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Rental markets, gender, and land certificates

Evidence from Vietnam

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Abstract: The way property rights affect land rental market behaviour is one of the key issues in development economics. In this paper we show the relationship between land use certificates and the compensation landlords receive when they lease out land to their relatives. We find that female-headed households who rent out land to their relatives are less likely to receive a payment (monetary or in-kind), unless they possess a title for the land leased. A regional decomposition of our results shows that this effect is more predominant in the North of Vietnam. This suggests that female-headed households may have weaker *de facto* rights over land, particularly in the Northern provinces, and that formal legal documents are potentially a useful tool to improve their bargaining power in negotiating land rental terms.

Keywords: land use certificates, land rental markets, gender, Vietnam
JEL classification: O12, Q15, J16

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1 Introduction

Weak enforcement of property rights has long been considered one of the key determinants of low agricultural productivity in developing countries. While many studies have focused on the tenure security channel (i.e. certainty of reaping the fruits of your work will incentivize long-term investment) another important channel through which property rights foster productivity is by allowing landholdings to be transferred to those better equipped to make productive use of them (e.g. via sales or rental markets). In developing countries, even when land transfers are formally allowed, land rental markets are far from perfect and transaction costs are ubiquitous and occur at every stage of the contract negotiation. In this context of imperfect contract enforcement and tenure insecurity, land transfers tend to happen among people of close social distance because this helps address issues of moral hazard, adverse selection, and transaction costs (Arrow 1968; Sadoulet et al. 1997; Fafchamps 2004).

Nonetheless, there are some cases in which land transactions among closely related agents can be detrimental for efficiency and equity, particularly when the landlord has a low capacity to enforce and monitor contracts. In Ethiopia for instance, where Ghebru and Holden (2015) find that same-kin tenants respond strategically to landlord's tenure security and economic power; their results show that sharecropped yields are significantly lower in plots rented from same-kin landlords that have weaker ability to enforce the contract and higher tenure insecurity (such as women).

During the 1990s Viet Nam carried out one of the most impressive land titling programmes in the world (Do and Iyer 2008). The formalization of private usage rights paved the way for the development of an active land market that seems to have facilitated a better allocation of agricultural resources (Khai et al 2013). According to our data, the percentage of plots rented out has more than doubled from 2008 to 2016 in Viet Nam. However, most of these transactions occurred among relatives and a large and increasing proportion of these land transfers were informal (i.e. they occur without any type of compensation, monetary or in-kind) raising concerns on the effectiveness and fairness of the transactions.

In this paper we use the Viet Nam Access to Resources Household Survey (VARHS) dataset to explore the relationship between property rights and the compensation obtained by landlords in the rental market. Our results show that female-headed households that lease land to relatives are 25 per cent less likely to receive any type of compensation, unless they have a Land Use Rights Certificate (LUC) for such plot. Moreover, we present a regional decomposition of our empirical analysis and we find that our results are being mostly driven by the dynamics of rental markets in the North of Viet Nam. Our results illustrate the importance of land titles for female landlords in the choice of tenant and the negotiation of contract terms in Viet Nam, particularly in the Northern provinces.

Previous studies have pointed out the relationship between property rights and contract choice (Bellemare 2012) or landlord-tenant matching (Macours et al. 2010). As far as we know, this is the first study showing how weaker tenure security may limit the choice of tenant and ultimately affect the outcome of the agreed compensation for the land rental transaction, particularly when the landlord is part of a group that has been traditionally neglected in terms of access to land and decision making (e.g. women). Additionally, this is the first study of land rental markets in Viet Nam that explicitly distinguish between formal and informal transactions. This is surprising given that informal transactions represent a significant proportion of the land rentals in the country. Our regional analysis also provides insights on how policy changes in land tenure are likely to have a

more significant impact in the Northern provinces of Viet Nam, where social institutions and attitudes towards market-oriented policies are considerably different than in the South.

The structure of the paper is as follows: in section 2 we outline the main features of land rental markets in the developing world, in section 3 we describe the land reforms undertaken in Viet Nam and their implications for women's land rights. The data and some descriptive statistics are presented in section 4. In section 5 we discuss the estimation strategy we employ to test our hypotheses and in Section 6 we present our results. In section 7 we conclude with some final remarks.

2 Land rental markets in developing countries

In a world with perfect information and zero transaction costs, and assuming agriculture has constant returns to scale, the distribution of land is irrelevant for both efficiency and equity. If at least one factor market works imperfectly, e.g. labour, efficiency remains unchanged because land and other inputs can still be traded efficiently until all farms operate at their 'optimal' size (Feder 1985). Yet, because labour effort is hard to monitor and enforce, farming labour markets tend to be thin or non-existent. Instead, most agricultural activities are carried out by household members and hired labour is reserved for simple tasks or seasonal bottle-necks (Otsuka et al. 1992). The distortions in agricultural labour markets, along with the difficulties of trading physical and human capital, make land rental markets one of the most feasible mechanisms to improve resource allocation across farms (Bliss and Stern 1982; Binswanger and Rosenzweig 1986; Skoufias 1995; Holden et al. 2010; Chen et al. 2017).[1]

Nevertheless, land transactions are hindered by a number of obstacles preventing a fully efficient functioning of the market. In particular, there are two main types of transaction costs when participating in land rental markets: the cost of searching potential tenants/landlords and negotiating the contract (fixed costs), and the risk of losing the land—either by the refusal of the tenant to vacate the plot after the contract expires or by administrative expropriation—which is proportional to the size of the land rented out. An unclear and weak enforcement of ownership rights increases the risk of losing property when it is rented out, discouraging potential landlords from participating in rental markets and incentivizing an inefficient use of agricultural resources to farm the land to maintain usage rights over such property (Besley and Ghatak 2010). Moreover, tenure-insecure landlords might have a weaker capacity to enforce rental contracts; they can also have fewer options for potential tenants, leading the market to allocate land to ill-suited farmers because the threat of expropriation is lower with them (Ghebru and Holden 2015).

The literature has also shown that landlords' property rights play a significant role in the choice of tenant and type of contract. In Madagascar, Bellemare (2012) finds that landlords with a lower perceived tenure security were more likely to engage in sharecropping contracts instead of fixed rents because participating in the production process increases the landlord's claims to the land (land-to-the-tiller agricultural system). In the Dominican Republic, Macours et al. (2004) show that

[1] Sadoulet et al. (2001) argue that land rentals are better than sales to improve equity and efficiency because they address some of the main restrictions farmers face, such as lack of credit, insurance and access to markets. In Viet Nam, Deininger and Jin (2008) find that both land sales and rentals transfer land to more productive farmers, but rentals have been more important for the poor to access land. Also, Promsopha (2015) discusses how land ownership works as a risk-coping mechanism in Viet Nam, which is why households that are more vulnerable to shocks prefer temporary land transfers to land sales.

tenure insecurity and weak contract enforcement leads landlords to operate along similar socio-economic lines, which comes with significant detrimental effects on efficiency and equity.

In many parts of the developing world, land reforms have tried to address this concern by strengthening individual rights and improve the mechanisms through which land transactions happen. In Mexico for example, the reforms in the *ejido* sector included the issuance of individual land titles and the legalization of land rentals and sales among community members (de Janvry et al. 2015). In China, where land transfers have been traditionally forbidden, Chari et al. (2017) find that a reform in property rights that allows farmers to lease out their land had positive impacts on efficiency and labour allocation across farms.

3 Land tenure and gender in Viet Nam

In this section we discuss the land reforms undertaken by Viet Nam to move from collective farming to a private usage rights rural economy with a dynamic land market. We also discuss some of the implications of the land reform in gender land rights and its effects on the functioning of land rental markets.

3.1 Land reform: the emergence of land markets in Viet Nam

During the 1980s Viet Nam started a de-collectivization process in its agricultural sector to form a production system based on household initiative. Before the reforms took place, agricultural production was carried out collectively and farmers were compensated by the hours they worked. However, after facing severe food shortages at the beginning of the 1980s, the government implemented a new policy in which farmers were responsible for delivering a quota to the commune and allowed them to keep or sell any surplus above such quota.[2] With the implementation of the Doi Moi reforms in 1988, the government addressed some concerns regarding tenancy security and started the privatization and decentralization of output and input markets (but land market transactions remained illegal). In 1993, a new land law was enacted to transfer private usage rights to rural households. Though the land remains the property of the State, households received land use certificates (LUCs) that allow them to transfer, lease, mortgage and bequest the usage rights of their land. The duration of use rights was set at 20 years for annual crops and 50 years for perennial crops, although in general households can renew their rights after this period if they wish so.

During the land allocation process commune authorities distributed land that was previously under collective cultivation to individual households. Ravallion and van de Walle (2004) show that the administrative allocation resulted in a highly egalitarian distribution of land. Additionally, the increase in tenure security and the liberalization of land markets promoted agricultural investment and allowed households to pursue non-farming activities (Do and Iyer 2008). Deininger and Jin (2008) analyse the evolution of land markets that emerged from these reforms. They find that land markets tend to transfer land to more productive farmers and that land rentals in particular play a crucial role in allowing the poor to access land as the non-agricultural sector of the economy evolves.[3] Using more recent data, Khai et al. (2013) reach similar conclusions, showing how market

[2] These reforms had a positive and significant effect on rice production (Pingali and Xuan 1992).

[3] A proper functioning of land markets is essential for a smooth readjustment of labour from agriculture to other industries (Adamopoulos et al 2017). This process is particularly important in Viet Nam since the share of the labour force devoted to agriculture decreased from 70 per cent in 1996 to 44 per cent in 2015 (ILOSTAT 2017).

transactions are increasingly substituting administrative land allocations as a way of accessing land with an overall positive impact on factor allocation in agriculture.[4]

3.2 Gender and land rights in Viet Nam

In general, female-headed households tend to have a lower endowment of non-land factors of production (i.e. labour and capital), hence they rely more on agricultural rentals for income generation. Female-headed households may also face higher transaction costs in searching for tenants and enforcing rental contracts. Household data from Ethiopia shows that plots rented out by female landlords have a lower productivity than those rented out by men. Holden and Bezabih (2006) say the reason for this gender differential might be that women are forced to rent their land to in-laws regardless of their capacity to farm the land. Holden et al. (2011) also find that the increases in tenure security created by a low-cost land certification program, had a relatively larger impact on female landlords' participation in rental markets than male landlords in Ethiopia.

Menon et al. (2017) argue that some features of the 1993 land reform in Viet Nam may have exacerbated gender disparities in property rights. First, the law allowed for only one name to be in the certificate as the sole owner of the land; in most cases the man—being the head of the household—had his name registered in the title. Second, the certification was granted at the farm level instead of the plot level (which could have allowed for some differentiation in asset ownership between husbands and wives). Finally, the authors mention that some of the guidelines in the land redistribution process favoured men over women,[5] and this inequality was aggravated by social norms and cultural traditions in which farm production decisions were made primarily by men (Tran 2001). Between 2000 and 2003 a series of legislative changes were conducted to address this gender disparity. The Marriage and Family Law of 2000 declares that any LUC obtained during the course of the marriage should be counted as common property (i.e. have both names in the title). Moreover, an amendment to the Land Law in 2003 indicates that certification has to be carried out at the plot level, which allows a legal differentiation in asset ownership for both husband and wife.[6] Nonetheless, some have argued that the implementation of these changes has not been properly enforced because of lack of administrative capacities in rural agencies (Ravallion and van de Walle 2008; World Bank 2002).

Although the agricultural system in Viet Nam, unlike China and many other African countries, is not characterized by land tenure insecurity and the land reforms have facilitated land transactions, it is still possible that differences in land rights across groups, with weaker rights for groups that have been traditionally more neglected (such as women), could affect the functioning of rental markets, particularly the remuneration of land rentals among relatives. In our sample, more than half of the plots that were rented out did not lead to any compensation for the landlord (monetary

[4] Vietnam and other post-socialist economies have traditionally relied on administrative reallocation of land instead of markets. However, evidence from China suggests that though reallocations assign land to households with low land endowments and numerous families, markets are a better mechanism since they ultimately assign the land to farmers with higher ability (Deninger and Jin, 2005; Kimura et al 2011).

[5] For example, the age of the household head and the number of household members in working age were considered for the amount of land allocated, given that the legal retirement age for women is 55 and for men 60 and female-headed households tend to have fewer working-age members, women tend to receive less land than men.

[6] Newman et al. (2015) say that, conditional on the plot having a certificate, registering the plot under two names as opposed to one does not affect productivity. They argue that including both names in the certificate could be a useful policy to increase women's bargaining power within the household, since there is no trade-off between productivity and including two names in the certificate instead of one. Menon et al. (2017) find that land-use rights held exclusively by women or jointly by couples result in higher household expenditures, more women's self-employment and lower household vulnerability to poverty.

or in-kind) and more than two thirds of the rentals occurred among relatives. The prevalence of such a high level of informal transactions raises concerns from two points of view. First, an extensive proportion of land cultivated under informal contracts can lead to lower levels of efficiency because those obtaining the land may not be the most suited to farm it.[7] Second—and the main aspect of our empirical analysis—the dominance of informal transactions in land rental markets could partly be a reflection of property rights imbalances among households, as those with weaker claims over land may fail to receive adequate and fair compensation.

4 Data and descriptive statistics

The empirical analysis will be based on the Vietnam Access to Resources Household Survey (VARHS), covering the period 2008–16. [8] The balanced panel survey includes observations from 2,131 rural households in 476 communes and 12 provinces, and is representative of the rural population in Viet Nam. The dataset contains precise information on household demographics, economic activities, land use and agricultural production.

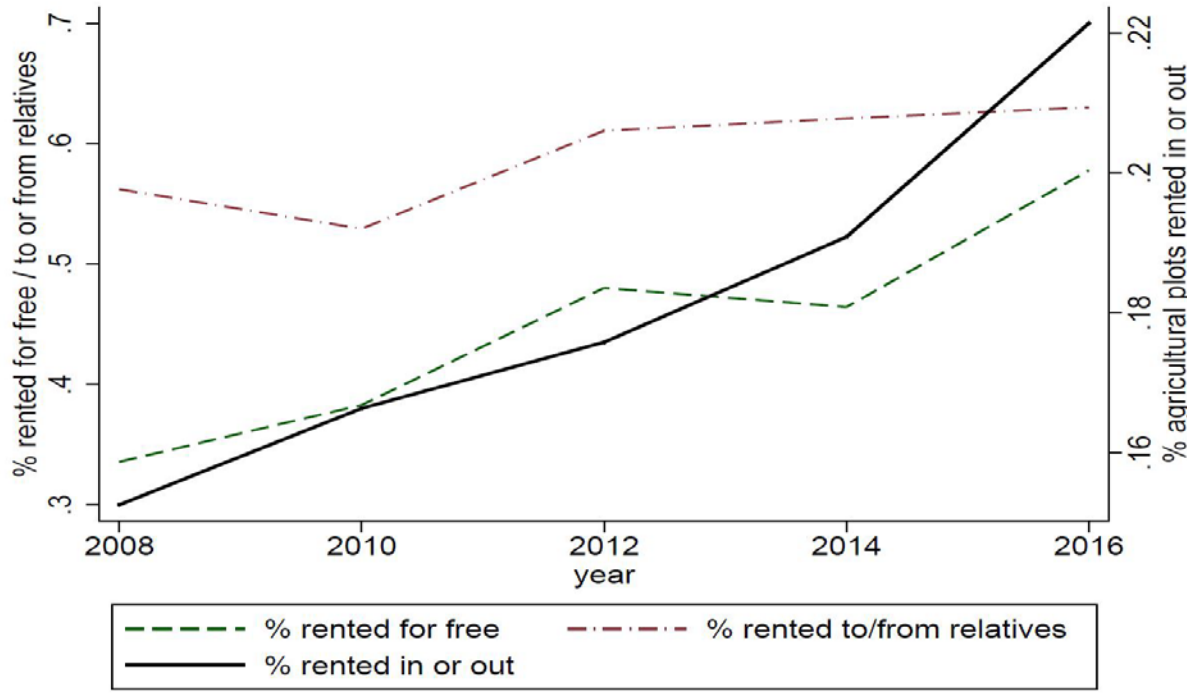
One of the most significant processes taking place during the period under analysis is the increase in the share of agricultural plots exchanged in land rental markets. As shown in Figure 1, this fraction has monotonically increased from 15 per cent in 2008 to more than 22 per cent in 2016. However, this expansion in rental market activities has been accompanied by a parallel increase in the share of plots leased for free and/or to relatives.[9]

[7] In Appendix A we can see that the tenants who rent in for free have considerably lower levels of labour, capital, land and agricultural ability.

[8] The survey was developed in collaboration between the Development Economics Research Group (DERG), Department of Economics, University of Copenhagen, and the Central Institute of Economic Management (CIEM), the Institute for Labour Studies and Social Affairs (ILSSA), and the Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), Hanoi, Viet Nam. The provinces included are, by region: Red River Delta: Ha Tay; North East: Lao Cai, Phu Tho; North West: Lai Chau, Dien Bien; North Central Coast: Nghe Anh; South Central Coast: Quang Nam, Khanh Hoa; Central Highlands: Dak Lak, Dak Nong, Lam Dong; and Mekong River Delta: Long An. The survey is carried every second year.

[9] Virtually all of the contracts contemplating some sort of compensation have the form of fixed rent. Therefore, we will now only distinguish between rental contracts with and without compensation, regardless of the type of payment arrangement (fixed rent or sharecropping).

Figure 1: Land rental markets in Viet Nam



Source: Authors' illustration based on VAHRS data.

In Table 1 we provide descriptive statistics of the main variables used in the analysis, separated by gender of the household head. For the entire sample, we observe that women have a higher (lower) percentage of land rented out (in) compared to men. This is not surprising given that female-headed households have on average fewer resources to conduct agricultural production (i.e. household members of working age, agricultural capital and draft animals).

Table 1: Mean comparison of household level variables by gender of the head

	Female headed	Male headed	p-value difference
All sample			
HH members in working age	2.05	3.02	0.00
Land farmed	3,361	7,227	0.00
Land owned	3,413	7,061	0.00
Draft animals owned	0.33	0.70	0.00
Years of education of HH head	7.68	8.37	0.00
Age of HH head	61.27	52.58	0.00
HH head has a paying job	0.20	0.36	0.00
Number of non-farming activities	0.24	0.33	0.00
Value of durable goods (log)	8.77	9.64	0.00
Net income	70,940	90,766	0.00
Average plot area (log)	6.50	6.77	0.00
% Plots with crop restrictions	45.98	41.23	0.00
% Plots with annual crops	89.30	84.20	0.00
% Plots with irrigation	73.10	74.63	0.21
% Plots defined as very fertile	5.22	4.86	0.48
% Plots defined as steep	0.49	0.76	0.10
% Agricultural plots with certificate	79.13	73.85	0.00
% Households renting in	14.53	17.74	0.00
% Households renting out	21.14	15.60	0.00
N	2,388	8,267	-

Households renting land out

% Land rented out	76.11	69.23	0.00
% Pure landlords	58.34	48.54	0.00
% Plots rented to relatives	71.02	65.31	0.04
% Plots rented for free	44.33	55.07	0.00
HH members in working age	1.53	2.32	0.00
Land farmed	1,023	4,170	0.00
Land owned	2,390	7,197	0.00
Draft animals owned	0.14	0.31	0.00
Years of education HH head	7.78	8.91	0.00
Age of HH head	65.17	58.65	0.00
HH head has a paying job	0.15	0.26	0.00
Number of non-farming activities	0.23	0.48	0.00
Value of durable goods (log)	8.66	9.79	0.00
Net income	66,724	128,624	0.00
Average plot area (log)	6.09	6.38	0.00
% Plots with crop restrictions	48.86	48.32	0.82
% Plots with annual crops	97.28	89.88	0.00
% Plots with irrigation	79.40	82.02	0.28
% Plots defined as very fertile	3.14	4.36	0.20
% Plots defined as steep	0.08	0.42	0.05
% Agricultural plots with certificate	83.63	74.97	0.03
N	505	1,290	-

Note: The mean comparison presented in the table refers to pooled household year level observations.

Source: Authors' calculation based on VAHRS data.

Additionally, female-headed households appear to have lower levels of income and wealth, fewer years of education and are less likely to carry out non-farm activities. Interestingly, despite the lower levels of education and wealth female landlords have a higher proportion of their plots titled. This could be an indication that women seek to certify their land more vigorously than men because the benefits in terms of strengthening property rights are larger for them.

When we observe the subsample of households that rent out at least one of their plots (i.e. landlords), the gender gap in agricultural inputs persists and in some cases it is even more noticeable; male landlords own almost three times the land female landlords own, also their income is almost twice as much. It seems that male-headed households who lease out land are better off than male-headed households that do not; they have more land and higher levels or income and wealth, they also have a higher number of off-farm activities. Nonetheless, the opposite is true for female landlords as they tend to have less land and lower levels of income and wealth than other female-headed households. Surprisingly, they even have slightly fewer non-farming activities than other female-headed households. This suggests that the factors determining rental market participation differ crucially depending on the gender of the household head. While men decide to participate in rental markets because it allows them to pursue opportunities outside agriculture and diversify their incomes, female landlords tend to rent out land because they are too old to farm it and lack the resources to do it properly.

These hypotheses are somehow supported by the observed rental behaviours. In fact, conditional on leasing out at least one agricultural plot, female-headed households tend to rent out a higher fraction of their land and are more likely to rent out all of their agricultural plots, becoming pure landlords. As for the potential constraints faced in choosing the tenant and negotiating the contract terms, the evidence is mixed. On the one hand, they rent a higher percentage of their land to their relatives, on the other they on average lend out for free a lower proportion of their plots.

5 Estimation strategy

In this paper we examine whether female-headed households are less likely to receive compensation when they rent out their land to relatives. We focus on the landowners that rent land to their relatives—which represent almost two thirds of all temporary land transfers—because these contracts are more likely to be influenced by social norms and the relative bargaining power between landlords and tenants. Furthermore, we explore the role of LUCs in the probability of receiving compensation when renting out a plot to a relative. If certificates strengthen landlord's property rights, we would expect that households who have their land titled—especially those with weaker *ex-ante* tenure security—are more likely to receive compensation for the land they rent because they can choose from a wider pool of possible tenants and have a stronger position in the negotiation process of the contracts. The first specifications we estimate take the following form:

$$\Pr(Free_{pht}) = \beta_1 Female_{ht} + \beta_2 LUC_{pht} + \beta_3 Female_{ht} * LUC_{pht} + X_{ht} + Z_{pht} + \tau_t + \zeta_c + \varepsilon_{pht} \quad (1)$$

Where the probability of a plot being rented out for free (conditional on being rented out to a relative) is modelled as a linear function of the gender of the household head, whether the owner has a land use certificate for the plot, their interaction term, a set of household (X) and plot (Z) level characteristics, and time and commune fixed effects. The estimate of β_1 would indicate whether female-headed households are more likely to receive no compensation for the plots they rent out, the sign of β_2 would tell us if the LUC plays a role in the probability of renting land for free (regardless of the landlord's gender) and a negative and significant estimate of β_3 would corroborate the hypothesis that LUCs have a gender-differential impact, increasing the probability of female-headed households to obtain some payment when leasing out land to their relatives. The introduction of household and plot level covariates helps to control for observable differences between female and male-headed households and in the plots they rent out, that arguably play a relevant role in determining the outcome of interest. Additionally, it mitigates our concerns related to endogeneity of land titling as it is non-random both at the household and the plot level, and is likely to be correlated with factors affecting rental behaviours as well.[10]

In our specification described so far, the outcome of receiving or not compensation for the land transferred is observed within a restricted sample: the landlords that decided to transfer land to a relative. Hence, we are excluding all the transactions between non-relatives, which ignore landlord's first level decision of tenant choice—renting to a relative versus renting to someone else. Such restriction can lead to problems of selection bias, which we address by using a double Probit model with Heckman selection. The decision to rent out to a relative, rather than any other household or institution, is expected to be the result of the household head's family connections in the commune and the level of trust the household has in other community members. Landlords that were born in the village and have a lower level of trust in their neighbours are expected to be more likely to lease land to their relatives, independently of her decision to charge for the rent or not. This two-step decision modelling is an improvement to the previous specification as it allows

[10] Although we control for community level observed and unobserved factors, as well as household and plot level characteristics, it is still possible that unobservable household and plot level variables are driving household's decision to obtain a LUC for a given plot. Ideally, we would like these unobservable factors to not be correlated with the probability of receiving compensation when leasing out land to a relative. However, in the absence of a viable instrument or an exogenous variation in our main explanatory variables, we cannot rule out the possibility that this is not the case; hence our estimates may suffer from omitted variable bias.

to account for the fact that plots leased out to relatives might differ in their unobservables (at the plot or at the household level) to those who are lended to other tenants.

For some, another important potential source of endogeneity comes from the decision of landowners to become landlords instead of cultivating their land. Certainly, other authors have estimated two-stage empirical models in which the first equation models the decision to farm the land or to transfer it (i.e. become a landlord) and the second stage accounts for the type of rental contract (Dubois 2002) or whether the land transfer was a sale or another type of transfer (Promsopha 2015). This paper does not model the decision to rent out land, and instead focuses on the relationship between rental payments and property rights, conditional on the farmer having decided to become a landlord.

Although it would be ideal to model all of these interrelated household choices (i.e. becoming a landlord, deciding to rent to a relative and deciciding whether to charge for the rent or not) including more than two steps in the decision model can be rather cumbersome (Cappellari and Jenkins 2006). Consequently, because we do not attempt to explicitely control for the selection into land rental market participation, our findings are only valid for the subsample of the landowner population that selects themselves into landlordship. However, if non-observed factors that drive the decision to become a landlord are also correlated with the probability of receiving rent when leasing out to a relative, our estimates could be biased. This is a problem which we cannot address directly, so our results are meant to be taken as illustrative of the importance that LUCs have for female-headed households who participate in land rental markets, and not an implication of the causal relationship between property rights and rental contract negotiation.

6 Results

In this section we discuss our results and provide an empirical analysis divided by region. Because of historical reasons, the evolution of social institutions and attitudes towards private property rights differ significantly between the North and the South of Viet Nam. Here we provide a brief description of the regional differences in rental market behavior and how they affect the relationship between tenure security and compensation for land rentals among relatives.

6.1 Full sample

In Table 2 we present the estimates of the first regression for the full household sample. Whenever the interaction term is not added (column 1 and 2), the estimate of β_1 is negative but not statistically significant. When the interaction term is included in column 3, it turns positive and statistically significant, suggesting that when female landlords lease untitled plots to their relatives, they are less likely to receive any type of compensation. The significance and size of coefficient β_3 suggest that possessing a title makes up for female-headed household's weaker tenure security, as it compensates for the higher probability of leasing land for free inferred from β_1. In contrast, β_2 is never statistically significant, indicating that LUCs have no impact on the probability that male-headed households rent out their land for free to relatives. Adding household and plot characteristics do not affect these conclusions and improves the significance level. The results are also robust when the sample is limited to those households whose gender of the head has never changed throughout the 5 waves (column 6).

In terms of economic significance, since the unconditional probability of a plot being rented out for free when the tenant is a relative is 0.64 and the estimates of $\beta 1$ range between 0.13 and 0.17,

female headed households renting out plots to relatives are 25 per cent less likely to receive any monetary or in-kind compensation, unless they possess a title for the plot.

Table 2: Plot level linear probability model (plots rented out to relatives)

Dep variable: Plot rented out for free conditional on being rented out to relatives						
	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.024	-0.024	0.130*	0.167**	0.158**	0.164*
	(0.04)	(0.04)	(0.07)	(0.08)	(0.08)	(0.09)
LUC		0.000	0.044	0.049	0.042	0.024
		(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
LUC*Female			-0.194**	-0.199**	-0.193**	-0.206**
			(0.08)	(0.08)	(0.08)	(0.09)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes	Yes	Yes	Yes
HH controls	No	No	No	Yes	Yes	Yes
Plot controls	No	No	No	No	Yes	Yes
N	2,930	2,930	2,930	2,930	2,930	2,596
Clusters	556	556	556	556	556	484
adj. R^2	0.381	0.381	0.381	0.385	0.387	0.370

Notes: Standard errors clustered at the household level in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Column 6 presents the results for the subset of households whose gender head has not changed throughout the period under analysis. Household controls: education and age of the household head, number of components in working age, number of draft animals, log of assets' value, net household income and household income decile. Plot level controls: fertility, slope and type of the plot (perennial vs annual crops or forestry), crop restrictions, log of area. The unconditional probability of a plot being rented out for free when the tenant is a relative is 0.64.

Source: Authors' computation based on VAHRS data.

Table 3 presents the estimates of the marginal effects of the Heckit model, for the sake of comparison we also include estimations of a Probit model. The main variables and set of controls included in these specifications are the same as in regression 1. The variables included in the first step of our Heckit model are a binary variable taking value 1 when the head of the household was born in the village and zero otherwise, and a second binary variable taking value one if the household would rather receive 1.5 acres to be shared with one non-related household, or zero if she prefers to receive 0.5 acres of land to be farmed independently. In both cases, the coefficients have the expected negative and statistically significant signs (farmers who were not born in the village and/or state a higher level of trust towards other unrelated households are less likely to lease land to their relatives).

Table 3: Average marginal effects of probit and Heckit models

	Heckit 1st stage	Heckit 2nd stage	Probit
Female	0.063	0.130*	0.172**
	(0.08)	(0.29)	(0.09)
LUC	-0.037	0.024	0.053
	(0.05)	(0.18)	(0.05)
LUC*Female	-0.069	-0.155**	-0.206**
	(0.08)	(0.32)	(0.09)
ρ		0.88*	
Year FE	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes
HH controls	Yes	Yes	Yes
Plot controls	Yes	Yes	Yes
N		4,378	2,288
Clusters		656	378

Notes: The dependent variable for the first stage of the Heckit model is to rent out to relatives conditional on renting the plot out. While for the second stage and the Probit is renting the plot out for free conditional on the plot being rented out to a relative. Standard errors clustered at the household level in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The coefficients represent the average marginal effects. Household controls: education and age of the household head, number of components in working age, number of draft animals, log of assets' value, household income decile. Plot level controls: fertility, slope and type of the plot (perennial vs annual crops or forestry), crop restrictions, log of area. The exclusion restrictions are a variable indicating if the household head was born in the village and household head's self-declared preferences between receiving 1.5 acres of land to be farmed with non-relatives or 0.5 acres not to be shared. Both coefficients are negative and statistically significant at the 5 per cent level.

Source: Authors' computation based on VAHRS data.

The average marginal effects of the Probit are in line with the coefficients of the linear probability model presented in Table 2 and have the same interpretation. As far as the Heckit model is concerned, the estimates are lower in magnitude but are consistent with the results of our Linear and Probit models. Interestingly, the estimate of ϱ, namely the correlation between the error terms of the latent regressions of the two stages, is positive. This suggests that plots that are more likely to be rented out to relatives are also more likely to be leased out without any compensation. The first stage also shows that once all the household and plot level observables are included in the analysis, female-headed households are not more likely to rent out to relatives and that possessing a land title has no significant impact on the choice of the tenant. In the end, we find evidence to support our main hypothesis; LUCs are positively related to the probability of female-headed households receiving compensation for the land they rent out to relatives. This result suggests that certificates play a significant role in improving property rights for groups that have been traditionally more neglected.[11]

[11] One possible concern for our results is that female-headed households that are giving out land for free may be receiving some other type of compensation for this transfer (i.e. protection from shocks, transfers, gifts, etc.). Indeed, Promsopha (2015) finds that Vietnamese households tend to not sell their land and instead just transfer it temporarily or as a gift to protect themselves against risk. In Appendix B we explore the possibility that households renting out land for free to their relatives may receive other types of compensation or be better protected against risk. Our results show that landlords lending land for free are not more likely to receive transfers from relatives nor do they receive more aid when being hit by a shock (bad crop or illness). Therefore we conclude that it is more likely that our results are being driven by opportunistic behaviour from related tenants to the weaker property rights of female landlords.

6.2 Regional analysis

There are substantial regional differences that are likely to have shaped the way land markets evolved in Viet Nam. While the Northern regions of Viet Nam had a collectivized agricultural production system since the 1950s, in the South this system was not introduced until the late 1970s. Even after the country's reunification, many farmers in the South resisted collectivization: as late as 1986—when collectivization was starting to be reversed in all the country—less than 10 per cent of the rural households in the Mekong Delta region had been organized into cooperatives (Pingali and Xuan 1992).

Another important difference between the Northern and Southern provinces that is relevant for the compensation in land rental markets is the performance of local institutions (formal or informal) that deal with risk. Due to the longer prevalence of collective farming, many agree that communal risk-coping institutions work better in the North. Smith (1997) says that in the North households that are negatively affected by illness or crop damage rarely need to sell their land to cope with the negative shock. Prompsopha (2015) also shows land sales are less common in the North of Viet Nam due to their better social risk-sharing institutions. These regional differences are also present in the context of our analysis. As we can see in Table 4, the prevalence of informal land transactions is higher in the Northern region. Landlords in the North do not receive any compensation for 57 percent of the plots they rent out, compared to 33 percent in the South. Similarly, the fraction of plots that are leased out to relatives is also higher. The same pattern can be seen for plots rented in, although the difference is less noticeable.[12]

Table 4: Type of landlords, tenants and rental agreement by region

	North	South	p-value difference
Plots rented out to relatives	0.67	0.60	0.00
Plots rented out for free	0.57	0.33	0.00
N	2,100	1,022	-
Plots rented in from relatives	0.50	0.42	0.00
Plots rented in for free	0.38	0.26	0.00
N	3,454	924	-

Source:Authors' computation based on VAHRS data.

In Table 5 we show the results of equation 1 divided by region. Starting from the simple OLS models, we can see that the coefficients presented in the previous section are mostly capturing the dynamics of the Northern region. In fact, for the Southern region, female-headed households are not significantly less likely to receive compensation for the plots they rent out to relatives (β_1 is not significantly different from zero) and the possession of a land use certificate does not seem to

[12] Provinces in the Northern Lowlands (Ha Tay, Phu To and Nghe An) and Northern Highlands (Lao Cai, Lai Chau and Dien Bien) areas are included in the Northern region, while the Southern region contains provinces located in the Southern Lowlands (Quang Nam, Khan Hoa and Long an) and in the Southern Highlands (Dak Lak, Dak Nong and Lam Dong).

make any difference in the negotiation of rental terms. On the other hand, in the North female-headed households without a certificate have, according to our estimates, a 20-percentage-point higher probability of renting out plots for free when the tenant is a relative, unless they have a LUC for the plot.

The results of the Heckit specifications are in line with the linear probability model.[13] However, the estimates of the first stage provide some additional interesting insights. Indeed, it seems that in the South women are more likely to rent their plots to relatives, unless they have a land use certificate. Therefore, although LUCs do not to have any impact on the negotiation of the contract terms with relatives, they seem to allow female-headed households to rent their land to a broader spectrum of tenants.

Table 5: OLS and Heckit estimates by region

	North			South		
	1st Stage Heckit	2nd Stage Heckit	OLS	1st Stage Heckit	2nd Stage Heckit	OLS
Female	0.062	0.174**	0.200**	0.464**	-0.032	-0.114
	(0.09)	(0.07)	(0.08)	(0.19)	(0.22)	(0.20)
LUC	-0.031	0.074	0.071	-0.039	-0.100	-0.134
	(0.06)	(0.05)	(0.04)	(0.11)	(0.18)	(0.14)
Female*LUC	-0.098	-0.243***	-0.271***	-0.458**	0.080	0.179
	(0.10)	(0.08)	(0.09)	(0.19)	(0.26)	(0.20)
ρ	0.59		-	0.41		-
year FE	Yes	Yes	Yes	Yes	Yes	Yes
commune FE	Yes	Yes	Yes	Yes	Yes	Yes
households covariates	Yes	Yes	Yes	Yes	Yes	Yes
plot covariates	Yes	Yes	Yes	Yes	Yes	Yes
N	3454		2370	924		560
Clusters	441		379	215		177

Notes: Standard errors clustered at the household level in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01. The dependent variable for the first stage of the Heckit model is to rent out to relatives conditional on renting the plot out. While for the second stage and the OLS is renting the plot out for free conditional on the plot being rented out to a relative. The coefficients of the Heckit models represent the average marginal effects. Household controls: education and age of the household head, number of components in working age, number of draft animals, log of assets' value, household income decile. Plot level controls: fertility, slope and type of the plot (perennial vs annual crops or forestry), crop restrictions, log of area. The exclusion restrictions are a variable indicating if the household head was born in the village and household head's self-declared preferences between receiving 1.5 acres of land to be farmed with non-relatives or 0.5 acres not to be shared. In both cases, ρ is not significantly different from 0.

Source: Authors' computation based on VAHRS data.

Overall, it seems that land use certificates have an important impact on female-headed household's behavior in land rental markets. Generally, the possession of a formal document confirming their ownership seems to facilitate their participation is more market-driven formal transactions. In the North, where most of the land rental transactions involve relatives, female-headed households are more likely to receive some type of compensation for the plot they lease out to relatives when they have a LUC. Similarly, in the Southern provinces, where transactions among relatives are somehow

[13] Note that, unlike the case of the aggregate analysis, the parameter ρ is not significantly different from zero for both the regions.

less predominant (although they still represent a considerable share), land certificates reduce the probability of female-headed landlords to lease land to their relatives.

7 Conclusions

In the period under analysis, Viet Nam has witnessed a remarkable growth in land rental market activity, with a nearly 50 percent increase in the share of agricultural plots that were rented in or out by rural households. Remarkably, a considerable number of these temporary land transfers occurred among relatives and did not contemplate any type of compensation to the landowner.

In this paper we have provided evidence that some of these informal transactions are being driven by the differences in power between female and male-headed households. According to our results, female-headed households are less likely to receive any rent payment when they lease out their plots to relatives, unless they have a certificate for the plot. This suggests that they might have weaker rights over the land, but legal documents strengthen their claims over their assets and increase their bargaining power in the negotiation of the rental terms.

There are significant differences between the Northern and Southern provinces in terms of their social institutions and attitudes towards market-oriented policies, particularly in agrarian issues. We show that our results are being driven mostly by the dynamics of the land rental markets in the North. In this region, where land transactions among relatives are common both for male and female landlords, female-headed households are more likely to receive compensation when they have a LUC for plots they lease out to relatives. In the South, the possession of a land title increases the likelihood of female-headed households to rent out their land to non-relatives, while it does not affect the probability of receiving a payment when leasing out to relatives.

In general, our results show the importance of clear and enforcable property rights in the choice of tenant and negotiation of contract terms. Some of the most common arguments against land certification programs is that they may not convey a real change in the *de facto* native property rights system. However, most of the studies fail to consider that some groups may have weaker *ex-ante* property rights and the formalization of ownership rights can make a significant increase in the tenure security for these vulnerable groups. Morever, none of the previous studies of land rental markets in Viet Nam distinguished between formal and informal transactions. Here we show how the implementation of a private usage rights market can have positive impacts on the potential participants that tend to be in a less privileged position in terms of claims over land.

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APPENDIX A: Misallocation and informal transactions

As highlighted by the recent literature on agricultural factors misallocation (Chen et al. 2017), active land rental markets tend to lead to more efficient distribution of land across farmers. However, the impact of informal transactions might not be as beneficial as they can be driven by non-market logic and do not necessarily result in transfers of resources to the most productive individuals.

Unfortunately, due to the structure of our data, we are not able to test directly this hypothesis as we have no information on the use tenants make of the plots rented out from the households in our sample. However, we can provide some illustrative evidence on that by observing the differences in agricultural endowements and unobservable farmer ability of the households farming plots rented in for free or for a fix rent. The results of this mean comparison test are shown in Table A.

Table A: Mean comparison of endowments of tenants of plots by type of contract

	Free	Fixed rent	p-value difference
Household components in working age	3.03	3.25	0.00
Draft animals (Yes = 1)	0.31	0.34	0.06
Value of agricultural capital	29,298	37,506	0.07
Land owned (square metres)	3,818	4,186	0.40
Agricultural ability	0.02	0.17	0.00

Source: Authors' computation based on VAHRS data.

Apparently, there is no significant difference in the total amount of land owned, while households renting agricultural plots in for free have lower endowments in terms of labour force, value of agricultural capital and, crucially, of unobserved farmer specific ability. These findings suggest that there are systematic differences between tenants obtaining the land for free and those who pay for that, where the latter are more productive and have higher endowements of complementary non-land agricultural inputs.

APPENDIX B: Transfers from relatives

As pointed out in the previous sections, one of the main concerns related to the increasing share of informal transactions in the land rental markets, beside the arguments related to the potential resulting inefficiencies, is that landlords might fail to receive an adequate compensation for their land. The issue is particularly crucial as a large fraction of the landlords in our sample is constituted by poor female-headed households.

However, there is the possibility that households renting their agricultural plots for free might receive some sort of indirect compensation in the form of cash or in-kind transfers not directly included in the contract.[14] We are not directly able to rule out this possibility as we do not have any further information on the contract terms and on the identity of the relatives acting as tenants, but we can study whether renting out plots to relatives for free is correlated with an increase in the probability of receiving transfers from relatives (not necessarily the same) or in their total amount.

In order to check whether it is the case, the following household regression is estimated:

$$Transfer_{ht} = \beta_1 land\ for\ free_{ht} + \beta_2 shock_{ht} + \beta_3 land\ for\ free_{ht} * shock_{ht} + X'_{ht}\gamma + \varepsilon_{ht}$$

and the resulting estimates are displayed in Table B.

In particular, the dependent variable is either a dummy taking value 1 when the household receives monetary transfers from its relatives (panel A) or the logaritm of the value of these transfers (panel B). We are mostly interested in assessing whether having some plots of land rented out to relatives for free increases the probability and/or the amount of the transfers received, and so in the coefficient β_1. In the first two columns, the main explanatory variable is a dummy that indicates whether the household is renting at least one plot for free, while in columns 3 and 4 the log of the area of land rented out for free is considered.

Another important factor to be taken into account is the occurence of shocks. Arguably, households being affected by shocks are more likely to receive some form of support from relatives. Additionally, it might be the case that leasing land for free to relatives might be conceived as a way to ensure a safety net in case of unexpected negative shocks (Promsopha 2015). If that was the case, we should observe a positive coefficient β_3. The measure used to capture shocks is the percentage of person days lost due to adverse circumstances in the previous year.

According to our estimates, neither renting at least one plot to relatives for free nor the total area of land rented out to relatives without receiving any direct compensation has any impact on the probability of receiving some transfers (Panel A) or on the amount of the transfers received (Panel B). Moreover, although households suffering shocks are more likely to receive transfers, we find no evidence of a higher amounts being transferred to those who have some land leased out for free to relatives.[15] These findings seem to exclude these free rental contracts have any indirect benefit to the landlords.

[14] From the questionnaire, we only know whether any form of direct compensation (in cash or kind) was contemplated by the rental agreement.

[15] The regressions presented include household level covariates (columns 1 and 3) or fixed effects (columns 2 and 4), but the results are robust to a wide range of specifications.

Table B: Transfers from relatives outside households

Panel A

Dependent Variable: Household receives transfers from relatives (Yes = 1)				
	(1)	(2)	(3)	(4)
Renting out for free	-0.015	-0.006	-	-
	(0.02)	(0.03)		
Area rented for free (log)	-	-	-0.002	-0.011
			(0.01)	(0.02)
% Person days lost (shocks)	0.405***	0.343***	0.407***	0.346***
	(0.06)	(0.09)	(0.06)	(0.09)
Interaction	0.004	-0.010	-0.002	-0.017
	(0.12)	(0.17)	(0.02)	(0.02)
Year FE	Yes	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes	Yes
Household covariates	Yes	No	Yes	No
Household FE	No	Yes	No	Yes
N	10,655	10,655	10,655	10,655
Adj-R^2	0.122	0.102	0.122	0.102

Notes: Standard errors clustered at the commune level in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01. Household controls: gender, education and age of the household head, number of components in working age, log of assets' value, whether the household has experienced an agricultural shock and if the household is renting out any plot.

Panel B

Dependent Variable: Value of transfers received from relatives (log)				
	(1)	(2)	(3)	(4)
Renting out for free	-0.037	0.081	-	-
	(0.22)	(0.28)		
Area rented for free (log)	-	-	-0.000	0.011
			(0.04)	(0.04)
% Person days lost (shocks)	3.742***	3.515***	3.773***	3.540***
	(0.58)	(0.83)	(0.58)	(0.84)
Interaction	0.877	0.040	-0.092	-0.024
	(1.23)	(1.58)	(0.17)	(0.22)
Year FE	Yes	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes	Yes
Household covariates	Yes	No	Yes	No
Household FE	No	Yes	No	Yes
N	10,655	10,655	10,655	10,655
Adj-R^2	0.149	0.151	0.149	0.151

Notes: Standard errors clustered at the commune level in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01. Household controls: gender, education and age of the household head, number of components in working age, log of assets' value, whether the household has experienced an agricultural shock and if the household is renting out any plot.

Source: Authors' computation based on VAHRS data.