Y	Y
All regressors of Table 1.10	Y	Y
Observations	7,410	8,532
Adjusted R-squared	0.553	0.536
Standard errors in parentheses, clustered by respondent		
*** p<0.01, ** p<0.05, * p<0.1		

We next explore whether evidence of strategic bequests is found when controlling for recent monetary or in-kind transfers between non-resident heirs and either the household or individual respondents (Table 1.12). Earlier, we had hypothesized that parents would reward a child who remits income with the promise of a larger bequest. Indeed, our results indicate that parents do favor a child who has contributed to the household (columns 1 and 4), with a positive coefficient that is comparable in magnitude to the penalty given to girl children. Although the coefficient on having received assistance is not significant, it is negative as expected. When the focus is narrowed to a remittance handed directly to the respondent, this pattern remains strong for land bequests (column 2). In columns 3 and 6, these indicators of assistance are interacted with the female dummy variable, and it seems that women do not exhibit any unique response to monetary transfers. Thus, mothers and fathers seem to strategize in a similar manner when it comes to remittances.¹³

¹³ Although not reported here, when the sample is limited to those sibling groups with children old enough to provide substantial assistance to their parents (estimated at 12 years of age), the results of Tables 1.7-1.12 are

Table 1.12 Intended bequests and remittances

	(1)	(2)	(3)	(4)	(5)	(6)
	% Land	% Land	% Land	% Assets	% Assets	% Assets
Heir's age	-0.097*** (0.034)	-0.093*** (0.034)	-0.094*** (0.034)	-0.106*** (0.028)	-0.104*** (0.027)	-0.104*** (0.027)
Step child	-12.272*** (1.606)	-12.410*** (1.618)	-12.407*** (1.621)	-11.232*** (1.484)	-11.263*** (1.486)	-11.269*** (1.484)
Girl	-4.029*** (0.447)	-4.008*** (0.447)	-4.010*** (0.447)	-2.546*** (0.398)	-2.540*** (0.398)	-2.541*** (0.398)
Has remitted money to HH ^a	4.359*** (1.440)			2.243** (0.880)		
Has received money from HH	-0.336 (1.239)			-0.019 (1.208)		
Has remitted money to respondent		4.784** (2.170)	6.092 (4.471)		2.231* (1.260)	2.060 (2.223)
Has received money from respondent		-0.466 (1.643)	-0.241 (2.473)		0.571 (1.766)	1.743 (2.826)
Female*Heir remitted to respondent			-2.398 (4.642)			0.384 (2.642)
Female*Heir received from respondent			-0.566 (2.670)			-2.954 (3.138)
Constant	21.183*** (0.613)	21.195*** (0.614)	21.205*** (0.615)	21.092*** (0.504)	21.097*** (0.505)	21.099*** (0.504)
Respondent FE	Y	Y	Y	Y	Y	Y
Observations	7,410	7,410	7,410	8,532	8,532	8,532
Adjusted R-squared	0.626	0.626	0.626	0.612	0.612	0.612

Standard errors in parentheses, clustered by respondent; *** p<0.01, ** p<0.05, * p<0.1

^a 'Money' refers to monetary transfers or value of in-kind gifts.

Our final exercise in this paper is to revisit the egalitarian motive in order to understand whether parents allot a smaller bequest to children who have already received a sizable gift. In Table 1.4, we learned that 52.3% of men and 55.7% of women intend to divide their land estate unevenly amongst their children. However, some of this variation may simply reflect a desire to 'even out' the bequests received across children. In Table 1.13, we include information on any (large) prior gifts received from the

generally consistent. Those who remit income are favored, and mothers with a higher burden of work seem to favor their daughters (though not necessarily their within-village daughters). However, the results are not as strongly significant as those observed when parents of younger children are included in the sample.

respondent. A child who has already received a gift of land will receive a bequest that is approximately 5.2-5.4% smaller (columns 1 and 4). Each acre received incrementally reduces the post-mortem bequest size (columns 2 and 5), and when we instead consider the monetary value of gifts received, this negative relationship remains strong (columns 3 and 6). This pattern is consistent with an egalitarian imperative. Note that, for a given household, evidence of perfect egalitarianism is inconsistent with a motive of exchange or altruism (as implemented through post-mortem transfers). However, these results suggest that multiple priorities, not limited to strategic motives, drive bequest decisions in the wider population.

Table 1.13 Intended bequests and past gifts to children

	(1) % Land	(2) % Land	(3) % Land	(4) % Assets	(5) % Assets	(6) % Assets
Heir's age	-0.062* (0.036)	-0.077** (0.034)	-0.068** (0.034)	-0.085*** (0.027)	-0.096*** (0.027)	-0.090*** (0.027)
Girl	-4.291*** (0.439)	-4.071*** (0.438)	-4.255*** (0.453)	-2.778*** (0.405)	-2.581*** (0.393)	-2.802*** (0.402)
Step child	-12.556*** (1.615)	-12.504*** (1.619)	-12.524*** (1.616)	-11.362*** (1.480)	-11.305*** (1.482)	-11.360*** (1.477)
Has received a gift of land	-5.405*** (2.076)			-5.204*** (1.290)		
Land area (acres)		-1.080*** (0.144)			-0.868*** (0.100)	
Value of all gifts received (10,000s TSh)			-0.027* (0.014)			-0.035*** (0.010)
Constant	21.214*** (0.629)	21.161*** (0.618)	21.156*** (0.640)	21.206*** (0.497)	21.115*** (0.500)	21.224*** (0.500)
Respondent FE	Y	Y	Y	Y	Y	Y
Observations	7,410	7,410	7,398	8,532	8,532	8,520
Adjusted R-squared	0.550	0.549	0.549	0.532	0.532	0.532

Standard errors in parentheses, clustered by respondent; *** p<0.01, ** p<0.05, * p<0.1

In Appendix 1C, we test for the influence of the preceding CBLA program that had been present in a subset of villages. Specifically, we test whether the program, which had included an emphasis on women's land rights, effectively shifted parental preferences in favor of their daughters. This would indicate that the above results are subject to omitted variable bias. However, the program effects are generally insignificant, and we conclude that this is not the case.

1.7 Conclusions

This paper uses the bequest intentions of parents to explore the diverse motives of bequest in Kagera, Tanzania, with particular attention to exchange-based objectives. Our inquiry has uncovered several intriguing results. First, a significant proportion of respondents intend to follow a rule of equal division amongst children. While these stated intentions are perhaps most reflective of how respondents would prefer to view themselves, this result is somewhat unexpected and indicates a general openness to gender equality in bequests. We find further evidence of egalitarianism in the form of parents reducing the post-mortem bequest size of children who have already received a sizable gift. This indicates that some of the variation across siblings is merely a parent's attempt to equalize the total inheritance received by each heir.

Second, we have gathered evidence that is consistent with parents making their bequest decisions with a strategic intent. Parents with greater needs, owing to old age or poverty, seem to favor certain children in bequests based on their gender and location of residence. Specifically, female children who reside nearby are given preference in the bequest allocations of older parents, perhaps because daughters are most willing to provide attention and care to their aging parents. As well, mothers with a higher work burden favor their nearby daughters. This is consistent with the strategic bequest model, whereby mothers exchange the promise of bequests for gendered labor from their daughters. Finally, parents strongly favor a child who remits money or in-kind gifts to the household or directly to the respondent. Thus, strategic bequests seem to operate with respect to both remittances and non-monetary goods, such as attention, care, or labor.

Third, while both women and men favor their sons in bequest decisions, women actively narrow the gap between brothers and sisters. This is consistent with results from other empirical studies, which find that resources held by mothers often benefit their daughters (Lillard and Willis 1994; Raley and Bianchi 2006; Thomas 1994). However, women in Kagera are less likely to claim bequest rights and are able to bequeath a much smaller land area than men. In terms of policy implications, this suggests that

greater bequest rights for women in Tanzania will benefit their daughters and enhance the gender equality of asset ownership in the next generation. Fourth, using the limited information available in this data set, we do not find evidence of altruism in the form of parents favoring their children who are divorced or widowed, or disfavoring a child with off-farm income. This suggests that a public assistance program for widows or single mothers would not crowd out private transfers in the form of altruistic bequests. However, pre-mortem transfers (not studied here) may exhibit an altogether different pattern.

There are several noteworthy limitations of this study. It is important to emphasize that this analysis is based only on the stated intentions of respondents, rather than observed bequest behavior. While providing an important glimpse into the mindset of parents in rural Tanzania, these results ought to be verified with information on realized inheritance, if possible. As well, the use of a cross-sectional data set means that we could not control for heir fixed effects and opens the possibility for omitted variable bias. For example, heirs that remain at home or in the village may be less upwardly mobile or less successful on the marriage market. Therefore, a parent who favors the child that remains nearby may be driven by an altruistic motive and not only the desire for exchange. As well, a parent that seems to reward remittances may actually be maximizing efficiency in bequests if wealthier children happen to exhibit greater abilities than their siblings. Because this paper lacks information on the children's wealth levels, our conclusions regarding altruism should not be regarded as strong evidence against altruism.

Despite these limitations, this paper has revealed some fascinating patterns around intended bequests, and has built an evidence base regarding the drivers of these behaviors. As Light and McGarry (2003) similarly find in the U.S., the dominant motive for parent-to-child transfers likely varies across parents and even over time for a given individual. The diverse motives uncovered in this paper belie any broad generalizations regarding the priorities and preferences of parents in sub-Saharan Africa.

APPENDICES

Appendix 1A Explanation of the strategic bequest model

This section summarizes the strategic bequest model as introduced by Bernheim et al. (1985), with a slight modification to incorporate child transfers of money. The model includes two agents, a parent (p) and a child (k), with consumptions c_p and c_k . The parent's consumption in the absence of any bequest is $\bar{c}_p$, and the child's consumption in the absence of any bequest is $\bar{c}_k$. However, the parent can make a transfer (T) to the child that results in the child's final consumption, $c_k = \bar{c}_k + T$. The child provides a merit good, a , such as attention paid to the parent, and this enters the utility functions of both parent and child. These utility functions are $U_p[c_p, a, U_k(c_k, a)]$ and $U_k(c_k, a)$. U_k first increases and then decreases in a , and with U_k held constant, U_p also first increases and then decreases in a .

$$\frac{\partial U_k}{\partial a} > 0, \quad \frac{\partial'' U_k}{\partial a''} < 0 \quad (1)$$

$$\frac{\partial U_p}{\partial a} > 0, \quad \frac{\partial'' U_p}{\partial a''} < 0 \quad (2)$$

However, we assume that the parent tires of attention only after the child does.

$$\text{If } \frac{\partial U_k}{\partial a} \geq 0, \text{ then } \frac{\partial U_p}{\partial a} > 0. \quad (3)$$

The parent selects a transfer to the child after observing the child's choice of a .

In Figure A1 (Panel A), U_p is represented in the space of a and c_k by substituting $c_p = \bar{c}_p + \bar{c}_k - c_k$. Point D is the global maximum of the parent's utility, with concentric circles I_p^1 , I_p^2 , and I_p^3 representing successively lower levels of utility. For a given level of a , the parent will draw a vertical line, identify a tangency with one of p 's indifference curves, and select the corresponding value of c_k . If the level of a does not affect the marginal rate of substitution between c_p and c_k , then the response function $c_k(a)$ will be horizontal (Panel A). This will likely be the case for transfers of attention or elder care. Bernheim et al. (1985) offer the following example of utility functions that produce a horizontal response function: $U_p = (c_p)^\beta f(a)(U_k)^\gamma$ and $U_k = (c_k)^\delta g(a)$.

Through backwards induction, the child anticipates the parent's response function and selects a point on $c_k(a)$. An indifference curve of the child is represented as I_k^1 . The child will select a point at the tangency of the child's and parent's indifference curves – in this case, at point A . With a horizontal $c_k(a)$, A inevitably lies to the right of D , such that an increase in a does not affect the child's utility but increases the parent's utility. The relationship between U_p and a can be expressed with the following derivative:

$$\frac{dU_p}{da} = \frac{\partial U_p}{\partial a} + \frac{\partial U_p}{\partial U_k} \left(\frac{\partial U_k}{\partial a} + \frac{\partial U_k}{\partial c_k} \frac{\partial c_k}{\partial a} \right) + \frac{\partial U_p}{\partial c_p} \frac{\partial c_p}{\partial a} \quad (4)$$

Because the child is at his optimum, $\frac{\partial U_k}{\partial a} = 0$. Because we are on the parent's optimal response schedule, $\frac{\partial c_p}{\partial a} = 0$. As well, $\frac{\partial c_k}{\partial a} = 0$ because that schedule is horizontal. Since $\frac{\partial U_k}{\partial a} = 0$, this implies that $\frac{\partial U_p}{\partial a} > 0$ from (3) above, and this means that $\frac{dU_p}{da} > 0$.

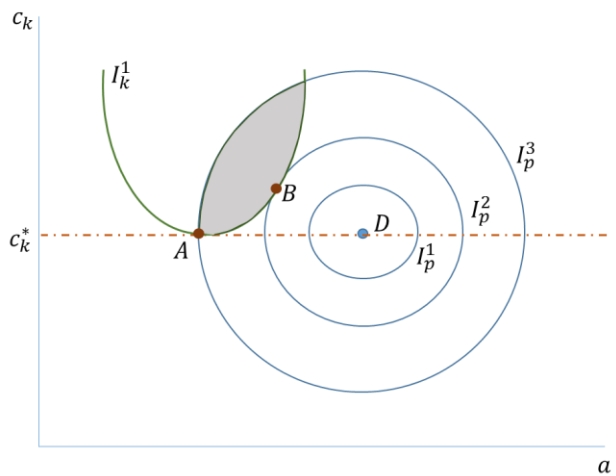
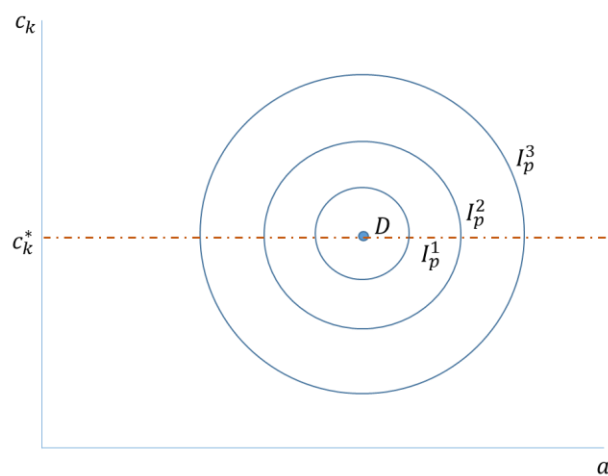
At point A , p 's indifference curve is vertical and k 's indifference curve is horizontal (Panel B). The area shaded in gray represents the space for possible Pareto improvements, in which the child would transfer more a while remaining at the same or higher utility (with a larger transfer from parent to child), and the utility of the parent will increase. In this set, the parent prefers point B . How can the parent induce a higher level of a from the child? If the parent can choose to disinherit the child, the child would be left with a lower consumption level, $\bar{c}_k$ (Panel C). Anticipating no inheritance, the child will choose point E , but the parent can use the threat of disinheritance to demand (or offer) point C . Note that a credible threat of disinheritance requires there to be at least two potential heirs.

If a takes the form of a monetary transfer, it directly affects the child's consumption. In this case, $c_k = \bar{c}_k + T - a$. However, as long as $c_k(a)$ slopes downward, D will still lie to the right of A , and the key hypotheses drawn from this model are retained (Panel D).

Figure 1A.1 Merit goods and transfers to children (strategic bequest model)

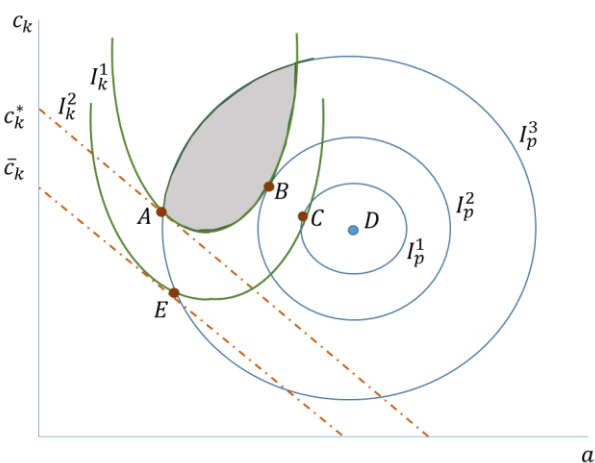
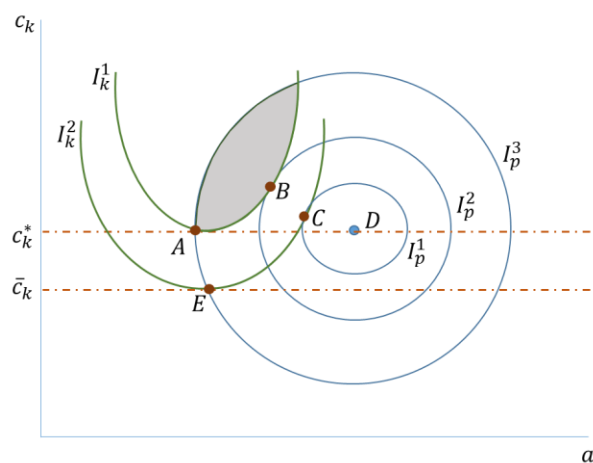
A. Parent's indifference curves

B. Child's indifference curves



C. Exchange of merit goods with threat of disinheritance

D. Downward sloping response function



Appendix 1B Likelihood of respondent remaining in sample, 2014

Table 1B.1 Likelihood of respondent remaining in sample, 2014

	Probit (1=remains)
Adult equivalents	0.014 (0.024)
Dependency ratio	0.433** (0.215)
Female-headed household	-0.267* (0.144)
Someone in HH completed primary school	0.334** (0.135)
Value of assets (ln)	-0.073** (0.031)
Land owned by household (acres)	0.007 (0.007)
HH rents or borrows land	-0.169 (0.148)
No. households in village (100s)	0.000 (0.005)
Time to district headquarters (hours)	-0.062 (0.050)
Time to phone (hours)	0.179* (0.100)
Time to health center (hours)	0.036 (0.048)
No. enumerator visits required at baseline	0.061 (0.180)
Respondent is male	-0.111 (0.090)
Respondent is widowed	0.336*** (0.129)
Age	0.006* (0.003)
Years education	0.022 (0.017)
Native to village	0.188* (0.097)
No. work hours in past week	0.001 (0.002)
Constant	0.939** (0.428)
Observations	2,417

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 1C Test for treatment effects of pre-survey CBLA intervention

This paper relies on data collected at the end of a randomized controlled trial of CBLA, and it is possible that the results are influenced by the program in the subset of villages exposed to the treatment. The paralegals were encouraged to educate their neighbors about gender equality, particularly in the realm of statutory laws. It is therefore possible that CBLA would shift parental preferences from sons to daughters, making their bequests more egalitarian. In fact, this would be an indirect but desirable effect of the legal aid intervention. In this appendix, we test for treatment effects of CBLA on gendered preferences in bequest decisions.

Table 1C.1 tests for treatment effects in terms of gender preferences by interacting key regressors with the respondents' treatment assignment. Residing in a treatment village did not significantly shift the extent to which girls are disfavored in bequests. However, the sign of the coefficient is unexpectedly negative, and column 2 shows that women may even disfavor their daughters more when they are assigned to receive the CBLA treatment. This result is quite surprising. However, because we can think of no causal pathway that would lead from the CBLA program to this outcome, and because it is not statistically significant, we believe that the preceding intervention did not influence the results of this paper.

Although not reported here, we have also tested for treatment effects of CBLA on bequest motives by repeating many of the analyses in Tables 1.8-1.13, but with key regressors now interacted with the treatment assignment. These results are available from the authors upon request. Almost all interaction terms are not significant, although it does seem that mothers in treatment villages now give less preference to their daughters who reside nearby. This is somewhat unexpected and beyond the scope of this paper to explain.

Table 1C.1 CBLA and gender preferences in bequests

	(1) % Land	(2) % Land	(3) % Assets	(4) % Assets
Girl	-3.375*** (0.666)	-5.113*** (1.029)	-1.803*** (0.662)	-3.755*** (1.096)
Heir's age	-0.087** (0.034)	-0.086** (0.034)	-0.102*** (0.030)	-0.103*** (0.030)
Step child	-12.416*** (1.625)	-12.343*** (1.616)	-11.252*** (1.470)	-11.205*** (1.461)
Treatment*Girl	-1.265 (0.883)	0.090 (1.309)	-1.459 (0.885)	-0.827 (1.285)
Female*Girl		3.693*** (1.294)		3.472*** (1.153)
Treatment*Female*Girl		-2.817 (1.736)		-1.062 (1.416)
Constant	21.139*** (0.613)	21.138*** (0.614)	21.086*** (0.572)	21.101*** (0.571)
Respondent FE	Y	Y	Y	Y
Observations	7,410	7,410	8,532	8,532
Adjusted R-squared	0.548	0.551	0.532	0.535

Standard errors in parentheses, clustered by respondent; *** p<0.01, ** p<0.05, * p<0.1

Appendix 1D Robustness tests for functional form of key models

Linear models are used for all regressions in this paper in order to control for respondent fixed effects, an indispensable element of the analysis. However, the dependent variable is bounded between the values of zero and 100% of children's bequests, which suggests that a nonlinear model may also be appropriate. In this appendix, several key models are re-run using two alternative nonlinear models, including an ordered probit model and a fractional response model. In the former case, heirs are categorized according to Table 1.5 as being disfavored in bequests, as having received neutral treatment, or as being favored (the highest ordinal value). In the latter case, the dependent variable is rescaled to become a proportion. Note that the fractional response models do not include population weights. Because respondent fixed effects are omitted, we do control for the number of heirs in this exercise.

Table 1D.1 generally confirms the relationship seen in Table 1.8 between bequest size and heir characteristics. The results of the ordered probit model (columns 1-4) and fractional response model (columns 5-8) consistently indicate that girl children are more likely to be disfavored in bequests, and that mothers favor their daughters. Our main indicators of vulnerability (years of education, status of being widowed/ separated, and status of having non-agricultural income) do not seem to influence bequests. Table 1D.2 confirms the findings of Table 1.9, showing that daughters are disfavored regardless of where they reside. However, mothers generally seem to favor their daughters who live nearby. While the coefficient on the interaction of mother and daughter living outside of the village is always positive, it is never significant. Table 1D.3 reflects the same results as seen in Table 1.13, showing that respondents reward a child who has remitted money or in-kind gift to either the household or directly to the respondent. For land bequests in the ordered probit model (columns 1-2), respondents also penalize a child who has received financial assistance. The conclusions of this paper are robust to nonlinear model specifications.

Table 1D.1 Intended bequests and heir's income vulnerability (nonlinear models)

	Ordered probit model				Fractional response model			
	(1) % Land	(2) % Land	(3) % Assets	(4) % Assets	(5) % Land	(6) % Land	(7) % Assets	(8) % Assets
No. heirs	0.007 (0.007)	0.011 (0.007)	0.001 (0.007)	0.004 (0.007)	-0.095*** (0.002)	-0.095*** (0.004)	-0.093*** (0.002)	-0.093*** (0.002)
Girl	-0.651*** (0.058)	-0.756*** (0.077)	-0.400*** (0.052)	-0.567*** (0.071)	-0.137*** (0.009)	-0.166*** (0.019)	-0.088*** (0.009)	-0.129*** (0.013)
Heir's age	-0.006** (0.002)	-0.006* (0.003)	-0.004** (0.002)	-0.002 (0.003)	-0.003*** (0.000)	-0.003*** (0.001)	-0.002*** (0.000)	-0.003*** (0.001)
Step child	-0.917*** (0.166)	-0.001 (0.188)	-0.884*** (0.131)	-0.150 (0.180)	-0.329*** (0.034)	-0.179*** (0.062)	-0.297*** (0.031)	-0.124* (0.066)
Heir is widowed/ separated	0.143 (0.178)	0.178 (0.189)	-0.111 (0.149)	-0.120 (0.271)	0.032 (0.035)	0.158 (0.126)	0.055 (0.036)	0.131 (0.140)
Heir works in non-ag sector	0.065 (0.089)	0.002 (0.132)	0.025 (0.090)	0.004 (0.159)	0.022 (0.020)	0.028 (0.033)	0.005 (0.023)	-0.000 (0.049)
Years education	0.002 (0.007)	0.003 (0.010)	-0.004 (0.007)	-0.003 (0.011)	-0.000 (0.002)	0.003 (0.003)	-0.002 (0.002)	0.002 (0.003)
Female*Girl		0.213** (0.102)		0.298*** (0.085)		0.047** (0.022)		0.060*** (0.016)
Female*Heir's age		-0.001 (0.004)		-0.003 (0.004)		0.001 (0.001)		0.001 (0.001)
Female*Step child		-1.351*** (0.268)		-1.001*** (0.234)		-0.202** (0.088)		-0.224*** (0.074)
Female*Heir is widowed/ separated		-0.054 (0.358)		0.012 (0.326)		-0.164 (0.129)		-0.096 (0.144)
Female*Heir works in non-ag sector		0.130 (0.176)		0.047 (0.192)		-0.009 (0.042)		0.008 (0.055)
Female*Years education		-0.002 (0.014)		-0.003 (0.014)		-0.004 (0.004)		-0.005 (0.004)
Cut 1	-0.912*** (0.064)	-0.894*** (0.064)	-0.849*** (0.064)	-0.838*** (0.064)				
Cut 2	0.289*** (0.066)	0.319*** (0.066)	0.395*** (0.061)	0.415*** (0.062)				
Constant					-0.171*** (0.016)	-0.169*** (0.025)	-0.199*** (0.015)	-0.198*** (0.015)
Observations	7,410	7,410	8,532	8,532	7,410	7,410	8,532	8,532

Raw coefficients (not marginal effects)

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 1D.2 Intended bequests and heir residence (nonlinear models)

	Ordered probit model				Fractional response model			
	(1) % Land	(2) % Land	(3) % Assets	(4) % Assets	(5) % Land	(6) % Land	(7) % Assets	(8) % Assets
No. heirs	0.007 (0.007)	0.008 (0.007)	0.000 (0.007)	0.001 (0.007)	-0.095*** (0.004)	-0.095*** (0.004)	-0.093*** (0.004)	-0.093*** (0.004)
Heir's age	-0.004* (0.002)	-0.004* (0.002)	-0.003 (0.002)	-0.003* (0.002)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
Step child	-0.918*** (0.166)	-0.934*** (0.172)	-0.880*** (0.131)	-0.897*** (0.135)	-0.328*** (0.051)	-0.331*** (0.052)	-0.295*** (0.046)	-0.297*** (0.046)
Boy who resides outside of village	-0.083 (0.073)	-0.073 (0.093)	-0.087 (0.074)	0.002 (0.093)	-0.034* (0.019)	-0.011 (0.032)	-0.035* (0.019)	0.013 (0.034)
Girl who resides in village	-0.642*** (0.063)	-0.708*** (0.081)	-0.389*** (0.055)	-0.494*** (0.075)	-0.140*** (0.014)	-0.158*** (0.018)	-0.088*** (0.014)	-0.121*** (0.018)
Girl who resides outside of village	-0.717*** (0.076)	-0.737*** (0.098)	-0.496*** (0.071)	-0.600*** (0.108)	-0.150*** (0.019)	-0.180*** (0.028)	-0.105*** (0.019)	-0.139*** (0.031)
Female*Boy outside village		-0.014 (0.131)		-0.139 (0.132)		-0.030 (0.036)		-0.062 (0.038)
Female*Girl in village		0.152* (0.092)		0.196** (0.079)		0.032 (0.020)		0.051*** (0.019)
Female*Girl outside village		0.050 (0.121)		0.183 (0.124)		0.045 (0.030)		0.047 (0.032)
Cut 1	-0.901*** (0.065)	-0.902*** (0.066)	-0.841*** (0.065)	-0.844*** (0.066)				
Cut 2	0.300*** (0.065)	0.301*** (0.066)	0.403*** (0.062)	0.404*** (0.062)				
Constant					-0.171*** (0.025)	-0.170*** (0.025)	-0.200*** (0.025)	-0.199*** (0.026)
Observations	7,410	7,410	8,532	8,532	7,410	7,410	8,532	8,532

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 1D.3 Intended bequests and remittances (nonlinear models)

	Ordered probit model				Fractional response model			
	(1) % Land	(2) % Land	(3) % Assets	(4) % Assets	(5) % Land	(6) % Land	(7) % Assets	(8) % Assets
No. heirs	0.008 (0.007)	0.007 (0.007)	0.001 (0.007)	0.001 (0.007)	-0.095*** (0.004)	-0.095*** (0.004)	-0.093*** (0.004)	-0.093*** (0.004)
Heir's age	-0.007*** (0.002)	-0.006*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.003*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)
Girl	-0.651*** (0.057)	-0.650*** (0.057)	-0.403*** (0.051)	-0.403*** (0.051)	-0.137*** (0.013)	-0.136*** (0.013)	-0.087*** (0.013)	-0.086*** (0.013)
Step child	-0.916*** (0.165)	-0.920*** (0.165)	-0.883*** (0.131)	-0.884*** (0.131)	-0.327*** (0.051)	-0.329*** (0.051)	-0.295*** (0.046)	-0.296*** (0.046)
Has remitted money to HH	0.401*** (0.096)		0.168** (0.081)		0.088*** (0.026)		0.074*** (0.027)	
Has received money from HH	-0.267** (0.122)		-0.187 (0.130)		0.015 (0.036)		0.008 (0.041)	
Has remitted money to respondent		0.451*** (0.135)		0.173 (0.135)		0.121*** (0.038)		0.100** (0.045)
Has received money from respondent		-0.306* (0.163)		-0.195 (0.161)		0.034 (0.051)		0.038 (0.063)
Cut 1	-0.917*** (0.064)	-0.913*** (0.063)	-0.855*** (0.064)	-0.854*** (0.064)				
Cut 2	0.287*** (0.065)	0.289*** (0.065)	0.389*** (0.061)	0.390*** (0.061)				
heirs					-0.171*** (0.024)	-0.173*** (0.024)	-0.200*** (0.025)	-0.201*** (0.025)
Observations	7,410	7,410	8,532	8,532	7,410	7,410	8,532	8,532

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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2. LAND MARKETS AND EQUITY OF LAND ACCESS IN NORTHWESTERN TANZANIA

2.1 Introduction

The impact of sales and rental markets on land distribution in developing countries remains a contentious topic.¹⁴ Equitable land access is widely recognized as important for both the pace of agricultural growth and the extent to which such growth will reduce poverty (Deininger and Squire 1998; Jayne et al. 2003; Ravallion and Datt 2002). Land markets, particularly those operating in customary settings, are an important avenue through which rural households access land. However, these markets are poorly understood and sometimes even overlooked in policy discourse (Chimhowu and Woodhouse 2006), with scant empirical evidence on which to base a decision regarding their promotion or restriction (Deininger and Mpuga 2009). Land markets may serve as an important avenue of land access for female-headed households if the market is less encumbered by gender norms around land ownership, as compared with customary systems of allocation (World Bank 2008). Yet little is known about the extent to which women engage with the land market or its anticipated effects on women's land access (Whitehead and Tsikata 2003).

This paper explores whether better-endowed households in northwestern Tanzania expand their landholdings through the market, or conversely, whether lesser-endowed households use the market to compensate for their limited inheritance. As the concept of equity encompasses land access by marginalized groups, we also evaluate the extent to which female-headed households participate in land sales and rental markets, and what drives their participation. This paper makes several contributions to the existing literature. First, we provide evidence on the performance of vernacular markets in present-day Tanzania, where land allocation has long been the responsibility of democratically elected village authorities (Daley 2005a and 2005b), rather than tribal leaders. This paper will complement studies in other contexts to highlight the form that land markets may take under this alternative governance

¹⁴ This essay is co-authored with Lenis Saweda Liverpool-Tasie.

structure. Second, the analysis covers both male- and female-headed households, with consideration of the way women may be excluded from either systems of inheritance or markets. To our knowledge, this is the first quantitative study to explore this gender dimension. Furthermore, the focus on female-headed households is strengthened with a qualitative exploration of the opportunities and constraints that land markets offer women in Tanzania.

The paper is organized as follows: Section 2.2 includes a literature review on the relationships between land distribution and land markets, and between gender and land markets in Africa, in addition to background on Tanzanian land policy. Section 2.3 provides a conceptual framework of household-level land market behavior, and section 2.4 introduces the data used in analysis. Descriptive statistics are included in section 2.5, while section 2.6 includes results of our econometric analysis. Section 2.7 provides a qualitative assessment of the gendered patterns of land market engagement, and section 2.8 concludes.

2.2 Background

2.2.1 Land markets and land access

Equitable land access is recognized as necessary for agricultural growth and poverty reduction in developing countries. In a cross-country comparison spanning several continents, relatively egalitarian patterns of land distribution are seen to generate higher rates of economic growth (Deininger and Squire 1998). This is partly due to a negative relationship between land concentration and agricultural efficiency, as occurs when large landholdings are not cultivated and rather held as speculative investments. In general, wherever an inverse relationship between farm size and land productivity can be found, land concentration leads to lower efficiency (Vendryes 2014). Such a relationship is found with remarkable consistency in sub-Saharan Africa (Larson et al. 2014; Holden and Otsuka 2014)¹⁵.

¹⁵ We recognize that the emphasis on smallholder agriculture in African rural development is actively debated (see Collier and Dercon 2014). Some authors maintain that promoting smallholder farming is both more equitable and

In addition to contributing to economic growth, equitable land access can improve the poverty-reducing effects of such growth by ensuring that gains are more widely shared. In contrast, in settings of concentrated land access, growth can lead to increased inequality as the gains are usurped by those at the top of the income distribution (Deininger and Squire 1998). In rural populations, land and labor are the main factors of production held by households, with land the primary asset used to build wealth (Vendryes 2014). For this reason, there exists across rural Africa a strong relationship between land access and household income (Jayne et al. 2003), making the distribution of land a prime focus of poverty reduction efforts.

Although not often acknowledged in policy discourse, the land market constitutes an important avenue of land access for rural households in many countries. These ‘vernacular’ or ‘informal’ markets operate in customary settings, often outside of a formal legal framework. Although they lack statutory protection, they possess social legitimacy and are of growing importance in Africa. Their prevalence has been noted in a number of countries, including Ethiopia, Kenya, Malawi, Niger, Nigeria, Tanzania¹⁶, and Uganda (Deininger et al. 2015; Holden et al. 2009). Nevertheless, policy discourse on poverty in Africa often relies on a perceived dualism between customary and statutory land systems, wherein customary tenure is associated with inalienability and guaranteed access. In Zambia, for example, the official definition of customary land even relies on its assumed non-market character (Sitko 2010). Policies aimed at formal land registration are often based on the premise that state-recognized property rights are a prerequisite for the functioning of a land market (Pinckney and Kimuyu 1994). However, as noted by Chimhowu and Woodhouse (2006), “failure to understand the nature and extent of land markets under customary tenure regimes risks obscuring the processes through which the poor have access to land and disabling efforts to maintain or improve that access.”

The question of how land markets influence the equity of land access remains a source of debate, and the effect may run in two opposing directions: On one hand, the land market may enhance equity if it

efficient (Hazell et al. 2010), while others question whether the attention given to smallholders is warranted. In focusing exclusively on the equity effects of land markets, this paper does not seek to settle this debate.

¹⁶ Deininger et al. (2015) focuses exclusively on the rental market in Tanzania.

provides land-scarce farmers with a means to obtain or enlarge their farms (Baland et al. 2007). In the absence of severe imperfections that impede market functioning, the impersonal nature of markets can also benefit those with limited social capital. On the other hand, when land is commoditized, it can disadvantage those with less access to capital. Where credit and insurance markets are absent, the opportunity to sell land may create the possibility for distress sales, as asset-poor farmers are compelled to liquidate their land base in response to negative shocks. This can push households into a 'poverty trap', now without the asset base necessary to emerge from poverty (Carter and Barrett 2006). At the same time, asset-rich farmers who are less vulnerable to such shocks can use the market to amass ever-larger landholdings (Holden et al. 2009). The land sales market can also facilitate speculative accumulation if financial markets do not function well, and in turn, land is used as a hedge against inflation. This pattern may lead to a concentration of land in the hands of (primarily) urban people with little intention of farming the land. Once land prices absorb the value of non-agricultural uses (inflation-protection, collateral, etc.), they extend beyond the reach of poorer community members (Binswager and Rosenzweig 1986). The risk of extreme asset concentration is what prompts Fafchamps (2005) to pointedly argue for the state to limit or prohibit certain asset markets, including land.

The existing literature on the link between land markets and land distribution offers sometimes contradictory findings. In India, the land sales market has been found to equalize factor ratios across households, serving to enhance both equity and efficiency (Deininger et al. 2009). Similarly in Vietnam, the land market (both sales and rental) is seen to transfer land from wealthier and less productive owners to more efficient smallholders, with poorer households particularly benefiting from the rental market (Deininger and Jin 2008). The market is also used by land-constrained households in Kenya (Jin and Jayne 2013) and Uganda (Baland et al. 2007). However, in Rwanda, a pattern of distress sales by the poor exacerbated the inequality of land distribution in the early 1990s (André and Platteau 1997). In Zambia, where customary land is administered by traditional authorities and sales are generally prohibited, there exists a so-called clandestine land market. Of note, it has been found that many medium-scale farmers have amassed their land in these markets through a process characterized by elite capture,

and much of this activity seems to be in the form of speculative accumulation (Sitko and Jayne 2014). Under certain conditions, land markets disproportionately benefit the elites.

One might expect sales and rental markets to exhibit different impacts on equity. In fact, rental markets are often heralded as better able to transfer land to poor households, as the factors that can potentially produce land concentration in the sales market are less relevant to the rental market. It does not require large sums of capital to enter, thus obviating the need for credit. With a range of contract-types, including sharecropping, rental arrangements do not require the immobilization of a household's savings (Yamano et al. 2009). A number of studies have found that rental markets contribute to greater equity in landholdings (e.g. Pender and Fafchamps 2001; Deininger and Mpuga 2009). In sub-Saharan Africa, land sales markets are assumed to be less active than rental markets (Holden et al. 2009), with far fewer empirical studies of their effects.

As noted, the equity impact of land markets is determined by a range of factors, including the functioning of markets for factors of production (e.g. land, labor), credit, and insurance, as well as transaction costs and the nature of returns to scale for agricultural production (Deininger and Jin 2008; Deininger et al. 2009). It is thus difficult to derive assumptions about the impact of land markets (particularly sales markets) from conceptual frameworks. Rather, the multiplication of studies across different contexts is necessary to understand this question. Fortunately, the opposing views outlined above produce empirically testable hypotheses based on the effect of initial household wealth on land market participation.

2.2.2 Land markets and gender

Equity of land access encompasses not only land distribution but also whether all groups have equal access. In sub-Saharan Africa, the policy discourse around land tenure often begins with an assumption that women have weaker land rights than men (Pedersen 2015; Whitehead and Tsikata 2003). Land markets can potentially improve the gender equity of land access if they provide women, and particularly

female-headed households, with an avenue of access outside traditional channels. Conversely, they may marginalize women if their functioning remains limited by traditional gender norms around land ownership, or if gendered restrictions in other realms leave women unable to mobilize the necessary capital.

In an early examination of the gender implications of privatized tenure systems, Lastarria-Cornhiel (1997) concludes that women have little to gain from the emergence of land markets. First, women's customary claims to land are often diminished when all the rights associated with land ownership are claimed by a single person. Second, the author maintains that women are unable to fully participate in land markets, noting that "often women enter the market system with no property, little cash income, minimal political power, and a family to maintain." Women find it difficult to accumulate capital, partly because land is the most important asset used to build wealth in rural Africa, and women begin with a weaker claim to land in customary systems (Razavi 2007). As well, women's productive work within the household is unremunerated, and husbands may curtail their wives' access to cash income, leaving them without savings (World Bank 2008).

On the other hand, in a fluid land market driven by the laws of supply and demand, the impersonal nature of transactions can potentially ease women's access to land. In many traditional systems in rural Africa, women have inheritance rights that are inferior to those of men, with customary law sometimes prohibiting the formal allocation of land to women (Whitehead and Tsikata 2003). In this context, women's land access depends on their relation to male relatives, leaving them in a precarious position upon separation or divorce (Lastarria-Cornhiel 1997). Yet the emergence of land markets can reduce the influence of family structure, potentially eliminating gender as a determinant of land rights (World Bank 2008).

Amidst these claims, there is minimal empirical evidence on the extent to which women participate in land markets. In Kenya, Mackenzie (1990) observes that women's claims to land have grown insecure as land becomes increasingly commoditized. As potential buyers, even elite women have difficulty purchasing land in their own names. In southern Zambia, Sitko (2010) documents how the

development of an informal land market has excluded women from participation. This land market is illegal under customary law, and owing to its underground nature, participation requires social capital to hide or protect a transaction from the authorities. Sitko notes that “the market system of land allocation is not free and impersonal, but rather deeply embedded within local power structures” that effectively sideline women. In the Iringa region of Tanzania,¹⁷ Daley (2008) finds that the land market itself is not directly eroding women’s land rights, though women remain marginalized as the market privileges those with money. By the late 1990s, approximately one-fifth of all market transactions were undertaken by female-headed households. Daley concludes that there are “no absolute gender obstacles to obtaining land”, and while land access is not gender-neutral, women with adequate finances or social capital are indeed able to acquire their own land. However, this account is over a decade old, and the diverging observations of these authors have not been tested through rigorous quantitative analysis in any setting.

2.2.3 Land policy in Tanzania

While not always recognized by law, land has long been regarded as alienable in Tanzania. Descriptions of land market activity exist from the late nineteenth century (Malcolm 1953), the 1960s (Madula 1998) and the 1990s (Pinckney and Kimuyu 1994). Daley (2005a and 2005b) traces the gradual commoditization of land over the twentieth century in a single village in the Iringa region. Initially, land access was defined by the ‘principle of first right’, wherein first settlers to an area had the prior claim to land and the discretionary right to allocate it to newcomers. Even under colonial rule, actions of the British authorities served to promote the commoditization of land. For example, monetary compensation was paid when land was seized from local farmers, reinforcing the concepts of monetary value and individual ownership of land. During this time, monetary exchange was allowed to accompany a transfer of land between peasants, though this was officially ‘payment for unexhausted improvements’ by the previous owner (Daley 2005a).

¹⁷ Iringa, in southern Tanzania, is one of 30 administrative regions.

With independence, the new government sharply curtailed this market activity. Tanzania's first president, Julius Nyerere, expressed great skepticism of the land market, writing "it is quite possible that... if the poor African were allowed to sell his land, all the land in Tanganyika would belong to wealthy immigrants, and the local people would be tenants" (*Mali ya Taifi* 1958, cited in Sundet 2005). Freehold tenure status was thus abolished, as were customary claims, with the nationalization of all land in the country. The purchase, sale, and even rental of land were forbidden (Pinckney and Kimuyu 1994), though it is unclear how actively this ban was enforced.

State socialism was adopted in 1967, and villagization, through which rural residents moved to villages in order to facilitate the provision of services, was made compulsory by 1973. This was accompanied by several institutional innovations, including the establishment of democratically-elected Village Councils with the power to allocate land among private cultivators and enforce property rights (Daley 2005a; USAID 2011; Sundet 1997). All adults were entitled to land, though in practice, land was accessed through male household heads while only widows or unmarried mothers could access land independently. Although some elders found positions in the new Village Councils, villagization officially removed traditional authority from the legal and political sphere (Daley 2005a). In 1982, Tanzania abandoned its system of state socialism, and the informal land market again picked up steam. This trend accelerated with the commoditization of agriculture through cash crops (boosting demand for land), as well as the growth of the cash-based economy, which placed pressure on landowners to access cash income through land sales (enhancing supply) (Daley 2005a).

Villagization left in its wake a landscape of contested and overlapping land claims, and in the 1990s, several new policies were introduced to clarify matters. The 1995 National Land Policy formally adopted the system of legal pluralism, whereby both customary and statutory laws exist side by side (Odgaard 2006). Then in 1999, the Land Act and Village Land Act translated the Land Policy into law. Both Acts have been viewed as a victory for women's rights, with gender equality before the law in both statutory and customary tenure, as well as consent clauses for the sale of land held by a married couple. These Acts introduced a state-sponsored (formal) land market and a new tenure status in the form of a

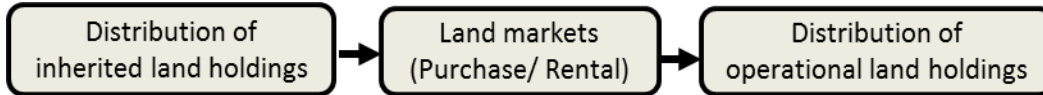
certificate of ‘customary right of occupancy’, thus recognizing customary rights as transferable (Wily 2003). However, this tenure option has not been widely adopted, and the impact of the Village Land Act on rural land administration is questionable. To this day, most rural land market activity occurs outside of the formal legal framework (USAID 2011).

One key component of land administration in Tanzania is the link between land tenure and use. Through the implementation of ‘development conditions’, rights to land have long depended on whether it is used productively (Sundet 1997). When left idle, land can potentially be expropriated by local governments and distributed to other households. These development conditions have even been credited with the reduction of fallow periods (Daley 2005a), and could potentially limit the appeal of land accumulation if owning unused land entails the risk of expropriation. However, reports of speculative accumulation on the part of urban businessmen and politicians do exist in Tanzania (Odgaard 2003).

2.3 Conceptual framework and hypotheses

To portray the role of land markets in determining the extent to which land distribution is equitable, we adopt the following framework (borrowed from Yamano et al. (2009)).

Figure 2.1 Role of land markets in land distribution



The initial distribution of landholdings is determined through the system of inheritance. Land is then exchanged on the sales and rental markets, resulting in a final distribution of operational land holdings. This new distribution may be more or less equitable than the original. To test the influence of land markets in a particular context, the following general equation is used:

$$Y_i = \alpha + \beta_1[Initial_acres_i] + \beta_2 X_i + \varepsilon_i \quad (1)$$

where Y_i is a measure of land market activity for household i , $Initial_acres_i$ is a measure of a household's initial land endowment, X_i is a vector of household characteristics, and ε_i is a stochastic error term. Y_i can take the form of a binary indicator for having purchased or rented in land, or a continuous

measure of the net amount of land purchased or rented. As well, $Initial_acres_i$ can measure a household's inheritance or the amount of land held at the start of a study period. If the key coefficient, β_1 , is positive, it indicates that households with relatively larger initial land holdings participate most actively as purchasers or renters. In other words, the land market results in a more concentrated distribution of land holdings. Conversely, if β_1 is negative, it indicates that the land market results in a more equitable land distribution, with households accessing land through the market in order to compensate for a small initial endowment. This equation can also be trained on a subset of the population, such as female-headed households, to understand the manner in which the land market is used by a specific demographic group.

To understand whether female-headed households participate equally in the land market, the following general equation is used:

$$Y_i = \alpha + \beta_1[FHH_i] + \beta_2 X_i + \varepsilon_i \quad (2)$$

where FHH indexes whether a household is headed by a woman. As X_i should capture the household characteristics that might otherwise determine land market behavior, a negative value for β_1 indicates that female-headed households are less likely to engage with the market, as compared with male-headed households.

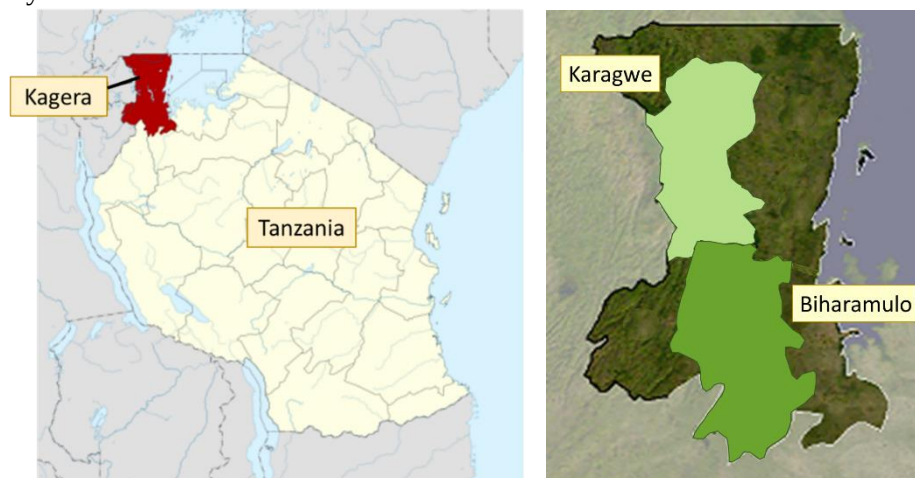
Consequently, we investigate three related hypotheses in this paper:

- (1) Households with a smaller inheritance are more likely to purchase and/or rent land, while households with a larger inheritance are more likely to dispose of land. Along these lines, the size of inheritance is negatively associated with land area purchased and/or rented.
- (2) Holding all else constant, a household headed by a woman is less likely to participate in the land market.
- (3) Female household heads with a smaller land area retained from marriage are more likely to purchase and/or rent land once they become single or widowed. Along these lines, the land area retained is negatively associated with the land area a female head subsequently purchases and/or rents.

2.4 Data for quantitative analysis

The data used for this analysis come from an impact evaluation of community-based legal aid undertaken by the International Food Policy Research Institute. This evaluation took place in 2013 and 2014 in two districts of the Kagera region of Tanzania, namely Karagwe and Biharamulo (Figure 2.2). All analyses in this paper draw from the 2014 survey round. Because the relevant information is retrospective or would not be influenced by this short-term intervention, it should not affect our analysis. Kagera is located in the northwestern corner of Tanzania and shares a border with Uganda, Rwanda, and Burundi. The local economy is dominated by agriculture, along with some trade in agricultural products (de Weerd 2010). As will be discussed, Kagera is characterized by a burgeoning land market in which a majority of households participate.

Figure 2.2 Study site



In the two study districts, 139 of the 142 rural villages were surveyed. A listing was conducted in one randomly selected hamlet¹⁸ in each village to stratify the selection of 12 households equally by gender of household head, and the sample is not limited by any upper limit on landholding size. 1,434 households were interviewed in 2014, bringing the rate of attrition from 2013 to 10.0%. Household

¹⁸ Each village is comprised of several hamlets, or sub-village administrative units (mean = 6.7 hamlets, mean hamlet size = 106.8 households).

population weights are used in all analyses, and are adjusted using inverse probability weights to reflect the likelihood of remaining in the sample in 2014 (Appendix 2A). A community-level survey was administered to key informants in each village. The survey also included household-level modules regarding asset holdings, land parcels held, and instances of land disposal for the period 2008-2014.¹⁹ In 2014, individual-level modules were administered to the household head and primary spouse, collecting information on their experiences of inheritance. With this information, we estimate the size of land inheritance for households in which the head is either unmarried or monogamously married (668 male-headed and 629 female-headed households).²⁰ Our regression analysis is therefore limited to this subsample.²¹ In some models, we consider only those monogamous households where both spouses were interviewed (461 households) in order to ensure an accurate measure of historical inheritance.

One key feature of this analysis is the measurement of both ‘actual’ and ‘potential’ inheritance. Actual land inheritance is calculated as follows: For monogamous households with both spouses interviewed, inheritance is the sum of land originally inherited by the two respondents. For unmarried households or monogamously married households with just one spouse interviewed, inheritance is estimated as the sum of the sole respondent’s inheritance and the land area currently in the household’s possession that was inherited by the respondent’s spouse. Actual inheritance is likely to be endogenous if a parent’s bequest decision was made with consideration of their children’s participation in the land market, or if the allocation of bequests is correlated with other unobserved characteristics of their children (e.g., varying levels of social mobility). Consequently we use potential inheritance in a control function approach to address potential endogeneity. Respondents reported how much land they, along with each living sibling, have received *and* what they expect to receive from their parents. A household’s potential

¹⁹ Unfortunately, the survey did not capture information related to agricultural production, thus precluding an examination of the effect of land markets on efficiency.

²⁰ The few households with a married female head are considered to be male-headed in this analysis.

²¹ To ensure accuracy of measurement, our econometric analysis excludes the 13.9% of households that are polygamous. However, as women tend to inherit smaller plots of land at less frequency, the relationships found for monogamous households are likely to extend to polygamous households. This sample restriction should not affect the quality of results.

inheritance is defined as the sum of land each spouse *could have* received, had land been divided equally among their siblings.

Following Baland et al. (2007), we also classify households into three categories of migrant status. (1) In ‘landed native’ households, either the head originates from the village and has inherited land (even if not retained), or the head had immigrated to marry a spouse originally from the village. (2) ‘Landless native’ households are those for whom the head originates from the village, though the household did not inherit any land. (3) ‘Migrants’ are those for whom the head originates from another location, and the household possesses no inherited land inside the village.

2.5 Descriptive statistics

Table 2.1 reveals the dominant role of agriculture, and the centrality of land, in our study site. Just 13% of households include a working-age member whose primary occupation is non-agricultural (column 1). On average, almost all land accessed by households is owned. This region also displays a rapid pace of land transactions. While 11% of households report having sold a parcel in the previous 6 years, 29% possess land that was purchased in the same interval. Note that this difference may be due to the omission of out-migrants and absentee landowners in our sample of rural households. Many of these transactions are sealed with a sales contract, even as less than 0.1% of plots in our study site have either a land title or ‘customary right of occupancy’ certificate. This underscores the informal nature of the land market.

Several notable differences are evident across the three categories of households (columns 2-4). Compared to landed native households, migrants have received an inheritance less than one-third as large, have retained a smaller proportion of their inheritance, and are more likely to have both purchased and sold land within the past 6 years. However, migrants do not appear to be wealthier than landed native households. While landless natives, by definition, have inherited no land, their average farm size is statistically indistinguishable from that of neighbors who inherited land.

Table 2.1 Household characteristics

	(1) All HHs		(2) Landed native		(3) Landless native		(4) Migrant		Tests	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	(2) = (3)	(2) = (4)
Number of working-age adults (ages 15-59)	2.270	(1.300)	2.259	(1.276)	1.796	(1.203)	2.408	(1.335)	***	
Proportion of dependents	0.533	(0.240)	0.529	(0.229)	0.567	(0.264)	0.531	(0.250)		
1=Polygamous Household	0.139	(0.346)	0.135	(0.342)	0.106	(0.309)	0.153	(0.361)		
1=Female-headed household	0.139	(0.346)	0.137	(0.344)	0.239	(0.428)	0.118	(0.323)	**	
Head's age (years)	45.221	(15.974)	42.980	(15.705)	47.663	(17.978)	48.226	(15.301)	*	***
1=HH member completed primary school	0.714	(0.452)	0.764	(0.425)	0.671	(0.472)	0.645	(0.479)		***
1=Has non-agricultural income	0.125	(0.331)	0.140	(0.347)	0.076	(0.266)	0.114	(0.318)		
1=Iron roof	0.733	(0.443)	0.811	(0.392)	0.539	(0.500)	0.654	(0.476)	***	***
Value of assets (100,000s TSh) ^a	44.370	(163.828)	42.071	(183.488)	26.628	(72.720)	52.563	(145.488)		
Land area owned (acres)	4.663	(6.786)	4.404	(5.198)	4.085	(8.627)	5.227	(8.327)		
Number of agricultural parcels	2.276	(1.216)	2.413	(1.198)	1.869	(1.137)	2.156	(1.230)	***	**
Land area inherited (acres) ^b	2.064	(2.772)	3.152	(3.026)	0.000	--	0.818	(1.635)	N/A	***
1=Has inherited no land	0.307	(0.461)	0.000	--	1.000	--	0.629	(0.484)	N/A	N/A
Proportion inherited land retained ^c	0.634	(0.426)	0.739	(0.365)	--	--	0.131	(0.328)	N/A	***
1=Inheritance is complete	0.409	(0.492)	0.412	(0.493)	0.373	(0.485)	0.414	(0.493)		
1=HH has sold land in past 6 years	0.105	(0.307)	0.077	(0.266)	0.105	(0.308)	0.151	(0.359)		***
1=HH has bought land in past 6 years	0.287	(0.452)	0.187	(0.391)	0.320	(0.468)	0.439	(0.497)	*	***
1=HH has sales contract	0.380	(0.485)	0.323	(0.468)	0.385	(0.488)	0.470	(0.500)		***
1= HH head has sales rights to any plot ^d	0.648	(0.478)	0.621	(0.486)	0.481	(0.502)	0.738	(0.440)	*	**
Observations	1,434		809		157		468			

Note: Asterisks denote significance levels of t-test for the difference in means. *** p<0.01, ** p<0.05, * p<0.1

^a The exchange rate in 2014 was approximately 1,500 TSh = USD \$1.

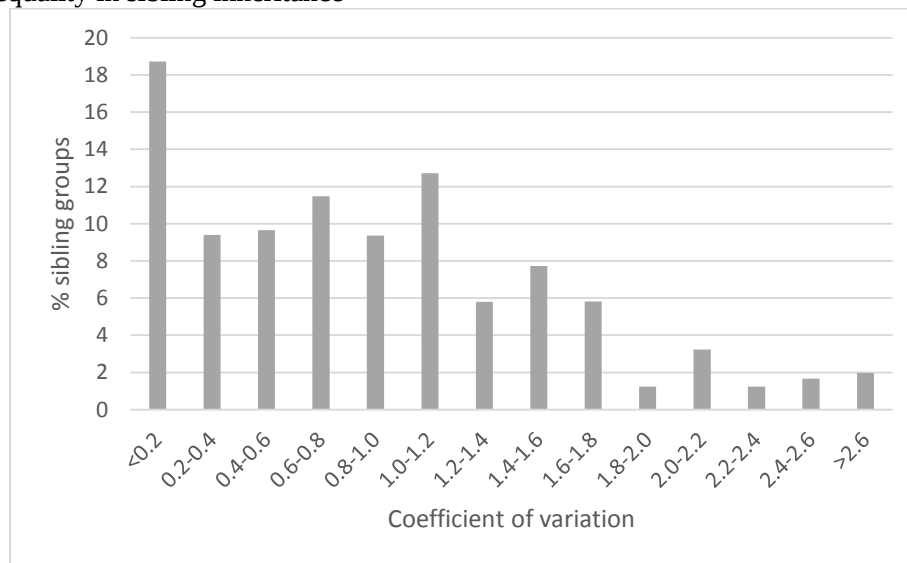
^b Land/ non-land asset inheritance is not estimated for polygamous households.

^c Proportion of inherited land area that has been retained is only calculated for households with a positive inheritance, and for which we directly observe their original inheritance. N=350 (column 1), 296 (2), and 54 (4).

^d This information is only available for land-owning households in which the head was interviewed. N=1,251 (column 1), 724 (2), 132 (3), and 395 (4).

Figure 2.3 illustrates that land bequests are often unequal among siblings, with a wide dispersion of the coefficient of variation among siblings' land inheritance. In 43% of cases, one sibling was entirely denied land while another received land. This pattern may reflect the potential endogeneity of inheritance, with parents differentially allocating land bequests in response to their children's characteristics (Wineman 2015a). Among respondents with completed inheritance, men receive considerably more land than women (on average, 1.7 vs. 0.3 acres).

Figure 2.3 Inequality in sibling inheritance

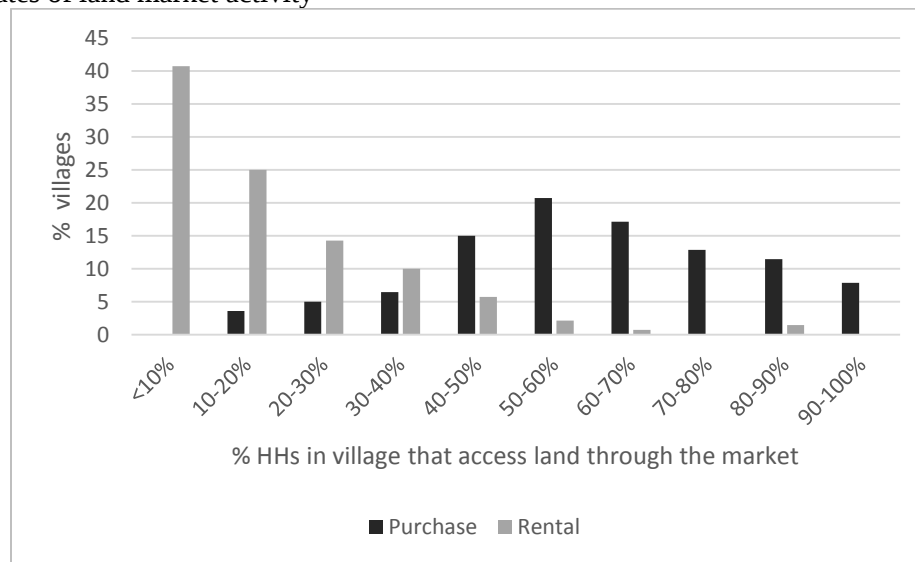


Note: Limited to sibling groups with completed inheritance.

Villages in the study site exhibit a wide range of land sales activity (Figure 2.4). We combine the categories of rental and borrowing because it seems plausible that borrowing entails a cost for the borrower (e.g. labor to clear the field or protect it from fires), even with no money exchanged. Odgaard (2006) similarly notes that few borrowing arrangements in Tanzania are genuinely ‘free of charge’.²² Few villages have less than 30% of households in possession of land that was purchased on the market, whereas most villages exhibit minimal renting activity. It therefore appears that the land sales market is more active than the rental market, a pattern opposite to that found in some African countries (Holden et al. 2009), but consistent with that seen in Uganda (Baland et al. 2007).

²² Results of our econometric analysis remain consistent when borrowed land is excluded in a test of robustness (Appendix 2B).

Figure 2.4 Rates of land market activity



A summary of land acquisition (Table 2.2) reflects the extent to which land is accessed through the market. A majority of plots (51%) are purchased, and while 36% are inherited or gifted from family, this accounts for just 29% of land area accessed. Another 8% of plots are accessed through rental or borrowing. With regard to sales rights, the household head reports the right to sell 72% of plots acquired through purchase, but just 55% of inherited plots. Table 2.3 shows the proportion of households that access land using these various modes of acquisition. 62% of all households in the study site possess at least one parcel that was purchased, and this exceeds the 52% that possess inherited land. Almost all migrants (82%) but relatively few landed native households (48%) possess purchased land. Over one quarter (28%) of landless native households rent land, surpassing the rental rate of migrants (20%).

Table 2.2 Patterns of land acquisition and plot characteristics

Mode of acquisition	Obs.	Proportion plots ^b	Area (acres)	Proportion of area	Plot size (acres)		Length of tenure (years)		1= HH head has sales rights ^c	
					Mean	SD	Mean	SD	Mean	SD
Purchased	1,318	0.507	268,343	0.544	2.449	(4.013)	12.397	(10.883)	0.723	(0.447)
Inherited/ Gift from family	1,092	0.357	144,150	0.292	1.867	(1.611)	18.299	(14.060)	0.552	(0.498)
Rented/ Borrowed	234	0.081	31,984	0.065	1.833	(2.472)	4.470	(6.955)	--	
Other ^a	204	0.055	48,811	0.099	4.122	(8.275)	27.043	(14.037)	0.548	(0.499)
Total	2,848		493,288							

^a 'Other' includes land that was cleared by the household or allotted by government.

^b Because plots are weighted, these proportions do not perfectly correspond to the number of observations.

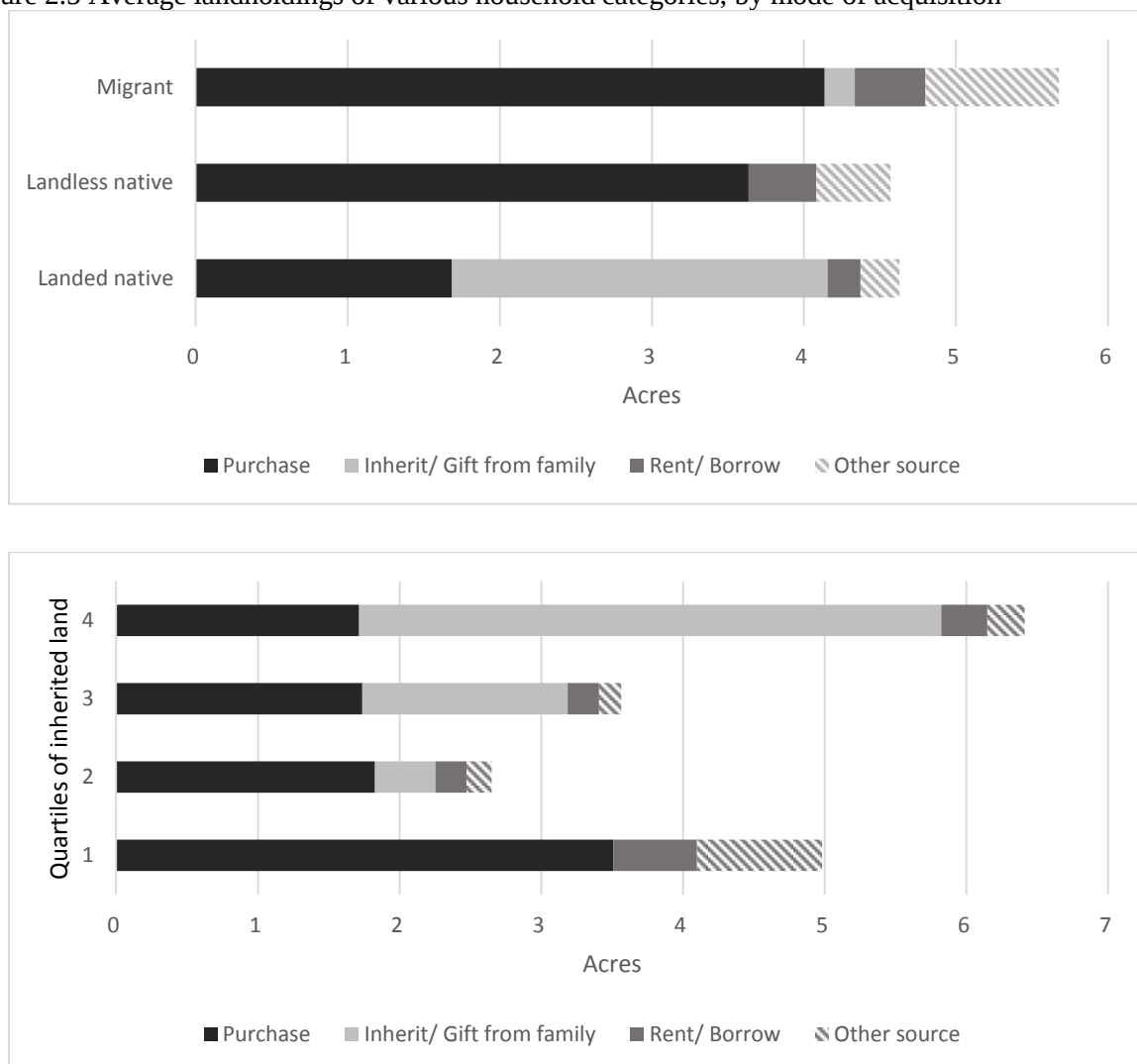
^c This information is only available for households in which the head was interviewed (85.8% of plots).

Table 2.3 Proportion of households accessing land by mode of acquisition

Mode of acquisition	All HHs	Landed native	Landless native	Migrant
Purchase	0.617	0.477	0.718	0.816
Inherit/ Gift from family	0.518	0.872	0.000	0.078
Rent/ Borrow	0.155	0.109	0.276	0.201
Other	0.100	0.070	0.154	0.137
Rent/ borrow only	0.052	0.016	0.193	0.076
Inherit/ Gift only	0.234	0.408	0.000	0.013
Purchased only	0.310	0.083	0.565	0.613
Observations	1,434	809	157	468

The top panel of Figure 2.5 displays the average land area accessed by each household type through different modes of acquisition. A typical migrant household has inherited 0.7 acres but currently retains just 0.16 acres of inherited land. This suggests that migrants tend to dispose of their inheritance through sale, gift, or bequest. In the bottom panel, households are categorized into four quartiles according to the amount of land originally inherited. On average, these quartiles inherited 0, 0.7, 1.8, and 4.5 acres of land, respectively. A typical household in the first quartile inherited no land but has purchased the largest amount (3.6 acres).

Figure 2.5 Average landholdings of various household categories, by mode of acquisition



To capture the degree of land concentration in our study site, a Gini coefficient²³ measures the extent to which the population deviates from a perfectly equal distribution. Values range from 0 to 1, with 0 representing perfect equality, and larger values representing greater inequality. The Gini coefficients (Table 2.4) show that currently-accessed land is more equitably distributed than inherited land. Thus, the coefficient for household-level inherited land is 0.61 (column 1), though this falls to 0.46 for currently-accessed land. A consistent pattern is seen in column 2, which is limited to households with completed inheritance. Column 3 is limited to households for which we have observed potential inheritance by interviewing both spouses, and again, the degree of land concentration drops sharply between that of potential inheritance and currently-accessed land. This suggests that land markets may compensate for the initial inequity of inheritance.

Table 2.4 Concentration indices of inherited land and currently accessed land

	(1) All HHs		(2) HHs with completed inheritance		(3) Monogamous HHs with both spouses interviewed	
	Gini	SE	Gini	SE	Gini	SE
Household						
Land accessed (acres)	0.462	(0.016)	0.471	(0.027)	0.441	(0.024)
Land owned (acres)	0.505	(0.017)	0.494	(0.027)	0.479	(0.025)
Land originally inherited (acres)	0.606	(0.014)	0.612	(0.017)		
Difference (land inherited and accessed)	0.143***	(0.019)	0.141***	(0.030)		
Potential land inheritance (acres)					0.559	(0.022)
Difference (potential inheritance and land accessed)					0.117***	(0.031)
Individual (per capita)						
Land accessed (acres)	0.447	(0.022)	0.451	(0.044)	0.434	(0.031)
Land owned (acres)	0.486	(0.023)	0.478	(0.044)	0.470	(0.032)
Land originally inherited (acres)	0.605	(0.017)	0.602	(0.023)		
Difference (land inherited and accessed)	0.157***	(0.027)	0.151***	(0.048)		
Potential land inheritance (acres)					0.571	(0.025)
Difference (potential inheritance and land accessed)					0.136***	(0.039)
Observations	1,297		817		461	

²³ A Lorenz curve plots the cumulative percentage of total landholdings against the cumulative percentage of the population, starting with those holding the least land. The Gini coefficient then measures the area between this Lorenz curve and a 45° line of perfectly equality, as a proportion of the total area under this line. In our analysis, Gini coefficients are calculated and analyzed with the DASP package for Stata.

The next tables provide information on female-headed households (FHHs), including 457 widows and 160 women who are separated or divorced. Table 2.5 outlines the basic characteristics of male- and female-headed households, showing that, as expected, the latter tend to be smaller, but with a higher proportion of non-working age members. While FHHs have significantly smaller owned landholdings (2.6 versus 4.4 acres) and rented holdings (0.18 versus 0.39 acres) than male-headed households (MHHs), they do not differ significantly in terms of land accessed per capita. FHHs are significantly less likely to have purchased land within the past 6 years, although note that female heads tend to be older (and their households smaller), placing them at a different stage of the farm-household life cycle. At the same time, female heads are significantly less likely to report the right to sell any owned plot (54% versus 67% among male heads), whether as a joint or exclusive decision.

Among all FHHs, the average land area purchased after a marriage has ended (i.e. after the year of divorce or widowhood) is 0.45 acres. However, just 21.1% of FHHs have purchased any land during this interval. Table 2.6 provides summary statistics for FHHs that have and have not purchased land since the women became household heads. In the former category, households have purchased an average of 2.14 acres since their marriage ended. According to our estimates, they were left with considerably less land when they became single (0.55 vs. 2.02 acres). A greater share (41%) of those who have purchased land are separated or divorced, rather than widowed.

Table 2.5 Characteristics of male- and female-headed households

	(1) Male-headed households		(2) Female-headed households		Test (1) = (2)
	Mean	SD	Mean	SD	
Number of working-age adults	2.324	(1.115)	1.553	(1.417)	***
Proportion dependents	0.516	(0.222)	0.594	(0.313)	***
Head's age (years)	41.787	(14.781)	56.900	(15.260)	***
1=HH member completed primary school	0.740	(0.439)	0.517	(0.500)	***
1=Has non-agricultural income	0.129	(0.336)	0.113	(0.317)	
1=Iron roof	0.718	(0.451)	0.783	(0.412)	**
Value of assets (100,000s TSh)	37.797	(107.812)	24.452	(58.374)	*
Land area owned (acres)	4.390	(5.613)	2.577	(2.543)	***
Land area rented/ borrowed (acres)	0.390	(1.471)	0.180	(0.727)	***
Land accessed per capita (acres)	1.072	(1.491)	1.012	(1.017)	
Number of agricultural parcels	2.340	(1.246)	1.731	(0.797)	***
1= HH rents/ borrows land	0.181	(0.386)	0.111	(0.315)	***
1=HH has sold land in past 6 years	0.124	(0.330)	0.056	(0.231)	**
1=HH has bought land in past 6 years	0.301	(0.459)	0.163	(0.369)	***
1=HH has sales contract	0.403	(0.491)	0.208	(0.406)	***
1= HH head has sales rights to any plot ^a	0.671	(0.470)	0.536	(0.499)	***
Observations	668		629		

Note: Asterisks denote significance levels of t-test for the difference in means. *** p<0.01, ** p<0.05, * p<0.1

^aThis information is only available for land-owning households in which the head was interviewed (N=1,159).

Table 2.6 Characteristics of female-headed households that have independently purchased land

	(1) Has purchased land		(2) Has not purchased land		Test (1) = (2)
	Mean	SD	Mean	SD	
Number of working-age adults	1.701	(1.433)	1.521	(1.433)	
Proportion dependents	0.543	(0.310)	0.624	(0.303)	*
1=Head is widowed	0.589	(0.494)	0.770	(0.421)	***
Years since marriage ended ^a	15.632	(9.872)	11.603	(9.286)	***
Head's age (years)	54.463	(12.296)	58.387	(15.434)	***
1=HH member completed primary school	0.529	(0.501)	0.500	(0.501)	
1=Has non-agricultural income	0.121	(0.327)	0.087	(0.281)	
1=Iron roof	0.739	(0.441)	0.790	(0.408)	
Value of assets (100,000s TSh)	15.446	(31.837)	23.703	(57.334)	
Land area owned (acres)	2.989	(3.218)	2.516	(2.340)	
Land accessed per capita (acres)	1.061	(0.499)	1.201	(0.783)	
Land purchased since marriage ended (acres) ^a	2.134	(2.457)	0.000	--	N/A
Land rented/ borrowed (acres)	0.140	(0.493)	0.155	(0.689)	
Land retained from time of marriage (acres) ^a	0.576	(1.568)	2.014	(2.337)	***
Observations	145		473		

Note: Asterisks denote significance levels of t-test for the difference in means. *** p<0.01, ** p<0.05, * p<0.1

^a 16 women in column 2 were unable to report the year their marriage had ended. For these variables, N = 457.

2.6 Econometric analysis

While the descriptive patterns of section 2.5 indicate that land markets are associated with reduced inequality, an econometric analysis is needed to better understand causality. In this section, we evaluate the determinants of land market participation, treating the dependent variable as alternately binary or continuous, and focusing on the coefficients for initial land endowment or gender of the household head. To begin, a seemingly-unrelated bivariate probit regression (SUR) is appropriate to identify the determinants of land market participation, as decisions to rent and purchase land are likely to be related (Baland et al. 2007), and this seemingly-unrelated system allows the error terms to be correlated across equations. In Table 2.7, the dependent variables in this system of equations are a household's status as renter and owner of purchased land. The equation is:

$$Y_{iv} = \alpha + \beta_1[Acrses_{iv}] + \beta_2X_{iv} + \beta_3W_{iv} + \beta_4V_v + \varepsilon_{iv} \quad (3)$$

where Y_{iv} is alternately a binary indicator for whether household i in village v possesses purchased land or rents, $Acrses_{iv}$ is the land area inherited, X_{iv} is a vector of demographic characteristics, W_{iv} is a vector of wealth indicators, and V_v is a vector of village characteristics.²⁴ In all analyses in this section, standard errors are clustered at the village level to account for potential correlation of shocks to the land market within the same village.

In columns 1 and 2, village and household demographic characteristics are included as controls. In addition, we control for whether inheritance is not yet complete, as the anticipation of future inheritance may influence a decision to purchase land. The unexplained portions of the two equations are significantly and negatively correlated ($\rho = -0.4$), suggesting that these decisions are made jointly. The coefficients on inherited land are negative and significant, indicating that with each additional acre inherited, a household is less likely to purchase or rent land. In general, this suggests that land is not being accumulated through the market by already well-endowed households; rather, the market is used to

²⁴ We have re-run these models with several other functional forms, including those with logged values of land inherited and purchased/ rented, or binary indicators of having inherited land. The results are quite consistent with those reported here.

compensate for smaller initial endowments. Also note that the sales market seems to transfer land to households with a larger endowment of family labor.

In columns 3 and 4, we add several regressors that are likely correlated with land market behavior, but potentially endogenous. For example, a household may simultaneously make decisions of migration and land market participation if it lacks other avenues of land access in a new community (Wineman 2015b). Migrant status may also be related to inheritance if a small inheritance prompts a household to search for a larger farm elsewhere. As well, indicators of wealth are susceptible to reverse causality, as when a household accumulates wealth after purchasing land. Results point to a strong, positive relationship between migration and the sales market, and wealth indicators (value of owned assets and having an iron roof) further reveal that poorer households are more likely to rent. In columns 5 and 6, the sample is limited to the 461 households for which we have directly observed past inheritance through retrospective interviews with both spouses.²⁵ Because a non-negligible number of households have not received any land inheritance, we also add an indicator to identify households with no inheritance. Results are generally consistent with those of the larger sample, though we now see that the rental market is used mostly by households with zero initial land endowment.

As noted by Baland et al. (2007), a household's initial endowment (inheritance) may be endogenous with land area accessed through the market. Respondents could have been denied land if they were perceived as more able than their siblings to purchase land, or because they had already migrated from their natal village. We therefore employ a control function approach (CFA) to address this potential endogeneity (Smith and Blundell 1986). The CFA can be employed with a censored endogenous regressor, and requires at least one instrumental variable that is partially correlated with the endogenous regressor but uncorrelated with unobserved factors that affect the dependent variable. A household's 'potential' inheritance is understood as exogenous to the household's abilities. In the first stage of the CFA (column 7), a tobit model is used to regress realized inheritance on the control variables, in addition to potential inheritance. The F-statistic confirms potential inheritance as a suitably strong determinant of

²⁵ Because all households in this subsample are headed by men, the female-headed status is omitted.

realized inheritance ($F=61.37$, $P>F=0.000$). Note that migrant status is omitted because it is likely to be correlated with potential inheritance, as when a household cannot possibly obtain a viable farm size through inheritance and therefore seeks a better life elsewhere.²⁶ Residuals from this tobit model are included in the second stage (column 8-9), which leaves the remaining variation in realized inheritance independent of the error term. However, the coefficients on these residuals are not significant, suggesting that realized inheritance is not, in fact, endogenous with binary indicators of land market behavior.

²⁶ Results are consistent in sign and significance when migrant status is included at this stage, and also when other potentially endogenous regressors (i.e. indicators of wealth) are omitted.

Table 2.7 Determinants of purchase and rental status (seemingly unrelated bivariate probit)

	All HHs				HHs with observed inheritance				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	SUR		SUR		SUR		Tobit	CF-SUR	
	Purchased	Rents	Purchased	Rents	Purchased	Rents	Land inherited (acres)	Purchased	Rents
Land inherited (acres)	-0.131*** (0.027)	-0.121*** (0.035)	-0.119*** (0.027)	-0.087** (0.037)	-0.117*** (0.043)	-0.027 (0.060)		-0.140*** (0.046)	-0.098 (0.071)
HH has received no land inheritance					0.353 (0.237)	0.590** (0.268)			
Inheritance is not complete	-0.129 (0.121)	0.114 (0.159)	-0.198 (0.122)	0.142 (0.158)	0.023 (0.159)	-0.016 (0.205)	-0.612** (0.250)	0.173 (0.144)	0.009 (0.203)
Female-headed household	-0.486*** (0.122)	-0.076 (0.141)	-0.420*** (0.124)	-0.034 (0.153)					
Age of head	0.089*** (0.021)	-0.009 (0.025)	0.056*** (0.019)	-0.002 (0.024)	0.064** (0.033)	0.056 (0.040)	-0.058 (0.052)	0.077** (0.033)	0.030 (0.030)
Age ² of head	-0.001*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.001* (0.000)	-0.001* (0.000)	0.000 (0.000)	-0.001** (0.000)	-0.000 (0.000)
HH member has completed primary school	0.057 (0.132)	-0.180 (0.178)	-0.094 (0.152)	-0.054 (0.194)	-0.291 (0.225)	-0.182 (0.260)	0.073 (0.283)	-0.314 (0.204)	-0.149 (0.209)
No. working-age adults	0.217*** (0.046)	-0.056 (0.066)	0.184*** (0.047)	-0.054 (0.068)	0.166** (0.079)	-0.090 (0.107)	0.083 (0.119)	0.095 (0.097)	-0.038 (0.145)
Migrant			0.609*** (0.152)	0.262 (0.167)	0.661*** (0.225)	-0.084 (0.250)			
HH has non-agricultural income			0.019 (0.162)	-0.009 (0.240)	-0.228 (0.205)	0.460 (0.354)	0.310 (0.481)	-0.288 (0.232)	0.259 (0.317)
HH dwelling has iron roof			0.362** (0.147)	-0.419** (0.204)	0.371 (0.231)	-0.404 (0.255)	0.443 (0.319)	0.151 (0.204)	-0.453** (0.189)
Value non-land assets (ln)			0.193*** (0.057)	-0.078 (0.063)	0.331*** (0.083)	-0.283*** (0.102)	-0.031 (0.094)	0.386*** (0.060)	-0.156** (0.076)
HH is in Karagwe	0.209 (0.147)	-0.218 (0.149)	0.261* (0.143)	-0.121 (0.163)	0.675*** (0.193)	-0.439* (0.228)	0.931* (0.482)	0.420** (0.201)	-0.370* (0.214)
Village population density (100's people/ km ²)	0.005 (0.023)	0.012 (0.025)	-0.005 (0.024)	0.012 (0.025)	0.004 (0.026)	-0.036 (0.042)	0.116* (0.065)	0.000 (0.027)	-0.074* (0.043)
Time to road (hours)	0.088 (0.120)	-0.376** (0.158)	0.193* (0.099)	-0.457*** (0.162)	0.296 (0.225)	-0.691** (0.269)	0.293 (0.381)	0.432 (0.273)	-0.513* (0.263)
Time to phone (hours)	-0.145	-0.230	-0.275	-0.268	-0.611	-0.214	1.783*	-0.709	0.005

Table 2.7 (cont'd)

	(0.249)	(0.328)	(0.277)	(0.377)	(0.441)	(0.516)	(0.930)	(0.485)	(0.695)
Land available in village to be allocated	-0.205*	0.097	-0.260**	0.110	-0.199	-0.022	-0.283	-0.243	-0.011
	(0.117)	(0.136)	(0.113)	(0.140)	(0.148)	(0.200)	(0.341)	(0.149)	(0.215)
Village median land value (log)	-0.153	-0.018	-0.252**	0.083	-0.384**	0.141	0.206	-0.456***	-0.028
	(0.113)	(0.099)	(0.113)	(0.113)	(0.155)	(0.147)	(0.279)	(0.155)	(0.146)
Potential inheritance (acres)							1.202***		
							(0.153)		
Residuals (first stage)								0.066	0.050
								(0.052)	(0.065)
Constant	-0.123	0.341	-0.843	-0.112	-1.278	0.905	-1.801	-0.833	2.133
	(1.473)	(1.325)	(1.433)	(1.495)	(2.047)	(1.742)	(3.720)	(2.282)	(2.199)
rho	-0.406***		-0.410***		-0.118			-0.097	
	(0.100)		(0.101)		(0.124)			(0.128)	
sigma							2.232***		
							(0.158)		
F (Potential inheritance)							61.37		
P > F							0.000		
Observations	1,297	1,297	1,297	1,297	461	461	461	461	461
Uncensored observations							350		

Standard errors in parentheses, clustered by village

*** p<0.01, ** p<0.05, * p<0.1

Note: In columns 8 and 9, standard errors are bootstrapped (50 replications). For this reason, population weights are not used in the model with a control function. However, exclusion of these weights in other models generally does not affect the results.

Table 2.8 explores the relationship between initial land endowment and the accumulation of land through the market. A left-censored tobit model is appropriate because a sizable proportion of households possess no purchased (38%) or rented (84%) land. Equation (3) is again used, where Y_{iv} is now the number of acres the household possesses that were purchased (columns 1-4), or how many acres are currently rented (columns 5-8). The dependent variable can also be thought of as a household's current stock of purchased or rented land. In column 1, we omit household wealth indicators and find that each additional acre inherited is associated with 0.4 fewer acres purchased. This negative relationship remains in column 2, which includes migrant status and wealth indicators, and column 3, which is limited to the 461 households with directly-observed inheritance. Column 4 provides second stage results of a control function tobit model that includes the same residuals generated in Table 2.7. Note that the coefficient on residuals is significant at the 10% level, while the coefficient on realized inheritance remains negative and significant.

Columns 5-8 repeat this exercise with land area rented. When wealth controls are omitted (column 5), there is again a negative relationship between land inherited and the area accessed through rental. However, when we control for the household's migrant and wealth status, our key coefficient becomes insignificant, and this remains the case for the control function model of column 8. This indicates that while households use the sales market to compensate for a small inheritance, the rental market is less relevant for this purpose.

Table 2.8 Determinants of land area purchased or rented (tobit)

	Land purchased (acres)				Land rented/ borrowed (acres)			
	(1)	Tobit (2)	(3)	CF-tobit (4)	(5)	Tobit (6)	(7)	CF-tobit (8)
Land inherited (acres)	-0.443*** (0.105)	-0.344*** (0.102)	-0.448*** (0.139)	-0.499*** (0.161)	-0.371** (0.171)	-0.241 (0.169)	-0.265 (0.313)	-0.325 (0.436)
Inheritance not complete	-0.172 (0.464)	-0.447 (0.438)	0.464 (0.583)	0.658 (0.591)	0.806 (0.667)	0.858 (0.638)	0.417 (0.838)	0.476 (0.897)
Residuals from first stage				0.289* (0.152)				0.223 (0.223)
HH demographic controls	Y	Y	Y	Y	Y	Y	Y	Y
HH migrant status		Y	Y			Y	Y	
HH wealth controls		Y	Y	Y		Y	Y	Y
Village controls	Y	Y	Y	Y	Y	Y	Y	Y
P > F (land inherited = -1)	0.000	0.000	0.000	0.012	0.000	0.000	0.019	0.026
Observations	1,297	1,297	461	461	1,297	1,297	461	461
Uncensored observations	702	702	272	272	190	190	72	72

Standard errors in parentheses, clustered by village

*** p<0.01, ** p<0.05, * p<0.1

Note: In the second stage control function results of column 4 and 8, standard errors are bootstrapped (50 iterations), and for this reason, population weights are not used.

Thus far, we have studied the land market only through a ‘snapshot’ of land accumulated, but we have not addressed the other side of these markets (sales and leases). Respondents were not specifically asked how they had disposed of inherited land that was not retained. However, we have reason to believe that land that is no longer held has likely been sold.²⁷ Consequently, we regard the amount of inherited land that is not currently retained as an *upper bound estimate* on the sale of inherited land. For the 350 households with a positive amount of directly-observed inheritance, we now estimate the net amount of land they have acquired through the sales market. Households are categorized as having a negative land acquisition (selling more than they purchased), zero net land acquisition, or positive land acquisition.

In Table 2.9, we estimate the propensity to fall into one of these categories with a multinomial logit model (using equation (3)), with zero net land acquisition as the base category. Village controls are omitted as they are not necessarily related to the location where inherited land was sold.²⁸ In columns 1 and 2, with only demographic controls included, the area of land inherited is a positive determinant of a negative land acquisition, and vice versa for a positive land acquisition. This is consistent with the notion that the land market ‘smooths out’ the distribution of land across households. Household wealth indicators are included in columns 3 and 4, and wealthier households (with an iron roof and greater non-land assets) seem more likely to have acquired a positive amount of land. At the same time, poorer households are more likely to have sold or lost land, suggesting that these sales may, indeed, have been motivated by distress. However, our key coefficients on inherited land remain in place. Finally, to address the potential endogeneity of realized inheritance, we again employ a control function approach (columns 5 and 6). When residuals from the first stage regression are included, results consistently point to the land market’s role in smoothing out the land distribution.

²⁷ The data set contains information on instances of land disposal since 2008, and 59.8% of all plots that were disposed-of during this interval had been sold.

²⁸ Results do not change in direction or level of significance when these current-village controls are included.

Table 2.9 Determinants of net land acquisition through the sales market (multinomial logit)

	HHs with > 0 inheritance					
	(1) Negative	(2) Positive	(3) Negative	(4) Positive	(5) Negative	(6) Positive
Land inherited (acres)	0.044*** (0.011)	-0.052*** (0.017)	0.048*** (0.011)	-0.052*** (0.015)	0.065*** (0.012)	-0.053*** (0.018)
Inheritance not complete	-0.093** (0.048)	0.048 (0.062)	-0.068 (0.044)	0.016 (0.049)	-0.059 (0.047)	0.020 (0.064)
Age of head	-0.011 (0.011)	0.030*** (0.011)	-0.009 (0.011)	0.015 (0.011)	-0.011 (0.013)	0.018 (0.014)
Age-squared of head	0.000 (0.000)	-0.000** (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
HH member has completed primary school	-0.107 (0.065)	0.175** (0.084)	0.026 (0.062)	-0.016 (0.072)	0.023 (0.060)	-0.043 (0.082)
No. working-age adults	0.001 (0.023)	0.030 (0.027)	0.012 (0.021)	0.024 (0.025)	0.006 (0.025)	0.021 (0.032)
Migrant			0.028 (0.075)	0.187** (0.086)		
Has non-agricultural income			0.057 (0.063)	-0.133** (0.058)	0.064 (0.063)	-0.134** (0.054)
HH dwelling has iron roof			-0.033 (0.055)	0.188*** (0.070)	-0.065 (0.053)	0.148* (0.089)
Value non-land assets (log)			-0.075*** (0.021)	0.112*** (0.023)	-0.072*** (0.024)	0.118*** (0.024)
Residuals (first stage)					0.034*** (0.011)	0.007 (0.019)
Observations	350	350	350	350	350	350

Average partial effects; Standard errors in parentheses, clustered by village

*** p<0.01, ** p<0.05, * p<0.1

Next, we exploit the observations of land transactions in 2008-2014 to evaluate whether the same pattern holds over a shorter time interval. Households are categorized by whether they purchased and/or sold land during this time period, and whether they currently rent land. Unfortunately, the data set includes few observations of land leased out, perhaps due to absentee landlords or to inadvertent or intentional under-reporting.²⁹ A seemingly unrelated multivariate probit model is used, allowing the error terms to be correlated across equations, with the following equation:

$$Y_{iv} = \alpha + \beta_1[Initial_Acres_{iv}] + \beta_2X_{iv} + \beta_3W_{iv} + \beta_4V_v + \varepsilon_{iv} \quad (4)$$

where Y_{iv} alternately indicates whether the household has purchased or sold land since 2008, and whether it currently rents land. *Initial_Acres* refers to the amount of land owned as of 2008 (for the sales market) or one year previous (for the rental market). Results of Table 2.10 show that households with a larger initial endowment are more likely to have sold land (column 2), while a smaller endowment is strongly associated with renting (column 3) and weakly associated with purchasing land (column 1). Again, the land market seems to produce a more equitable distribution of land.

Table 2.10 Determinants of land market behavior (2008-14) (seemingly unrelated multivariate probit)

	(1) Has purchased land in past 6 years	(2) Has sold land in past 6 years	(3) Currently rents/ borrows land
Land owned by household 6 years ago (acres)	-0.042* (0.025)	0.026* (0.013)	
Land owned by household 1 year ago (acres)			-0.241*** (0.043)
HH has been female-headed for the past 6 years	-0.233* (0.124)	-0.617*** (0.154)	
Female-headed household			-0.333** (0.138)
HH demographic/ wealth controls/ migrant status	Y	Y	Y
Village controls	Y	Y	Y
Observations	1,297	1,297	1,297

Standard errors in parentheses, clustered by village

*** p<0.01, ** p<0.05, * p<0.1

Athrho (1 & 2): 0.133 (0.084); Athrho (1 & 3): -0.205 (0.106); Athrho (2 & 3): -0.110 (0.112)

Likelihood ratio test that all rhos = 0: χ^2 : 198,005 P > χ^2 = 0.0000

²⁹ In 2014, there were just 17 observations of leased-out land and 234 observations of rented/ borrowed land. A similar discrepancy in reporting is seen in a nationwide agricultural survey in Tanzania (Deininger et al. 2015).

We next explore what determines whether a female-headed household (FHH) accesses land through the market. We have seen so far that households respond to their initial land endowment, purchasing incrementally less land with a larger land inheritance. With a set of seemingly unrelated bivariate probit models (Table 2.11), we now explore whether FHHs similarly respond to the amount of land they were left with at the time their marriage ended. The equation is:

$$Y_{iv} = \alpha + \beta_1[Acrs_FHH_{iv}] + \beta_2X_{iv} + \beta_3W_{iv} + \beta_4V_v + \varepsilon_{iv} \quad (5)$$

where Y_{iv} indicates whether the female head has purchased land since she became single, and whether she currently accesses land through rental. $Acrs_FHH$ refers to the area of currently-retained household land that had been held at the year of widowhood or divorce. (Note that this estimate necessarily does not account for any land that was sold off, seized, or abandoned. As $Acrs_FHH$ is a lower bound estimate of a woman's true post-marriage endowment, β_1 may be biased upward.) In columns 1 and 2, results indicate that women are more likely to purchase or rent if they began with a smaller land endowment, suggesting that FHHs use the market to compensate for a smaller endowment. Recognizing that women face two non-market channels to access land, including both marriage and personal inheritance, we next add a new variable for the amount of land the head has inherited or received as a gift since her marriage ended (columns 3 and 4). Particularly with land purchases, women seem to compensate for their personal inheritance.³⁰

In Table 2.12, tobit models are used to estimate the determinants of land area purchased or rented by FHHs, as a function of land acquired through marriage and the head's post-marriage inheritance. Equation (5) is used, with Y_{iv} now a continuous measure of land area purchased or rented. The results again indicate that women use the market to compensate for the land area they were left with, and this is true for both the sales and rental markets (columns 1 and 4). In fact, the coefficients on initial land endowment are not significantly different from a value of -1, with one less acre of inherited land

³⁰ This analysis necessarily overlooks the women who became widowed or divorced, but then changed their status. For example, some women remarry or join the household of a sibling, and we cannot observe their hypothetical land market behavior, had they not self-selected out of being a female head.

associated with exactly one additional acre obtained through purchase or rental. Recalling that widows are significantly less prevalent among female heads that purchase land (Table 2.6), we also disaggregate these households by whether they are widowed or separated. It seems the relationship between land retained from marriage and subsequent land purchase or rental is strongest for women who are divorced or separated (columns 3 and 6). In other words, the land market is most important for women who are separated/ divorced and likely to have retained less from their ex-husbands. Women, and particularly widows, also use the sales market to compensate for their limited inheritance (columns 1 and 2), and we cannot reject the hypothesis that the coefficients of land retained and land inherited are equal. While it is true that just 21% of female heads have purchased land since becoming widowed or separated, it is also evident that women use the market to compensate for a small initial endowment. It seems that the market serves the same purpose for these households as for the larger population.

Table 2.11 Determinants of land market behavior among FHHs (seemingly unrelated bivariate probit)

	(1) Has purchased land since marriage ended	(2) Rents/ Borrows land	(3) Has purchased land since marriage ended	(4) Rents/ Borrows land
Land retained from before marriage ended (acres)	-0.265*** (0.065)	-0.261** (0.100)	-0.300*** (0.072)	-0.268*** (0.106)
Land inherited by head, since marriage ended (acres)			-0.321** (0.144)	-0.040 (0.092)
No. years head has been widowed, separated, or divorced	0.039*** (0.009)	0.004 (0.010)	0.041*** (0.009)	0.004 (0.010)
HH demographic/ wealth controls / migrant status	Y	Y	Y	Y
Village controls	Y	Y	Y	Y
Rho	-0.227 (0.140)		-0.248* (0.146)	
Observations	602	602	602	602

Standard errors in parentheses, clustered by village

*** p<0.01, ** p<0.05, * p<0.1

Table 2.12 Determinants of land acquisition by FHHs (tobit)

	Land area purchased since marriage ended (acres)			Land area rented/ borrowed (acres)		
	(1)	(2)	(3)	(4)	(5)	(6)
	All FHHs	Widowed FHHs	Separated FHHs	All FHHs	Widowed FHHs	Separated FHHs
Land retained from before marriage ended (acres)	-0.981*** (0.303)	-0.778*** (0.208)	-1.783** (0.744)	-0.701** (0.276)	-0.292 (0.238)	-2.849*** (0.869)
Land inherited by head, since marriage ended (acres)	-1.007** (0.439)	-0.869** (0.388)	-0.832 (0.649)	-0.140 (0.238)	0.219 (0.249)	-0.746 (0.555)
No. years HH has been widowed, separated, or divorced	0.101*** (0.024)	0.117*** (0.031)	0.035 (0.059)	0.014 (0.026)	0.036 (0.035)	0.015 (0.040)
HH demographic/ wealth controls and migrant status	Y	Y	Y	Y	Y	Y
Village controls	Y	Y	Y	Y	Y	Y
P > F (land retained from marriage = land since inherited)	0.946	0.791	0.222	0.056	0.089	0.010
P > F (land retained = -1)	0.950	0.286	0.295	0.278	0.003	0.035
P > F (land inherited = -1)	0.988	0.736	0.797	0.000	0.000	0.648
Observations	602	446	156	602	446	156
Uncensored observations	145	88	57	79	33	46

Standard errors in parentheses, clustered by village

*** p<0.01, ** p<0.05, * p<0.1

Despite this pattern, it is important to note that female-headed households are still significantly less likely to participate in the market as buyers, seller, or renters (Table 2.10). Because the sales market is captured for the years 2008-2014 in this table, the status of female-headed household in columns 1 and 2 is given to those who were headed by a woman during the entire 6-year interval (i.e. they were widowed or divorced prior to 2008). The coefficient on FHH is consistently negative, even when we control for household demographics and wealth indicators. Thus, although we have seen that women purchase or rent land to compensate for a small initial endowment, it still seems that women are somewhat marginalized in these markets. However, these results may be affected by unobserved factors (omitted variables) that influence the land market behavior of FHHs.

2.7 Qualitative analysis of women's land market participation

The qualitative data come from a set of semi-structured in-depth interviews and focus group discussions held in the study site in 2015. Two villages were selected in each district with the aim of capturing a diversity of community characteristics (Table 2.13). In each of the four villages, a comprehensive household census was conducted in one randomly selected hamlet in order to identify all female-headed households that have ever participated in the land market. Within this group, five household heads were randomly selected to be interviewed, including (where possible) three women who had bought or sold land, while the rest were renters. The sample of 20 women spans a wide spectrum of ages and marital situations (Table 2.14). In one village, gender-disaggregated focus group discussions were also held regarding women's participation in the land market. All conversations were structured by interview guides (Appendix 2C).

Table 2.13 Villages included in qualitative data collection

Study sites	Village description	Population (no. households)	Travel time from district headquarters (hours)
Karagwe District			
Katembe	Public transport readily available	881	0.5
Chabalisa	Difficult to find public transport	660	2
Biharamulo District			
Nyakanazi	Town characteristics (daily market, crowded)	2,272	1.5
Nyabugombe	Remote, no phone reception	633	2.5

Table 2.14 Characteristics of respondents (qualitative study)

Age	No.	Marital status	No.
< 35	3	Widowed	8
35 – 70	13	Divorced/ separated	8
≥ 70	4	Married, but functioning as head	3
		Never married	1

Among 64 female-headed households, 52% have *ever* independently rented in land, 5% report having rented out land, 25% have purchased land, and 5% have sold land. A majority of these women (66%) have turned to the land market at some point since becoming a household head. Renting or borrowing land for immediate farming purposes, though widely done, is regarded as less profitable and riskier than owning land outright. Most respondents had saved up their purchase or rental fees through agricultural production (selling crops from land they already access), wages (working on others' farms), and small businesses (e.g. selling charcoal, making mats, or working as a seamstress). For these women, land serves as more than merely a factor of production. It is also an investment, a source of security from eviction, a savings mechanism, and a future bequest for their children. As one respondent noted, "*I decided to buy land because it is a permanent asset. For goats or cattle, you can lose them even the next day. But land is there to stay.*"

Before we attempt to trace out the 'rules' associated with women's participation in the land market, an example will help illuminate the context in which women navigate this market. Miriam³¹ (age 72) had been in a polygamous marriage and successfully campaigned for ownership of a portion of her

³¹ Name changed to protect the respondent's identity.

husband's land. He died in 1987 when her children were still young, and she supplemented her income with a business of selling home-brewed beer. When a troubled neighbor approached with an offer to buy a plot of land, she was happy to agree. She said, *"I had saved my money for a reason, as I knew my children were still young and they had to go to school. So I bought that land as a way of keeping my money, so that I could sell it in the future to take care of my children."* In other words, she viewed land as a secure way to store savings. Miriam did not feel that being a woman influenced this transaction, saying *"so long as you had your money, you could purchase land."* The year was 1990. Seven years later, one of her children was imprisoned and required bail money. Seeing no alternative, and with no rental market in existence, Miriam now sold that same plot to a brother and successfully secured her son's release. She said, *"for women to sell land is not easy unless someone has an emergency like I had."* Since then, the land inherited from her late husband has been allotted to each child.

Several themes that emerge from this qualitative exercise are evident within Miriam's story. The female heads we interviewed generally (and surprisingly) do not perceive that their gender functioned as a restriction in purchasing or renting land. Thus, a common remark was, *"so long as you have money, you can buy land."* One woman commented that, since the land purchased by both men and women goes toward their children's inheritance, the joint effort is reasonable. Another divorced woman felt that her community even appreciated the efforts of a woman to be independent. Most respondents simply felt that money overshadows gender as a determinant of land access, and this sentiment was shared by the men in our focus group. One man noted, *"As long as you have money that I need, I will sell my land to you. We don't need to give priorities based on gender because if a woman says I want to buy land, it means she has money and she intends to buy it."* It seems these same conditions extend to the rental market, in a manner similar to that observed by Daley (2008).

However, the interviews also reveal that female heads tend to have less access to money with which to enter the market. First, women with children have many strains on their budget, with a responsibility to care for the immediate needs of their family. It thus becomes difficult to save the amount necessary to either rent or purchase land. Another respondent observed that *"A married woman will*

always be under the feet of her husband... It will be hard for her to buy land or any other important asset because always she is under the control of her husband. As that is the case, she can't do something without consent from her husband, even if she has her own money." Within marriage, it is also difficult (though not always impossible) for women to accumulate savings. One focus group participant noted, *"It is very hard for a woman to own even 500,000 shillings. ...Even if they cultivate crops together, it is her husband who claims the money."* For this reason, women do not possess a hefty bank account when they become household heads.

This ties into an important observation: While women who are widowed or separated hold considerable freedom to engage independently with the land market, women with husbands possess far fewer rights over property and money. Within marriage, decisions over land are commonly made by the husband (though perhaps after consultation with his wife). Even if a woman has saved money from her own small business, the intent to purchase land must be vetted by her husband, and both men and women insisted that a woman who purchases land without the direct involvement of her husband will be regarded with suspicion. *"Within no time, you find yourself back at your parents' home."* Some wives do attempt to creatively assert ownership over property. We heard of women who purchased land far from home and beyond their husbands' gaze. One respondent had a male acquaintance purchase a cow for her and keep it within his own herd. This transaction was kept secret from her husband.

In contrast to the expansive rights of female heads to purchase and rent land, we heard of many more restrictions on their rights to sell land. It seems women are allowed to sell in response to an emergency, as in the case of Miriam (above), but not for other reasons, such as the desire to invest in a business. As one respondent concluded, *"for a woman to sell land, it is not easy unless you have a big problem. Otherwise you cannot do so as a woman, but a man can do so at any time without seeking permission from anyone."* Thus, a woman who sells land becomes an object of her clan's scrutiny. *"The one who knows your problem cannot bother you. But those who don't know what you are going through will look intently upon you."* Often, a woman's children must be consulted for approval, and sons, in particular, may hold veto rights over a mother's decision to sell land.

The confusing divergence between a woman's right to purchase and sell land seems to disappear when a woman has independently purchased land. In this case, decisions regarding land disposal are largely outside the purview of the clan. One respondent noted that, although a woman must inform her husband of a plan to sell land she had purchased, "*he can't refuse because he knows you bought it using your own money*". This freedom to sell land was evident across many circumstances (e.g. different intentions or family structures), as long as it was initially acquired through purchase. It thus seems that land, once purchased, has somehow 'exited' the clan system for as long as a woman (or man) holds it. This pattern is also noted in Table 2.2, which shows that sales rights are commonly attached to plots that were purchased. Meanwhile, land acquired through inheritance is subject to greater restrictions.

This qualitative exercise reveals a reality more complex than can be extracted from econometric analysis. The land market clearly plays a large role in how female-headed households structure their livelihoods. At the same time, women are subject to gender-based restrictions with regard to selling land that was not independently purchased, and owing to gender roles, they are less able to raise money to purchase or rent land. However, the manner in which women can or cannot participate in the market is nuanced. Female heads are far from sidelined, and as the land market continues to develop, it does seem that women's land access may simultaneously expand. At the same time, if land prices continue to rise (a common observation during interviews), then women may be the first to be priced out of the market.

2.8 Conclusions

This paper explores the equity implications of land sales and rental markets in northwestern Tanzania. We empirically test the relationship between initial land endowment and land market behavior to understand whether the market is used to concentrate landholdings or to 'smooth out' the inequity of initial endowments. Several intriguing outcomes emerge from our analysis: First, it is evident that commoditized access to land is common within the customary system of tenure, as a majority of households (62%) possess purchased land. The pervasiveness of the sales market indicates that capital market imperfections

do not significantly inhibit the functioning of land markets in this region. Furthermore, there appears to be adequate security of tenure within the informal market to safeguard the returns to a land purchase. This is the case, even as efforts to promote land titling have had negligible impacts in Tanzania (USAID 2011); the development of an active land sales market evidently does not require formalized property rights. At the same time, we find limited evidence of land rental, suggesting that Kagera has not attained the requisite level of tenure security for land to be exchanged on a temporary basis.

Second, our findings are consistent with Baland et al. (2007), showing that land purchasers tend to be those with little or no initial land endowment in the form of inherited land. The concern over elite capture assumes that those with the greatest wealth or influence will gain the most from the commoditization of land (Holden and Otsuka 2014). At least with respect to initial land endowments, our results generally do not provide evidence of this phenomenon in the local land market. This conclusion differs from that of Sitko and Jayne (2014) in Zambia, where the authors find that “farm size growth [through statutory and vernacular land markets] among those primarily engaged in agriculture appears to be predominantly confined to a minority of rural residents who started out in a relatively privileged position with regard to initial landholding size.” In contrast, in Tanzania we find widespread participation in the land market. Our findings suggest that policy efforts to facilitate the functioning of land markets can be pursued as pro-equity. However, it remains likely that when a market is driven underground (as in Zambia), it may pose a threat to smallholders whenever it can be manipulated by politicians, bureaucrats, and other elites.

Third, roughly one in five female heads are observed to participate in the land sales market, purchasing an average of 2.14 acres after they become widowed or divorced/separated. This indicates that women in Kagera are not excluded from the market, as has been documented elsewhere (Sitko 2010). Furthermore, female heads use the market in the same manner as other households, effectively compensating for the amount of land held when they became single or widowed, as well as the land they have individually inherited. Yet female-headed households are significantly less likely to participate in the market as buyers, sellers, or renters. These quantitative results are supported with evidence from our

qualitative analysis, which reveals that women often feel they have the right to buy or rent in land, though they face difficulties accessing or raising the money to do so. In fact, many respondents feel that wealth outweighs gender as a determinant of land access. At the same time, our analysis reveals a fascinating complexity around gender and land markets, whereby women face asymmetric freedoms on either side of the market. Even if female heads are active purchasers, they are burdened with particular restrictions on the sale of land and, thus, do not benefit equally from market engagement. Our analysis complements that of Pedersen (2015), who uses a case study to document how Tanzania's 1999 Land Laws have improved land access for women (especially female heads). While noting that access is becoming less gendered, Pedersen does not consider the role of land markets in this trend.

Several caveats are in order: First, we do not explore possible tensions between the priorities of equity and efficiency. Several papers analyze the efficiency implications of rental markets by estimating unobserved farmer ability (Jin and Deininger 2009; Jin and Jayne 2013), with rental markets found to transfer land to more capable producers, thereby improving agricultural efficiency. Note, as well, that this analysis has not considered absentee landowners which were not captured in the household survey, and we do not know whether these would influence the results. It should be emphasized that this paper is not a complete gender analysis of the land market, as it does not address intra-household differences in land access for men and women. Furthermore, we cannot rule out the possibility that distress sales made by widowed or divorced women left them homeless and prompted them to join a relative's household. We can only observe the female-headed households that have survived any grief caused by a husband's departure.

Despite these limitations, this paper has upended several generalizations often made about rural Africa: The sales market in Kagera is characterized by widespread participation, which counters the "idealized models of customary tenure" that dominate the policy discourse (Chimhowu and Woodhouse 2006). As well, the local land market seems to facilitate a more equitable distribution of land. Contrary to near-universal claims that women are dependent on men for access to land, female-headed households in Kagera are observed to participate in the market, though at a lower rate than other households. As land

becomes increasingly scarce in sub-Saharan Africa, owing to rising population density and greater demand for commercial agricultural land, market-based mechanisms of allocating land are expected to become more prevalent. While the market in Kagera evidently does not function ‘perfectly’, this paper sheds light on a vibrant land market that may represent, for other African contexts, the potential for markets to foster social mobility and a more flexible local economy.

APPENDICES

Appendix 2A Likelihood of household remaining in sample, 2014

Table 2A.1 Likelihood of household remaining in sample, 2014

	Probit 1= remains
Adult equivalents	0.085** (0.041)
Dependency ratio	0.296 (0.265)
Female-headed household	-0.409** (0.161)
Head is widowed	0.195 (0.150)
Head's age	0.004 (0.004)
Head is native to village	0.313** (0.137)
Someone in HH completed primary school	0.294** (0.129)
Value of assets (ln)	0.017 (0.035)
Land owned by household (acres)	0.022 (0.016)
HH rents or borrows land	-0.256 (0.169)
No. households in village (100s)	0.000 (0.000)
Time to district headquarters (hours)	-0.021 (0.059)
Time to phone (hours)	0.268** (0.114)
Time to health center (hours)	0.055 (0.067)
No. enumerator visits required at baseline	-0.213 (0.209)
Constant	0.189 (0.520)
Observations	1,667

Standard errors in parentheses, clustered by village

*** p<0.01, ** p<0.05, * p<0.1

Appendix 2B Robustness checks for definition of rental

Throughout this paper, we have treated the activities of renting and borrowing as though they are both transactions in the rental market. To verify that this choice did not influence our results, this appendix includes several key models with the dependent variable restricted to ‘rented’ land. Referring to Table 2.7, Table 2B.1 provides new results for columns 1 and 2 and shows that the results are robust to this alternate definition of land rental. Referring to Table 2.8, Table 2B.2 provides new results for columns 5-8 and also shows that the results are robust. Referring to Table 2.10, Table 2B.3 provides new results and shows that female-headed households are still less likely to buy, sell, or rent land. It does not seem that our less restrictive definition of land ‘rental’ influenced our main findings.

Table 2B.1 Determinants of purchase and rental status, excluding borrowing

	(1) Purchased	(2) Rents
Land inherited (acres)	-0.131*** (0.027)	-0.163*** (0.053)
Inheritance is not complete	-0.141 (0.123)	-0.054 (0.161)
Female-headed household	-0.473*** (0.124)	-0.575*** (0.166)
Age of head	0.088*** (0.021)	0.124*** (0.048)
Age-squared of head	-0.001*** (0.000)	-0.001*** (0.001)
HH member has completed primary school	0.055 (0.133)	-0.227 (0.231)
No. working-age adults	0.221*** (0.046)	-0.089 (0.080)
HH is in Karagwe	0.204 (0.148)	-0.006 (0.183)
Village population density (100s people/ km ²)	0.006 (0.024)	-0.027 (0.031)
Time to road (hours)	0.088 (0.121)	-0.347* (0.190)
Time to phone (hours)	-0.142 (0.251)	-0.552 (0.402)
Land available in village to be allocated	-0.208* (0.118)	0.118 (0.168)

Table 2B.1 (cont'd)

Log of village median land value	-0.150 (0.113)	0.021 (0.121)
Constant	-0.117 (1.463)	-3.210** (1.612)
rho	-0.284** (0.124)	
Observations	1,297	

Table 2B.2 Determinants of land area purchased or rented, excluding borrowed land

	(5)	(6)	(7)	(8)
Land inherited (acres)	-0.792** (0.329)	-0.624** (0.271)	-0.741* (0.439)	-0.661 (0.812)
Inheritance not complete	-0.125 (0.735)	0.016 (0.697)	-0.157 (0.988)	-0.361 (1.343)
Residuals from first stage				0.544* (0.324)
HH demographic controls	Y	Y	Y	Y
HH migrant status		Y	Y	
HH wealth controls		Y	Y	Y
Village controls	Y	Y	Y	Y
Observations	1,297	1,297	461	461
Uncensored observations	82	82	36	36

Table 2B.3 Determinants of land market behavior (2008-2014), excluding borrowing

	(1) Has purchased land in past 6 years	(2) Has sold land in past 6 years	(3) Currently rents/ borrows land
Land owned by household 6 years ago (acres)	-0.034* (0.025)	0.026* (0.014)	
Land owned by household 1 year ago (acres)			-0.222*** (0.057)
HH has been female-headed for the past 6 years	-0.247** (0.123)	-0.625** (0.159)	
Female-headed household			-0.737** (0.174)
HH demographic/ wealth controls and migrant status	Y	Y	Y
Village controls	Y	Y	Y
Observations	1,297	1,297	1,297

Appendix 2C Interview guides

Table 2C.1 Interview guide for female market participants

Introduction

1. Tell me a bit about your **household** (*so I can get to know you*).
2. Tell me about your **land**.
 - a. How did you acquire each parcel?
 - b. Any land being leased out?
3. Tell me about any land you have sold or rented/ leased in the past.

For each piece of land that was **purchased**:

4. Why did you decide to purchase this land?
 - a. [*If applicable*] Did you think of this plan before you divorced or separated from your husband?
 - b. Why purchase instead of renting?
5. What was the process?
 - a. Did you know the person from whom it was purchased? Who was it (generally)? How did you learn it was for sale?
 - b. What was the negotiation process like?
 - c. How did you pay for it? How did you save or access money? Was the price fair? Was it paid at once, or in installments?
6. What does your family think of the purchase? The village leaders?
 - a. What was most difficult about making this purchase? Are you satisfied?
7. Will you purchase land again?
8. Why do you think more women do not purchase land, the way you did?

For each piece of land that was **sold**:

9. Why did you decide to sell this land?
 - a. Why sell instead of leasing?
10. What was the process?
 - a. Did you know the person who bought it? Who was it (generally)? How did the buyer learn it was for sale?
 - b. What was the negotiation process like?
 - c. How did s/he pay for it? Was the price fair?
11. What does your family think of the sale? The village elders?
12. What was most difficult about making this sale? Are you satisfied?
13. Will you sell land again?
14. Why do you think more women do not sell land, the way you did?

...And similar questions for any land that is/was **rented or leased**.

Note: We are trying to understand the *constraints* that limit women's participation in the land market. Are the constraints different for men and women? Are they different for married or unmarried women? **Have these constraints been changing, and how?**

Table 2C.1 (cont'd)

Conclusion
15. Do you think it is a good/ bad/ neutral thing for women to participate in the land market?
16. What advice would you give to another woman who also wants to buy/sell/rent land?

Table 2C.2 Interview guide for focus groups

Introduction
1. Tell me a bit about your community.
2. Do women in this village buy, sell, rent, or lease land?
a. Why or why not?
b. What types of women? (e.g. wives, divorcees, immigrants versus natives, young versus old)
c. Under what circumstances? (e.g. in need of money, in need of land, excellent farming abilities, land had been acquired through inheritance, land had been independently purchased, etc.)
d. Who needs to give permission
3. What is different when a man or a woman participates in the land market?
a. Is it easier for men or women? How?
b. Are the transactions documented in the same way?
4. Have these trends been changing in this village?
a. In what ways?
b. Why?
5. Is it easier for women to rent or to lease land? To sell or to buy land?
a. Why?
6. Do you think it is a good/bad/neutral thing for women to participate actively in the land market?
a. Why?
b. Who tends to be critical? Who tends to be supportive?
7. Between men and women, who is responsible for providing their children with an inheritance?
a. How does this factor into land market decisions?
Conclusion
8. If a woman wants to buy, sell, or rent land, how would you advise her?

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3. LAND MARKETS AND MIGRATION TRENDS IN TANZANIA: A QUALITATIVE-QUANTITATIVE ANALYSIS

3.1 Introduction

Migration between rural locations is quite prevalent in many countries, often exceeding the rate of migration from rural areas to urban centers (Bilsborrow 1998).³² However, this issue has been largely overlooked in the development economics literature. A number of studies demonstrate that migration improves economic well-being in sub-Saharan Africa, even for those who move to a rural area. For example, in northwestern Tanzania, Beegle et al. (2011) find that migration confers a growth in consumption, whether it takes place between rural locations or from rural to urban areas. Migration even benefits those who move to a more remote area. In Ethiopia, de Brauw et al. (2013) similarly find that migrants who move for employment (including to a rural destination) experience a significant increase in consumption.³³ However, strikingly little is known about the dynamics of rural-to-rural migration (Lucas 1997), including who participates, how it is financed, and how destinations are selected. Furthermore, while it is possible that land markets play an important role in migration dynamics, the literature almost universally neglects the influence of land liquidity.

This paper builds on the limited knowledge of migration between rural areas in sub-Saharan Africa by exploring the relationship between land markets and migration in northwestern Tanzania. We propose that a dynamic rural land market facilitates migration by enabling households to liquidate their land wealth and finance a move, and also to access land and establish residence in a new community. The corollary is that an inactive or restricted land market functions as a barrier to migration. This ties together various strands of research concerning the dynamics of internal migration and the impact of real estate liquidity on labor mobility. This paper combines quantitative and qualitative analytical methods to more deeply explore the process of rural migration, and to place the quantitative results in context. We find that

³² This essay is co-authored with Lenis Saweda Liverpool-Tasie.

³³ Though migration is seen to benefit the migrants themselves, it may negatively affect the communities that are left behind or those that host migrants. However, an examination of the benefits and drawbacks of migration flows is beyond the scope of this paper.

high levels of land market activity are consistently and strongly associated with patterns of migration. In particular, market activity in 2013 is positively correlated with village rates of both in- and out-migration over the following year. Qualitative data demonstrate how commonly migrants utilize the market in the process of migration, and further shed light on how barriers to market development can hinder mobility. Because migration facilitates economic mobility, the proposed link between land markets and migration is extremely relevant to policies regarding poverty reduction.

Consequently, this study makes several key contributions. First, it sheds light on the prevalence and nature of rural-to-rural migration in Tanzania, an important but overlooked phenomenon. Second, to our knowledge, this is the first paper to address the role of land liquidity in migration patterns in sub-Saharan Africa. Furthermore, we have found no other study that considers the role of land markets at both the sites of origin and destination in the process of rural-rural migration. Third, this study incorporates both quantitative and qualitative research methods, otherwise known as a mixed-methods or ‘Q-squared’ approach (Kanbur and Shaffer 2007). Qualitative methods are particularly useful to explore a topic that has not been previously researched (Rubin and Rubin 2012; Starr 2014), and this paper demonstrates the usefulness of such an approach.

The paper is organized as follows: Section 3.2 provides background on rural-rural migration and the relationship between liquidity constraints and migration flows. A conceptual framework for a household’s migration decision is given in section 3.3. Section 3.4 details our quantitative data and descriptive statistics of both migration rates and land market activity. Econometric results are given in section 3.5, and an analysis of migrant interviews is included in section 3.6. Section 3.7 concludes.

3.2 Background

In the development economics literature, rural Africans are generally assumed to be either stationary or engaged in migration between the rural and urban sector. The literature thus maintains the stereotype of a stable society characterized by tight-knit communities rooted in a tribal homeland (Chimhowu and

Woodhouse 2006). Farmers are perceived to remain in place until they are ‘uprooted’ by economic or environmental forces (Nijenhuis 2013) or modernization introduces a mobile lifestyle (Trager 2005). When economists do consider patterns of internal migration, it is with near-exclusive attention to the flows between rural areas and urban centers (de Haan 1999). This narrow focus seems to stem from traditional two-sector models of development, such as the Lewis model that considers the process of development as one of moving people from the ‘subsistence’ to the capitalist sector (Lewis 1954), or the Harris-Todaro model that seeks to explain the rate of migration to the urban sector (Harris and Todaro 1970). While these models have inspired extensive study of wage labor migration, they implicitly assume the rural sector to be homogenous, thereby precluding any research into the dynamics of migration across the countryside. The few existing studies of rural-to-rural migration tend to focus on seasonal or temporary migration (e.g. Hampshire and Randall 1999; de Bruijn and van Dijk 2003), again overlooking patterns of long-term migration between villages.

Despite the overwhelming attention given to rural-urban migration, rural-rural migration is as prevalent, if not more widespread, in many developing countries. Across a set of 14 countries in the 1970s and 80s, rural-rural migration surpassed rural-to-urban migration in 10 countries (Bilsborrow 1998). By the 1970s in India, Skeldon (1986) observed that rural-rural migration flows were larger than any other type of migration (e.g. rural-urban, urban-urban). By the 1980s in Botswana, within-district rural-to-rural migrants were the largest migrant group, outstripping rural-urban migrants by a factor of three (Lesetedi 1992, cited in de Haan 1999). Similar patterns were observed in Ghana in the 1990s (Sowa and White 1997) and Burkina Faso in the early 2000s (Henry et al. 2004). In Tanzania, the limited attention paid to rural-rural migration has focused on the villagization policy of the 1970s. However, both pastoralists (by definition, nomadic) and agriculturalists demonstrate a high level of migration, as documented in a case study of one community in the Mbeya region³⁴ (Odgaard 1996).

A number of papers have examined the link between wealth and rural out-migration to explain how liquidity constraints influence migration rates. McKenzie and Rapaport (2007) present a simple

³⁴ Mbeya, located in the southwest of the country, is one of Tanzania’s 30 administrative regions.

theoretical model that links wealth and migration rates, showing that when liquidity constraints bind, migration rates should first increase and then decrease with wealth. This is because cash-in-advance constraints bind for the poor, while the opportunity costs of migration bind for the wealthy. In rural Tanzania, Hirvonen (2014) finds that the rate of male migration increases after a positive weather shock, concluding that a lack of liquidity serves as a barrier to migration. Similarly in rural Indonesia (Bazzi 2013) and Mexico (Angelucci 2015), positive income shocks are seen to increase international migration, and in rural Bangladesh, seasonal migration decisions seem to be driven by liquidity constraints (Bryan et al. 2013). However, some authors arrive at a different conclusion, finding migration to be a response to a negative shock. For example, in Nigeria (Dillon et al. 2011) and Burkina Faso (Henry et al. 2004), men are more likely to migrate following a negative temperature or rainfall shock. Feng et al. (2010) also find that poor crop yields in Mexico are associated with increased out-migration. To reconcile these diverging patterns, Kleemans (2014) posits that migration can serve as either a response to a negative income shock (termed ‘survival’ migration) or an investment. In rural Indonesia, survival migration is often selected by poor people who move temporarily to other rural areas, while investment migration takes the form of long-term moves to urban destinations.

Although there is ample evidence that liquidity constraints (at least sometimes) drive migration choices, very little attention has been paid to the role of land liquidity.³⁵ Instead, authors consistently focus on income shocks in the form of public transfers or weather outcomes. The model of McKenzie and Rapaport (2007) even begins with the premise that agricultural land is a household’s main form of *illiquid* wealth, such that migration can only be financed with savings. However, it seems that where land markets exist, potential migrants can also finance their move through land sales. Chernina et al. (2014) address this in a study of the 1906 Stolypin land titling reform in the late Russian Empire, treating it as a quasi-natural experiment of improved land liquidity. Under this program, households in peasant communes received a land title for the plots in their possession, meaning they could finance out-migration through

³⁵ The literature on property rights and migration tends to focus on tenure security (de Janvry et al. 2012; de la Rupelle et al. 2009; Mullan et al. 2001). While property rights and the emergence of a land (or real estate) market are related, these papers do not address this link.

land sales or by becoming absentee landlords. This increase in land liquidity is found to explain almost 20% of the post-reform Europe-Asia migration. At the same time, a lack of liquidity may inhibit migration, as in India, where land market frictions are found to limit the occupational and spatial mobility of those who inherit land (Fernando 2014).³⁶ This relationship between real estate liquidity and labor mobility is also relevant in developed country settings such as the U.S., where the rate at which homeowners accept a distant job offer depends on how quickly they can sell their house (Head and Lloyd-Ellis 2012).

At the other end of a migrant's journey, the existence of a land market can plausibly make it possible to select a rural destination where land is otherwise inaccessible. In Uganda and Tanzania, migrants are observed to participate in the land market as buyers and renters (Baland et al. 2007; Wineman 2015), and the consequent improvement in household mobility has prompted Deininger and Mpuga (2009) to refer to land markets as a "ladder out of poverty". However, few studies of migration consider the migrants' selection of a rural destination, and no existing paper has sought to discern the causal relationship between rural land markets and a household's choice of destination.³⁷

The region of Kagera, Tanzania is an appropriate setting to explore this topic, as it is characterized by extensive migration flows (de Weerd and Hirvonen 2013) and a burgeoning land market. Kagera is located in the northwestern corner of Tanzania, with a local economy that is dominated by agriculture (de Weerd 2010). In a longitudinal study that tracked individuals from Kagera over 10 years, Beegle et al. (2011) find that roughly half of the sample moved from their home village during this interval. Among migrants, 38% moved to a nearby village and another 40% moved elsewhere within the region. This presents an opportunity to explore the heretofore under-researched role of land markets in migration decisions.

³⁶ Note that Fernando (2014) focuses solely on migration to urban areas.

³⁷ The sparse literature on land markets and rural-rural migration in Africa has thus far focused on the opposite direction of causality, or the effect of migration on systems of land tenure. In Uganda, Mwesigye et al. (2014) conclude that rural migration makes it difficult to maintain communal tenure systems and promotes a shift toward individualized ownership. In Burkina Faso, Koussoubé (2013) also finds that greater in-migration leads to a higher probability of land being sold or rented.

3.3 Conceptual framework and hypotheses

The conceptual framework draws from the standard human capital model pioneered by Sjaastad (1962), which posits that potential migrants compare their earnings in the place of origin with expected earnings at a possible destination, making a decision based on the economic costs and benefits of migration.³⁸

Let $ER(0)$ stand for the expected return in period 0 to a potential migration decision.

$$ER(0) = \int_0^n [(w_d)(t) - (w_o)(t)] e^{-rt} dt - C[(P_d A_d) - (P_o A_o) + S_o(\delta_o, \mathbf{X}) + S_d(\delta_d, \mathbf{X})] \quad (1)$$

The household migrates if the income gain from migrating exceeds the cost, i.e. $ER(0) > 0$. w_d is the known household income at destination d and w_o is the known income at origin o . For rural-rural migrants, these are a function of land in each location.³⁹ In equation (1), n indexes the time periods over which the household will exist. $C(\cdot)$ is a one-time cost of migration, which is a function of both the price of land at origin (P_o) and destination (P_d),⁴⁰ and the search costs involved in finding an exchange partner, or the ease with which land can be exchanged for cash. The search costs at origin (S_o) and destination (S_d) are therefore a function of land market activity (δ_o, δ_d) and other factors ($\mathbf{X}$), such as the strength of a household's social network. Because search costs are decreasing in land liquidity, the first derivatives with respect to land market activity are positive.

$$\frac{\partial ER}{\partial \delta_o} > 0 \quad \text{and} \quad \frac{\partial ER}{\partial \delta_d} > 0 \quad (2)$$

³⁸ The 'new economics of labor migration' (Stark 1991) considers the migrant-sending family to be the appropriate unit of analysis, with migration a form of portfolio diversification. Our decision to regard the migrant (or migrant household) as the unit of analysis is a direct reflection of information gathered in migrant interviews (section 3.6). They overwhelmingly cite themselves, and not their families, as the key decision-maker in their movements. Even women who have migrated for marriage report that the decision was primarily their own, and not that of parents or extended family.

³⁹ For example, $w_o = A_o \theta_o L - \frac{bL^2}{2}$, where A_o is the household's land at origin, L is household labor, and θ_o is a parameter representing land quality. Similarly, $w_d = A_d \theta_d L - \frac{bL^2}{2}$.

⁴⁰ As this is a partial equilibrium model, prices are assumed to be exogenous. In actuality, a wider set of general equilibrium dynamics would influence the effect of a marginal change in land market activity on migration flows. See Appendix 3A for a full discussion.

From this stylized partial equilibrium model, we can conclude that, holding all else constant, the probability of migration should increase with the rate of land market activity at either the site of origin or destination.

Consequently, this paper explores the following hypothesis regarding the effect of land markets on migration: A higher level of land market activity in a village will be associated with higher levels of in- and out-migration. Along these lines, a household's migrant status will be positively correlated with the level of land market activity among its neighbors, and the level of market activity will be positively associated with the prevalence of immigrants. This is consistent with the notion that the land market facilitates mobility.

3.4 Quantitative data and descriptive statistics

The quantitative data used in this study come from an impact evaluation of community-based legal aid in Kagera, Tanzania, undertaken by the International Food Policy Research Institute in 2013 and 2014. This took place in two districts (Karagwe and Biharamulo) (Figure 3.1), and in 2013, 1,667 households were interviewed in 139 rural villages (12 households per village). The quantitative analyses in this paper draw largely from the 2013 survey round, with consideration of village-level migration rates from 2013-14. The survey included household-level modules on land parcels owned or accessed, as well as individual-level modules on migration administered to the household head. Information on land sales (i.e. disposals) was only captured for the years since 2008, and household population weights are used in all analyses. Village-level information on migration rates and economic conditions was collected through community interviews with village leaders. Table 3.1 provides detailed definitions of key variables.

Figure 3.1 Study site

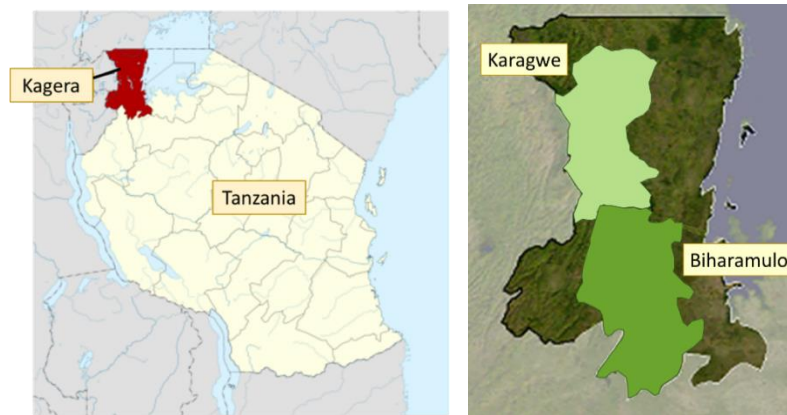
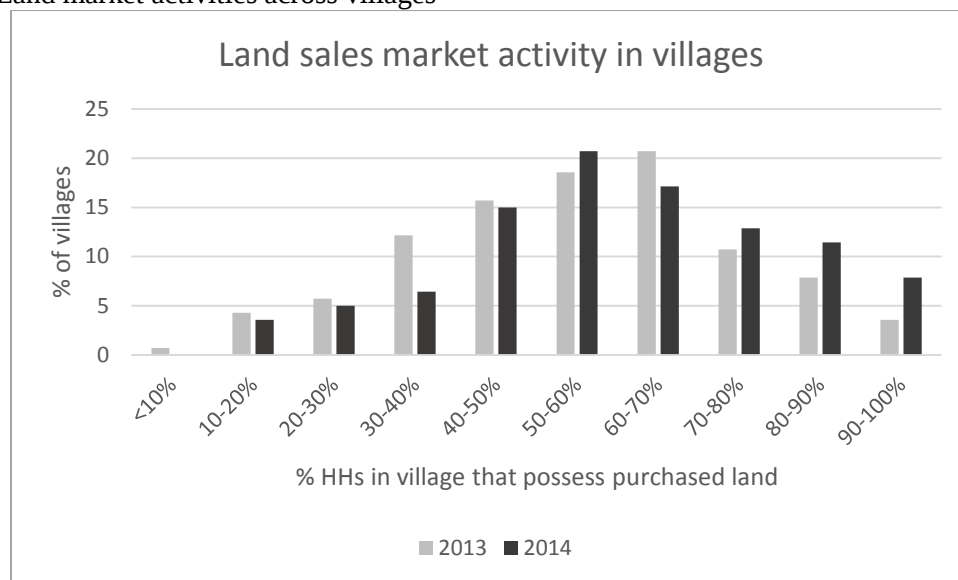


Table 3.1 Key variable definitions

Variable	Definition
LAND MARKET ACTIVITY	
Proportion HHs engaged with the land market	Proportion households in village that either possess purchased land or rent land in 2013. Purchased land may have been purchased at any time.
Proportion HHs that possess purchased land	Proportion households that possess purchased land. This could have been purchased in any year.
Proportion HHs that rent land (2013)	Proportion households that rent or lease land at time of 2013 interview. This does not include borrowed land. Although this is inclusive of leases, very few households report leasing out land.
Proportion HHs that have either bought or sold land (2008-2013)	Proportion households that report having sold land since 2008, or possess land that was purchased since 2008
Proportion land area accessed through the market (purchased or rented)	Proportion land area in village that has been acquired through either purchase or rental
Proportion parcels transacted as sales (2008-2013) or rentals (2013)	Proportion parcels in village that are either currently rented or leased or have been sold or purchased since 2008. It is possible that some transactions are double-counted.
Proportion parcels that were bought or sold (2008-2013)	Proportion parcels that have been sold or purchased since 2008
Proportion parcels transacted as rentals (2013)	Proportion parcels that are currently rented/ leased
Value of land sales in village since 2008 (100 millions TSh)	Estimated value of land purchased or sold in village from 2008-2013. It is possible that some sales are double-counted.
Value of land rentals in village in 2013 (100 millions TSh)	Estimated value of land rented in or out in 2013
MIGRATION RATE	
Migrant household	1=Household is migrant, 0=ative. A migrant household meets the following criteria: (1) Head's origin is not in village and head has not resided in village since birth, (2) HH possesses no inherited land in village, and (3) if head moved for marriage, spouse's origin was not in village. This can also be thought of as a 'first generation migrant'.
Proportion migrants	Proportion of HHs in village that are migrants
Proportion in-migrants (2013-14)	Ratio of in-migrant households (2013-14) to the village population in 2013
Proportion out-migrants (2013-14)	Ratio of out-migrant households (2013-14) to the village population in 2013

Figure 3.2 demonstrates that villages exhibit a wide range of sales activity (top panel), and the escalating level of market engagement is evident even within a span of approximately one year.⁴¹ In 2013, 57% of households possessed some land that was acquired through purchase. By 2014, 6% had altered their status from not owning to owning purchased land (Figure 3.3). Villages generally exhibit lower levels of rental activity when this is measured as a ‘snapshot’ of rental status (Figure 3.2, bottom panel), though this is also increasing over time.⁴² With regard to the prevalence of migration, villages exhibit a wide range of immigration rates when this is measured as the percent of households that are first-generation migrants (Figure 3.4). While 13% of villages seem to have no migrants, the prevalence of migrants elsewhere extends to over 90%. In total, 36.3% of all households are migrants. It thus seems that neither land sales nor migration are restricted to a small number of villages.

Figure 3.2 Land market activities across villages



⁴¹ The two survey waves took place 15 months apart.

⁴² Note that rates of rental and sales activity are not readily comparable, as rentals are short-term transactions while land purchases are cumulative. A simple comparison of the number of sales and rental transactions in a given interval would not reflect their relative importance. At the same time, a ‘snapshot’ of market engagement does not capture how many households have *historically* relied on the rental market.

Figure 3.2 (cont'd)

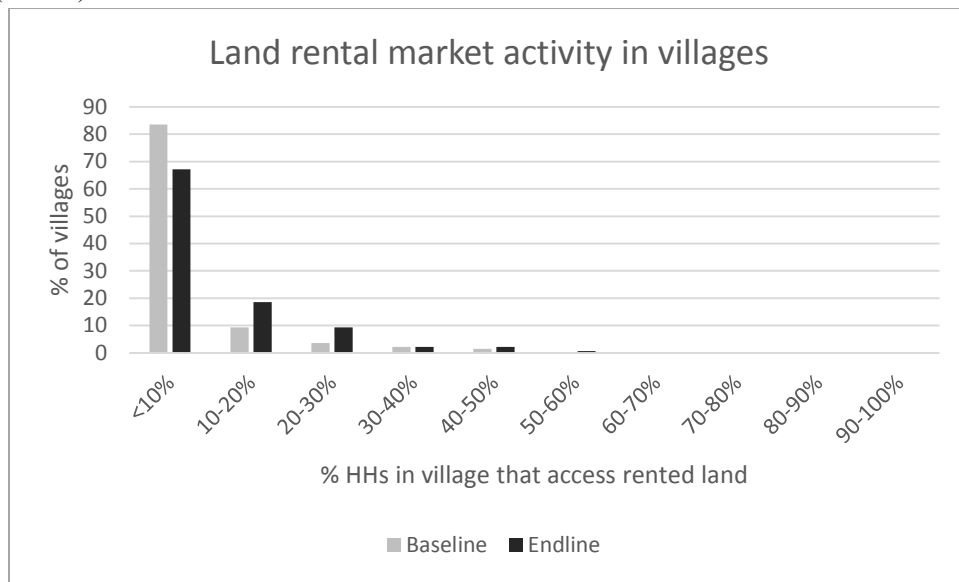


Figure 3.3 Changes in land market engagement, 2013 to 2014 (proportions)

RENTAL				PURCHASE			
2013		2014		2013		2014	
		No	Yes			No	Yes
	No	0.91	0.04		No	0.38	0.06
	Yes	0.01	0.04		Yes	0.01	0.56

Figure 3.4 Prevalence of in-migration across villages, 2013

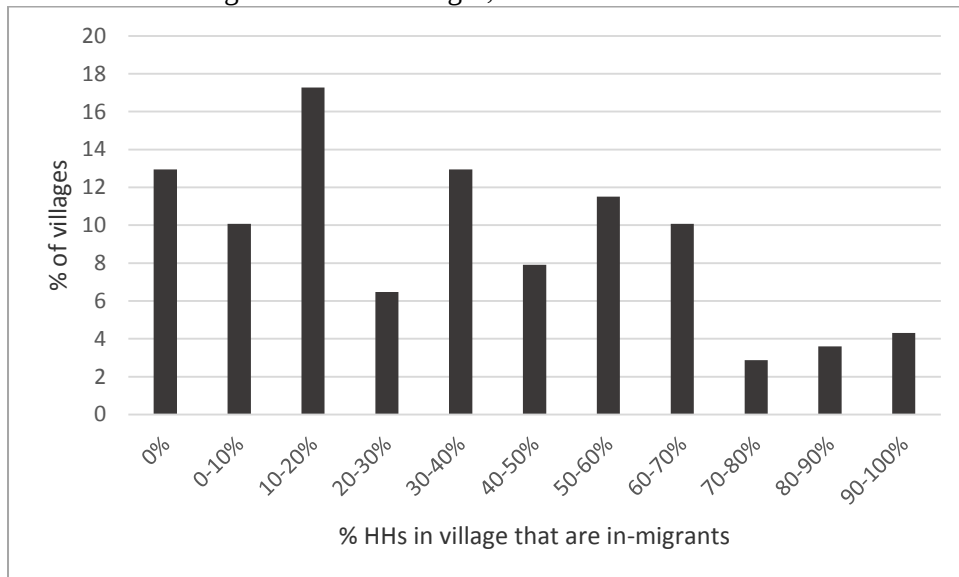
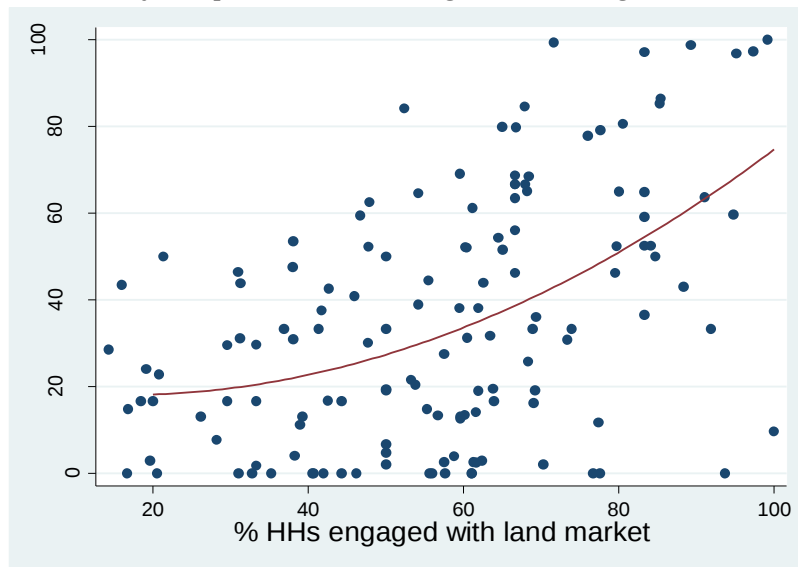


Figure 3.5 Land market activity and prevalence of in-migration in villages, 2013



We find a positive relationship between the level of land market activity and the prevalence of migrants across villages (Figure 3.5), where market activity is defined as the percent of households that either rent or possess purchased land. In fact, it is rare to observe substantial immigration in the absence of an active land market. In Table 3.2, villages are categorized as ‘majority-migrant’ with at least 50% immigrants, or ‘majority-native’ with less than 50% immigrants. Between these two categories, majority-migrant villages saw a higher rate of both in- and out-migration (though the difference in in-migration rates is not statistically significant) from 2013-2014, indicating that these may be sites of population ‘churning’. They also contain a significantly higher proportion of households with purchased and/or rented land. There are surprisingly few differences among variables intended to capture the degree of remoteness, though majority-migrant villages are more likely to contain a weekly market or pharmacy, and also to be found in Biharamulo district. At the household level (Table 3.3), while migrant and native households do not differ with regard to some measures of wealth, including land area accessed, they exhibit very different patterns of market engagement. Migrants hold, on average, almost twice as much purchased land as native households (3.8 versus 2.1 acres), and also rent more land (0.22 versus 0.02 acres).

Table 3.4 sheds light on the nature of rural migration and the range of motivations involved. A typical instance of migration is far from temporary, as migrant household heads have spent an average of 17.9 years in their current village.⁴³ Rural migration thus does not seem to be a short-term response to distress. It is more common for female migrant heads to be widowed or separated, and 38.7% had moved to their current village after their marriage ended. Among all migrant heads, 98.3% report that their previous community had been rural, and a striking 57.8% cite inadequate access to land or poor quality land as the reason for leaving their last community. Thus, the desire for more and better land appears as a major driver of migration decisions. A large majority (74.9%) financed their move with savings, while just 8.2% liquidated their land base.⁴⁴ Though the ability to finance migration through land sales may be limited in some cases, land seems to play a non-negligible –and often significant– role in the migration process.

While Table 3.4 focuses on rural in-migrants, community leaders were also asked about out-migration.⁴⁵ Referring to the most common destination for emigrants *from* each village, 59.2% of villages list another rural community in Tanzania, 27.6% list an urban community in Tanzania, and 13.2% see most emigrants depart for another country. 27.6% of villages cite the search for more or better land as the most common reason for out-migration, while 42.1% list work opportunities.

⁴³ By 2014, 50 out of 587 (7.4%) migrant households interviewed in 2013 had left their village, according to neighbors' accounts. Among this group, the household head had spent an average of 6.18 years (standard deviation = 7.46) in the village.

⁴⁴ Among migrant heads who had owned land in their previous community, a larger percent (18.9%) had sold land to finance their move, and 43.1% still own that land. The remainder presumably disposed of the land for a different purpose.

⁴⁵ This information was collected for the 115 villages with a positive amount of out-migration from 2013 to 2014.

Table 3.2 Characteristics of majority-native and majority-migrant villages

		(1)		(2)		
		Majority natives ^a		Majority migrants		Test
		Mean	SD	Mean	SD	(1) = (2)
Migration	Proportion migrant HHs	19.707	(16.065)	70.276	(15.443)	***
activity	% net in-migration (2013-14)	2.103	(8.633)	2.572	(4.494)	
	% in-migration (2013-14)	3.384	(8.345)	5.083	(4.521)	
	% out-migration (2013-14)	1.281	(3.604)	2.510	(2.379)	**
Land market	% HHs engaged with the land market	50.616	(19.485)	71.824	(14.775)	***
activity	% HHs that possess purchased land	48.189	(18.184)	67.129	(14.440)	***
	% HHs that rent land (2013)	3.393	(6.344)	9.676	(14.308)	***
	% HHs that bought or sold land (2008-13)	19.647	(14.878)	39.950	(18.776)	***
	% land area accessed through the market (purchased or rented)	41.618	(21.583)	74.253	(19.328)	***
	% parcels transacted as sales (2008-13) or rentals (2013)	12.782	(10.760)	37.355	(17.227)	***
	% parcels bought or sold (2008-13)	10.674	(10.354)	30.515	(15.954)	***
	% parcels transacted as rentals (2013)	2.108	(4.183)	6.869	(11.357)	***
	Value of land sales (2008-13) (100 millions TSh)	3.504	(9.677)	4.900	(5.668)	
	Value of land rentals (2013) (100 millions TSh)	0.010	(0.032)	0.036	(0.146)	
Basic	1=Village is in Karagwe District	0.660	(0.476)	0.143	(0.354)	***
characteristics	No. HHs in village (100s)	7.200	(3.465)	6.866	(3.825)	
	Population density (HHs/ km ²)	36.410	(41.006)	29.966	(31.551)	
	Average land accessed per capita (acres)	1.121	(0.596)	1.228	(0.931)	
	Median value of land acre (ln)	13.560	(0.743)	12.817	(0.543)	***
	1=Land is available for allocation in village	0.320	(0.469)	0.357	(0.485)	
	1=Village formed (and/or populated) during villagization	0.361	(0.483)	0.310	(0.468)	
	Time to main town (hours)	1.394	(0.934)	1.696	(0.982)	*
	Time to phone reception (hours)	0.128	(0.413)	0.038	(0.161)	*
	Time to road (hours)	0.124	(0.372)	0.262	(0.492)	
	1=School in village	0.907	(0.292)	0.881	(0.328)	
	1=Weekly market in village	0.515	(0.502)	0.667	(0.477)	*
	1=Pharmacy in village	0.485	(0.502)	0.810	(0.397)	***
	1=Health center in village	0.381	(0.488)	0.286	(0.457)	

Table 3.2 (cont'd)

1=Water source is river during dry season	0.588	(0.495)	0.310	(0.468)	***
1=Women customarily inherit land	0.959	(0.200)	0.881	(0.328)	
1=Land has been expropriated/ reallocated (2008-13)	0.072	(0.260)	0.262	(0.445)	**
1=Village experienced economic crisis (2008-13)	0.784	(0.414)	0.810	(0.397)	
1=Village experienced rising food prices (2008-13)	0.515	(0.502)	0.571	(0.501)	
1=Village experienced economic development (2008-13)	0.402	(0.493)	0.405	(0.497)	
1=Dominant tribe: Nyambo ^b	0.598	(0.493)	0.095	(0.297)	***
1=Dominant tribe: Subi	0.165	(0.373)	0.143	(0.354)	
1=Dominant tribe: Ha	0.103	(0.306)	0.167	(0.377)	
Observations	97		42		

Note: Asterisks denote significance levels of a t-test for the difference in means. *** p<0.01, ** p<0.05, * p<0.1

^a Majority native: > 50% natives; majority migrant: ≥ 50% migrants.

^b Only the Nyambo, Subi, and Ha tribes are dominant (estimated to comprise ≥ 50% of the village population) in at least 10 villages.

Table 3.3 Characteristics of immigrant and native households

		(1)		(2)		
		Natives		Migrants		Test
		Mean	SD	Mean	SD	(1) = (2)
Land access	Land area owned (acres)	4.732	(7.457)	4.812	(6.658)	
	Land area accessed (acres) ^a	4.807	(7.429)	5.242	(6.653)	
	Land accessed per capita (acres)	1.117	(1.810)	1.168	(1.838)	
	No. agricultural parcels accessed	1.918	(1.008)	1.718	(1.067)	*
	1=HH rents land	0.031	(0.174)	0.085	(0.279)	***
	Land area rented (acres)	0.023	(0.184)	0.215	(1.545)	**
	1=HH possesses purchased land	0.450	(0.498)	0.747	(0.435)	***
	Land area purchased (acres)	2.135	(6.316)	3.825	(6.200)	***
	1=HH has bought land (2008-13)	0.132	(0.339)	0.351	(0.478)	***
	1=HH has sold land (2008-13)	0.058	(0.233)	0.114	(0.318)	**
Basic characteristics	1=Female-headed	0.146	(0.353)	0.106	(0.307)	***
	No. working age adults	2.163	(1.146)	2.305	(1.429)	
	Proportion dependents in HH (below 15 or above 59 years)	0.512	(0.247)	0.534	(0.249)	
	Head's age	42.489	(16.297)	46.811	(15.720)	***
	1=HH member completed primary school	0.760	(0.427)	0.588	(0.493)	***
	1=HH member's occupation is non-agricultural	0.139	(0.347)	0.162	(0.369)	
	1=Iron roof	0.748	(0.434)	0.627	(0.484)	***
	Value farm equipment (ln)	6.211	(4.413)	4.920	(4.502)	***
	Value livestock (ln)	7.942	(5.836)	8.650	(5.922)	
	Value non-farm assets (ln)	10.172	(4.099)	9.915	(4.354)	
	1=Nyambo tribe (head)	0.614	(0.487)	0.215	(0.411)	***
	1=Subi tribe (head)	0.140	(0.348)	0.046	(0.209)	***
	1=Sukuma tribe (head)	0.026	(0.159)	0.181	(0.386)	***
	1=Ha tribe (head)	0.069	(0.254)	0.262	(0.440)	***
Observations		1,080		587		

Note: Asterisks denote significance levels of a t-test for the difference in means. *** p<0.01, ** p<0.05, * p<0.1

^a Land accessed refers to all modes of access, including land owned, rented, and borrowed.

Table 3.4 Characteristics of migrant household heads

	(1)		(2)		(3)		Test (2) = (3)
	All migrant heads Mean	SD	Male heads Mean	SD	Female heads Mean	SD	
Age at time of move	30.738	(13.380)	30.179	(13.234)	34.531	(13.874)	*
No. years in current village	18.124	(12.928)	17.929	(12.653)	19.446	(14.704)	
Marital status							
1=Married	0.824	(0.381)	0.940	(0.239)	0.038	(0.192)	***
1=Widowed	0.094	(0.292)	0.022	(0.148)	0.581	(0.495)	***
1=Divorced or separated	0.054	(0.226)	0.016	(0.125)	0.314	(0.465)	***
1=Never married	0.028	(0.165)	0.022	(0.148)	0.067	(0.250)	
1= Moved after marriage ended, if widowed or separated	N/A		N/A		0.387	(0.488)	N/A
Previous community							
1=Same district	0.365	(0.482)	0.360	(0.481)	0.398	(0.491)	
1=Kagera region	0.184	(0.388)	0.190	(0.393)	0.144	(0.352)	
1=Tanzania	0.414	(0.493)	0.422	(0.495)	0.357	(0.480)	
1=Another country	0.037	(0.190)	0.028	(0.165)	0.101	(0.302)	
1=Previous community was rural	0.983	(0.129)	0.992	(0.087)	0.920	(0.272)	**
Travel time (hours)	3.856	(3.339)	3.752	(2.917)	4.555	(5.358)	
Cost of transport (10,000s TSh)	13.247	(28.586)	13.635	(30.292)	10.611	(12.002)	
1=Plans to return	0.064	(0.246)	0.065	(0.248)	0.058	(0.235)	
Reason for leaving previous community							
1=Work-related	0.082	(0.020)	0.077	(0.022)	0.116	(0.040)	
1=Marriage ^b	0.038	(0.016)	0.020	(0.018)	0.164	(0.037)	***
1=Other family reasons	0.132	(0.022)	0.105	(0.024)	0.315	(0.048)	***
1=Poor services (housing, water)	0.088	(0.023)	0.088	(0.026)	0.089	(0.024)	
1=Inadequate access to land	0.523	(0.041)	0.579	(0.046)	0.146	(0.033)	***
1=Poor quality land	0.055	(0.017)	0.045	(0.016)	0.128	(0.063)	
1=Following parents	0.070	(0.026)	0.076	(0.029)	0.029	(0.019)	**
1=Other	0.011	(0.005)	0.011	(0.006)	0.014	(0.008)	
Means of financing the move							
1=Savings	0.749	(0.034)	0.763	(0.038)	0.656	(0.061)	
1=Sold land	0.092	(0.021)	0.084	(0.021)	0.145	(0.063)	
1=Sold other assets	0.117	(0.026)	0.107	(0.030)	0.181	(0.039)	*
1=Borrowed from friends/ relatives	0.001	(0.000)	0.000	--	0.005	(0.004)	
1=Borrowed from bank/ moneylender	0.028	(0.012)	0.031	(0.014)	0.003	(0.003)	*

Table 3.4 (cont'd)

1=Other	0.014	(0.009)	0.014	(0.011)	0.009	(0.009)
Observations	397 ^a		196		201	

Note: Asterisks denote significance levels of a t-test for the difference in means. *** p<0.01, ** p<0.05, * p<0.1

^a Information in this table was collected only in 2014. For this reason, the number of observations is lower than in econometric analyses.

^b A migrant respondent may report having moved for marriage, though, by definition, their spouse was not originally from the current village. For example, a young couple may relocate to a new community and while the husband reports an economic motive, the wife may still consider marriage to be her reason for migration.

3.5 Econometric analysis

To explore whether the rate of land market activity influences the prevalence of migrants in a village, we use the following equation:

$$M_v = \Phi(\alpha + \beta_1 LM_v + \beta_2 V_v + \varepsilon_v) \quad (3)$$

where M_v is the proportion of migrant households in village v , LM_v is a measure of land market activity that could plausibly be related to historical (long-term) rates of in-migration, V_v is a vector of village characteristics that could influence migration decisions, and ε_v is a stochastic error term. The betas are parameters to be estimated, with β_1 the coefficient on our key variable of interest. In this section, village-level models cluster standard errors at the ward level,⁴⁶ while household models cluster at the village level. Because the dependent variable is a proportion, a fractional response generalized linear model (FRM) is used (Papke and Wooldridge 1996).

As market activity can be captured in many ways, Table 3.5 reports the β_1 coefficients of equation (3) for a variety of measures of the prevailing 2013 activity levels. For example, in the first row, the level of land market activity is measured as the proportion of households that rent or possess purchased land.⁴⁷ Results point to a positive and significant correlation between land market activity and the prevalence of migrants, and this is true when market activity is restricted to purchases or rentals, and when it is measured as a proportion of land area or land parcels accessed or transacted over the market.⁴⁸ Note that the results of Table 3.5 do not imply causality, as they may be a function of the migrants' behaviors or may be influenced by omitted variables that are correlated with both migration trends and the development of a land market. However, these results demonstrate that the presence of migrants is tightly tied to the land market.

⁴⁶ A ward is an administrative unit comprised of several villages. There are 35 wards in our study site.

⁴⁷ Full results of key models from Tables 3.5 and 3.6 are given in Appendix 3B. A robustness test of Tables 3.5 and 3.6 using OLS produces generally consistent results (Appendix 3D).

⁴⁸ The decision to restrict our definition of land rental to exclude 'borrowed' land is intended to accurately capture their monetary value. However, a robustness check of key results from section 3.5, using a broader definition of rentals, is given in Appendix 3C.

Table 3.5 Prevalence of migrants and rates of land market activity (FRM)

	Proportion migrant households
Proportion HHs engaged with the land market	0.552*** (0.000)
Proportion HHs that possess purchased land	0.512*** (0.000)
Proportion HHs that rent land	0.794*** (0.000)
Proportion HHs that bought or sold land (2008-13)	0.424*** (0.000)
Proportion land area accessed through the market (purchased or rented)	0.395*** (0.000)
Proportion parcels transacted as sales (2008-13) or rentals (2013)	0.683*** (0.000)
Proportion parcels bought or sold (2008-13)	0.608*** (0.000)
Proportion parcels transacted as rentals (2013)	0.898*** (0.000)
Value of land sales (2008-13) (100 millions TSh)	0.002 (0.280)
Value of land rentals (2013) (100 millions TSh)	0.180 (0.425)
Village controls in all regressions	Y
Observations	139

Average partial effects; p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Note: Each coefficient is drawn from a separate regression that includes just one measure of land market activity.

As migrants tend to participate in the land market, the market activity variable in equation (3) is susceptible to reverse causality. This is because in-migration can intensify land pressure and increase the demand for rented/ purchased land, positively influencing the level of local market activity (Koussoubé 2013; Mwesigye et al. 2014).⁴⁹ For this reason, we next explore the relationship between village levels of land market activity in 2013 and subsequent rates of migration from 2013-2014. Here, the key regressor precedes the time interval of our dependent variable, thus avoiding the possibility of reverse causality.

The equation is:

$$M_{v,2013-14} = \Phi(\alpha + \beta_1 LM_{v,2013} + \beta_2 V_{v,2013} + \beta_3 T_v + \varepsilon_v) \quad (4)$$

where $M_{v,2013-14}$ is the proportion of households that have migrated in or out over the year prior to the 2014 survey, and $LM_{v,2013}$ is land market activity in 2013. Although not the focus of this paper, an indicator for village assignment to receive the randomized legal aid intervention (T_v) in 2013 is also included as a control. Using a set of market activity measures that could plausibly influence rates of short term migration, Table 3.6 reports the key coefficient, β_1 , from each FRM.

In column 1, the rate of in-migration is estimated as the ratio of immigrant households to the 2013 village population. Results indicate that the proportion of households that rent land is positively correlated with the rate of in-migration, which is consistent with our hypothesis that the rental market eases a household's entrance to a new community. This pattern is also found for other measures of rental activity, including the proportion of parcels rented in 2013, and the value of these rentals. With the rate of out-migration as the dependent variable (column 2), there is again a clear link between levels of rental and sales activity and the subsequent rate of out-migration. Note that villages with active rental markets may be sites of churning, with short-term residents streaming in and out. Nevertheless, a comparison of coefficients reveals that the coefficients for rental market are larger for in-migration, while the sales market is more strongly related to out-migration. This suggests that it may be easier for an emigrant to

⁴⁹ For equation (3), we were unable to identify a suitable instrumental variable in the dataset to isolate exogenous variation in land market activity.

dispose of land rather than become an absentee landlord, given the difficulty of monitoring a tenant from a distance.

Table 3.6 Land market activity (2013) and rates of in- and out-migration (2013-2014) (FRM)

	(1) Proportion in-migrants	(2) Proportion out-migrants	Test [(1) = (2)] P > χ^2	Sig.
Proportion HHs that rent land (2013)	0.065*** (0.000)	0.030** (0.039)	0.097	*
Proportion HHs that have either bought or sold land (2008-13)	0.010 (0.172)	0.015 (0.185)	0.606	
Proportion parcels transacted as sales (2008-13) or rentals (2013)	0.023 (0.138)	0.032** (0.013)	0.397	
Proportion parcels that were bought or sold (2008-13)	-0.003 (0.834)	0.022* (0.092)	0.039	**
Proportion parcels transacted as rentals (2013)	0.089*** (0.002)	0.050** (0.010)	0.251	
Value of land sales in village since 2008 (100 millions TSh)	-0.000 (0.501)	0.000 (0.206)	0.049	**
Value of land rentals in village in 2013 (100 millions TSh)	0.031** (0.016)	0.019 (0.114)	0.453	

Average partial effects; p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Village controls included in all regressions; Observations = 139

Note: Each coefficient is drawn from a separate regression. Thus, column 1 includes the key coefficient from 7 different models.

As a robustness check on the previous village-level analysis, we now turn to a household-level regression. The prevailing level of market activity in a village is beyond a household's control and unlikely to reflect reverse causality with the household's own migration decision. Note that this scale of analysis may be most appropriate for the partial equilibrium framework presented in equation (1), as prices are assumed to be exogenous to any individual household. Unfortunately, we lack longitudinal data regarding market activity at the destination *before* a household arrives. In order to minimize the potential for endogeneity, land market activity is estimated as a proportion of other households in the village engaged with the market, excluding each household in turn. The equation is:

$$M_{iv} = \Phi(\alpha + \beta_1 LM_{v(N \neq i)} + \beta_2 \mathbf{X}_{iv} + \beta_3 \mathbf{V}_v + \varepsilon_{iv}) \quad (5)$$

where M_{iv} is the migrant status of household i in village v (1=migrant, 0=ative), $LM_{v(N \neq i)}$ is a measure of land market activity among N neighbors (excluding household i), $\mathbf{X}_{iv}$ is a vector of household

characteristics, V_v is a vector of village characteristics, and ε_{iv} is a stochastic error term. Table 3.7 provides the results for a set of probit regressions with different measures of land market activity. Results indicate that no matter how neighbors' land market activity is defined, it is a positive and usually significant correlate of a household's own migrant status. This does not definitively imply causality, as it remains possible for a migrant household to facilitate future migration to a village, effectively influencing the neighbors' status and likelihood of market participation. However, this result is at least consistent with our hypothesis that migrants are more likely to select villages with an active land market.⁵⁰

Finally, the relationship between land markets and migrant status may differ for men and women if there are gendered determinants of market participation (Wineman 2015). We therefore explore this relationship using equation (5), with an additional term for the interaction of female-headed household and neighbors' market activity (Table 3.8). Note that a household's current classification as female-headed does not necessarily imply that it was headed by a woman at the time of migration. The interaction term is negative and significant for the interaction with neighbors' market activity (column 1), and the term remains significant when sales activity is considered separately (column 3). This indicates that, compared to male-headed households, the association between migrant status and the land market is less important for households led by women. Perhaps this is because women have limited access to capital or are somewhat excluded from the land market, rendering it peripheral to their migration decisions.

⁵⁰ Although not reported here, no significant results are found when this analysis is repeated for out-migrant status (i.e. when the dependent variable indicates whether a surveyed household has left the village by 2014).

Table 3.7 Household migrant status and land market activity in village (probit)

	Migrant status (1 = Migrant)			
	(1)	(2)	(3)	(4)
Proportion neighbors engaged in land market	0.328*** (0.000)			
Proportion neighbors that rent land (2013)		0.479*** (0.008)		
Proportion neighbors that possess purchased land			0.290*** (0.000)	
Proportion neighbors that have bought or sold land (2008-13)				0.248*** (0.002)
Female-headed household	-0.115*** (0.000)	-0.117*** (0.000)	-0.117*** (0.000)	-0.117*** (0.000)
Number working-age adults in HH	-0.022** (0.046)	-0.022** (0.046)	-0.022** (0.050)	-0.022** (0.048)
Proportion dependents in HH	-0.141** (0.022)	-0.135** (0.023)	-0.140** (0.023)	-0.137** (0.023)
Head's age	0.020*** (0.000)	0.019*** (0.000)	0.020*** (0.000)	0.019*** (0.000)
Head's age (squared)	-0.000*** (0.001)	-0.000*** (0.001)	-0.000*** (0.001)	-0.000*** (0.002)
1=HH member has completed primary school	-0.107*** (0.003)	-0.109*** (0.003)	-0.110*** (0.002)	-0.115*** (0.002)
1=HH member has primary occupation that is non-agricultural	0.168*** (0.000)	0.165*** (0.000)	0.172*** (0.000)	0.167*** (0.000)
1=HH dwelling has an iron roof	0.016 (0.664)	0.013 (0.714)	0.017 (0.647)	0.012 (0.742)
Value farm equipment (ln)	-0.001 (0.855)	0.001 (0.877)	-0.001 (0.767)	-0.000 (0.970)
Value livestock (ln)	0.003 (0.273)	0.002 (0.374)	0.003 (0.238)	0.002 (0.403)
Value non-farm assets (ln)	0.008** (0.023)	0.008** (0.034)	0.007** (0.030)	0.007** (0.038)
Land owned (acres)	-0.005** (0.018)	-0.005** (0.016)	-0.005** (0.020)	-0.005** (0.026)
1=Nyambo tribe	-0.283*** (0.000)	-0.273*** (0.000)	-0.277*** (0.000)	-0.265*** (0.000)
1=Subi tribe	-0.240*** (0.000)	-0.277*** (0.000)	-0.248*** (0.000)	-0.277*** (0.000)
1=Sukuma tribe	0.255*** (0.000)	0.240*** (0.000)	0.263*** (0.000)	0.256*** (0.000)
1=Ha tribe	0.133** (0.012)	0.124** (0.016)	0.138** (0.012)	0.126** (0.019)
Village controls	Y	Y	Y	Y
Observations	1,667	1,667	1,667	1,667

Average partial effects; p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 3.8 Gendered patterns of household migrant status and land market activity in village (probit)

	Migrant status (1 = Migrant)			
	(1)	(2)	(3)	(4)
Proportion neighbors engaged in land market	0.372*** (0.000)			
FHH * Proportion neighbors engaged in land market	-0.318*** (0.007)			
Proportion neighbors that rent land		0.525*** (0.008)		
FHH * Proportion neighbors that rent land		-0.362 (0.185)		
Proportion neighbors that possess purchased land			0.330*** (0.000)	
FHH * Proportion neighbors that possess purchased land			-0.286** (0.024)	
Proportion neighbors that have bought or sold land (08-13)				0.258*** (0.002)
FHH * Proportion neighbors that have bought or sold land (2008-13)				-0.077 (0.533)
Female-headed household	0.070 (0.300)	-0.098*** (0.003)	0.039 (0.567)	-0.097** (0.029)
Other HH characteristics	Y	Y	Y	Y
Village controls	Y	Y	Y	Y
Observations	1,667	1,667	1,667	1,667

Average partial effects; p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

3.6 Narratives of migration

The qualitative data for this paper come from a set of semi-structured, in-depth interviews and focus group discussions held in September 2014. We randomly selected four villages in each district, stratifying our selection by distance from the district headquarters in order to include both remote and accessible villages in the sample (Table 3.9). The selection of respondents based on key variables (e.g. gender, village remoteness) that are likely to influence views on migration is termed a ‘maximum variation sample’. Although not statistically representative, this approach aims to enhance the sample’s credibility and minimize bias, with an analytical focus on patterns that cut across the heterogeneity (Patton 2015, pg. 283). In each village, we interviewed approximately two people who had migrated from elsewhere, and

one or two people in households from which someone had previously migrated, bringing the sample to 31. Respondents were identified with the assistance of village leaders.

Table 3.10 provides basic characteristics of the respondents, with detailed information for the 20 migrants whose narratives ultimately form the basis of this analysis. The sample captures a wide range of ages, years resident in the current village, and estimated wealth levels. However, while 17% of migrant household heads in the general sample had arrived within the previous 5 years, this is the case for 45% of qualitative respondents. For those below 35 years of age, these figures are 24% and 40%, respectively. It thus seems this exercise can shed the most light on current migration dynamics, with a less pronounced historical perspective. Interviews were structured by interview guides (Appendix 3E), and migrants (or their family members) recounted the movements they followed to arrive at their current village and what was done to retain, dispose of, or acquire land. Gender-disaggregated group discussions were also held in three randomly-selected villages (see Table 3.9) regarding community experiences with migration.

Table 3.9 Villages included in qualitative data collection

Study sites	Village description	Population (no. households)	Travel time from district headquarters (hours)
Karagwe District			
Katembe	Public transport readily available	881	0.5
Igurwa	Reachable only by motorbike	425	1.25
Chabalisa	Difficult to find public transport	660	2
Kamagambo ^a	Very difficult to find public transport	1,300	2.5
Biharamulo District			
Nyakanazi ^a	Town characteristics (daily market, crowded)	2,272	1.5
Kiruruma	Road passable only by motorbike, no phone reception	750	0.5
Chebitoke	Town characteristics (daily market, crowded)	463	1.5
Nyabugombe ^a	Remote, no phone reception	633	2.5

^a Sites of focus group discussions

Table 3.10 Respondent characteristics from qualitative data collection

Migrants									
Migrant status	No.	Gender	No.	Age	No.	Years in current village	No.	Wealth Score ^a	No.
Migrants	20	Men	13	< 25	3	< 2	5	1	5
From sending HHs	11	Women	7	25-35	5	2-5	4	2	4
				35-45	4	5-10	3	3	6
				45-55	4	10-15	4	4	5
				≥ 55	4	≥ 15	4	5	0

^a Score assigned to each respondent based on their clothes, house materials, and narrative. 1= Mud walls and few possessions, 5= Nice clothes and soft furniture in house. No migrant respondents received a score of 5, though migrant-sending households did.

The first theme to emerge from these conversations is the ease with which migrants shift from village to village, and the extent to which they maintain ties to multiple communities. As one respondent stated, “*moving from one place to another was normal for me.*” Many had moved more than once, almost always between rural areas, and it was evident from focus group discussions that such migration (while not entirely free of conflict) is regarded as neither shameful nor alarming. Perhaps this can be attributed to Tanzania’s long history of nation-building accompanied by villagization, which itself entailed large-scale rural migration. Eight of the 20 migrant respondents retain a claim to some property in their original villages, even if they have not returned for years or decades. This seems to leave open the possibility of return, should it someday become the migrant’s most favorable option. It further demonstrates that emigration, in its current form, does not necessarily imply a severance of community ties. While rural-rural migration is far from new, the focus groups consistently highlighted the manner in which immigration (particularly from regions to the south) has increased within the past 10-15 years.

The qualitative investigation indicates that the land market enhances labor mobility, as illustrated through the life stories of two respondents. In the first case, Abraham⁵¹ initially married in a rural area of Mwanza region, but determined that his prospects as a farmer, given the available clan land, were poor. For this reason, he moved to the natal village of his wife, where her family provided the new couple with land. However, this borrowing arrangement was not without tension, and his brothers-in-law would chastise him and claim his farm as their own. In response, Abraham and his family moved again, this time using his savings to purchase land in a new village. With his own farm and an entrepreneurial spirit, Abraham began marketing his products. Unfortunately, the poor infrastructure made it difficult to transport crops, inhibiting his ability to expand the farming business. Once more, Abraham moved to a new village, and once more, he turned to the land sales market in the process. This time, he was able to sell his first farm in order to finance the move, saying “*when I shifted, I sold [that land] ... The money I got, I used it to buy this land here. It was like an exchange.*” As will be discussed, Abraham’s story

⁵¹ Names of respondents have been changed to protect their identities.

demonstrates both the manner in which the land market enhances rural mobility, and the way restrictions on the market made his journey more difficult.

In the second case, Aisha had been living with her husband and children in another district within the Kagera region. However, her marriage was turbulent and she was beaten by her husband. Leaving the children in their father's care, she left her husband and went to stay with a brother in town. Yet Aisha was not satisfied in the custody of her brother, saying "*from there, I began looking for my own life.*" A neighbor had earlier moved to a particular village and alerted Aisha that the soil there was fertile and she could easily get ahold of land. Aisha rented a farm when she first moved to her current village, though she purchased land after just one season and has periodically expanded her farm ever since. It should be noted that she seemed to come from a relatively wealthy family, having received a sizable inheritance and assistance from her siblings. Nonetheless, Aisha's story demonstrates how the land market can (in some cases) improve the mobility of women, enabling them to exit an unhappy marriage and establish a new, independent life elsewhere.

These two stories exemplify the role that land markets sometimes play in migration decisions. First, migrants often refer to declining land availability as their motivation to migrate, noting that the family or clan land left behind could not provide for a growing population. As one respondent stated, "*my expectations were to find more land... That place was not enough to accommodate all of us, so we had to move somewhere else.*" Though few respondents had sold land in the process of moving (consistent with our quantitative findings (Table 3.4)), a majority have engaged with the market at their destination. While we did encounter migrant laborers who arrived without resources to rent or purchase land, most migrants seem intent on putting down roots. As well, some migrants initially rent land while they 'scope out' the local land market to eventually make a purchase. This was reflected in the narrative of a native focus group participant. "*I knew nothing about [this place]. What I knew was it was private land. If you had money, you would go and ask them to sell part of their land to you.*" In one instance, a migrant even claimed that what he knew of his village before arriving was *only* that the land market is well-functioning

and impersonal. *“I knew nothing about [this place]. What I knew was it was private land. If you had money, you would go and ask them to sell part of their land to you.”*

However, another lesson drawn from this exercise is that the availability of land through the market is one among several reasons for selecting a destination. In fact, this decision is couched without a web of other concerns and priorities. Thus, migrants consider the availability of land from a range of sources, with some sparsely-settled villages actively recruiting immigrants through the provision of free land. The market is evidently not the only source of land for newcomers. To map the reasons for selecting a rural destination, we categorize migrant respondents as either ‘un-endowed’ (those who arrive without a resource base on which to build a new life) or ‘endowed’. In the first category, migrants at least initially work as farm laborers, selecting a destination with exclusive consideration of agricultural job opportunities. Among 6 respondents who arrived as laborers, just one has since purchased land, though others also expressed plans (or dreams) to do so. In contrast, endowed migrants select a destination with concern for the land market, but also access to markets and non-agricultural services, such as schools, infrastructure, and security. Such migrants are hesitant to move to remote areas with ample and inexpensive land if a lack of neighbors leaves them vulnerable to banditry, and a lack of services (e.g. phone reception) precludes economic mobility. A large majority of rural migrants engage with the rental or sales market. Yet their decisions are guided by myriad concerns and priorities, among which the land market is but one consideration.

Earlier we saw that the vibrancy of the sales market is a correlate of out-migration (Table 3.6). This might reflect the way households that are able to liquidate their land wealth are more likely to go in search of a better life. However, just a small fraction of migrants finance their move with land sales (Table 3.4), and in our qualitative research, we similarly find that few respondents had sold land before moving. While some respondents did buy land from emigrants, the focus groups did not describe this as common. There are several explanations for this pattern. First, it seems that emigrants face normative pressures to leave their land for the family members left behind. In other words, when a migrant seeks his personal betterment, he feels obligated to provide for those back home, and this extends beyond

remittances to include the provision of land. As one migrant explained, *“I won’t sell because I still have my siblings, my sisters and brothers. I may give it to them rather than selling.”* A second reason to retain land is that it serves as insurance if a migrant is unsuccessful. Many respondents seem comfortable claiming land in multiple villages precisely because they value the protection this provides, should a marriage fall apart (for women) or one’s livelihood otherwise decline. For this reason, some migrants only sell land in a former village once they’ve established a secure livelihood in their new home. Interviews with migrant-sending households indicate that people frequently watch over their relatives’ land when they are gone.

The third reason that migrants do not sell land more readily is that, where possible, the clan restricts such sales. According to one migrant, *“That wealth belongs to the tribe. You cannot sell inherited property. That wealth is different from your home you bought with your own money. With yours, you can do whatever you want because it’s your property. [But with] family property, someone else within the family may use that land. That’s why we never sell inherited property.”* Along these lines, Abraham (above) was unable to sell land upon his first migration because the clan did not allow individuals to dispose of land, ostensibly to provide emigrants with a contingency plan. He explained, *“We had a meeting with the clan members and agreed that we should not divide this land, so that anyone who goes out to look for life, if he feels like coming back, he can use this land.”* This seemingly well-intentioned gesture is what Hoff and Sen (2005) would refer to as an “exit barrier”. If ambitious migrants are likely to sever ties with their community, leaving the left-behind members worse off, a kin system may respond by raising the cost of emigration. And where land liquidity facilitates migration, this may take the form of restrictions on the market. In Abraham’s case, the clan prohibited all sales,⁵² but a clan can alternately require that preference be given to clan members, even as the prices of intra-clan transactions tend to be considerably below market value. Several respondents seem relieved to pass their land to another clan member, thinking the buyer likely to someday return the favor. Some respondents had grudgingly sold

⁵² We encountered one migrant who purchased land that was confiscated when the clan nullified the sale to a non-clan member. However, sales to non-clan members (albeit with the clan’s approval) do seem to be common.

land for this lower price, while others compared the value of holding onto the land against the diminished reward from selling it, and found the former to outweigh the latter.

Our qualitative findings ultimately extend beyond the scope of this paper, touching on perceptions of the land market; the diverse range of transactions lying behind a survey categorization of ‘purchase’, ‘rent’, or even ‘inherit’; and how land exits and re-enters the customary system. This exercise captures the challenges of empirical research on land access in rural Africa, as the definitions and ‘rules’ of land transactions are quite difficult to pin down. However, the interviews do illustrate how commonly migrants engage with the land market and, to some extent, factor this opportunity into their migration decisions.

3.7 Conclusions

This paper contributes to the limited evidence on rural-to-rural migration by highlighting its prevalence in northwestern Tanzania. We show that the rural population is quite mobile, with over one third of households classified as migrants. Many seem to have settled in their new communities for the long term, indicating that such migration is not a temporary response to distress, but rather a fundamental element of rural life. This refutes a common assumption that rural communities in Africa are static and largely homogenous, and supports de Haan’s (1999) assertion that analyses of migration should be integrated into those of agricultural development. Furthermore, we find that the dominant reason for leaving a community is the desire for more and higher-quality land, revealing a deep-seated concern for farmers. Qualitative evidence indicates that, while intra-regional migration is not new, the Kagera region has recently experienced an uptick in the inflow of immigrants from the south. Thus, migration is becoming increasingly salient.

To explore the connection between land markets and migration trends, this paper includes both village- and household-level models and attempts to address the potential endogeneity of market activity through a sequential model of short-term migration and the measurement of neighbors’ market activity.

Results point to a consistently strong relationship between market activity and migrant flows. With regard to short-term migration, sales activity is a stronger determinant of out-migration, while rental activity is more strongly related to in-migration. This is consistent with the notion that migrants avail themselves of the rental market before permanently settling in a community (which is also borne out by the qualitative analysis), while enhanced liquidity of land wealth facilitates out-migration. Along these lines, a household's migrant status is correlated with village land market activity, though this seems to be less true for female-headed households. As the level of market activity in Kagera is rising, a pattern evident even within this short time span, it seems the relevance of markets to migration decisions will only intensify.

The additional insights uncovered in our qualitative analysis confirm the value of supporting quantitative analysis with qualitative methods, particularly when exploratory research is necessary. In a mixed-methods framework, we have sought to exploit both the representativeness and statistical power of quantitative work, and the depth and nuance of qualitative work. The interviews situate our hypotheses in a human context by incorporating the voices of rural migrants, whose very existence is often overlooked in the literature. We observe how the land market 'greases' the rural landscape, making it easier for aspiring residents to seek a better life elsewhere. Yet it also becomes apparent that social norms and complicated dynamics regarding customary authority affect the operation of land markets. Although the complexity of qualitative analysis was at times cumbersome, this approach certainly advanced our understanding of the topic.

Several policy implications can be drawn from this analysis. First, it underscores the importance of migration for rural livelihoods. As farmers in Kagera choose to migrate when faced with land pressure, it seems this can be an effective response. This may be particularly true for Tanzania, where population densities are lower than some neighboring countries, and historical efforts at nation-building have (to a large extent) supplanted local, tribal allegiances with a unified national identity. Second, this paper spotlights the development of a rural land market as a potential policy pathway through which population mobility can be facilitated. As migration has also been found to improve economic outcomes across a

range of settings (Mckenzie et al. 2009; Beegle et al. 2011; de Brauw et al. 2013), policies that facilitate mobility have direct implications for economic growth and poverty alleviation. Such policies can support the land market through improved access to market information (especially over a long distance) and well-defined property rights. It is imperative to develop an efficient system to address land disputes, as the moment that land exchanges hands is also a moment where boundaries may be revised or contested, and this is most pertinent to land sales with outsiders.

Third, note that the rental market in Kagera is less active than might be expected alongside such a prevalent sales market. In one village, we even observed the public posting of rental contracts with newcomers, indicating that such transactions are considered most risky. Given the importance of the rental market to rural migration, policies to support this market may be especially effective at facilitating migration. This can take the form of legal innovations to protect landlords or the dissemination of information on rental contracts that effectively deter disputes. Finally, as the link between migration and land markets is somewhat weaker for women, it seems the market does not function well as a conduit for migration among female-headed households. This may reflect the constraints women face in accessing the land market, particularly where they lack an established social network. Policies to support the land market should ensure that women have equal access to its rewards.

Because this study is a cross-sectional analysis, we are unable to capture the decision sequence whereby households might respond to land market opportunities by migrating. A more complete study would draw from longitudinal data that tracks migrants and their land market behavior over time and also documents the historical rates of market activity at both origin and destination. In actuality, longitudinal surveys often do not track emigrant households, and those that do follow emigrants fail to collect detailed information on their communities of destination. As well, longitudinal surveys generally do not include additional observations as new households enter the community. Yet this information is critical to understand the sequence of migration decisions. In a highly mobile region such as Kagera, it should be possible to collect community- and household-level data over several years in order to map out, and better

understand, the flows of rural-rural migration. Finally, if an instance of exogenous variation in land liquidity is identified, then its effects on migration can be more deeply explored.

APPENDICES

Appendix 3A General equilibrium considerations in understanding migration trends and land markets

The hypothesis tested in this paper is derived from a stylized, partial equilibrium model, and this appendix summarizes some of the general equilibrium considerations not addressed in our model. Recall that, according to the conceptual framework, a household will migrate when it faces a positive expected return from the move (equation (1)). This value is a function of known household incomes at the locations of origin and destination, as well as a one-time cost of migration. In turn, the cost is determined by the prices of land at the two locations, and the search costs required to identify an exchange partner.

From the perspective of a single household making a migration decision at a given time, prices are rightly treated as exogenous. However, in a longer term study migration flows, prices may be more accurately represented as a function of total migration in and out of a given village. Particularly where land can be openly exchanged, out-migration from a village pushes out the supply curve in the local land market, leading to a reduction in prices. On the other hand, in-migration pushes out the demand curve, resulting in a price increase. The extent to which either of these flows dominates the other will influence land prices in a general equilibrium framework. Furthermore, the level of land market activity can influence prices if a village of low market activity is more likely to exhibit a non-competitive market, with correspondingly higher land prices.

As well, in a dynamic framework with all markets working perfectly, one might expect migration patterns that reflect local incomes to also affect prices, such that land prices across locations eventually adjust to diminish the net benefit of migration. This is because prices are likely to be positively correlated with household incomes (determined largely by land productivity in a rural setting). If other households flood into a highly productive village, the price of land will rise, offsetting the gross returns to migration. And if many neighbors desire to leave a low-productivity village, the price of land at the origin will fall, again offsetting the gross returns to migration. These price dynamics may overshadow any effect of land liquidity on migration decisions. Also in a dynamic framework, migration in one period is expected to positively influence the emergence and development of a local land market, as a surge in demand for land

will serve as a ‘shock’ to the institutions that may otherwise prohibit land sales. Migration flows into a region can also reduce the search costs faced by other households in the next period. These dynamics add considerable complexity to larger-scale and longer-term patterns of migration. While general equilibrium considerations do not detract from the strong correlations found in this paper, they do suggest that migration dynamics may be more accurately represented in a general equilibrium model.

Appendix 3B Full results of key models

Table 3B.1 Migration and land market activity (FRM full results)

	(1) Proportion migrants (2013)	(2) Proportion in- migrants (2013-14)	(3) Proportion out- migrants (2013-14)
Proportion HHs engaged with the land market (2013)	0.563*** (0.000)		
Proportion HHs that rent land (2013)		0.065*** (0.000)	0.030** (0.039)
1=Village is in Karagwe	-0.014 (0.872)	-0.018 (0.234)	0.006 (0.629)
Number of HHs in village (100s)	0.001 (0.898)	0.002* (0.052)	0.000 (0.638)
Population density (HHs/ km ²)	0.000 (0.424)	0.000 (0.649)	-0.000 (0.608)
Median value of land acre (ln)	-0.098*** (0.004)	-0.001 (0.801)	-0.007 (0.149)
Land accessed per capita (acres)	-0.035** (0.028)	-0.005 (0.120)	-0.005 (0.104)
1=Land is available to be allocated in village	0.019 (0.602)	0.002 (0.708)	0.006 (0.273)
1=Village formed during villagization	0.010 (0.812)	-0.007 (0.234)	-0.006 (0.170)
Travel time to main town (hours)	0.004 (0.763)	0.001 (0.741)	0.004 (0.124)
Travel time to phone reception (hours)	0.029 (0.243)	-0.002 (0.793)	0.009 (0.218)
Travel time to motorable road (hours)	0.026 (0.506)	0.003 (0.714)	-0.001 (0.822)
1=Village has primary school	-0.059 (0.280)	-0.007 (0.310)	-0.011* (0.062)
1=Village has weekly market	-0.013 (0.769)	-0.005 (0.116)	0.009 (0.129)
1=Village has pharmacy	0.107** (0.012)	-0.002 (0.676)	-0.008** (0.041)
1=Village has health center	-0.064** (0.012)	-0.001 (0.862)	0.003 (0.428)
1=River used as water source during dry season	-0.023 (0.634)	0.003 (0.616)	0.006 (0.255)
1=Women can inherit land in village	0.085 (0.169)	0.003 (0.574)	0.002 (0.757)
1=Land has been taken for public use, 2008-13	0.086** (0.037)	-0.003 (0.640)	-0.004 (0.537)
1=Village experienced economic crisis, 2008-13	-0.012 (0.771)	-0.009* (0.057)	-0.004 (0.432)
1=Village experienced rise in food prices, 2008-13	0.022 (0.391)	0.001 (0.885)	0.009** (0.034)

Table 3B.1 (cont'd)

1=Village experienced economic development, 2008-13	-0.047 (0.167)	0.005 (0.383)	-0.002 (0.649)
1=Nyambo tribe dominant	-0.177** (0.011)	0.000 (0.974)	-0.014 (0.255)
1=Subi tribe dominant	-0.109** (0.037)	0.005 (0.405)	-0.010 (0.113)
1=Ha tribe dominant	-0.129** (0.020)	0.000 (0.947)	-0.003 (0.643)
1=Village assigned to legal aid treatment (2013)		-0.001 (0.751)	-0.008* (0.059)
Pseudo R-squared	0.186	0.067	0.065
Observations	139	139	139

Appendix 3C Robustness checks for definition of rental

Throughout our econometric analysis, land rentals are defined to exclude parcels that respondents identify as borrowed. However, an argument can be made that the lines between renting and borrowing are blurred, with no transaction being genuinely free of charge (see Wineman 2015). Borrowers clear the land of brush, protect it from fires and animals, and even (somewhat counterintuitively) from encroachment by neighbors. The following tables repeat several key analyses from section 3.5, but with rental defined to include borrowed land. Rental/ borrowing activity no longer predicts short-term migration rates when using a fractional response model (Table 3C.2), though other results are generally consistent with those reported.

Table 3C.1 Prevalence of migrants and rates of rental/ borrowing activity (FRM)

	Proportion migrant households	
	(1)	(2)
Proportion HHs that rent/ borrow land (2013)	0.446*** (0.000)	
Proportion parcels rented/ borrowed (2013)		0.476*** (0.000)
Village controls	Y	Y
Observations	139	139

Table 3C.2 Rental/ borrowing activity (2013) and rates of in- and out-migration (FRM and OLS)

	(1) Proportion in-migrants	(2) Proportion out-migrants	Test [(1) = (2)] $P > \chi^2$ Sig.	
FRM				
Proportion HHs that rent/ borrow land (2013)	0.053 (0.542)	0.028 (0.727)	0.117	
Proportion parcels rented/ borrowed (2013)	0.055 (0.588)	0.028 (0.774)	0.125	
OLS				
Proportion HHs that rent/ borrow land (2013)	0.083*** (0.009)	0.042** (0.015)	0.097	*
Proportion parcels rented/ borrowed (2013)	0.094** (0.020)	0.042** (0.045)	0.068	*

Table 3C.3 Household migrant status and rental/ borrowing activity in village (probit)

	Migrant status	
	(1)	(2)
Proportion neighbors that rent/ borrow land (2013)	0.145 (0.231)	0.157 (0.220)
FHH * Proportion neighbors that rent/ borrow land		-0.109 (0.524)
HH controls	Y	Y
Village controls	Y	Y
Observations	1,667	1,667

Appendix 3D Robustness checks for functional form of key models

Whenever the dependent variable is a proportion, we have used a fractional response model (FRM) in econometric analysis. This appendix presents the results of Tables 3.5 and 3.6 as estimated with OLS. The results are generally quite consistent with those of the FRM.

Table 3D.1 Prevalence of migrants and rates of land market activity (OLS)

	Proportion migrant households
Proportion HHs engaged with the land market	0.602*** (0.000)
Proportion HHs that possess purchased land	0.563*** (0.000)
Proportion HHs that rent land	0.699*** (0.000)
Proportion HHs that bought or sold land (2008-13)	0.431*** (0.000)
Proportion land area accessed through the market (purchased or rented)	0.464*** (0.000)
Proportion parcels transacted as sales (2008-13) or rentals (2013)	0.768*** (0.000)
Proportion parcels bought or sold (2008-13)	0.674*** (0.000)
Proportion parcels transacted as rentals (2013)	0.881*** (0.000)
Value of land sales (2008-13) (100 millions TSh)	0.002 (0.276)
Value of land rentals (2013) (100 millions TSh)	0.164 (0.355)
Village controls	Y
Observations	139

p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Note: Each coefficient is drawn from a separate regression.

Table 3D.2 Land market activity (2013) and rates of in- and out-migration (2013-14) (seemingly unrelated regression)

	(1) Proportion in-migrants	(2) Proportion out-migrants	Test [(1) = (2)] $P > \chi^2$ Sig.	
Proportion HHs that rent land (2013)	0.128** (0.026)	0.044* (0.099)	0.036	**
Proportion HHs that have either bought or sold land (2008-2013)	0.013 (0.103)	0.016 (0.255)	0.852	
Proportion parcels transacted as sales (2008-2013) or rentals (2013)	0.045 (0.209)	0.036** (0.032)	0.743	
Proportion parcels that were bought or sold (2008-2013)	0.005 (0.815)	0.025 (0.131)	0.332	
Proportion parcels transacted as rentals (2013)	0.181** (0.048)	0.066* (0.094)	0.068	*
Value of land sales in village since 2008 (millions TSh)	-0.000 (0.512)	0.000 (0.775)	0.254	
Value of land rentals in village in 2013 (millions TSh)	0.049*** (0.006)	0.016 (0.232)	0.043	**
Village controls included in all regressions	Y	Y		
Observations	139	139		

p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Appendix 3E Interview guides

Table 3E.1 Interview guide for migrants

Introduction

1. Tell me a bit about your **household**.

2. Tell me about the **places you have lived**.

- When and where?

Note: Proceed chronologically from birth, and track time according to respondent's age.

FOR EACH LOCATION

3. Please **describe** [*this place*].

- Rural or urban?
- What were your main livelihood sources?
- What were the good and bad things?

If respondent left this place:

4. Tell me about **leaving** [*this place*].

- Who made the decision that you would move from here?
- How was the decision made? (*e.g. One person's decision, discussion, necessity*)
- Why did you leave [*this place*]?

Note: Listen for land-related reasons (e.g. land scarcity, poor quality land, land conflicts).

- At the time, how did you feel about the move?
- Do you think you will someday return to [*this place*] to live? Why?
- Before you left, did you own **LAND** in [*this place*]?

If yes...

- Please describe your farm in [*this place*].
 - How had you acquired that land?
 - Were you satisfied with the size? With the quality?
- What did you do with it at the time you left? Why?
- Was that an easy or difficult decision? Why?
- Since you left, have you inherited any land in [*this place*]?

If yes...

- What have you done with it? Why?

If respondent either owned land or has inherited land:

- Do you still own land in [*this place*]?

If yes...

- How do you currently manage that land?

If it is possible the respondent will inherit land in this place:

- If you do inherit land here, what do you plan to do with it? Why?

If respondent settled in this place (Questions 5-7):

5. Tell me about **settling in** [*this place*].

- Why did you choose the place of destination?

Note: Listen for land-related reasons.

- How did you learn about it? What did you know before arriving?
- How far is it from [*previous place you lived*]?
- When you first arrived, what were your main livelihood sources?
- When you first arrived, did you access **LAND**?

Table 3E.1 (cont'd)

If yes...

- How much land? Through what avenue? (*Purchase, rent, inherit, etc.*)

If not inheritance...

- How did you learn about this opportunity?
- Did this change over time? (*Did respondent begin renting, but later purchased land?*)

If respondent had land:

- Please describe your farm in [*this place*].
- Did you experience any conflict over land in [*this place*]? Please describe it.

Ask if a female respondent settled in a place because of marriage (i.e. her spouse is/was from this location and she joined him).

6. How did you get together with your husband?

- Who decided that you would marry him? How was that decision made?
- Why choose to marry him?

Note: Listen for reasons related to the husband's wealth and village location.

- Did you want to move to [*this place*]? Why?

Conclusion

7. Sometimes in life, your welfare can vary (*e.g. wealth, health, happiness*).

- Do you feel that your personal welfare is higher/ lower than it would be, had you *not* moved to [*this place*]?
- Do you feel your family's welfare is higher/ lower because you moved to [*this place*]? Why?

Note: Probe for remittances

8. To **conclude** (optional questions)

- Which of these places do you most prefer? Why?
 - Do you have any comments or thoughts you'd like to share about migration?
-

Figure 3E.1 Outline of migrant interviews

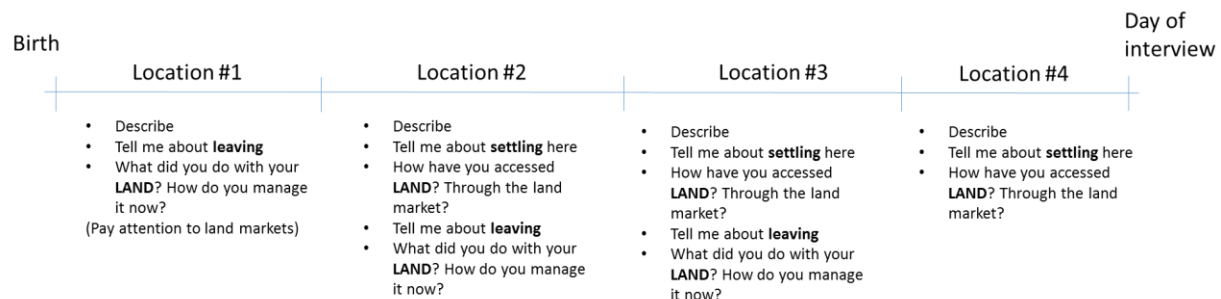


Table 3E.2 Interview guide for members of households that have sent away a migrant

Introduction

1. Tell me a bit about your **household**, including temporary migrants.

- Members
- Sources of livelihood
- Where have your household members lived in the past?
- Where is everyone living now?

For family members that moved for marriage or were children when they lived elsewhere, consider what is appropriate and discuss these topics selectively.

2. For any **member that lives elsewhere**:

- What does s/he do as a livelihood?
- Who decided s/he will live elsewhere? How was that decision made?
- Why did s/he move?
- What would s/he have been doing here, had s/he not gone away?
- Does s/he send remittances? Does your family send money to the migrant?
 - How much? How often?
 - How often are you in contact? (Phone calls/ visits)
- What are the good and bad things of having this person live elsewhere?
- Do you think s/he will someday return to this village to live? Why?

3. A few questions about **LAND**.

- Please describe your farm.
 - Land accessed through what avenues?
 - If you wanted a larger farm, would anything prevent you from achieving that?
- Do you ever **hire labor** to work on your farm?

If yes...

- How do you decide whether to hire labor in a given year?
- How do you decide how much labor to hire?

If no...

- Why not?

- Do you ever **rent out land**, or allow others to borrow land?

If yes...

- How do you decide whether to rent out land in a given year?

Note: Listen for reasons related to migration. Does the respondent rent out land when s/he has fewer household members at home? Does s/he rent in land when she has more household members at home?

If no...

- Why not?

Conclusion

4. Sometimes in life, your welfare can vary (*e.g. wealth, health, happiness*).

- Do you feel that his/her welfare is higher/ lower that it would be, had s/he *not* moved away? Why?
 - Do you feel your family's welfare is higher/ lower because s/he moved away? Why?
-

Table 3E.3 Interview guide for focus groups

Introduction

1. Tell me a bit about your **community**.

- Size
- Diversity of tribes
- Strengths and challenges

2. In the past 12 months...

- About how many households have permanently migrated into, and out of, this community?
- Have these rates of migration changed over the past 10 years?

If yes...

- In what way?
- Why do you think there has been a change?
- Do you feel this is a positive or negative change? Why?

3. A few questions about people **moving in** to this community:

- Where do in-migrants usually come from, before settling in this community?
- Why do you think they choose to settle here?
- What are the steps involved in settling into this community?

4. A few questions about people **moving out** of this community:

- Where do out-migrants usually travel when they leave this community?
- Why do you think they choose to leave?
- What are the steps involved in moving from this community?

5. What are the good and bad things associated with...

- Migrants moving into your community?
- People moving out of your community?

Note: Listen for land-related issues, such as land pressure or land conflicts

6. Tell me about **LAND** in your community.

- Is there enough?
- Do people buy, sell, and rent in/ out land?

If yes...

- Describe these transactions.
- Has this changed in the past 10 years? If yes, why? Is this change a good or bad thing?

If no...

- Why not?

Probe for transactions involving inherited land.

- How is a typical land conflict handled in this community? (Example: border dispute)
 - Is this changing? Why?
 - Does it make a difference if one party is not originally from this community? How?

For women [Questions 7-8]

7. These days, how do women choose a man to marry?

- What do they consider in their decision? (List all factors)

Table 3E.3 (cont'd)

- Has this been changing?
- What are the good and bad things about moving to a new village for marriage?

8. Can women rent in/ rent out/ sell/ buy land independent in [*this village*]?

- What types of women?
- If yes, is it easier or harder to rent/ buy land if you are a woman?
- If not, what stops women from independently renting/ buying land?

Conclusion

9. What do you think your community will be like **10 years from now**?

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