

Land Reform and Welfare in Vietnam: Why Gender of the Land-Rights Holder Matters

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Abstract: Vietnam's 1993 Land Law created a land market by granting households land-use rights which could be exchanged, leased, inherited, sold or mortgaged. This study uses quantitative and qualitative methods to analyze whether increased land titling led to discernible improvements in the economic security of households, and whether land titles in women's names had markedly different effects as compared to titles held by men. Using a matched sample of households from Vietnam's 2004 and 2008 Household Living Standards Survey, we find that on balance, land-use rights held exclusively by women or jointly by couples result in several beneficial effects including increased household expenditures and women's self-employment, and lower household vulnerability to poverty. Titles held by men have statistically significant impacts on their probability of self-employment in agriculture and on food poverty. Results from interviews conducted in Vietnam support these conclusions with evidence that the main channel through which women's ownership of land rights mattered is increased bargaining power in the home.

Keywords: Land-use certificates, property rights, economic security, Vietnam

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I. Introduction

Improving control over assets such as land may have powerful consequences for women's autonomy and household well-being. The availability of collateral facilitates borrowing, which, among other things, gives women the capital required to finance home-based self-employment. In addition to facilitating greater access to credit, land rights can also affect women's economic decision-making through increased security of land tenure. Greater security of tenure strengthens the incentive to undertake long-term agricultural investments such as planting perennial crops, which, in turn, may free up women's labor for non-agricultural activities. Each of these changes helps to boost women's income-generating capacities, which in turn contributes to greater economic security of households.

In practice, greater control over land in developing countries has come primarily through land titling programs. In the case of Vietnam, the 1993 Land Law created a land market by giving households the power to exchange, lease and mortgage their land-use rights. The law change prompted one of the largest land-titling programs seen to date in the developing world both in terms of scope and pace of implementation; within seven years, rural households were issued about 11 million land-use certificates (Do and Iyer 2008). However, the reform process did involve drawbacks including uneven implementation in coverage and speed across localities, and an increase in rural landlessness (Ravallion and van de Walle 2008).

Given the comprehensive scope and somewhat controversial nature of its land reform, Vietnam constitutes an interesting case for examining how the economic security and vulnerability of households were affected by the creation of an asset that could be traded. By creating the basis for a new formal market in land, the 1993 Land Law contributed to an enormous change in the security of land tenure with potentially large consequences for

household decisions regarding agricultural investments and labor inputs. Furthermore, the Land Law may also have had strong implications for women's relative well-being, especially in light of the feminization of Vietnam's farm production that began in the 1980s. Estimates indicate that in the 1990s alone, household farm employment by men decreased by 0.3 percent annually while that of women rose by 0.9 percent annually (Akram-Lodhi 2004). To date, 58 percent of the female labor force is employed in agriculture as compared to 51 percent of the male labor force (ILO 2012).

With proportionately more women employed in agriculture, an important question is whether increased land titling in Vietnam led to overall improvements in economic security for households, and whether the gender of the person who holds the land right matters for different household outcomes. Using a mixed-methods approach, this research examines whether land-use rights registered in the names of both husbands and wives or women only have different impacts on measures of households' welfare and vulnerability as compared with land-use rights registered in the name of men only. Results from regressions estimated with data on matched households from Vietnam's 2004 and 2008 Household Living Standards Surveys (VHLSS) indicate that on balance, land rights held by women either exclusively or jointly improve the economic security of households with increases in household expenditures and in women's self-employment, and reductions in household vulnerability to poverty. Land rights held exclusively by men have beneficial impacts on the incidence of food poverty and on male self-employment probabilities in agriculture. Results from interviews conducted with women in Vietnam further indicate that women who own land are more likely to be employed outside the home and feel that their land ownership improved their economic status. To the best of our knowledge, this

research is among the first few to analyze the effects of gender-segregated land rights on measures of household-level economic security and vulnerability in a developing country.

II. Background on Land-Use Rights in Vietnam

Since the beginning of the government's "Doi Moi" policy in 1986, Vietnam has engaged in a massive transition from a centrally-planned economy to a market-based one. With transition came a surge in economic growth at rates that exceeded many other comparable economies in terms of overall GDP as well as exports, agricultural production and worker productivity. The transition entailed a distinct shift in patterns of land use in the agricultural sector with a reallocation of communally-held land toward land controlled by individual households.¹ At the same time, the mode of agricultural production shifted from agricultural cooperatives towards farm households.

In 1988, the government began the move away from a collective system based on agricultural cooperatives with a new policy that allowed farm households to lease plots of land for ten to fifteen years. The reform was intended to improve incentives for farmers to invest in their land. However, in practice, the land-use rights were not seen as secure as they were not tradable and consequently, many farmers were reluctant to undertake long-term investments in their fields (Do and Iyer 2008). To improve the incentive structure facing farm households, the government passed a new Land Law in 1993 that extended the lease period to twenty years for land used to produce annual crops and fifty years for land used to produce perennial crops. In addition, it allowed farmers to trade, transfer, rent, bequeath and mortgage their land-use rights.

The law change was implemented through the issuance to farm households of land-use rights — known in Vietnam as Land-Use Certificates (LUCs). Although the issuance of LUCs proceeded quickly, implementation across the provinces remained uneven. In 1995, just one-

third of farm households had been allocated LUCs. Problems included delays on the part of the management agencies in setting guidelines for issuing LUCs, land-use tax rates that were initially too high, inaccurate records on prior landholdings, large numbers of disputes that required resolution and debts that needed to be cleared before LUCs could be issued, and lack of awareness among farm households and local authorities (especially in remote areas) about the importance of formal land-use rights.

Issuance of land-use rights also demonstrated uneven patterns in terms of gender since formal land rights were held predominantly by men. In principle, the legal reforms did not discriminate in granting rights because legal decrees on implementation of the Land Law relied on gender-neutral language such as “individuals” and “users” in referring to the targeted beneficiaries of the reforms. Rather, gender disparities in the issuance of land-use rights resulted from the implementation process. For example, a large source of gender disparities was that in the initial years, the LUCs had space for only one name which was to be filled by the household head. Because more households with both husbands and wives present were headed by the husband rather than the wife, the unintended consequence was that fewer women had their names on the LUCs. This changed with a 2001 government decree that stipulated that the names of both husband and wife should be inscribed on the LUCs if the land was jointly owned.² However the new regulation was not well enforced, especially since the government agency in charge of rural land titling lacked the administrative capacity to ensure full compliance across provinces. In fact, a survey conducted in relatively remote rural provinces after 2001 found that most new LUCs issued still had space for only one name (World Bank 2002).

Another source of gender discrepancies was that many localities stipulated that the amount of acreage allocated to a household should depend on the ages of household members

with individuals of working age receiving the largest allocations and young children the smallest. Because female-headed households tended to have fewer adults of working age, female-headed households on average received less land than male-headed households. Contributing to this discrepancy, the legal retirement age for women remained five years earlier than that for men (age 55 for women as compared to 60 for men). As a result, the amount of land allocated to women ages 55 to 59 was half that allocated to men of the same age. Gender inequities in the issuance of land-use rights were also exacerbated by social norms and cultural traditions in which decisions on farm production and the ownership of assets were made primarily by men.

III. Land Rights and Control of Assets

Conceptual Framework

In principle, land rights have beneficial impacts on household behavior through increased security of land tenure and the freedom from expropriation; greater access to credit from being able to use land as collateral; reduced vulnerability to food price shocks; and gains from trade in the rental and sales markets for land.³ With regard to the security of land tenure, land-right holders are more likely to make long-term investments in their land if they are confident that their holdings cannot be expropriated. Allowing land to remain fallow for longer periods of time to increase soil fertility, investing in improved drainage and irrigation, and planting perennial crops rather than annual crops are all examples of relatively costly investments that farmers might be reluctant to undertake in the absence of secure land rights. In addition to enhancing investment incentives, a low risk of expropriation decreases the need for farmers to spend private resources on protecting their land which may liberate capital for other agricultural investments.

In terms of the second channel, stronger land rights can make it easier to obtain loans in the credit market. Land is a widely used asset for garnering loans from banks that require

collateral. On the third channel, securing women's rights to land has beneficial welfare impacts by reducing vulnerability when economic shocks occur, or after divorce or widowhood. These beneficial welfare effects do not necessarily arise from simply improving household's access to land since intra-household distribution is not always equitable (Lastarria-Cornhiel *et al.* 2011). In terms of the final channel, households have the opportunity to generate gains from trade in land sales and rental markets when land rights are transferable. Households may then use the income to finance expenditures and land-based investments.

Each of these channels affects control over resources. Higher yields due to agricultural investments, greater access to credit, and gains from trade in land markets can give beneficiaries the financial capital they require to finance a host of economic activities. Moreover, long-term investments in land may be labor-saving after the initial planting stage, with a resulting shift of labor hours into other non-agricultural activities (Do and Iyer 2008). Opportunities to begin new entrepreneurial ventures and to increase the scale of existing microenterprises can be particularly beneficial in regions with limited paid-employment opportunities due to labor-market discrimination or insufficient labor demand (Karlan and Morduch 2009). Such benefits may disproportionately accrue to women.

In this context, employment in home-based enterprises can provide earnings that improve women's socioeconomic status and that of their households. Further, income generation and access to credit can have feedback effects on measures of autonomy such as an increased role in household decision making, greater mobility, and improved bargaining power vis-à-vis male members in the household (Pitt *et al.* 2006). Women's employment in income-generating activities may strengthen their negotiating power by improving their fallback position. Greater

autonomy and a shift in intra-household dynamics that favor women may in turn reduce domestic violence, lower fertility and improve health outcomes (Agarwal 1994).

Earlier Findings for Vietnam

Earlier analyses of Vietnam's land reforms have tended to examine changes in agricultural production and income at the household level without a focus on gender. In particular, Do and Iyer (2008) used province-level variation in the speed of implementation and two waves of Vietnam's Living Standards Survey from the 1990s to identify effects of the land reform. The study found that as a consequence of acquired land rights, households allocated a larger proportion of cultivated areas toward perennial crops and increased their labor supply in non-farm activities. Since household borrowing did not exhibit any variation during the period of analysis, these results are attributed mainly to the additional security of land tenure rather than increased access to credit. In contrast to Do and Iyer's (2008) finding of little variation in household access to credit, Kemper and Klump (2010) found that the formalization of property rights through LUCs has a substantial positive effect on household borrowing from formal sources. Explanations for the difference in results include the use of a more recent wave of the VHLSS (2004) as well as a more direct measure of land-use rights at the household level.

Van den Broeck *et al.* (2007) found that land-use rights positively impacted rice yields in male-headed households but not in female-headed households. Possible explanations are that the land ownership right is not viewed in the same way when women have their names on the LUCs; men may experience relatively greater access to credit following land titling; or women may be more risk averse than men in offering their land as collateral. This last explanation is confirmed with evidence based on a set of controlled experiments in Fletschner *et al.* (2010), which found

that women in Central Vietnam were relatively less likely to choose risky options even after controlling for the area of land owned by the household.

In terms of household vulnerability, Imai *et al.* (2011) found that Vietnamese households with more land are less vulnerable to poverty, but this analysis does not disaggregate land ownership by gender. Further, Markussen *et al.* (2011) examined repercussions of the Vietnamese government's restrictions on types of crops that may be grown (especially rice) that accompanied land reforms. The study found that these restrictions helped to promote food security and production without jeopardizing household income.

In their discussion of the land reforms, Ravallion and van de Walle (2008) note that the reallocation process of agricultural land favored men mostly because there was space for only one name on the LUCs. Consequently, women lost control of the main productive asset owned by the household even though they might have carried primary responsibility for working it. Moreover, the authors argued that the land allocations were disproportionately biased toward male-headed households in excess of what the efficient allocation would have been, so that female-headed households were treated unequally in allocation decisions at the local level as well. Another source of gender disparities has occurred in land rental and sales markets. In particular, Deininger and Jin (2008) found that Vietnamese women who head households face bias in the market for land sales. Finally Linde-Rahr (2008) found that Vietnamese households with a higher proportion of female members appear to have a lower willingness to pay for secure property rights as compared to households with fewer female members, suggesting that land market imperfections may induce women to behave as if they are risk-averse. Our study contributes to this literature by studying the effects of LUCs demarcated by gender on measures of household welfare and vulnerability to poverty.

IV. Data and Methodology

Data Sources and Sample Composition

The study uses household survey data from the 2004 and 2008 waves of the Vietnam Household Living Standards Surveys.⁴ The VHLSS, begun in 2002 and conducted every two years by Vietnam's General Statistics Office, has data on a range of individual and household characteristics including income, ethnicity, region of residence, household structure, hourly wages, education, and income earned from different agricultural activities. The surveys are panel in nature with a subset of the households surveyed in one wave tracked and re-surveyed in the following wave. The 2004 and 2008 waves contain specialized modules on land use with detailed information on registration of LUCs and the identity of the first and second stakeholders (the 2006 wave did not collect land use information).⁵ In both 2004 and 2008, the full samples contain information for 9189 households.⁶ In addition to the household data, we also utilized data on communes in both years for information on commune-level characteristics including geographical terrain, poverty rates, major religion and access to roads and electrical power.

We began by constructing a panel data set of households and their members from 2004 and 2008 following an established and widely-used method outlined in McCaig (2009). The panel allows us to identify departure of old (2004) members, arrival of new (2008) members, and whether there was a switch in holdings of LUCs from male-only to female household members (either held alone or jointly with the husband). The panel also allows us to control for heterogeneity in household preferences and other unobservables. Construction of the panel involved several steps that began with using the 2004-2006 household identifier cross-walks to match households across these years. Using gender and year of birth of household members between 2006 and 2008, a similar cross-walk was created for households between 2006 and

2008. Matched households between 2004 and 2008 were identified by combining information from the 2004-2006 and 2006-2008 household identifier cross-walks. Using gender and year of birth of members to identify households is the same technique employed in McCaig (2009). Several corrections were made because at the household level there were 8 “matched” households in 2008 that were not included in the 2004 dataset, and there were 6 “matched” households in 2004 that were not included in the 2008 dataset. These 14 households were dropped in order to construct a balanced panel of households over 2004 and 2008. The final dataset at the household level has 1728 matched households across the two years.⁷

After creating a panel dataset at the household level for 2004 and 2008, we proceeded to match individuals within households across these years. Our main reason for matching individuals within households is to ensure the integrity of the household matches, that is, to ascertain that the household matches are correct.⁸ For individuals common across both years, the main discrepancy was that the identification codes for the same person in a particular household changed from one year to the next. For example, a woman may have an identification code of 1 if she was head of the household in 2004, but in 2008 the same woman may be identified with an identification code of 3 if she was now living with her adult son and his wife and was no longer considered to be the head of the household. In such cases, we assigned a modified identification code value in 2008 that matched their identification code value in 2004 (so in the preceding example, this woman would be assigned a revised identification code of 1 in 2008 so that she would be correctly matched with her individual-level information in 2004). In total, 22 percent of the individuals (1853 out of 8445 people) fell into this category.

As expected, there were new people present in 2008 but absent in 2004 (822 out of 8445 people or about 10 percent), and some individuals from 2004 could no longer be tracked in 2008

(1242 out of 8445 people or about 15 percent). Reasons for new members in 2008 who were absent in 2004 include the birth of a child, a new spouse, or an older child returning home after being away in 2004. In cases such as these, we assigned revised identification codes in 2008 that tallied with their relative position in 2004 had they been present in the household. Alternatively, there were cases where members in 2004 were no longer members of that same household in 2008. Examples include the death of a spouse or an older child leaving home. In cases such as these, the individuals were assigned a revised 2008 identification code that had missing values. The different categories of “corrected” individual-level identification codes for 2008 were then used to match individuals across 2004 and 2008.⁹ In total, after accounting for attrition and new additions to households across 2004 and 2008, we were able to match about 75 percent of the individuals (6381 out of 8445 people) perfectly. The final panel dataset at the household level has 1728 matched households containing 7623 individuals in 2004 and 7203 individuals in 2008, for a total of 14,826 individuals across both years. Of the 1728 households in each year, 1296 have male heads and 432 have female heads in 2004. In 2008, 1274 households have male heads and 454 households have female heads. Since the dependent variables we consider are at the household level, the estimations below are run on the sample of 1728 matched households in each year for a total of 3456 observations.

The VHLSS questions on land-use rights in 2004 and 2008 are at the plot level. Thus, households had responses for multiple plots of land for a particular type of land and/or for more than one type of land. For purposes of this study, the corresponding LUC variables are aggregated to the household-level. The fact that households had multiple plots of land implies that the variables describing whether a LUC is inscribed in the name of the husband only, the wife only, and/or both the husband and the wife are not mutually exclusive.

Several other sources of information were used to compile the data. Per capita expenditures across 2004 and 2008 were deflated with both a regional deflator provided in the original VHLSS databases, and with the annual consumer price index for Vietnam (GSO 2012). Data from several different years of the *Statistical Handbook of Vietnam* and the *Statistical Yearbook of Vietnam* were used to include information on province-level characteristics including population, number of farms, gross agricultural output, and land area (GSO 2009; 2008; 2005). Further, we used the general poverty threshold in either year to construct measures of the proportion of households falling under the poverty line. We also constructed the proportion of all households falling under the food poverty line, an indicator of more abject poverty in which households do not have sufficient income to consume a diet of 2100 calories. The poverty and food poverty lines are calculated by Vietnam's General Statistical Office (GSO) with support from the World Bank; the 2004 benchmarks were published in the *Vietnam Poverty Update Report* (SASS 2006) and the 2008 benchmarks were provided by the GSO.

Sample Statistics

Sample means for the dependent and independent variables are found in Table 1 (means are weighted using the VHLSS sampling weights). There are three measures of economic security and two measures of economic vulnerability. The economic security measures include per capita household expenditures, women's self-employment and men's self-employment in agriculture. Per capita household expenditures is a widely use aggregate measure of household welfare; we focus on self-employment in agriculture since this sector employs a relatively large proportion of women.¹⁰ While per capita expenditures increased from 2004 to 2008, both forms of self-employment appear to have declined over this time span. The vulnerability measures are whether the household falls below the overall poverty line or the food poverty line. In keeping

with other evidence on the success of Vietnam's fight against poverty, both these measures decreased from 2004 to 2008 (Imai *et al.* 2011).

The key independent variables of interest are whether a LUC is held just by a man, just by a woman or jointly by husband and wife. The regressions include a host of household characteristics as control variables, the choice of which was guided by Imai *et al.* (2011) and Allendorf (2007). As indicated in Table 1, these variables include age, gender, schooling, and marital status of the household head; household ethnicity, size, gender composition, and dependency ratio; household geographical indicators (rural versus urban); ownership of livestock; land area; and type of land owned – for annual crops that are replanted every year, for perennial crops that do not require annual replanting, and land owned for residential purposes.¹¹ The regressions also control for commune characteristics (such as geographical terrain, major religion, infrastructure and poverty status), and for province-level features (including population, number of farms, gross real agricultural output and land area).

Sample statistics for land-use certificates by different types of land and by the gender of the holder are reported in Table 2. Panel A shows that for the sample of matched households in 2004 and 2008, 75 percent of all households in the sample held a LUC in 2004 with a decline to 60 percent in 2008.¹² The explanation is that the share of households who responded that they have any type of land fell over time from 95 percent of all sample households in 2004 to 71 percent in 2008. This relatively large decline is in keeping with other studies on Vietnam that have noted dramatic increases in land sales and rental market activity over a relatively short time-span arising from the advent of transferable land-use rights and a rise in off-farm work. For instance, using the 1992-93 and 1998 VHLSS surveys, Deininger and Jin (2008) documented that at the national level, the proportion of land sales increased from 0.3 percent in 1992-93 to

almost 2 percent in 1998 (an almost six-fold increase). Despite the decline in land ownership, LUC coverage increased during the period. If we condition on households that owned any type of land at the time of the survey, then 81 percent of households had a LUC in 2004 and this share increased to 86 percent in 2008.

Delving deeper into these estimates, the share of newly registered LUCs (defined as those that were acquired in the previous year) is comparatively low in these data. For instance, considering households in 2004, only 57 households reported registering LUCs in the previous year (about 3 percent of the sample). In the case of households in 2008, only 3 households reported registering LUCs in the previous year (about 0.2 percent of the sample). Furthermore, 150 households had LUCs held by males only in 2004 and then switched to either jointly-held LUCs or female-only held LUCs in 2008 (about 9 percent of the sample). Thus the proportion switching away from male-only held LUCs to jointly-held or female-only held LUCs is comparatively higher than the share of newly-registered LUCs in our sample; this is the framework within which our results should be interpreted.¹³

In Table 2, the highest incidence of land ownership through formal land-use rights occurs for residential land in 2004 and annual agricultural land in 2008. Also in both years, rural households with any type of land are more likely to hold a LUC relative to urban households with any type of land. Further, ethnic minorities have higher rates of possessing land-use certificates as compared to the Kinh/Chinese majority, with a particularly large differential in 2008. Panel B shows that in both years, at least 60 percent of land-use certificates of any type of land are held in the name of the male only as compared to about 20 percent of land-use certificates held in the name of females only. Interestingly, the incidence of jointly-held LUCs increased for each type of land from 2004 to 2008, rising from 16 percent of LUCs to 18 percent

for any type of land. The increase in joint holdings from 2004 to 2008 is especially large for perennial agricultural land.

A closer look at land-use certificates among landholders by province in Figure 1 indicates that in 2004, provinces in the northern part of Vietnam tended to have the greatest coverage of land-use certificates while provinces in the south had relatively less coverage. This geographical variation is consistent with the argument that lack of awareness about the importance of formal land-use rights caused implementation of LUCs across provinces to remain uneven after the new Land Law was passed. By 2008, coverage had spread geographically to include the central and southern provinces.¹⁴

Econometric Methodology

A potential challenge in analyzing the effect of LUCs on measures of economic security and vulnerability is selection bias. In particular, progressive or egalitarian households may be more likely to seek joint land-use rights and also have favorable economic indicators for women. Due to similar concerns about household-level unobservables, Deininger *et al.* (2008) tested for wealth bias in the allocation of land rights in Ethiopia. Pitt *et al.* (2006) also used a latent method framework and employed a village fixed-effects-instrumental variables technique to correct for selection at the household and village levels. We control for endogeneity arising from unobserved preferences or selection using a household fixed-effects framework. Province and commune-level characteristics are added to this framework to control for systematic variations in registration patterns at these levels. The specific details of our model follow.

To estimate the *causal* impact of LUCs, we use a method that controls for household-level unobservable characteristics related to preferences and tastes that may determine patterns of LUC registration and measures of economic security or vulnerability simultaneously. The

standard remedial technique is instrumental variables. However, identifying an instrument that satisfies the exclusion restriction, remains free from correlation with omitted variables and has adequate strength, is not straightforward in this context. For example, province-level characteristics that affected the speed of implementation of the reforms may at first seem a valid instrument as in Do and Iyer (2008). However, such characteristics would not satisfy the exclusion restriction here since although they might be related to LUC coverage, such characteristics are also likely to be correlated with other province level measures that may also determine household education and labor market outcomes. For example, funding for education programs may be determined at the province level and simultaneously be related to the speed of implementation of laws (well-funded and administered provinces may implement laws more efficiently and have more resources for programs that build human capital). Since we do not possess information on health, education, and other social development entitlements at the province-level, these indicators would be omitted in our context and may invalidate the exclusion restriction. Given the difficulties associated with identifying an instrument that is relevant yet randomly assigned, we adopt a model that conditions out household-level heterogeneity in a fixed-effects framework. The 2004 to 2008 time window is arguably small enough such that household-level unobservable characteristics may be treated as time-invariant. Region and time dummies and their interactions are included to control for other factors at these levels that may be changing contemporaneously.¹⁵

The details of the empirical model are as follows:

$$y_{ijrt} = a_0 + a_1 H_{ijr} + a_2 C_{jr} + a_3 T_t + a_4 (R_r \times T_t) + \beta X_{ijrt} + \delta LUC_{ijrt} + \varepsilon_{ijrt} \quad (1)$$

where i denotes a household, j denotes a commune, r denotes a region and t denotes time. The notation H_{ijr} is the time-invariant household-level unobservable, C_{jr} is the time-invariant

commune-level unobservable, R_r is the time-invariant region-level unobservable and T_t is a time dummy which controls for effects in 2008 relative to 2004. X_{ijrt} is a matrix of household, commune and province characteristics and LUC_{ijrt} is a vector of up to (potentially) three types of land use rights held by the household: male only, female only or joint (three separate dummies for having an LUC with each of the name possibilities). If the household owns no land, these dummies are all zero by definition. Households with land may also have zero values for LUCs and this is controlled for by the variable that measures land area. We include interactions of regional indicators with the time dummy instead of commune and time interactions in order to facilitate model convergence and to keep the number of parameters manageable (there are six regions versus 702 communes in the data). Taking differences of equation (1) over time leads to the household fixed-effects model that sweeps out the household and regional time-invariant characteristics. Household, commune, and province characteristics in X_{ijrt} are identified since they vary from 2004 to 2008 as indicated by the sample means in Table 1. The vector of coefficients of interest δ represents the impact of the three different categories of land-use certificates on y_{ijrt} , which is composed of five alternative indicators. In this specification, the coefficients in δ are identified from variations in LUC_{ijrt} over time. All models cluster standard errors at the commune level.

V. Results

The Effect of Land-Use Rights on Measures of Economic Security

Table 3 presents results with estimates separated into three categories: all households, rural households and urban households.¹⁶ Since household choices and the relevance of LUCs may vary by rural or urban residence, we disaggregate impacts along these lines. The rural analysis does not include residential LUCs which are expected to be primarily urban and subject

to different regulations. Coefficients are presented for the main variables of interest - the gender-disaggregated LUC variables. The models also include the full set of control variables in Table 1.¹⁷ Appendix Table 1 reports all results for per capita expenditure; results for the other dependent variables are not reported in the paper but are available on request. The discussion begins with an evaluation of the effect of LUCs on log per capita household expenditures which is considered a general measure of household welfare. Results in Panel A indicate that LUCs held by females only have a statistically significant and positive effect on per capita expenditures. Estimates indicate that in households where LUCs are registered in the names of women, per capita household expenditures are 10.4 percent higher. The most likely channel through which this increase occurs is a marginal improvement in a household's access to credit and the ability to undertake agricultural investments. Moreover, a comparison of the results for the rural and urban sub-samples indicates that virtually all of this effect occurs in the rural sector.

Panel B shows that in the total household sample, the share of household women who are self-employed in agriculture rises by 5.5 percentage points with female-only held LUCs. Women's self-employment in agriculture rises by a similar amount (5.0 percentage points) in the case of LUCs held jointly. These positive coefficients for female-only held LUCs and jointly-held LUCs could reflect the fact that women are growing crops for subsistence.¹⁸ A similar result is found for men in Panel C where the share of household men who are self-employed in agriculture rises by 4.3 percentage points when the LUCs are held by men only. Again, most of this effect is evident in rural areas. Female-only held LUCs are found to reduce the proportion of men self-employed in agriculture among urban households.

Panels D and E investigate the impact of LUCs on the incidence of poverty and food poverty at the household level. Estimates indicate that LUCs held by women only and LUCs

held jointly reduce the incidence of poverty at the household level by about 6 and 5 percent, respectively. The second measure of household vulnerability considers the incidence of food poverty. Male-only held LUCs reduce the incidence of food poverty among all households by 2.5 percent, a finding consistent with the interpretation that the formalization of land-use rights generates an income effect induced by greater access to credit and returns to agricultural investments. The effect for male-only held LUCs is slightly higher in the rural sector with a decrease of 3.3 percent in the incidence of food poverty. Formalized land rights are not found to have statistically significant impacts on poverty or food poverty among urban households.

We implemented three statistical tests for each of the five outcomes in Table 3. The first tested for joint equivalence of the three LUC variables - hence all that might matter is whether the household has an LUC and not the identity of the LUC holder. The second tested for equivalence of the male-only and female-only LUC and the third tested for equality between male-only and jointly-held LUCs. It is clear from Table 3 that for per capita expenditures and the two poverty measures, we cannot reject the null hypothesis across all three tests. That is, there is no statistical evidence that the gender of the LUC holder matters. For the two categories of self-employment in agriculture, there is evidence that the identity of the LUC holder matters. For example, the test for joint equivalence of LUCs is strongly rejected (p -value of 0.002) for female self-employment in agriculture. Moreover, there is evidence that male-only and female-only LUCs have statistically distinct impacts on this dependent variable (p -value of 0.016) as does male-only and jointly held LUCs (p -value of 0.003). Similar patterns are found in the case of male self-employment in agriculture, except that we cannot reject the equivalence of male-only and female-only held LUCs in the full sample and among rural households. Hence for the

self-employment dependent variables at least, there is differentiation in impacts by the identity of the LUC holder and gender of the land rights holder does matter.

VI. Qualitative Evidence

Although land rights are expected to bring benefits to both men and women, we focused on women in collecting qualitative evidence since we were keen on understanding what this reform has meant to them specifically.¹⁹ Twenty-five women were interviewed in Thot Not, a district of the city of Can Tho which is located in the Mekong Delta and ranks as Vietnam's fifth largest city.²⁰ All respondents live in a rural part of Thot Not. Although Thot Not's main industry is agriculture (rice, soybeans, vegetables, and fishing), the economy has grown rapidly and has continued to urbanize as transportation, tourism and the service sector have prospered. The local government granted LUCs to eligible residents of Thot Not during the 1990s. Before the land reform, residents were given a white certificate when they purchased land. This certificate was not a legal document; it acted as a receipt to prove they had paid for a certain plot of land. The certificate did not map out the boundaries of the land however, and this increased disputes over land size and ownership between neighbors. These white certificates were brought to the local government office during the land reform so that the land could be officially measured. After the fees were paid, an official "measurement team" came to the land in question to take measurements and photographs. LUCs were then administered as legal documents (and were changed in color from white to red) that named the owner of the land, specified the type of land, and included images of the outlines of land boundaries.

Our survey instrument included questions regarding land ownership, land use, demographics, decision making in the home and community, gender roles and the respondent's opinion of her status within the home and the community. These data provide new insights into

Vietnamese gender roles and decision making power within the households. Overall, 12 of the 25 women interviewed own the land on which they live and have their names on LUCs while 13 women do not have their name on a LUC (but may still live on land owned by their spouses or other relatives).

Table 4 provides a set of sample means for a variety of demographic and socioeconomic characteristics for the interview subjects. Respondents' ages range from 24 to 63 years with an average age of 43. The group of women who do not have their names on LUCs are on average younger (39 years) than the group of women who do (47 years). Respondents have anywhere from zero to six children, with an average of two. On average, women in the sample have seven years of schooling with about a quarter of the sample having completed high school. The slightly higher measures of educational attainment for women with no LUCs could reflect the fact that they are on average quite a bit younger and more likely to have been affected by compulsory schooling legislation. All the respondents belong to the Kinh ethnic group, the largest ethnic group in Vietnam today. Overall 64 percent are Buddhist - most of the remaining women stated that they do not follow any religion. Of all those interviewed, 19 respondents (76 percent) are married, three are single, two are widowed and one is divorced. Among the women LUC holders, four have just their names on the LUC as sole holders and are currently single (never married, divorced, or widowed). In contrast, the remaining eight women who hold LUCs are all married and hold the titles jointly with their husbands. The respondents who do not have their names on LUCs said that they live on land owned by either their spouses or other family members. Among the women who do not hold LUCs, one is single, one is widowed and eleven are married.

Table 4 further shows that in 64 percent of all cases, the respondents hold land for farming and housing purposes while 32 percent hold land for housing (residential) purposes only. In terms of employment, four women stated that they are not employed and that they are housewives. Of the remaining respondents, most are self-employed as rice farmers. Other types of self-employment included pig farmer, soybean seller, baker, juice vendor, and seamstress. The rest of the women worked in wage-employment (as a farm hand, government worker, construction worker or accountant). All women who have their names on LUCs are employed - this is in contrast to the 69 percent employment rate among those who do not have their names on LUCs. Moreover women who have their names on LUCs on average earn more than women who do not: two thirds of women with their name on a LUC earned more than 900,000 VND per month (about US \$43). Interestingly only 8 percent of respondents had ever used property as collateral. Finally 68 percent of all respondents felt economically secure, with a higher percentage of women with no LUC feeling economically secure (77%) as compared to women with a LUC (58%). This may be because more single, widowed, and divorced women belong to the latter group. Panel B's results for the sub-sample of currently married women indicate that women with and without their names on LUCs compare equally on this measure.

Table 5 demonstrates self-reported decision-making power within the household and specifically, the percent of respondents who said that they have sole or joint decision-making power for the issue at hand. The table shows clearly that for many of the indicators, women who have their names on a LUC report having greater decision-making power than women who do not have their names on a LUC. This result holds for decisions on borrowing money, paying bills, buying groceries, livestock transactions, agricultural-product transactions, land transactions, farm-equipment transactions, home-maintenance transactions, and voting in

elections. For example, while two-thirds of women with their names on LUCs had decision-making power over the purchase or sale of agricultural products, less than 10 percent of women without their names on a LUC had decision-making power for this type of transaction.

Among currently-married women, women with a LUC in their name were less likely to have a spouse who refused to allow them to work outside of the home compared to women without a LUC in their name (13 percent versus 45 percent). However, women without LUCs are about as likely as women with LUCs to make decisions about the number of children and the education and health of their children. The most plausible explanation is that women who do not have land in their names are younger on average and have younger children than women who have LUCs – there is thus more parental involvement for them in health and schooling decisions.

Table 6 examines respondents' opinions regarding status and empowerment in the household and community. Women who have their names on LUCs are more likely than those who do not to say that women's opinions are equal to men's in the household (83 percent versus 69 percent) and in the community (83 percent versus 62 percent). A similar conclusion applies for women who think that their land ownership will enhance their status in their homes (83 percent versus 39 percent). For example, one woman who currently does not have her name on the LUC stated, "I currently feel shy and embarrassed because I do not own the land. I feel that my husband has a higher voice. I have already discussed this with him and when the government renews the program in eight years, he will add my name to the certificate."

More women who have their names on LUCs believe they will feel empowered by the current or future (through inheritance) possession of land than those who do not (67 percent versus 54 percent). When asked if she feels empowered, one woman who held a joint LUC with her husband for farming but not for housing stated "yes. I feel that my rights are shared jointly

but he has more power because it is the land that he inherited. Once I inherit, I will feel empowered because when he is still alive, I will have my own property as my father will divide his land equally between his children. Because we live in harmony, my property will be shared between me and my husband and maybe I will have more rights.” When asked if since they own a LUC or once they were expected to own LUCs in the future, did or would their responsibilities increase, more women without land than women with land thought that their responsibilities did or would increase (92 percent versus 75 percent).

When asked if owning LUCs changes their standing in the community, about 54 percent of women who do not own LUCs stated that their standing would increase in the community if they owned one. However, only a third of women feel that their status has increased within the community since they obtained LUCs in their names; the remaining women felt that their status has stayed the same. Many stated this was because their parents owned land as well and they felt the benefits of their parents’ status. One woman stated that before her husband inherited a LUC from his parents, “my position was higher than my husband at that time. Then, when my husband got his parents’ LUC, the position changed [he now has higher status than her].” She continued to state that once she has her name on the certificate, she will feel that her position will be “higher than other people but not higher than my husband because I have my name on the certificate later than my husband.”

Some women who do not have their names on LUCs are still optimistic about their status in their homes and community. For example, one woman stated the following in regards to the LUC program, “if both the husband and wife have their names on the LUC, they will be happy. I think this is important for both names to be on the property to protect the rights of the woman if a divorce happens. It ensures the property will be divided equally between husband and wife. It is

a good policy because it ensures the rights of women.” While not all respondents understand the LUC program (one fifth of the women were unable to explain it), all feel that the policy is good. One woman stated, “It makes a person able to live life more easily because it is a law that you have the right to decide what to do with your land...” Another respondent stated, “I feel more confident because before I never thought about property rights.”

These interviews lend support to the argument that the LUCs were viewed as being beneficial by women and were strongly correlated to qualitative measures of increases in bargaining power. However, given the small sample size and the fact that the interviews were conducted in only one region of Vietnam, we are careful to underscore that this evidence cannot be given a causal interpretation.

VII. Closing Remarks

The study has provided new evidence on the relationship between land titling and the economic welfare of Vietnamese households, paying particular attention to whether gender of the land-rights holder matters. Greater gender equality in land rights is important in light of the priority that Vietnam’s government has placed on meeting the goals of the 2006 Law on Gender Equality. Thus, increased land titling, especially for women, remains high on the government’s agenda. A substantial literature has shown that improving women’s access to land rights is important in improving women’s relative status, particularly for women who are widowed or divorced (Deere and León 2001; Whitehead and Tsikata 2003).

The analysis has shown that Vietnam’s large-scale land titling program resulted in an increase in the share of all landowners who held land-use rights, and in joint-holdings by husbands and wives for any type of land between 2004 and 2008. We find that land-use rights held exclusively by women have, on balance, beneficial effects on household expenditures, self-

employment by women and the incidence of household poverty. Jointly-held LUCs are also found to bring beneficial effects in reducing poverty. In contrast, male-only held LUCs are particularly important for reducing the incidence of food poverty in the household, and for male self-employment in agriculture. Statistical tests reveal that LUC impacts by gender of the holder are distinct only in the case of self-employment in agriculture. We were hindered in the precise measurement of impacts in urban areas given small sample size.

What do these measures of economic security and household vulnerability imply for women's empowerment? The qualitative data provides direct evidence that respondents overwhelmingly felt that women with their names on a LUC have relatively more decision-making power on a variety of economic, political and social scales. A woman who will inherit farmland from her mother stated, "Everybody thinks I am poor... When I inherit land, maybe it will be different. People will not look down on me." Standard economic models argue that improvements in a woman's fallback position serve to strengthen her relative bargaining position within the home and her ability to contribute to the economic viability of households. On balance, our results indicate that land-use rights in women's names do indeed serve this role, thus providing a clear rationale for strengthening procedures to encourage titling to land for everyone, particularly women. Such procedures may have more potent impacts if they are embedded in a broader framework that strengthens social safety nets and changes existing institutional structures that may currently disfavor women.

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Table 1. Sample Means for Household Characteristics

<i>Variable</i>	<i>2004</i>		<i>2008</i>	
	<i>Mean</i>	<i>Std. Dev.</i>	<i>Mean</i>	<i>Std. Dev.</i>
Dependent Variables				
Log per capita hh expenditures (log points)	8.189	(0.624)	8.789	(0.601)
% of hh women self-employed in ag	0.472	(0.387)	0.423	(0.392)
% of hh men self-employed in ag	0.423	(0.377)	0.402	(0.384)
HH lives below poverty line	0.174	(0.380)	0.116	(0.320)
HH lives below food poverty line	0.067	(0.249)	0.058	(0.233)
Independent Variables				
<i>Household Property Rights</i>				
LUC held by male only	0.474	(0.499)	0.370	(0.483)
LUC held by female only	0.161	(0.367)	0.118	(0.323)
LUC held by male and female jointly	0.118	(0.323)	0.109	(0.312)
<i>Household Control Variables</i>				
Age of hh head (years)	49.283	(13.618)	51.732	(13.082)
HH headed by male	0.744	(0.437)	0.730	(0.444)
Grade in school completed by hh head (level)	6.965	(3.668)	7.243	(3.597)
HH head has diploma in vocational training	0.107	(0.309)	0.120	(0.325)
HH head is married	0.806	(0.395)	0.804	(0.397)
HH ethnicity is Kinh, Chinese	0.886	(0.318)	0.892	(0.311)
% of hh members who are female	4.355	(1.566)	4.114	(1.638)
HH Size	0.505	(0.189)	0.520	(0.198)
Dependency ratio	0.318	(0.253)	0.294	(0.274)
Land area owned by hh (sq. meters)	5.138	(14.090)	5.773	(21.529)
Lives in urban area	0.214	(0.410)	0.238	(0.426)
HH has livestock	0.612	(0.488)	0.522	(0.500)
HH has annual agricultural land	0.634	(0.482)	0.606	(0.489)
HH has perennial agricultural land	0.127	(0.333)	0.138	(0.345)
HH has residential land	0.861	(0.346)	0.274	(0.446)
<i>Commune characteristics</i>				
Commune is in coastal area	0.044	(0.206)	0.047	(0.212)
Commune is in delta area	0.456	(0.498)	0.441	(0.497)
Commune is in hills area	0.060	(0.237)	0.055	(0.228)
Commune is in low mountain area	0.109	(0.311)	0.109	(0.311)
Commune is in mountain area	0.094	(0.291)	0.088	(0.283)
Commune is Buddhist	0.360	(0.480)	0.311	(0.463)
Commune is poor	0.134	(0.340)	0.122	(0.327)
Commune has power	0.753	(0.431)	0.739	(0.439)
Commune has road	0.739	(0.439)	0.732	(0.443)
Commune has market	0.468	(0.499)	0.475	(0.500)
<i>Province characteristics</i>				
Province population (millions)	1.774	(1.211)	2.146	(1.827)
Province no. of farms (thousands)	1.831	(2.117)	2.163	(2.019)
Province real ag. output (trillions dong)	2.539	(1.504)	3.174	(1.870)
Province area (thousands of sq. km)	4.949	(4.054)	5.139	(3.997)

Notes: Means weighted using sampling weights included in the 2004 and 2008 VHLSS. All numbers are proportions unless indicated otherwise. Sample size is 1728 households in each year.

Table 2. Sample Statistics for Land-Use Certificates (in weighted proportions)

Panel A: Proportion of All Sample Households who Hold Land-Use Certificates

	<i>Any Type of Land</i>		<i>Annual Ag Land Only</i>		<i>Perennial Ag Land Only</i>		<i>Residential Land Only</i>	
	<i>2004</i>	<i>2008</i>	<i>2004</i>	<i>2008</i>	<i>2004</i>	<i>2008</i>	<i>2004</i>	<i>2008</i>
All Households	0.753	0.597	0.565	0.518	0.116	0.126	0.703	0.253
Rural Households	0.799	0.720	0.677	0.637	0.137	0.149	0.738	0.308
Urban Households	0.582	0.204	0.154	0.133	0.041	0.051	0.572	0.075
Kinh/Chinese Ethnicity	0.751	0.580	0.544	0.491	0.110	0.120	0.701	0.236
Ethnic Minorities	0.767	0.738	0.728	0.736	0.169	0.169	0.713	0.396

Panel B: Proportion of Land-Use Certificates Held by Males, Females, and Joint Holders

	<i>Any Type</i>		<i>Annual Ag Land Only</i>		<i>Perennial Ag Land Only</i>		<i>Residential Land Only</i>	
	<i>2004</i>	<i>2008</i>	<i>2004</i>	<i>2008</i>	<i>2004</i>	<i>2008</i>	<i>2004</i>	<i>2008</i>
Male Only	0.630	0.620	0.645	0.604	0.684	0.614	0.609	0.611
Female Only	0.213	0.198	0.190	0.188	0.168	0.153	0.206	0.168
Joint Holders	0.157	0.183	0.142	0.164	0.133	0.205	0.158	0.182

Notes: Means weighted using sampling weights included in the 2004 and 2008 VHLSS. Sample size is 1728 households in each year.

Table 3. Effects of Land-Use Certificates on Economic Security Indicators Using Fixed-Effects Models

	<i>All Households</i>	<i>Rural Households</i>	<i>Urban Households</i>
<i>Panel A: Log per Capita Household Expenditures</i>			
LUC Held by Male Only	0.049 (0.031)	0.042 (0.036)	0.055 (0.065)
LUC Held by Female Only	0.104*** (0.037)	0.083* (0.048)	0.082 (0.072)
LUC Held Jointly	0.050 (0.037)	0.053 (0.043)	-0.002 (0.087)
Test for equivalence of LUCs	1.180 [0.308]	0.490 [0.614]	0.360 [0.701]
Test for equivalence of male only and female only LUCs	2.280 [0.131]	0.930 [0.334]	0.120 [0.733]
Test for equivalence of male only and jointly held LUCs	0.000 [0.969]	0.120 [0.725]	0.380 [0.540]
Number of observations	3456	2697	759
<i>Panel B: Proportion of Household Women Self-Employed in Agriculture</i>			
LUC Held by Male Only	-0.009 (0.024)	-0.007 (0.031)	0.013 (0.033)
LUC Held by Female Only	0.055* (0.032)	0.068 (0.043)	0.063 (0.050)
LUC Held Jointly	0.050** (0.024)	0.049 (0.031)	0.061 (0.038)
Test for equivalence of LUCs	6.310 [0.002]	5.340 [0.005]	1.170 [0.314]
Test for equivalence of male only and female only LUCs	5.810 [0.016]	5.460 [0.020]	0.980 [0.324]
Test for equivalence of male only and jointly held LUCs	8.730 [0.003]	6.420 [0.012]	1.860 [0.175]
Number of observations	3410	2664	746
<i>Panel C: Proportion of Household Men Self-Employed in Agriculture</i>			
LUC Held by Male Only	0.043** (0.020)	0.052** (0.024)	0.012 (0.039)
LUC Held by Female Only	0.018 (0.025)	0.053 (0.035)	-0.075** (0.032)
LUC Held Jointly	-0.010 (0.024)	0.001 (0.028)	-0.071 (0.048)
Test for equivalence of LUCs	3.010 [0.050]	2.690 [0.069]	3.980 [0.021]
Test for equivalence of male only and female only LUCs	0.890 [0.347]	0.000 [0.986]	7.950 [0.005]
Test for equivalence of male	5.690	5.310	1.740

only and jointly held LUCs	[0.017]	[0.022]	[0.189]
Number of observations	3306	2576	730

Panel D: Incidence of Poverty at the Household Level

LUC Held by Male Only	-0.033 (0.022)	-0.033 (0.028)	-0.019 (0.036)
LUC Held by Female Only	-0.060* (0.036)	-0.062 (0.052)	-0.013 (0.027)
LUC Held Jointly	-0.054* (0.028)	-0.057 (0.038)	-0.014 (0.028)
Test for equivalence of LUCs	0.660 [0.515]	0.580 [0.559]	0.020 [0.977]
Test for equivalence of male only and female only LUCs	0.670 [0.413]	0.430 [0.510]	0.040 [0.847]
Test for equivalence of male only and jointly held LUCs	0.800 [0.372]	0.750 [0.386]	0.040 [0.847]
Number of observations	3456	2697	759

Panel E: Incidence of Food Poverty at the Household Level

LUC Held by Male Only	-0.025* (0.015)	-0.033* (0.019)	-0.010 (0.022)
LUC Held by Female Only	-0.031 (0.019)	-0.042 (0.028)	-0.013 (0.014)
LUC Held Jointly	-0.018 (0.019)	-0.028 (0.025)	-0.008 (0.016)
Test for equivalence of LUCs	0.190 [0.825]	0.110 [0.898]	0.090 [0.914]
Test for equivalence of male only and female only LUCs	0.110 [0.745]	0.100 [0.754]	0.050 [0.829]
Test for equivalence of male only and jointly held LUCs	0.160 [0.687]	0.070 [0.794]	0.010 [0.909]
Number of observations	3456	2697	759

Notes: Weighted to national level with weights provided by the VHLSS. Standard errors, clustered by commune, in parentheses. *p*-values in square brackets. The notation *** is $p < 0.01$, ** is $p < 0.05$, * is $p < 0.10$. All regressions include a constant term; controls for types of land; controls for household, commune, and province characteristics; and commune dummies, a time dummy and region-time dummy interactions. Sample size is 1728 households in each year for a total of 3456 observations.

Table 4. Respondents' Demographic and Socioeconomic Characteristics

Panel A: Full Sample	All Women n=25	Women w/ LUC n=12	Women w/ no LUC n=13
Age in years	43	47	39
Head of household	40	58	46
Number of children	2	2	2
Years of education	7	6	8
Completed high school (%)	28	25	31
Religion (%)			
No religion	32	42	23
Buddhism	64	58	69
Caodaism	4	0	8
Marital Status (%)			
Single	12	17	8
Married	76	67	85
Divorced or Widowed	12	16	8
Type of Land			
Residential only	32	25	38
Farm only	4	8	0
Residential and farm	64	67	62
Type of Employment (%)			
Not in labor market	16	0	31
Self-employed	60	83	38
Hired worker	24	17	31
Woman's income/month (%)			
0-300,000 VND	16	0	31
300,001-600,000 VND	12	17	8
600,001-900,000 VND	20	17	23
900,001 + VND	52	67	38
Borrowed money in past year (%)			
Did not borrow money	72	75	69
Borrowed from bank	0	0	0
Borrowed from family	12	8	15
Borrowed from money-lender	8	8	8
Borrowed from other source	8	8	8
Ever used property as collateral (%)	8	17	0
Feels economically secure (%)	68	58	77
Panel B: Currently Married Women	All Women n=19	Women w/ LUC n=8	Women w/ no LUC n=11
Years of spouse's education	7	8	6
Spouse completed high school (%)	5	13	0
Spouse borrowed money in past year (%)	21	50	0
Feels economically secure (%)	74	75	73

Table 5. Respondents Have Decision-Making Power (% of Respondents Answering Yes)

Panel A: Full Sample	All women n=25	Women w/ LUC n=12	Women w/ no LUC n=13
Decides borrowing money	72	75	69
Pays bills	96	100	92
Buys groceries	88	92	85
Decides purchase/sale livestock	24	25	23
Implements purchase/sale livestock	24	33	15
Decides purchase/sale ag products	36	67	8
Implements purchase/sale ag products	52	75	31
Decides purchase/sale/mortgage land	56	75	38
Implements purchase/sale/mortgage land	56	75	38
Decides purchase/sale/mortgage farm eq	20	33	8
Implements purchase/sale/mortgage farm eq	12	25	0
Decides home construction/maintenance	52	58	46
Implements home construction/ maintenance	20	33	8
Received health care in last year	72	58	85
Vote in the last election	72	83	62
Own decision for who to vote	72	83	62
Panel B: Currently Married Women	All Women n=19	Women w/ LUC n=8	Women w/ no LUC n=11
Spouse received health care in last year	21	25	18
Decides number of children	74	75	73
Decides health care of children	89	88	91
Decides education of children	84	75	91
Spouse does not allow respondent to work outside of home	32	13	45

Note: Answering yes includes respondents who have complete control over the decision and respondents who decide jointly with their husbands.

Table 6. Respondents' Opinions on Status and Autonomy (% of Respondents Who Agree)

	All women n=25	Women w/ LUC n=12	Women w/ no LUC n=13
Women's opinions equal to men's in household	76	83	69
I attend community meetings and/or participate in community decision making	44	42	46
Women participate enough in community	60	58	62
Women's opinions equal to men's in community	72	83	62
Owning land enhances status in home	60	83	39
I feel empowered by my current or future possession of land	60	67	54
I have more responsibilities owning land	84	75	92
My community standing increases with land	44	33	54
I understand the LUC program	80	83	77

Appendix Table 1. Effects of Land-Use Certificates on Log per Capita Household Expenditures

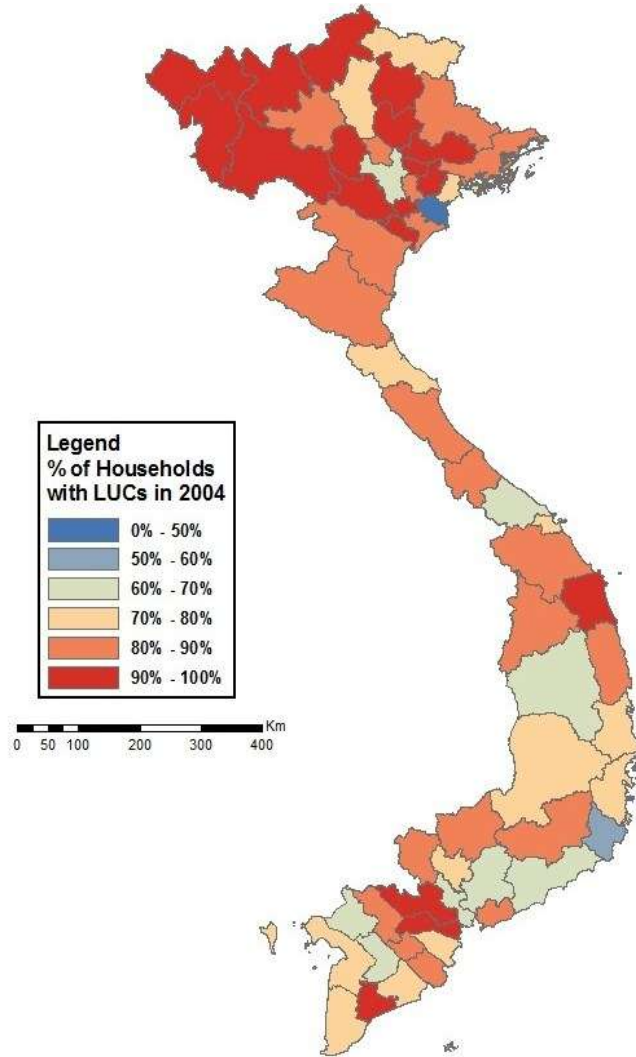
	<i>All Households</i>	<i>Rural Households</i>	<i>Urban Households</i>
LUC held by male only	0.049 (0.031)	0.042 (0.036)	0.055 (0.065)
LUC held by female only	0.104*** (0.037)	0.083* (0.048)	0.082 (0.072)
LUC held by male and female jointly	0.050 (0.037)	0.053 (0.043)	-0.002 (0.087)
Age of hh head	-0.003* (0.002)	-0.003 (0.002)	-0.007 (0.004)
HH headed by male	0.081 (0.075)	0.105 (0.068)	0.140 (0.203)
Grade in school completed by hh head	0.000 (0.007)	0.003 (0.008)	-0.013 (0.015)
HH head has diploma in vocational training	-0.055* (0.029)	-0.034 (0.034)	-0.101* (0.061)
HH head is married	-0.105 (0.068)	-0.110 (0.070)	-0.169 (0.161)
HH ethnicity is Kinh, Chinese	-0.164* (0.085)	-0.225** (0.094)	-0.008 (0.206)
HH size	-0.086*** (0.009)	-0.099*** (0.010)	-0.038* (0.022)
% of hh members who are female	-0.008 (0.095)	0.019 (0.101)	0.065 (0.225)
Dependency ratio	-0.105** (0.048)	-0.127** (0.052)	-0.059 (0.112)
Land area owned by hh (sq. meters)	0.001 (0.001)	0.001 (0.001)	0.005** (0.002)
Lives in urban area	-0.059 (0.092)	-	-
HH has livestock	-0.002 (0.025)	0.012 (0.027)	-0.061 (0.060)
HH has annual agricultural land	-0.103** (0.041)	-0.083* (0.043)	-0.125 (0.108)
HH has perennial agricultural land	0.024 (0.031)	0.017 (0.032)	0.072 (0.114)
HH has residential land	0.026 (0.023)	0.007 (0.025)	0.065 (0.064)
Commune is in delta area	-0.022 (0.059)	-0.031 (0.061)	-
Commune is in hills area	-0.022 (0.088)	-0.019 (0.087)	-

Commune is in low mountain area	0.047 (0.090)	0.049 (0.090)	-
Commune is in mountain area	0.079 (0.105)	0.087 (0.108)	-
Commune is Buddhist	-0.042 (0.027)	-0.036 (0.028)	-
Commune is poor	-0.079** (0.039)	-0.076** (0.037)	-
Commune has power	0.044 (0.079)	0.028 (0.078)	-
Commune has road	0.042 (0.084)	0.050 (0.083)	-
Commune has market	-0.023 (0.031)	-0.027 (0.031)	-
Province population	0.001 (0.031)	-0.040 (0.029)	0.181** (0.078)
Province no. of farms	-0.008 (0.014)	-0.004 (0.015)	-0.009 (0.023)
Province real ag. output	-0.020 (0.048)	-0.006 (0.055)	-0.102 (0.093)
Province area	0.028 (0.099)	0.072 (0.109)	-0.028 (0.201)
Number of observations	3456	2697	759

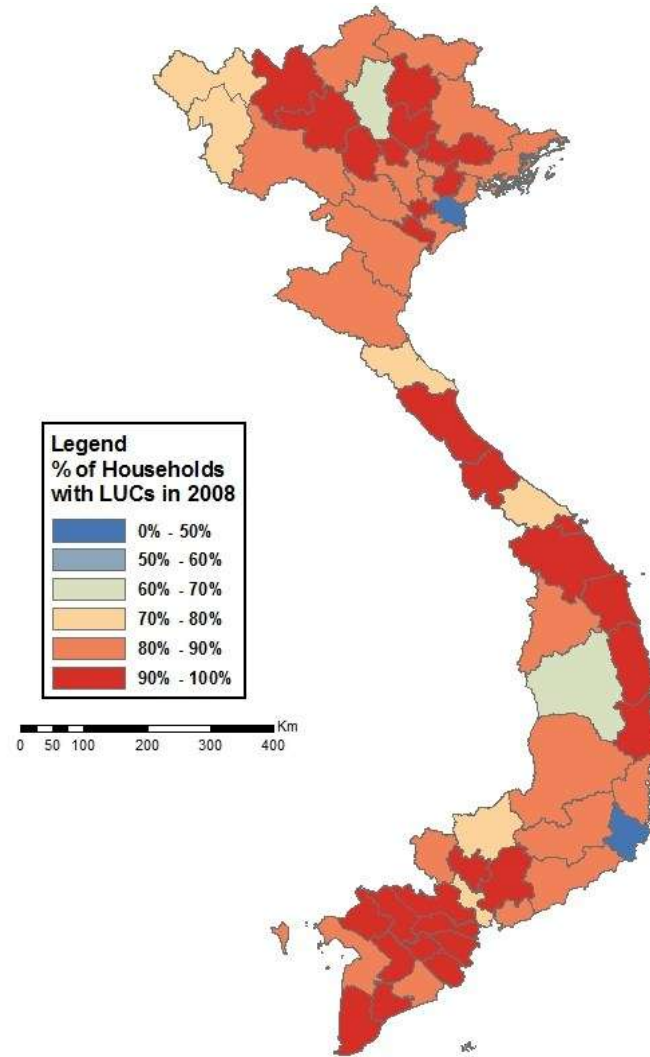
Notes: Weighted to national level with weights provided by the VHLSS. Standard errors, clustered by commune, in parentheses. The notation *** is $p < 0.01$, ** is $p < 0.05$, * is $p < 0.10$. All regressions include a constant term, a time dummy, commune dummies and region-time dummy interactions. Sample size is 1728 households in each year for a total of 3456 observations.

Figure 1. Incidence of Land-Use Certificates Among Landholders in Vietnam, by Province

Panel A: 2004



Panel B: 2008



Source: Constructed using ArcGIS software applied to the 2004 and 2008 VHLSS.

ENDNOTES

¹ This background discussion of Vietnam's land law reforms is based on Do and Iyer (2008), Ravallion and van de Walle (2008) and Tran (1999).

² Closely related, while LUCs were issued at the household level with the original Land Law, the New Land Law of 2003 led to the issuance of LUCs at the plot level. Thus household members could own multiple plots and enjoy greater freedom in how they conducted land transactions.

³ See Deininger and Ali (2008), Besley and Ghatak (2010), and Kumar and Quisumbing (2012) for more discussion.

⁴ Specifically, we used the samples in which respondents answered the more detailed surveys on expenditures. While data from the income surveys may have been preferable due to larger sample size, the income surveys do not contain information on the poverty and expenditure outcomes that are the focus of this study.

⁵ We cannot track the management of registered land plots since that information is only contained in the 2004 VHLSS. That is, the 2004 questionnaire also asks who manages the registered plots, over and above whether the plots are registered in the names of individuals.

⁶ In 2004, one household with two members was dropped at the outset due to missing values for the demographic characteristics of individual members, leaving a sample of 9188 households with which we started as a base in the matching procedure.

⁷ Of the 9189 households surveyed in 2006, 4298 are reported in the data as being from the 2004 survey. However, of these households, only 3915 were correctly identified as being part of the 2004-2006 panel (see <http://www.divietnam.org/default.aspx?g=posts&t=5>, accessed on December 7, 2013). Of the 9189 households in the 2008 data, 4104 households are reported in

the data as being resurveyed from 2006. However, of these households, we can accurately match only 3856 as being part of the 2006-2008 panel using the methodology outlined above. There are no official estimates of how many households are part of the 2004-2008 panel and since we do not know whether household panels drawn in subsequent waves are perfectly overlapping, we are not able to judge how the 1728 households in our 2004-2008 panel compares with the actual panel dataset of households between these years. But since the matching method results in numbers that are not very far from the official estimates (3915 as opposed to 4298 in 2006 and 3856 as opposed to 4104 in 2008), we believe that 1728 households is relatively close to the official number of households surveyed between 2004 and 2008.

⁸ The individual level data were also used to run a fixed-effects model at this level.

⁹ In matching individuals across years, in some cases the original data had typos in the gender and year of birth. We examined the composition of every single household in both years and made corrections accordingly. We assumed a person was the same person as long as the gender matched and the difference in the year of birth recorded did not exceed two years.

¹⁰ We did look at self-employment in non-agriculture and real wages for women, but there were few statistically significant effects to report. We acknowledge that self-employment in agriculture may be inherently risky due to susceptibility to weather outcomes and price shocks. However, we consider it as a measure of economic security as the person may behave as a residual claimant, have more independence in terms of deciding the types of crops/food grown, and have no risk of being terminated as may happen in the case of wage employment.

¹¹ The dependence ratio is defined as the share of dependent members (0-14 years and >65 years) in the household. Controlling for types of land owned and total land area (net of household fixed

effects, this variable is not endogenous) is important in case there were land market transactions which influenced the registration of new LUCs or the conversion of male-only to female-only or jointly-held LUCs. Further, controlling for initial-level characteristics such as age and education of the household head in 2004 is important in case they have effects on the trajectories of households over time. Household size is included since it is an important demographic characteristic of households and at least for the expenditure variable, it controls for economies of scale in consumption. We are confident that there is little measurement error since there is little reporting error in variables that should have stayed constant between 2004 and 2008. For example, gender of household head is almost unchanged.

¹² Most of this decline appears to be in the proportion of households with a LUC for residential land (from 70 percent in 2004 to 25 percent in 2008). This decline is consistent with evidence in Smith *et al.* (2007) that during the same time period, the transfer market was quite active for residential land use rights as compared to agricultural land rights.

¹³ The relationship between household headship and household structure in Vietnam is not straightforward (see Lee 2008). Although relatively more female only LUCs are held in female-headed households, households may be female-headed even if a husband or other adult males are present and not just by virtue of widowhood or divorce.

¹⁴ There is some decline evident in the Northern provinces in 2008 but this is not of substantial magnitude as seen from the information provided in the figures.

¹⁵ In a household fixed-effects framework, commune and region time invariant effects can be identified only from households that move. Even though there are relatively few such households

in the data, we include region-specific measures in the model to minimize bias from region-specific heterogeneity.

¹⁶ We also tried an individual-level fixed-effects model. However very few coefficient estimates were statistically significant even among variables that a priori were expected to have strong associations with economic security, most likely because the number of fixed-effects was relatively large as compared to sample size.

¹⁷ Regressions that controlled for the complicated nature of household headship and structure by including the proportion of adult (above 14 years) males in the household and whether the household head is a widow/widower resulted in estimates that were essentially the same as those in Table 3. These are not reported in the paper but available on request.

¹⁸ To be clear, changes in LUC status between 2004 and 2008 are found to have a positive impact on changes in self-employment in agriculture between these years. Since these are not contemporaneous impacts, reverse causality (those who are self-employed in agriculture are more likely to have their names registered) is less likely to be an issue.

¹⁹ We think of the evidence presented in this section as motivating the research questions we address above and providing a context for our qualitative work.

²⁰ Given budgetary constraints, we conducted interviews in just one area. Although our sample may not be representative of the whole country, these interviews provide insight on how reforms have impacted women at the micro-level.