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Yuya KUDO *

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Keywords: Demography, Gender empowerment, Land ownership, Social custom, Social security, Widowhood

JEL classification: J12, J14, K11, Q15, R23

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September 28, 2012

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1 Introduction

Old age security is a global concern of paramount importance for men and women alike, in both developed and developing countries. Nonetheless, it has a far more serious impact on the welfare of women in the developing world, not only because social security programs provided by the government are often in their early stages in less advanced economies, but also due to the fact that, in such economies, women are highly discriminated against with respect to the access to political and socio-economic opportunities.

Despite its evident significance, during the last decade, this issue has not been high on the development agenda. Thus, only recently, the international society has devoted more effort to

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providing residents of low- and middle-income countries with better social protection, as reflected in the UN Social Protection Floor Initiative. One reason for this lack of prior interest may stem from a great difficulty in demonstrating empirically how providing old age security shapes socio-economic outcomes, which is likely associated with researchers' inability to provide subjects with old age insurance in a randomly controlled experiment they conduct for their studies.[1] As a result, researchers have to patiently watch for the timing that the government in developing countries introduces social protection programs, such as pension plans, for the impact evaluation (Morduch, 1999, p.192). Hence, it is not surprising that there is paucity of research in this area, with only a few empirical studies exploring influence of social protection programs on, for example, children's welfare outcomes and the pattern of a household's labor supply and expenditures in Mexico (Nugent and Gillaspy, 1983) and South Africa (Bertrand et al., 2003; Case and Deaton, 1998; Duflo, 2000, 2003).

The pertinent literature indicates that there are essentially two strategies that may allow women in developing economies to obtain social protection in their old age, one of which is investing in their resources from human capital (e.g., children's health and education) to physical capital (e.g., land) as well as social capital (e.g., social relationships with relatives and neighbors). In fact, most previous studies have explored, either empirically or theoretically, the relationship between parents' old age concern and their investment in childbearing (fertility) or children's health and education (Hoddinott, 1992; Jensen, 1990; Nugent, 1985; Seebens, 2009; Zhang and Nishimura, 1993). However, this strategy may not be sufficient for revealing the full extent of this issue, as in less advanced economies women tend to have weak bargaining power within a household. In such cases, household assets are rarely in the hands of females, who, in some societies, often need permission from their husbands just to go outside.

For single females, however, finding a prosperous spouse may be an alternative to the mother's investment strategy. In fact, the relationship between women's old age concern and the pattern of marital formation or dissolution is often observed in several countries. For instance, it seems that an increase in gold prices, associated with international sanctions against Iran's Nuclear Program, has recently led Iranian women that were married against their will, yet were previously hesitant to seek divorce, to pursue marriage dissolution, as their circumstances had changed favorably. The main cause of this change in attitude is believed to be the increased value of *mehr*, a payment from a husband to a wife conditional on termination of marriage and, in Iran, usually stipulated in gold coins in prenuptial agreement (BBC, 2012; The New York Times, 2010).[2] Another example from Bangladesh indicates that the enactment of the Muslim Family Law Ordinance (MFLO) of 1961 increased the equilibrium level of *mehr*, as it provided a husband with a de facto incentive to officially divorce without altering the cost of divorce in case that he desires to separate (Ambrus et al., 2010). In contrast to the mother's strategy, however, most of these examples only indicate that, in the developing world, good marriage, indeed, plays an institutional role as a means of women's old age insurance and, based on the extensive literature review, it appears that, at present, there is no rigorous empirical research explicitly testing this view. Thus, the current study attempts to fill this knowledge gap.

[1] Another reason may be the government's preference to allocate limited budget to a policy targeting young generation over old generation.

[2] `http://www.nytimes.com/2010/12/07/world/middleeast/07divorce.html?pagewanted=all` for the New York Times and `http://www.bbc.co.uk/news/world-middle-east-16813248` for BBC.

Data used in this study is drawn from a five-wave long-term household panel survey conducted in the rural region in northwest Tanzania, Kagera (Kagera Health and Development Survey, KHDS). The first four waves were carried out 6 to 7 months apart during the period between 1991 and 1994, with the final wave carried out in 2004. Historically, whether a widow can inherit her late husband's land has depended upon a customary rule imposed by each village in rural Tanzania, generating some variation in application of the rule across villages. As the data suggests, although in 1991 (wave 1) some villages customarily prohibited widows from inheriting land, by 2004 (wave 5) the discrimination was removed in some areas, following the surge of national excitement about women's land rights in the 1990s. This produces an ideal setting of natural experiment that fits the purpose of the current study.

In traditional marriage characterized by patrilocal residence and clan exogamy prevailing in much of Sub-Saharan Africa, when she marries, a rural woman often leaves her kin to reside with her husband living outside her natal village. Hence, in this region, the choice of partner is partly equivalent to a decision pertaining to the selection of residence. In addition, women who get separated from their husbands tend to experience difficulties in earning a living in (or even returning to) their natal villages, as this sometimes brings conflicts with their male siblings (and their wives). Moreover, in patriarchal societies, daughters are usually not allowed to inherit any properties from their fathers. Therefore, in these systems, it is quite likely that single females would attempt to marry into a village that allows widows to inherit land, because the rule can provide them with social protection in case of their husband's death. Since external females may compete with local ones for marrying males living in such a progressive village, this competition may reduce the cost of getting married for those males (e.g., search cost, bride wealth payments from a man to a woman's family, which is another prevailing tradition in Sub-Saharan Africa). As a result, it is expected that the probability of males marrying is higher in a village that permits a widow's land inheritance than in a village that does not. In line with this view, by exploiting the above experimental situation, this paper will show that removing discrimination against widows regarding land inheritance in a village increased the marital probability of males living in the village.

Implicitly, this hypothesis builds upon an assumption that old age is a remarkable concern for females in rural Tanzania. Regarding this point, Figure 1 presents the proportion of wedded population by age and sex, based upon data sourced from Tanzania Population and Housing Census 2002. For example, approximately 24% of females aged 15-19 years were formally married or living together with their partners in contrast to the corresponding figure of 3% for males, suggesting that women marry younger than males do. However, there were fewer females aged 35 years or above that were in the wedded relationship compared to males, suggesting that women's separation from their husbands starts around that age and is partly driven by a husband's death resulting from commonly observed age differences between spouses[3] and sexually transmitted diseases (STDs).[4] Combining these findings with women's life expectancy at birth, which was 51.04 years in 2002 (National Bureau of Statistics, 2006) and the median age at first marriage among women aged

[3] A husband was on average older than his wife by 8-10 years in Tanzania in 1996 (Westoff, 2003).

[4] Kagera is one of the areas most severely affected by HIV/AIDS. Beegle (2005) used the data drawn from the first four waves of the KHDS to investigate how prime-age (15-50) adult mortality (past and future) affected the time allocation of household members. In a similar vein, the impact of adult mortality shocks on the consumption growth of household members was also investigated by using all the full dataset of the KHDS (Beegle et al., 2008).

20-49 years, 18.3 years in 2004-2005 (National Bureau of Statistics and ORC Macro, 2005),[5] it appears that women must anticipate relatively long periods of widowhood when they marry.[6] This may suggest that old age security is a significant concern for females in this country.[7] Another serious example that may highlight the importance of women's old age concern in this country is witch killing - a frequently reported social problem in northern Tanzania (BBC, 1999, 2002; Miguel, 2005), whereby the victims are often elderly widowed women.[8]

The analysis presented here is limited to the sample respondents who were (single) males aged 5 to 18 years in wave 1 that lived in a village throughout the sample periods, which prohibited widows from inheriting land in wave 1. Making a comparison of the subsequent marital probability of these males between villages - which eliminated the discrimination (treatment villages) and villages that did not (control villages) - enables this study to explore the pattern of women's marriage-related relocation motivated by their old age concern. Despite this ideal natural experimental setting, it appears that changes in the inheritance rule were not randomly distributed across villages. To address this endogeneity, this research primarily takes a differences-in-differences (DID) approach, together with a two-step method, following Munshi and Rosenzweig (2006). The method the authors implemented allows this study to explicitly control for village-fixed effects, as well as identify the impact of removing the discrimination by using the differing effects by gender.

In rural societies in the developing world, women work very hard. They engage in predominantly domestic activities (e.g., preparation for meals, collection of firewood, and fetching of water), as well as agricultural work, which often considerably exceeds that performed by males. Therefore, their marriage-related migration implies a spatial allocation of productive labor-power as well as a formation of new production units (Fafchamps and Quisumbing, 2008). Moreover, their relocation could inter-temporally affect the distribution of welfare, because they reproduce the labor of next generation. Consequently, providing rural women with old age protection (e.g., insurance, livelihood protection) will have remarkable temporal and spatial welfare effects, by influencing their decision to marry, which is a primary policy implication from the current study.

Recent policy efforts for empowering women in developing countries may be broadly classified into those pertaining to social and cultural factors and those that act on their rational behavior, with the former emphasizing raising awareness, and the latter focusing on the role of economic incentives. In this context, the current study contributes to this policy debate by providing further support for the second approach (Jensen and Oster, 2009; Jensen, 2012), because it is expected that the findings of this study will show that women are highly responsive to the changes in (expected) economic returns in their old age (although this does not imply that the first approach is ineffective). However, when taking this approach, it should be noted that having a full understanding of the role played by existing social institutions is necessary. In the current context, it seems that reforming a land tenure system was not expected to affect marital sorting. Without an in-depth knowledge of local institutions (in this study, primarily clan exogamy and patrilocality), there would be danger

[5] Men's life expectancy at birth was reported as 50.99 years in the 2002 census. These figures could vary by the source of data. For example, life expectancy at birth in 2004 was 46 years, based upon Africa Development Indicators in 2004 (World Bank, 2006).

[6] These figures suggest that females who get married at the age of 20 years have to live as widows for almost half of their life following their first husband's death.

[7] When a husband dies early, following his death, women may not necessarily resume their 'old' life. However, as few females would expect their husbands to die early when they get married, their concern about social security in their life following their husband's death is primarily related to resuming their old life.

[8] `http://news.bbc.co.uk/2/hi/africa/386550.stm` for BBC (1999) and `http://news.bbc.co.uk/2/hi/africa/2372907.stm` for BBC (2002).

that any policy intervention unintentionally changes the pattern of economic development.

Another policy implication may also reach practitioners challenging several traditional marital practices (e.g., early marriage, polygamy) often observed in Sub-Saharan Africa. As the current study will show that a marriage market operates across neighboring villages, any potential policy interventions for addressing those issues should be spatially extensive, although an optimal geographical scope of those interventions could not be established in this study.

This paper mainly contributes to three strands of the extant literature.[9] Firstly, this study will suggest that political shocks to the cost of life security in the future change the current marital behavior of women and thus the pattern of matching in a marriage market. This view is taken, as the current study will show that providing widows with a right to inherit land can affect a marital decision of single females of the current generation by reducing the expected cost of being widowed. In this sense, this study reveals a parallel to the literature sources reporting the link between socio-economic shocks and adjustments in a marriage market (e.g., Gruber, 2004; Peters, 2011; Ueyama and Yamauchi, 2009). However, this similarity largely exists in terms of the quantity of matching (i.e., probability), rather than the quality (e.g., hypergamy) due to the limitations imposed by the data this study relies on for the analysis (Abramitzky et al., 2011).[10] Secondly, the research on the manner in which traditional institutions can shape socio-economic outcomes in the modern world has been growing since the study conducted by Munshi and Rosenzweig (2006). For example, by exploiting a unique setting of tea plantation in South India, Luke and Munshi (2011) showed that effects of an increase in women's bargaining power within a household, driven by economic globalization, on children's educational attainment and marriage varied by caste groups. The current study follows this line of research by investigating how introducing a modern inheritance system influences the pattern of forming marital unions in agrarian societies where traditions of clan exogamy and patrilocality are still prevailing. Finally, a few studies have empirically explored the link between women's marriage and migration, despite the significant correlation. For instance, Rosenzweigh and Stark (1989) showed that women's migration motivated by marriage, which accounted for a significant proportion of migration in rural India, could be seen as an inter-household contractual arrangement, aimed at mitigating income risks as well as facilitating consumption smoothing. In contrast to their study, which was implicitly based on a unitary-household model, the current research will highlight the importance of a woman's (rather than household's) old age concern as a motivator behind her relocation driven by marriage in rural Tanzania.

The remainder of this paper is organized as follows. Section 2 provides institutional background on marital practices and land ownership in Tanzania. An empirical strategy is discussed in Section 3, followed by data overview given in Section 4. The findings of this paper are presented in Section 5, with conclusions summarized in Section 6.

[Here, Figure 1]

[9] More generally, this research also relates to many development studies, such as those examining impacts of empowering women (e.g., Allendorf, 2007; Duflo, forthcoming); those exploring impacts of reforming a land tenure policy (e.g., Gibson and Gurmu, 2011; Roy, 2012); and those investigating the role of traditional institutions in the process of economic development (e.g., La Ferrara, 2007; Luke and Munshi, 2006).

[10] I wish to thank Ran Abramitzky for introducing his paper to me.

2 Institutional Background

Largely sourced from Gopal and Salim (1998), Killian (2011) and Rwebangira (1996), this section briefly explains institutional background on marriage, land, rules of land inheritance, and women's land rights movement in the 1990s.

2.1 Marriage and Land

In Tanzania, marriage tends to be patrilocal, with a wife moving into her husband's family. In addition, exogamous marriage, prevalent in much of Sub-Saharan Africa, prevents a man from marrying a woman from his own clan. This combination of patrilocal residence and exogamous marriage often forces a rural wife to move some distance away from her natal village to her husband's home, with a customary payment of bride wealth in the hands of her parents.

Marriage can be seen as a formation of new production unit and rural women, who are responsible for almost all housework (e.g., preparing for food, gathering firewood and carrying water, weeding, sowing and harvesting crops, grinding, pounding and milling grains, and caring for children and ill household members), devote most of their productive time to the unit. Despite women's significant contribution, historically, males were the sole custodians of matrimonial properties and children, whereby women would often receive minimal rewards from their efforts in their marital relationship. To overcome this disadvantages caused by married women's legal status, the Law of Marriage Act (LMA) was enacted in 1971. This Act secured women's basic rights in marriage and divorce by providing for forms of marriage, minimum age of marriage (18 for males and 15 for females), separate ownership of properties between spouses during marriage, child custody, and maintenance and division of matrimonial assets upon divorce or separation (Tenga and Peter, 1996). Although customary rules and traditional norms still continue to affect people's attitudes and practices, the enactment of the LMA was seen as a landmark in an attempt to improve women's legal status in Africa. However, as the LMA does not provide for inheritance of matrimonial properties by widowed women, their inheritance rights are excluded from the protection of this Act.

In contemporary Tanzania, all rights pertaining to land ownership, i.e. 'radical title', have been vested in the President in trust for the whole nation since the independence. This principle essentially stems from colonial land tenure policies exploited by the British Government (1922-1961), whereby there is no freehold form of land tenure, and landholders possess only leaseholds of a specified duration. Consequently, land matters of the people, such as acquiring, using, disposing of and bequeathing, are taken in the sense of the 'right of occupancy'. Any disputes related to land are initially dealt with at a village council, which has substantial power at the local level, before they come before the primary court (and subsequently the district or high court, in case of an appeal).

2.2 Inheritance Law and Women's Rights

Whilst the picture should not be over-simplified, the inheritance of estates is primarily governed by three different laws in Tanzania: Customary, Islamic, and Statutory laws. These laws provide for both testate and intestate succession and each of these legal systems is connected by ethnicity and religious affinity. In practice, however, Islamic and Statutory are superseded by Customary

Law, which applies to the majority of Africans living in rural areas.

Customary Law is essentially contained in the Customary Law Declaration Order (CLDO) 1963 (Government Notice No. 436 of 1963), which codifies rules relating to inheritance, although customary practices in the allocation, use, and transfer of land are more flexible than those stipulated in the CLDO. The CLDO applies to patrilineal communities, constituting about 80 percent of Tanzania's ethnic diversity (Rwebangira, 1996, p.25), in which succession is passed down the male line.[11]

Together with unwritten social rules derived from shared values and traditions in a community, the CLDO discriminates against women with respect to the ownership and control of land, despite the fact that women provide 60 to 80 percent of labor required for farming activities in the country (Kameri-Mbote, 1992, p.7). With the deceased's first son receiving the greatest share, followed by all the other sons, if any, daughters are least favored in the allocation and inheritance of clan or family land.[12] This division is driven by the desire to retain clan or family land within the clan or family, as well as the fear that daughters might transfer it to another clan or family when they marry out of their natal village. When no male heir exists, or when land was self-acquired by their late father, daughters have a chance to inherit land, even though this situation is not favored.

Widows are most vulnerable in *any* property ownership and control, as Rule 27 of the CLDO provides that "a widow has no share of the inheritance if the deceased left relatives of his own clan." Since they receive no resources, they usually have to rely on their children for taking care of them. According to Rule 66A, for example, "(a widow) may claim the right to remain with her issue in a house of the deceased, and thus become one of the deceased's kinsfolk." However, tying a widow's rights to her children's rights in this way does not necessarily protect her, as it invariably brings practical conflicts in case of polygynous marriage and/or when a widow has daughters only. Alternatively, a widow has a right to be inherited to any relative of the deceased as a wife (Rule 66A). However, this forces her to be a dependant on her new family, irrespective of the number of years she has lived with her late husband and the size of her contribution to the wealth of her previous family. Some leniency in the CLDO protects a childless widow by enabling her to enjoy user rights pertaining to land, half of the perennial crops, and right of residence until she remarries or dies. However, this presumes a very rare case in which a married couple keeps a monogamous relationship in face of social pressure to produce an heir. Since a husband usually tends to beget children through polygamy or adultery, it must be difficult for a childless widow to obtain any form of protection. Moreover, in some societies, a childless widow might also face opprobrium as a witch. In sum, a widow is most discriminated against among members of Tanzanian society regarding the use and inheritance of properties by Customary Law.

2.3 Women's Land Rights Movement

The introduction of a multi-party system in 1992 opened up opportunities for women to form independent civil society organizations (CSOs). Through advocacy and lobbying, these CSOs brought

[11] The remaining 20 percent is matrilineal, where the unmodified customary rules remain in force. In matrilineal communities, a male heir inherits the property of his maternal uncle, rather than the property of his mother (Rwebangira, 1996, p.25).

[12] Based upon the CLDO, land can be classified as: clan land, family land, and self-acquired land, whereby the clan land is a piece of land vested in the clan, the family land is a piece of land that an individual of the same family lineage held title to in the past, and the self-acquired land is a piece of land that an individual or family has obtained at the cost of their efforts.

gender-oriented perspectives in policies and legislation in various spheres, such as education, employment, and political participation.[13]

Regarding women's land rights, a coalition called the Gender Land Task Force (GLTF), consisting of the Tanzania Women Lawyers Association (TAWLA) and six other organizations, emerged in 1997 in the way of challenging the National Land Policy of 1995 and the Land Bill of 1996.[14] The National Land Policy and the Land Bill were adopted as a result of the government's efforts to introduce legal reforms in a land tenure system. Under the proposed new legal system, however, the radical title of land remained vested in the President, which continued to leave possibilities for the government to use any piece of land for the public interest (e.g., alienate land from indigenous pastoralists and small-scale farmers to foreigners), and a pluralistic legal system - including Customary, Islamic, and Statutory laws - remained after the adoption. Consequently, these legal reforms did not take a fundamental departure from the existent principles, retaining women's disadvantage in accessing and owning land.[15]

The GLTF adopted several strategies to lobby for the changes in the Land Bill. The Tanzanian Media Women's Association (TAMWA), one of those six organizations, for example, used the media, such as radio, television and newspapers, to inform the public of the deficiencies in the Land Bill. To agitate against a discriminatory customary land tenure system, other organizations directed campaigns and distributed fliers and bulletins to a variety of stakeholders. Seminars and workshops involving various entities, including government officials, MPs, CSOs, and religious institutions, were also held in many places in the country to facilitate women's land rights movement. Moreover, the GLTF collaborated with another lobbying group, the National Land Forum (NALAF).[16] As the primary goal of the NALAF was to empower marginalized groups - primarily pastoralists, peasants, children, the disabled and women - by removing the radical title vested in the President, the GLTF and NALAF overlapped in their aims and strategies. Religious organizations were also involved in the movement led by both the GLTF and NALAF. Whilst religious groups had to be very cautious in their actions, as the secular neutrality of the state bans political grouping along religious lines, they also contributed to encouraging a national debate about the Land Bill.[17]

[13]For example, through an affirmative action of special seats arrangement, the number of women in parliament increased from 37 in 1995 to 48 in 2000, and 75 in 2005, resulting in 30 percent share of all the current MPs (Killian, 2011, p. 25).

[14]The six CSOs included the Tanzanian Media Women's Association (TAMWA), the Women's Advancement Trust (WAT), the Women's Legal Aid Centre (WLAC), the Tanzania Gender Networking Programme (TGNP), the National Organization for Children, Welfare and Human Relief (NOCHU), and the Tanzania Home Economics Association (TAHEA).

[15] Before adopting the National Land Policy and the Land Bill, the government formed a Land Commission in 1991, headed by Issa G. Shivji - one of Africa's leading experts on law and development issues - to inquire into a land tenure system in the country. After a thoroughgoing investigation of all twenty regions of mainland Tanzania and a couple of neighboring countries, the Land Commission submitted to the President a two-volume report, including a series of recommendations. The essence of the report was to democratize land tenure systems by detaching land ownership and administration from civil servants. The report rejected the radical title currently vested in the President and recommended that land matters should be left to the parliament and village assemblies. The recommendations, therefore, had much potential to create room for people to take part in the administration of land (although these recommendations of the Land Commission did not explicitly address gender issues). However, since the Shivji report strongly criticized a statist top-down institutional structure in land management, many of its recommendations were finally disregarded in the Land Policy and the Land Bill (Manji, 1998).

[16]The NALAF aimed at pushing for the implementation of Shivji's Land Commission recommendations (see footnote 15) and was led by Haki Ardhi, a CSO founded by Shivji.

[17]Despite its diverse ethnicity and religions, Tanzania is a highly unified country, characterized by harmony and civic peace, due to a number of contributing factors, one of which is the use of one national language, Swahili. In addition, Tanzanian constitution prohibits religious bodies from being a part of activities of the state authority. This secular neutrality of the state might also be another factor.

All these movements eventually succeeded in obtaining real improvements of the Land Act of 1999 and the Village Land Act of 1999, both characterized by a number of gender-neutral aspects. For example, it is provided that males and females should enjoy equal rights pertaining to acquisition, use and transfer of land. In addition, disposing of land is not allowed without the consent of both (or all) spouses as occupiers. Moreover, both acts override Customary Law, if the latter prohibits marginalized groups, such as women, children, and the disabled, from using, owning, and transferring land.

For these acts to be observed and enforced strictly, however, an appropriate monitoring system is needed. Further issues can also arise from the CLDO of 1963, as it has not yet been repealed in spite of numerous discriminatory rules related to land against women. This leaves some ambiguities in applying these acts to real life situations. Moreover, these improvements might not have fully mobilized rural women, who are most affected by customary rules detrimental to them, as the majority of them may not be well informed of these legal reforms. Despite the two acts of 1999, it is likely that it will take some time for the effect to be fully realized. Nevertheless, it is true that women's land rights movement flourished in the 1990s and, since then, the ideology must have gradually reached out to the grassroots in a society.

3 Empirical Strategy

As noted in Section 4, the primary data used in this paper is drawn from the Kagera Health and Development Survey (KHDS), which is a longitudinal household panel survey that consists of five waves, with the first four waves carried out between 1991 and 1994 and the final wave conducted in 2004.[18]

While the panel data contains information on both individuals that moved out of their original villages between the waves 1 and 5 (migrants) and those who did not (non-migrants), this study limits focuses on male respondents aged 5 to 18 years in wave 1, who lived in a village throughout the sample periods, which customarily prohibited a widow's land inheritance in wave 1.[19] These selection criteria yielded a sample comprising 281 non-migrant males living in 26 villages.[20] The lower and upper bounds of age stem from the fact that, in Tanzania, 18 is the minimum legal marrying age for males, which ensures that all male study participants were single in wave 1 and that males under the age of 5 in wave 1 did not reach the marriageable age by wave 5. The sampled villages in the KHDS are located a great distance away from each other, thus covering the entire region of Kagera. Of these 26 villages, 21 enabled a widow to inherit land between waves 1 and 5, whereas 5 villages did not. The subsequent analysis explored the manner in which an improvement

[18] Wave 1, September 1991 to May 1992; wave 2, April 1992 to November 1992; wave 3, November 1992 to May 1993; wave 4, June 1993 to January 1994; wave 5, January 2004 to August 2004.

[19] Note that it is possible to include males who lived in villages that already allowed a widow's land inheritance in wave 1. However, their inclusion in the data analysis could be another source of bias in the estimations, as it is highly likely that those progressive villages differed from the other villages with respect to unobserved characteristics, which may affect the subsequent probability of males entering into marriages. In order to ensure that the sample villages used for the estimations are as similar at baseline as possible, the focus of this study is on males who lived only in non-progressive villages in wave 1. The estimation results based on data pertaining to males living in both progressive and non-progressive villages at baseline are available from the author if requested.

[20] The KHDS sample households were, with stratification based on geography and mortality risk, randomly selected in two stages: selection of villages, followed by the selection of households. In the first stage, 550 geographical areas delineated by the 1988 Tanzanian Census were initially classified into eight strata defined over four agronomic zones and the level of adult mortality (high and low) in each zone. Next, six or seven villages were selected from each stratum. See *User's Guide to the Kagera Health and Development Survey Datasets* (2004) and *Kagera Health and Development Survey* 2004 − *Basic Information Document* (2006) for details of sampling design.

in a widow's right between waves 1 and 5 affected the marital probability of those males over time. This section presents an empirical strategy by treating the waves 1 and 5 as periods t and $t+1$, respectively.

For a (single) male i living in a village j in a period t, marital status in a period $t+1$ (i.e., marital decision between the periods t and $t+1$) is modeled as[21]

$$M_{ijt+1} = I(v_{ijt}^{M*} > 0), \tag{1}$$

where $I(\cdot)$ is an indicator function and M_{ijt+1} takes one if he is married in the period $t+1$ and zero otherwise. The variable v_{ijt}^{M*} is the expected present value of net gains from marriage at baseline and can be modeled as

$$v_{ijt}^{M*} = \alpha_1^M + \alpha_2^M D_j + \alpha_3^{M\prime}\mathbf{x_{it}} + \alpha_4^{M\prime}\mathbf{x_{jt}} + \omega_j^M + \epsilon_{ijt}, \tag{2}$$

where D_j is a dummy variable, equal to one for a village that made it possible between the periods t and $t+1$ for a widow to customarily inherit land under the surge of the previously explained national excitement about women's land rights in the 1990s; $\mathbf{x_{it}}$ and $\mathbf{x_{jt}}$ contain the determinants of marital costs and benefits specific to the male and his village at baseline; any time-invariant unobserved village-level characteristics determining the net gains are measured by ω_j^M; and ϵ_{ijt} represents a stochastic error. Assuming that a village having a social rule regarding land inheritance in favor of widows attracts (young) single females from outside the village and that their attempts to marry males living in the village reduce the cost of marriage incurred by the males (e.g., search cost, bride wealth payments), it is expected that D_j increases the probability that males living in the village would enter into marriage (i.e., positive α_2^M).

For the sake of tractability, this paper primarily estimates the model of (1) and (2) by applying a linear probability model (LPM) of[22]

$$M_{ijt+1} = \alpha_1^M + \alpha_2^M D_j + \alpha_3^{M\prime}\mathbf{x_{it}} + \alpha_4^{M\prime}\mathbf{x_{jt}} + \omega_j^M + \epsilon_{ijt+1}. \tag{3}$$

In contrast to standard discrete choice models, such as logit and probit, the linear specification chosen here enables the predicted probability to lie outside the unit interval. In the estimations, therefore, the proportion of the predicted values outside the unit interval will be evaluated to ensure that it does not seriously detract from the effectiveness of the LPM. Following Beegle et al. (2011) and McKenzie et al. (2010), equation (3) may also be seen as a variant of differences-in-differences (DID) specification, as it compares changes in marital status over time (either single to married or single to single) between treatment and control villages. In this sense, the unobserved ω_j^M can be seen as the growth-fixed effects operating at the level of villages.

3.1 Information on Local Settings

For the above hypothesis to be plausible, it must be assumed that, in rural areas, (a) women have limited access to formal insurance of protecting old age, (b) women are strategically able or willing to choose their husbands by themselves, and (c) the characteristics of destination villages are well

[21] Theoretically, it is possible that single males in wave 1 got married and immediately dissolved the marital relationship between waves 1 and 5. However, since the present analysis is limited to young males (mainly, boys) in wave 1 and deals with a relatively short period of time (1991-2004), this is very unlikely.

[22] The results of probit model are available from the author, although implications remain unchanged.

known to women that are about to marry. While the assumption (a) is quite likely (Mboghoina and Osberg, 2010), this subsection reports on checks performed in order to verify the other assumptions, before discussing several empirical challenges in the subsequent subsections 3.2 to 3.5.

With a support from one of the supervisors of the KHDS project (wave 5) and a local NGO advocating with and for the rights of older people, in 2012, the author conducted a short questionnaire-based survey in Karagwe - one district in Kagera region. After stratifying the district into five groups of wards by characteristics of population (ethnicity, wealth, etc.), based upon conversations with the NGO, this survey selected at least one village from the respective group, resulting in seven villages, randomly drawn from a list of 114 villages existing in the district.[23] In each village, the author asked 5 or 6 females aged 30 to 40 years about the manner in which their marriages were formed and conducted, spending half an hour to one hour on interviewing each woman in an environment where the respondent was alone with the author and the research assistant (for translation to Swahili), thus ensuring confidentiality and increasing data reliability. Almost all these women entered into marriage between 1991 and 2004. While this survey eventually resulted in approximately 40 interviews in all selected villages, the interviewed women were not randomly selected because of the author's limited resources (i.e., convenience sampling). Although this non-random nature makes it difficult for the current study to generalize the findings from this survey, the obtained data still revealed a common picture about the process of marital formation in the surveyed area in those days of interest.

Based upon those interviews, marriages formally arranged by a groom's and a bride's parents hardly existed during the sample periods of the KHDS.[24] Commonly, a groom would be introduced to a bride at a church, a market, or his relatives' residence, and would initiate a process of marriage by proposing to her. In those days, a woman would often receive many proposals - the interviewed women reported minimum of 2 and maximum exceeding 20 - from both her neighboring and distant villages; thus, it was common for females to refuse an unwanted offer of marriage.[25] Most women selected their husband despite not having many opportunities to meet or talk with him. For example, about 70% of the interviewed women said that, before getting married, they had met their husband fewer than 10 times or had known him for less than 3 months. When choosing a partner, instead, a woman carefully investigated a groom's family through her friends and relatives living in the groom's village.[26] In some cases, a bride herself visited a groom's natal village and explored the groom's family by talking to his neighbors.

In this survey, the author asked respondents whether each item displayed in Appendix Table 8 was an important consideration when choosing a husband. For example, 91% of the interviewed women preferred a husband belonging to a different clan, suggesting the significance of clan exogamy, which is associated with local preferences to avoid marrying somebody that has close blood relationship, and women's marriage-related migration in this region.[27] While the most important

[23] Consequently, the sampled villages were located a great distance away from each other, thus covering the entire district.

[24] This is consistent with views of researchers and those shared by the NGO staff members in Dar es Salaam and Kagera prior to the questionnaire survey.

[25] While less than half of the interviewed women asked for parents' approval before accepting the marriage proposal, parents did not have a strong power to force their daughter to choose a husband that they liked.

[26] When a groom makes a proposal and a bride responds, families on both sides commonly use go-betweens (*mushenga* in Swahili), who would often be groom's and bride's relatives (e.g., aunt). During the sample period, the go-betweens played major roles in the process of marital formation as a messenger between families, a negotiator of bride prices, and an investigator about a groom's family.

[27] As a matter of fact, about 65% of the currently married interviewed women were living in a village different

consideration, as indicated by questionnaire responses, was whether a husband's family was 'good' - in the sense that it did not practice witchcraft and had no criminals or sick members - interestingly, approximately 63% of the interviewed women agreed that whether a husband's family was considerate enough to allow them to inherit a husband's properties in case of the husband's death was one of their considerations. Although the author does not intend to place much emphasis on this answer because of potential response bias, it seems true that a bride did have a way of collecting information about a groom's family living in a village different from her natal village and that she strategically chose the best partner. These findings provide a justification for the above assumptions (b) and (c). Taking into account this strategic behavior exhibited by women, it may be plausible to interpret the positive α_2^M in equation (3) as the confirmation that removing discrimination against widows enabled males who had not previously been particularly attractive marriage candidates to obtain a wife by offering old age protection to women, and that women strategically accepted that offer.

In subsection 2.3, it was also argued that women's land rights movement emerged in the 1990s and the ideology has gradually penetrated through the society. As a matter of fact, approximately 58% of the interviewed females were aware of some activities (e.g., workshops, seminars) aimed at removing discrimination against women in accessing land rights when their husband proposed to them, and almost all women recognized such activities during the interviews.

3.2 Measurement Issues about Land Inheritance

In all waves of the KHDS, the survey team asked a group of village leaders whether a wife could customarily inherit land in the village in the event of her husband's death.[28] As this information is a source of a measure of land inheritance used in this study, a widow's inheritance right may be measured with noise, which could confound estimations. Thus, it should be noted that excessive noise may make the measure untenable to an empirical analysis.

Peterman (2011) provides support for the view that observed variation of land inheritance in the KHDS data is informative for an empirical analysis. By using the same information as the current study, she investigated the effects of a widow's property and inheritance rights on labor force participation and earnings of women aged 15 to 55 years at baseline. In her preferred model that controls for an individual's fixed effects and sample attrition, she found that securing a widow's rights resulted in an increase in their employment opportunities outside home and their earnings.

Nevertheless, this study cannot rule out the possibility that the rule of land inheritance is measured with errors. As a matter of fact, only a few groups of the village leaders changed their answer to the above question from 'yes' to 'no' (and further 'yes') in the first four waves - an inconsistency that may be associated with misunderstanding of the question and/or social desirability or irresponsibility for answering the question. While this discrepancy is difficult to interpret, this paper does not discriminate against such answers. Instead, the subsequent analysis performs all estimations by changing the base period t from wave 1 to 2, 3, and 4. In addition, even if some measurement errors exist, a key message from this study will be unaffected by this problem because the estimated positive impact of interest is the lower bound of true α_2^M, provided that those errors are classical.

from their natal villages, and almost all those women lived in their husband's natal village.

[28] According to the previously mentioned supervisor of the KHDS project (wave 5), approximately 7 to 8 villagers were selected in each village for this community survey.

Furthermore, altering the rule of inheritance at the village level will not necessarily mean that all households in a village strictly followed the new rule. As data does not contain information about the application of the new rule at the household level, the findings of this study are based on the village-level average of all individual impacts operating at the household level.

3.3 Simultaneity Bias: Correlation between D_j and ω_j^M

Another empirical challenge arises from potential correlation between D_j and ω_j^M. For instance, assuming that males living in a village close to a city would opt to postpone marriage due to their exposure to urban attitudes and values, and that the villagers are more generous with women's rights for the same reason, this generates downward bias on the estimated α_2^M, unless village-level tastes and preferences for modernity are controlled for. One possible solution to this problem is to explicitly control for village-fixed effects. However, this strategy cannot simply be taken because of perfect multicollinearity between D_j and ω_j^M in equation (3).

Alternatively, this paper takes a two-step approach by following Munshi and Rosenzweig (2006). In this approach, firstly, the same equation as (3) is modeled for females aged 3 to 15 years in wave 1 as

$$M_{ijt+1} = \alpha_1^F + \alpha_2^F D_j + \alpha_3^{F\prime}\mathbf{x_{it}} + \alpha_4^{F\prime}\mathbf{x_{jt}} + \omega_j^F + \epsilon_{ijt}. \tag{4}$$

As the minimum legal age of marriage for females is 15 years, all females included in the analysis were single in wave 1 and those under the age of 3 years in wave 1 did not reach the marriageable age by wave 5. In contrast to the male sample, the analysis uses migrants as well as non-migrants, because the purpose of using this female sample is to explicitly control for unobserved village-level characteristics in the following second step that might affect the probability of marriage. Consequently, there is no strong reason to restrict the sample to non-migrant females.[29] Another reason for including female migrants as well as non-migrants is to mitigate a potential problem of sample selection, as discussed in subsection 3.4.

It is possible to anticipate the sign of the estimated impact of D_j, i.e., $\hat{\alpha}_2^F$. Firstly, it is expected that the $\hat{\alpha}_2^F$ is insignificantly different from zero. As seen in subsection 4.1, female marriage is highly associated with leaving their natal village. To the extent that all women marry out of their natal village and that their decision to marry is primarily affected by living conditions at the *destination*, altering the rule of land inheritance in their *original* village may not influence their marital probability at all. However, as it should not be assumed that no woman would get married in her natal village, the estimated sign may alternatively be negative. This is because allowing a widow's land inheritance in a village may intensify competition among local women by attracting single females from outside the village. Consequently, those females who intend to marry males living in their natal village would have difficulty in doing so due to the increase in the level of competition in a marriage market. All these arguments imply the non-positive $\hat{\alpha}_2^F$.

[29] Apart from an advantage of mitigating a potential problem of sample selection discussed in subsection 3.4, however, whether the analysis uses all females or just non-migrant females is irrelevant when applying this two-step approach, although limiting the sample only into non-migrant females is more likely to result in the negative $\hat{\alpha}_2^F$ in the first step. This is because allowing a widow's land inheritance in a village is likely to result in attracting single females from outside the village and encouraging competition in the village, which may make it difficult for the local females to find a marital partner in that village. As seen in subsection 4.1, female marriage is highly associated with leaving their natal village. If those females who fail to marry out in the presence of the increasing level of competition primarily stay in their natal village, limiting the sample into non-migrant females in modeling equation (4) might estimate the negative $\hat{\alpha}_2^F$ due to selection bias. In fact, this is true. The estimation results of both the first and second steps using only non-migrant females are available from the author if requested.

Given this presumption, the second step uses this gender difference in the impact of D_j by pooling both males and females as[30]

$$\begin{aligned} M_{ijt+1} &= \alpha_1^F + (\alpha_1^M - \alpha_1^F)g_i + (\alpha_2^M - \alpha_2^F)D_j \cdot g_i + \alpha_3^{F\prime}\mathbf{x_{it}} \\ &\quad +(\alpha_3^M - \alpha_3^F)'\mathbf{x_{it}} \cdot g_i + (\alpha_4^M - \alpha_4^F)'\mathbf{x_{jt}} \cdot g_i + (\omega_j^M - \omega_j^F)g_i + V_j + \epsilon_{ijt+1}, \end{aligned} \tag{5}$$

where g_i takes one for males and zero otherwise. Now, equation (5) can explicitly control for village-fixed effects by using a dummy variable for a village j, i.e., $V_j \equiv \alpha_2^F D_j + \alpha_4^{F\prime}\mathbf{x_{jt}} + \omega_j^F$.[31] Whilst α_2^M can no longer be identified in equation (5) independently, it is possible to draw inference about it from the estimated $\alpha_2^M - \alpha_2^F$ by using the gender difference in the impact of D_j (within-village variation). Given that $\hat{\alpha}_2^F = 0$, as discussed in the first step, the coefficient on the interaction term between D_j and g_i should identify the impact of altering the inheritance rule in a village on the marital probability of males living in the village. Even in case of the negative $\hat{\alpha}_2^F$ in equation (4), the estimated $\hat{\alpha}_2^M$ in (3) is likely to be free from bias arising from potential correlation between D_j and ω_j^M, provided that $\hat{\alpha}_2^M - \hat{\alpha}_2^F$ is close to the coefficient on the interaction term between D_j and g_i in (5).

Similar to Munshi and Rosenzweig (2006), the validity of this approach relies on the assumption pertaining to the unobserved village-level characteristics that the impacts on an individual's marital probability do not significantly differ by gender, i.e., $\omega_j^M = \omega_j^F$.[32] One major concern that may invalidate this assumption is the male-to-female ratio in a village, which is not contained in data. This is because the smaller number of males in a village may increase the marital probability of males, but decrease that of females (Becker, 1981). While the sex-ratio may indeed equally affect marital probability between males and females after controlling for an individual's sex in the pooling equation - in fact, a few covariates will reveal differential effects by gender in subsequent estimations, the assumption may still be strong.

In order to make the assumption appear more plausible, in addition to the village-fixed effects, a variety of observed village-level characteristics (interacted with the male dummy), which may correlate with the sex-ratio, are also included in equation (5). To capture the levels of modernity and economic development in a village that might affect marital behavior - for example, population in a village; whether a village has a bank, a daily market, and a bar or restaurant; and whether public transportation passes by a village are controlled for. Moreover, the vector $\mathbf{x_{jt}}$ also includes a dummy for a village formed by the villagization program in the 1970s. As described in subsection 4.2, this is expected to capture a village-level preference for women's rights.

Furthermore, in columns (a) to (d) in Appendix Table 9, it was also assessed whether sample respondents in treatment villages engaged more in particular types of activities at baseline, given the assumption that the work pattern may be affected by the sex-ratio in a village. In the table, last week's hours per person dedicated to two major activities - self-employed farming and chore activities (collecting firewood, fetching water, caring for ill household members, preparing meals,

[30] Equation (5) can be derived by pooling equations (3) and (4) as

$$\begin{aligned} M_{ijt+1} &= (\alpha_1^M + \alpha_2^M D_j + \alpha_3^{M\prime}\mathbf{x_{it}} + \alpha_4^{M\prime}\mathbf{x_{jt}} + \omega_j^M + \epsilon_{ijt}) \cdot g_i \\ &\quad +(\alpha_1^F + \alpha_2^F D_j + \alpha_3^{F\prime}\mathbf{x_{it}} + \alpha_4^{F\prime}\mathbf{x_{jt}} + \omega_j^F + \epsilon_{ijt}) \cdot (1 - g_i). \end{aligned}$$

[31] Strictly speaking, the impacts of $\mathbf{x_{jt}}$ are not fixed effects, as the vector $\mathbf{x_{jt}}$ is time-varying. Since estimating (5) does not use any time variation across waves, however, it can be treated as fixed effects in this estimation.

[32] The *jati* fixed effects in their paper correspond to village-fixed effects in the current study. They assumed that the *jati* fixed effects equally affected boys and girls after controlling for an individual's sex.

cleaning house, doing laundry, and shopping for food) - were estimated for males and females aged 7 years or older, separately. The results provided no evidence supporting the view that sample respondents in treatment villages engaged more or less in particular types of activities at baseline than those in control villages.

In rural Tanzania, most females engage in crop production and are, in particular, in charge of 'female' crops (e.g., food crops such as banana, beans, cassava, and maize), compared to 'male' crops (e.g., cash-yielding crops such as coffee, cotton, tea, and tobacco) predominantly controlled by males. As the differing level of sex-ratio in a village may generate the difference in crop choices among villages, the share of cash-yielding crops relative to the sum of cash and food crops in household production at baseline was also estimated in columns (e) and (f) in Appendix Table 9. The results revealed no significant difference between treatment and control villages. While all these discussions may not provide a fully convincing justification for the identification assumption, the empirical strategy explained above is the most feasible approach taken in this study, along with the DID framework.

Another potential concern is that a widow's inheritance right to land might, in fact, be a proxy for an improvement in women's access to other properties, which makes it difficult to attribute an increase in the marital probability of males in treatment villages solely to an improvement in a widow's land right. To make a distinction between the land and other property effects, the analysis also controls for a village custom regarding a widow's inheritance right to houses in both wave 5 and the base period, which appear to be another important asset in rural societies.

3.4 Sample Selection Bias

Since estimating equation (3) exploits only data pertaining to individuals who stay in their original village (i.e., male non-migrants) in the period $t+1$ (wave 5), this selected sample can be another source of bias. For example, if changes in the land inheritance rules force males with great (little) appeal valued in a marriage market to move out of their original villages for some reason (which is difficult to identify precisely, though), this makes the estimated α_2^M biased downwards (upwards) in equation (3). One simple way of avoiding this issue is by exploiting all panel individuals, irrespective of whether or not they were migrants in wave 5. However, this strategy cannot be adopted in this study because data does not include the information pertaining to specific social rule regarding a widow's land inheritance that is enforced at migrants' destination.

However, if males more or less appealing in a marriage market were indeed induced to migrate out by the change in the rule, it is highly likely that the probability of marriage systematically differs between migrants and non-migrants. As seen in subsection 4.1, however, the panel data does not support this view, indicating that male migrants and non-migrants were identical in terms of their marital probability. Drawn from the literature, moreover, the analysis controls for as many determinants of migration as possible, such as age, education and household demographic composition. Given these controls, non-migrant males may not be statistically different from migrants in a marriage equation (even though they are different in another equation such as earnings).[33] Based upon these discussions, this study eventually assumes that migration-oriented selection problem does not exist in estimating (3).

In contrast to (3), estimating equations (4) and (5) exploits female migrants as well as non-

[33] For example, great business acumen does not necessarily guarantee a success in a marriage market.

migrants. Thus, the estimation results of (5) will not be negatively affected by selecting sample observations, as long as the identification assumption for the male sample holds.

3.5 Other Identification Issues

Some other concerns still exist. Firstly, while this study - by exploiting the two-step approach as well as the DID specification - attempts to control for growth-fixed effects (i.e., ω_j^M) in each village, some time-varying village characteristics assumed to be unobserved (i.e., ω_{jt}^M) might still contaminate the estimations. Although this issue cannot be explicitly addressed in this study, this concern will be discussed more carefully in subsection 5.2 after presenting the main estimation results.

Another caveat for the estimations is that the estimated α_2^M may need to be interpreted as a population-weighted average of ex-ante (expectation) and ex-post impacts of the change in the rule of land inheritance. This point will be explained more clearly in subsection 5.3.1.

4 Data

The KHDS started in the rural region in northwest Tanzania, Kagera, as a part of a research project on adult mortality in Sub-Saharan Africa launched by the World Bank in 1991. With 912 households drawn from the 1988 Tanzanian Census with a stratification based on geography and mortality risk,[34] the first four surveys were conducted between 1991 and 1994 with a 6- or 7-month interval. After a 10-year gap from wave 4, approximately 91% of those 912 baseline households were recontacted in 2004 (wave 5), even if located outside their original villages. When previous members moved out of their original households, their new households were traced. This exercise generated 2719 household surveys in wave 5, which emerged from the 832 recontacted original households. Of the 2719 households, only half stayed in the village they resided in 10 years previously, suggesting a substantial demographic mobility in this region during one decade.

While the KHDS is a household panel survey, it enabled us to construct unbalanced panel data from wave 1 to 5 at the individual level, as it provided the information for all household members in all waves. The rate of sample attrition in the KHDS is very low even on an individual basis. Based upon the careful examination of sample attrition by Beegle et al. (2011), excluding individuals that died, approximately 82% of 5394 original respondents interviewed in the first four waves were successfully recontacted in wave 5. This significantly high recontact rate is one of many successes and contributions of this long-term panel survey. As throughout the waves, a standardized survey questionnaire was used (although several changes were made in wave 5), collected information is highly comparable across waves. In addition, the data contains a variety of information related to a household, its members, and a village from which sample households were chosen, making the KHDS highly valuable resource for an empirical study.

4.1 Marriage and Migration

Before providing summary statistics, the relationship between marriage and migration was overviewed by gender. Firstly, the reason for migration is reported in Table 1, where the first two columns re-

[34] The sampling procedures caused households with a high risk of an adult death to be oversampled; therefore, the findings in the subsequent analysis should be treated with caution when attempting to generalize them.

port data pertaining to migration that took place between waves 1 and 5, and the last two columns indicate individuals that moved into a surveyed village prior to wave 1. In accordance with the pre-conception that women typically relocate at marriage in much of Sub-Saharan Africa, almost half of female migration in this sample was driven by marriage. On the other hand, male migration was hardly related to marriage. Next, Table 2 reports marital status in wave 5 of men and women that were single in wave 1 in order to establish whether their status varies by relocation. While about 64% of females that migrated out between waves 1 and 5 were married in wave 5, the corresponding figure for female non-migrants was just 19%. This discrepancy between migrants and non-migrants confirms strong correlation between women's marriage and migration. On the other hand, there is almost no difference in the proportion of married male migrants and non-migrants in wave 5, as in both groups approximately 37% were married in wave 5. Thus, it appears that migration did not affect male marital behavior. This difference in the relationship between marriage and migration by gender is formally evaluated by estimating the linear probability of being married in wave 5 with a control of a migration dummy between waves 1 and 5 by OLS in Appendix Table 10. The results indicate that, whilst female marital status in wave 5 positively and significantly correlates with migration, the correlation is insignificantly different from zero for males.

[Here, Tables 1 and 2]

4.2 Summary Statistics

To assess whether males in villages with $D_j = 0$ (control villages) are a suitable control group for those in villages with $D_j = 1$ (treatment villages), Table 3 summarized key variables at baseline (wave 1) with a check of the equality of the mean between these two groups. In contrast to few individual and household attributes that differ between the two groups, many significant differences arise from village characteristics. For example, on average, a greater number of individuals lived in treatment villages in wave 1, where public transportation was available. In addition, treatment villages are more likely to have had a bank, a daily market, and a bar/restaurant in wave 1. Hence, this information might characterize treatment villages as more developed and modernized, compared to control villages. Moreover, a village formed by the villagization program in the 1970s was found only in the treatment group. Along the famous concept of $Ujamaa$, an ideology of socialism and self-reliance introduced by the first post-independent President Julius Nyerere and the Tanganyika African National Union (TANU),[35] the program intended to create communally organized socialist villages in the country where people would live and work together, mutually respecting each other and sharing common basic goods and services (Hyden, 1980; McHenry, Jr., 1979). Whilst this program was terminated without yielding the expected success, women living in a village formed by this program were given an equal right to partake in some aspects of village life (McHenry, Jr., 1979; Swantz, 1985). Thus, no control villages formed by this program might suggest that males in treatment villages might have been more liberal with regard to women's rights, compared to those in control villages. As, under a surge of national excitement about women's land rights in the 1990s, these characteristics might have helped treatment villages remove discrimination against widows regarding land inheritance during the sample periods, controlling

[35]TANU became Chama cha Mapinduzi (CCM) in 1977, a leading party in the current multi-party political system.

for observed village characteristics, as well as unobserved ones, is indeed crucial in the analysis that follows.

[Here, Table 3]

5 Estimation Results

5.1 Main Results

Pooling sample villages into six districts (Biharamulo, Bukoba Rural, Bukoba Urban, Muleba, Ngara, and Karagwe), columns (a) to (d) in Table 4 report the OLS estimation results of (3) with the district-fixed effects. While the magnitude varies depending upon which wave is exploited as the base period, which is likely to be associated with potential measurement errors related to D_j,[36] the results support the hypothesis of this study. Using wave 1 as the base period in column (a), for example, altering the inheritance rule pertaining to land in a village increased the probability of males marrying in the village by 21 percentage points over 13 years.

As it is recognized that time-invariant unobserved village-level characteristics might have confounded these results, in order to exclude this possibility, the analysis was conducted by applying a two-step approach following Munshi and Rosenzweig (2006). As the first step, equation (4) was estimated for females by OLS in columns (e) to (h) in Table 4 with the district-fixed effects. As anticipated in subsection 3.3, the results indicate the non-positive impacts of altering the inheritance rule on the marital probability of females with or without conventional significance. Given these results, Table 5 pooled males and females to estimate equation (5) with an explicit control of village-fixed effects. The estimated impacts of the interaction term between D_j and g_i reveal great similarity to the corresponding impacts of D_j shown in Table 4. For example, the difference in the estimated impacts of D_j between columns (a) and (e) in Table 4 is remarkably similar to the coefficient on the interaction term between D_j and g_i in column (a) in Table 5, i.e., $0.209 - (-0.032) \approx 0.267$. This similarity rejects the possibility that the effect of improving a widow's land right on marital probability of males identified in Table 4 captures only (time-invariant) gender-neutral tastes and attitudes of treatment villages.

One unexpected outcome of these estimations is that having an inheritance rule related to houses in favor of widows in wave 5 is negatively and significantly correlated with the probability of males getting married. In fact, it is surprising that a village would apply different inheritance rules to land and houses, as houses and (banana-producing) land are usually on the same premises in most households in this region. If the differing rules observed in the data are not attributed to measurement noise, one naive explanation for this counter-intuitive finding is that the negative coefficient may be implicitly including some unobserved, yet very strong, village-level preferences against women's rights. Based upon conversations with the previously mentioned supervisor of the KHDS project (wave 5), for example, allowing a widow to inherit houses, but not land, may be an implicit way of chasing her out of her late husband's village, because she cannot earn a living without the right to land usage. However, as the data does not facilitate exploration of different

[36] As suggested in subsection 3.2, the number of treatment (which are reported as not having allowed a widow's land inheritance in wave X but as having allowed it in wave 5, where X is either 1, 2, 3, or 4) and control villages (which are reported as not having allowed a widow's land inheritance in both wave X and wave 5) used in these estimations is different across columns, with the numbers of 21 and 5 in column (a), 29 and 5 in column (b), 27 and 5 in column (c), and 29 and 2 in column (d).

mechanisms behind this negative coefficient further, this study eventually avoids giving a theoretical interpretation to the coefficient and treats this variable as a control. Excluding this variable from regressors leaves the analytic implications almost unaffected, although it attenuates the impact of D_j, because the inheritance rules pertaining to land and houses are positively correlated.[37] Similarly, the negative effect of the house inheritance rule is also attenuated by excluding the land inheritance rule from regressors. It should also be noted that the high level of correlation among regressors generally affects the efficiency of point estimates, but not the consistency.

Finally, the significantly negative association between mothers', rather than fathers', education and the marital probability of their children is consistent with the findings reported in numerous literature sources, whereby positive correlation between mothers' education and child welfare (education, earnings, etc.) is reported, as early marriage is likely to reduce educational attainment (Field and Ambrus, 2008).

[Here, Tables 4 and 5]

5.2 Robustness: Alternative Interpretations

The preceding subsection showed that making it customary for women to inherit land following their husband's death increased the marital probability of males living in the village. Taking into account a traditional system of exogamous and patrilocal marriage prevalent in rural Tanzania, this finding is consistent with a view that females attempt to marry into a village that supports the widow's right to land inheritance, because the rule can provide them with social protection in the future. However, alternative interpretations, which may be driven by time-varying village-level unobservable factors (ω_{jt}^{M}), may also be possible for this finding. This section discusses some of those concerns.

Welfare Shocks

During the sample periods, treatment villages might have experienced economic expansion. As this raises the value of males living in these villages in a marriage market, this economic fluctuation may be the source of an increase in marital probability of males residing in treatment villages. In order to assess potential differences in economic growth between treatment and control villages, the increase in per capita weekly income and annual consumption was estimated by using a specification of (3) and data pertaining to males exploited in the previous analysis (columns (a) to (h) in Appendix Table 11). However, no significant differences between treatment and control villages were found in terms of the growth of these welfare measures.

In addition, the wave 5 survey collected information pertaining to socio-economic shocks in the past 10 years from 1994 to 2003, which had been experienced by panel respondents aged 20 years or older in wave 5. By using this information, in this study, a dummy was constructed for positive income shocks, which takes the value of one if the respondents enjoyed high income in any year between waves 4 and 5 due to high crop prices; bumper harvests; livestock activities; wage employment; off-farm employment; remittances; gifts and support by organizations; returns

[37] The correlation coefficient of the inheritance rules between those related to land and houses is approximately 0.82 in the first four waves and 0.72 in wave 5. When it comes to sample observations used in the estimations in Table 4, the correlation coefficient between D_j and the rule of house inheritance in wave 5 is 0.72 in column (a), 0.62 in (b), 0.59 in (c), and 0.32 in (d).

to other assets (e.g., land rental); and/or others (e.g., inheritance). Using this subjective measure as a dependent variable also reveals no significant difference between treatment and control villages in column (i) in Appendix Table 11.

Crop Choices

Whilst no significant difference between treatment and control villages was found in terms of the overall welfare measures in Appendix Table 11, it may be possible that the types of agricultural activities changed over time differently between treatment and control villages. As explained in subsection 3.3, in rural Tanzania, most females are in charge of female crops. To the extent that changes in underlying economic conditions encouraged treatment households to invest more in those female crops than male crops, for example, the changes, rather than women's security concerns, might have raised the marital probability of males in treatment villages by increasing demands for female labor.

By using the same male sample and specification of (3) as before, the changes in the share of cash-yielding crops relative to the sum of cash and food crops in household production were estimated in Appendix Table 12. The results in all columns except column (c) suggested that treatment villages in fact *increased* the share of male crops. If any factors related to the changes in the crop choices biased the previous estimations in Table 4, it is likely that the bias worked by providing further support for the primary finding of this study.

Mortality Shocks

To the extent that treatment villages experienced a greater loss of males relative to females during the sample periods, due to unobserved mortality shocks, than control villages did, this might have raised the marital probability of males living in treatment villages by decreasing the male-to-female ratio (relative to the corresponding ratio in control villages) (Becker, 1981). It is certainly possible that the decrease in the sex-ratio associated with the mortality shocks enabled widows in treatment villages to obtain a right of land inheritance by increasing women's bargaining power in a village, as females had to control land due to a greater number of male deaths.

Kagera has historically been one of the regions most seriously affected by HIV/AIDS in Tanzania. In addition, as seen in subsection 4.2, the panel data suggests that treatment villages were more developed and modernized at baseline than control villages were. Since mortality shocks associated with HIV/AIDS may be more serious in urban areas, the increase in the marital probability of males in treatment villages may be attributed to shifts in the gender composition of population driven by health-related shocks.

In order to explore this possibility, Appendix Table 13 reports the estimation results of (3) by using the same male sample as before, after replacing the dependent variable with variables assumed to capture mortality shocks experienced by those males. Using the growth of per capita annual household expenditures related to household members' illness and death as the dependent variable in columns (a) to (d), this study finds no evidence supporting the view that males in treatment villages spent more on health and funeral services because they were more seriously affected by mortality shocks.[38] However, one potential concern remains in the significantly negative

[38]Taking the log of the health-related expenditures might generate sample selection bias. However, if males in treatment villages spend more on health-related goods or services, the effect of D_j on the growth of those health-related expenditures will be *overestimated* by taking the log. Even in the presence of this potential sample

association between D_j and the growth of health-related expenditures in column (d), which suggests that mortality shocks were more serious in control villages, compared to treatment villages. If the greater shocks experienced by control villages affected females more than males, the previously identified positive effect of D_j on the marital probability of males in Table 4 might have been overestimated by increasing the sex-ratio in control villages (relative to the corresponding ratio in treatment villages). However, this concern is absent in all the other columns. Moreover, if the greater shocks experienced by control villages were more serious for males than for females, the bias would show the opposite direction, suggesting that the true impact of D_j on the marital probability of males is more positive.

Alternatively, based upon the information on the past socio-economic shocks explained in the above 'welfare shocks' section, another dependent variable - a dummy for health shocks, equal to one if respondents aged 20 years or above in wave 5 experienced income or asset losses in any year between 1994 and 2003 due to household members' death or serious illness - was used in the estimation in column (e). Despite exploiting this alternative subjective measure, no significant difference was found between treatment and control villages.

Village Infrastructure

In addition to exploring the growth in income and consumption, the analysis also compared improvements in village infrastructure between treatment and control villages over time, as potential factors reflecting economic expansion in each village. By constructing panel data at the village level, the analysis investigated changes in village infrastructure in terms of a bank, a daily market, public transportation, and a bar or a restaurant in Appendix Table 14. All the results show that treatment villages experienced *less* improvement in terms of availability of those facilities, which may be associated with higher levels of economic development in treatment villages at baseline. In Table 4, all these village characteristics at baseline were explicitly controlled for. Thus, if economic growth measured by the improvement of the village infrastructure raises the marital probability of males by increasing their value in a marriage market, it might have generated bias in the estimations in Table 4 by attenuating the positive impacts of D_j. Again, this provides further support for the finding of this study.

5.3 Heterogeneity

5.3.1 Ex-ante and Ex-post Effects

As already touched upon in subsection 3.5, it appears that the estimated α_2^M is a population-weighted average of ex-ante (expectation) and ex-post impacts of altering the land inheritance rules.

This remark arises from three pieces of background information; in this study, firstly, an improvement in a widow's land right is measured by changes in the *customary* rule in each village rather than a nationally authorized lawful action at a particular point in time. Since the customary rule is likely to change gradually over time, as well as spread through a community by degrees rather than suddenly or all at once, it is quite likely that people adjust their marital behavior, expecting the rule of land inheritance to be revised in the near future under a surge of national

selection bias, the estimations in Appendix Table 13 reveal no evidence in support of the view that treatment villages experienced more serious mortality shocks than control villages did.

excitement about women's land rights in the 1990s. This suggests that the previously estimated α_2^M might have implicitly included some expectation effects of removing discrimination against widows. This possibility will be tested below shortly. Secondly, according to interviews with village leaders, data reveals little improvement in a widow's inheritance right in the first four waves, suggesting that most villages removed discrimination against widows between waves 4 and 5. In fact, this is compatible with women's land rights movement, which emerged in the 1990s and contributed to the enactment of the Land Act of 1999 and the Village Land Act of 1999. However, for villages that changed the social rule regarding a widow's land inheritance after wave 4, the exact timing of the change cannot be discerned from the available data. Thirdly, timing of marriage is seemingly distributed between 1991 and 2004 with an adequate variation in data. Regarding the distribution, Figure 2 presents empirical cumulative distribution functions of baseline age for males aged below 18 years in wave 1 by their marital status in wave 5. Clearly, the distribution of those who married by wave 5 first-order stochastically dominates the distribution of those who remained single until wave 5. As this pattern of distribution suggests that single male children in wave 1 systematically self-selected into marital relationship as they reached some cut-off point of age for marriage, consequently, some proportion of males in the sample must have married in advance of changes in the land inheritance rules.

In order to examine, albeit simplistically, the manner in which this background information contributed to the above remark, let's assume that villages that changed the social rule (treatment villages) can be grouped into two types - those that changed the rule at the end of the sample periods (group A) and those that did so at the beginning of the sample periods (group B). Then, the linear probability of getting married between the periods t and $t+1$ can be modeled as

$$M_{ijt+1} = \begin{cases} \gamma_1 + \epsilon_{ijt+1} & \text{for those who are in the group } A \text{ (treatment villages)} \\ \gamma_2 + \epsilon_{ijt+1} & \text{for those who are in the group } B \text{ (treatment villages)} \\ \epsilon_{ijt+1} & \text{for those who are in control villages} \end{cases} \tag{6}$$

where γ_1 and γ_2 are the ex-ante (expectation) and ex-post impacts of the change in the social rule, respectively. With a dummy for the group A, A_j, pooling all villages yields

$$M_{ijt+1} = \gamma_2 D_j + (\gamma_1 - \gamma_2) D_j A_j + \epsilon_{ijt+1}. \tag{7}$$

This is a simplified version of equation (3) with an exception of the interaction term between D_j and A_j. When the timing of the change in the social rule cannot be ascertained from the available data for either treatment group, the interaction term cannot be included in regressors. Then, a standard OLS argument shows that with additional assumptions of $E(D_j \epsilon_{ijt+1}) = 0$ and $E(D_j|A_j) = E(D_j)\ \forall\ i$, j, and t, regressing M_{ijt+1} only on D_j results in[39]

$$\text{plim}_{n\to\infty}\, \hat{\gamma}_2 = p\gamma_1 + (1-p)\gamma_2. \tag{8}$$

[39]Equation (8) can be derived as

$$\begin{aligned} \text{plim}_{n\to\infty}\, \hat{\gamma}_2 &= \gamma_2 + \frac{(\gamma_1 - \gamma_2) E(D_j^2 A_j)}{E(D_j^2)} \\ &= \gamma_2 + (\gamma_1 - \gamma_2) p. \end{aligned}$$

where $E(D_j^2 A_j) = \text{Prob}(A_j = 1) \cdot E(D_j|A_j = 1) = \text{Prob}(A_j = 1) \cdot E(D_j)$ (by assumptions) and $E(D_j^2) = E(D_j)$ are used from the first to the second line.

where $p \equiv \text{Prob}(A_j = 1)$ is the probability of males being in the group A. Equation (8) suggests that, unless $D_j A_j$ is explicitly included in the empirical model, the estimated effect of the change in the inheritance rule will converge to $p\gamma_1 + (1-p)\gamma_2$ as the sample size (n) grows, which can be interpreted as a population weighted average of ex-ante and ex-post effects of D_j. Note that this is true in the absence of any correlation between D_j and ϵ_{ijt+1} in equation (7).

Another implication from equation (8) is that the estimated α_2^M in (3) might be biased downwards, provided that the expectation effect is absent (i.e., $\gamma_1 = 0$). One way of testing for the presence of the expectation effect is to split sample males into two groups - the young (aged 5 to 12 years) and the old (aged 13 to 18 years), in wave 1.[40] As shown in Figure 2, it appears that single male children in wave 1 systematically entered into marital relationship as they aged, which, in turn, suggests that, on average, the old group are more likely to have married earlier than the young group did during the sample periods. While the data does not reveal exactly when most villages altered the land inheritance rule between the waves 4 and 5, the distribution pattern in Figure 2 may indicate that some expectation effect exists, provided that the change in the rule affected the marital probability of the old group as well as that of the young group.

After splitting the male sample into the two groups, equation (3) was estimated in Table 6. As shown in Table 4, the magnitude of the impacts is different across columns, depending upon which wave is used as the base period. However, the results reveal quite a robust picture supporting the view that the expectation effect does exist.

Somewhat surprisingly, the ex-ante effect is greater than the ex-post effect, suggesting that the advantage in treatment villages with respect to the marital probability of males dies out over time. Likely, males in control villages may try to attract single females by offering additional resources (e.g., bride prices) to those females, or credibly promising to allocate more of (divisible) marital outputs to potential spouses in a marriage market (transferable utility model). Similarly, if such resource transfer is not feasible (non-transferable utility model), those males in control villages may attempt to invest in themselves in order to be perceived as more attractive in a marriage market (Peters and Siow, 2002). As both these adjustments may eventually eliminate differences in the marital probability of males between treatment and control villages, this adjustment process may be seen as one potential interpretation for the finding.

Alternatively, control villages might also have removed discrimination against widows after wave 5. In fact, all villages in an economy seem to have eventually removed the discrimination. If this is indeed the case, single females might have attempted to marry into control villages for the latter half of sample periods, expecting future changes in the inheritance rule, which might have taken place after wave 5. This may also be another interpretation for the smaller difference in marital probability of the young cohort between treatment and control villages than that of the old cohort.

Another interpretation for the estimation results is that the old cohort in treatment villages enjoyed the greater advantage regarding the marital probability because they had access to the marriage market for longer than the younger cohort did. This may be true, provided that most

[40] Another possible test is to change the base period of (3) from wave 1 to wave X (where X is either 2, 3 or 4) after excluding individuals that married between wave 1 and X. Given that most villages altered the land inheritance rule after wave 4, excluding married males is likely to remove from the sample those who got married in advance of the inheritance rule changing. If there is no expectation effect (i.e., $\gamma_1 = 0$), thus, sliding the base period towards wave 5, as well as excluding those who got married by wave 4 - implying a decrease in p in (8) - is likely to increase the estimated impact of α_2^M in (3). However, this test could not be conducted within the present study, as only a few males aged 5 to 18 years in wave 5 got married between waves 1 and 4.

villages changed the land inheritance rule immediately after wave 4 (hence, the treatment effect is largely the ex-post effect for both groups) and that the positive gain arising from the treatment did not appear at the point of an individual's entry into the marriage market, but rather gradually materialized over time.[41] Or more simply, most of the young cohort might still have been too young to get married in wave 5, despite the fact that the village removed discrimination against widows regarding land inheritance. Unfortunately, the data does not enable further tests that would distinguish these possibilities; nonetheless, the difference in the treatment effect between the young and old cohorts suggests the presence of some mechanism along these dimensions (or a different, yet unidentified, scenario).

[Here, Figure 2 and Table 6]

5.3.2 Land Size

Finally, this subsection explores how the effect of introducing a new inheritance rule in favor of widowed women varies by the size of an individual's farmland within a village. Assuming that women's relocation associated with marriage is driven by an attractive land inheritance rule at the destination, they are more likely to marry males, not only living in a village characterized by a favorable inheritance rule, but also having a large size of farmland.

To test this story, the following model was estimated for males used in the previous analysis,

$$M_{ijt+1} = \pi_1^M + \pi_2^M D_j \cdot L_{ijt} + \pi_3^{M\prime} \mathbf{x_{it}} + \omega_j^M + \epsilon_{ijt+1}, \tag{9}$$

where L_{ijt} is the size (acre) of land area cultivated by a household which a male i in a village j belonged to in wave t, assuming that the predetermined land size has exogenous variation in the marriage equation. In contrast to estimating (3), note that this specification does not include $\mathbf{x_{jt}}$, but instead allows for controlling for village-fixed effects explicitly. Consequently, π_2^M, which is expected to be positive, can be identified by using variation in marital probability across households within treatment villages.

The estimation results of (9) are reported in columns (b), (d), (f), and (h) in Table 7. In the other columns, a vector $\mathbf{x_{jt}}$ was included with a dummy of D_j after replacing the village-fixed effects with district-fixed effects. The evidence is less conclusive, as only using wave 4 as the base period in columns (g) and (h) provides some evidence supporting the heterogeneity in the treatment effect, associated with the size of farmland. Based upon interviews conducted by the author in Karagwe district, seemingly, once they reach marriageable age, males inherit land from their father or purchase it and start to build their own house (typically in their natal village). Consequently, using the size of farmland at the level of an original household may not be a good proxy for the size of farmland actually owned by an individual male.[42] In addition, as the land size is estimated by respondents in the KHDS, possible measurement errors may also account for this weak evidence.

[Here, Table 7]

[41] I wish to thank Kazunari Tsukada for this insightful observation.

[42] Even using (log of) a household's cultivated land area per capita did not provide strong support for this heterogeneity.

6 Conclusion

To provide rigorous empirical support for the view that good marriage plays an important institutional role as women's old age insurance in the developing world, this study explored the relationship between a customary rule regarding a widow's land inheritance and the pattern of women's relocation associated with marriage in rural Tanzania. The hypothesis that the marital probability of males is higher in a village that allows a widow's land inheritance than in a village that does not was tested, assuming that females attempt to marry into the progressive village for old age protection and that the resultant competition among those females might reduce the cost of marriage incurred by males living in that village (e.g., search cost, bride prices, etc.).

This research used a unique, natural experimental setting, based on the data drawn from rural Tanzania for the period of 1991-2004. During this period, several villages that initially banned widows from inheriting land eliminated this discrimination. Comparing males living in such a village with their counterparts residing in a village that discriminated against widows throughout the sample periods enabled interpretation of the difference in their marital probability as a causal effect of empowering widows on women's relocation motivated by marriage. Controlling for the endogeneity associated with changes in the customary rule was the hardest empirical task, because the changes appeared not randomly assigned across villages. With an explicit control of village-fixed effects, together with a full set of village-level characteristics, the DID approach provided evidence in support of the hypothesis that making it possible for widows to inherit land in a village increased the marital probability of males living in the village.

In rural societies in developing countries, women not only work very hard, but also reproduce the labor of next generation as mothers. Therefore, their relocation associated with marriage has considerable welfare consequences. As the current study demonstrated that women's old age concern significantly affected their spatial mobility, reducing the cost of social security in the future (e.g., by establishing social pension programs) will have remarkable influence on the long-term spatial distribution of population and welfare. In addition to this fundamental lesson, the findings reported here also highlight the effectiveness of exploiting an appropriate economic incentive as a policy tool for empowering women, as the current study revealed their rational response to changes in (expected) economic returns in their old life. However, having an in-depth understanding of local institutions (e.g., clan exogamy and patrilocality, in the context of the current study) would be prerequisite for taking this approach. Without this knowledge, a newly introduced incentive system may unexpectedly alter the pattern of economic development. Moreover, this research confirmed a traditional view of a marriage market in rural Africa operating across neighboring villages, suggesting that any policy interventions for challenging traditional marital practices, such as early marriage and polygamy, should be spatially extensive, although further research is needed for providing more precise prescriptions about the geographical scope.

A few reservations may be expressed with respect to the findings of this study. First, some time-varying shocks experienced by treatment villages during the sample periods might have adversely affected the reported estimations. Thus, attempts were made to assess whether and how those potential shocks confounded the estimations from several perspectives (e.g., welfare, mortality). Regarding the perspectives examined in this paper, the several attempts served to strengthen, rather than weaken, the significance of the results, suggesting that the estimates reported by this study may provide the most conservative indications of the relationship between a customary rule

governing a widow's land inheritance and the marital probability of males. However, it may still be doubtful that the empirical results are entirely free from endogeneity bias, making alternative interpretations of the reported results possible. This concern may also arise from likely noise in measuring a widow's land inheritance, counter-intuitive impacts of the house inheritance rule, and relatively weak evidence in support of the heterogeneity in the treatment effect associated with the farmland size. Consequently, the findings of this study will have to be interpreted with these qualifications in mind. Nevertheless, this study adds one piece of evidence, shedding light on the significance of an old age issue that might have been long out of the headlines of international policy debates focusing on the development. Combining this evidence with qualitative information additionally collected by the author in the surveyed area, overall, it may be surmised that women strategically chose their husband to protect their quality of life in the future. Further empirical work could greatly enhance our understanding of the institutional role of marriage as means of women's old age insurance, or more generally, social insurance.

Finally, an empirical framework exploited in this paper may be used for analyzing the impacts of removing discrimination against widows on parents' incentive to invest in agricultural innovation and/or in children, as partly done in previous studies.[43] These questions are also open for future research.

[43]For example, a village having a customary rule that allows widows to inherit land may increase the level of girls' education relative to boys' education in the village, provided that it reduces mothers' preference for sons by providing mothers with alternative safety nets.

A Appendix: More on Institutional Background

A.1 Historical Perspective of Land Tenure Policy

In the pre-colonial period, land was a communally owned property in Tanzania and it was vested in a family or a group of extended families, known as clan. A headman of family or a chief of clan administrated land matters on behalf of the entire family or the clan members, and any borrowing in excess of the amount of land allocated to each family or clan had to be authorized by the community.

At the end of the 19th century, the Germans first colonized Tanzania and the Government confiscated large areas of land from indigenous people to give to European settlers. Based on the imperial decree passed by the German Government in 1895, land owned by an indigenous community was regarded as 'unowned land' and its free expropriation was permitted. As the concept of individualized ownership was also introduced during this time, transactions involving land became possible, albeit subject to documentary evidence as a proof of title, which many Africans lacked in a land tenure system of the pre-colonial period.

After Tanganyika moved to Britain (1922-1961) under the supervision of the League of Nations, the British Government had to fulfill their obligation under the Trusteeship Agreements, which provided as follows, "In framing laws relating to the holding or transfer of land and natural resources, the Administering Authority shall take into consideration native laws and customs, and shall respect the rights and safeguard the interests, both present and future, of the native population. No native land or natural resources may be transferred except between natives, save with the previous consent of the competent public authority. No real rights over native land or natural resources in favour of non-natives may be created except with the same consent." In response to this Article 8, the British Government declared all land to be 'public land' in the Land Tenure Ordinance instituted in 1923 and statutorily recognized 'title of native community lawfully using or occupying land in accordance with customary law.' In reality, however, an exploitative structure by the colonial government remained. Since the British Government's priority was given to the interests of foreign settlers and planters, for example, this 'customary right of occupancy' was often ignored. In addition, in 1953, customary law was invalidated in all urban areas declared a township, municipality or minor settlement (Circular no. 4). Moreover, following the introduction of the Land Tenure Ordinance, the issue of documentary title was still necessary in land transactions.

Following the declaration of independence in 1961, colonial land tenure policies were more or less absorbed by the newly emergent state. In contemporary Tanzania, therefore, since the independence, all land has been public, although all rights of land ownership, i.e. 'radical title', have been vested in the President in trust for the whole nation, thus still leaving possibilities for the executive to freely allocate land to government agencies or private foreign investors for the public purpose. There is essentially no freehold form of land tenure and land holders possess only leaseholds of a specified duration. Consequently, land matters of the people, such as those pertaining to acquisition, use, disposal and bequeathing, are taken in the sense of the 'right of occupancy'. Moreover, potential disputes related to land are firstly dealt with at a village council, which has substantial power at the local level, before being presented to the primary court (and finally the district or high court, in case of an appeal).

A.2 Pluralistic Legal System about Inheritance

As described in Section 2.2, in Tanzania, the inheritance of estates is primarily governed by three different laws - Customary, Islamic, and Statutory laws - that provide for both testate and intestate succession. Moreover, each of these legal systems is connected by ethnicity and religious affinity. In Tanzania, there are approximately 120 ethnic groups (Killian, 2011, p.8) that, albeit distinguished by socio-cultural factors, show commonality in their belief systems, associated with African traditional religion. In contemporary Tanzania, this traditional religion is no longer in a populational rivalry with two major religions of Christianity and Islam, as 60% of population is Christian, 36% Muslim, and 2% are followers of African traditional religion (Pew Forum, 2010, p.20).[44] Nevertheless, it is quite common that those who identify themselves as Christians and Muslims customarily practice the traditional religion, further complicating inheritance matters.

It can be problematic to determine which inheritance law - Customary Law, arguably associated with the traditional religion (Killian, 2011, pp.38-40), or Islamic Law, founded on Qur'an - applies when an African is a Muslim. This is an important issue, as there is a conflict between these two laws. For those who die testate, presumably, their intention would be appreciated. If their will is challenged by any of the intended or would-be beneficiaries, or in the case of intestate succession, either Customary or Islamic Law applies, depending upon which one dominated the life of the deceased (a mode of life test). In contrast to Islamic Law, Statutory Law, i.e., law enacted by Parliament of either the colonial or post independent state, applies to Christians, but only when Customary Law does not apply to them. Despite Islamic and Statutory laws adopted in particular situations, in practice, these two laws are superseded by Customary Law, which applies to the majority of Africans living in rural areas.

A.3 Women's Mobility during a Post-independence Single-party Period

The first women's organized mobilization can be found in women's section of TANU, which was formed as a nationwide nationalist party in 1954. In 1965, this section developed into a national women's organization called *Umoja wa Wanawake wa Tanganyika* (UWT) under a post-independence single-party system. Throughout the single-party period, the UWT played the role of a women's wing of the ruling party, in charge of improving women's social status (Tenga and Peter, 1996). The Employment Ordinance was, for example, amended in 1975 due to the UWT's efforts, so that a female officer certified as pregnant could be entitled to paid maternity leave of 84 days every three years, which might be taken once at any time between the commencement of the seventh month of pregnancy and the day following the termination of pregnancy by a live delivery. In addition, the UWT contributed to clearly providing for grounds for divorce in the LMA. Despite its achievements, however, the UWT primarily served as one of party-affiliated organizations aimed at disseminating the TANU's ideology, rather than an independent and legitimate political forum for and by women. In addition, the single-party system greatly restricted women's freedom of association and expression by prohibiting women from organizing and mobilizing independently. Consequently, the limited women's mobilization did not achieve a substantial improvement in their land rights during the single-party period, making them still highly vulnerable to land insecurity.

[44] While religious composition is somewhat controversial, Christians and Muslims constitute the majority of population in contemporary Tanzania. In the current data set, approximately 12% of a household heads declared themselves as Muslim in wave 1, with 82% reporting some type of Christianity as their religion, and 3% following African traditional religion.

A.4 Villagization Program in the 1970s

Along the lines of the well-known concept of *Ujamaa* ('familyhood' or 'brotherhood' in Swahili), an ideology of socialism and self-reliance introduced by the first post-independent President Julius Nyerere and the Tanganyika African National Union (TANU),[45] the villagization program intended to create communally organized socialist villages (ujamaa villages) in the country, where people would live and work together, mutually respecting each other and sharing common basic goods and services.

When the government formally started this program with the Arusha Declaration of 1967, most rural population lived at widely scattered locations throughout the countryside. This policy was, therefore, associated with initially voluntary (1967-1972) and later compulsive (1973 onwards) resettlement of people into clustered villages. By the end of the 1970s, about 75% of the rural population relocated to clustered villages (McHenry, 1979, p.150),[46] although not all clustered villages were recognized as an ujamaa village. At the beginning of this program, some confusion existed about the nature of an ujamaa village, because neither the concept of 'living together' nor 'working together' was clearly defined. To avoid this confusion, the Villages and Ujamaa Villages Act (hereinafter, Villagization Act) was established in 1975, which provided for registration of villages, administration of registered villages, and designation of ujamaa villages.[47][48]

The process of moving people to clustered villages briefly experienced three stages: persuasion (1967-69), inducement (1969-72), and compulsion (1973-76).[49] In reality, considerable resettlement took place in the last stage, where the policy implementation was primarily left to each region (*operation villagization*). While operational procedures differed from region to region, militia, policemen, and junior officials typically went to an assigned area and forced the movement of population. To expedite the process, houses were sometimes burned, roofs ripped off, and doors and windows removed, and personal belongings were damaged when loaded into trucks that were used to transport people and goods to new villages.

Great regional variations also existed in the government's effort of operation. For example, an attempt to enforce resettlement was somewhat avoided in wealthy regions where private farming was well established, such as Kilimanjaro and West Lake (Hyden, 1975, p.56). In addition, areas occupied by a low proportion of government officials underwent forced resettlement earlier than did those having a higher proportion (McHenry, Jr., 1979, p.134). Even in each region, some criteria for setting up new villages existed, such as access to roads, water and presence of social amenities.

[45] TANU became Chama cha Mapinduzi (CCM) in 1977, a leading party in a current multi-party political system.

[46] According to the research conducted by the Dar-es-Salaam Institute of Land Administration and Policy Studies (DILAPS), by 1979, approximately 15 million individuals, some forcibly and without any compensation, relocated to 8,300 ujamaa villages (Lugoe, 2008, p.5).

[47] In the Villagization Act, villages were categorized either as ordinary villages or ujamaa villages. Broadly speaking, a village could apply to become an ujamaa village once it undertook a substantial portion of economic activities on a communal basis, as well as achieved a certain number of families. By this Act, the multipurpose cooperative, which had been previously considered as the highest form of an ujamaa village, became a precondition to designation as a village, and communal production was identified as the distinguishing feature of an ujamaa village (McHenry, 1979, p.102).

[48] Just prior to the establishment of the Villagization Act, rural population was brought to live in planned villages (or development villages), i.e., reorganized traditional villages or newly established villages, where people relocated from surrounding areas (Swantz, 1985). This community could become an ujamaa village once it succeeded in the transition to communal production (Moore, 1979, p.68).

[49] In the stage of persuasion, a great variety of agents, such as ministers, regional commissioners, and TANU officials, toured rural areas, passing a message of *Ujamaa* and exhorting people to move into clustered villages. In the second stage of inducement, the government offered material incentives, such as the provision of water, land, productive equipment, and non-material incentives, including the association of the status of a person, position, or institution with an ujamaa village.

Before the introduction of the villagization program, clustered villages were seen as a way to improve agricultural productivity and facilitate the delivery of services, such as schooling, healthcare, and water supply. However, this was not always the case. The villagization, for example, initially brought about a disruption in agricultural work and also jeopardized the agricultural production of those who had to relocate to a place distant from their fields. In addition, the promised services were lacking in some places due to the government's limited budget. Moreover, the large-scale resettlement made people uncertain of their future claim to land ownership, as others now settled on land having belonged to them prior to the program. After the failure of the ujamaa socialism policy in the 1980s, some people moved back to their original residences, which sometimes culminated in conflicts about land ownership between original and new settlers.

Whilst the villagization program came to an end without an expected success, women's social position might have been improved in a village formed by this program. In a clustered village, every ordinary resident aged 18 or above was eligible for membership in all the powerful village assemblies, irrespective of gender and marital status. In addition, both males and females were entitled to work on a communally owned farm and receive remuneration according to their labor inputs. The extent to which women could take advantage of these opportunities in those days is arguable.[50] However, giving women an equal right to partake in some aspects of village life in these ways seems to have raised a public awareness against gender-based discrimination in a social life.

In fact, existing ethnographic studies provide suggestive evidence that the work pattern remarkably differed in clustered villages, where women were more empowered compared to their counterparts residing in traditional villages. In Kangabusharo ujamaa village, for example, communal work was performed three mornings a week in addition to an individual's work on own plots, and both males and females were involved in communal activities, such as tea production and management of carpentry cooperative (Swantz, 1985, pp.62-63). In addition, Kilimelile ujamaa village in Bukoba District called public attention by selecting a woman as a chairperson for the first time (ibid, pp.65-66). Moreover, in some ujamaa villages, Haya women, a dominant tribe in Kagera, were accepted as heads of household and as holders of the tenure to the plots of land they had purchased themselves. This has changed a previous image of women as dependents of male family members (ibid, pp.60-61).

B Appendix: Descriptions of Welfare Variables

Per Capita Annual Consumption

Per capita annual consumption is the average of a household's total annual consumption. The processed household-level consumption is publicly available and composed of food consumption (seasonal and non-seasonal) and non-food consumption (education and health expenditures, miscellaneous non-food expenditures, etc.). See *Kagera Health and Development Survey − Consumption Expenditure Data* for details at `http://www.edi-africa.com/research/khds/introduction.htm`.

[50] As the Villagization Act did not provide for a legal framework for land tenure arrangements, land was usually allocated to newly created villages for collective farming. Subsequently, the village council granted plots of land to village members for their farming at the household level. As the council was largely dominated by male members, who basically followed customary practices governing land administration, women were still in a disadvantaged position in terms of their right to accessing and owning land during this program (Killian, 2011, p.18).

Per Worker Weekly Income

Total per worker weekly income is calculated on an individual basis as the sum of wage earnings, non-farm self-employment income, and farming self-employment income. The KHDS collected an individual's wage earnings in the past 7 days. This includes salary after deduction of all taxes, per diem allowances, bonuses, incentives, gratuities, overtime income, payment in kind, and so forth. The non-farm self-employment income is the sum of net profits from all non-farm household businesses. This is calculated by adding the value of products consumed or used by households for their use to net cash revenues from those businesses. Since income reference periods for the non-farm self-employed activities were the past 2 weeks, this paper simply took the time average to compute the weekly income. To construct an individual's income measure, the household income was finally allocated to each household member in proportion to an individual's hours worked on those activities in the past 7 days, which were individually reported in a different section from sections collecting household-level self-employment income. The farming self-employment income is the household-level annual (or 6-month in waves 2 to 4) net profits from self-employed farming and livestock activities. This is calculated by adding the value of crops and crop- or livestock-related home products consumed or used by households or lost for some reasons (e.g., natural disasters, thefts) to net cash revenues from those activities. As in the case of non-farm self-employment income, the weekly income is the time average of annual (or 6-month) income and the household-level weekly income was assigned to each household member in proportion to an individual's hours worked on those activities in the past 7 days.

Per Capita Weekly Income

Per capita weekly income is the average of the total weekly income of a household. The household income consists of the income from the activities described before: wage employment, non-farm self-employment, and farming self-employment.

Price Index

All monetary values in this paper are transformed into baseline prices (1991 prices) by using the Laspeyres and Fisher indices, both of which are in the public domain and constructed by household-wave group. See *Kagera Health and Development Survey − Price index* for details at `http://www.edi-africa.com/research/khds/introduction.htm`.

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Table 1: Reason for Migration

	Move out from wave 1 to 5		Move in by wave 1	
	Male	Female	Male	Female
(1) Economic reason				
No job / wanted better job	0.07	0.02	0.08	0.01
Business Opportunities	0.21	0.04	0.02	0.00
Land not available	0.11	0.03	0.18	0.05
(2) Schooling	0.09	0.06	0.03	0.02
(3) Family related reason				
Marriage	0.03	0.47	0.00	0.44
Divorce	0.00	0.03	0.00	0.06
Widowhood	0.05	0.02	0.00	0.02
Death of parents	0.00	0.00	0.12	0.06
Illness of household members	0.00	0.01	0.01	0.01
Other family problems	0.05	0.02	0.15	0.11
(4) Political reason				
Posted to new area	0.02	0.00	0.07	0.03
Political / economic problems	0.07	0.06	0.02	0.00
(5) Other	0.24	0.17	0.26	0.14
No. of migrants	626	955	995	1521

Notes: (1) Migrants in the first two columns are those who migrated out their original village at some point between 1991 and 2004, whereas migrants in the latter two columns are those interviewed in wave 1 who migrated into their surveyed village prior to wave 1. (2) The number is the proportion relative to the total number of migrants in each category.

Table 2: Marriage and Migration by Migration Status

	Migrants			Non-migrants
	Total	Internal	External	
(A) Males				
Married in wave 5	0.36	0.38	0.31	0.37
No. of individuals	444	317	127	962
(B) Females				
Married in wave 5	0.64	0.67	0.51	0.19
No. of individuals	685	552	133	758

Notes: (1) Individuals are respondents who were interviewed in both waves 1 and 5 and single in wave 1. (2) Migrants can be split into those who moved out of original villages but remained within Kagera (internal) and those who left the region (external). (3) The number is the proportion relative to the total number of individuals in each gender-migration-status category.

Table 3: Summary Statistics

	Male (5-18) non-migrants in wave 1					
	Treatment group (No. of villages = 21)			Control group (No. of villages = 5)		
	Mean	Std.	No. of obs.	Mean	Std.	No. of obs.
(1) Individual characteristics in wave 1						
Age	10.80	[3.92]	223	11.55	[4.23]	58
Education (years)	1.90	[2.50]	223	2.15	[2.61]	58
Height (cm)	130.98	[18.96]	215	135.65	[22.58]	55
Weight (kg)	28.90	[10.93]	215	31.76	[13.83]	55
Parents' education (years)						
Father	5.32	[3.10]	223	5.60	[2.65]	58
Mother	4.88	[2.63]	223	4.74	[2.80]	58
Parents died prior to a respondent being age 15 (one if yes)						
Father	0.34	[0.47]	223	0.41	[0.49]	58
Mother	0.24	[0.42]	223	0.24	[0.43]	58
(2) Household characteristics in wave 1						
Head's age	50.29	[14.83]	223	47.18	[18.64]	58
Head's tribe = Largest ethnic group (one if yes)						
	0.84***	[0.36]	223	0.98	[0.13]	58
HH head born outside a village (one if yes)						
	0.44**	[0.49]	223	0.27	[0.45]	58
HH head is Muslim (one if yes)						
	0.10***	[0.30]	223	0.01	[0.13]	58
No. of HH members aged 3 to 15						
Total	3.81	[1.65]	223	3.81	[1.83]	58
Male	2.25	[1.08]	223	2.43	[1.31]	58
Female	1.56	[1.29]	223	1.37	[1.28]	58
HH size	7.28	[2.65]	223	7.86	[2.81]	58
HH's cultivated land (acre)						
	4.30***	[4.52]	221	2.99	[2.47]	57
(3) Village characteristics in wave 1						
Population	2561.99***	[1589.57]	223	2014.05	[503.16]	58
A dummy for a village						
formed by the villagization	0.24***	[0.42]	223	0.00	[-]	58
having a bank	0.08***	[0.27]	223	0.00	[-]	58
having a daily market	0.45***	[0.49]	223	0.24	[0.43]	58
having a public transportation passed	0.34***	[0.47]	223	0.00	[-]	58
a bar or restaurant	0.53***	[0.49]	223	0.25	[0.44]	58

Note: The equality of means between treatment and control villages are examined by T-tests. *** denotes significance at 1%, ** at 5%, and * at 10%.

Table 4: Impacts of Inheritance Right to Land by Gender

Dependent variable:	One if get married between waves X and 5							
Sample:	Non-migrant males (5-18) only				All females (3-15)			
	$X=1$	$X=2$	$X=3$	$X=4$	$X=1$	$X=2$	$X=3$	$X=4$
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Remove discrimination regarding	0.209**	0.221***	0.290***	0.343***	-0.032	-0.193***	-0.137**	-0.072
a widow's land inheritance	[0.084]	[0.074]	[0.046]	[0.066]	[0.093]	[0.050]	[0.059]	[0.049]
between waves X and 5								
Age (years) in wave X	0.122**	0.071*	0.015	0.120**	0.142***	0.164***	0.101**	0.169***
	[0.045]	[0.039]	[0.032]	[0.045]	[0.031]	[0.036]	[0.046]	[0.045]
Age squared in wave X	-0.004	-0.002	0.000	-0.004**	-0.005**	-0.006***	-0.004*	-0.005**
	[0.003]	[0.001]	[0.001]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]
Education (years) in wave X	0.004	0.014	0.022	0.029	-0.006	-0.011	-0.013	-0.039*
	[0.023]	[0.019]	[0.017]	[0.017]	[0.021]	[0.020]	[0.019]	[0.019]
Height (cm) in wave X	-0.002	0.003	0.013***	-0.003	0.001	0.004	0.009*	0.002
	[0.004]	[0.005]	[0.003]	[0.006]	[0.003]	[0.004]	[0.005]	[0.005]
Weight (kg) in wave X	0.013	0.008	-0.007	0.012**	0.002	-0.006	-0.004	0.007
	[0.009]	[0.007]	[0.007]	[0.006]	[0.006]	[0.005]	[0.006]	[0.007]
Father's education (years)	-0.012	-0.010	-0.010	-0.014	0.001	-0.002	-0.001	0.012
	[0.009]	[0.010]	[0.008]	[0.009]	[0.007]	[0.007]	[0.006]	[0.008]
Mother's education (years)	-0.040***	-0.038***	-0.034***	-0.048***	-0.023**	-0.028**	-0.022*	-0.035***
	[0.009]	[0.010]	[0.009]	[0.010]	[0.010]	[0.010]	[0.012]	[0.010]
Father died before a	0.077	0.045	0.012	-0.018	-0.060	-0.095*	-0.119*	-0.059
respondent being aged 15	[0.057]	[0.040]	[0.041]	[0.055]	[0.073]	[0.048]	[0.058]	[0.053]
Mother died before a	0.005	0.007	0.020	-0.131	0.087*	-0.024	0.034	0.034
respondent being aged 15	[0.064]	[0.070]	[0.064]	[0.103]	[0.047]	[0.052]	[0.052]	[0.061]
Head's tribe = Largest	0.052	0.050	0.048	0.108	-0.139	-0.040	-0.083	-0.081
ethnic group in a	[0.138]	[0.085]	[0.081]	[0.094]	[0.130]	[0.081]	[0.084]	[0.105]
village in wave 1								
HH head born outside	-0.037	0.000	-0.457***	0.360***	0.009	-0.431***	-0.395**	-0.150
a village in wave X	[0.057]	[0.000]	[0.116]	[0.092]	[0.051]	[0.092]	[0.147]	[0.103]
Head's age in wave X	-0.000	-0.002	-0.003**	0.000	-0.000	0.003*	0.002	0.001
	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]
Head Muslim in wave X	0.005	-0.056	-0.051	-0.267***	0.013	-0.007	-0.047	0.008
	[0.069]	[0.047]	[0.048]	[0.087]	[0.081]	[0.060]	[0.088]	[0.080]
No. of HH male members	0.049	0.022	0.079***	0.103***	0.042*	0.028	0.025	0.024
aged 3 to 15 in wave X	[0.037]	[0.021]	[0.023]	[0.027]	[0.025]	[0.022]	[0.025]	[0.023]
No. of HH female members	0.016	-0.005	0.011	0.063**	0.032	0.017	0.014	-0.011
aged 3 to 15 in wave X	[0.025]	[0.024]	[0.027]	[0.027]	[0.025]	[0.024]	[0.026]	[0.025]
HH size in wave X	-0.027*	-0.004	-0.015	-0.046***	-0.031**	-0.015*	-0.016	-0.005
	[0.013]	[0.012]	[0.017]	[0.015]	[0.011]	[0.008]	[0.012]	[0.010]
Log of cultivated	0.035	0.005	-0.001	0.001	0.035	-0.031	0.012	-0.020
land (acre) in wave X	[0.040]	[0.029]	[0.035]	[0.030]	[0.026]	[0.028]	[0.030]	[0.028]
Log of population in	-0.059	-0.121*	-0.102**	-0.102	0.000	-0.005	-0.046	0.035
a village in wave X	[0.046]	[0.061]	[0.049]	[0.083]	[0.077]	[0.046]	[0.049]	[0.096]
Village formed by	-0.125**	0.023	0.070*	0.090	0.018	0.040	-0.004	0.059
the villagization in the 1970's	[0.051]	[0.063]	[0.040]	[0.063]	[0.067]	[0.091]	[0.071]	[0.072]
Village having								
a bank in wave 1	-0.332**	-0.256*	-0.189**	0.110	0.021	-0.060	-0.050	-0.127
	[0.120]	[0.127]	[0.073]	[0.226]	[0.133]	[0.108]	[0.100]	[0.227]
a daily market in wave 1	0.049	0.022	0.086**	0.031	-0.127**	-0.070	-0.011	-0.072
	[0.066]	[0.057]	[0.039]	[0.062]	[0.057]	[0.067]	[0.055]	[0.062]
public transportation	-0.069	-0.066	-0.037	-0.084	-0.212**	-0.049	-0.108*	-0.117
passed in wave 1	[0.070]	[0.083]	[0.086]	[0.079]	[0.088]	[0.062]	[0.056]	[0.090]
a bar or restaurant in wave 1	0.229***	0.083	-0.052	0.098	0.146*	0.053	0.023	0.047
	[0.053]	[0.064]	[0.049]	[0.086]	[0.076]	[0.088]	[0.074]	[0.058]
Village allowing a widow's	-0.355***	-0.227***	-0.209***	-0.417***	0.037	0.105	0.108	-0.036
house inheritance in wave 5	[0.064]	[0.076]	[0.066]	[0.076]	[0.106]	[0.078]	[0.084]	[0.070]
Village allowing a widow's	-0.241**	-0.055	0.152**	0.038	-0.034	0.090*	-0.052	-0.041
house inheritance in wave X	[0.105]	[0.067]	[0.067]	[0.148]	[0.123]	[0.048]	[0.057]	[0.177]
Constant	0.653	0.938*	0.521	0.391	-0.134	-0.032	-0.142	-0.731
	[0.469]	[0.496]	[0.480]	[0.723]	[0.694]	[0.376]	[0.469]	[0.880]
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Proportion of predicted probability outside the unit interval								
	0.149	0.149	0.167	0.144	0.065	0.071	0.073	0.100
R-squared	0.474	0.471	0.507	0.492	0.309	0.289	0.299	0.371
No. of obs.	268	294	292	249	410	445	409	328

Notes: (1) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (2) Standard errors are robust to heteroskedasticity and clustered residuals within each village.

Table 5: Impacts of Inheritance Right to Land with a Control of Village Fixed Effects

Dependent variable:	One if get married between waves X and 5			
Sample:	Non-migrant males (5-18) and all females (3-15)			
	$X = 1$	$X = 2$	$X = 3$	$X = 4$
	(a)	(b)	(c)	(d)
Male ×				
Remove discrimination regarding	0.267**	0.457***	0.452***	0.471***
a widow's land inheritance	[0.126]	[0.084]	[0.048]	[0.057]
between waves X and 5				
Male	-0.082	0.135	0.013	0.079
	[0.252]	[0.241]	[0.207]	[0.222]
Age (years) in wave X	0.135***	0.170***	0.111**	0.160***
	[0.033]	[0.036]	[0.043]	[0.045]
Age squared in wave X	-0.005**	-0.006***	-0.004**	-0.005**
	[0.002]	[0.001]	[0.002]	[0.002]
Education (years) in wave X	-0.013	-0.017	-0.017	-0.035*
	[0.021]	[0.021]	[0.019]	[0.019]
Height (cm) in wave X	0.000	0.004	0.008*	0.002
	[0.003]	[0.004]	[0.004]	[0.005]
Weight (kg) in wave X	0.006	-0.006	-0.002	0.006
	[0.006]	[0.005]	[0.006]	[0.007]
Father's education (years)	-0.001	-0.002	-0.001	0.012
	[0.007]	[0.007]	[0.006]	[0.008]
Mother's education (years)	-0.020	-0.025**	-0.016	-0.034***
	[0.012]	[0.011]	[0.012]	[0.010]
Father died before a	-0.031	-0.088*	-0.119*	-0.056
respondent being aged 15	[0.074]	[0.048]	[0.059]	[0.058]
Mother died before a	0.098**	-0.015	0.043	0.040
respondent being aged 15	[0.047]	[0.053]	[0.053]	[0.065]
Head's tribe = Largest	-0.085	-0.001	-0.035	-0.068
ethnic group in a	[0.128]	[0.075]	[0.085]	[0.102]
village in wave 1				
HH head born outside	0.024	-0.504***	-0.487***	-0.261**
a village in wave X	[0.051]	[0.080]	[0.157]	[0.098]
Head's age in wave X	-0.001	0.003**	0.002	0.001
	[0.002]	[0.001]	[0.002]	[0.002]
Head Muslim in wave X	0.059	0.004	-0.032	0.001
	[0.085]	[0.066]	[0.093]	[0.079]
No. of HH male members	0.045*	0.051**	0.029	0.036
aged 3 to 15 in wave X	[0.024]	[0.020]	[0.026]	[0.025]
No. of HH female members	0.028	0.026	0.024	-0.008
aged 3 to 15 in wave X	[0.024]	[0.023]	[0.027]	[0.026]
HH size in wave X	-0.029**	-0.022**	-0.018	-0.007
	[0.011]	[0.008]	[0.013]	[0.011]
Log of cultivated	0.034	-0.043	0.001	-0.023
land (acre) in wave X	[0.031]	[0.030]	[0.033]	[0.028]
Male				
× Age in wave X	0.004	-0.107*	-0.079	-0.052
	[0.061]	[0.054]	[0.049]	[0.062]
× Age squared in wave X	-0.000	0.004**	0.003	0.002
	[0.004]	[0.002]	[0.002]	[0.003]
× Education (years) in wave X	0.025	0.031	0.039	0.064**
	[0.034]	[0.034]	[0.026]	[0.024]
× Height (cm) in wave X	-0.001	-0.000	0.004	-0.002
	[0.004]	[0.006]	[0.004]	[0.005]
× Weight (kg) in wave X	0.006	0.014	-0.002	0.001
	[0.012]	[0.009]	[0.009]	[0.009]
× Father's education	-0.014	-0.009	-0.008	-0.027**
	[0.012]	[0.011]	[0.011]	[0.012]
× Mother's education	-0.019	-0.017	-0.022	-0.015
	[0.012]	[0.012]	[0.014]	[0.015]
× Father died before a	0.089	0.155**	0.132	0.038
respondent being aged 15	[0.094]	[0.068]	[0.079]	[0.092]
× Mother died before a	-0.077	0.013	-0.028	-0.159
respondent being aged 15	[0.079]	[0.095]	[0.082]	[0.112]
× Head's tribe = Largest	0.007	-0.037	0.043	0.140
ethnic group in a	[0.115]	[0.106]	[0.094]	[0.129]
village in wave 1				
× HH head born outside	-0.071	0.521	0.193	0.506**
a community in wave X	[0.085]	[0.668]	[0.290]	[0.203]
× Head's age in wave X	0.001	-0.004*	-0.005*	-0.001
	[0.003]	[0.002]	[0.003]	[0.003]
× Head Muslim in wave X	-0.074	-0.046	-0.010	-0.256**
	[0.096]	[0.072]	[0.102]	[0.113]
× No. of HH male members	0.022	-0.030	0.045	0.072*
aged 3 to 15 in wave X	[0.039]	[0.029]	[0.036]	[0.036]
× No. of HH female members	0.006	-0.027	-0.015	0.084*
aged 3 to 15	[0.041]	[0.035]	[0.041]	[0.041]
× HH size in wave X	-0.004	0.022	0.004	-0.044**
	[0.019]	[0.016]	[0.022]	[0.019]
× Log of cultivated	0.004	0.053	0.010	0.011
land (acre) in wave X	[0.051]	[0.045]	[0.040]	[0.039]
× Log of population in	-0.020	-0.061	-0.048	-0.023
a village in wave X	[0.049]	[0.060]	[0.046]	[0.047]
× Village formed by	-0.002	-0.021	0.072	0.047
the villagization in the 1970's	[0.100]	[0.115]	[0.078]	[0.101]
× Village having				
a bank in wave 1	-0.188	-0.068	0.022	0.140
	[0.206]	[0.153]	[0.111]	[0.217]
a daily market in wave 1	0.063	0.036	0.061	0.097
	[0.096]	[0.072]	[0.074]	[0.087]
public transportation	-0.019	-0.009	0.097	0.069
passed in wave 1	[0.109]	[0.080]	[0.091]	[0.090]
a bar or restaurant in wave 1	0.204*	0.053	-0.046	0.037
	[0.113]	[0.060]	[0.075]	[0.076]
× Village allowing a widow's	-0.373**	-0.429***	-0.375***	-0.508***
house inheritance in wave 5	[0.142]	[0.105]	[0.072]	[0.076]
× Village allowing a widow's	-0.079	-0.168**	0.132*	-0.078
house inheritance in wave X	[0.164]	[0.071]	[0.071]	[0.084]
Constant	-0.150	-0.277	-0.569	-0.552
	[0.325]	[0.294]	[0.336]	[0.497]
Village FE	Yes	Yes	Yes	Yes
Proportion of predicted probability outside the unit interval	0.120	0.125	0.127	0.143
R-squared	0.379	0.387	0.409	0.442
No. of obs.	678	739	701	577

Notes: (1) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (2) Standard errors are robust to heteroskedasticity and clustered residuals within each village.

Table 6: Ex-ante and Ex-post Impacts of Inheritance Right to Land (Non-migrant Males Aged 5-18 in Wave 1)

Dependent variable:	One if get married between waves X and 5							
	$X=1$		$X=2$		$X=3$		$X=4$	
Age in wave 1	5-12	13-18	5-12	13-18	5-12	13-18	5-12	13-18
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Remove discrimination regarding	0.147	0.177	0.202***	0.416***	0.157**	0.542***	0.249***	0.529***
a widow's land inheritance	[0.096]	[0.208]	[0.067]	[0.133]	[0.073]	[0.109]	[0.083]	[0.114]
between waves X and 5								
Age (years) in wave X	0.002	-0.702	0.114*	-0.137	0.005	0.511	0.060	0.065
	[0.107]	[0.671]	[0.065]	[0.360]	[0.030]	[0.495]	[0.046]	[0.646]
Age squared in wave X	0.002	0.021	-0.004	0.004	0.001	-0.016	-0.001	-0.004
	[0.007]	[0.021]	[0.002]	[0.011]	[0.002]	[0.015]	[0.002]	[0.019]
Education (years) in wave X	0.096	0.019	0.108**	-0.004	0.090**	-0.025	0.013	0.039*
	[0.063]	[0.031]	[0.052]	[0.023]	[0.033]	[0.019]	[0.041]	[0.020]
Height (cm) in wave X	-0.009*	0.002	0.001	0.004	0.016***	0.011	-0.000	-0.007
	[0.004]	[0.008]	[0.007]	[0.010]	[0.004]	[0.008]	[0.009]	[0.011]
Weight (kg) in wave X	0.032**	0.012	-0.003	0.010	-0.026**	0.003	0.005	0.017*
	[0.014]	[0.013]	[0.013]	[0.010]	[0.011]	[0.008]	[0.013]	[0.009]
Father's education (years)	-0.010	-0.011	-0.003	-0.037**	-0.011	-0.015	-0.015	-0.030
	[0.011]	[0.019]	[0.012]	[0.016]	[0.008]	[0.023]	[0.009]	[0.028]
Mother's education (years)	-0.041***	-0.041**	-0.023	-0.055**	-0.021*	-0.046**	-0.050***	-0.034
	[0.013]	[0.019]	[0.015]	[0.021]	[0.010]	[0.017]	[0.015]	[0.020]
Father died before a	0.070	0.073	0.050	0.027	0.006	-0.002	-0.086	0.005
respondent being aged 15	[0.063]	[0.177]	[0.055]	[0.084]	[0.062]	[0.124]	[0.077]	[0.197]
Mother died before a	-0.058	0.009	-0.087	0.124	-0.039	0.092	-0.059	-0.117
respondent being aged 15	[0.081]	[0.165]	[0.074]	[0.179]	[0.061]	[0.130]	[0.139]	[0.181]
Head's tribe = Largest	0.109	-0.042	0.028	-0.113	0.048	0.006	0.151	-0.072
ethnic group in a	[0.099]	[0.230]	[0.113]	[0.242]	[0.053]	[0.258]	[0.111]	[0.201]
village in wave 1								
HH head born outside	-0.012	0.029	0.000	0.000	0.000	-0.384	0.131	0.000
a village in wave X	[0.075]	[0.086]	[0.000]	[0.000]	[0.000]	[0.330]	[0.114]	[0.000]
Head's age in wave X	0.003*	-0.004	0.002	-0.006	-0.000	-0.008	0.003	-0.003
	[0.002]	[0.004]	[0.002]	[0.004]	[0.002]	[0.005]	[0.002]	[0.008]
Head Muslim in wave X	-0.094	0.252***	-0.061	0.140	-0.078	0.151	-0.166	-0.757***
	[0.085]	[0.080]	[0.061]	[0.180]	[0.055]	[0.197]	[0.103]	[0.216]
No. of HH male members	0.067	0.026	0.024	0.015	0.072***	0.097**	0.111***	0.011
aged 3 to 15 in wave X	[0.046]	[0.061]	[0.028]	[0.048]	[0.026]	[0.046]	[0.036]	[0.046]
No. of HH female members	0.030	0.031	-0.004	0.022	0.005	0.025	0.054	0.069
aged 3 to 15 in wave X	[0.040]	[0.030]	[0.032]	[0.037]	[0.028]	[0.052]	[0.032]	[0.058]
HH size in wave X	-0.036	-0.030	-0.010	-0.004	-0.012	-0.041	-0.043**	-0.031
	[0.023]	[0.026]	[0.018]	[0.017]	[0.017]	[0.031]	[0.017]	[0.034]
Log of cultivated	0.023	0.030	-0.013	-0.007	-0.005	0.059	-0.040	0.024
land (acre) in wave X	[0.040]	[0.082]	[0.039]	[0.065]	[0.036]	[0.073]	[0.041]	[0.065]
Log of population in	-0.150	-0.035	-0.164**	0.041	-0.055	-0.056	-0.075	-0.240*
a village in wave X	[0.106]	[0.153]	[0.080]	[0.120]	[0.060]	[0.103]	[0.109]	[0.123]
Village formed by	-0.244***	0.119	-0.027	0.086	0.011	0.232**	0.018	0.234
the villagization in the 1970's	[0.070]	[0.196]	[0.094]	[0.125]	[0.063]	[0.112]	[0.067]	[0.159]
Village having								
a bank in wave 1	-0.052	-1.062***	-0.046	-0.818***	-0.102	-0.413	0.295	0.183
	[0.191]	[0.345]	[0.127]	[0.281]	[0.080]	[0.259]	[0.315]	[0.352]
a daily market in wave 1	0.008	0.141	0.044	0.077	0.102*	0.013	0.060	-0.100
	[0.089]	[0.195]	[0.092]	[0.148]	[0.053]	[0.090]	[0.059]	[0.105]
public transportation	-0.070	0.186	-0.012	0.158	-0.031	0.056	-0.122	-0.148
passed in wave 1	[0.126]	[0.193]	[0.087]	[0.166]	[0.078]	[0.194]	[0.092]	[0.132]
a bar or restaurant in wave 1	0.194**	0.171	0.005	0.036	-0.044	-0.111	-0.040	0.255*
	[0.080]	[0.160]	[0.097]	[0.155]	[0.059]	[0.147]	[0.093]	[0.144]
Village allowing a widow's	-0.297**	-0.424**	-0.208*	-0.467***	-0.082	-0.523***	-0.239*	-0.508***
house inheritance in wave 5	[0.124]	[0.189]	[0.110]	[0.157]	[0.098]	[0.115]	[0.123]	[0.133]
Village allowing a widow's	-0.249	-0.246	-0.166**	-0.009	-0.027	0.357**	0.060	0.396
house inheritance in wave X	[0.155]	[0.181]	[0.073]	[0.122]	[0.090]	[0.166]	[0.193]	[0.355]
Constant	1.977**	6.809	1.119	1.701	-0.549	-3.432	0.266	3.346
	[0.912]	[4.896]	[0.787]	[3.266]	[0.466]	[4.574]	[0.938]	[5.833]
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Proportion of predicted probability outside the unit interval								
	0.242	0.171	0.181	0.168	0.223	0.178	0.214	0.209
R-squared	0.456	0.433	0.393	0.464	0.433	0.480	0.407	0.592
No. of obs.	169	99	187	107	197	95	168	81

Notes: (1) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (2) Standard errors are robust to heteroskedasticity and clustered residuals within each village.

Table 7: Land Heterogeneity (Non-migrant Males Aged 5-18 in Wave 1)

Dependent variable:	One if get married between waves X and 5							
	$X = 1$		$X = 2$		$X = 3$		$X = 4$	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Remove discrimination regarding	0.221**	-	0.193**	-	0.302***	-	0.468***	-
a widow's land inheritance	[0.084]		[0.077]		[0.051]		[0.072]	
between waves X and 5								
Log of cultivated land (acre) in wave X	0.046	0.065	-0.065	-0.014	0.052	0.069	0.277***	0.252***
× Remove discrimination regarding	[0.070]	[0.077]	[0.061]	[0.106]	[0.080]	[0.102]	[0.086]	[0.085]
a widow's land inheritance								
between waves X and 5								
Age (years) in wave X	0.121**	0.121**	0.070*	0.077*	0.016	0.023	0.121**	0.119**
	[0.046]	[0.049]	[0.039]	[0.041]	[0.031]	[0.034]	[0.046]	[0.047]
Age squared in wave X	-0.004	-0.004	-0.002	-0.002	-0.000	-0.000	-0.004**	-0.003**
	[0.003]	[0.003]	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]
Education (years) in wave X	0.005	0.003	0.014	0.002	0.022	0.021	0.028	0.028
	[0.023]	[0.024]	[0.019]	[0.022]	[0.017]	[0.019]	[0.017]	[0.020]
Height (cm) in wave X	-0.002	-0.002	0.003	0.002	0.013***	0.012***	-0.002	-0.003
	[0.004]	[0.005]	[0.005]	[0.005]	[0.003]	[0.004]	[0.006]	[0.006]
Weight (kg) in wave X	0.013	0.013	0.007	0.009	-0.006	-0.005	0.012*	0.009
	[0.009]	[0.010]	[0.007]	[0.008]	[0.007]	[0.008]	[0.006]	[0.007]
Father's education (years)	-0.013	-0.014	-0.010	-0.013	-0.010	-0.012	-0.014	-0.015
	[0.009]	[0.009]	[0.010]	[0.011]	[0.008]	[0.008]	[0.009]	[0.009]
Mother's education (years)	-0.039***	-0.036***	-0.039***	-0.036***	-0.033***	-0.030***	-0.046***	-0.043***
	[0.009]	[0.010]	[0.011]	[0.012]	[0.010]	[0.010]	[0.010]	[0.010]
Father died before a	0.075	0.068	0.047	0.074*	0.014	0.047	-0.021	-0.000
respondent being aged 15	[0.055]	[0.057]	[0.040]	[0.040]	[0.041]	[0.049]	[0.052]	[0.058]
Mother died before a	0.004	-0.007	0.007	0.003	0.017	0.016	-0.126	-0.120
respondent being aged 15	[0.063]	[0.069]	[0.070]	[0.075]	[0.064]	[0.069]	[0.097]	[0.104]
Head's tribe = Largest	0.059	0.051	0.056	0.109	0.047	0.041	0.113	0.173*
ethnic group in a	[0.140]	[0.161]	[0.086]	[0.106]	[0.079]	[0.087]	[0.094]	[0.099]
village in wave 1								
HH head born outside	-0.037	-0.016	0.000	0.000	-0.458***	-0.391***	0.345***	0.352***
a village in wave X	[0.057]	[0.060]	[0.000]	[0.000]	[0.119]	[0.135]	[0.089]	[0.088]
Head's age in wave X	-0.000	-0.000	-0.002	-0.002	-0.003**	-0.002	0.000	0.000
	[0.002]	[0.002]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.002]
Head Muslim in wave X	0.004	0.065	-0.060	-0.019	-0.054	-0.063	-0.268***	-0.179*
	[0.069]	[0.074]	[0.047]	[0.058]	[0.049]	[0.060]	[0.088]	[0.094]
No. of HH male members	0.047	0.049	0.022	0.015	0.079***	0.076***	0.103***	0.090***
aged 3 to 15 in wave X	[0.037]	[0.042]	[0.020]	[0.024]	[0.024]	[0.026]	[0.027]	[0.029]
No. of HH female members	0.015	0.026	-0.005	0.003	0.012	0.014	0.066**	0.070**
aged 3 to 15 in wave X	[0.026]	[0.028]	[0.024]	[0.026]	[0.027]	[0.028]	[0.027]	[0.029]
HH size in wave X	-0.027*	-0.033*	-0.004	0.001	-0.016	-0.019	-0.047***	-0.048***
	[0.014]	[0.017]	[0.012]	[0.013]	[0.017]	[0.018]	[0.015]	[0.016]
Log of cultivated	0.036	-0.020	0.006	0.009	0.000	-0.039	-0.012	-0.249***
land (acre) in wave X	[0.040]	[0.060]	[0.028]	[0.094]	[0.036]	[0.083]	[0.029]	[0.082]
Log of population in	-0.059	-	-0.122*	-	-0.098*	-	-0.100	-
a village in wave X	[0.046]		[0.061]		[0.049]		[0.082]	
Village formed by	-0.123**	-	0.020	-	0.071*	-	0.091	-
the villagization in the 1970's	[0.050]		[0.063]		[0.040]		[0.063]	
Village having								
a bank in wave 1	-0.337**	-	-0.258**	-	-0.204**	-	0.102	-
	[0.123]		[0.122]		[0.077]		[0.226]	
a daily market in wave 1	0.055	-	0.018	-	0.091**	-	0.032	-
	[0.068]		[0.058]		[0.041]		[0.062]	
public transportation	-0.066	-	-0.072	-	-0.033	-	-0.084	-
passed in wave 1	[0.071]		[0.085]		[0.088]		[0.080]	
a bar or restaurant in wave 1	0.222***	-	0.088	-	-0.056	-	0.100	-
	[0.056]		[0.065]		[0.050]		[0.086]	
Village allowing a widow's	-0.361***	-	-0.195**	-	-0.223***	-	-0.428***	-
house inheritance in wave 5	[0.066]		[0.075]		[0.066]		[0.076]	
Village allowing a widow's	-0.242**	-	-0.044	-	0.152**	-	0.032	-
house inheritance in wave X	[0.108]		[0.070]		[0.067]		[0.145]	
Constant	0.654	-0.043	0.988*	-0.296	0.499	-0.637*	0.190	-0.455
	[0.474]	[0.387]	[0.494]	[0.373]	[0.481]	[0.375]	[0.742]	[0.514]
District FE	Yes	No	Yes	No	Yes	No	Yes	No
Village FE	No	Yes	No	Yes	No	Yes	No	Yes
Proportion of predicted probability outside the unit interval								
	0.136	0.164	0.153	0193	0.167	0.192	0.140	0.200
R-squared	0.475	0.498	0.472	0.504	0.508	0.529	0.495	0.535
No. of obs.	268	268	294	294	292	301	249	255

Notes: (1) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (2) Standard errors are robust to heteroskedasticity and clustered residuals within each village. (3) The demeaned log of cultivated land area and D_j are interacted in columns (a), (c), (e), and (g).

Table 8: Appendix: Considerations when Choosing a Husband

(1) Own age (maturity)	0.91
(2) A husband's age (similarity, maturity)	0.83
(3) A husband's education	0.63
(4) A husband belongs to a different clan	0.91
(5) A husband is in the same ethnic group	0.83
(6) A husband has no other wives	0.91
(7) A husband has the same religion	0.83
(8) A husband's family is rich	0.69
(9) A husband's family allows a widow to inherit a husband's properties	0.63
(10) A husband's family is 'good' in the sense that	
No witchcraft practices	0.88
No criminals	0.88
No ill members	0.80

Notes: (1) The observations were 36 females aged 30-40 years in 2012. (2) The number is the proportion.

Table 9: Appendix: An Individual's Hours Worked and Crop Choices in Wave 1

Dependent variables:	Log of per worker hours worked (weekly) on				The share of cash crops (relative to the sum of cash and food crops) in HH production	
	Self-employed farming		chore activities			
	Male	Female	Male	Female	Male	Female
	(a)	(b)	(c)	(d)	(e)	(f)
Remove discrimination regarding a widow's land inheritance between waves 1 and 5	-0.095	0.182	-0.035	0.001	-0.080	-0.043
	[0.085]	[0.120]	[0.145]	[0.060]	[0.093]	[0.120]
Age (years) in wave 1	0.012	0.056***	0.013	0.035***	-0.008*	0.000
	[0.021]	[0.009]	[0.022]	[0.008]	[0.004]	[0.004]
Age squared in wave 1	-0.000	-0.001***	-0.000	-0.000***	0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Education (years) in wave 1	-0.015	0.014	-0.026	0.024*	0.007	-0.005
	[0.016]	[0.021]	[0.023]	[0.013]	[0.005]	[0.006]
Height (cm) in wave 1	0.010	-0.000	0.018***	0.022***	-0.000	-0.003
	[0.006]	[0.005]	[0.006]	[0.004]	[0.002]	[0.002]
Weight (kg) in wave 1	0.005	0.005	-0.022**	-0.008*	-0.000	0.003
	[0.007]	[0.005]	[0.011]	[0.005]	[0.003]	[0.002]
Father's education (years)	0.008	0.010	0.012	-0.003	-0.012***	-0.009*
	[0.012]	[0.013]	[0.016]	[0.010]	[0.003]	[0.005]
Mother's education (years)	-0.014	-0.005	-0.006	-0.018	-0.012**	-0.004
	[0.017]	[0.012]	[0.015]	[0.013]	[0.005]	[0.006]
Father died before a respondent being aged 15	-0.010	-0.127	0.062	-0.143	0.020	-0.036
	[0.070]	[0.096]	[0.118]	[0.087]	[0.031]	[0.026]
Mother died before a respondent being aged 15	0.091	0.159*	0.145	0.055	-0.031	-0.025
	[0.078]	[0.090]	[0.150]	[0.088]	[0.033]	[0.034]
Head's tribe = Largest ethnic group in a village in wave 1	0.031	0.149	0.218	0.168	0.134**	0.121**
	[0.158]	[0.123]	[0.211]	[0.148]	[0.051]	[0.057]
HH head born outside a village in wave 1	0.009	0.131	0.038	0.059	-0.070	-0.107**
	[0.070]	[0.080]	[0.124]	[0.065]	[0.047]	[0.046]
Head's age in wave 1	0.001	-0.002	0.003	0.002	0.002**	0.003***
	[0.003]	[0.003]	[0.003]	[0.002]	[0.001]	[0.001]
Head Muslim in wave 1	0.161	0.120	0.345***	0.131	-0.089	-0.049
	[0.123]	[0.196]	[0.117]	[0.130]	[0.055]	[0.074]
No. of HH male members aged 3 to 15 in wave 1	-0.012	-0.088**	-0.009	0.032	0.003	0.016
	[0.064]	[0.035]	[0.067]	[0.030]	[0.018]	[0.019]
No. of HH female members aged 3 to 15 in wave 1	-0.012	-0.055*	-0.023	0.027	0.006	0.006
	[0.053]	[0.031]	[0.053]	[0.031]	[0.015]	[0.012]
HH size in wave 1	-0.010	0.003	-0.013	-0.037*	0.011	-0.005
	[0.034]	[0.020]	[0.034]	[0.018]	[0.013]	[0.012]
Log of cultivated land (acre) in wave 1	0.204***	0.106**	-0.203***	-0.158***	0.004	0.032
	[0.066]	[0.047]	[0.052]	[0.046]	[0.018]	[0.022]
Log of population in a village in wave 1	-0.257***	-0.090	0.289**	-0.061	0.004	0.001
	[0.087]	[0.126]	[0.125]	[0.061]	[0.065]	[0.087]
Village formed by the villagization in the 1970's	-0.195***	-0.322***	-0.082	-0.101	-0.131**	-0.161**
	[0.067]	[0.097]	[0.147]	[0.071]	[0.061]	[0.072]
Village having						
a bank in wave 1	-0.579***	-0.301	-0.787***	-0.032	0.108	0.064
	[0.170]	[0.305]	[0.275]	[0.138]	[0.113]	[0.172]
a daily market in wave 1	0.001	-0.108	0.107	0.082	-0.034	-0.102
	[0.078]	[0.123]	[0.149]	[0.065]	[0.077]	[0.095]
public transportation passed in wave 1	0.474***	-0.024	0.463***	0.179**	0.032	-0.121
	[0.120]	[0.143]	[0.139]	[0.086]	[0.076]	[0.096]
a bar or restaurant in wave 1	0.089	0.319**	-0.042	0.189**	0.058	0.112
	[0.091]	[0.143]	[0.141]	[0.086]	[0.058]	[0.081]
Village allowing a widow's house inheritance in wave 1	-0.511***	-0.085	-0.390	-0.354***	-0.027	-0.088
	[0.111]	[0.164]	[0.230]	[0.091]	[0.096]	[0.137]
Constant	2.905***	2.188*	-1.640	0.249	-1.640	0.249
	[0.859]	[1.146]	[1.181]	[0.729]	[1.181]	[0.729]
District FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.312	0.293	0.107	0.267	0.239	0.216
No. of obs.	403	542	427	634	605	727

(1) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (2) Standard errors are robust to heteroskedasticity and clustered residuals within each village. (3) Chore activities consist of collecting firewood, fetching water, caring for ill household members, preparing meals, cleaning houses, doing laundry, and shopping for food. (4) Coffee, cotton, tea, and tobacco are classified as cash crops, whereas banana, beans, cassava, and maize are classified as food crops. (5) Sample respondents included in the estimations were 7 years or older in wave 1.

Table 10: Appendix: Correlation between Marriage and Migration

Dependent variable:	One if married in wave 5			
Sample:	All		Only single at baseline	
	Male	Female	Male	Female
	(a)	(b)	(c)	(d)
Migrate between	0.008	0.372***	0.019	0.462***
waves 1 and 5 (dummy)	[0.029]	[0.028]	[0.034]	[0.026]
Married in wave 1	0.536***	0.376***	-	-
(dummy)	[0.019]	[0.030]		
Constant	0.457***	0.273***	0.452***	0.268***
	[0.010]	[0.018]	[0.009]	[0.013]
Initial village FE	Yes	Yes	Yes	Yes
R-squared	0.231	0.213	0.044	0.261
No. of obs.	1788	1901	1406	1443

Notes: (1) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (2) Standard errors are robust to heteroskedasticity and clustered residuals within each original village. (3) Columns (a) and (b) exploit all panel individuals with a control of marital status in wave 1, whereas columns (c) and (d) limit the sample only to those who were single in wave 1.

Table 11: Appendix: Inheritance Right and Welfare Shocks (Non-migrant Males Aged 5-18 in Wave 1)

Dependent variables:	Growth from wave X to 5 of:								One if positive income shocks
	Log of per capita income (weekly)				Log of per capita consumption (annual)				
	$X=1$	$X=2$	$X=3$	$X=4$	$X=1$	$X=2$	$X=3$	$X=4$	$X=4$
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Remove discrimination regarding a widow's land inheritance between waves X and 5	-0.318	0.173	0.030	0.229	-0.082	0.144	0.183	0.154	0.065
	[0.505]	[0.226]	[0.132]	[0.193]	[0.233]	[0.237]	[0.174]	[0.195]	[0.068]
Age (years) in wave X	-0.083	-0.211*	0.150	0.146	-0.031	-0.055	0.021	0.036	-0.040
	[0.106]	[0.118]	[0.141]	[0.125]	[0.089]	[0.081]	[0.080]	[0.086]	[0.046]
Age squared in wave X	0.005	0.010**	-0.003	-0.003	0.004	0.004	0.000	0.001	0.000
	[0.006]	[0.004]	[0.004]	[0.004]	[0.004]	[0.003]	[0.003]	[0.003]	[0.002]
Education (years) in wave X	-0.049	-0.078	-0.046	0.019	-0.062	-0.073*	0.008	-0.020	0.022
	[0.058]	[0.055]	[0.041]	[0.047]	[0.047]	[0.037]	[0.028]	[0.039]	[0.014]
Height (cm) in wave X	0.016	0.025	-0.001	-0.022	0.021*	0.010	0.006	-0.009	0.005
	[0.013]	[0.017]	[0.016]	[0.021]	[0.012]	[0.011]	[0.010]	[0.008]	[0.006]
Weight (kg) in wave X	-0.018	-0.037*	-0.007	0.011	-0.036*	-0.012	-0.013	0.000	-0.003
	[0.020]	[0.021]	[0.017]	[0.022]	[0.018]	[0.014]	[0.013]	[0.011]	[0.006]
Father's education (years)	0.020	-0.018	0.019	0.009	-0.004	-0.003	0.026	0.008	-0.005
	[0.029]	[0.029]	[0.026]	[0.021]	[0.023]	[0.030]	[0.025]	[0.033]	[0.010]
Mother's education (years)	-0.017	-0.005	0.003	0.029	-0.020	-0.018	-0.035	-0.015	-0.012
	[0.033]	[0.035]	[0.041]	[0.040]	[0.024]	[0.025]	[0.022]	[0.025]	[0.017]
Father died before a respondent being aged 15	-0.153	0.087	0.147	0.423*	0.103	0.039	0.066	0.212	-0.003
	[0.199]	[0.194]	[0.161]	[0.233]	[0.128]	[0.123]	[0.157]	[0.195]	[0.056]
Mother died before a respondent being aged 15	0.216	-0.062	-0.015	0.058	0.071	0.004	-0.051	-0.080	-0.054
	[0.197]	[0.240]	[0.160]	[0.245]	[0.106]	[0.139]	[0.159]	[0.180]	[0.092]
Head's tribe = Largest ethnic group in a village in wave 1	1.143***	0.298	0.534*	-0.037	0.262	0.336	0.081	-0.071	-0.018
	[0.221]	[0.370]	[0.281]	[0.452]	[0.184]	[0.202]	[0.115]	[0.334]	[0.113]
HH head born outside a village in wave X	-0.172	0.000	0.446	0.687	-0.173*	0.000	-0.001	-0.206	0.000
	[0.143]	[0.000]	[0.364]	[0.438]	[0.091]	[0.000]	[0.269]	[0.511]	[0.000]
Head's age in wave X	0.005	0.010	0.003	0.007	0.004	0.008*	0.008**	0.003	0.002
	[0.006]	[0.007]	[0.006]	[0.005]	[0.004]	[0.004]	[0.004]	[0.003]	[0.002]
Head Muslim in wave X	0.028	-0.134	0.592**	0.096	0.089	0.007	0.257	-0.142	0.001
	[0.262]	[0.244]	[0.260]	[0.384]	[0.167]	[0.207]	[0.203]	[0.161]	[0.114]
No. of HH male members aged 3 to 15 in wave X	0.299***	0.187*	0.044	0.116	0.122*	0.139***	0.040	0.029	-0.020
	[0.068]	[0.106]	[0.079]	[0.093]	[0.069]	[0.048]	[0.053]	[0.049]	[0.029]
No. of HH female members aged 3 to 15 in wave X	0.105	0.195**	0.167**	0.182***	0.059	0.115**	0.046	0.056	-0.002
	[0.068]	[0.074]	[0.066]	[0.061]	[0.052]	[0.043]	[0.037]	[0.053]	[0.034]
HH size in wave X	-0.119**	-0.035	-0.060	-0.056	-0.057	-0.039	-0.028	-0.013	-0.011
	[0.049]	[0.041]	[0.046]	[0.043]	[0.037]	[0.026]	[0.032]	[0.021]	[0.015]
Log of cultivated land (acre) in wave X	-0.281**	-0.223**	-0.236**	-0.300**	-0.044	-0.101	-0.204***	-0.227**	0.004
	[0.107]	[0.099]	[0.097]	[0.119]	[0.075]	[0.076]	[0.066]	[0.100]	[0.028]
Log of population in a village in wave X	-0.107	-0.128	-0.027	-0.571*	0.193	-0.165	-0.075	0.164	-0.006
	[0.318]	[0.184]	[0.110]	[0.286]	[0.214]	[0.192]	[0.125]	[0.256]	[0.088]
Village formed by the villagization in the 1970's	0.123	0.213	0.040	0.404**	0.278	0.374	0.149	0.228	-0.027
	[0.355]	[0.142]	[0.110]	[0.194]	[0.284]	[0.253]	[0.198]	[0.306]	[0.057]
Village having									
a bank in wave 1	-0.443	-0.505*	-1.134***	1.289**	-0.529	-0.248	-0.455**	-0.353	-0.021
	[0.605]	[0.276]	[0.303]	[0.492]	[0.493]	[0.281]	[0.221]	[0.618]	[0.170]
a daily market in wave 1	0.200	0.128	0.420***	-0.176	0.159	0.107	0.322***	-0.017	-0.065
	[0.402]	[0.164]	[0.127]	[0.170]	[0.212]	[0.193]	[0.114]	[0.128]	[0.055]
public transportation passed in wave 1	-0.199	-0.130	-0.187	-0.266	-0.159	-0.231	-0.130	-0.117	-0.107
	[0.307]	[0.166]	[0.182]	[0.230]	[0.263]	[0.206]	[0.174]	[0.199]	[0.100]
a bar or restaurant in wave 1	0.396	0.226	-0.211	0.146	0.110	0.066	-0.099	-0.085	0.144
	[0.268]	[0.214]	[0.155]	[0.273]	[0.169]	[0.160]	[0.171]	[0.206]	[0.092]
Village allowing a widow's house inheritance in wave 5	1.021***	0.016	0.336*	0.120	0.178	0.016	0.139	-0.180	-0.079
	[0.324]	[0.206]	[0.174]	[0.275]	[0.214]	[0.278]	[0.194]	[0.153]	[0.116]
Village allowing a widow's house inheritance in wave X	0.196	-0.208	0.903***	0.590	-0.026	-0.090	0.362*	-0.797	-0.125
	[0.543]	[0.211]	[0.168]	[0.612]	[0.264]	[0.379]	[0.179]	[0.693]	[0.177]
Constant	-0.833	-0.479	0.085	4.370*	-3.065	0.211	0.008	0.231	0.091
	[3.099]	[1.525]	[1.328]	[2.165]	[1.899]	[1.694]	[1.295]	[1.502]	[0.725]
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.269	0.210	0.207	0.194	0.213	0.171	0.172	0.215	0.123
No. of obs.	262	284	279	243	268	294	292	249	189

Notes: (1) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (2) Standard errors are robust to heteroskedasticity and clustered residuals within each village. (3) A dummy for positive income shocks takes one if respondents aged 20 years or older in wave 5 enjoyed high income in any year between 1994 and 2003 due to high crop prices, bumper harvests, livestock activities, wage employment, off-farm employment, remittances, gifts and support by organizations, returns to other assets (e.g., land rental), and others (e.g., inheritance).

Table 12: Appendix: Inheritance Right and Crop Choices (Non-migrant Males Aged 5-18 in Wave 1)

Dependent variable:	Growth from wave X to wave 5 of: share of cash crops (relative to the sum of cash and food crops) in HH production			
	$X = 1$	$X = 2$	$X = 3$	$X = 4$
	(a)	(b)	(c)	(d)
Remove discrimination regarding	0.149**	0.125*	0.010	0.224**
a widow's land inheritance	[0.070]	[0.069]	[0.051]	[0.088]
between waves X and 5				
Age (years) in wave X	-0.001	0.053	0.062	0.094
	[0.048]	[0.052]	[0.039]	[0.055]
Age squared in wave X	0.000	-0.002	-0.002	-0.003**
	[0.002]	[0.002]	[0.002]	[0.002]
Education (years) in wave X	-0.016	0.008	-0.022	0.013
	[0.025]	[0.020]	[0.015]	[0.021]
Height (cm) in wave X	-0.002	-0.012**	-0.008*	-0.016*
	[0.006]	[0.005]	[0.005]	[0.008]
Weight (kg) in wave X	0.001	0.010	0.009	0.013*
	[0.008]	[0.008]	[0.008]	[0.006]
Father's education (years)	0.007	-0.007	0.018*	-0.003
	[0.008]	[0.010]	[0.010]	[0.011]
Mother's education (years)	0.004	0.028*	-0.004	0.009
	[0.009]	[0.015]	[0.012]	[0.017]
Father died before a	-0.039	0.006	-0.033	0.026
respondent being aged 15	[0.059]	[0.057]	[0.061]	[0.075]
Mother died before a	-0.045	-0.100	-0.010	-0.048
respondent being aged 15	[0.068]	[0.075]	[0.065]	[0.093]
Head's tribe = Largest	-0.221***	-0.084	0.168	-0.010
ethnic group in a	[0.072]	[0.099]	[0.120]	[0.143]
village in wave 1				
HH head born outside	0.008	0.000	0.002	0.083
a village in wave X	[0.056]	[0.000]	[0.171]	[0.255]
Head's age in wave X	-0.002	0.003	-0.001	-0.000
	[0.002]	[0.002]	[0.002]	[0.003]
Head Muslim in wave X	0.121	-0.066	-0.002	-0.353*
	[0.098]	[0.095]	[0.135]	[0.204]
No. of HH male members	-0.007	0.034	-0.017	-0.022
aged 3 to 15 in wave X	[0.039]	[0.028]	[0.034]	[0.047]
No. of HH female members	-0.040	0.021	0.026	-0.070
aged 3 to 15 in wave X	[0.043]	[0.034]	[0.031]	[0.046]
HH size in wave X	0.023	-0.023	0.002	0.020
	[0.024]	[0.015]	[0.020]	[0.023]
Log of cultivated	0.025	0.056	-0.032	0.061
land (acre) in wave X	[0.038]	[0.051]	[0.043]	[0.052]
Log of population in	0.080	-0.180**	-0.057	-0.383**
a village in wave X	[0.101]	[0.083]	[0.063]	[0.175]
Village formed by	0.090	-0.207*	0.028	-0.168
the villagization in the 1970's	[0.064]	[0.110]	[0.061]	[0.122]
Village having				
a bank in wave 1	-0.109	0.392***	0.416***	0.475
	[0.179]	[0.132]	[0.127]	[0.333]
a daily market in wave 1	-0.119	0.065	-0.076	-0.104
	[0.093]	[0.083]	[0.057]	[0.097]
public transportation	-0.139	-0.127	-0.103	-0.150
passed in wave 1	[0.091]	[0.116]	[0.086]	[0.135]
a bar or restaurant in wave 1	0.102	0.060	-0.184***	0.360***
	[0.092]	[0.074]	[0.056]	[0.115]
Village allowing a widow's	0.037	0.022	-0.146**	0.041
house inheritance in wave 5	[0.085]	[0.066]	[0.067]	[0.112]
Village allowing a widow's	0.140	-0.018	-0.152	0.048
house inheritance in wave X	[0.131]	[0.097]	[0.094]	[0.327]
Constant	-0.590	1.738**	0.938	3.910***
	[0.939]	[0.759]	[0.673]	[1.379]
District FE	Yes	Yes	Yes	Yes
R-squared	0.138	0.184	0.206	0.298
No. of obs.	245	255	265	220

Notes: (1) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (2) Standard errors are robust to heteroskedasticity and clustered residuals within each village. (3) Coffee, cotton, tea, and tobacco are classified as cash crops, whereas banana, beans, cassava, and maize are classified as food crops.

Table 13: Appendix: Inheritance Right and Mortality Shocks (Non-migrant Males Aged 5-18 in Wave 1)

Dependent variables:	Growth from wave X to 5 of log of per capita expenditures (annual) associated with household members' illness and death				One if health shocks
	$X=1$	$X=2$	$X=3$	$X=4$	$X=4$
	(a)	(b)	(c)	(d)	(e)
Remove discrimination regarding	0.802	0.509	0.363	-1.057**	0.023
a widow's land inheritance	[1.144]	[0.700]	[0.510]	[0.499]	[0.070]
between waves X and 5					
Age (years) in wave X	0.054	0.312	-0.018	0.022	0.057
	[0.260]	[0.238]	[0.204]	[0.286]	[0.043]
Age squared in wave X	-0.002	-0.017**	0.001	-0.002	-0.002
	[0.010]	[0.008]	[0.007]	[0.008]	[0.001]
Education (years) in wave X	0.020	0.080	0.056	0.202*	0.010
	[0.169]	[0.097]	[0.100]	[0.112]	[0.017]
Height (cm) in wave X	0.033	0.014	0.021	0.061	-0.011**
	[0.040]	[0.032]	[0.024]	[0.041]	[0.005]
Weight (kg) in wave X	-0.042	0.002	-0.040	-0.104**	0.011
	[0.046]	[0.040]	[0.032]	[0.045]	[0.007]
Father's education (years)	-0.037	0.002	-0.136**	-0.117	-0.012
	[0.086]	[0.051]	[0.065]	[0.083]	[0.018]
Mother's education (years)	0.168*	0.095	0.133*	0.169*	0.003
	[0.092]	[0.060]	[0.077]	[0.085]	[0.014]
Father died before a	0.002	-0.009	-0.027	-0.056	0.016
respondent being aged 15	[0.356]	[0.371]	[0.293]	[0.356]	[0.067]
Mother died before a	0.482	0.151	-0.614	-0.401	-0.101
respondent being aged 15	[0.479]	[0.349]	[0.428]	[0.546]	[0.082]
Head's tribe = Largest	-1.292	-0.854	0.156	-0.121	0.138
ethnic group in a	[0.902]	[0.634]	[0.422]	[0.277]	[0.147]
village in wave 1					
HH head born outside	-0.277	0.000	0.990	-0.274	0.000
a village in wave X	[0.372]	[0.000]	[0.777]	[1.148]	[0.000]
Head's age in wave X	0.000	0.020	0.011	0.009	0.010***
	[0.011]	[0.014]	[0.013]	[0.018]	[0.003]
Head Muslim in wave X	-0.800	0.019	0.709	-0.703	-0.131
	[0.546]	[0.355]	[0.526]	[0.558]	[0.082]
No. of HH male members	0.072	0.076	-0.150	0.152	0.045*
aged 3 to 15 in wave X	[0.294]	[0.133]	[0.207]	[0.179]	[0.026]
No. of HH female members	0.042	0.313**	-0.051	-0.088	0.046**
aged 3 to 15 in wave X	[0.254]	[0.121]	[0.145]	[0.143]	[0.022]
HH size in wave X	-0.152	-0.036	0.096	0.089	-0.033***
	[0.162]	[0.062]	[0.103]	[0.085]	[0.009]
Log of cultivated	0.282	-0.430**	-0.730***	-0.471	-0.015
land (acre) in wave X	[0.246]	[0.174]	[0.263]	[0.335]	[0.037]
Log of population in	0.262	-0.493*	-0.162	-0.511	0.126*
a village in wave X	[0.533]	[0.286]	[0.465]	[0.550]	[0.063]
Village formed by	-0.590	0.219	-0.746	0.372	-0.067
the villagization in the 1970's	[0.650]	[0.355]	[0.597]	[0.554]	[0.069]
Village having					
a bank in wave 1	-1.338	0.917	-1.754**	1.764	-0.171
	[1.123]	[0.731]	[0.747]	[1.112]	[0.153]
a daily market in wave 1	-0.612	0.182	0.386	0.062	-0.046
	[0.559]	[0.372]	[0.450]	[0.371]	[0.056]
public transportation	0.949	-1.091**	-0.295	-0.742	-0.010
passed in wave 1	[0.670]	[0.501]	[0.472]	[0.545]	[0.092]
a bar or restaurant in wave 1	-0.017	0.117	0.157	-0.134	0.044
	[0.617]	[0.477]	[0.556]	[0.624]	[0.073]
Village allowing a widow's	-0.615	0.514	0.579	-0.310	-0.108
house inheritance in wave 5	[1.198]	[0.721]	[0.706]	[0.479]	[0.095]
Village allowing a widow's	-0.538	1.347***	0.323	2.289**	-0.441**
house inheritance in wave X	[0.776]	[0.456]	[0.531]	[0.995]	[0.159]
Constant	-4.968	-0.808	0.972	0.881	-0.477
	[5.520]	[3.090]	[3.916]	[4.806]	[0.653]
District FE	Yes	Yes	Yes	Yes	Yes
R-squared	0.144	0.204	0.200	0.263	0.261
No. of obs.	217	256	251	205	189

Notes: (1) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (2) Standard errors are robust to heteroskedasticity and clustered residuals within each village. (3) A dummy for health shocks takes one if respondents aged 20 years or older in wave 5 experienced income or asset losses in any year between 1994 and 2003 due to household members' death or serious illness.

Table 14: Appendix: Inheritance Right and Infrastructure Improvements

Dependent variables:	One if a village has in wave 5			
	a bank	a daily market	public trasportation passed	a bar/ restaurant
	(a)	(b)	(c)	(d)
Remove discrimination regarding a widow's land inheritance between waves 1 and 5	-0.115 [0.094]	-0.382 [0.314]	-0.822** [0.325]	-0.361 [0.482]
Log of population in a village in wave 1	-0.076 [0.066]	0.031 [0.373]	-0.162 [0.359]	0.057 [0.294]
Village formed by the villagization in the 1970's	0.127 [0.098]	-0.414 [0.243]	-0.286 [0.263]	-0.182 [0.148]
Village having				
a bank in wave 1	0.785** [0.289]	0.126 [0.715]	-0.194 [0.581]	0.735 [0.471]
a daily market in wave 1	0.146 [0.107]	0.078 [0.455]	0.383 [0.322]	0.123 [0.427]
public transportation passed in wave 1	0.020 [0.072]	-0.073 [0.591]	0.448 [0.448]	0.160 [0.420]
a bar or restaurant in wave 1	-0.146 [0.103]	-0.169 [0.348]	-0.106 [0.249]	-0.244 [0.360]
Village allowing a widow's house inheritance in wave 5	0.059 [0.067]	-0.028 [0.341]	0.437 [0.324]	0.555 [0.443]
Village allowing a widow's house inheritance in wave 1	-0.044 [0.128]	0.377 [0.690]	-0.120 [0.439]	0.256 [0.737]
Constant	0.245 [0.562]	0.435 [2.748]	2.700 [2.603]	-0.364 [2.371]
District FE	Yes	Yes	Yes	Yes
R-squared	0.886	0.550	0.581	0.598
No. of obs.	26	26	26	26

Notes: (1) Unit of observations is a village. (2) Figures [ ] are standard errors. *** denotes significance at 1%, ** at 5%, and * at 10%. (3) Standard errors are robust to heteroskedasticity and clustered residuals within each village.

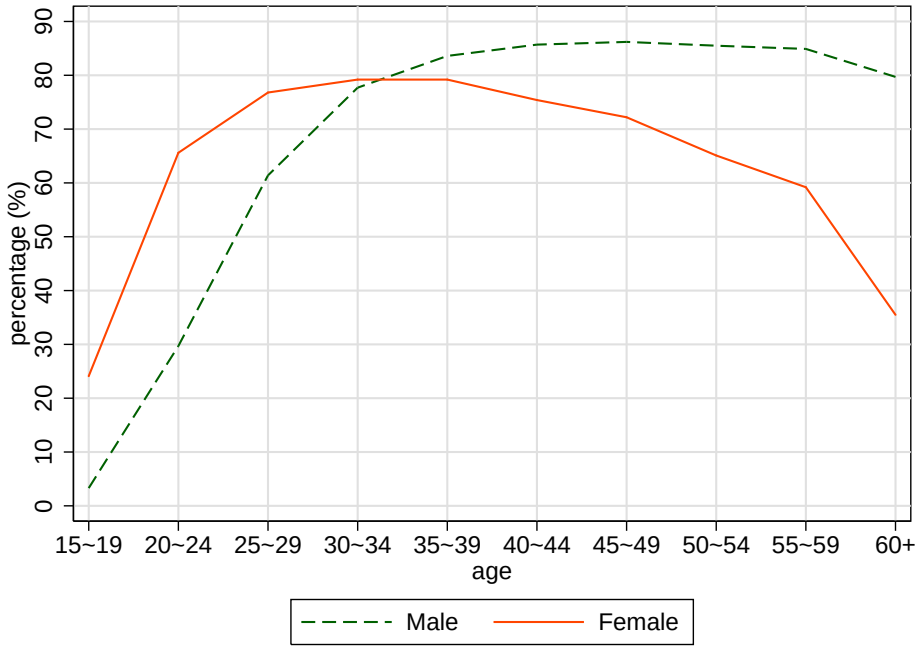

Figure 1: Percentage of Wedded Population in Tanzania by Age and Sex

Source: 2002 Population and Housing Census
Note: Wedded population consists of not only those who are formally married irrespective of the type of marriage but those in consensual unions or socially recognized stable unions.

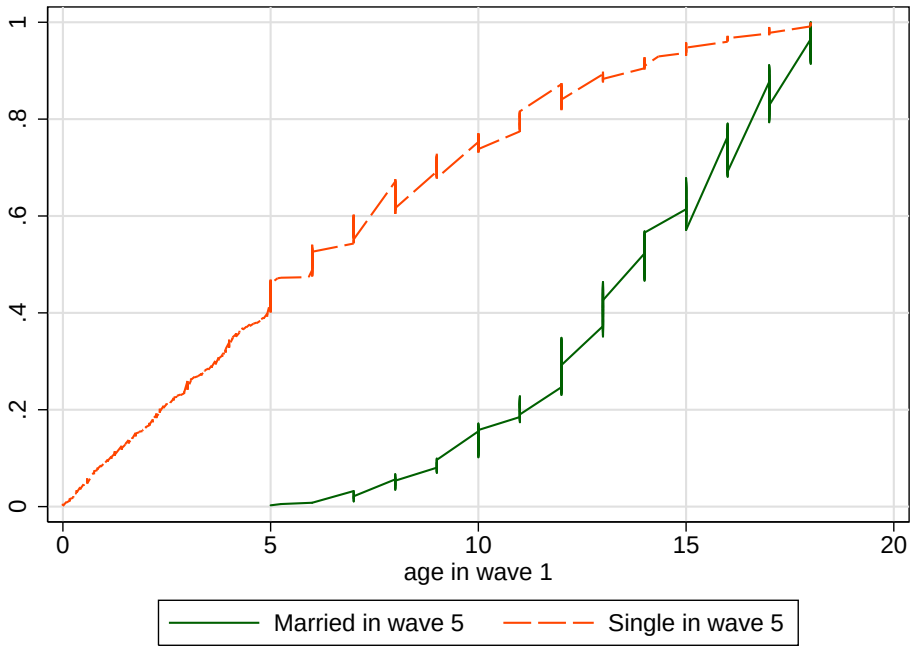

Figure 2: Empirical Cumulative Distribution Functions of Baseline Age of Males below 18 years old in Wave 1 by Marital Status in Wave 5