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GENDER BIASES IN CUSTOMARY LAND ALLOCATION: EVIDENCE FROM SUB-SAHARAN AFRICA

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Abstract

An important source of disparity in land tenure rights is gender bias within many customary systems of authority in sub-Saharan Africa, particularly patrilineal systems. Women are often disadvantaged under customary systems in terms of the quality of the land available to them. Using secondary household survey datasets collected for USAID impact evaluations in Ethiopia and Zambia, we derive a measure of land quality of household land, controlling for spatially correlated characteristics like precipitation and soil composition. We then estimate the relationship between the gender of the head of household and land quality using a selection model. Results do not provide evidence of direct gender discrimination in land acquisition but suggest the possibility of a systemic basis for observed gender disparities in land quality outcomes.

Key Words:

Africa, customary law, land rights, women

I. Introduction

It is commonly asserted that women have lower quality land in terms of its condition, soil fertility, and productive potential in Sub-Saharan Africa and that customary land systems continue to discriminate against women in land allocation. Qualitative evidence connected to the USAID datasets selected for this research suggests that female-headed households are perceived to be disadvantaged in land-related decision-making, that they have less access to land, are more concerned about risks of appropriation, and face restrictions on permission to plant certain crops (Stickler & Huntington 2015). Another USAID study found differences in land quality between genders in Guinea, as measured by soil fertility and participants' ratings of the value of plot land (Marple-Cantrell et al. 2015).

Limiting women's access to land imposes substantial social costs. The Sustainable Development Goals (SDGs), Convention on the Elimination of Discrimination Against Women (CEDAW), and other United Nations agreements recognize the importance of women's land rights as human rights. Providing women smallholder farmers with rights to the land they farm gives them a gateway to enjoying a host of other basic human rights—the rights to equality, livelihood, and identity—by elevating women's status within communities and building their access to markets and public spaces (Landesa 2012). Property rights improve a woman's status and bargaining position in her household as well, because a woman with property can achieve a better living standard in case of marriage breakdown. Moreover, there is evidence that the income women generate from land tends to be spent on purchases that benefit their household's well-being, particularly education and food for their children. This contributes to longer term human capital formation and economic growth through improved health and nutrition outcomes (Katz & Chamorro 2002, Quisumbing & Maluccio 2002).

Many analyses of gendered outcomes in land quality rely on respondent perceptions or do not adequately address potential omitted variable bias when comparing male- and female-headed households. Evidence for the claim of gender differences in land quality often rests on models for farm output. However, land is only one input in household farm production. Women's relatively limited credit access restrict their use of capital inputs like fertilizer and in female-headed households in particular, there are fewer adults available on average to supply labor to the household farm (Quisumbing 1996; Croppenstedt, Goldstein, & Rosas 2013; Andrews, Golan, & Lay 2015; Karamba & Winters 2015). Where farming knowledge and skill are lacking, factor misallocation could be affecting farm output. Limited bargaining power can also affect women's ability to mobilize factors of production and thus the productivity of their land (Udry et al. 1995). Gender output gaps can therefore reflect a number of factors beyond land quality.

Direct measures of land quality, such as those obtained through laboratory testing of soil samples are costly. Direct observation or self-report of conditions like erosion problems or irrigation systems provide limited information on overall land quality in our sample. Observations of soil type and slope constitute nominal data, as different crops are well-suited to each soil type or slope, and soil fertility can vary within types. To address the challenge of finding a detailed measure of land quality for comparison across households, we derive a land quality score using farm inputs and outputs, controlling for other household and land characteristics. This approach assumes that households choose the crops and inputs, within the limits of social norms and their agricultural knowledge, that will maximize their output. Under this assumption, the best and most desirable land in a community is that on which households can cultivate the highest total value of output, net of the labor and capital inputs required. This flexible approach allows for the possibility that the optimal crop mix will vary across plots.

We then estimate a model for land quality that takes into account the decisions households have made about land acquisition. Principle among these decisions is from which sources to seek and accept land. Such household decisions influence land quality outcomes and need to be taken into account in order to identify the influence of customary authorities' and other landlords' decisions. We use this approach for each mode of acquisition – inheritance, customary allocation, purchase, rental, borrowing, gifts, and clearing own land – in order to estimate whether women are offered lower quality land on the basis of their gender. Section II describes the basic framework for the process of land seeking and acquisition. Section III describes the data and its advantages and limitations for answering the research question. Section IV presents the empirical strategy and results. Section V concludes.

II. Theoretical Framework

Land-seeking households desire land with enough productive potential, net of any land costs, to leave them better off than alternatives. Alternatives include continuing to cultivate their existing stock of land, taking off-farm work, or migrating to another village. In the search for land, the household makes a request to a customary authority or any landowner whom is likely to offer them suitable land. If the household does not expect that a customary authority or landowner would make them a suitable offer, or any offer at all, they do not make a request. Households accept the best offer they receive. Through this process, self-selection is expected to introduce bias in a model for land quality. The acquisition of land through inheritance works differently. However, land inheritance outcomes may still involve selection based on characteristics that influence the probability that a household receives an inheritance.

Whether a customary authority or landowner is likely to make an offer of land depends in part on their own biases toward or against transacting with a particular household. Similarly, the decision of which plot to allocate, rent, or otherwise offer is influenced by any biases they may hold. Out of any suitable land offers made and any land available for inheritance at the same time, households choose the land with the most productive potential, net of any land costs. Since land is inherited without cost, it is expected that households will choose inheritance over other offers whenever it is available. Accepted offers are what we observe in the data, while rejected land offers are censored. Only for these plots does the data provide information that can be used to derive a measure of land quality. The following section describes the data and how it is used to identify the factors influencing the quality of land acquired by land-seeking households.

III. Data

To investigate gender bias in land allocation, we use four baseline datasets originally collected for USAID land tenure impact evaluations, two from Ethiopia and two from Zambia. The data presents limitations for estimating gender effects. First, data collection is at the household level rather than individual level. As a result, analysis relies on comparing male-headed households and female-headed households. Land may be acquired either by households or individuals within the household and responsibility over specific household land may be divided among household members. This limitation affects the external validity of the findings. Female heads of household differ from female members of male-headed households in many ways. Broadly, female heads of household possess relatively more decision-making power within their household in the absence of a male spouse but are relatively less empowered in the community and have access to fewer resources (Doss et al. 2013). Female-headed households also have fewer adult members and less wealth on average.

Gender of head of household has a potential advantage for internal validity in the context of traditional rural communities in Sub-Saharan Africa. In this context, female-headed households generally do not exist by choice. They are typically formed as a result of divorce or death of the male spouse. In the Ethiopia subsample, 94.9% of female heads of household are either divorced or widowed. In the Zambia subsample, 83.1% of female heads of household are either divorced, separated, or widowed. Married women who report being the head of household are more likely to belong to the matrilineal Chewa tribe in Zambia. While the probabilities of death and divorce are influenced by macro- and household-level factors such as disease incidence or access to healthcare, it is expected that death of spouse and divorce are exogenous to the land quality model. Note that households whose male head has migrated for work

are classified as male-headed households for the purposes of this analysis. This choice is based on expected social and economic advantages conferred by the existence of a male spouse, even if they are not physically present in the home. Furthermore, it is possible to control for two of the primary differences between female- and male-headed households, wealth and the number of adult members. These characteristics would otherwise be major confounding factors in models describing farm production and land acquisition.

Second, the data is a cross section. Plots are associated with household and land characteristics that are observed at the time of data collection, regardless of when the plot was acquired. This requires the strong assumption that household and land characteristics are time invariant, or at least that their relative location in the sample distribution is time invariant. This is especially problematic for gender of the household head. For households that may have had a change in gender of head since the acquisition of their oldest plot, the year of that change is not known. The year of acquisition is observed, so this is included in the land quality model in order to control for time trends.

The data show that female headed households are less likely to acquire land through customary allocation as compared to male-headed households. On average, female headed households have fewer parcels acquired by customary allocation, and a smaller proportion of their parcels have been acquired by customary allocation as compared to other modes of acquisition, such as inheritance or market purchases.

[Figure 1 about here] [Figure 2 about here]

To improve the land quality index, we use spatial variables for precipitation, vegetative productivity, soil quality, and distance to roads generated using publicly available spatial data. Rainfall data was sourced from Climate Hazards Group Infrared with Stations Data (CHIRPS) (Climate Hazard Center 2020). We use rainfall means for the growing season, defined as March through June in Ethiopia and October through May in Zambia. Normalized Difference Vegetation Index (NDVI) was sourced from U.S. Geological Survey's Famine Early Warning System (USGS FEWS 2020a, 2020b). Soil organic carbon content was sourced from the Africa Soil Information Service (AfSIS) (Hengl et al. 2017). Distance from households to roads was derived using roads data from OpenStreetMap (OpenStreetMap contributors 2020).

Variation in our land quality measure is apparent between modes of acquisition and between female- and male-headed households. Plots acquired through purchase or by clearing undeveloped land have the highest average land quality score. This may reflect the large upfront costs involved in their acquisition, in that only the best land is worth the expense. Cleared land in particular may also be more nutrient dense if soil degradation from land use practices is a trend in the region. Borrowed parcels are the lowest in quality, and likely the least valuable of land belonging to the lender.

[Figure 3 about here]

Female-headed households have a significantly lower average land quality score regardless of mode of acquisition. This disparity is observed for quality of land acquired through customary land allocations in particular, although the customary land allocation does not appear to exhibit a greater quality disparity as compared to other modes of acquisition. This result is consistent with existing quantitative and qualitative observations of gender disparities in land quality in customary allocation.

[Figure 4 about here] [Figure 5 about here]

IV. Empirical Strategy

A. Land Quality Measure

While soil type is observed, it is a nominal measure of land quality given that ideal conditions vary between crops. An ordinal measure of land quality is constructed using inputs and output of production on the plot, controlling for four spatially correlated variables. Household wealth is identified using principal components analysis of housing material and ownership of durable goods not used in farm production (Montgomery et al. 2000).

As a consequence of observing only the best offers, unobserved offers have an inferred lower land quality. Unobserved offers could be of lower quality for several reasons. These can include discrimination, or factors in the “fair” exchange of land, such as the distribution of land quality available or the household’s ability to afford land market prices. Discrimination can still influence the quality of land observed in the best offers. This occurs when discrimination in other modes of acquisition resulted in

lesser offers or when the distribution of land quality available to any household through other modes is lower.

We first derive the land quality measure from a household farm production function. The production functions use farm inputs and outputs from household data and control for spatially correlated land and environmental characteristics. Farm output is defined as the total household production quantity multiplied by the sample median sale price. This provides a local market value for all household production, even when some of the harvest is traded or kept for household consumption.

Farm inputs include a combination of the following, depending on the dataset:

- Labor – person days allocated or number of adults in household, as a proxy
- Seeds – quantity or expenditure
- Fertilizer – quantity or expenditure
- Pesticide or herbicide – number of applications
- Land area under cultivation (trimming outliers)
- Farm implements and structures – a discrete count or a PCA index
- Controls
    - Allocative efficiency - education level of the household head, as a proxy for knowledge
    - Number of household plots, as a measure of dispersion
    - Mean NDVI[1] in 1km radius of homestead
    - Mean soil organic carbon content in 1km radius of homestead
    - Mean rainfall in 1km radius of homestead
    - Distance to road from homestead

[1] Normalized difference vegetation index (NDVI) is a spatial indicator of overall vegetative productivity.

The base production function is given by

$$\ln(Y)_i = \alpha + \beta_1 \ln(labor)_i + \beta_2 \ln(seeds)_i + \beta_3 \ln(fert)_i + \beta_4 \ln(pest)_i + \beta_5 \ln(area)_i + \beta_6 \ln(implements)_i + \gamma_1 i.edlevel_i + \gamma_2 i.nplots_i + \gamma_3 NDVI_i + \gamma_4 carbon_i + \gamma_5 rain_i + \gamma_6 distance_i + \varepsilon_i \quad (1)$$

$$where \sum_{i=1}^{6} \beta_i = 1$$

From three alternative specifications to the above production function, we choose the specification that best characterizes the data in each subsample. Land quality is defined as the residual of the production function. The level of observation of several inputs and outputs requires allows only household-level land quality estimates for three of the baseline datasets. A similar household-level land quality estimate is produced for the fourth by aggregating plot-level values.

B. Main Empirical Model

The outcome equation describes land quality as a linear function of several individual, household, and land characteristics. Gender, age, and marital status of the head of household are characteristics upon which a customary authority, seller, or landlord may discriminate. Modes may vary in distribution of land quality and in the extent to which discrimination on individual characteristics occurs. The basic model without selection correction is estimated using land acquired through all modes. The ability to afford land on the market is captured in household wealth. Household size and the head's education level capture the consumption needs of the household and its dependence on cultivation for income, which will affect its reservation level of land quality. Year acquired and district and country dummies control for time and location effects. This assumes that the values of other variables are time invariant. The base land quality model is given by

$$landqual_{i,p} = \alpha + \beta_1 fem_i + \beta_2 fem_i * age_i + \beta_3 age_i + \beta_4 fem_i * i.mode_{i,p} + \beta_5 i.mode_{i,p} + \beta_6 year_{i,p} + \gamma_1 married_i + \gamma_2 i.edlevel_i + \gamma_3 wealth_i + \gamma_4 hhsize_i + \gamma_5 i.district_i + \varepsilon_{i,p} \quad (2)$$

When correcting for potential selection bias in specific modes, the outcome equations is simplified to

$$landqual_{i,p} = \alpha + \beta_1 fem_i + \beta_2 fem_i * age_i + \beta_3 age_i + \beta_4 year_{i,p} + \gamma_1 married_i + \gamma_2 i.edlevel_i + \gamma_3 wealth_i + \gamma_4 hhsize_i + \gamma_5 i.district_i + \rho\sigma_\varepsilon \lambda(Z\xi) + \varepsilon_{i,p} \quad (3)$$

Subsequent model specifications test and correct for the presence of selection bias. The quality of land acquired through a mode is observed only if the household chooses that mode. The selection equation is a probability model estimated separately for each mode.

The specification for inheritance is unique to that mode, where the household does not self-select into receiving an inheritance. There is a unique set of factors determining the probability that a parcel was inherited. Customary inheritance laws are gendered in their design or enforcement. Wealth is expected to correlate with extended family wealth, which correlates with the amount of land that could be up for inheritance at any time and thus the probability of a parcel having come from inheritance. The age of head correlates with the probability that a relative, especially parent, passes away at any time. In the event that a larger inheritance is divided between heirs and on the basis of favor, plot characteristics like land area may be considered in the distribution among heirs. Household size increases the probability that some household land will be inherited, as multiple household members may be able to receive inheritance. The year acquired and country dummy control for time and location trends in the rate of land inheritance. The probability that a plot is acquired through inheritance is defined as

$$\Pr(inherited = 1|X)_{i,p} = F\left(fem_i, age_i, wealth_i, hhsize_i, area_{i,p}, year_{i,p}, i.country_i, \xi_{i,p}\right) \quad (4)$$

Probability models for all other modes are characterized by self-selection. Wealth is related to the household's ability to pay for desired land on the land market, whether they choose to rent or buy, or use a non-market alternative. Land area relates to the value of the land available in that mode, which influences their decision. The number of adult household members, as a proxy for labor, measures the household's capacity to extract that value from the land (Holden, Otsuka, & Place 2009). Education level of the household head may proxy to some extent for the household's capacity to extract value. It also

proxies for the head's off-farm wage and therefore their level of dependence on cultivation for income or subsistence. The year acquired and country dummy control for time and location trends in the usage of each mode. For example, the size of the land market and the rate of clearing new land may change with time. The probability that a plot was acquired through other modes is defined as

$$\Pr(m = 1|X)_{i,p} = F\left(wealth_i, adults_i, i.edlevel_i, area_{i,p}, year_{i,p}, i.country_i, \xi_{i,p}\right) \quad (5)$$
$$where\ m \in (allocated, purchased, rented, borrowed, given, cleared)$$

It is less clear which factors might increase the probability that a parcel was received as a gift. Households in need may be more likely to receive gifts of land from others. Parcels acquired as a gift may also include some that could be categorized as inheritance. Without knowing the extent of this overlap or misclassification, there is not a clear justification for changing the specification of the selection equation in the "given land" model from other non-inheritance modes.

C. Results

Table 1 displays results for models that do not include selection correction. In the base model for land quality, a significant negative relationship between currently having a female head and land quality is detected. This negative relationship increases in magnitude in customary allocation. These results are consistent with existing quantitative and qualitative observations in the literature. However, some selection models that follow in Table 2 do not produce significant coefficients on gender of the current head. In purchases, inheritance, and clearing one's own land, there is no significant relationship found between gender of head and land quality. Taken together, this is a lack of evidence that gender disparities in land quality are a result of direct gender discrimination in land searches and land transactions in these modes. Observed gender disparities in land quality in these modes are more likely to be related to other individual and household characteristics, which may correlate with the gender of the current head. This could be interpreted as systemic or institutional gender discrimination if the gender of head is the same as at the time of acquisition. In customary allocation, borrowing, and gifts of land, there is a significant negative relationship between female headship and land quality. If the gender of the head of household was the same at the time of land acquisition, this suggests that direct gender discrimination may be present in these modes.

There is practical value of the distinction between direct discrimination and systemic gender inequality for identifying potential solutions. Modes in which there is less observed gender disparity may still not be advantageous in an absolute sense for many female-headed households. If that is the case, those households would be less likely to select into those modes because the land offers do not meet their minimum threshold for land quality, net of costs. More effective solutions for reducing gender disparities in land quality outcomes may have to do with addressing the underlying causes preventing some female-headed households from choosing to utilize the modes where others are seen to acquire better land.

Results for rented land: A linear model estimated by OLS detects no relationship between *fem* and *landqual* (Table 1). In the selection model, we cannot reject the null hypothesis that the outcome and selection equations are independent. There is no selection detected in quality of land acquired through rental. In theory, it is plausible that positive selection exists in the population of renters. Households able to rent land in lieu of acquiring free land from non-market sources are more likely to do so when it is high in quality. There may be too few observations to detect selection bias.

[Table 1 about here]

Results for inherited land: No right-hand side variables are significant in predicting land quality in inherited land (Table 2). No relationship with the gender of current head is detected. We reject the null hypothesis that the equations are independent. There is positive selection in quality of land acquired through inheritance. Households that are more likely to acquire land through inheritance have a higher predicted land quality. This may reflect families' desire to retain good quality land within the family, while being more likely to sell, rent out, lend, or give away land of lower quality. Plots owned by a household but lent or rented out to another household at the time of data collection are not observed for the landowning household.

Results for allocated land: There is a significant negative gender effect on average (Table 2). We reject the null hypothesis that the equations are independent. There is negative selection in quality of land acquired through customary allocation. Households that are more likely to acquire land through customary allocation have a lower predicted land quality. Households that choose to use this mode may have no other option for acquiring land at that time, either due to exclusion from other modes, a lack of suitable alternative offers, or their inability to afford land on the market. Aside from self-selection, low

quality land may be more likely to end up back in circulation if households in possession of low-quality land are more likely to leave farming for off-farm work or to migrate away for better wages or better land.

Results for borrowed land: There is a large negative and highly significant effect on land quality of borrowed plots for currently female-headed households (Table 2). Female-headed households do benefit from age in terms of land quality, according to the coefficient on *age*fem*. We reject the null hypothesis that the equations are independent. There is negative selection in quality of land acquired by borrowing. Households that are more likely to borrow land have a lower predicted land quality. Households that borrow may not have other options, due to exclusion from other modes, a lack of suitable offers, or the inability to afford land on the market. Selection may also come from the supply side. Land that landowners are willing to lend out in exchange for no compensation is likely to be lowest in quality.

Results for land received as a gift: Female-headed households received gifts of land of significantly lower quality (Table 2). This gender effect decreases with the age of the current head. We reject the null hypothesis that the equations are independent. There is positive selection in quality of land received as a gift. Households that are more likely to receive land as a gift have a higher predicted land quality. For those "given" plots that are actually misclassified inheritance, this result is consistent with the positive selection found in the "inherited land" model. For other plots received as a gift, an explanation for positive selection is unclear.

Results for purchased land: Female-headed households are able to purchase land of the same quality as male-headed households, when controlling for wealth and other household characteristics (Table 2). In the selection model, we reject the null hypothesis that the outcome and selection equations are independent. There is positive selection detected in quality of land acquired through purchase. Household that are more likely to have purchased land have higher predicted land quality. Households able to afford to buy land on the market are likely to be willing only when it is high in quality.

Results for cleared land: There is no detected relationship between gender of the current head and land quality. The quality of cleared land increases somewhat with the current size of the household. If household size is positively correlated over time since the land was cleared, larger households may have had more labor with which to prepare undeveloped land for cultivation. We reject the null hypothesis that the two equations are independent. There is negative selection in land quality for cleared plots. Households that are more likely to clear their own farm plots from undeveloped land have a lower predicted land quality. Clearing land is a difficult task. Those households who do clear their own land

may end up with land that is initially more difficult to cultivate. It is also possible that communities have already cleared the land that has the highest potential quality so that plots cleared more recently are lower in quality on average. In either case, these plots would have lower returns to observed inputs and land quality estimates derived from the farm production function will be lower.

[Table 2 about here]

V. Conclusion

Taken together, the results do not provide sufficient evidence that gender disparities in land quality are a result of direct gender discrimination in land searches and land transactions. A basic model for land quality that does not account for land search decisions detects a significant negative relationship between current female headship and land quality. This negative relationship increases in magnitude for plots acquired from customary allocation. These initial results are consistent with existing quantitative and qualitative observations in the literature. However, selection models produce mixed results depending on the mode of acquisition. Female-headed households have a significantly lower predicted land quality score on plots acquired through customary allocation, borrowing, or gifts. This relationship diminishes with female heads' age when the land is borrowed or received as a gift. There is no such difference detected in terms of land quality score when the plot was acquired through inheritance, purchase, or rental, or by the household clearing its own land.

These results should be interpreted with caution, as it is not possible to determine with certainty whether the gender of the head of household was the same at the time of land acquisition. Other household characteristics at the time of land acquisition may correlate with both the quality of land acquired and the household becoming female-headed later in time. Alternatively, the land quality index itself may still be influenced by the gender of the head of household due to the limited ability to account for farming knowledge and skill in the construction of the index. Under either of these two possibilities, the gender of the head of household would not be exogenous to the land quality model. Given the limitations of household level observations in a cross-section for establishing a causal relationship between gender and land quality, similar analysis should be extended using panel data that observes land acquisitions and land, household, and individual outcomes at the time of acquisition.

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Tables and Figures

TABLE 1. LAND QUALITY MODELS WITHOUT SELECTION		
	All Modes N=13,607	**Rented^ N=104**
female	-.292 **	-.463
female*age	.003	.007
age	-.001	-.005
female*mode		
*female*inherited*		
female*allocated	-.266 ***	
female*purchased	-.112	
female*rented	.004	
female*borrowed	-.524 **	
female*given	-.334 ***	
female*cleared	-.358	
mode		
inherited		
allocated	.062 **	
purchased	.056	
rented	.070	
borrowed	.003	
given	.062 **	
cleared	.162	
year acquired	.001	.002
married	.010	.155
education level		
no education		
primary	-.051 *	-.127
secondary	-.116 ***	-.526 **
post-secondary	-.050	
wealth	.030 ***	.025
household size	.016 ***	-.012
intercept	-1.839	-4.549
p>0.1 *, p>0.05 **, p>0.01***		
^No selection bias detected		
Source: Author		

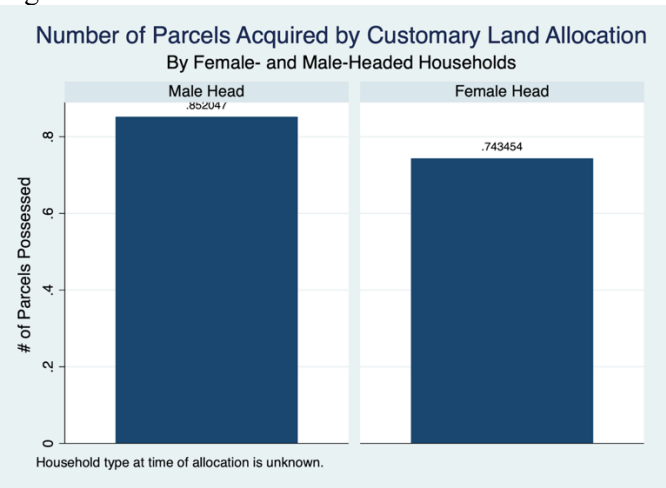
TABLE 2. LAND QUALITY MODELS WITH SELECTION CORRECTION

	Inherited N=17,027	**Allocated N=16,967**	**Borrowed N=7,663**	**Given N=11,040**	**Purchased N=18,797**	**Cleared N=11,228**
female	-.113	-.589 **	-3.053 ***	-.969 ***	.570	-.969
female*age	.001	-.002	.046 ***	.017 **	-.011	-.002
age	-.001	.001	.002	-.003	.011 **	.005
year acquired	-.001	.003 *	-.100	.007 *	.007	.007
married	.098	-.111	.167	.329 ***	.191	-.504*
education Level						
no education						
primary	-.011	-.179 ***	-.303	.259 *	-.225	.099
secondary	-.046	-.282 ***	.018	-.158	-.649	
post-secondary	-.046	-.078		-.332	.406	
wealth	.005	.047 ***	-.060	.078 ***	.175 **	-.090
household size	-.001	.040 ***	-.029	-.021 **	.068 ***	.061 *
intercept	1.518	-6.458	203.385	-15.475	-18.200	-11.999

p>0.1 *, p>0.05 **, p>0.01***

Source: Author

Figure 1.



Source: Author

Figure 2.

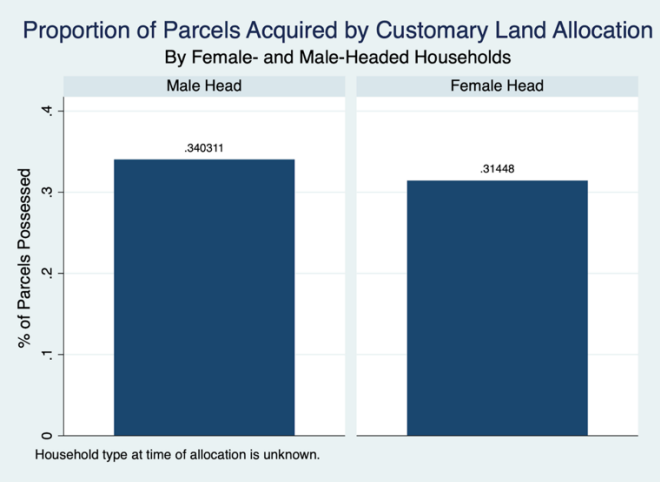


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Figure 3.

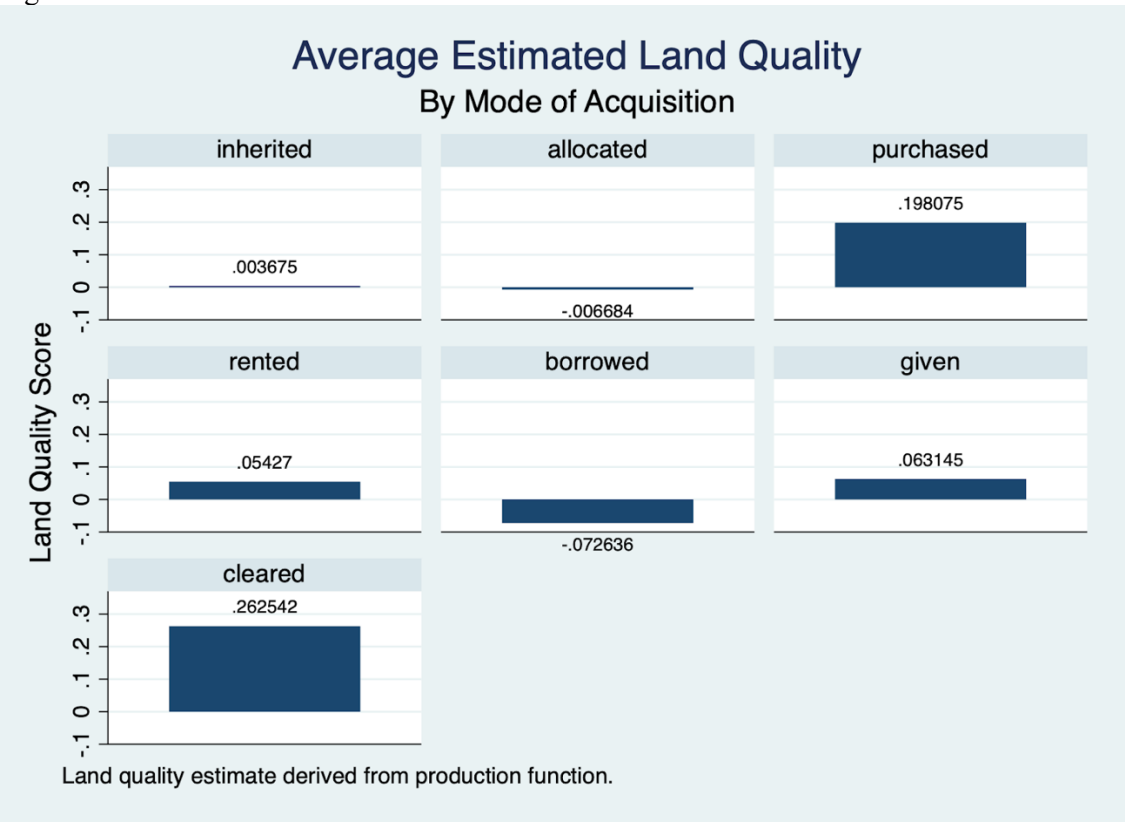

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Figure 4.

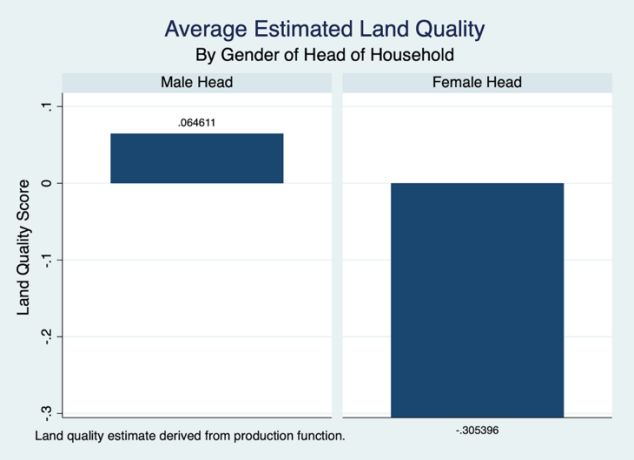

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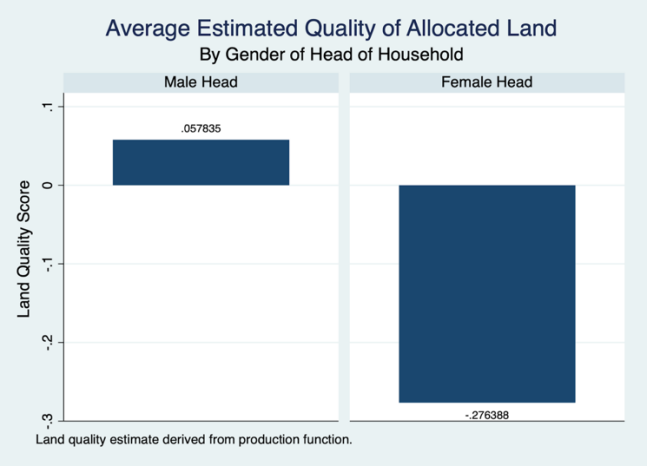
Figure 5.



Source: Author