



The effects of trust and land administration on economic outcomes: Evidence from Vietnam



Duc Anh Dang^{a,*}, Kim Khoi Dang^b, Vuong Anh Dang^c, Thi Lan Vu^b

^a National Center for Socioeconomic Information and Forecast, Viet Nam

^b Institute of Policy and Strategy for Agriculture and Rural Development, Viet Nam

^c National Centre for Social and Economic Modelling, University of Canberra, Australia

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ABSTRACT

This paper examines how the interaction of social trust and institutions, such as land administration, affects household economic decisions in Viet Nam. Using a panel dataset of rural households from 2008 to 2014, we show that negative consequences of the duration of land administration on agricultural investment have been lower in rural households with higher level of trust. Higher-trust households, when facing higher barrier from land administration, tend to invest more on agricultural land compared to low-trust households where household heads are male. We also find that high-trust households enhance land property rights when facing obstacles from land administration.

1. Introduction

Many empirical studies show that formal institutions, such as property right protections, play important roles in determining economic outcomes (for example [Acemoglu et al., 2001](#)). Another strand of literature stresses the vital effects of social capital, such as trust on economic development (see [Algan and Cahuc \(2014\)](#) for a review). However, while much progress has been made in isolating the importance of trust¹ and institutions, we do not know much about how they jointly affect development ([Alesina and Giuliano, 2015](#)).

Recent empirical literature shows that formal institutions may perform better in societies with high social trust. For example, [Miguel et al. \(2015\)](#) examine the joint interaction of political institutions and social trust in determining the provision of public goods in Chinese villages. The authors argue that elections in Chinese villages are more effective at choosing politicians, who provide more public goods in villages, where generalized trust (that is trust for unknown people) is high relative to personalized trust (that is trust for known people). The

main result is that elections have very little effect in villages with low social trust and a big effect in villages with high social trust. In another study, [Nannicini et al. \(2013\)](#) investigate the effects of civic behaviours² on political accountability. They documented that individuals living in regions with higher social capital assign higher values to public goods. Using data on Italian members of Parliament, they provided supporting empirical evidence that elected leaders from districts with higher social capital suffer more profound electoral punishment for misbehaviours. In above examples, formal institutions and social trust are complement. However, social trust may substitute formal institutions as weak legal enforcement could make people relying more on informal rules and local regulations and to develop particularized trust rather than generalized trust ([Algan and Cahuc, 2014](#)). Therefore, depending on the economic environment and initial conditions, trust and institutions might complement each other, or might act as substitutes, in promoting economic growth ([Bisin and Verdier, 2017](#)).

The primary objective of this paper is to complement recent studies that try to understand the interaction effects of trust and institution on

* Corresponding author.

E-mail address: dang.ducanh78@yahoo.com (D.A. Dang).

¹ [Fukuyama \(1995\)](#) considered trust as a shared expectation of honest and cooperative behaviour in a community. The literature on social trust distinguishes between generalized trust and particularized trust. Particularized trust refers to the situation in which individuals trust members of a narrow circle of persons. In this paper, we focus on generalized trust, which is trust for unknown people ([Delhey et al., 2011](#)).

² The authors define civic capital as “those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities.”

economic outcomes in a developing country. Viet Nam offers an attractive setting to study these effects. Viet Nam has experienced exceptional per capita income growth in the last three decades without large-scale social or political upheavals. However, this impressive economic growth cannot be explained by the quality of formal institutions as Viet Nam has low position on international ranking tables such as Polity IV and the Governance Indicator. One possible explanation is that weak formal institutions are likely to be substituted by strong informal institutions (Dang, 2012). For instance, the World Value Surveys show that the Vietnamese national level of social trust is higher than some other East Asian nations at the same stage of economic development (Dalton and Ong, 2005).

We examine the hypothesis that social trust substitutes the low effectiveness of land administration, which is considered as one of the main factors affecting economic decisions by rural households. To test this hypothesis, we use panel data from the Viet Nam Access to Resources Household Survey in 2008–14 to investigate whether trust and land administrative procedures have joint effects on household's agricultural land investment, land-use right certificates ownership and credit access.

There are difficulties in empirically determining whether land administration and social trust are complements or substitutes. Trust is correlated with other factors that could influence how land administration can affect household decisions. To address this, we document the correlates of land administration (such as political connections) and directly control for the interaction of each correlate and land administration in the baseline specification. We also provide a large set of robustness tests to rule out the potentially confounding influence from other factors such as households head characteristics and the demographic composition of communes.

The results reveal that for households with high trust, the effects of land administration have less negative impacts on their investment in agricultural land, especially soil investment, compared to those with lower trust. High-trust households tend to invest more on agricultural land compared to low-trust households where household head are male. Compared to low-trust households, they also have higher probability to own land-use right certification when facing weak land administration. The results also confirm the hypothesis that social capital such as trust and institutions such as land administration are substitutes: trust helps to improve agricultural land investment where the quality of land administration is weak. In other words, they provide empirical evidence that trust can play an important role in determining the success of improvements in formal institutions.

This study makes several contributions to the literature. To the best of our knowledge, this paper is one of the few studies that provide rigorous empirical evidence on the interaction effect of trust and formal institutions on household economic decisions such as agricultural land investment, ownership of land-use right certificates and access to formal credit. This study complements the findings from recent studies that have shown the joint effects of trust and institutions on economic development (such as Nannicini et al., 2013; Miguel et al., 2015). Our study contributes to the existing evidence by directly examining land administration and its effect on household outcomes. We also add to studies that investigate the impacts of generalized trust on economic outcomes (for example, Aghion et al., 2010; Alesina and La Ferrara, 2002; Algan and Cahuc, 2010).

The paper is organized as follows. We begin in Section 2 by describing the characteristics of trust and land administration in Viet Nam. Section 3 illustrates the conceptual framework. Section 4 discusses our data, along with descriptive analyses of trends in trust and land administration variables. In Section 5, we present the empirical strategy. Section 6 presents estimation results. Section 7 summarizes the key findings and concludes.

2. Characteristics of trust and land administration in rural Viet Nam

2.1. Land administration in Viet Nam

There have been many changes in land policy over the last 30 years in Vietnam. Resolution 10 of the Party in 1988 is a milestone policy of the agriculture reform which expanded the implementation of the “package-contract” scheme in which all means of production (land and equipment) were handed back to farmers instead of cooperatives. The Land Law enacted in 1993 enables farmers to entitle to long-term agricultural land assignment (20 years) through the issuance of land-use right certificates (LURCs). This law allowed farmers to not only cultivate on their assigned land but also trade, transfer, rent or inherit the land use right. In 2003, the Land Law was revised another time with its focus on regulating land area limits and land use terms of households and setting the government land price frame. Most recently, in 2013 this Law was amended to increase area limits of land trading and land use terms per household. Therefore, land rights, including the right to sell, rent, mortgage, exchange, and bequest a plot of land, were guaranteed through LURCs and have been gradually reinforced and refined through various amendments to the Land Law. These developments are often recognized as an important determinant of rural economic growth in Viet Nam (Pingali and Xuan, 1992; Rozelle and Swinnen, 2004; Deininger and Jin, 2008; Do and Iyer, 2008; Kompas et al., 2012; Newman et al., 2015).

Although many legislation reforms have been implemented, some studies show that households cannot fulfil all their land property rights and the rights are not always well protected (Markussen, 2017). For example, Markussen et al. (2011) show that many households face some restrictions on crop choice. Rice households cannot change their land use purpose to other crops because food security reasons reduce their production productivity (Giesecke et al., 2013). Luu et al. (2013) also indicate that while the efficiency of land market transactions has been improved they are still immature in many regions of Viet Nam.

The government system in Viet Nam consists of both the central government and local governments, which comprise of three levels: provincial, district and communal. Accompanying legislation reform, the power of land management has been decentralized to lower levels of government. This has classified clearer power and mandates at different government levels, helping local governments to better manage land. Specifically, the land use designation (*lap quy hoach*) and planning (*lap ke hoach*) is prepared at three levels: national, provincial, and district. Land use plans, developed every 5 years for national and provincial level and every year for district level, are issued by the Ministry of Natural Resources and Environment (MONRE) after the approval of the Government and the National Assembly based on a 10-year land use designation, 5-year socio-economic development plan, the land demand of different sectors, and the performance of the land use plan implementation in the previous term. Following the approval of land-use planning and plans, the communal People's Committees decide limits for land allocation, leasing and reclamation and to issue a land price frame in accordance with general regulations by the central governments (Le et al., 2015). As the lowest level of the administrative system, communes are responsible to manage, use and exploit public lands, and to update and store information relating to any changes in their territory. Land users can exploit their land by their own decision but are not allowed to change the land use purpose/land use categories regulated in land use plans without the approval of MONRE and provincial authorities who are responsible for the monitoring and evaluation of the land use plan implementation in practice.

As such, commune governments play a crucial role in the security of property rights. This is most evident in their role in the State issuance of LURCs. While the process of issuing LURCs to millions of land users progressed with impressive speed and without obvious signs of widespread abuse by local authorities in the 1990s, current management of

LURC issuance is widely perceived to be highly affected by corruption (World Bank, 2010; Anderson and Davidsen, 2011). Land administration in Viet Nam has been regarded as incomplete and unclear information about administrative procedures to the public and the processes for issuing property rights and certificates were complicated and expensive. Therefore, as Markussen and Tarp (2014) point out there is a risk of land reclamation by local government and household's land investment depends on their informal relationship with local government officials.

2.2. Social trust in Viet Nam

Trust is an important factor in both individual and household social capital. For example, trust can enable people's engagement in potentially profitable business with (trusted) strangers. Trust within a community may facilitate economic cooperation with their partners that benefits all in the long term. Individuals that live in societies with a high level of trust are more likely to divert fewer resources to purchasing protection such as paying bribes (Knack and Keefer, 1997). In countries that may lack formal institutions, generalized trust could substitute for such institutions as a second-best solution.

Dalton and Ong (2005) show that Vietnamese levels of social trust are higher than some other East Asian nations at the same stage of economic development. Rural households in Viet Nam living in a high-risk environment have evolved a series of institutions which serve to reduce individual insecurity. This is accomplished by spreading risk-taking over a group larger than the nuclear family, such as the extended family and the corporate community. By choosing to cooperate with other members, trust amongst village members increases (Dang, 2012). Saint-Macary and Zeller (2012) also show that high trust makes people better access to credit with lower lending rate in Northern provinces in Vietnam.

3. Conceptual framework

There are several potential mechanisms through which land administration and trust might influence investment in agriculture land, LURC ownership and access to credit by rural households.

First, transaction costs play an important role in land market development. High transaction costs in land markets originate from insecure land rights and low levels of trust. Better land administration might make investors feel more secure in investing in agricultural land as it is an important factor in reducing the cost of transactions. Longer processing time and slower issuance of land-use rights may exacerbate household fears of expropriation or loss of control of land on which investments would be made, potentially deterring such investment. In societies with efficient land administration, trust could reinforce and make land administration perform better. Therefore, trust complements quality of land administration. On the contrary, where land regulations are insufficient, trust also helps reduce transaction costs in land markets as the costs of acquiring information, and negotiating and enforcing contracts tend to be much lower. In these cases, high trust may substitute weak land administration.

Second, shorter time for land administration makes land transaction and households receiving LURC faster. Incomplete and unclear information about land administrative procedures to the public makes the processes for issuing property right certificates complicated and expensive. Therefore, we expect that when facing this situation, high-trust individuals are more willing to take part in this process but low-trust ones may not want to do so.

Third, access to credit might be hindered if land-use rights are not sufficiently defined for land to serve as collateral for loans. The longer time for land administration processes, the lower probability that households can get a loan. At the same time, social trust plays an important role in formal financial markets, where it helps to reduce the risks of asymmetric information. Therefore, for better land

administration, trust can help access to credit faster. In case slow land administrative procedures, trust can substitute land-use rights as a form of collateral that helps households access better to credit.

4. Data sources and description

This study exploits a four-wave household panel dataset that was collected in the Vietnam Access to Resources Household Survey (VARHS) from 2008 to 2014. The VARHS is a panel survey, conducted in the rural areas of 12 provinces in Viet Nam every second year. The VARHS re-interviewed all rural households sampled for the income and expenditure modules of the 2004 Vietnam Household Living Standards Survey (VHLSS). Attrition in the VARHS is fairly low with an overall attrition rate from 2008 to 2014 of seven per cent. A common reason for attrition is migration. Based on the responses from local authorities, two third of migrating households are believed to have migrants permanently, whereas one third is believed to have migrated temporarily (Brandt and Tarp, 2017).

The VARHSs collect a broad range of detailed information about economic and social aspects of the lives of households in rural areas, such as rural employment, on- and off-farm income generating activities, rural enterprises, property rights, savings, investment, insurance, participation in formal and informal social networks, and land investment. They also include a commune questionnaire that asks information on the general situation of the commune and demographic information. The commune questionnaire includes one module that asks about administrative procedures related to land-use rights.

4.1. Trust variables

The surveys ask two standard questions about self-reported trust. The exact wording of the questions is as follows: 'Please tell me whether in general you agree or disagree with the following statements: Most people are generally honest and can be trusted, and: In this commune one has to be careful, there are people you cannot trust?'³ Respondents could either agree or disagree. Since respondents' answers to the trust questions are binary, we construct a measure of trust that takes on the binary value of 0 and 1, where 0 corresponds to the response 'Disagree' and 1 to the response 'Agree'. As shown in Table 2, there is a negative link between two trust scores.

The distributions of responses for each question are reported in Table 1. Based on the data in Table 1, in 2008, 91 per cent of the interviewed households agreed that most people are generally honest and can be trusted; however, this fell to 87 per cent by 2014, a decrease of four percentage points since 2008. This trend indicates that rural households generally have a high level of trust, but they also recognise that social interactions could bring more risk (CIEM et al., 2009).

For the second measure of social trust, even though people were becoming less confident in others, only 48 per cent of households in 2014 agreed that there are some people who cannot be trusted. This ratio was significantly lower than the level of 65 per cent in 2008. This tendency seems to contradict with the trend of the first measure of trust. One potential explanation is that rural households may trust other people more as they have more social interaction. As Ermisch and Gambetta (2010) suggest, interacting more with other peoples can lead to more "outward exposure", and improve their ability to trust other people by (1) estimating more accurately the probability of trust-worthiness; or (2) reading the signs of untrustworthiness more precisely.

Another important point is that the trust questions are answered by household heads and the household heads could change over time.

³ These trust questions may not fully reflect individual trust attitudes and does not explicitly specify the object of the respondent's trust (Durante, 2009). They also could be induced by aversion against risk (Algan and Cahuc, 2014)

Table 1
Descriptive statistics.

VARIABLES	2008	2010	2012	2014
Age of household heads	48.9 (14.0)	50.4 (13.47)	51.85 (13.60)	53.5 (13.3)
Gender (Male: = 1)	0.83 (0.38)	0.82 (0.38)	0.82 (0.38)	0.80 (0.40)
Year of schooling of household heads	8.07 (3.59)	8.19 (3.52)	8.24 (3.55)	8.76 (3.30)
Days for land administration at commune levels	12.26 (12.74)	13.79 (17.86)	12.33 (11.57)	10.9 (8.44)
Most people can be trusted (Trust: = 1)	0.91 (0.28)	0.89 (0.32)	0.90 (0.30)	0.87 (0.34)
There are people you cannot trust (Careful: = 1)	0.65 (0.48)	0.60 (0.49)	0.53 (0.50)	0.48 (0.50)
Ln (1 + Land investment)	1.46 (3.06)	1.12 (2.64)	1.20 (2.82)	0.79 (2.33)
Ln (1 + Soil investment)	1.43 (2.84)	1.57 (2.89)	1.64 (2.88)	3.09 (3.33)
Ln (1 + Aquaculture investment)	0.49 (1.95)	0.71 (2.28)	0.87 (2.45)	0.68 (2.21)
Ln (1 + Permanent investment)	6.43 (3.54)	0.00 (0.00)	1.26 (3.13)	1.05 (3.08)
Share of household's land with land-use right certificates	0.71 (0.40)	0.63 (0.44)	0.71 (0.40)	0.71 (0.40)
Share of borrowing households with formal credit	0.34 (0.47)	0.38 (0.49)	0.29 (0.45)	0.25 (0.43)
Number of observations	1923	1890	1825	1917

Note: Prices are adjusted for inflation. Standard errors are in parentheses.
Source: Author's calculation from VARHS 2008–14.

Consequently, the difference of the responses may reflect changes in the identity of the respondent rather than trust behaviour and this could be related to investment and other outcome variables. However, as shown in Table 1, the average age of household heads increases over time following survey timing. The share of male of household heads is almost unchanged over time. Therefore, we expect that the head of households have not changed substantially throughout this period.

4.2. Land administrative procedures

We use the number of days that the Commune Government takes to process an application for land transactions in the commune, such as sale, rental, exchange, or other type of transaction of land-use rights as a measure of quality of land administrative procedures. Of course, the number of days may only capture a part of quality of land administration systems. World Bank (2015) proposed a full set of indicators on reliability, transparency, coverage and dispute resolution to measure the overall quality of land administration. However, if the land

Table 2
Pairwise correlation among main variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Ln (1 + Land investment)	1								
2. Share of HH land with LURC	-0.04*	1							
3. Whether HHs have formal loans	0.004	-0.02	1						
4. Days for land administration	0.004	-0.002	0.02*	1					
5. Most people can be trusted	-0.02	-0.03*	0.002	-0.009	1				
6. There are people you cannot trust	-0.006	0.01	0.04*	-0.03*	-0.21*	1			
7. HH members hold positions	0.06*	-0.01	-0.03*	0.003	0.01	0.01	1		
8. HH relatives hold positions	0.04*	0.03*	0.02	-0.02*	0.02	0.05*	0.11*	1	
9. HH friends hold positions	0.04*	0.03*	0.00	-0.01	-0.01	0.05*	0.21*	0.26*	1

Source: Author's calculation from VARHS 2008–14. *Significant at 5 percent level.

administration systems are unreliable, not transparent and insecure, land transactions will require more time to be completed. Then, the number of processing days is likely to be a sensible proxy for quality of land administration. Table 1 indicates that the days for land administration have been shortened recently, decreasing from 13.8 days in 2010 to 10.9 days in 2014.

4.3. Agricultural land investment

Table 1 presents a summary on total value of cash investment in household agricultural land and three different types of land-related investment, including investments in soil and water conservation, structures for aquaculture (mainly ponds) and other structures, such as farm buildings, fences and animal sheds. The figures indicate that on average total investment in agricultural land in 2014 has declined and is lower than the past years mainly due to lower levels of investment in permanent structure. However, the soil investment shows an improvement in 2014 compared to those in the past years.

4.4. Formal credit

Table 1 also shows the summary of access to formal credit by rural households, which are loans from banks and unions. Overall, formal credit access has decreased with fewer households with loans. Of which, there are 34 per cent of households access to formal credit in 2008 but down to 25 per cent in 2014.

5. Empirical strategies

Our empirical strategy can be summarized by the following equation:

$$y_{ijt} = \alpha_1 Trust_{ijt} + \alpha_2 Land_ad_{jt} + \alpha_3 (Trust_{ijt} \times Land_ad_{jt}) + \beta X_{ijt} + \theta \tau_{ijt} + \delta_i + \rho_t + \varepsilon_{ijt} \tag{1}$$

where y_{ijt} is the level of outcome variables of household i in commune j during year t (which are agricultural land investment, land registration and access to credit). $Trust_{ijt}$ is the generalized trust by household i in commune j during year t . $Land_ad_{jt}$ is the time for land administrative procedures in commune j at time t . $Trust_{ijt} \times Land_ad_{jt}$ is the interaction effect of a dummy variable for trust at household levels, $Trust_{ijt}$, and the time for land administrative procedures at commune levels, $Land_ad_{jt}$. X_{ijt} are interaction of days for land administration and household's political connections. τ_{ijt} are household and commune characteristics. δ_i , ρ_t are household and year fixed effects, respectively. Standard errors are clustered by commune. α_2 captures the effect of land administration procedures for households with low trust, $Trust_{ijt} = 0$, which is expected to have negative impacts on household outcomes ($\alpha_2 < 0$). $\alpha_2 + \alpha_3$ captures the effect of land administration procedures for households with high trust, $Trust_{ijt} = 1$. Our main variable α_3 measures the different effect of land administration on high-trust households compared to low-trust ones. We expect that trust and institutions, which are proxied by

Table 3
Effects of trust and land administration on household's agricultural land investment.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: Ln(Land investment + 1)							
	FE	RE	FE	RE	FE	RE	FE	RE
Trust X Days for land administration	0.019** (0.008)	0.012** (0.006)	0.011 (0.008)	0.007 (0.006)				
Trust = 1; w/o = 0	-0.67*** (0.176)	-0.47*** (0.149)	-0.59*** (0.174)	-0.41*** (0.148)				
Careful X Days for land administration					-0.014*** (0.005)	-0.006 (0.004)	-0.014*** (0.005)	-0.006 (0.004)
Careful = 1; w/o = 0					0.311*** (0.114)	0.042 (0.085)	0.313*** (0.114)	0.053 (0.086)
Days for land administration	-0.017** (0.008)	-0.012* (0.006)	-0.008 (0.009)	-0.005 (0.007)	0.012** (0.005)	0.004 (0.004)	0.014*** (0.005)	0.006 (0.005)
Observations	8706	8706	8706	8706	7689	7689	7689	7689
R-squared	0.018	0.018	0.02	0.02	0.019	0.019	0.021	0.021
Number of HH	2708	2708	2708	2708	2697	2697	2697	2697
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other interacts	No	No	Yes	Yes	No	No	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household FE	Yes	No	Yes	No	Yes	No	Yes	No

Note: Standard errors, clustered at commune level, are in parentheses. Trust means “Most people can be trusted” and Careful means “There are people you cannot trust”. Other control variables are age of household head, gender, year of schooling, an indicator for household has a relative who holds a position of public or bureaucratic responsibility, an indicator for household has a relative who holds a public position, an indicator for household has a member who holds a public position, an indicator for household has a friend who holds a public position, number of households in communes, number of poor households in communes. Other interacts includes interaction of days for land administration and indicator for household has a friend who holds a public position, interaction of days for land administration and indicator for household has a member who holds a public position, interaction of days for land administration and indicator for household has a relative who holds a public position. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Author's calculation from VARHS 2008–14.

days for land administration procedures, are substituted, then the interaction effect will be positive, $\alpha_3 > 0$.

The challenge in estimating the Eq. (1) is that there is potential endogeneity between outcomes variables and the interaction between trust and land administration. The source of this endogeneity could be due to omitted variable bias. It is possible that unobserved characteristics of the household or communes which are correlated with trust and land administration may affect household decisions. Using household-level fixed effects eliminates the potential for any time-invariant characteristics of households and communes to act as confounding factors in our analysis. Moreover, we also introduce the interaction of land administration variable with a vector of other social connections such as political connections, X_{ijt} . By controlling for the interaction of these potential correlates with land administration, we mitigate the possibility that the coefficient of interest is contaminated by the influence that other correlates may have on the effect of the land administration.

6. Results

6.1. Land investment

We now turn to estimating the joint effects of trust and land administration on agricultural land investment. Table 3 presents estimates of Eq. (1) with both fixed and random effects. To implement the log-linear version of Eq. (1) without dropping observations with zero-values on the dependent variables, we use $\ln(\text{Land investment} + 1)$ as our dependent variable. The values of investment are inflation-adjusted to reflect changes in prices over time. A number of unobservable household characteristics, such as entrepreneurial spirit, cognitive abilities and risk preferences are likely to affect both investment decisions and the trust and therefore may be a source of endogeneity bias. Household fixed effects account for these factors, to the extent that they are time-

invariant. To check the potential effects of omitted varying variables, a number of control variables are included. In column (1) and (2), we include a few characteristics of the household head, namely age, gender and schooling as controls. In columns (3) and (4), we control for a larger set of variables. Table 2 shows that political connections are related to household land investment. At the same time, households with better connections with officials may be more confident with investing (Markussen and Tarp, 2014). Therefore, we include both political connections and interaction of political connection and land administration in the regression in column (3) and (4). We also control for other commune characteristics such as number of households and number of poor households in communes. Moreover, year-fixed effects are included to take account of changes over time in the economic environment. The control variables are not presented for ease of exposition. Models in columns (5)–(8) have characteristics identical to columns (1)–(4), respectively, except that social trust is measured as an alternative indicator of trust.

Models in columns (1) and (2) show positive joint effects of trust and land administration on land-related investment. They are consistent with the hypothesis that trust is substitute to land administration. The results in columns (3) and (4) are not statistically significant but the magnitude of coefficients is almost similar. The effects are also similar with the second measures of self-reported trust in columns (5) and (7). For the magnitude of the coefficients, an one-day increase in duration of land administration results in low-trust households investing in agricultural land 0.14 per cent⁴ less than high-trust households. In other words, given that the average days of land administration is around 12.3, 10 per cent increase in the days of land

⁴ Given low variation of the first measure of social trust over time, we rely on the second measure of trust to evaluate the joint impacts of trust and land administration on household outcomes.

Table 4
Effects of trust and land administration on household's decision on agricultural land investment.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: Household's decision to invest in agricultural land							
	FE	RE	FE	RE	FE	RE	FE	RE
Trust X Days for land administration	0.002 (0.002)	0.002 (0.002)	0.002* (0.001)	0.002 (0.001)				
Trust: = 1; w/o = 0	-0.12*** (0.032)	-0.10*** (0.030)	-0.13*** (0.028)	-0.1*** (0.025)				
Careful X Days for land administration					-0.002* (0.001)	-0.003 (0.002)	-0.002* (0.001)	-0.002 (0.001)
Careful: = 1; w/o = 0					0.074*** (0.024)	0.073*** (0.023)	0.076*** (0.024)	0.075*** (0.023)
Days for land administration	-0.000 (0.002)	-0.000 (0.002)	-0.001 (0.001)	-0.001 (0.001)	0.003*** (0.001)	0.003** (0.002)	0.003** (0.001)	0.003** (0.002)
Observations	8706	8706	8706	8706	7689	7689	7689	7689
R-squared	0.144	0.144	0.145	0.145	0.151	0.151	0.152	0.152
Number of HH	2708	2708	2708	2708	2697	2697	2697	2697
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other interacts	No	No	Yes	Yes	No	No	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household FE	Yes	No	Yes	No	Yes	No	Yes	No

Note: Standard errors, clustered at commune level, in parentheses. Trust means "Most people can be trusted" and Careful means "There are people you cannot trust". Other control variables are age of household head, gender, year of schooling, an indicator for household has a relative who holds a position of public or bureaucratic responsibility, an indicator for household has a relative who holds a public position, an indicator for household has a member who holds a public position, an indicator for household has a friend who holds a public position, number of households in communes, number of poor households in communes Other interacts includes interaction of days for land administration and indicator for household has a friend who holds a public position, interaction of days for land administration and indicator for household has a member who holds a public position, interaction of days for land administration and indicator for household has a relative who holds a public position. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Author's calculation from VARHS 2008–14.

administration results in an average of 1.7 per cent higher in land investment of high-trust people compared to low-trust ones.⁵

The results in Table 3 also reveal that trust has significant effects on agricultural investment. However, it has negative effects on land investment⁶. These results seem to contradict with the standard arguments about the effects of trust on investment. There is one possible interpretation for this situation. As mentioned above, the trust questions do not explicitly specify the object of the respondent's trust. Their responses may reflect and be influenced by historical experiences, such as experiences with collectivized agriculture. Rural households may have had bad experiences from collective farming where incentives to invest in agricultural land are reduced because of free rider problems (CIEM et al., 2009). In addition, although many legislation reforms have been implemented, there is still a risk of land reclamation by local governments (Markussen and Tarp, 2014). All of these could affect more profound on high-trust households and their decision to invest in agricultural land.

Along with examining the joint effect of social trust and land administration on agricultural land investment, we also investigate its impact on household's decision to invest. The results are reported in Table 4. Rather than the amount of land investment, the dependent variable is now a dummy variable, which takes value of 1 if households invest and 0 otherwise. Similar to the findings in Table 3, the key variables in columns (1)–(4) show that with an increase in duration of land administration, households with high trust have a higher probability to invest than ones with lower trust, although the estimates are only statistically significant in some estimations.

Table 5 presents the fixed effect estimation of trust and land administration on household's land investment by gender. The main coefficients in all models have expected signs but are only statistically

significant in column (4). The estimate in the last column shows that male household heads with higher trust tend to invest more than those with lower trust when facing more land administration.

We now turn to the examination of how interaction of trust and land administration affects land investment by different ethnic groups⁷. The fixed effect estimates are reported in Table 6. According to estimates from column (1), as land administration increases, other ethnic households with higher trust invest more than lower trust ones for the first measure of trust. However, the result in column (4) shows that among Kinh households, higher trust households invest more on agricultural land than lower trust ones as facing an increase in duration of land administration.

We next turn to a closer examination of the impact of joint effects of trust and land administration on different types of agricultural land investment. The fixed effect estimates are reported in Table 7. As shown in columns (1) and (4), the effects of joint trust and land administration are mainly attributed to investment in soil and irrigation systems. These results are not surprising because crop production still plays an important role in the majority of households in rural Viet Nam.

6.2. Land property rights

A key channel through which land administration and trust may affect investment is through property rights. In general, land plots with LURC have received more investment than plots without LURC (VARHS, 2014). However, the process of issuing LURCs is complex and time-consuming and we expect that high trust individuals are more willing to take part in the process. Table 8 reports the joint effect of trust and land administration on LURC ownership by rural households. The control variables in Table 8 are generally the same as in Table 3. We present results both with a limited set of exogenous characteristics of household heads, and with a larger set of controls. The results in

⁵ The magnitude is calculated as $1.23 * 0.014 * 100 = 1.7\%$.

⁶ The effect of trust for a household with an average of days for land administration in column (1) in Table 3 is $-0.67 + 0.019 * 12.3 = -0.43$.

⁷ The non-Kinh group accounts for 38 per cent of our sample.

Table 5
Effects of trust and land administration on household's land investment by gender.

Variables	(1)	(2)	(3)	(4)
	Dependent variable: Ln(Land investment + 1)			
	Female	Male	Female	Male
Trust X Days for land administration	0.018	0.013		
	(0.014)	(0.009)		
Trust: = 1; w/o = 0	-0.392	-0.689***		
	(0.280)	(0.188)		
Careful X Days for land administration			-0.004	-0.009*
			(0.012)	(0.005)
Careful: = 1; w/o = 0			0.006	0.200
			(0.173)	(0.132)
Days for land administration	-0.005	-0.011	0.008	0.009*
	(0.015)	(0.009)	(0.011)	(0.005)
Observations	1578	7107	1413	6262
R-squared	0.037	0.037	0.032	0.038
Number of HH	571	2307	562	2287
Other controls	Yes	Yes	Yes	Yes
Other interacts	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes

Note: Standard errors, clustered at commune level, in parentheses. Trust means "Most people can be trusted" and Careful means "There are people you cannot trust". Other control variables are age of household head, gender, year of schooling, an indicator for household has a relative who holds a position of public or bureaucratic responsibility, an indicator for household has a relative who holds a public position, an indicator for household has a member who holds a public position, an indicator for household has a friend who holds a public position, number of households in communes, number of poor households in communes. Other interacts includes interaction of days for land administration and indicator for household has a friend who holds a public position, interaction of days for land administration and indicator for household has a member who holds a public position, interaction of days for land administration and indicator for household has a relative who holds a public position. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Author's calculation from VARHS 2008–14.

Table 8 show that the interaction of trust and land administration has positive and statistically significant effects on the ownership of LURC by rural households.

6.3. Credit access

Land administration and LURC play an important role in the allocation of loans from lending institution. Shorter time for land administration makes land transaction and issuing LURC faster. LURC is the main collateral that may improve access to formal loans. Therefore, we expect that the longer time for land administration processing, the lower probability that households can get a loan. At the same time, social trust plays an important role in formal financial markets, where it helps to reduce the risks of asymmetric information. If trust is a substitute to land administration, we expect that households with high trust may have higher chances to access formal loans.

Table 9 presents regressions for whether households have taken loans from formal lenders. The set of control variables is similar to the set used in Table 3. Again, we present results both with a limited set of exogenous characteristics of the household head, and a set of controls which are the interaction of days for land administration with political connections and commune characteristics.

The results in columns (1)–(4) represent the differential effects of land administration on households with high trust relative to households with low levels of trust for the first measure of self-reported trust.

Table 6
Effects of trust and land administration on household's land investment by ethnicity.

Variables	(1)	(2)	(3)	(4)
	Dependent variable: Ln(Land investment + 1)			
	Other ethnic groups	Kinh	Other ethnic groups	Kinh
Trust X Days for land administration	0.023***	0.010		
	(0.007)	(0.012)		
Trust: = 1; w/o = 0	-0.993***	-0.514***		
	(0.286)	(0.195)		
Careful X Days for land administration			0.002	-0.021**
			(0.007)	(0.009)
Careful: = 1; w/o = 0			-0.169	0.324**
			(0.186)	(0.137)
Days for land administration	-0.022***	0.003	-0.001	0.023**
	(0.007)	(0.012)	(0.007)	(0.009)
Observations	2986	5699	2618	5057
R-squared	0.042	0.051	0.038	0.055
Number of HH	1034	1710	1023	1707
Other controls	Yes	Yes	Yes	Yes
Other interacts	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes

Note: Standard errors, clustered at commune level, in parentheses. Trust means "Most people can be trusted" and Careful means "There are people you cannot trust". Other control variables are age of household head, gender, year of schooling, an indicator for household has a relative who holds a position of public or bureaucratic responsibility, an indicator for household has a relative who holds a public position, an indicator for household has a member who holds a public position, an indicator for household has a friend who holds a public position, number of households in communes, number of poor households in communes. Other interacts includes interaction of days for land administration and indicator for household has a friend who holds a public position, interaction of days for land administration and indicator for household has a member who holds a public position, interaction of days for land administration and indicator for household has a relative who holds a public position. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Author's calculation from VARHS 2008–14.

There are no statistically significant effects of the interaction of trust and land administration on access to credit. The results in columns (5)–(8) for the second measure of trust suggest that access to credit is improved for rural households with high trust when facing the burden from land administration although the coefficients are not statistically significant.

7. Conclusion

In this study, we examine the combined effects of trust and land administrative procedures on investment in agricultural land, land-use right certificates and formal borrowings in rural communities in Viet Nam. The findings suggest that when facing longer duration of land administration households with higher trust tend to increase their levels of land-related investment, especially soil investment, compared to those with lower trust. Higher-trust households, when confronting with higher barrier from land administration, are likely to invest more on agricultural land compared to low-trust households where household heads are male. We also find that high-trust households strengthen de facto land property rights when facing obstacles from land administration. These results highlight the economic importance of substitution between trust and institutions, particularly in environments where property rights institutions are not efficient. On the broader sense, the

Table 7
Effects of trust and land administration on types of household's agricultural land investment.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Ln(1 + Soil investment)	Ln(1 + Aqua investment)	Ln(1 + Permanent investment)	Ln(1 + Soil investment)	Ln(1 + Aqua investment)	Ln(1 + Permanent investment)
Trust X Days for land administration	0.020** (0.009)	0.005 (0.008)	0.085 (0.069)			
Trust: = 1; w/o = 0	-1.138*** (0.301)	0.256 (0.203)	-1.402 (1.038)			
Careful X Days for land administration				-0.011* (0.006)	-0.002 (0.005)	0.008 (0.044)
Careful: = 1; w/o = 0				0.176 (0.178)	-0.133 (0.165)	1.220 (0.743)
Days for land administration	-0.019** (0.009)	-0.003 (0.008)	-0.102 (0.069)	0.011* (0.006)	0.004 (0.004)	-0.023 (0.035)
Observations	3663	3663	1364	3209	3209	1173
R-squared	0.055	0.007	0.460	0.054	0.007	0.504
Number of HH	2018	2018	1157	1902	1902	1015
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Other interacts	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard errors, clustered at commune level, in parentheses. Trust means "Most people can be trusted" and Careful means "There are people you cannot trust". Other control variables are age of household head, gender, year of schooling, an indicator for household has a relative who holds a position of public or bureaucratic responsibility, an indicator for household has a relative who holds a public position, an indicator for household has a member who holds a public position, an indicator for household has a friend who holds a public position, number of households in communes, number of poor households in communes. Other interacts includes interaction of days for land administration and indicator for household has a friend who holds a public position, interaction of days for land administration and indicator for household has a member who holds a public position, interaction of days for land administration and indicator for household has a relative who holds a public position. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Author's calculation from VARHS 2008–14.

Table 8
Effects of trust and land administration on share of household plots with land-use right certificates.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: Share of household plots with land-use right certificates							
	FE	RE	FE	RE	FE	RE	FE	RE
Trust X Days for land administration	0.002 (0.002)	0.002 (0.002)	0.002* (0.001)	0.002 (0.001)				
Trust: = 1; w/o = 0	-0.12*** (0.032)	-0.10*** (0.030)	-0.13*** (0.028)	-0.1*** (0.025)				
Careful X Days for land administration					-0.002* (0.001)	-0.003 (0.002)	-0.002* (0.001)	-0.002 (0.001)
Careful: = 1; w/o = 0					0.074*** (0.024)	0.073*** (0.023)	0.076*** (0.024)	0.075*** (0.023)
Days for land administration	-0.000 (0.002)	-0.000 (0.002)	-0.001 (0.001)	-0.001 (0.001)	0.003*** (0.001)	0.003** (0.002)	0.003** (0.001)	0.003** (0.002)
Observations	8706	8706	8706	8706	7689	7689	7689	7689
R-squared	0.144	0.144	0.145	0.145	0.151	0.151	0.152	0.152
Number of HH	2708	2708	2708	2708	2697	2697	2697	2697
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other interacts	No	No	Yes	Yes	No	No	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household FE	Yes	No	Yes	No	Yes	No	Yes	No

Note: Standard errors, clustered at commune level, in parentheses. Trust means "Most people can be trusted" and Careful means "There are people you cannot trust". Other control variables are age of household head, gender, year of schooling, an indicator for household has a relative who holds a position of public or bureaucratic responsibility, an indicator for household has a relative who holds a public position, an indicator for household has a member who holds a public position, an indicator for household has a friend who holds a public position, number of households in communes, number of poor households in communes. Other interacts includes interaction of days for land administration and indicator for household has a friend who holds a public position, interaction of days for land administration and indicator for household has a member who holds a public position, interaction of days for land administration and indicator for household has a relative who holds a public position. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Author's calculation from VARHS 2008–14.

Table 9
Effects of trust and land administration on household's formal borrowing.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: Households have formal borrowing							
	FE	RE	FE	RE	FE	RE	FE	RE
Trust X Days for land administration	−0.001 (0.001)	−0.001 (0.001)	−0.002 (0.001)	−0.001 (0.001)				
Trust = 1; w/o = 0	0.017 (0.020)	0.018 (0.018)	0.021 (0.020)	0.018 (0.019)				
Careful X Days for land administration					−0.025 (0.017)	−0.023 (0.014)	−0.025 (0.017)	−0.023 (0.014)
Careful = 1; w/o = 0					0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Days for land administration	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	0.000 (0.001)	−0.001 (0.001)	−0.001 (0.001)	−0.001 (0.001)	−0.001 (0.001)
Observations	8706	8706	8706	8706	7689	7689	7689	7689
R-squared	0.024	0.024	0.024	0.024	0.025	0.025	0.025	0.025
Number of HH	2708	2708	2708	2708	2697	2697	2697	2697
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other interacts	No	No	Yes	Yes	No	No	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard errors, clustered at commune level, in parentheses. Trust means “Most people can be trusted” and Careful means “There are people you cannot trust”. Other control variables are age of household head, gender, year of schooling, an indicator for household has a relative who holds a position of public or bureaucratic responsibility, an indicator for household has a relative who holds a public position, an indicator for household has a member who holds a public position, an indicator for household has a friend who holds a public position, number of households in communes, number of poor households in communes. Other interacts includes interaction of days for land administration and indicator for household has a friend who holds a public position, interaction of days for land administration and indicator for household has a member who holds a public position, interaction of days for land administration and indicator for household has a relative who holds a public position. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Author's calculation from VARHS 2008–14.

results also provide evidence showing why effects of institutional changes on economic development are more profound in one region but not in the others, which depend on different cultural traits of people in the regions.

The findings also show some evidence that faster economic development may be promoted if land administrative procedures can be simplified, which enhances investment of households who have stronger trust on others. This would help increase agricultural investment and the agricultural sector, which are good for improved food security in developing countries, especially in rural areas, where poverty is more pronounced.

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