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Gender, Headship, and the Life Cycle

Landownership in Four Asian Countries

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ABSTRACT

Despite increasing evidence that households do not always function as one, policies regarding land and property rights are often formulated at the household level, assuming the primary adult male is the landowner. Because land policy reform has typically focused on changing household, rather than individual, rights to land, many of the data are collected at the household rather than the individual level. As a result of a combination of these factors, securing women's land rights has remained a largely unaddressed issue by policymakers. So as to inform the formulation of policies and interventions to strengthen women's land rights, this paper analyzes nationally representative data from Bangladesh, Tajikistan, Timor-Leste, and Vietnam to understand the processes by which men and women acquire land; the social, cultural, and legal institutions surrounding gender and landownership; and the role of individual and household characteristics influencing an individual's ability to own land. Our findings that women own less land than do men across different types of household structures and that gender inequality increases with household landholdings suggests that women's land rights need to be strengthened within marriage and protected should the marriage dissolve. Although the impacts of gender-sensitive land policy reform are not well researched, early findings on policy reforms such as joint titling in Vietnam show that policies to strengthen women's land rights have the potential to improve women's well-being as well as their children's without detrimental effects on productivity. Our findings of gender inequalities in intrahousehold land allocation and of increasing inequality as households accumulate land suggest an agenda for future research and policy that strengthens the land rights of women, particularly within marriage.

Keywords: gender, headship, landownership, life cycle, Asia

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1. INTRODUCTION

Policies regarding land and property rights are often formulated at the household level, despite increasing evidence that households do not always function "as one" (Haddad, Hoddinott, and Alderman 1997). Like other forms of property rights, land rights are overlapping "bundles" of rights (CGIAR Systemwide Program on Collective Action and Property Rights 2010), ranging from use rights (the right to access the resource, withdraw from the resource, or exploit the resource for economic benefit) to control or decisionmaking rights (including management, exclusion, or alienation). Among these rights, alienation (the right to rent out, sell, or give away the rights) is the strongest and is often used to define ownership. Land rights can be held individually (as in a land document issued in a person's name)[1] or collectively (as in community or state ownership), but data on land rights have generally been collected at the household level and land policy reform has typically focused on changing household, rather than individual, rights to land (Lastarria-Cornhiel et al. 2014).

The focus on landownership at the household level and the assumption that land, like other household resources, would be shared among household members has led to a neglect of gender dimensions of land rights. However, accumulating evidence from South Asia, Africa, and Latin America demonstrates that women are disadvantaged in both statutory and customary land tenure systems (Agarwal 1994; Lastarria-Cornhiel 1997; Kevane 2004; Deere and León 2001; Deere, Alvarado, and Twyman 2012). This evidence combined with the increased recognition that men and women within households do not necessarily pool resources (Haddad, Hoddinott, and Alderman 1997) has led researchers and policymakers alike to realize that strengthening household rights to land does not imply that women's land rights are also strengthened.

Despite long-standing claims that women's land rights are much weaker than men's, it is only with the recent availability of large-scale datasets with sex-disaggregated data on landownership that researchers have been able to systematically study the nature and extent of gender gaps in landownership. Analyzing data from nationally representative datasets in Africa south of the Sahara, Doss et al. (2015) conclude that women are disadvantaged relative to men in nearly all measures of landownership and management; however, the gender gap varies widely across countries and indicators. These statistics are typically more equitable for management indicators, or for land with use or access rights only; they are less equitable for indicators based on reported or documented ownership. Kieran et al. (2015) arrive at similar conclusions based on a review of the literature on gendered landownership in Asia and analysis of nationally representative datasets from Asian countries with varying gender norms, political systems, and land market conditions. These largely descriptive analyses identify the patterns of the gender gaps but do not provide guidance about how to reduce them. To develop policies to strengthen women's land rights, it is important to understand the processes by which men and women acquire land; the social, cultural, and legal institutions surrounding gender and landownership; and the role of individual and household characteristics influencing an individual's ability to own land.

Women's and men's land rights mainly come through five channels (World Bank, Food and Agriculture Organization of the United Nations [FAO], and International Fund for Agricultural Development 2009; Lastarria-Cornhiel et al. 2014): (1) family allocations, typically through marriage and from inheritance; (2) customary or community allocations, including common property; (3) state allocations, such as land reform and resettlement programs (and housing and urban upgrading programs in urban areas); (4) civil society or nongovernmental organization programs; and (5) the market. All of these rights are conditioned by formal and customary law as well as by the market economy's influence on agricultural production and land market structures. Gender influences the patterns of acquisition of land rights through each of these channels.

[1] Having legal title to land is often considered proof of ownership, but this is not a necessary condition. Other forms of documentation (like long-term land use certificates, if transferable) also convey full ownership rights.

Family allocation customs in many Asian cultures tend to disadvantage women, especially with respect to land inheritance (Agarwal 1994; Quisumbing 1994). In some instances, those who do not receive land transfers may be compensated with nonland assets and investment in human capital (as in the Philippines; see Estudillo, Quisumbing, and Otsuka 2001), and family allocation customs may slightly favor women in matrilineal communities such as the Minangkabau in Indonesia (Quisumbing and Otuska 2001). Yet the most obvious area of gender disparity in land rights is women's unequal access to and ownership of land held by the household (Lastarria-Cornhiel et al. 2014). Similar to other resources within the household, land is not necessarily shared equally between husband and wife. The marital property laws that determine whether marriage confers rights to spouses' property particularly affect the strength of women's land rights. Changes in household structure, particularly marriage or its dissolution (divorce, separation, or death), also may affect women's land rights depending on the marital property and inheritance regimes (Deere and Doss 2006).

Both community and state allocations also typically favor men in terms of land allocations. Land reform programs and resettlement schemes generally issue certificates in husbands' names (see Deere and León 2001 and a review by Lastarria-Cornhiel et al. 2014), although recent efforts such as those in Vietnam (Menon, Rodgers, and Kennedy 2014; Newman, Tarp, and van de Broeck 2015), Odisha (Savath et al. 2014), and West Bengal (Santos et al. 2014) have moved toward increasing gender equality by mandating that women's names also be placed on certificates of use or ownership.

Finally, acquisition of land through land rental or sales markets often depends on initial stocks of capital, whether physical, financial, or human, which make the purchase of land possible. Lacking initial stocks of such capital, and often constrained by regulations and social norms that limit women's ability to purchase land, women are frequently disadvantaged in land market transactions.

The traditional focus on the households as the unit of analysis for research and land policy has limited the demand for individual landownership data. These two factors, the household focus and lack of data, limit our ability to formulate policies to reduce gender inequalities in land rights. Where gender has been considered, it has focused on differences in land rights between male- and female-headed households. The sex of the household head, although often used as a proxy for understanding differences between men and women, is a poor indicator to use to study gender inequality for several reasons. While women frequently live in male-headed households, female-headed households are often defined as those in which no adult male is present. Furthermore, female heads of households are a heterogeneous category, depending on the reasons behind female headship (Joshi 2004). Female heads who are widowed or divorced may, in some contexts, be much worse off than female heads who are only temporarily separated from migrant husbands or those who never married and decided to head their own households. Simply considering the sex of the head also ignores the land rights of women in male-headed households, which are typically the majority of households.

Yet considering only the sex of the landowner ignores how marital status and headship status are related to the acquisition of land rights. It is necessary to consider men's and women's property rights in the context of their roles in their households.

It is important to consider women's property rights both for married women and for those women who are female sole heads of households. The property rights of married women influence the bargaining power of women within households and thus the outcomes of household decisions. In addition, the majority of female-headed households are headed by women who were once married but are now widowed or divorced. If women's property rights are contingent on marriage, then they are at risk. In most societies, women's land rights obtained through marriage are valid only while the marriage is intact. Thus, because women who are single heads of households may be at greater risk of poverty in some countries (Quisumbing, Haddad, and Peña 2001), it is important to pay attention to land rights of women who do not live in dual-headed households.

This paper analyzes the role of gender, headship, and life-cycle processes in influencing men's and women's landownership in four countries—Bangladesh, Tajikistan, Timor-Leste, and Vietnam—with different gender norms and social, cultural, and legal institutions underlying landownership. Using nationally representative datasets with information about who owns or manages the land within each

household, it analyzes the probability of being a landowner and the area of land owned by individuals, taking into account the relationship between gender and household type, marital status, and life-cycle stage and controlling for individual human capital endowments and household characteristics. It also examines the patterns of the intrahousehold distribution of landownership, controlling for household wealth and other unobservable characteristics of the household. In so doing, we aim to identify social, cultural, and legal barriers to women's landownership to propose policy recommendations to reduce the gender gap in land rights.

2. COUNTRY CONTEXT AND DATA

We use nationally representative datasets that have individual- and plot-level landownership data, management data, or both. These include Bangladesh (Bangladesh Integrated Household Survey, 2011–2012; Ahmed 2013), Tajikistan (Tajikistan Living Standards Survey; World Bank 2007a), Timor-Leste (Timor-Leste Survey of Living Standards; World Bank 2007b), and Vietnam (Vietnam Household Living Standards Survey; World Bank 2004). Although these four countries are the only countries in Asia with data appropriate for this analysis, they illustrate the diversity in landownership systems and gender norms across the continent, representing each of the four major types of cultural and land management systems (Rao 2011), namely, (1) largely patrilineal South Asia, with land's being a private asset owned and acquired mainly through inheritance down the male line (Bangladesh); (2) bilateral and matrilineal Southeast Asia, where land is a private asset acquired through customary inheritance systems (Timor-Leste); (3) communist/socialist states, where land is vested in the state but households are granted use rights by the local village committees (Vietnam); and (4) the Central Asian states marked by conflicts between centralized state institutions and private, clan-based, land management systems (Tajikistan).

In these surveys, households were sampled, and information was collected about every plot owned or farmed by anyone in the household. In addition, information is available about all household members. Thus, we can identify whether each adult living in the household is a landowner and how much land he or she owns. Table 2.1 summarizes relevant information about each of the datasets used.

Table 2.1 Country data summary

Country	Dataset	Survey date	Sample size[a]	Representativeness	Data summary
Bangladesh	Bangladesh Integrated Household Survey	2011–2012	5,500 households	Nationally representative of the rural population.	Individual ownership and management, joint ownership and management, individual and household characteristics.
Tajikistan	Tajikistan Living Standards Survey	2007	4,860 households	Nationally representative of the urban and rural population.	Individual ownership and management, individual and household characteristics.
Timor-Leste	Timor-Leste Survey of Living Standards	2007	4,477 households	Nationally representative of the urban and rural population.	Individual management, individual and household characteristics.
Vietnam	Vietnam Household Living Standards Survey	2004	9,189 households	Nationally representative of the urban and rural population.	Individual ownership and management, joint ownership and management, individual and household characteristics.

Source: Authors.

Note: [a] Our analysis sample excludes households that do not have at least one household member 18 years or older. Regression models differ slightly in sample and are specified for each model (that is, some are restricted to landowning households, households with both an adult male and an adult female, and so forth). While we do not restrict our sample to rural households given the largely rural populations of these countries (69–73 percent according to World Bank 2015 statistics) and our use of sample weights, we control for geographic region.

We use a nuanced definition of household types in this paper. Dual-headed households are those in which the head of the household is currently married or in a union and an adult male and an adult female have primary decisionmaking roles. A male-headed household is headed by a single adult male, while a female-headed household is headed by a single adult female. Being single does not necessarily

imply never having been married; our definitions include those who are divorced, widowed, or separated/deserted. In most of the literature that examines gender differences in landownership (for example, Kossoudji and Mueller 1983; Adhikari, Di Falco, and Lovett 2004), what we classify as dual-headed households would be called "male-headed" households, despite the presence of a female adult who is responsible for many household decisions. Our definition is more appropriate under the United Nations guidelines that indicate "when spouses are considered equal in household authority and responsibility and may share economic support of the household, the concept of head of household is no longer considered valid even for family households," and furthermore, "the most common assumption that can distort the facts is that no woman can be the head of any household that also contains an adult male" (United Nations 2008).

Country Context

Bangladesh

Like in many societies in South Asia, the patrilineal and patrilocal kinship systems in Bangladesh constrain women's property rights. Islamic law, which applies to 85 percent of the population, allows women to own property. Islamic inheritance law, however, stipulates that sisters inherit half the share of their brothers. Rural women also face limitations in exercising their limited property rights, as illustrated by the practices of *benami,* where husbands acquire property in their wives' names, and *naior,* where daughters are encouraged to relinquish their inheritance claims to their brothers (Subramanian 1998). Moreover, the practice of village exogamy means that brides leave their natal villages to marry; the practical difficulties of cultivating land in distant villages creates a reason for sisters to surrender their land inheritance rights to their brothers in return for financial support in times of need. Although Bangladeshi law putatively guarantees equal access to property, these customary and religious laws underlie the gender inequality in landownership. Indeed, according to the Bangladesh Agricultural Census of 2008, only 4.6 percent (1.32 million) of almost 28.7 million agricultural holders were female (FAO 2015). While women are more likely to own a homestead if a household has only the homestead than if the household also has cultivable land, the World Bank finds that less than 10 percent of all women and less than 3 percent of younger women have their names on marital property papers such as a rental agreement or title to land or a homestead (World Bank 2008).

The Bangladesh Integrated Household Survey, 2011–2012, was designed and supervised by the International Food Policy Research Institute and administered by Data Analysis and Technical Assistance, Ltd. in Dhaka, Bangladesh. The dataset, which includes 5,500 households, is nationally representative of rural Bangladesh. For each plot of land that was owned or operated by someone in the household in the previous 12 months, respondents answered questions regarding the current operational and ownership status, providing up to three member identification codes for each plot. In addition, they could indicate that the plot is owned by all members jointly, it is owned by a male or female outside of the household, they have a temporary user right, the land is government/Khas land, or the land is owned by other institutions. Respondents also identified who owned the plot officially, and we focus on this indicator of ownership throughout our analysis. An individual is considered a landowner if he or she owns land either individually or jointly with someone else (or both).[2]

Tajikistan

Although Tajikistan became an independent country in 1991 following the collapse of the Soviet Union, all land continues to be owned by the state (FAO 2014). Landownership is not permitted, and land cannot be bought and sold (Lerman 2012). However, various tenure types exist, and long-term use rights can be allocated and inherited (Shahriari et al. 2009). As a result of post-Soviet agricultural reform, four

[2] Because we concentrate on land owned by household members, we excluded land owned exclusively by people outside of the household from the analysis.

categories of agricultural holdings exist: household plots,[3] individual and family *dehkan* farms,[4] collective dehkan farms, and agricultural enterprises (the successors of former state farms) (Lerman and Sedik 2008). However, only household plots and individual and family dehkan farms provide individual household tenure rights (Lerman 2012) and are captured in the dataset analyzed in this paper.[5] For expediency, we will refer to those with land use rights as landowners. Furthermore, although a 1996 decree established an individual's right to withdraw an individual land share from a collective dehkan enterprise and obtain a certificate (Lerman and Sedik 2008), it is an expensive process that is rarely accomplished (United States Agency for International Development [USAID] 2010). In addition, since dekhan certificates for use rights are issued in the name of the dekhan head, dekhan members, especially women, do not generally know about their tenure rights (USAID 2010).

While women legally have the same land use rights as men, cultural objections and patrilineal inheritance practices limit their landownership in practice (USAID 2010; FAO 2014). However, women's land rights are particularly important since female-headed households constitute almost one-fifth of all households as a result of male casualties from the 1992–1997 civil war, mass young male out-migration, and lower male life expectancy (Shahriari et al. 2009). In addition, almost three-quarters of female landowners reside in these households (Kieran et al. 2015).

Four Living Standards Measurement Survey (LSMS) surveys have been conducted in Tajikistan (1999, 2003, 2007, and 2009). We use data from the 2007 round of the Tajikistan Living Standards Survey, the latest date for which agricultural plot information is available. This Tajikistan Living Standards Survey sample comprises 4,860 households in 270 clusters and is representative of the entire country, urban and rural areas, and the five main administrative regions of the country. The survey collected data on every plot of land cultivated by a household member within the previous 12 months, with data on how each plot was acquired, if the plot had a legal title or ownership rights (including certificates, sealed documents [acts], and sales receipts), and the names of household members listed on the title.[6] The survey does not allow for analysis of joint ownership. While the gender imbalances are great in Tajikistan and favor men with regard to landownership, the low incidence of private landownership in general—only 1 in 4 men and 1 in 23 women own land (Kieran et al. 2015)—suggests that granting land rights to individuals may be a priority in Tajikistan's land policy. Many factors make it difficult for both men and women to obtain individual legal ownership rights, including a lack of knowledge regarding land rights and legacies of the collectivist system, making it costly and difficult.

Timor-Leste

Timor-Leste was colonized by Portugal and later occupied by Indonesia, resulting in waves of violence, evictions, and expropriations and the displacement of an estimated three-fourths of its population at the time of independence in 2002 (World Bank 2014). Largely as a result of its volatile history, multiple land-use regimes coexist in Timor-Leste, involving customary land tenure systems, Portuguese titles, Indonesian titles, and long-term occupation (Narciso and Henriques 2010). The situation is further exacerbated due to the destruction of most public records in 1999, although only one-quarter of plots have ever been formally registered (USAID 2012). Hence competing land claims have been a source of friction in Timor-Leste (United Nations Development Programme 2013). While a series of land laws have been passed since Timor-Leste acquired independence in 2002,[7] a formal system of land administration has

[3] The government also granted, to thousands of mainly rural households, temporary use of small plots on 75,000 hectares called "presidential lands" (Organisation for Economic Co-operation and Development 2014). Presidential lands served to bolster the size of household plots under the national minimum size (USAID 2010).

[4] *Dehkan* farms are midsized peasant farms that are legally distinct from household plots and were created during a phase of reorganization of traditional large-scale collective farms (Lerman and Sedik 2008).

[5] As of 2014, the agricultural sector was largely individualized. However, as of 2005 only 5,000 private and family farms were established; by 2012, it was more than 85,000, representing 65 percent of total arable land (Lerman 2012).

[6] The types of land included are household plot/garden, remote plots/presidential land; *dacha;* individual dehkan and other plots (excludes group/communal land).

7 As of 2010, a government land registration program called *Ita Nia Rai* had collected more than 10,000 claims in

been slow to develop given the historic complexities and predominance of customary ownership systems, which constituted about 97 percent of rural land in 2005 (*Economist* 2012; Dale et al. 2010). Given the ambiguity and evolving nature of land laws as well as the insufficient government infrastructure to uphold them, most people use the traditional system of justice, *adat,* and other informal processes for dealing with land issues (Narciso and Henriques 2010; USAID 2012). Customary practices govern land rights in rural areas where the majority of land is held and are recognized by law as long as they do not contradict Timor-Leste law (USAID 2012). The vast majority of people occupy land to which they have no formal title, and over time, this has evolved into a situation where long-term land users have a greater claim than newcomers with formal titles trying to occupy the same land (USAID 2012). Although the constitution guarantees both men and women the right to own property, the presence of the formal justice system is limited, and women face discrimination in patrilineal settings (Dale et al. 2010). Land is acquired primarily through inheritance, and while traditionally matrilineal communities favor female land inheritance and patrilineal communities favor male inheritance, Timor-Leste society is predominantly patrilineal (Dale et al. 2010; Henriques, Narciso, and Branco 2011).[8]

The Timor-Leste Survey of Living Standards 2007 covers 4,477 households and contains individual plot-level information about agricultural land. The sample is representative at the national level as well as at the level of the five regions in the country. The survey collected data on every plot of land that a household member cultivated or controlled and subsequently asked who in the household made decisions about the plot as well as the tenure status of the plot.[9] While no question was asked to determine individual legal ownership of a plot (that is, legal title), the aforementioned questions were used to construct a measure of land management rights, which serves as a proxy for landownership rights given the historical circumstances and largely customary tenure in the country.[10] However, given the difference in the land rights definition as compared to the other countries, we use the term *manager* instead of *owner* when referring to Timor-Leste. The Timor-Leste survey allowed only one name per plot to be listed as manager and thus does not address joint management.

Significant gender inequalities in land rights exist. Given the nascent and evolving land tenure system in Timor-Leste, there is room for policies to be implemented to help redress the gender imbalance in landownership. However, given the predominance of customary law, even if there are programs such as joint titling, women may continue to face inequality under the traditional justice system.

Vietnam

A central component of Vietnam's *Doi Moi* reforms involved a transition from a collective agricultural system toward one where households lease plots of land for varying periods of time (Do and Iyer 2008). Although the state continues to own all land, the 1988 Land Law allowed households to obtain land use certificates (LUCs) granting individual long-term use rights (Spichiger et al. 2013). The government expanded these rights in 1993 to allow farmers to transfer, trade, bequeath, rent, and mortgage their LUCs (Do and Iyer 2008). However, because space was provided to list only one name, most LUCs bore the name of the household head, who is usually male. This resulted in gender disparities in property rights (Menon, Rodgers, and Kennedy 2014). In addition, some localities based the amount of land allocated on

preparation for laws that would later determine the ordering of competing claims (Dale et al. 2010). In 2012, Parliament passed laws allowing authorities to grant titles for land with uncontested ownership, set up a system for resolving land disputes outside dysfunctional courts, and recognized communal land as a legal category for communities to register shared plots (*Economist* 2012). The goal of a land law introduced to Parliament at the beginning of 2013 is to address many of the ambiguities present in the landownership laws (Piaskowy 2013).

[8] The Bunak and Tetun Terik are matrilineal people and comprise about 12.0 percent of the population.

[9] To infer ownership, our analysis uses the answers to the following questions: (1) "Tell me about any plot of arable land a member of your household controlled, even though it does not belong to your household." (2) "What is the tenure status of this plot?" with response codes: *owner, part owner, rented from someone, rented to someone, public land, private land,* and *other specify*. Note that plots rented from someone and public land were excluded from this analysis in keeping with analysis for the other countries. (3) "Who in this household makes decisions about this plot of land?"

[10] The 2001 survey asks about legal ownership; however, it was conducted around the time of independence, when a large proportion of the population was displaced.

the number and the age of household members, providing the most land to working-age adults. This meant that female-headed households, which generally have fewer working-age adults,[11] received less land than did other household types (Menon, Rodgers, and Nguyen 2014).

Several laws and decrees introduced in the past 15 years attempt to rectify these discriminatory practices. The Marriage and Family Law of 2000 asserts that property, including LUCs, obtained during marriage is considered common property (Menon, Rodgers, and Nguyen 2014), and law now stipulates that all common property must be registered under the name of both spouses (Vietnam Laws Online Database 2003). In spite of these provisions, women's access to land remains limited due to inconsistent implementation and poor enforcement (Ravallion and van de Walle 2008), compounded by de facto discrimination (Hatcher, Meggiolaro, and Ferrer 2005). Vietnam's dualistic legal system restricts women's property rights, as customary rules tend to regulate ownership and inheritance rights and property disputes in areas where the state is ineffectual in administering state law (Phan 2011). Differences are most pronounced between the northern and southern regions due to variations in cultural norms as well as agrarian reforms, demonstrating the importance of collecting and analyzing data at the local and regional levels and not just at the national level (Scott et al. 2010).

We use the Vietnam Household Living Standards Survey, 2004, which includes 9,189 households in 3,100 communes and is representative of the entire country, urban and rural areas, and eight regions. The survey collected data on every plot of land that each household used or managed in the previous 12 months and facilitates the identification of plot owners and managers by inquiring how each plot was acquired, whether it was guaranteed with a long-term LUC, and if so, whose names were listed on the LUC. Consistent with the requirement that the names of both spouses be included on LUCs, the questionnaire allows for the entry of up to two household member identification codes. If no household members are listed, then the survey identified which household members are currently managing and using the plot, again allowing for the entry of up to two household member IDs. We consider an individual to be a landowner if he or she is listed on the LUC, regardless of whether or not anyone else is listed. Throughout this paper, all references to landownership in Vietnam denote documented land use rights.

Gendered Patterns of Landownership across Countries

The data are not strictly comparable across the four countries because different data collection methodologies were used. In particular, joint landownership data were collected in Bangladesh and Vietnam but not in Tajikistan and Timor-Leste. Thus, the differences in the gender gaps across countries may be due to either the country context or to data collection methods. Despite this limitation, one can identify patterns across the four countries and highlight areas of divergence. Tables 2.2 through 2.5 present summary statistics on individual and household characteristics of individuals 18 and older, by landowning status, in each country.

[11] Female-headed households have fewer working-age adults not only due to the processes by which they are formed but also because the legal retirement age for women is five years younger than the retirement age for men (Menon, Rodgers, and Nguyen 2014).

Table 2.2 Summary characteristics of adults and landowners 18 and older, by sex, Bangladesh

Characteristic	All adults (*n* = 13,515)	Women (*n* = 7,398)	Men (*n* = 6,117)	*t* test of difference (*p* value)	All landowners (*n* = 4,324)	Women landowners (*n* = 881)	Men landowners (*n* = 3443)	*t* test of difference (*p* value)
Individual characteristics								
Proportion in population	1.00	0.53 (0.00)	0.47 (0.00)	NA	0.29 (0.00)	0.15 (0.01)	0.85 (0.01)	.00
Age (years)	39.36 (0.15)	38.21 (0.19)	40.62 (0.21)	.00	48.78 (0.30)	44.96 (0.60)	49.47 (0.33)	.00
Proportion married	0.79 (0.01)	0.79 (0.01)	0.78 (0.01)	.17	0.91 (0.01)	0.66 (0.02)	0.95 (0.00)	.00
Education (years)	3.99 (0.08)	3.66 (0.07)	4.36 (0.11)	.00	3.42 (0.11)	2.76 (0.16)	3.54 (0.12)	.00
Proportion owning land	0.29 (0.00)	0.09 (0.00)	0.52 (0.01)	.00	1.00	NA	NA	NA
Area of land owned by individual (in acres), conditional on owning land	NA	NA	NA	NA	0.71 (0.03)	0.42 (0.03)	0.76 (0.04)	.00
Household characteristics[a]								
Household size	4.57 (0.04)	4.50 (0.04)	4.66 (0.04)	.00	4.29 (0.04)	3.61 (0.06)	4.46 (0.04)	.00
Household is dual headed	0.93 (0.00)	0.91 (0.00)	0.96 (0.00)	.00	0.92 (0.00)	0.73 (0.02)	0.97 (0.00)	.00
Household is male headed	0.02 (0.00)	0.02 (0.00)	0.03 (0.00)	.00	0.02 (0.00)	0.02 (0.01)	0.02 (0.00)	.87
Household is female headed	0.04 (0.00)	0.07 (0.00)	0.01 (0.00)	.00	0.05 (0.00)	0.24 (0.02)	0.01 (0.00)	.00
Dependency ratio	0.72 (0.01)	0.78 (0.01)	0.66 (0.01)	.00	0.78 (0.01)	1.06 (0.04)	0.72 (0.01)	.00
Total land area owned by household	0.57 (0.03)	0.54 (0.03)	0.61 (0.03)	.00	0.67 (0.03)	0.55 (0.04)	0.70 (0.03)	.00
Proportion in households with irrigated land (dummy = 1 if household has irrigated	0.48 (0.01)	0.45 (0.01)	0.52 (0.01)	.00	0.51 (0.02)	0.35 (0.02)	0.55 (0.02)	.00

Source: Authors.

Note: Standard errors are in parentheses. For individual characteristics, we use individual weights for all adults 18 and older. For household characteristics, we use household survey weights. NA = Not applicable. [a] Characteristics of the households in which the female or male adults or landowners live.

Table 2.3 Summary characteristics of adults and landowners 18 and older, by sex, Tajikistan

Characteristic	All adults (*n* = 17,384)	Women (*n* = 9,040)	Men (*n* = 8,344)	*t* test of difference (*p* value)	All landowners (*n* = 3,017)	Women landowners (*n* = 422)	Men landowners (*n* = 2,595)	*t* test of difference (*p* value)
Individual characteristics								
Proportion in population	1.00	0.52	0.58	NA	1.00	0.14	0.86	.00
Age (years)	36.73 (0.15)	36.26 (0.18)	37.25 (0.19)	.00	54.20 (0.40)	57.38 (0.81)	53.67 (0.40)	.00
Proportion married	0.69 (0.01)	0.67 (0.01)	0.70 (0.01)	.00	0.86 (0.01)	0.28 (0.03)	0.96 (0.01)	.00
Education (years)	10.53 (0.06)	9.87 (0.07)	11.25 (0.06)	.00	10.91 (0.11)	8.27 (0.27)	11.35 (0.10)	.00
Proportion owning land	0.16 (0.00)	0.04 (0.00)	0.29 (0.01)	.00	1.00	NA	NA	NA
Area of land owned by the individual, conditional on owning land	NA	NA	NA	NA	0.41 (0.02)	0.34 (0.02)	0.42 (0.02)	.01
Household characteristics[a]								
Household size	7.47 (0.10)	7.40 (0.10)	7.55 (0.10)	.00	6.98 (0.09)	6.26 (0.16)	7.12 (0.08)	.00
Household is dual headed	0.84 (0.01)	0.82 (0.01)	0.87 (0.01)	.00	0.85 (0.01)	0.35 (0.03)	0.95 (0.01)	.00
Household is male headed	0.03 (0.00)	0.02 (0.00)	0.04 (0.00)	.00	0.03 (0.00)	0.01 (0.00)	0.04 (0.00)	.00
Household is female headed	0.12 (0.01)	0.16 (0.01)	0.08 (0.00)	.00	0.12 (0.01)	0.64 (0.03)	0.01 (0.00)	.00
Dependency ratio	0.97 (0.01)	1.01 (0.02)	0.93 (0.01)	.00	1.18 (0.03)	1.44 (0.07)	1.13 (0.02)	.00
Total land area owned by household (in acres)	0.30 (0.02)	0.29 (0.01)	0.30 (0.02)	.03	0.40 (0.02)	0.36 (0.02)	0.41 (0.02)	.07
Proportion in households with irrigated land (dummy = 1 if household has irrigated land)	0.60 (0.02)	0.59 (0.02)	0.60 (0.02)	.02	0.83 (0.02)	0.85 (0.02)	0.83 (0.02)	.41

Source: Authors.

Note: Standard errors are in parentheses. For individual characteristics, we use individual weights for all adults 18 and older. For household characteristics, we use household survey weights. NA = Not applicable. [a] Characteristics of the households in which the female or male adults or landowners live.

Table 2.4 Summary characteristics of adults and land managers 18 and older, by sex, Timor-Leste

Characteristic	All adults (*n* = 12,646)	Women (*n* = 6,197)	Men (*n* = 6,449)	*t* test of difference (*p* value)	All landowners (*n* = 3,696)	Women landowners (*n* = 517)	Men landowners (*n* = 3,179)	*t* test of difference: men versus women (*p* value)
Individual characteristics								
Proportion in population	1.00	0.49	0.51	NA	1.000	0.14	0.86	.00
Age (years)	37.11 (0.22)	37.41 (0.27)	36.82 (0.28)	.08	47.32 (0.35)	50.41 (0.91)	46.82 (0.36)	.00
Proportion married	0.56 (0.01)	0.58 (0.01)	0.54 (0.01)	.00	0.80 (0.01)	0.20 (0.03)	0.90 (0.01)	.00
Education (years)	5.03 (0.16)	4.125 (0.18)	5.76 (0.16)	.00	2.73 (0.11)	1.25 (0.19)	2.97 (0.12)	.00
Proportion owning land	0.24 (0.01)	0.07 (0.00)	0.41 (0.01)	.00	1.00	NA	NA	NA
Area of land owned by individual (in acres), conditional on owning land	NA	NA	NA	NA	1.32 (0.04)	1.04 (0.12)	1.36 (0.12)	.00
Household characteristics[a]								
Household size	6.27 (0.07)	6.18 (0.08)	6.35 (0.08)	.00	5.45 (0.06)	4.08 (0.14)	5.70 (0.06)	.00
Household is dual headed	0.83 (0.01)	0.81 (0.01)	0.86 (0.01)	.00	0.80 (0.01)	0.19 (0.02)	0.92 (0.01)	.00
Household is male headed	0.05 (0.00)	0.03 (0.00)	0.07 (0.01)	.00	0.06 (0.00)	0.01 (0.00)	0.07 (0.01)	.00
Household is female headed	0.12 (0.01)	0.16 (0.01)	0.07 (0.00)	.00	0.13 (0.01)	0.80 (0.03)	0.01 (0.00)	.00
Dependency ratio	1.13 (0.02)	1.15 (0.02)	1.12 (0.02)	.01	1.27 (0.02)	0.98 (0.05)	1.32 (0.03)	.00
Total land area owned by household (in acres)	1.11 (0.10)	1.08 (0.10)	1.13 (0.10)	.04	1.27 (0.11)	1.05 (0.14)	1.32 (0.12)	.01
Proportion in households with irrigated land (dummy = 1 if household has irrigated land)	0.19 (0.02)	0.19 (0.02)	0.19 (0.02)	.21	0.23 (0.02)	0.16 (0.02)	0.25 (0.02)	.00

Source: Authors.

Note: Standard errors are in parentheses. For individual characteristics, we use individual weights for all adults 18 and older. For household characteristics, we use household survey weights. NA = Not applicable. [a] Characteristics of the households in which the female or male adults or landowners live.

Table 2.5 Summary characteristics of adults and landowners 18 and older, by sex, Vietnam

Characteristic	All adults (*n* = 26,227)	Women (*n* = 13,605)	Men (*n* = 12,622)	*t* test of difference (*p* value)	All landowners (*n* = 8,266)	Women landowners (*n* = 2,648)	Men landowners (*n* = 5,618)	*t* test of difference (*p* value)
Individual characteristics								
Proportion in population	1.00	0.51 (0.00)	0.49 (0.00)	NA	0.27 (0.00)	0.31 (0.01)	0.69 (0.01)	.00
Age (years)	40.13 (0.14)	41.14 (0.19)	39.08 (0.15)	.00	50.62 (0.22)	51.84 (0.32)	50.05 (0.22)	.00
Proportion married	0.64 (0.00)	0.63 (0.01)	0.65 (0.01)	.00	0.87 (0.01)	0.66 (0.01)	0.96 (0.00)	.00
Education (years)	8.02 (0.09)	7.56 (0.10)	8.47 (0.09)	.00	7.86 (0.09)	7.32 (0.14)	8.08 (0.09)	.00
Proportion owning land	0.27 (0.00)	0.16 (0.00)	0.38 (0.01)	.00	1.00	NA	NA	NA
Average area of land owned by individual (in acres), conditional on owning land	NA	NA	NA	NA	0.95 (0.04)	0.71 (0.03)	1.05 (0.04)	.00
Household characteristics[a]								
Household size	4.87 (0.03)	4.83 (0.03)	4.91 (0.03)	.00	4.47 (0.03)	4.10 (0.03)	4.65 (0.03)	.00
Household is dual headed	0.83 (0.01)	0.79 (0.01)	0.88 (0.01)	.00	0.84 (0.01)	0.63 (0.01)	0.95 (0.00)	.00
Household is male headed	0.03 (0.00)	0.02 (0.00)	0.04 (0.00)	.00	0.03 (0.00)	0.00 (0.00)	0.04 (0.00)	.00
Household is female headed	0.14 (0.00)	0.19 (0.01)	0.08 (0.00)	.00	0.13 (0.00)	0.37 (0.01)	0.02 (0.00)	.00
Dependency ratio	0.56 (0.01)	0.59 (0.01)	0.54 (0.01)	.00	0.62 (0.01)	0.59 (0.01)	0.64 (0.01)	.00
Total land area owned by household (in acres)	0.77 (0.03)	0.74 (0.03)	0.80 (0.03)	.00	0.93 (0.04)	0.75 (0.03)	1.03 (0.04)	.00
Proportion in households with irrigated land (dummy = 1 if household has irrigated land)	0.46 (0.01)	0.46 (0.01)	0.47 (0.01)	.02	0.60 (0.01)	0.54 (0.02)	0.64 (0.01)	.00

Source: Authors.

Note: Standard errors are in parentheses. For individual characteristics, we use individual weights for all adults 18 and older. For household characteristics, we use household survey weights. NA = Not applicable. [a] Characteristics of the households in which the female or male adults or landowners live.

Not surprisingly, across all four countries, substantially more landowners are men than women; however, the distribution is more equal in Vietnam than in the other countries. Other broad similarities across almost all variables are also evident. For example, men landowners have more years of schooling, have larger household sizes, and are more likely than women landowners to be married and to live in dual- or male-headed households, except in Bangladesh (where women landowners are just as likely to live in male-headed households). Women landowners, by contrast, are more likely than men landowners to live in female-headed households. Women landowners are also older than men landowners, on average, in all countries except Bangladesh. This pattern likely reflects women's acquisition of land through inheritance on the death of their spouses, while men may be more likely to inherit land at the time of marriage. Men landowners own significantly larger land area than women landowners in all four countries and are significantly more likely to live in households with larger areas of land. In addition, they are more likely to live in households with irrigated land, with the exception of Tajikistan.

We also observe a few interesting differences among the countries. For example, while women landowners live in households with higher dependency ratios than men landowners in Bangladesh and Tajikistan, the opposite is true in Timor-Leste and Vietnam. In Vietnam, this may occur because land was allocated on the basis of the number of working-age adults in the household, so while women in general live in households with higher dependency ratios than do men, women landowners do not. Tajikistan is noteworthy because of the low incidence of individual landownership (only 29 percent of men and 4 percent of women own land), and while men own significantly more land than do women, the total area owned by each sex is the lowest of the four countries.

Unlike other studies that use sex of the household head as an indicator of gender differences, our data permit us to examine the landownership of individuals within the household. Relying only on the sex of the household head is likely to understate landownership by women if women own land within dual-headed households. Such households, in which an adult male and an adult female are present, comprise the majority of households in all four of our study countries. More than 90 percent of men landowners in all four countries live in dual-headed households. The patterns differ, however, for women landowners. In Timor-Leste and Tajikistan, the majority of women landowners live in female-headed households, while in Vietnam and Bangladesh, the majority of women landowners live in dual-headed households.

3. PATTERNS OF LANDOWNERSHIP

We first examine patterns of landownership among men and women. We analyze both the probability that an individual is a landowner and the factors that are correlated with the area of land owned.

The basic specification for the probability of landownership and the area of land owned, by individual, is the following:

> *Probability of owning any land = f (sex, headship status, sex-household type dummies, age categories, marital status, education, household head or individual's ethnicity or religion, household size, household age and sex composition, household land variables, regional dummies)*
>
> *Area of land owned = g (sex, headship status, sex-household type dummies, age categories, marital status, education, household head or individual's ethnicity or religion, household size, household age and sex composition, household land variables, regional dummies)*

The probability of owning land is a simple dummy variable that equals 1 if the individual owns any land, whether solely or jointly. The area of land owned is the sum of land owned by each individual, either solely or jointly, in acres. Sex, headship, sex-household type dummies, age categories, marital status, and education refer to those characteristics of the individual discussed in greater detail below. Ethnicity or religion refers to characteristics of individuals in Tajikistan and Timor-Leste and to characteristics of the household head in Bangladesh and Vietnam. All other variables are at the household level.

To explore whether the effect of household type differs by sex, we use five dummy variables (for sex-household type), namely, whether an individual is (1) a woman in a dual-headed household, (2) a man in a male-headed household, (3) a woman in a male-headed household, (4) a man in a female-headed household, or (5) a woman in a female-headed household. The excluded category is whether an individual is a man in a dual-headed household.

Life-cycle variables include age range and marital status. We also include education of the individual and indicators of household demographic composition (household size and proportion of household members in various age-sex categories). In addition, we incorporate indicators of total land area owned by household as a proxy for household wealth, whether the household has irrigated land, and country region variables. We also include variables indicating the religion or ethnicity of the individual (Timor-Leste and Tajikistan) or the self-reported household head (Vietnam and Bangladesh).[12] Land is arguably only one part of a household's asset portfolio, which also includes nonland assets. However, in most rural economies, land comprises the bulk of the household's asset portfolio and, in those economies with imperfect land markets, is more difficult to acquire through the market or convert into other forms of wealth. Thus, it is arguably a more exogenous measure of household wealth compared to nonland assets.[13]

We examine the robustness of our results on the probability of being a landowner and the area of land owned to household unobservables by estimating these regressions with household fixed effects.

These regressions are weighted using individual survey weights for the number of adults age 18 and older in each household.[14] All regressions are estimated with robust standard errors, adjusted for clustering.

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[12] In Bangladesh and Vietnam, the surveys collect data exclusively on the religion, ethnicity, or both of the self-reported household head and do not identify the religion and/or ethnicity of each individual within the household.

[13] Our datasets also include information about nonfarm assets, employment, and incomes, but these could be considered more endogenous measures of wealth compared to total landholding size. In particular, incomes, which are flows derived from assets, would be subject to the same criticism of endogeneity. Since we are using cross-sectional data, any income data found in this dataset would be co-determined with assets.

[14] These weights equal the household weight multiplied by the number of individuals age 18 and older in the household. We do not use the household weight times the area of land owned because our unit of observation is the individual, not the plot.

The results are presented separately for each country in Tables 3.1 through 3.4. Each table presents regressions on the probability that an individual is a landowner, either individually or jointly, estimated (1) using a probit model for a sample of individuals age 18 and older in all households, (2) using a probit for a sample of individuals 18 and older in landowning households, and (3) using a linear probability model with household fixed effects for the same sample as (2). We also present regressions on the area of owned land, which is the sum of land owned individually and jointly, estimated (1) using a tobit model for individuals in landowning households, (2) using a tobit estimated separately for male and female landowners, and (3) using ordinary least squares (OLS) with fixed effects for individuals in landowning households. While land area is left censored and a tobit estimator should be used in both levels and fixed-effects estimates, our fixed-effects tobit regressions failed to converge. Thus, we present only OLS estimates with fixed effects for the regressions on land area. Given that we undertake a more detailed analysis of intrahousehold land allocations subsequently, the OLS with fixed-effects estimates should be interpreted as a robustness check to our levels estimates. Marginal effects are presented for the probit and tobit regressions, and coefficient estimates are presented for OLS.

Table 3.1 Bangladesh: Probability of being a landowner and area of owned land, individuals 18 and older, marginal effects at means reported

	Probability of being a landowner		Area of land owned			Fixed-effects estimates, individuals in landowning HHs	
Variable	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner [a]	Area of land owned[b]
Headship dummy	0.37***	0.66***	0.49***	0.54***	0.33***	0.60***	0.47***
(= 1 if individual is HH head)	(0.02)	(0.03)	(0.04)	(0.07)	(0.04)	(0.03)	(0.10)
Sex-HH type dummies (base is male in dual-headed HH)							
Female in dual-headed HH	–0.19***	–0.33***	–0.10***			–0.19***	–0.09**
	(0.02)	(0.03)	(0.02)			(0.01)	(0.03)
Male in male-headed HH	0.12***	0.14**	0.17**	–0.04		0.38***	–0.02
	(0.04)	(0.06)	(0.08)	(0.12)		(0.02)	(0.08)
Female in male-headed HH	–0.07	–0.14*	–0.14		–0.01	0.22***	–0.40***
	(0.05)	(0.07)	(0.09)		(0.02)	(0.03)	(0.09)
Male in female-headed HH	0.21***	0.27***	0.08	0.04		0.66***	0.23
	(0.06)	(0.08)	(0.10)	(0.16)		(0.17)	(0.21)
Female in female-headed HH	–0.14***	–0.20***	–0.07*		–0.02	0.39***	0.13
	(0.03)	(0.05)	(0.04)		(0.04)	(0.06)	(0.10)
Age categories (base is 18–20 group)							
21–29	0.04***	0.06***	–0.03	–0.07	0.01**	–0.03**	–0.03
	(0.01)	(0.01)	(0.02)	(0.06)	(0.01)	(0.01)	(0.03)
30–39	0.11***	0.20***	–0.05	–0.23**	0.04***	0.07***	–0.04**
	(0.01)	(0.02)	(0.03)	(0.09)	(0.01)	(0.01)	(0.01)
40–49	0.23***	0.32***	0.07***	–0.05	0.05***	0.15***	0.08**
	(0.02)	(0.03)	(0.02)	(0.08)	(0.02)	(0.02)	(0.03)
50–59	0.36***	0.52***	0.20***	0.32***	0.04**	0.22***	0.21*
	(0.02)	(0.03)	(0.03)	(0.10)	(0.02)	(0.03)	(0.09)
60–69	0.49***	0.65***	0.42***	0.57***	0.05**	0.29***	0.49***
	(0.03)	(0.03)	(0.05)	(0.10)	(0.02)	(0.03)	(0.12)
70–79	0.53***	0.70***	0.45***	0.57***	0.02	0.37***	0.55***
	(0.03)	(0.04)	(0.06)	(0.09)	(0.04)	(0.03)	(0.08)
80+	0.59***	0.78***	0.53***	0.80***	–0.02	0.42***	0.62**
	(0.06)	(0.05)	(0.08)	(0.19)	(0.04)	(0.05)	(0.17)

Table 3.1 Continued

	Probability of being a landowner		Area of land owned			Fixed-effects estimates, individuals in landowning HHs	
Variable	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner [a]	Area of land owned[b]
Marital status (base is unmarried)							
Married	0.05**	0.06*	0.10***	0.10	–0.01	0.07***	0.16***
	(0.03)	(0.04)	(0.03)	(0.07)	(0.01)	(0.01)	(0.04)
Widow/widower	–0.04	–0.09*	–0.07	0.32*	0.06	–0.07	–0.10
	(0.03)	(0.04)	(0.06)	(0.19)	(0.04)	(0.04)	(0.08)
Divorced or separated/deserted	0.07	0.06	–0.01	0.10	–0.04**	0.11**	0.06
	(0.05)	(0.07)	(0.10)	(0.28)	(0.02)	(0.03)	(0.17)
Education (base is no schooling)							
Some schooling	0.01	0.05*	0.05**	0.12***	0.00	0.03	0.09
	(0.01)	(0.03)	(0.02)	(0.04)	(0.01)	(0.02)	(0.08)
Elementary completion	0.03**	0.04	0.09***	0.12***	0.04**	0.02*	0.13
	(0.01)	(0.03)	(0.02)	(0.04)	(0.02)	(0.01)	(0.08)
Some high school	0.03**	0.01	0.11***	0.18***	0.01	0.03	0.19
	(0.02)	(0.03)	(0.03)	(0.06)	(0.01)	(0.02)	(0.12)
High school graduation	0.03	0.02	0.18***	0.19**	0.01	0.02	0.27
	(0.02)	(0.04)	(0.05)	(0.08)	(0.02)	(0.02)	(0.19)
High school+	0.07**	0.06	0.25***	0.30***	–0.01	0.06*	0.41*
	(0.03)	(0.05)	(0.06)	(0.10)	(0.01)	(0.03)	(0.18)
HH demographics (base is proportion male 0–14)							
HH size	–0.02***	–0.04***	–0.02***	–0.03***	–0.00		
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)		
Proportion female 0–14	0.04	0.03	0.03	0.01	0.02		
	(0.03)	(0.04)	(0.03)	(0.07)	(0.03)		
Proportion male 15–49	–0.08**	–0.27***	–0.04	–0.04	0.03		
	(0.04)	(0.06)	(0.03)	(0.07)	(0.03)		
Proportion female 15–49	0.08*	0.09	0.09*	0.16	0.08		
	(0.04)	(0.06)	(0.05)	(0.10)	(0.05)		
Proportion male 50–79	–0.39***	–1.01***	–0.37***	–1.20***	–0.05		
	(0.05)	(0.08)	(0.06)	(0.20)	(0.04)		
Proportion female 50–79	–0.04	–0.24***	–0.23***	0.04	0.10		
	(0.05)	(0.07)	(0.07)	(0.14)	(0.06)		

Table 3.1 Continued

Variable	Probability of being a landowner		Area of land owned			Fixed-effects estimates, individuals in landowning HHs	
	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner [a]	Area of land owned[b]
HH demographics (base is proportion male 0–14) (continued)							
Proportion male 80+	–0.49***	–1.44***	–0.59***	–1.85***	0.06		
	(0.12)	(0.18)	(0.13)	(0.43)	(0.09)		
Proportion female 80+	–0.22**	–0.71***	–0.41***	–0.51	–0.05		
	(0.11)	(0.16)	(0.13)	(0.44)	(0.05)		
Land variables							
Area of land owned by the HH	0.03***	0.01*	0.25***	0.46***	0.03***		
	(0.01)	(0.01)	(0.02)	(0.04)	(0.01)		
Irrigation dummy (= 1 if HH has any land area with irrigation)	0.07***	0.00	0.03***	0.05**	0.01*		
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)		
Constant						0.02*	–0.38**
						(0.01)	(0.15)
Observations	13,504	10,394	10,394	4,821	5,573	10,400	10,400
R-squared						.78	.42
Joint tests of coefficients							
Female in dual-headed HH = 0			*F* = 6.01			*F* = 913.31	*F* = 8.66
Male in male headed HH = 0	*F* = 31.91		Prob > *F* =			Prob > *F* = 0.00	Prob > *F* = 0.01
Female in male headed HH = 0	Prob > *F* =	*F* = 37.20	0.00				
Male in female-headed HH = 0	0.00	Prob > *F* = 0.00					
Female in female-headed HH = 0							

Source: Authors.

Note: [a.] Linear probability with fixed effects. b. Ordinary least squares with fixed effects. Robust, clustered standard errors are in parentheses. Religion of self-reported HH head and regional variables are used as controls but are not reported here. Fixed-effects models estimated only for landowning HHs. Weight: HH Weight × HH Members 18 and Older. HH = household; Prob = Probability. *p < .10. **p < .05. ***p < .01.

Table 3.2 Tajikistan: Probability of being a landowner and area of owned land, individuals 18 and older, marginal effects at means reported

	Probability of being a landowner		Area of land owned			Fixed-effects estimates	
Variable	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner[a]	Area of land owned[b]
Headship dummy	0.07***	0.33***	0.36***	0.33***	0.26***	0.91***	0.35***
(= 1 if individual is HH head)	(0.01)	(0.03)	(0.02)	(0.03)	(0.02)	(0.01)	(0.02)
Sex-HH type dummies (base is male in dual-headed HH)							
Female in dual-headed HH	–0.01***	–0.05***	–0.01***			–0.02***	–0.01*
	(0.00)	(0.01)	(0.00)			(0.01)	(0.01)
Male in male-headed HH	–0.01***	–0.02	0.02	0.02		–0.00	–2.41***
	(0.00)	(0.02)	(0.01)	(0.02)		(0.05)	(0.07)
Female in male-headed HH	–0.01	–0.03	0.00		0.01	–0.00	–2.43***
	(0.01)	(0.02)	(0.01)		(0.01)	(0.05)	(0.08)
Male in female-headed HH	0.01**	0.03**	0.02**	0.02		0.04*	–2.06***
	(0.00)	(0.02)	(0.01)	(0.02)		(0.03)	(0.04)
Female in female-headed HH	–0.02***	–0.10***	–0.02***		0.00	–0.03	–2.11***
	(0.00)	(0.02)	(0.01)		(0.00)	(0.02)	(0.04)
Age categories (base is 18–20 group)							
21–29	–0.00	–0.01	–0.01*	–0.01	–0.00**	–0.00	–0.01
	(0.00)	(0.01)	(0.01)	(0.02)	(0.00)	(0.00)	(0.01)
30–39	0.01**	0.03**	–0.02***	–0.04	–0.00	–0.00	–0.03**
	(0.00)	(0.01)	(0.01)	(0.02)	(0.00)	(0.01)	(0.01)
40–49	0.02***	0.10***	–0.00	0.00	0.01	0.04***	–0.00
	(0.01)	(0.02)	(0.01)	(0.03)	(0.00)	(0.01)	(0.02)
50–59	0.05***	0.17***	0.02	0.07**	0.01*	0.05***	0.01
	(0.01)	(0.03)	(0.01)	(0.04)	(0.01)	(0.01)	(0.02)
60–69	0.06***	0.18***	0.07***	0.11***	0.04***	0.05***	0.09***
	(0.01)	(0.03)	(0.02)	(0.04)	(0.01)	(0.01)	(0.03)
70–79	0.05***	0.13***	0.04*	0.08**	–0.02	0.03	0.06
	(0.01)	(0.04)	(0.02)	(0.04)	(0.02)	(0.02)	(0.04)
80+	0.04	0.14	0.08	0.14	–0.01	0.04	0.09
	(0.03)	(0.09)	(0.05)	(0.10)	(0.02)	(0.05)	(0.07)

Table 3.2 Continued

Variable	Probability of being a landowner		Area of land owned			Fixed-effects estimates	
	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner[a]	Area of land owned[b]
Marital status (base is unmarried)							
Married	0.01**	0.02**	0.01	0.02	0.00	0.00*	0.01
	(0.00)	(0.01)	(0.01)	(0.02)	(0.00)	(0.00)	(0.01)
Widow/widower	0.02**	0.07***	–0.01	0.00	0.04**	0.03	–0.01
	(0.01)	(0.03)	(0.02)	(0.06)	(0.02)	(0.02)	(0.02)
Divorced or separated/deserted	0.01	0.04*	0.03**	–0.04	0.02	0.01	0.04**
	(0.01)	(0.02)	(0.01)	(0.06)	(0.01)	(0.01)	(0.02)
Education (base is no schooling)						–0.01	
Elementary completion	–0.00	–0.01	–0.01	–0.07	–0.04	(0.02)	–0.02
	(0.00)	(0.01)	(0.04)	(0.09)	(0.03)	0.00	(0.08)
Some high school	0.00	0.01	0.02	–0.04	–0.03	(0.02)	0.03
	(0.00)	(0.01)	(0.05)	(0.09)	(0.03)	0.01	(0.10)
High school graduation	0.00	0.02*	0.01	–0.07	–0.03	(0.02)	0.02
	(0.00)	(0.01)	(0.05)	(0.09)	(0.03)	0.02	(0.09)
High school+	0.00	0.03	0.04	–0.05	–0.02	(0.02)	0.05
	(0.00)	(0.02)	(0.05)	(0.09)	(0.03)	–0.01	(0.09)
HH demographics (base is proportion male 0–14)							
HH size	–0.00**	0.01***	–0.00	–0.00	–0.00*		
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
Proportion female 0–14	0.01***	0.03*	0.01	–0.02	0.01		
	(0.00)	(0.02)	(0.01)	(0.03)	(0.01)		
Proportion male 15–49	–0.00	–0.06***	–0.02	–0.02	–0.02		
	(0.00)	(0.02)	(0.02)	(0.03)	(0.01)		
Proportion female 15–49	0.00	0.00	0.01	–0.02	0.00		
	(0.00)	(0.02)	(0.01)	(0.03)	(0.02)		
Proportion male 50–79	–0.04***	–0.22***	–0.10***	–0.27***	–0.05*		
	(0.01)	(0.04)	(0.04)	(0.10)	(0.03)		

Table 3.2 Continued

Variable	Probability of being a landowner		Area of land owned			Fixed-effects estimates	
	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner[a]	Area of land owned[b]
HH demographics (base is proportion male 0–14) (continued)							
Proportion female 50–79	—	—	—	—	—		
Proportion male 80+	–0.03	–0.18*	–0.14	–0.49*	0.04		
	(0.02)	(0.10)	(0.09)	(0.29)	(0.05)		
Proportion female 80+	0.02	–0.12	–0.08*	0.05	–0.10**		
	(0.02)	(0.08)	(0.05)	(0.09)	(0.04)		
Land variables							
Area of land owned by the HH	0.01***	0.01*	0.19***	0.35***	0.03***		
	(0.00)	(0.00)	(0.02)	(0.02)	(0.01)		
Irrigation dummy (= 1 if HH has any land area with irrigation)	0.04***	–0.00	–0.00	–0.01	0.00		
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)		
Constant						0.05* (0.03)	2.04*** (0.10)
Observations	16,862	11,417	11,417	5,460	5,957	11,417	11,417
R-squared						.90	.44
Joint tests of coefficients							
Female in dual-headed HH = 0 Male in male headed HH = 0 Female in male headed HH = 0 Male in female-headed HH = 0 Female in female-headed HH = 0	*F* = 11.48 Prob > *F* = 0.00	*F* = 10.13 Prob > *F* = 0.00	*F* = 5.89 Prob > *F* = 0.00			*F* = 4.50 Prob > *F* = 0.00	*F* = 605.74 Prob > *F* = 0.00

Source: Authors.

Note: [a] Linear probability with fixed effects. [b] Ordinary least squares with fixed effects. Robust, clustered standard errors are in parentheses. Ethnicity and regional variables are used as controls but are not reported here. Fixed-effects models estimated only for landowning HHs. Weight: HH Weight × HH Members 18 and Older. Dashes indicate no results. HH = household; Prob = Probability. *$p < .10$. **$p < .05$. ***$p < .01$.

Table 3.3 Timor-Leste: Probability of being a land manager and area of land managed, individuals 18 and older, marginal effects at means reported

	Probability of being a landowner		Area of land owned			Fixed-effects estimates	
Variable	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner[a]	Area of land owned[b]
Headship dummy (= 1 if individual is HH head)	0.39*** (0.03)	0.89*** (0.06)	1.04*** (0.10)	1.11*** (0.15)	0.82*** (0.06)	0.80*** (0.03)	1.12*** (0.17)
Sex-HH type dummies (base is male in dual-headed HH)							
Female in dual-headed HH	–0.17***	–0.33***	–0.08			–0.11***	–0.08
	(0.02)	(0.05)	(0.06)			(0.02)	(0.10)
Male in male-headed HH	0.04	0.06	–0.05	–0.13		0.13	0.77
	(0.03)	(0.06)	(0.06)	(0.18)		(0.17)	(0.59)
Female in male-headed HH	–0.07	–0.13	–0.17		0.01	0.07	0.68
	(0.05)	(0.09)	(0.11)		(0.07)	(0.17)	(0.59)
Male in female-headed HH	0.06**	0.09	0.06	0.19*		0.08	0.96
	(0.03)	(0.06)	(0.06)	(0.11)		(0.21)	(0.80)
Female in female-headed HH	–0.12***	–0.26***	–0.16***		–0.06***	–0.07	0.74
	(0.02)	(0.04)	(0.05)		(0.02)	(0.20)	(0.78)
Age categories (base is 18–20 group)							
21–29	–0.00	–0.03	–0.01	–0.06	–0.00	–0.02	–0.04
	(0.02)	(0.04)	(0.05)	(0.08)	(0.03)	(0.02)	(0.09)
30–39	0.05*	0.13**	0.10*	0.14	0.03	0.04*	0.11
	(0.03)	(0.05)	(0.05)	(0.09)	(0.04)	(0.02)	(0.10)
40–49	0.05**	0.17***	0.18**	0.30**	0.05	0.06***	0.26
	(0.03)	(0.05)	(0.08)	(0.12)	(0.04)	(0.02)	(0.17)
50–59	0.06*	0.15**	0.27***	0.48***	0.02	0.04	0.44**
	(0.03)	(0.07)	(0.09)	(0.17)	(0.04)	(0.03)	(0.20)
60–69	0.05	0.15*	0.25***	0.48***	0.05	0.05	0.44**
	(0.03)	(0.08)	(0.09)	(0.16)	(0.05)	(0.04)	(0.20)
70–79	0.04	0.14	0.19**	0.37**	–0.00	0.05	0.27
	(0.04)	(0.09)	(0.09)	(0.18)	(0.05)	(0.06)	(0.21)
80+	–0.04	–0.05	0.04	–0.14	0.22	–0.03	0.13
	(0.04)	(0.19)	(0.20)	(0.36)	(0.23)		(0.31)

Table 3.3 Continued

Variable	Probability of being a landowner		Area of land owned			Fixed-effects estimates	
	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner[a]	Area of land owned[b]
Marital status (base is unmarried)							
Married	0.04**	0.08**	–0.08	–0.22*	0.01	0.02	–0.10
	(0.02)	(0.04)	(0.05)	(0.13)	(0.03)	(0.02)	(0.12)
Widow/widower	0.05*	0.10*	–0.19**	–0.33	0.01	0.02	–0.25
	(0.03)	(0.06)	(0.07)	(0.20)	(0.04)	(0.04)	(0.18)
Divorced or separated/ deserted	0.06	0.23**	0.28	0.41	0.12	0.09	0.41
	(0.07)	(0.10)	(0.31)	(0.47)	(0.19)	(0.06)	(0.63)
Education (base is no schooling)							
Some schooling	–0.14***	–0.24***	0.16*	0.36*	0.13**	–0.07*	0.43**
	(0.01)	(0.04)	(0.09)	(0.20)	(0.06)	(0.04)	(0.20)
Elementary completion	–0.05***	–0.00	0.10**	0.07	0.06*	–0.00	0.32**
	(0.01)	(0.03)	(0.04)	(0.06)	(0.04)	(0.02)	(0.16)
Some high school	–0.07***	–0.03	0.03	0.10	–0.01	–0.02	0.15
	(0.02)	(0.05)	(0.05)	(0.08)	(0.02)	(0.02)	(0.11)
High school graduation	–0.12***	–0.11***	–0.03	–0.04	0.01	–0.04**	0.11
	(0.01)	(0.03)	(0.04)	(0.07)	(0.03)	(0.02)	(0.13)
High school+	–0.13***	–0.18**	–0.24	–0.58*	–0.08*	–0.08	–0.06
	(0.01)	(0.09)	(0.20)	(0.31)	(0.04)	(0.07)	(0.39)
HH demographics (base is proportion male 0–14)							
HH size	–0.01***	–0.02***	–0.01*	–0.01	0.00		
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)		
Proportion female 0–14	–0.02	–0.06	0.02	0.25**	–0.12*		
	(0.03)	(0.05)	(0.05)	(0.11)	(0.07)		
Proportion male 15–49	–0.11***	–0.16***	–0.09	0.03	–0.02		
	(0.03)	(0.05)	(0.07)	(0.14)	(0.06)		
Proportion female 15–49	–0.02	–0.01	–0.02	–0.16	0.02		
	(0.03)	(0.05)	(0.05)	(0.13)	(0.08)		

Table 3.3 Continued

Variable	Probability of being a landowner		Area of land owned			Fixed-effects estimates	
	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner[a]	Area of land owned[b]
HH demographics (base is proportion male 0–14) (continued)							
Proportion male 50–79	–0.19***	–0.43***	–0.41***	–0.61*	–0.09		
	(0.05)	(0.11)	(0.14)	(0.35)	(0.11)		
Proportion female 50–79	—	—	—	—	—		
Proportion male 80+	–0.20	–0.47	0.07	1.24	–0.38**		
	(0.20)	(0.47)	(0.35)	(0.95)	(0.18)		
Proportion female 80+	0.03	–0.02	–0.32	–1.32*	–0.56***		
	(0.13)	(0.28)	(0.26)	(0.80)	(0.15)		
Land variables							
Area of land managed by the HH	0.02***	0.01**	0.22***	0.38***	0.05***		
	(0.00)	(0.00)	(0.02)	(0.03)	(0.01)		
Irrigation dummy (= 1 if HH has any land area with irrigation)	0.11***	0.07***	0.02	0.05*	–0.01		
	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)		
Constant						0.18	–1.37*
						(0.18)	(0.80)
Observations	11,217	8,988	8,988	4,436	4,552	8,988	8,988
R-squared						.84	.48
Joint tests of hypotheses							
Female in dual headed = 0 Male in male headed = 0 Female in male headed = 0 Male in female headed = 0 Female in female headed = 0	*F* = 17.37 Prob > *F* = 0.00	*F* = 12.91 Prob > *F* = 0.00	*F* = 2.58 Prob > *F* = 0.03			*F* = 5.44 Prob > *F* = 0.00	*F* = 1.09 Prob > *F* = 0.36

Source: Authors.

Note: [a] Linear probability with fixed effects. [b] Ordinary least squares with fixed effects. Robust, clustered standard errors are in parentheses. Ethnicity and regional variables are used as controls but are not reported here. Fixed-effects models are estimated only for landowning HHs. Weight: HH Weight × HH Members 18 and Older. Dashes indicate no results. HH = household; Prob = Probability. *p < .10. **p < .05. ***p < .01.

Table 3.4 Vietnam: Probability of being a landowner and area of owned land, individuals 18 and older, marginal effects at means reported

	Probability of being a landowner		Area of land owned			Fixed-effects estimates	
Variable	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner[a]	Area of land owned[b]
Headship dummy (= 1 if individual is HH head)	0.32*** (0.01)	0.71*** (0.02)	0.65*** (0.02)	0.71*** (0.03)	0.34*** (0.03)	0.67*** (0.01)	0.70*** (0.04)
Sex-HH type dummies (base is male in dual-headed HH)							
Female in dual-headed HH	–0.05*** (0.01)	–0.12*** (0.01)	–0.13*** (0.01)			–0.06*** (0.01)	–0.12*** (0.02)
Male in male-headed HH	0.05*** (0.02)	–0.05* (0.03)	–0.01 (0.03)	0.01 (0.04)		–0.20** (0.01)	0.47*** (0.08)
Female in male-headed HH	–0.08 (0.05)	–0.19** (0.07)	–0.14*** (0.05)		–0.07*** (0.03)	–0.25*** (0.05)	0.34** (0.13)
Male in female-headed HH	0.01 (0.02)	0.01 (0.02)	0.06** (0.03)	0.12*** (0.04)		–0.26*** (0.03)	–0.31*** (0.08)
Female in female-headed HH	–0.03** (0.01)	–0.10*** (0.02)	–0.10*** (0.02)		0.09*** (0.02)	–0.31*** (0.03)	–0.46*** (0.08)
Age categories (base is 18–20 group)							
21–29	0.03*** (0.01)	0.06*** (0.01)	0.07*** (0.01)	0.10*** (0.03)	0.04*** (0.01)	–0.01 (0.01)	0.05*** (0.02)
30–39	0.11*** (0.01)	0.18*** (0.01)	0.19*** (0.02)	0.29*** (0.04)	0.10*** (0.02)	0.04*** (0.01)	0.19*** (0.04)
40–49	0.20*** (0.01)	0.32*** (0.02)	0.23*** (0.02)	0.38*** (0.04)	0.12*** (0.02)	0.18*** (0.01)	0.27*** (0.04)
50–59	0.32*** (0.02)	0.53*** (0.03)	0.35*** (0.03)	0.51*** (0.06)	0.23*** (0.03)	0.24*** (0.01)	0.34*** (0.04)
60–69	0.31*** (0.02)	0.48*** (0.04)	0.30*** (0.03)	0.46*** (0.06)	0.17*** (0.03)	0.23*** (0.02)	0.32*** (0.05)
70–79	0.28*** (0.02)	0.42*** (0.03)	0.26*** (0.04)	0.36*** (0.07)	0.13*** (0.04)	0.19*** (0.03)	0.31*** (0.07)
80+	0.16*** (0.03)	0.22*** (0.05)	0.14*** (0.04)	0.13 (0.10)	0.00 (0.04)	0.09*** (0.03)	0.15*** (0.05)

Table 3.4 Continued

Variable	Probability of being a landowner		Area of land owned			Fixed-effects estimates	
	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner[a]	Area of land owned[b]
Marital status (base is unmarried)							
Married	0.13***	0.21***	0.04**	–0.02	0.03*	0.08***	0.02
	(0.01)	(0.02)	(0.02)	(0.03)	(0.01)	(0.01)	(0.02)
Widow/widower	0.05***	0.11***	–0.06**	–0.15**	0.12***	0.04	–0.12**
	(0.01)	(0.03)	(0.03)	(0.07)	(0.03)	(0.03)	(0.05)
Divorced or separated/deserted	0.05***	0.11***	–0.16***	–0.30***	–0.03	0.04	–0.23***
	(0.02)	(0.03)	(0.04)	(0.08)	(0.04)	(0.02)	(0.06)
Education (base is no schooling)							
Some schooling	0.03***	0.05***	0.02	–0.03	–0.01	0.04***	0.02
	(0.01)	(0.02)	(0.02)	(0.05)	(0.03)	(0.01)	(0.04)
Elementary completion	0.03**	0.05**	–0.03	–0.11**	–0.06**	0.05***	–0.05
	(0.01)	(0.02)	(0.03)	(0.05)	(0.03)	(0.02)	(0.04)
Some high school	0.03***	0.07***	–0.02	–0.14***	–0.02	0.06***	–0.02
	(0.01)	(0.02)	(0.03)	(0.05)	(0.03)	(0.02)	(0.04)
High school graduation	0.05***	0.06**	–0.02	–0.08	–0.04	0.05***	0.01
	(0.01)	(0.02)	(0.03)	(0.05)	(0.03)	(0.02)	(0.05)
High school+	0.07***	0.08**	–0.09***	–0.18***	–0.04	0.02	–0.07
	(0.02)	(0.04)	(0.03)	(0.06)	(0.04)	(0.03)	(0.06)
HH demographics (base is proportion male 0–14)							
HH size	–0.01***	–0.04***	–0.02***	–0.02***	–0.02***		
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)		
Proportion female 0–14	0.04*	0.02	–0.01	–0.09	0.06		
	(0.02)	(0.04)	(0.03)	(0.06)	(0.05)		
Proportion male 15–49	–0.05**	–0.17***	–0.09***	–0.08	0.02		
	(0.02)	(0.04)	(0.03)	(0.06)	(0.05)		
Proportion female 15–49	–0.05**	–0.14***	–0.03	–0.19***	–0.06		
	(0.02)	(0.04)	(0.03)	(0.06)	(0.05)		
Proportion male 50–79	–0.24***	–0.51***	–0.21***	–0.37***	0.05		
	(0.03)	(0.06)	(0.05)	(0.12)	(0.06)		

Table 3.4 Continued

Variable	Probability of being a landowner		Area of land owned			Fixed-effects estimates	
	Individuals in all HHs (probit)	Individuals in landowning HHs (probit)	Individuals in landowning HHs (tobit)	Men in landowning HHs (tobit)	Women in landowning HHs (tobit)	Probability of being a landowner[a]	Area of land owned[b]
HH demographics (base is proportion male 0–14)							
Proportion female 50–79	–0.10***	–0.40***	–0.30***	–0.32***	–0.39***		
	(0.03)	(0.06)	(0.04)	(0.08)	(0.06)		
Proportion male 80+	–0.13**	–0.38***	–0.25***	–0.13	–0.06		
	(0.06)	(0.09)	(0.07)	(0.17)	(0.09)		
Proportion female 80+	–0.06	–0.31***	–0.15***	–0.01	–0.38***		
	(0.05)	(0.08)	(0.05)	(0.12)	(0.08)		
Land variables							
Area of land owned by the HH	0.02***	0.01**	0.34***	0.52***	0.15***		
	(0.00)	(0.00)	(0.01)	(0.02)	(0.01)		
Irrigation dummy (= 1 if HH has any land area with irrigation)	0.14***	–0.02**	0.02**	–0.01	0.06***		
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)		
Constant						0.28***	–0.06
						(0.02)	(0.06)
Observations	26,227	20,191	20,191	9,773	10,418	20,191	20,191
R-squared						.75	.49
Joint tests of hypotheses							
Female in dual headed = 0 Male in male headed = 0 Female in male headed = 0 Male in female headed = 0 Female in female headed = 0	*F* = 18.60 Prob > *F* = 0.00	*F* = 18.66 Prob > *F* = 0.00	*F* = 18.81 Prob > *F* = 0.00			*F* = 20.58 Prob > *F* = 0.00	*F* = 130.73 Prob > *F* = 0.00

Source: Authors.

Notes: [a] Linear probability with fixed effects. [b] Ordinary least squares with fixed effects. Robust, clustered standard errors are in parentheses. Ethnicity of self-reported HH head and regional variables are used as controls but are not reported here. Fixed-effects models are estimated only for landowning HHs. Weight: HH Weight × HH Members 18 and Older. HH = household; Prob = Probability. *p < .10. **p < .05. ***p < .01.

In all four countries, being the head of the household significantly increases one's probability of being a landowner and the area of land owned. Women are consistently less likely than men to own land, although there are variations by household type. Women in dual-headed households and in female-headed households have a significantly lower probability of owning land and tend to own smaller areas of land than men in dual-headed households. This is robust to the inclusion of household fixed effects, except in Timor-Leste.

In Bangladesh, Tajikistan, and Vietnam, life-cycle effects in landownership are evident. In Bangladesh, both the probability of owning land and the area of land owned increase relative to the base category (age 18–20) up until the oldest (80+) age category, and this finding is robust to controlling for household unobservables. In Tajikistan, the peak is at ages 60 to 69, while in Vietnam, the peak is earlier at 50 to 59. This illustrates both the acquisition of land over the life cycle and bequests (or inter vivos transfers) later in life as individuals inherit land from their parents or, especially for women, from deceased spouses. These life-cycle effects on the area of land owned are generally larger in magnitude and often more significant for male landowners than for female landowners. Compared to the other countries, in Timor-Leste, life-cycle effects on the probability of landownership are weaker but still apparent; adults between 40 and 59 years are most advantaged, and the effect diminishes after 60 to 69 years.

Marital status also may affect landownership. Consistent with expectations, in all four countries, married persons are more likely to own land and to own more land since marriage signals the formation of a new social and economic unit. This pattern holds when controlling for household unobservables in all countries except Timor-Leste. However, the correlation between marital status and the area of land owned varies across countries. Overall, ever-married individuals, regardless of whether the marriage dissolves, have higher probabilities of landownership, although the relationship between marriage and the area of land owned is more ambiguous.

Relationships between education and landownership also differ widely among the four countries, from a positive correlation between schooling and landownership in Bangladesh to a negative relationship in Timor-Leste. Among individuals in all households in Bangladesh, higher levels of education are generally associated with higher probabilities of landownership. However, for individuals in landowning households, only those who have some elementary schooling are significantly more likely to own land than those with no schooling. In addition, there is a positive and significant relationship between land area and schooling, but this effect is mostly confined to males. Similarly, in Vietnam, the likelihood of landownership generally increases with higher levels of education. However, areas of land owned tend to decrease with higher levels of schooling for both women and men, though the pattern is most pronounced for men. This may indicate a propensity of more educated individuals, and particularly men, to diversify into nonagricultural fields.

In Tajikistan, the correlations between human and physical wealth are the weakest. There is no significant relationship between education and the probability of being a landowner or the area of land owned, although individuals who are high school graduates in landowning households have a higher probability of owning land compared to those with no schooling.

Finally, in Timor-Leste, there appears to be a negative correlation between physical and human capital. Individuals who have completed some schooling, elementary, high school, or beyond high school are significantly less likely to manage land compared to those with no schooling; however, the impact is greatest at the education extremes—those with just some schooling and those with beyond high school are least likely to manage land. Indeed, men and women who go beyond high school education manage smaller areas of land. This may be because persons with higher education may choose to work in nonagricultural enterprises or in salaried occupations rather than in agriculture.

In all four countries, living in a large household reduces an individual's probability of owning land, although household size does not have a consistent relationship with the amount of land owned among men and women in landowning households. Not surprising, the amount of land held by the household increases the probability of owning land and the size of land owned by individuals, particularly for men.

Joint tests of coefficients of interactions between sex and household type confirm the significant differences between being a man or woman with respect to the probability of landownership and land area across household types across all countries.

In summary, we find overwhelmingly that household heads are most likely to have land. Aside from widows in Bangladesh, individuals who have ever been married (that is, are currently married, separated, divorced, or widowed) are more likely to own land. Across countries, we find that women in both dual-headed households and female-headed households have a lower probability of owning land and own less land than men in dual-headed households, a finding that is robust to the inclusion of household fixed effects.

4. DISTRIBUTION OF LANDOWNERSHIP WITHIN HOUSEHOLDS

The previous regressions examined the probability of being a landowner and the area of land owned in all four countries, controlling for individual and household characteristics, including the size of total land owned by the household. However, this does not control for unobservable household characteristics that may influence the intrahousehold allocation of land.

To address this issue, we estimate a within-household regression in which the dependent variable is the difference between the size of the individual's own land and the household average landholding size per adult (that is, the area of land owned by the household divided by the number of adults in the household), as a function of individual characteristics and the interaction of the female dummy variable and household characteristics. In effect, the dependent variable measures the difference between the actual size of land owned by the household and the size of land that would be owned if land were distributed equally among all adults. We estimate this with household fixed effects to control for household-level unobservables. The equation is specified as follows:

> *Area of individual land owned (whether solely or jointly) minus household land area per adult = h (sex, headship status, age in years, years of schooling, marital status dummies, Female × Headship Dummy, Female × Household Type Dummy, Female × Age, Female × Schooling, Female × Marital Status Dummies, Female × Household Land Owned, Female × Whether Land Is Irrigated, Female × Household Size, Female × Religion and/or Ethnicity Dummies, household dummies [fixed effects])*

Because the fixed-effects procedure sweeps out all variables that are common to the household, interacting household characteristics with the female dummy variable allows the effect of these characteristics to be estimated, to the extent that they differentially affect men and women. This equation is estimated only for landowning households with at least one man and one woman so that that estimating the intrahousehold difference by sex is meaningful. If an individual in a landowning household owns no land, that person is still included in the estimation because we are examining the difference between individually owned land (whether positive or zero) and the average amount of land the household owns per adult.[15]

For land that is reported as jointly owned, we do not have information about the share owned by each individual. Thus, we have two options. The first is to sum the total amount of land that each individual owns, regardless of whether it is owned individually or jointly. The second would be to make an arbitrary allocation, such as to split joint landholdings equally among the listed owners. We chose to do the former. While it is less arbitrary, it does implicitly assume that land owned individually and land owned jointly have the same benefits for the owner. Each plot is included only once when calculating the total area of land owned by each household. Although household characteristics would be wiped out in a fixed-effects regression, the interaction term between the female dummy variable and the specific characteristics captures the differential effects of these characteristics by sex.

Household fixed-effects regressions for all four countries are presented in Table 4.1. Although it appears that being female increases landownership because the female dummy variable is interacted with a number of household characteristics, to evaluate the effect of being female on landownership, one needs to compute the total effect, evaluated at the means of the other variables, rather than the coefficient on the female dummy alone. Evaluated at sample means, the total effect of being female is negative; women have significantly less land than the household average in all four countries. Although household headship is associated with greater areas of land owned, relative to other adults in the household, female heads own less land in all four countries. The household's being dual headed is positively associated with larger land areas owned by females in all countries (although this result is not significant in Bangladesh);

[15] Given that this set of regressions includes only individuals in landowning households with at least one woman and one man, we did not weight the regressions.

being in a male-headed household has a significant and positive affect on the area of land owned by females in Tajikistan and Timor-Leste.

Table 4.1 Determinants of the within-HH land distribution, by individual, in landowning HHs with at least one adult male and adult female

	Dependent variable: Individual land owned minus HH average land area owned per adult			
Variable	**Bangladesh**	**Tajikistan**	**Timor-Leste**	**Vietnam**
Sex dummy (female = 1)	0.59***	0.15***	0.51***	0.22**
	(0.15)	(0.05)	(0.14)	(0.10)
Headship dummy (HH head = 1)	0.53***	0.38***	1.07***	0.90***
	(0.06)	(0.02)	(0.09)	(0.04)
Age (years)	0.01***	0.00***	0.00**	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Education (years)	0.01**	0.00	–0.01	–0.01
	(0.01)	(0.00)	(0.01)	(0.00)
Marital status (base is unmarried)				
Married	–0.01	–0.02*	–0.02	0.10**
	(0.07)	(0.01)	(0.10)	(0.04)
Widowed/Widower	0.38	0.01	–0.09	–0.10
	(0.29)	(0.05)	(0.17)	(0.13)
Divorced or separated	–0.07	–0.14	0.10	–0.15
	(0.23)	(0.09)	(0.30)	(0.12)
Interactions				
Female × Head	–0.26*	–0.11***	–0.40**	–0.78***
	(0.13)	(0.04)	(0.18)	(0.07)
Female × Dual HH	0.18	0.05***	0.31***	0.12**
	(0.13)	(0.02)	(0.09)	(0.05)
Female × Male-headed HH	0.20	0.14***	0.54***	0.00
	(0.17)	(0.04)	(0.18)	(0.09)
Female × Years Schooling	–0.01**	0.00	0.01	0.00
	(0.01)	(0.00)	(0.00)	(0.00)
Female × Age	–0.01***	–0.00***	–0.00**	–0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Female × Married	–0.02	0.03**	0.05	0.02
	(0.07)	(0.01)	(0.09)	(0.04)
Female × Widowed	–0.52*	0.03	0.14	0.28**
	(0.27)	(0.06)	(0.17)	(0.14)
Female × Separated/Divorced	0.02	0.14	–0.08	0.22
	(0.25)	(0.09)	(0.33)	(0.14)
Female × HH Land Area	–0.54***	–0.41***	–0.53***	–0.40***
	(0.07)	(0.03)	(0.04)	(0.03)

Table 4.1 Continued

Variable	Dependent variable: Individual land owned minus HH average land area owned per adult Bangladesh	Tajikistan	Timor-Leste	Vietnam
Interactions (continued)				
Female × Irrigated HH Land	–0.03	0.01	–0.05	0.08***
	(0.03)	(0.01)	(0.04)	(0.03)
Female × HH Size	0.02*	–0.00	–0.01	–0.01
	(0.01)	(0.00)	(0.01)	(0.01)
Female × Hindu	0.01	NA	NA	NA
	(0.04)			
Female × Christian	–0.26	NA	NA	NA
	(0.35)			
Female × Tajik Ethnicity	NA	0.01	NA	NA
		(0.04)		
Female × Uzbek Ethnicity	NA	0.03	NA	NA
		(0.04)		
Female × Kinh Ethnicity of HH Head	NA	NA	NA	0.16***
				(0.04)
Constant	–0.83***	–0.19***	–0.70*	–0.36
	(0.23)	(0.06)	(0.39)	(0.34)
Observations	9,737	11,520	9,434	16,003
R-squared	.52	.48	.47	.50
Hypotheses tests on coefficients				
Female × Headship = 0	*F* = 3.84 Prob > *F* = 0.05	*F* = 9.10 Prob > *F* = 0.00	*F* = 4.99 Prob > *F* = 0.03	*F* = 107.78 Prob > *F* = 0.00
Female × Dual-headed HH = 0 Female × Male-headed HH = 0	*F* = 1.02 Prob > *F* = 0.36	*F* = 8.51 Prob > *F* = 0.00	*F* = 6.83 Prob > *F* = 0.00	*F* = 3.54 Prob > *F* = 0.03
Female × HH Characteristics (ethnicity, religion, land, irrigated,	*F* = 40.97 Prob > *F*	*F* = 36.16 Prob > *F* = 0.00	*F* = 67.06 Prob > *F* = 0.00	*F* = 72.04 Prob > *F* = 0.00
Female × Education = 0	*F* = 5.68 Prob > *F* = 0.02	*F* = 0.04 Prob > *F* = 0.85	*F* = 1.52 Prob > *F* = 0.21	*F* = 0.45 Prob > *F* = 0.50
Female × Age (years) = 0	*F* = 47.51 Prob > *F* = 0.00	*F* = 10.67 Prob > *F* = 0.00	*F* = 5.07 Prob > *F* = 0.02	*F* = 1.25 Prob > *F* = 0.26
Female × All Marital Status Dummies = 0	*F* = 1.24 Prob > *F* = 0.29	*F* = 2.07 Prob > *F* = 0.10	*F* = 0.29 Prob > *F* = 0.83	*F* = 2.14 Prob > *F* = 0.09

Source: Authors

Note: Ordinary least squares with household fixed effects and robust standard errors are reported. Standard errors are in parentheses; household fixed effects are included but are not reported. Education variables are calculated differently in each country and do not necessarily reflect the total number of years of schooling of each individual. HH = household; NA = Not applicable; Prob = Probability. *$p < .10$. **$p < .05$. ***$p < .01$.

The negative and significant coefficient of the interaction term between being female and the size of land owned in all countries is worth noting: women own less land, as individuals, in households that have more land. This suggests that, as households accumulate land, additional land is owned mostly by men. This finding implies that intrahousehold inequality with respect to land tends to increase as households become wealthier.

In Bangladesh, individuals with more schooling also have more land; however, schooling negatively affects women's landownership in Bangladesh, indicating that while land and schooling investments may be complementary for men, they are substitutes for women. In the other three countries, schooling does not significantly affect land owned in general or by women within the household. Irrigation significantly differentially affects women's landownership only in Vietnam, where it has a positive effect on the size of land women own. Once household unobservables are considered, negative life-cycle effects for women are observed in all countries except Vietnam.

Marital status also differentially affects the size of land owned by women relative to the household average, with widowed women owning less land in Bangladesh and more land in Vietnam, compared to unmarried women, while married women own more land in Tajikistan. One possibility is that when Bangladeshi male landowners die, their sons inherit directly, while widows inherit in Vietnam. The Marriage and Family Law of Vietnam stipulates that husbands and wives have the right to inherit each other's property and, unless other arrangements are made, when one spouse dies, the living partner manages their common property. Given that Vietnam has a partial community of property regime, all property obtained after marriage is considered common property.

We explore the finding that gender inequality increases as households acquire more land by evaluating the total effect of being female across the landownership distribution (Table 4.2). We compute the effect of being female for each quartile of the household landownership distribution, substituting the average characteristics of households and individuals within that quartile. As noted earlier, the mean total effect of being female is associated with a disadvantage in the size of land owned, compared to other household members. However, the female disadvantage in landownership within the household does not appear to exist at lower levels of land owned by the household (in fact, being female appears to convey a slight advantage) but becomes evident in the top quartile of the household landownership distribution, in which the value of the female disadvantage is highest.

Table 4.2 Total effect of being female across the landownership distribution, households divided into quartiles based on area of land owned or managed by household

Quartile	Bangladesh	Tajikistan	Timor-Leste	Vietnam
Mean	–0.15 (0.04) P > |t| = 0.00	–0.06 (0.01) P > |t| = 0.00	–0.09 (0.03) P > |t| = 0.03	–0.25 (0.02) P > |t| = 0.00
First quartile	0.28 (0.05) P > |t| = 0.00	0.06 (0.01) P > |t| = 0.00	0.08 (0.02) P > |t| = 0.00	0.16 (0.02) P > |t| = 0.00
Second quartile	0.20 (0.05) P > |t| = 0.00	0.02 (0.01) P > |t| = 0.05	0.06 (0.02) P > |t| = 0.01	–0.03 (0.02) P > |t| = 0.10
Third quartile	–0.04 (0.04) P > |t| = 0.32	0.03 (0.02) P > |t| = 0.12	0.01 (0.03) P > |t| = 0.85	–0.16 (0.02) P > |t| = 0.00
Fourth quartile	–1.04 (0.11) P > |t| = 0.00	–0.28 (0.02) P > |t| = 0.00	–0.46 (0.04) P > |t| = 0.00	–1.02 (0.07) P > |t| = 0.00

Source: Authors.
Note: Linear combinations of parameters are reported; standard errors are in parentheses.

5. CONCLUSIONS

Our analysis has revealed patterns of significant relationships among sex, headship, and the life cycle that cut across such diverse countries as Bangladesh, Tajikistan, Timor-Leste, and Vietnam. Household heads are more likely to own land and to own larger areas of land, but women are less likely to own land. Women in both dual-headed and female-headed households are less likely to own land than are men in dual-headed households, suggesting that women are disadvantaged in landownership, regardless of household structure. Age and marital status also affect men and women differently. In general, women landowners tend to be older than male landowners because they are more likely to acquire land when they become widows.

We find gender gaps in land rights when comparing individual men and women both across and within households. Contrary to the assumption that gender inequality declines as wealth increases, one of our most striking findings is that, as the area of land owned by the household increases, women tend to own less land relative to the household average, implying that household land accumulation disproportionately benefits men. This finding has important implications for data collection: knowing whether women own any land is not enough; we need to know how much land she owns. Policymakers also need to be attuned to gendered changes in landownership as households become wealthier.

The intrahousehold analysis also reveals that women in dual-headed households are the least likely to own land. Neglected in analyses that focus on headship, women in what are traditionally considered male-headed households comprise the majority of adult women in all four countries. They are also the majority of female landowners in Bangladesh and Vietnam. Thus, to ignore these women would result in a substantial misunderstanding of gendered landownership patterns.

There is substantive evidence that women's having land rights is correlated with better outcomes for families (see Allendorf 2007 for Nepal and Menon et al. 2014 for Vietnam). In addition, protecting married women's property rights has important implications for women's well-being if the marriage dissolves, through either death of the husband or divorce. Three factors affect widows' land rights—whether they retain ownership of any land that they owned individually, whether they retain a share of marital property, and whether they inherit any land from their husbands. Women's ability to retain their land rights in case of marital dissolution needs to be protected by marriage and property law.

Potential decreases in productivity and efficiency are often cited as reasons against strengthening women's land rights. For example, inequalities in the intrahousehold land distribution could reflect specialization, efficiency, and returns to specific experience (Rosenzweig and Wolpin 1985). If men provide a comparative advantage in agricultural labor or specialize in agriculture or if there are great returns from experience on a specific plot of land over time, there is a strong economic argument that men should own and manage land. Given these advantages, the overall returns to land could be higher, and the proceeds could then be equitably shared among household members, such as in a Pareto-optimal allocation.

The productivity hypothesis is difficult to test because it is empirically challenging to separate the productivity effects of the sex of the landowner or manager since the sex of the landowner is also highly correlated with other factors that affect agricultural productivity, such as land quality, tenure security, access to advisory services, and other agricultural resources. The gender gaps in these other factors have been documented elsewhere (Peterman et al. 2014). Moreover, the predominance of jointly managed farms in Asia make it difficult to test this hypothesis for male- and female-managed plots. Simply comparing the productivity of jointly managed plots with those managed individually by men and those managed by women does not indicate what would happen if women's property rights were strengthened. However, recent evidence from Vietnam (Newman, Tarp, and van de Broeck 2015) finds higher yields on titled plots and no efficiency losses from titling land in both men's and women's names. In this case, where there is no tradeoff between joint titling and productivity, joint titles are potentially an effective way to improve women's bargaining power within the household and to protect their property rights on the dissolution of the marriage with no associated efficiency losses.

This paper attempts to understand the processes by which men and women acquire land; the social, cultural, and legal institutions surrounding gender and landownership; and the role of individual and household characteristics influencing an individual's ability to own land so as to inform the formulation of policies and interventions to strengthen women's land rights. Our finding that women own less land than men across different types of household structures, that they are likely to own even less land if a marriage dissolves, and that gender inequality increases with household landholdings suggests that strengthening women's landownership rights is important. Women's land rights need to be strengthened within marriage and protected should the marriage dissolve. Although building the evidence base on the impacts of gender-sensitive land policy reform is still in its infancy, early research on policy reforms such as joint titling in Vietnam show that strengthening women's land rights has the potential to improve women's well-being as well as their children's, without detrimental effects on productivity. This is an important topic for future research.

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