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This Land is Her Land:

A Comparative Analysis of Gender, Institutions, and Landownership

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ABSTRACT

Most analyses of the gender gaps in landownership are based on one or a few countries in which little discussion is provided of the institutional context. Yet, the institutions within a given context will certainly influence both men's and women's landownership. In this paper, we analyze data from individual men and women respondents to the Demographic and Health Surveys in 45 low- and middle-income countries combined with 28 indicators at the national level of relevant institutions. To measure the associations with institutions, we use indicators of the structure of the economy, land market efficiency, women's labor force participation, education of women and girls, gender equality, women's property rights, social norms, marital property rights and inheritance, women's political voice, and the extent of indigenous and communal property in the country. We do not find a clear association between higher GDP and structural transformation in the economy and a smaller gender land gap. This suggests that economic growth and development alone will not resolve the gender land gaps. The indicators that proxy for more gender equality in the labor force, educational attainment, and legal and social norms are all associated with a lower gender gap in landownership.

Keywords: gender, women's land rights, gender land gap, institutions, land inequality

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ACRONYMS

DHS Demographic and Health Surveys
GLRD Gender and Land Rights Database

1. INTRODUCTION

Women's landownership is increasingly seen as a key component of the development agenda, both because of its instrumental role in increasing women's livelihoods, empowerment, and outcomes for children, and also because it is a matter of human rights and dignity. Land is often considered a gateway asset, which enables access to other resources (Lastarria-Cornhiel et al., 2014). There is abundant evidence on the benefits of women's landownership: it provides a means for women to earn an income, improves the health and education of children, increases food security (Doss, 2006; Menon, van der Meulen Rodgers, & Nguyen, 2014), and lowers vulnerability to intimate partner violence (Panda & Agarwal, 2005; Peterman, Pereira, Bleck, Palermo, & Yount, 2017). Women's landownership has the potential to enhance women's agency (Yokying & Lambrecht, 2020), and strengthens women's decision-making and bargaining power regarding intra-household consumption and human capital investment (Meinzen-Dick, Quisumbing, Doss, & Theis, 2019). Giovarelli (2009) conceptualizes this as property's ability to bestow economic and social access to both market and non-market institutions.

Scholars have identified factors that condition women's property ownership. Deere and Doss (2006, p. 12) argue that "[women's] ability to accumulate wealth is conditioned by the state, the family, the community, and the market". Similarly, Agarwal (2003) writes that "women can obtain land through the State, the family and the market". Lastarria-Cornhiel et al. (2014, p. 119) identify the following "channels" to obtaining land: "(1) family allocations, specifically at marriage and from inheritance; (2) customary or community allocations, including common property; (3) state allocations such as land reform and resettlement programs […]; (4) civil society or NGO programs; and (5) through the market".

To understand women's landownership, we thus need to understand a broad range of institutions that shape the environment in which women acquire and retain land. Bardhan (1989) defined institutions, in the economic context, very broadly as the "social rules, conventions, and other elements of the structural framework of social interaction" (1989, p. 3). Institutions thus include the prevalent type of property rights, for example, as well as the ideology and the "socialization process"

(1989, p. 13).[1] North (1990) described institutions as the "rules of the game in a society or, more formally, […] the humanly devised constraints that shape human interaction" which "structure incentives in human exchange, whether political, social or economic." Glaeser et al. (2004) emphasize the durability and permanence of those "rules". In their study of colonial institutions and economic growth, Acemoglu, Johnson and Robinson (2008) add that institutions are aspects within human control, unlike geographical factors. Thus, institutional factors are crucial to consider because they are both important and subject to change.

Agarwal (1997) brought the question of institutions into the fold of feminist economics in arguing that intra-household bargaining power depended not only on gendered power relations within the household, but also on "extra-household socio-economic and legal institutions within which households are embedded, and how these institutions might themselves be subject to change." Agarwal (1997) interprets these institutions widely, encompassing social norms, the education system, various administrative and economic institutions, institutions that shape gender ideology, such as the media and arts, the judiciary, and the family as a state-influenced institution.

Often, analyses of women's landownership within a single country or set of a few countries take the institutions for granted as part of the background or context. Impact evaluations of interventions designed to strengthen women's land rights, such as land titling programs that are designed to include women's names (Deininger et al, 2015; Ali et al, 2014; Persha et al, 2017) or paralegal programs to provide support for women in their land claims (Mueller et al, 2018), often focus on one aspect of the institutional setting. Many of these analyses do not provide enough information on the context to allow for analysis of the importance of these institutional factors. Doss and Meinzen-Dick (2020) develop a conceptual framework for women's land rights in which they lay out the key elements of the context, the threats and opportunities, and the action area where land rights are contested. We draw on their framework to identify institutions that may be relevant.

1 In a neoliberal sense, institutions have most often been taken to mean property rights and *laissez faire* economic policy only, with the aim of "getting prices and institutions right" (Carter & Barham, 1996; Deere & León, 2001b). Economic policy and property rights are one of the aspects we are interested in (although we do not assume there is one way to get them "right"), but we include a much wider list of institutions.

In this paper we analyze how the gender gap in the incidence of landownership is associated with a wide range of institutions. We combine individual level data on agricultural landownership from Demographic Health Surveys (DHS) for 45 low- and middle-income countries with national level indicators on the structure of the economy, land markets, employment, education, gendered laws and social norms, and communal land tenure patterns. The DHS includes a question about whether the respondent owns agricultural or non-agricultural land.

We use a simple binary indicator of whether the respondent says that they own land. While there are a number of other dimensions that could be considered, such as the area of land owned by men and women (Kieran, Sproule, Doss, Quisumbing, & Kim, 2015) or who has formal documentation for the land (Doss, Kovarik, Peterman, Quisumbing, & van den Bold, 2015), these other measures are not available in the DHS. Our approach allows us to look at the widest possible range of countries and is also the most consistent with how indicator 5.a.1 of the Sustainable Development Goals (SDG) is measured.[2]

Many of the institutions discussed influence the incidence of landownership for both men and women. For instance, urbanization and structural transformation typically result in fewer individuals overall owning land. Yet they may affect ownership patterns differently for men and women. Thus, to analyze the gendered impacts of these institutions, we focus on gender gaps in landownership.

2 Indicator 5.a.1 is related to the Gender Equality SDG and has two components: (1) the proportion of the total agricultural population with ownership or secure rights over agricultural land, by gender, and (2) the share of women among owners or rights-bearers of agricultural land, by type of tenure.

2. DATA AND METHODS

For the indicator of individual level of landownership, we use Demographic Health Survey (DHS) data from 45 low- and middle-income countries across Latin America, Africa, and Asia where both men and women were asked whether they own land, either solely or jointly. DHS data is nationally representative, but with a limited age range. Only women ages 15-49 are included. For men, the upper age range varies across countries from 49-59. The total sample size is 855,357.

For each respondent in the sample, we have a binary indicator of whether or not they report that they own land. We consider them a landowner if they report owning land solely, jointly, or both. No information is available on whether there is documentation of ownership, such as a land title or registration certificate, or on the area of land owned.

We weight individual-level DHS data to account for differences in sample size across men and women (re-weighting to adjust to the gender ratio within each country). We also weight across countries, opting to weight all countries equally so countries with larger populations or large sample sizes do not drive our results. Since we are interested whether the national-level institutional factors affect women's landownership, we want each country equally weighted.

We compile a set of 28 country-level institutional indicators (see Table 1 below). We draw on a range of sources for these indicators. Most economic indicators were from the World Bank Development Indicators. For measures of gendered norms, expectations, custom, regulations, and laws, we draw on the OECD's Social Institutions and Gender Index (SIGI), the UN's Gender Social Norms Index, and the World Bank's Women, Business and the Law (WBL) index. We discuss each of these indicators in greater detail in the results section below. We use a linear transformation of some of the indicators so that a higher number is associated with greater gender equality. Not all of the institutional indicators are available for all countries; thus, the sample sizes may differ across estimations.

In their conceptual framework for tenure security, Doss and Meinzen-Dick (2020) note that women's individual demographic information will be related to women's tenure security—and the same is true for landownership. We take this into account by controlling for individual characteristics:

education, household wealth, age, and marital status. Race, ethnicity, religion, and caste have not been included as controls, as the information is not recorded in a way that would allow for cross-country comparisons[3] (Deere & Doss, 2006b; Doss & Meinzen-Dick, 2020).

The DHS data is available only for low and middle-income countries. There is no comparable data for high-income countries. But we find that the gender gap in landownership is larger in economies with high GDP, suggesting that it may be important to look across the full range of countries. The FAO Gender and Land Rights Database (GLRD) has data on the share of landholders who are women for 99 countries, including some high-income countries.[4] This is a single indicator at the country level. In addition, the landholder is not necessarily the landowner. The landholder is the person who makes the management decisions and controls the output on a landholding. The holding for smallholder agriculture is the family farm, not the individual plots within the family farm. And while the landholder is often the owner, only one person per holding is identified as the landholder. Women who are joint owners or who own one of multiple household plots will not be counted. Thus, this measure underestimates the share of women landowners. In our final section, we use this data to analyze the bivariate correlations of the share of women landholders at the national level and each of the institutional factors.

3 For the DHS, religion and ethnicity are recorded and coded in country-specific categories.
4 https://www.fao.org/gender-landrights-database/en/

Table 1. Institutional indicators.

Institutional factor	Indicator	Source	Detail
Structure of the economy			
National income	GDP per capita, PPP (current international $)	UN Human Development Data Center	
Rural transformation	Agriculture, forestry, and fishing, value added per worker (constant 2010 USD)	World Bank's World Development Indicators	
Structural transformation	Non-agricultural value added (% of GDP)	World Bank's World Development Indicators	Constructed from the indicator "Agriculture, forestry, and fishing, value added (% of GDP)".
Employment in agriculture	Employment in agriculture (% of total employment)	World Bank's World Development Indicators	
Income inequality	GINI index (World Bank estimate)	World Bank's World Development Indicators	
Urbanization	Urban population (% of total population)	World Bank's World Development Indicators	Constructed from the indicator "Rural population (% of total population)"
Efficiency of land markets			
Property registration: Days	Days required to register property	World Bank's World Development Indicators	Number of days required for a business to secure rights to property.
Property registration: Procedures	Number of procedures to register property	World Bank's World Development Indicators	Number of administrative steps required for a business to secure rights to property.
Women in the labor force			
Women as a share of the labor force	Labor force, female (% of total labor force)	World Bank's World Development Indicators	
Women as a share of the agricultural labor force	Share of female employment in agriculture (% of employment in agriculture)	FAO Employment Indicators	
Education			
Women's secondary school education	Progression to secondary school, female	World Bank's World Development Indicators	

Institutional factor	Indicator	Source	Detail
Women's literacy	Literacy rate, adult female	World Bank's World Development Indicators	
Girls' literacy	Literacy rate, youth female	World Bank's World Development Indicators	
Indices of gender equality			
Women's access to economic opportunities	WBL (Women, Business and the Law) Index	World Bank's Women, Business and the Law Data	The WBL index measures "legal differences between men's and women's access to economic opportunities" across different dimension affecting women's careers.
Gendered social institutions	Social Institutions and Gender Index (SIGI)	OECD.Stat (2019)	The Social Institutions and Gender Index (SIGI) measures "discrimination against women in social institutions" by looking at gendered laws, social norms and practices in the family, the workplace, public spaces, the judiciary, and more. The SIGI is one of the official data sources for monitoring SDG 5.1.1 ("End all forms of discrimination against all women and girls everywhere.")
Social norms	Share of the population without disclosed gender bias	UNDP Human Development Report	Transformation of the Gender Social Norms Indicator of "Share of people with at least 1 bias). The GSNI measures agreement to a number of statements about gender in politics, work, education and physical integrity.
Women and property rights			
Women's property rights	Do men and women have equal ownership rights to immovable property?	World Bank's Women, Business and the Law Data	"Yes" if there are no gender-based legal restrictions to property rights; "No" if there are gender-based legal restrictions to property rights, or if there is gender-based discrimination in spousal property rights, including if men are granted administrative control of joint property. According to the World Bank, this includes "instances in which legal systems are supported by custom and judicial precedent."
Women's access to assets	Aggregate measure of women's access to productive and financial resources	OECD.Stat**6**	Linear transformation of the overall score for "restricted access to productive and financial resources (RAPFR)" sub-index of the SIGI, which includes access to land, non-land, and financial assets.
Women's access to financial assets	Percentage of women in the total number of people aged 15 years and above who have an account at a financial institution (alone or jointly)	OECD.Stat6	Social Institutions and Gender Index (SIGI) measure for "secure access to formal financial services: practice" (as opposed to attitudes).

Institutional factor	Indicator	Source	Detail
Social norms and the family			
Gendered discrimination in the family	Aggregate measure of discrimination in the family based on the SIGI sub-index	OECD.Stat6	Linear transformation of the overall score in the SIGI sub-index "discrimination in the family", which includes the prevalence of child marriage, expectations towards women's role and work in the household, women's right to divorce, and equal rights to inheritance.
Social norms around women's work	Percentage of the population not agreeing that "when a mother works for pay, the children suffer."	OECD.Stat6	Linear transformation of the "household responsibilities: attitudes" measure of the SIGI.
Unpaid care and household work	Female to male ratio of average time spent on unpaid domestic, care and volunteer work in a 24-hour period	OECD.Stat6	This is the "household responsibilities: practice" sub-index of the SIGI.
Marital and inheritance regimes			
Marital property regime	What is the default marital property regime?	World Bank's Women, Business and the Law Reports	Recoded categorical indicator based on data from the WBL index's "assets" dimension. This data is sourced from the WBL reports 2012 (data for 2009-2011), 2014 (data for 2011-2013), 2016 (data for 2013-2015).
Inheritance	Do sons and daughters have equal rights to inherit assets from their parents?	World Bank's Women, Business and the Law Data	"Yes" if there are no gender-based differences in the rules of intestate succession for transfer of property from parents to children; "No" if there are.
Spousal inheritance	Do female and male surviving spouses have equal rights to inherit assets?	World Bank's Women, Business and the Law Data	"Yes" if surviving spouses of either gender have the same inheritance rights; "No" if there are gender-based differences.
Political voice			
Women's political representation	Proportion of seats held by women in national parliament	World Bank's World Development Indicators	
Social norms around women's political leadership	Percentage of the population who does not agree with "On the whole, men make better political leaders than women do".	OECD.Stat6	Constructed from the Social Institutions and Gender Index (SIGI), dimension 4: "Political voice: Attitudes".

Institutional factor	Indicator	Source	Detail
Communal and community land			
Indigenous and community land rights	Total amount of land held or used by Indigenous Peoples and communities in a country as a percentage of the country's total land area	LandMark (Global Platform of Indigenous and Community Lands)	

Note: Unless otherwise indicated, the variables are matched to the year of each country's DHS data or, where DHS data was collected over two years, to the more recent year. Where this was not possible, the closest possible year was selected, with a cut-off point of 5 years from the year of the most recent DHS survey.

We are interested in the joint distribution of the gender gap in landownership and each of the institutional factors. We estimate ordinary least squares regressions (OLS):

$$y_{ij}=\beta_0+\beta_1 X_i+ \beta_2 g_i+\beta_3 z_j+\beta_4 g_i z_j+\varepsilon_i$$

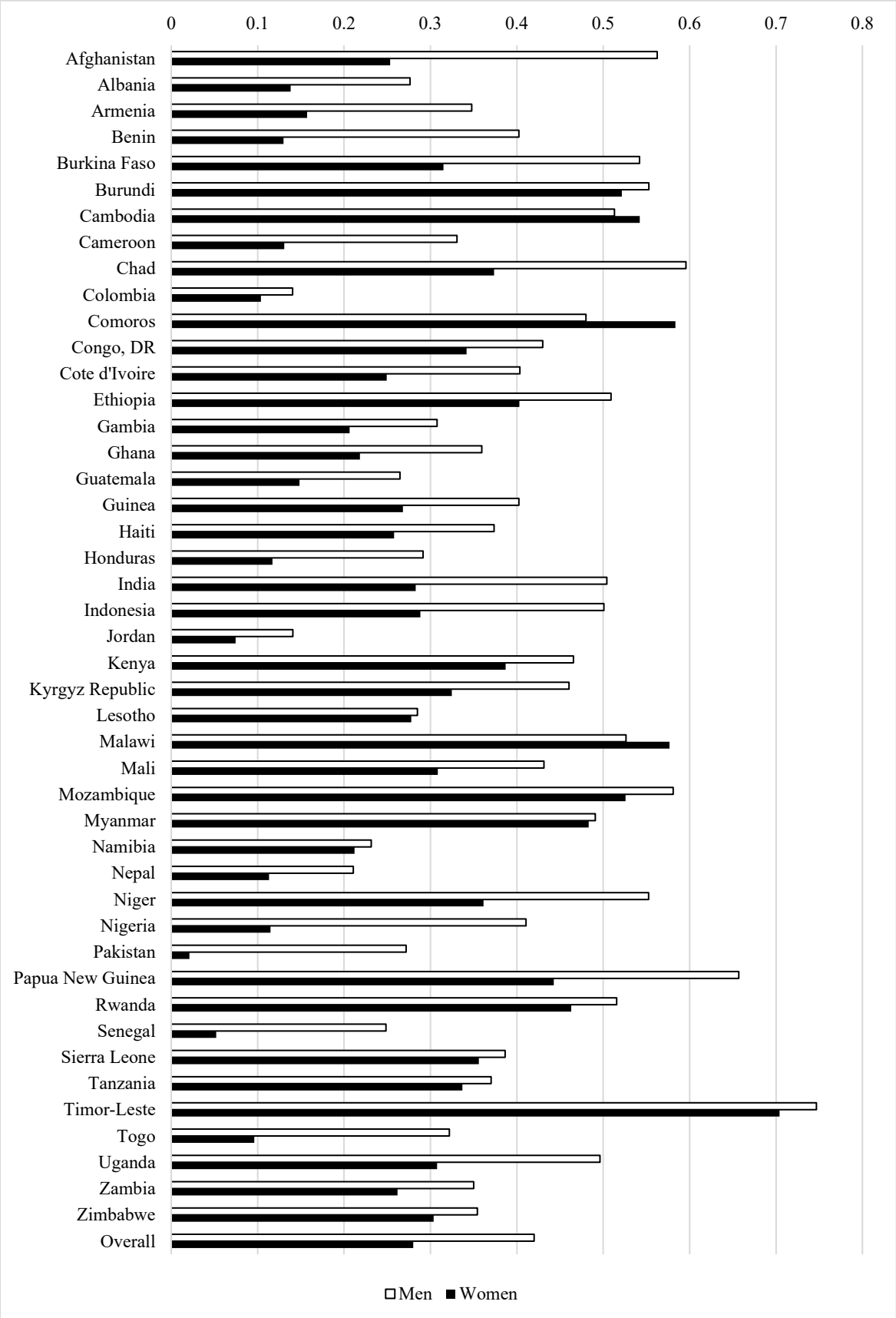
where y_{ij} is a binary variable indicating whether individual $_i$ living in country $_j$ reports that he or she owns land (whether solely or jointly); X_i is a vector of individual-level characteristics, including age, educational level, a household wealth index score, marital status, and relationship to the household head; g_i is the gender dummy (women=1, men=0); and z_j is the country-level institutional characteristic of interest. The term $g_i z_j$ is an interaction of gender and the institutional characteristic.

In our estimations, the coefficients on β_2 are always negative, indicating that all else equal, women are less likely to own land than men. There is a gender gap in favor of men. β_3 is the coefficient on the institutional variable. The coefficient β_4, the interaction term, is the association of the institutional variable on women's landownership, after controlling for the impact on men's landownership; in other words, it is the association of the institutional variable with the gender gap in landownership. Because the coefficients on β_2 are negative, we can interpret the coefficients on β_4 as follows: when β_4 is positive, the gender gap is smaller at higher levels of the institutional variable; when β_4 is negative, the gender gap is larger with higher levels of the institutional variable.

We consider each institutional indicator separately, to explore the broad descriptive patterns across countries. With this data, we cannot identify the direction of causality; it is likely that women's landownership and many of the institutional variables are mutually reinforcing. The broader patterns of relationships are addressed in the discussion section.

For the analysis using the GLRD data, we estimate a series of equations where we regress each institutional indicator on the share of landholders who are women. Each country is a single observation. Thus, we consider the bivariate correlations of the institutions and women's landownership.

Figure 1. Share of population that owns land, by sex and by country. (DHS data)



3. RESULTS

Overall, men are more likely to own land than women. A more detailed picture emerges in Figure 1. In all but three countries for which we have data, a higher percentage of men than women in the DHS sample report themselves as being landowners. We consistently find that in our cross-country analysis, the coefficient for the gender (women=1) dummy variable is negative.

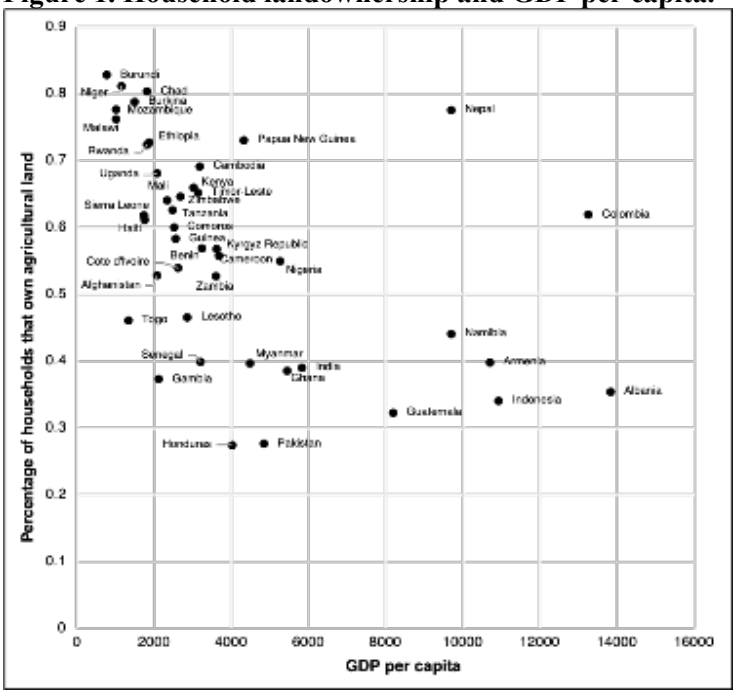
Structure of the economy

As countries move from being poor, rural, and agricultural to being richer, more urban, and having a more diverse economy, we would expect that fewer people overall own land. We see this in Figure 2, which plots the proportion of households that own land against GDP per capita. Thus, we would not expect that economic growth would result in higher absolute levels of landownership for either women or men; in fact, we would expect the opposite.

A substantial literature suggests that higher levels of GDP are correlated with higher levels of gender equality (see, for example, World Bank, 2012). Thus, we might also expect them to be correlated with smaller gender gaps in landownership.

To go beyond simply considering GDP, we consider six measures of the structure of the economy: GDP per capita, rural transformation, structural transformation, the share of the labor force engaged in agriculture, urbanization, and income inequality.

Figure 1. Household landownership and GDP per capita.



GDP is the most widely used indicator of a country's level of economic activity. All three of the coefficients in this estimation are negative (Table 2). Women are less likely than men to own land, all else equal. In addition, fewer people own land in countries with higher GDP per capita. And finally, the gender gap in landownership is larger in countries with higher GDP per capita (the interaction term is negative; as GDP per capita is higher, women are less likely than men to own land).

One reason for this result might be that as GDP per capita increases, the composition of wealth changes. In low-income countries, land is a large component of wealth, in richer countries it is overtaken by financial assets as the most prevalent component of wealth (Deere & Doss, 2006, p. 4; Doss & Oduro, 2018). Thus, while we might see more gender equality in overall wealth in richer countries, we don't necessarily see gender equality in landownership.

Table 2. Association of landownership with gender and indicators of the structure of the economy.

GDP p/c	-0.0000204** (0.0000003)	Rural trans-formation	-0.000018** (0.00000033)	Structural transformation	-0.0040688** (.0001016)
Gender	-0.086** (.002454)	Gender	-0.105** (.0019742)	Gender	-0.145** (.0116426)
Interaction – Gender Gap	-0.00000322** (0.00000036)	Interaction – Gender Gap	-0.000005** (0.00000038)	Interaction – Gender Gap	0.0003843** (.0001435)
N	855,357	N	846,487	N	855,357
R-squared	0.2126	R-squared	0.2115	R-squared	0.1963

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

We define *rural transformation* as a shift in agricultural production due to changes in technology, farming systems, and other factors, that result in an increase in agricultural productivity. As an indicator, we use the agricultural value-added per agricultural worker from the World Bank Development Indicators (WDI).

The results in Table 2 indicate that the gender gap in landownership is larger for higher levels of rural transformation. Thus, increases in agricultural productivity per worker are not only associated with fewer households owning land, but with disproportionately fewer women owning land relative to men.

One explanation might be found in the patterns of land regimes. At lower levels of rural transformation, the predominate land regime tends to be smallholder agriculture. Higher levels of rural transformation are often associated with land consolidation and commercialization (e.g. Vélez-Torres et al. 2019; Hall, 2021). Our results are also in line with findings by Heckert et al. (2020) who analyze 36 low- and middle- income countries and find a lower likelihood of landownership among young people in rural areas in countries with high rural transformation. They suggest that higher agricultural productivity

may go hand in hand with higher land values, thus making it more difficult for youth to acquire land. As rural transformation takes place, land markets change. On the demand side, commercial pressure on individual and common land is increasing (Alden Wily, 2011), while on the supply side, urbanization, agricultural productivity shifts, and climate change are affecting availability and quality of land for agriculture (Doss & Meinzen-Dick, 2020).

Structural transformation is the "process of shifting from labor-intensive and low-productivity activities, such as agriculture, to more skill-intensive and productive activities, such as services and manufacturing" (Heckert et al., 2020) in the economy as a whole. Again, we would expect that structural transformation would be associated with greater gender equality, and thus a smaller gender gap in landownership.

Using non-agricultural value-added (as a percentage of GDP) as an indicator for structural transformation, we find that the gender gap is smaller at higher levels of structural transformation (Table 2). This could be a sign of increasing gender equality. On the other hand, while structural transformation may be creating opportunities outside of agriculture for both men and women, our findings may reflect a "feminization of agriculture" in which women are moving out of agriculture at lower rates than men. It is consistent with the story that women are claiming ownership of smallholder farms after men migrate out. Our results contrast with an analysis by Heckert et al. (2020) who in their study of rural youth, find structural transformation associated a larger gender gap in landownership. They find a decreased likelihood of landownership among young women but an increased likelihood of landownership among young men.

Employment in agriculture tends to be high when the agricultural sector plays a central role in the economy and many households rely on agriculture for their livelihoods. This tends to be the case in countries that are poorer and have lower levels of structural and rural transformation.

We find that when a greater share of workers are employed in agriculture, the gender gap in landownership is smaller (Table 3). Thus, when more workers are outside of agriculture, the gender gap

is larger. This is consistent with our indicators for GDP per capita and structural transformation, which are correlated with larger gender gaps.

Since *urbanization* affects both the demand for and the availability of agricultural land (Doss & Meinzen-Dick, 2020), it affects the conditions under which women acquire and retain land. Above we find that economic growth and rural transformation are associated with larger gender land gaps. Urbanization often accompanies or precedes those developments. Using an indicator of the share of the population that lives in urban areas, we find that the gender gap in landownership is larger when the country is more urbanized (see Table 3).

While we might expect more gender equality in urban areas, this would not necessarily mean overall more gender equality in landownership. One reason may be that urban and peri-urban development increases demand for land, resulting in higher land prices and the potential for conflict within local communities (Yaro, 2010).

The final feature of the economy that we consider is *income inequality* using the Gini coefficient as the indicator. Income inequality within a country, reflective often of entrenchments of class or caste, intersects with gendered power relations (Ukhova, 2015). Both in turn reflect and reinforce gendered structures in land rights and ownership—as land is an important means of income—thus we would expect income inequality and the gender land gap to be linked.

Our results show the gender gap in landownership is smaller in countries with high income inequality (Table 4). This is unexpected, as it suggests that across 45 low- and middle-income countries—income inequality and gendered land inequality do not reinforce each other.

Conversely, the result shows that greater equality in income does not necessitate equality in other areas. Thus, we shouldn't expect reductions in the gender land gap from addressing other inequalities. Over two decades, from the 1990s to 2010s, income inequality within low- and middle-income countries has tended to decline, while in high-come countries it has increased (United Nations Economist Network [UNEN], 2020). Since we only include low- and middle-income country data, this pattern shows in

countries where income inequality has been, or is, declining. This implies that separate attention and interventions are needed to resolve gendered inequality in landownership.

The size and structure of the economy are not consistently related to the gender gap in landownership. A larger GDP is associated with a larger gender gap. Having a larger share of the GDP coming from agriculture, having fewer people employed in agriculture and relatively smaller rural population, and higher agricultural productivity are all associated with a larger gender gap. While these relationships may seem contradictory, they suggest that having the agricultural sector more concentrated, with higher productivity and fewer people involved is correlated with relatively fewer women owning land.

Table 3. Association of landownership with gender and indicators for the structure of the economy.

Employment in agriculture (% of labor force)	0.0035** (0.0000562)	Urban population	-0.0048** (0.00006)	Income inequality	-0.0045** (0.00016)
Gender	-0.1767913** (0.0036757)	Gender	-.0717** (0.003)	Gender	-0.1621** (0.0091)
Interaction – Gender Gap	0.0011** (0.0000684)	Interaction – Gender Gap	-0.001** (0.00007)	Interaction – Gender Gap	0.0011** (0.00021)
N	855,357	N	855,357	N	746,950
R-squared	0.2122	R-squared	0.2252	R-squared	0.1940

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

Efficiency of land markets

Mainstream economic literature tends to hail land markets as efficient means of land distribution. Formal rules in the market and some degree of anonymity may be advantageous to women compared to means of land acquisition more closely entangled in familial or community relations (Kevane and Gray,

1999). More efficient land markets might facilitate women's acquisition of land through the market. We use two indicators of the efficiency of land markets: the number of procedures and the amount of time needed to register property.

Table 4. Association of landownership with gender and indicators for the efficiency of land markets.

Land markets (procedures to register property)	-0.0012* (.0005762)	Land markets (time to register property)	0.00000891 (.0000163)
Gender	-0.1418** (.0048108)	Gender	-0.1458** (.0023144)
Interaction – Gender Gap	0.00118 (.0006978)	Interaction – Gender Gap	0.0001598** (.0000208)
N	838,128	N	838,128
R-squared	0.2042	R-squared	0.2043

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

We find that the number of procedures required to register property is not associated with the gender land gap. However, the gender landownership gap is smaller when the transfer of property is less efficient (when it takes longer to register a new property, as shown in Table 4) indicating that more efficient markets may mainly create acquisition opportunities for men. This is in spite of the fact that much of the land in low- and middle- income countries is not formally registered.

This is consistent with the cross-country studies that have found land markets to be less important for women than for men in the acquisition of land (Doss, Deere, Oduro, Swaminathan, Catanzarite, and J.Y., 2019). Deere and León (2003) find for five Latin American countries that women are less likely than men to acquire land though purchase in land markets.

Women in the labor force

Women's work may be associated with their landownership in several ways. Women's overall "access to employment and other income-earning means" is one of the dimensions included in Agarwal's (1997) list of factors likely to affect women's bargaining power and with it control over resources. In this paper, we are not focused on whether an individual woman's participation in the labor force affects her landownership, but instead whether having more women overall in the labor force influences women's landownership. We consider two dimensions of employment: women as a share of the labor force and women as a share of the agricultural labor force.

We find that in countries where more women participate in the labor force relative to men, the gender gap in landownership is lower (see Table 5). We find this to be the case whether we are looking at the overall labor force or the agricultural labor force. Our results are consistent with other findings. Deere, Contreras and Twyman (2010) find that women's employment is one avenue of accumulating assets that would allow for the purchase of property. Hallward-Driemeier, Hasan, and Rusu (2013a; 2013b) also find a strong positive association between women's labor force participation and equal property rights.

In addition, these findings may describe a variety of interconnections between paid work in agriculture and the gender land gap, since a high share of women in the agricultural workforce may reflect several different situations. One scenario was identified by Quisumbing et al. (2001) who find that women's increased involvement in cocoa farming in Ghana translated into land transfers as "gifts" from their husbands. When more women work in agriculture, it may be that their work is more visible and they are more likely to identify themselves as farmers and as landowners. Women may also be a larger proportion of the agricultural labor force as men leave agriculture, either to work off-farm or to migrate out of rural areas. As part of these broader processes of structural transformation, the gender gap in landownership may decline.

Table 5. Association of landownership with gender and women's labor force participation.

Women as a share of the labor force	0.0038** (0.00013)	Women as a share of the agricultural labor force	0.002148** (0.0001069)
Gender	-0.3677** (0.00697)	Gender	-0.13832** (0.0063355)
Interaction – Gender Gap	0.0053** (0.00015)	Interaction – Gender Gap	0.00066** (0.0001497)
N	855,357	N	557,656
R-squared	0.2025	R-squared	0.1615

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

Education of women and girls

A number of mechanisms may affect the association of the gender gap in landownership and women's education. On the one hand, when individual women have higher levels of education, they may have greater bargaining power within their household and community. Education also increases women's ability to make and enforce claims to land. For example, Deere and León (2003) find that literacy, including legal literacy, contributes to greater gender equity in the inheritance of land in Latin America. Education may provide the knowledge of one's rights as well as a better ability to engage with the legal systems.

Educational opportunities for women may also reflect and reinforce gender norms more amenable to women's landownership and may enable women to increase their chances of acquiring or asserting their land rights. Higher levels of women's education may also be a result of women's landownership and an associated stronger economic position in the first place.

This association of girls' and women's landownership with educational levels may also reflect parents' preferences around how to allocate land and education across their children. An analysis of Ghana, Indonesia and the Philippines, finds equal treatment for sons and daughters in Indonesia, a preference for schooling for daughters but for land transfers for sons in the Philippines, and worse outcomes for daughters in both aspects in Ghana (Quisumbing, Estudillo, and Otsuka, 2003). Both land transfers and education are a means of transferring wealth across generations.

Yet, women with more education may be less likely to work in agriculture and thus to own agricultural land. They may be more likely to own other forms of land, but much of the land owned by households in low- and middle-income countries is agricultural land.

We find that the gender land gap is smaller when the national indicators for women's education are higher, whether it is proxied by girls' or women's literacy or women's progression to secondary school (Table 6).

It is worth noting that these results are based on estimations that include controls for the level of education of the respondent. So this finding goes beyond the fact that the education of men and women may affect their individual landownership. It suggests that in countries where women's levels of education are higher overall, the gender gap in landownership is lower.

Table 6. Association of landownership with gender and indicators for women's education

Girls' literacy	-0.001036** (0.0000536)	Women's literacy	-0.0011045** (0.0000482)	Women's secondary school education	-0.001264** (0.0000947)
Gender	-0.296642** (0.0060464)	Gender	-0.2003283** (0.0042319)	Gender	-0.154088** (0.0098289)
Interaction – Gender Gap	0.0022291** (0.000073)	Interaction – Gender Gap	0.0012942** (0.0000605)	Interaction – Gender Gap	0.000306* (0.0001212)
N	833,118	N	833,118	N	736,202
R-squared	0.1954	R-squared	0.1953	R-squared	0.1947

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

Indices of gender equality

The Women, Business and the Law Index identifies whether the laws are supportive of women's economic opportunities across eight domains: mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets and pensions. A higher number on the index indicates a more favorable legal environment for women.

The Social Institutions and Gender Index (SIGI) measures discrimination against women in social institutions. The four dimensions are discrimination in the family, restricted physical integrity, restricted access to productive and financial resources, and restricted civil liberties. This indicator goes beyond formal laws and takes into account informal laws, attitudes, and practices. Note that we have transformed the index, so that a higher score indicates less discrimination.

The Gender Social Norms Index (GSNI) looks at the prevalence of gender-based biases based on people's responses to statements about politics, work, education, and physical integrity. Again, this indicator has been transformed so that a higher number indicates fewer biases against women.

For all three of these indices, when they are more favorable to women, we see a lower gender gap in landownership. When there is less discrimination and bias against women, in the laws, social norms, and attitudes, the gender land gap is lower.

Table 7. Associations of women's landownership with indicators of gender equality.

Women's access to economic opportunities (WBL index)	0.0009** (.000091)	Social Institutions and Gender Index (SIGI)	0.0009578** (.0001182)	Gender Social Norms Index (GSNI)	0.00253** (.0003806)
Gender	-0.423** (.0078882)	Gender	-0.2126064** (.0090973)	Gender	-0.1758** (.0030767)
Interaction – Gender Gap	0.0043** (.0001113)	Interaction – Gender Gap	0.00131** (.0001434)	Interaction – Gender Gap	0.00914** (.0005037)
N	830,536	N	781,187	N	483,024
R-squared	0.1919	R-squared	0.2057	R-squared	0.1924

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

Women and property rights

We have identified three indicators of women's property rights. The first is whether women and men have equal ownership rights to property, based on whether there are legal restrictions on women's rights to own property or that men are granted administrative rights over jointly owned property. This is a sub-indicator of the Women, Business and the Law Index.

Second, we have a sub-index of the SIGI that captures whether there is restricted access to productive and financial resources. It includes the laws on access to land assets, nonland assets, formal financial services, and the laws on workplace rights. It incorporates whether customary, religious, and traditional laws and practices limit women's legal rights and an indicator of attitudes towards working women. Finally, it has two dimensions of the manifestation of these institutions, the percentage of those

hold accounts at financial institutions who are women and the percentage of those employed in management who are women. Again, we have transformed this indicator so that a higher number means less restricted access for women.

Finally, we separately include a measure of the share of those holding accounts at financial institutions who are women. Not only is this a manifestation of the laws and social norms, but it may be directly correlated with the gender gap in landownership; women owning formal financial accounts and land may be reinforcing.

Again, we find that all three of these are associated with a smaller gender gap in property ownership. When there are fewer restrictions on women's property rights, on women's access to productive and financial resources, and more women have financial accounts, the gender land gaps are lower.

Table 8. Associations of women's landownership with indicators of women's property rights and access to assets.

Women's property rights	-0.0295** (0.0030658)	Women's access to assets	-0.0005** (.0000812)	Women's access to financial assets	0.0021** (.0001761)
Gender	-0.1967** (0.0038647)	Gender	-0.2938** (.0065278)	Gender	-0.4731** (.0086468)
Interaction – Gender Gap	0.0807** (0.0041066)	Interaction – Gender Gap	0.0025** (0.0000982)	Interaction – Gender Gap	0.0081** (.0001991)
N	830,536	N	781,187	N	809,911
R-squared	0.1847	R-squared	0.2059	R-squared	0.2225

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

Marital and inheritance regimes

While the market is one way that people obtain land, the most common way to acquire land is through the family. The marital and inheritance regimes define how property is owned within marriage and who inherits.

We consider three specific components from the Women, Business and the Law data. First, we consider the default marital regime. In a community of property marital regime, all property acquired after marriage is the joint property of both spouses (Deere & Doss, 2006; Deere et al., 2013; Doss & Meinzen-Dick, 2020).[5] In contrast, in a separation of property regime, marriage does not confer any rights to the property acquired by the spouse. In a deferred community of property regime, property is held individually during the marriage, but with the dissolution of the marriage, both spouses have a claim

5 In a full community of property regime, all property of either spouse becomes joint property. In a partial community of property regime, some property, such as inheritances or property brought to the marriage, may remain owned individually, but all property acquired while married is joint property.

on the property. This would increase the property ownership of widows and women who are divorced but would not necessarily affect the property ownership of married women.

Deere and León (2001a) have argued that partial and full community of property regimes benefit women's landownership compared to separation of property regimes. Under a community of property regime, women's contributions to the household in the forms of unpaid work are recognized and she has claims to property that is acquired during marriage. Under a separation of property regime, husbands may acquire property in their own name drawing on their higher incomes and may treat it as their individual property.

Table 9. Association of landownership with gender and marital property regimes

Marital property regime	
Full or partial community of property	Omitted
Deferred community of property	-.2239806** (.0040195)
Separation of property	-.0638511** (.0023008)
Gender	-0.0866254** (.0024508)
Interaction—Gender Gap (Women*Deferred Community)	.0419693** (.0051113)
Interaction—Gender Gap (Women*Separation of Property)	-.0609755** (.0030515)
N	849,379
R-squared	0.2099

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

We have almost no countries with a full community of property regime, thus for our analysis, we combine full and partial community of property into one group and compare it with deferred community

of property regimes and separate property regimes. The gender gap is the smallest under a deferred community of property regime and largest under a separation of property regime. It is worth noting that these are based on individuals reports of whether they are landowners, so women may be claiming joint ownership under deferred community of property, even if they do not have the rights while still married.

Our results are consistent with those of Deere et al. (2013) who compare data from Ecuador, Ghana and Karnataka, India, and find that the separation of property regime in Ghana and Karnataka disadvantages married women, while community of property is associated with higher levels of women's ownership of major assets.

We consider two aspects of the laws regarding inheritance. The first is whether sons and daughters have the same rights to inherit land. The second is whether surviving husbands and wives have the same inheritance rights. These indicators are based on the rights identified in the Women, Business and the Law data. For both, as shown in table 10, we find that the gender land gap is smaller when women have the same inheritance rights as men.

Table 10. Association of landownership with gender and inheritance rights.

Inheritance rights for daughters and sons	0.073** (0.0028644)	Spousal inheritance rights	0.0548** (0.002704)
Gender	-0.176** (0.0031365)	Gender	-0.1811** (0.002969)
Interaction – Gender Gap	0.0726** (0.0033574)	Interaction – Gender Gap	0.0855** (0.0032321)
N	830,536	N	830,536
R-squared	0.1937	R-squared	0.1925

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

In many places, women do not inherit land either from their parent or their spouse, because women are expected to marry out of their community. Often, they do not have inheritance rights in their natal community, but neither are they recognized as part of the lineage or the community into which they marry (Kevane & Gray, 1999; Yaro, 2010).

These findings confirm evidence on the importance of inheritance for women's asset accumulation. The gender gaps in landownership are lower when women have equal inheritance rights.

Social norms and the family

Gender is intertwined with legal and social norms, which although often perceived as separate, in practice are on "a continuum of statutory law, customary law, and social norms" (Doss & Meinzen-Dick, 2020). We consider three subindices of the SIGI in this section. The first is on discrimination in the family, which includes the prevalence of child marriage, expectations towards women's role and work in the household, and women's right to divorce. The second is the percentage of the population who disagrees with the statement, "when a mother works for pay, the children suffer." And the third is a measure of who does the household unpaid work. Discrimination within the family and women's responsibilities for unpaid care work both shape the environments in which women acquire and retain

property. We would expect that when household management takes up more of a woman's time, she will have less time and opportunity to establish herself as an agricultural manager or landowner as well as less time and opportunity to accumulate assets. A higher share of unpaid care and household work may also be reflective of gender norms and roles less amiable to women being recognized as economic agents and landowners in the first place. These norms affect the amount of paid work that women can do and shape the expectations that women's primary responsibility is to care for the family.

We find that when there are lower levels of discrimination in the family, when a greater proportion of the population approves of women with children working outside of the home and do not consider it detrimental to their children's wellbeing, and when the division of unpaid domestic, care, and volunteer labor is more equal, the gender gap in landownership is smaller.

Table 11. Association of landownership with gender and social norms.

Lower levels of discrimination in the family	0.0007** (.0000647)	Unpaid care and household work	-0.006** (.0005269)	Social norms around women's work	0.0024** (.0001016)
Gender	-0.2465** (.0045292)	Gender	-0.078** (.0035759)	Gender	-0.3136** (.0074421)
Interaction – Gender Gap	0.0024** (.0000798)	Interaction – Gender Gap	-0.0112** (.0006625)	Interaction – Gender Gap	0.0026** (.0001267)
N	830,536	N	586,932	N	346,863
R-squared	0.1896	R-squared	0.1793	R-squared	0.1815

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

Political voice

We would also expect women's political representation and women's landownership to be closely linked—not least due to the historically close connection between political power and ownership of land and other wealth.[6]

We indeed find that the landownership gender gap is smaller when women's political representation is stronger—here proxied by the share of a country's parliamentary seats held by women (see table 12). A second indicator is the social norms surrounding women's political leadership, proxied by an indicator of the lack of self-professed prejudice against women in politics (among men and women). Here too, higher acceptance of women's political competency was associated with a smaller gender land gap.

6 See, for example, the co-emergence of racial hierarchies and the racialized property regime of slavery and the dispossession of indigenous populations in colonial and settler-colonial contexts (Bhandar, 2015; Harris, 1993), or how closely property ownership and suffrage have been tied all throughout the history of democracy (Engerman and Sokoloff, 2005).

Table 12. Association of landownership with gender and indicators for women's political voice.

Women's political representation (as proportion of seats in parliament)	0.0007** (0.0000869)	Social norms around women's political leadership	0.0001971** (0.0000837)
Gender	-0.1533** (0.0031064)	Gender	-0.2762761** (0.0057247)
Interaction – Gender Gap	0.0014** (0.000116)	Interaction – Gender Gap	0.0031563** (0.000106)
N	855,357	N	555,916
R-squared	0.1918	R-squared	0.1944

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. ** and * denote results significant at the 1 and 5 % levels, respectively.

Indigenous and community land rights

The Global Platform of Indigenous and Community Lands defines community lands as those under customary governance of the community.[7] These lands may take a variety of forms. They may be commons which are maintained as the communal property of all community members. They may be forests, pasture, or rangelands where access is governed by the community. Or the community may allocate land to individuals or households to farm or manage. Within indigenous- and community-held lands, women's land rights vary widely (Giovarelli, Richardson, & Scalise, 2016). We were therefore interested in determining whether an association would emerge between the prevalence of community and indigenous lands and women's landownership.

We do find that a higher percentage of indigenous and community lands in a country is associated with a lower gender land gap, as shown in table 13. This points to the importance of not seeing the

[7] Data – LandMark (landmarkmap.org)

discourse around individual and community land rights as dichotomous. Efforts to strengthen women's land rights in common and community property, in ways other than establishing individual property, may be an important avenue for strengthening women's land rights and reducing the gender land gap (Lastarria-Cornhiel et al. 2014).

Table 13. Association of landownership with gender and indigenous and community land.

Prevalence of indigenous and community lands	0.0006** (.0000459)
Gender	-0.1621** (.0051369)
Interaction – Gender Gap	0.0007** (.0000701)
N	618,959
R-squared	0.2224

Note: Results of OLS regression with a gender interaction term, to capture association with and change to the gender gap in landownership, controlling for age, education, household wealth, civil status, and relationship to head of the household. Standard errors listed in parentheses. *** denote results significant at the 1 and 5 % levels, respectively.

4. WOMEN LANDHOLDERS

The above discussion all focuses on the gender gaps in women's landownership in low- and middle-income countries. Yet, particularly given results on the relationship of the structure of the economy to the gender gap, we are interested in analysing these joint distributions for a set of countries that include rich countries. Unfortunately, we do not have sex-disaggregated data on landownership in countries in the global North.

We do, however, have data on 99 countries in the Gender and Land Rights Database that indicates the share of landholders who are women. The caveats regarding this data were noted above. The data is at the country level, rather than at the individual level. And the data is based on the holder of the agricultural enterprise, with one holder listed per agricultural household. Women landowners may be underrepresented if they live in a household where a man is defined as the holder and when women are the owners of sub-holdings or when they are the joint owner of a household farm, they may not be counted. And some of the indicators are only available for a limited number of countries.

Table 14 provides the overview of the bivariate correlations between each of the institutional indicators and the share of landholders who are women. We run a separate OLS regression for each indicator. We find that fewer of the indicators are statistically significant using this approach, but that the patterns are broadly consistent.

Table 14. Association of the share of women landholders in a country with institutional factors.

	Coefficient	P-value		N=
Structure of the economy				
National income	-0.0000003	0.996		99
Rural transformation	-0.1572	0.082		98
Structural transformation	0.1457	0.107		99
Income inequality	0.1814	0.163		86
Urbanization	-0.0161	0.728		99
Employment in agriculture	-0.0693	0.118		96
Efficiency of land markets				
Property registration: Days	-0.0288	0.092		95
Property registration: Procedures	-0.7683	0.112		95
Employment				
Women as a share of the labor force	0.5674	0	**	96
Women as a share of the agricultural labor force	0.2612	0.005	*	76
Education				
Women's secondary school education	0.1385	0.088		79
Women's literacy	0.1604	0	**	93
Girls' literacy	0.1974	0.001	**	93
Indices of gender equality				
Women's access to economic opportunities	0.1613	0.003	**	99
Gendered social institutions	0.2398	0.048	*	52
Social norms	0.0479	0.499		49
Women and property rights				
Women's property rights	0.9511	0.8		99
Women's access to assets	0.0916	0.346		60
Women's access to financial assets	0.6922	0.014	*	62
Marital and inheritance regimes				
Full or partial community of property	8.2987	0	**	94
Deferred community of property	4.2339	0.21		94
Inheritance	8.4285	0.001	**	99
Spousal inheritance	10.1641	0	**	99
Social norms and the family				
Gendered discrimination in the family	0.1464	0.031	*	67
Social norms around women's work	-0.0798	0.385		43
Unpaid care and household work	-2.2465	0.091		49
Political voice				
Women's political representation	0.0450	0.653		95
Social norms around women's political leadership	0.0849	0.277		40
Communal and community land				
Indigenous and community land rights	-0.0332	0.622		33

Note: Each institution is a separate OLS regression, analyzing the association of the institutional factor to the share of landholders who are women. ** and * denote results significant at the 1 and 5 % levels, respectively.

The key difference with the analysis above is that none of the variables on the structure of the economy are statistically significant in this sample. Higher levels of women's labor force participation and literacy are associated with higher shares of women landholders. Having community of property and more equal inheritance rights are also both strongly correlated with having a larger share of women landholders. Generally, the patterns are similar, with less statistical significance.

5. DISCUSSION: THE MARKET, THE STATE, AND THE FAMILY

The institutions related to the market, the state, and the family and community all shape women's landownership and may advantage or disadvantage women relative to men. These institutions affect the gender gap in landownership directly, by affecting women's ability to acquire land, and indirectly, by shaping the broader context in which individuals acquire and retain land.

We have few direct measures of the structure of land markets themselves. It would be useful to have indicators for the extent of the land markets, the commercialization of agriculture, and the scarcity of land. The literature on large-scale investments in land and land grabs suggests that women are often disadvantaged under these scenarios (Doss, Summerfield, and Tsikata 2014; Behrman, Meinzen-Dick and Quisumbing 2011). We do find that in places where the bureaucratic processes to formally register land take less time, the gender land gap is larger. This suggests that more efficient land registration processes disproportionally advantage men. Thus, gender neutral policies, such as speeding up the registration process, may not necessarily decrease the gender landownership gap.

For women to access land markets, they need access to capital, through earnings, savings, or loans. As part of a critique of the privatization and marketization of agricultural land, women's lack of capital has been highlighted—women lack the financial means, either in terms of financial assets or access to loans, that would enable them to engage with land markets on equal terms with men (Lastarria-Cornhiel, 1997; Yaro, 2010). We find that as a greater share of women are in the labor force, both overall and in the agricultural labor force, we see a smaller gender gap in landownership. This is true both with the DHS sample of low- and middle-income countries and in the broader sample of women landholders. The gender gaps in landownership are lower when more women have financial accounts. Providing women with the means to purchase land would be one mechanism through which these institutions could reduce the gender land gaps.

The structure of the economy is associated with the gender gap in landownership, although not always in the expected ways. Often, the growth of the economy and transformation towards a more specialized economy with few people involved in a more productive agricultural sector is seen as a

solution to issues of gender equality. We find no evidence to support this. In fact, in the sample of low- and middle-income countries, higher GDP per capita is associated with a larger gender gap. When we use the sample that includes the rich countries, none of the relationships between the indictors for the structure of the economy and the gender gap in landownership are statistically significant. This suggests that we should not expect that economic growth will necessarily reduce the gender inequalities in landownership. Nor do we find that greater income equality is associated with lower gender land gaps.

Notably, we find that the gender gaps in landownership are lower when agriculture is a smaller part of the economy and when many people are involved in low productivity agriculture. This would be consistent with a story of the feminization of agriculture, where an increasing number of women are farmers relative to men as men move out of agriculture into other sectors, with women remaining on marginal lands. These results suggest that women may consider themselves as the landowners under these circumstances. It may also be that a relatively small number of men are becoming owners of consolidated, commercial farms, while many women remain on the smallholder farms.

It should be noted that our measure is simply an aggregation of whether respondents claim to be landowners. We don't have comparable measures of the size or value of the land owned by men and women. Thus, the patterns are consistent with a story that women are more likely to be landowners when much of the land is small, marginalized plots.

The state could have a direct impact on the gender gap in landownership through land distribution or land registration or titling programs. For example, it has been shown that when land titling programs intentionally seek to include the names of both women and men on land titles or registration documents, such as through training of the government officials involved in registration and ensuring that the documents have space for more than one name to be listed, more women's names are included. We don't have good data on whose names are on land titles. Administrative sources, such as land records, typically do not include information on the gender of the landowners. We usually only have this data if the land titling program made a specific effort to ensure that women's names were included. Household surveys

often ask if there is an ownership document for the land, but often don't ask whose names are listed as owners.

The state also influences the gender land gap through the legal system. We have analyzed several indicators of restrictions on women's legal rights regarding property. Some of the indices combine the laws and social norms. We consistently find that when there are fewer restrictions on women's legal rights, the gender gap in landownership is smaller. Again, we cannot ascribe causality here; it may be that the laws reflect the practice or are a result of civil society organizing to protect women's property rights.

While the state creates the laws around marital property and inheritance, the implementation of these policies is often influenced by the social norms within the community. Because women face greater challenges than men in acquiring property through the market, they tend to benefit when they have claim to property within marriage. Under community of property marital regimes, whether full or partial community of property, the gender gaps in landownership are smaller. At least in part, this is because married women have claims on household land.[8] It also gives women a stronger claim to land if there is a divorce or if she is widowed. Another important factor influencing the gendered distribution of land are spouses' rights to assets upon divorce, including land. Deere and Doss (2006, p. 41) list the greater prevalence of "no-fault divorce where marital property is equally divided", partially due to changes to divorce law required of CEDAW-ratifying states, as contributing to the gender asset gap decreasing over the long term. In our regression analysis, divorce laws are included in the index of discrimination in the family. Similarly, when the inheritance laws are more gender equal, we see a smaller gender land gap.

Legal systems in many countries are closely tied to colonial legal systems—which we would also expect to influence the gender land gap. Both marital and inheritance regimes are significantly shaped by countries' colonial experience (Deere, Oduro, Swaminathan, & Doss, 2013), the legal systems put in place, and their later reform or replacement (Deere & León, 2005). Relevant for women's property ownership will also be the interaction of pre-colonial norms and colonial impositions. Experiences of colonialism and the accompanying imposition or creation of legal systems shaped not only land law but

[8] The specifics of the marital property rules will affect whether they have claims on just land purchased after marriage or also on land that was inherited by their spouse.

sex and gender itself (Morgensen, 2012; Stoler, 2010; Lugones, 2007). Colonial regimes not only imposed a particular legal system, but often dispossessed indigenous populations and re-distributed land among white settlers (Razavi, 2003). While we do not include the colonial property regime in our regression analysis, many of the indicators we include measure outcomes tied to it—as Barry and Gahman (2021) for instance argue in the context of the Eastern Caribbean, where they tie gendered barriers to agricultural business development such as a lack of access to land and financial assets, lack of economic training opportunities, women's over-representation in the work of social reproduction and community cohesion to overarching patriarchal and colonial-capitalist logics.

When considering the role of the state, it is useful to consider whose voice is heard in developing state policies. The relationship between women's property rights and women's political representation most likely runs both ways. For instance, Hallward-Driemeier, Hasan, and Rusu (2013b) find women's share of seats in parliament to be positively associated with the number of reforms undertaken in a country with the aim of closing gender gaps. On the other hand, landownership, as any kind of wealth, in most political systems will increase women's chances of running successful parliamentary campaigns. Agarwal (2010) also asserts that the relationship of political influence and land rights likely runs both ways—arguing that women's command over common land is as central to their economic empowerment as their control and ownership of private property. Instrumental in achieving both, as well as intrinsically desirable, is women's participation in "public decision-making institutions." Agarwal does not assign primacy to either, writing that "[w]e need to conceptualize both processes—that of resource redistribution and that of achieving representation and voice—as ongoing, interactive, and parallel, without insisting that the one or the other be a precondition" (Agarwal, 2010).

In practice, women's participation in local politics and particularly in land governance will directly influence women's land rights since local land administration bodies shape all land formalization processes and the enforcement of policies. While there is not a reliable cross-country indicator of women's local political participation, other studies find that the inclusion of local women's organizations increased women's participation in land titling projects (Lastarria-Cornhiel et al., 2014) and women's

knowledge about land-related laws that may enable their uptake of land registration opportunities (Bayisenge, 2018). In addition, women on land administration committees not only increase women's attendance at land registration meetings but may also help shift women's expectations around asset division during a divorce (Kumar & Quisumbing, 2015).

The interaction of the state with various other institutions will affect women's land rights. For example, the state has to decide how to respond to appropriation by use and/or occupation under "squatters' rights". Legal acceptance of "adverse possession" may thus influence women's land rights, as they are often disadvantaged in other channels of land acquisition. Across countries, landless women wage land struggles by a variety of strategies, including squatting and land occupation (Federici, 2004). The extent of their success will influence their land rights and levels of landownership (Deere, 2017).

Finally, we consider the role of the family and community. As noted above, while the state may legislate the marital property and inheritance laws, most transfers of property within families is not mediated by the courts. We proxy for the role of family and the community by looking at the social norms within the country. And the evidence is clear that the gender gap in landownership is smaller when there are fewer biases against women.

Doss and Meinzen-Dick (2020) have argued that social norms determine to what extent women are seen as potential or legitimate or capable property owners. Social norms will affect women's claim to land, women's influence in the community on matters of land, whether they inherit land, whether they are regarded as desirable heirs, and thus how land will be distributed within a family, how they are expected to bring disputes, and how those disputes are negotiated (in formal or informal systems). In a range of countries, women are viewed as farm helpers, rather than farmers (Galiè, Jiggins, and Struik, 2013 for Syria; Twyman, Muriel, and Garcia, 2015 for Bolivia, Ecuador, and Peru. We don't have an indicator of the extent to which women are perceived as farmers.

The family may influence women's landownership through other channels as well, but there are not adequate cross-country measures of these. These include the prevalence of *inter vivos* transfers and

gifts (cf. Deere & Doss, 2006; R. S. Meinzen-Dick, Brown, Feldstein, & Quisumbing, 1997) and the provision of dowry or "start-up capital" from their parents at marriage (Fafchamps & Quisumbing, 2005).

The market, the state, and the family all interact in complex ways to influence the gender gaps in landownership. While the market and the state affect the choices that families are able to make, the local communities and women's movements also may shape the structures of the markets, economy, and state policy.

6. CONCLUSIONS

In this paper, we have identified a set of institutions that are associated with the gender gaps in women's landownership. These institutions, whether the structure of the economy, or legal and social norms, are related not only to the extent to which individuals own land, but also are related to the gendered patterns of landownership. Some of these institutions are often viewed as gender neutral, such as land registration processes, and yet, they are associated with the gender gaps in landownership.

These institutions are both important and subject to change. Thus, it is critical to not only see them as the backdrop to the gendered patterns of landownership, but to also explore how they change over time and how they interact with gender land rights in particular settings. This broad comparative analysis serves as a complement to analyses of specific countries and the changes over time.

Depending on context, gender may or may not be a—or the central—significant identity. Lastarria-Cornhiel (1997), for instance, points to the interaction of gender, class, caste, and political power in control over land (cf. Havens, Lastarria-Cornhiel, & Otero, 1983). Yet when it comes to landownership, the literature cited here as well as our own results show that gender is a consistently relevant.

We have raised issues that suggest we should be cautious about using a gender gap measure based on the incidence of landownership. The SDG indicators are based on incidence of ownership (defined both as ownership and as secure tenure) and so such indicators are currently part of the policy discourse. We find that women are more likely to own land when agricultural productivity is low and many people are in rural areas. Thus, a scenario in which high productivity agricultural land was consolidated in the hands of a few men and many women became owners of small, marginal plots of land would show up as small gender land gap or even one in women's favor. But this scenario would not reflect a broader understanding of gender equality in landownership.

In addition, our analysis identifies women as landowners whether they claim to own land individually or jointly. However, evidence suggests that joint ownership of land may not confer the same rights to land for women as individual landownership. Women's rights over the land may be more

restricted in spousal co-ownership than other forms of ownership (Manji, 2003; Kes and Jacobs 2015; Doss, Meinzen-Dick and Bomuhangi, 2013).

We are using individuals' reports on whether or not they own land. The understanding of what it means to be a landowner may vary across context. It some places, ownership is clearly defined with much of the land being formally documented. In other places, more of the land may be untitled or registered, with customary tenure practices in place. In this case, not all people may have the same understanding of what it means to be an owner, and this may differ among men and women.

Finally, while land is usually the most important asset for rural households, especially in low- and middle- income countries, the portfolio of assets held by individuals changes as countries go through structural transformation (Oduro and Doss, 2018). Thus, moves towards gender equality would involve not only ensuring that women are landowners and that they are not simply the owners of small, marginal plots, but also ensuring that women are able to acquire assets across a broader portfolio, including housing, financial assets, and business assets.

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