Social Capital and Savings Behavior: The impact of group membership on household formal savings in rural Vietnam

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Abstract:

In this paper, we analyze household savings in rural Vietnam paying particular attention to the factors that determine the proportion of savings held as formal deposits. Our aim is to explore the extent to which social capital can play a role in promoting formal savings behavior. Social capital is defined as active membership of socio-political organizations such as Women's Unions and Farmer's Unions. We find strong evidence to support the hypothesis that information transmitted through these organizations increases the proportion of liquid assets held in the form of deposits that yield a return. Our results imply that transmitting information on the benefits of deposit saving through formal networks or groups would be effective in increasing the number of households that save at grassroots level.

Keywords: Household Savings, Social Capital, Women's Unions, Farmer's Unions, Vietnam

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1. Introduction

Household savings are an important determinant of welfare and so promoting savings at the household level is important for economic development. In particular, savings (along with the accumulation of other assets) act as an important buffer against income shocks, particularly where access to credit is scarce (Deaton, 1991; 1992). Moreover, savings constraints, coupled with credit constraints, may hinder productive investment.[1] A key issue for developing countries, however, is the extent to which households can access financial products, particularly deposit products. For low-income households there may be many barriers to saving in formal financial institutions aside from access, including a lack of knowledge or information, potentially leading to mistrust and uncertainty about available returns.[2] Poor households are therefore more likely to save money as cash held in their homes, an insecure form of saving that does not yield a return (Banerjee and Duflo, 2007).

In many cases, information and trust problems can effectively be eliminated at local level rather than requiring costly state-wide policies. This can be achieved through either the establishment of informal savings and credit groups to substitute for the formal market or through the sharing of information and expertise on the merits of formal saving and the process of opening a bank account.[3] It is well established in the literature that risk-sharing among social groups through a system of transfers and loans is an important mechanism for risk coping among the rural poor (Coate and Ravallion, 1993; Townsend, 1994; Udry, 1994; Foster and Rosenzweig, 2001; Ligon *et al.*, 2002), but less is known about the role of social capital in facilitating formal savings behavior.[4]

In a general sense, the role of social networks in developing country contexts is well documented.[5] Informal networks act as a substitute for formal institutions where the latter are weak. In particular, they can facilitate information sharing and efficient exchanges by eliminating information asymmetries associated with mistrust and search. A key consideration is how to define and identify the network or group that represents social capital. Most of the empirical literature identifies interpersonal relationships amongst members within villages or communities through conducting detailed surveys (see for example, Conley and Udry (2001), Fafchamps and Lund (2003) and Fafchamps and Gubert (2007) amongst others). Fafchamps (2006) suggests, however, that groups that reach everyone in a community may be a more effective vehicle for eliminating information failures. Moreover, it

[1] Dupas and Robinson (2009) find that opening interest-free savings accounts had a positive impact on the productive investment levels of women in Kenya.

[2] Other barriers include high opening balance requirements and minimum deposit amounts, complicated and unclear procedures, costs associated with travelling to the institution and impersonal or unfriendly service (ILO, 2007).

[3] Local insurance and credit markets may also act as substitutes for saving, particularly where savings are precautionary. However, in many developing country contexts access to formal insurance and credit markets may be even more limited than savings

[4] Some recent advances in the literature have used experimental approaches to try and uncover the role of trust, financial information and social learning in financial decision making. For example, Ballinger *et al.* (2003) using experimental methods find that social learning improves individuals' ability to solve life cycle precautionary savings models. Cole *et al.* (2009) using a randomized field experiment in two rural regions of India find that trust and information are important in financial market participation.

[5] Fafchamps (2006) provides an overview of the importance of social capital for development. Other examples include Conley and Udry (2001) who illustrate the importance of social networks for technology diffusion in the household agricultural sector in Ghana; Bandiera and Rasul (2006) who show the role of networks in the adoption of sunflower, a new cash crop, in Mozambique; and Barr (2000) and Fafchamps and Minten (2002) who show how social networks affect entrepreneurial activity in Africa.

may be that for community governance to work effectively it also requires a legal environment that facilitates their functioning (Bowles and Gintis, 2002). In other words, an institutional structure that allows the state, markets and communities to collectively govern and interact is essential.

In this paper we examine the role that social capital can play in correcting for information failures in financial markets in rural communities in Vietnam. Households in rural areas may be excluded from interest-bearing savings products due to a lack of information or a higher perceived level of risk associated with saving formally leading households to choose either not to save or to save in a low yielding form (for example, cash held at home).[6] We explore the possibility that formal social groups such as Women's Unions, Farmer's Unions and Veteran's Unions, can play an important role in informing group members of the merits of saving formally. This may lead to an increase in households' level of trust in formal financial institutions while reducing the perceived riskiness associated with formal saving.

As a centrally planned economy, the state plays a dominant role in the functioning of the Vietnamese economy, however, under the umbrella of the Communist Party, a variety of local socio-political organizations exist that play an important role, both socially and economically, in local communities. These organizations, the most prominent of which include Women's Unions and Farmer's Unions, follow a hierarchical structure with official leaders (paid through government funds) operating at the central, province, district and commune level, managing the activities of the organization and working with members within the relevant unit. The nature of the organizational structure of these groups suggests that active members at grassroots level will have the right incentives to behave in a socially beneficial way. In addition, since these groups operate under the umbrella of the State, the activities of these local organizations complement the strategy and policies of the State. Furthermore, active members of these organizations within regions interact regularly at meetings and so group membership can act as an important vehicle through which information can be shared.

We begin our empirical analysis by exploring the factors determining household savings focusing on how these factors have changed over time and are different across regions. We pay particular attention to the determinants of formal savings. We also analyze the factors determining membership of socio-political groups, namely Women's Unions and Farmer's Unions. Finally, we link membership of formal socio-political groups to the savings behavior of households in an attempt to establish the extent to which social capital of the kind described above can impact on household savings behavior.

We find strong evidence to support the hypothesis that information transmitted via reputable social organizations increases the proportion of liquid assets held in the form of deposits that yield a return. In a policy context, our results imply that targeting information on the benefits of saving in financial institutions or local savings groups through formal social networks or groups would be effective in increasing the proportion of total saving held in interest-bearing form.

[6] See Banerjee and Duflo (2007) for a general overview of the economic situation of households in developing countries.

The paper is structured as follows. Section 2 provides some background on the role Women's Unions and Farmer's Unions in Vietnam. The data are described in Section 3. We present and discuss the empirical results in Section 4. Section 5 concludes.

2. Social Capital: Women's Unions and Farmer's Unions

The Vietnam Women Federation (VWF) is a political, social organization, for women in Vietnam and is the umbrella organization of the Women's Union. VWF is a member of the Vietnam Fatherland Front, a member of the International Democratic Women Federation and the ASEAN Women Federation. Any Vietnamese woman aged 18 and over can join the VWF by agreeing to its rules and regulations. Applications to join are made at grassroots level (within the woman's local village or hamlet) and are processed at the commune level. A nominal fee of 500 dong is paid upon joining.

The overall function of the VWF is to protect the right to equal, democratic, and fair treatment for women and to unite and mobilize women in the pursuit of these rights in the implementation of the policies and laws of the Communist Party. A number of recent activities of the VWF extend beyond this role. Examples include: the provision of technical training to improve business skills, household economic development, family financial management, etc.; illiteracy eradication in mountainous and ethnic communities through education and training programs; assisting in the provision of credit through the two main state banks (Vietnamese Bank for Agriculture and Rural Development (VBARD) and the Vietnamese Bank for Social Policies (VBSP)) and the creation of saving-credit groups; and involvement in social programs in family planning, vaccination and HIV/AIDS prevention and control.

The Vietnam Farmers' Association (VFA) was founded as a socio-political organization for peasants and farmers and also falls under the leadership of Communist Party of Vietnam. It is also a member of Vietnam's Fatherland Front. The VFA has the mandate of gathering and educating farmers to ensure the successful implementation of industrialization and modernization of agriculture and the countryside in Vietnam. All individuals over the age of 18 working in agricultural sectors, handicraft or agricultural services, can join the Farmer's Union by signing up to its philosophies, rules and regulations.

The main motivation for farmers to join the VFA is to receive assistance in the development of their agricultural enterprises. In more recent years, the VFA has also assisted farmers in accessing credit from the two main state banks (VBARD and VBSP). The VFA guarantees loans for farmers so that they can borrow without collateral, and also facilitates saving and credit groups to assist in the management of repayments. Farmer's Unions also participate in national programs relating to job creation, agricultural extension and vocational training.

It is clear that the economic benefits associated with membership of Women's Unions and Farmer's Unions have the potential to extend beyond the stated objectives of these organizations. Given the nature of the work undertaken by members, regular interactions can potentially have a significant effect on the behavior of members and economic outcomes. In this paper, we investigate the extent to which there is evidence of such network effects on the savings behavior of members.

3. Data and Descriptive Statistics

Data are taken from the Vietnam Access to Resources Household Survey (VARHS) implemented in 2006, 2008 and 2010 in 12 provinces in Vietnam.[7] The households for which a full panel is available are spread over 456 communes, 131 districts and total approximately 2,200 households. Along with detailed demographic information on household members, the survey includes sections on financial behavior, in particular in relation to savings and borrowing. Due to the absence of total expenditure data we cannot use the standard 'income minus expenditure' measure of saving. Instead, we focus our investigation on self-reported levels of saving.

The supply of institutional saving services for rural households is estimated to cover 65 percent of the poorest quarter of the population (ILO, 2007). Saving services are offered by five state-owned commercial banks, one social policy bank, one post office savings company, 37 joint stock commercial banks, 31 foreign owned bank branches, five joint venture banks, 934 People's Credit Funds and 58 microfinance institutions (ILO, 2007 p.85). In 2006, 35 percent of communes included in our sample had a state bank located in their commune and only 18 percent had access to other types of credit organizations such as People's Credit Funds and microfinance institutions. However, 93 percent of communes report having access to formal savings deposits through institutions located outside of the commune. In 2008, access within communes increased with 52 percent of communes having a state bank and 25 percent having access to other forms of credit organizations. Further increases were observed in 2010 with 64 percent of communes having a state bank and 42 percent having some other form of credit organization.

Table 1 provides a description of the savings behavior of households in our sample. Our measure of savings includes formal savings (i.e. postal savings, savings in state owned commercial banks, private banks and credit organizations), informal savings (i.e. ROSCAS[8] and saving through private money lenders), and home-saving in the form of cash, gold and jewelry kept at home. We categorize formal and informal savings as deposit saving given that both require sums of money to be deposited with a third party.

In 2006, 54 percent of households reported having saved in one of these forms in the previous 12 months. This fell to 43 percent of households in 2008 but increased again to 61 percent of households in 2010. The dominant form of saving is cash, gold and jewelry held at home (44 percent of households in 2006, 37 percent in 2008 and 52 percent in 2010). In contrast, the proportion of households with savings in formal financial institutions is very small at around 5 percent each year. Saving households save more in 2008 and 2010 compared with 2006, even after adjusting for inflation. The lower level of saving in 2010 compared with 2008 can be accounted for by the increase in the proportion of households who save. As they are 'beginner' savers, they are more likely make small deposits. Home-saving makes up the greatest proportion of saving with formal saving accounting for only 8 percent of the total in

[7] The survey was developed in collaboration between the Development Economics Research Group (DERG), Department of Economics, University of Copenhagen and the Central Institute of Economic Management (CIEM), the Institute for Labour Studies and Social Affairs (ILSSA) and the Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), Hanoi, Vietnam.

[8] Rotating Savings and Credit Associations (ROSCAs) are very widespread and very popular with low income households. They are small, operate locally, accept contributions in-kind (e.g. rice ROSCAs) as well as in cash and some have a mutual assistance mechanism.

each year. Households save approximately 17 percent of their income in 2010.[9] There is also considerable variation in savings levels across provinces.

INSERT TABLE 1 HERE

The VARHS records membership in eight different groups/organizations, three of which fall directly under the hierarchical structure of the State.[10] As discussed in Section 2, Women's Unions fall under the umbrella organization of the Vietnamese Women's Federation (VWF) and Farmer's Unions operate under the umbrella of the Vietnamese Farmer's Association (VFA). These groups are formed on the basis of the same socio-political ideals. The duties and responsibilities of members range from fulfilling the duties of a citizen, actively participating in community meetings and mutually supporting the work of the community and the sharing of information to enhance the work of the organization. In recent times the role of these organizations has extended to enhancing the economic activity of communities. For example, Farmer's Unions work toward disseminating information on new production technologies while Women's Unions work toward facilitating savings and credit teams and providing information on family planning and health. Almost all communes have an active organization operating within the commune. The VWF and VFA have established agreements with the two main state banks in Vietnam (The Vietnam Bank for Social Policy (VBSP) and the Vietnamese Bank for Agriculture and Rural Development (VBARD)) to support savings and credit groups in local communities. However, savings facilities are only offered directly through groups in 7 percent of communes in our sample.

Household networks are defined on the basis of whether individuals within households are *active* members of different groups/organizations within the region defined in this paper separately by province and district. There is a high proportion of active group membership in households in Vietnam. Women's Unions and Farmer's Unions play a particularly important role. Although the proportion of households with active group members declined for our sample between 2006 and 2008, participation increased between 2008 and 2010 (see Table 2). While these groups share the same structure, they vary in the extent to which they have established the infrastructure at the village level for supporting local financial markets (through, for example, the establishment of savings and credit groups).

Table 2 describes the savings behavior of these groups. Members of Women's Unions and Farmer's Unions are more likely to save than households that are non-members in all years. The average level of saving of Women's Union members is higher than non-members in 2006 and 2008 but is lower in 2010. Members of Farmer's Unions save less than non-members in all years but this is only in terms of financial savings and excludes savings in the form of other assets such as livestock.

It is also the case in 2006 that deposits, and in particular formal deposits, make up a greater proportion of saving for group members compared with non-group members. This suggests that (at least in 2006) households that are active members of these groups have greater access to formal financial institutions. This is, perhaps, not surprising given that these groups have a great deal of organizational support at grassroots level and a long history of cooperation and

[9] This is consistent with national statistics provided by the GSO based on the Vietnamese Household Living Standards Survey which estimates that households save approximately 17.5 percent of their monthly income.

[10] In addition to the three groups used in this analysis, the VARHS also collects information on membership of the Vietnamese Communist Party, Youth Unions, religious organizations, irrigation cooperation and informal credit groups.

support on financial related issues among community members. The same picture does not emerge from the 2008 data, however, where saving households that are members of Women's Unions and Farmer's Unions save less in formal deposits than other saving households in the sample.

In this paper we are interested in the extent to which the behavior of these groups is causally related to the behavior of its members. In particular, we are interested in the extent to which the behavior of the network can influence the proportion of saving held in the form of deposits (that can yield a return) as opposed to home-saving. The behavior of the network is measured as the average level of deposits of group members within a province. Descriptive statistics are presented in Table 2.

[INSERT TABLE 2 ABOUT HERE]

Of particular note is the fact that the spatial pattern of group savings behavior in relation to deposit saving is very different to that of the rest of the sample (see Table 1). These trends suggest that the composition of savings of active members of Women's Unions and Farmer's Unions is more volatile than the average behavior of households in the sample. We cannot conclude from these observations that group behavior has an effect on the behavior of its members. The summary statistics do suggest, however, that group members behave differently than non-group members. We hypothesize, in particular, that group members possess better information on formal financial institutions than non-members which appears to be the case, at least in 2006. These correlations, however, may be due to many factors such as changes in the composition of members or changes in the behavior of the population as a whole. We will investigate the impact of the savings behavior of the group on the behavior of its members through our empirical analysis in Section 4.

INSERT TABLE 2 HERE

We also control for the density of the network. While we do not know how many group members there are in each province the VARHS does record a number of commune level characteristics including the number of households within the commune which we aggregate to province level. To compute the density of the network we take the proportion of active group members in each province in our sample as being representative of group activity in that province and multiply this proportion by the number of households in the province, aggregated using the commune level data, to compute the density of the network.

In addition to network effects, we also consider how other factors may affect the level of formal savings. We expect that as wealth increases households will hold less of their savings in the form of (perceived risky). In particular, if we assume that households view formal savings as the relatively riskier form of saving, due to the absence of complete information, we would expect that as households become wealthier they hold less of their savings in the form of formal deposits. It could also be the case that wealthier households simply choose other forms of saving and investment such as real estate. The wealth measure that we include is the stock of deposit saving held at the beginning of each year. We also include wealth quintiles constructed using information on the dwellings of the household.[11] We control for differences in access to saving (or the cost of saving) with the average savings levels in the province and the number of new banks located in the commune. To control for income

[11] Details available on request.

shocks we include household income, a dummy indicator of whether the household reported that they experienced a natural disaster, and a variable capturing the number of natural disasters experienced within the commune.[12] If savings are precautionary we expect households to dis-save in the event of a shock and it is also likely that they are not able to save in the immediate aftermath.[13] We also include household size and whether households receive transfers from children living outside of the home as controls. A description of all variables included in the model and summary statistics are presented in Table 3.

[INSERT TABLE 3 ABOUT HERE]

4. Empirical Results

4.1 The determinants of group membership

We begin our empirical analysis by considering the determinants of active membership of Women's Unions and Farmer's Unions. We first analyze the determinants of membership separately for each year and then pool the data across years to estimate a household fixed effects model of the determinants of saving. In all models we use a linear probability model for comparability of the estimates. Using household fixed effects allows us to exploit the within household variation in group membership over time to identify the determinants of group participation. The inclusion of fixed effects, however, means that the impact of time invariant household characteristics such as gender, and characteristics that vary little over time such as age education, are not identified. These variables are only included in the cross-sectional analysis (see Table 3 for a description). We also disaggregate by Northern provinces and Southern provinces to see whether the determinants of group membership differ across regions.

[INSERT TABLE 4a ABOUT HERE]

The results for Women's Union membership are presented in Table 4a. The cross-sectional analysis shows a positive and significant relationship between active participation in Women's Unions and a household's exposure to natural disasters. This result holds in 2008 and when we control for household fixed effects (column (3)). It is also evident in the Northern provinces (column (6)). One explanation for this result is that when households are more exposed to risks they are more likely to rely on the support of the network of Women's Union members, particularly in times of need. In support of this explanation, we also find evidence that households in receipt of support from children are less likely to actively participate in Women's Groups. This suggests that where there are family support mechanisms in place participation in Women's Unions is less common. This result holds in both cross-section models and the household fixed effects model. It is, however, only evident in Northern provinces.

Another important cross-sectional determinant of participation is the age of the household head which is negatively correlated with active participation in Women's Unions. We also find that the higher the level of education of the household head the more likely they are to actively participate, although this does not apply to the highest education levels. In the fixed

[12] Shocks include floods, droughts, typhoons, landslides, animal/livestock epidemics, plant disease and insect/rat infestations.

[13] Empirical evidence to support the hypothesis that households dis-save when confronted with a negative income shock was provided for example by Udry (1995) using a sample of 200 farmers households in northern Nigeria and Newman et al (2011) in the case of rural Vietnam.

effects model in column (3) we find that wealth is positively correlated with Women's Union membership but once group characteristics are controlled for this effect disappears. There is some weak evidence, however, that wealth may be correlated with Women's Union membership in the Northern provinces.

In relation to group characteristics we find that in communes where Women's Union members state that there are economic benefits to membership households are less likely to be group members. This suggests that economic benefits of Women's Union membership are more common in communes with fewer active participants. In contrast, where households claim that access to credit is an important benefit of membership active participation is much more likely. These results only hold for Northern provinces. We also find some evidence that when there are a large number of poor households in a commune (as classified by the authorities) the level of active participation is higher.

The results for active participation in Farmer's Unions are presented in Table 4b. We find some evidence that lower income households are more likely to participate in Farmer's Unions. As for Women's Unions we find that households that experience natural disasters are more likely to be active participants in Farmer's Unions, but only in 2010, while in Northern provinces households that receive support from children are less likely to be active members in both years. The latter result suggests that households with stronger family support mechanisms in the North may be less likely to rely on group support mechanisms.

[INSERT TABLE 4b ABOUT HERE]

As for Women's Union membership there is some evidence that households with older household heads are less likely to participate in Farmer's Unions and there is also a positive relationship between education and group membership, but not at the highest education levels. Male headed households are much more likely to participate in the activities of Farmer's Unions in both years.

Once group characteristics are included (column (4)) we find that the membership fee is positively related to group membership, particularly in Southern provinces. This suggests that where membership fees are required the benefits of membership may be greater (or at least may be perceived as being greater), encouraging more active participation. Similar to Women's Union membership we find that in communes where members report access to credit as an important benefit of membership, households are more likely to actively participate in Farmer's Unions.

Overall, our results highlight notable differences in the types of households that participate in groups. The characteristics of participants in Women's Unions and Farmer's Unions are similar in that active participants tend to be younger households with more education (but not the highest level of education). Households that are exposed to natural shocks rely to a greater extent on group members but those that receive financial support from children do so to much less of an extent. An important motivator for active participation is where benefits of membership include access to credit, although the direction of causality is unclear. On the basis of this analysis we can conclude that active participants of these groups have similar characteristics and those households that are in greater need of informal safety networks are more actively involved. Group participants can therefore be thought of as a formal social network and a good proxy for social capital.

4.2 The determinants of saving

In this section we consider the determinants of savings. We estimate cross-sectional models for 2008 and 2010 and also household fixed effects models where the data are pooled and time invariant unobservable household characteristics are controlled for. We also control for provincial and commune characteristics that may impact on savings behavior such as the average level of savings in the province, the number of banks in the commune, the number of natural disasters suffered in the commune and the proportion households that are classified as poor. We also disaggregate the data to consider the pattern of saving in the Southern and Northern provinces separately.

Table 5a presents the results for total household savings including formal, informal and home savings. We find a strong positive relationship between income and savings in the cross-sectional models and the household fixed effects models. This relationship, however, only holds for households in Southern provinces. Income has no significant effect on the savings of households in the North. This suggests that income is an important determinant of saving in Southern provinces but in the North savings are driven by other factors. We also find that the larger the household size the lower the level of savings which is not surprising given that disposable income will be lower in larger households. In the cross-sectional model we find some evidence that age has a negative and significant effect on savings in 2008, consistent with the lifecycle model of savings. In relation to the commune characteristics there is some evidence that the greater the number of natural disasters the lower the savings level. This is particularly the case for the Southern provinces. This result is consistent with Newman et al (2011) who find that, in the absence of other insurance mechanisms, household savings act as an important buffer for households that suffer natural shocks, causing them to deplete their savings stocks.

[INSERT TABLE 5a ABOUT HERE]

In Table 5b we explore the factors determining the proportion of household saving that is held in the form of deposits, either formal or informal. In all case we find that the larger the stock of financial savings already held by the household the greater the proportion of saving that the household will choose save in the form of deposits. Income is also positively related to the proportion of savings held as deposits, but not in the disaggregated models. There is some evidence that wealthier households are less likely to hold savings in this form, particularly in 2010 and in Northern provinces. This could be due to wealthier households perceiving deposits as a more risky form of saving than cash held at home or it could be that they save in other less liquid forms such as land and housing. In the cross-sectional models we find that education is positively related to deposit saving.

[INSERT TABLE 5b ABOUT HERE]

The results for the proportion of savings held in the form of *formal* bank deposits are presented in Table 5c. We find a positive wealth effect for households with already high stocks of deposit saving: that the greater the stock of savings, the greater the proportion of savings households hold in formal deposits. Wealthier households in terms of housing, however, save less formally suggesting as above that they have different risk perceptions or that they hold their wealth in other asset forms (such as land, livestock, or real estate). There is also a positive income effect observed in all models with the exception of the Northern sub-sample.

We find a positive and significant relationship between households that receive support from children and the proportion of formal saving. This is a particularly interesting result and could be explained by two mechanisms: i) remittances provide additional income for households which allows them to save more; or ii) households that receive financial support from children are more likely to receive this money through formal bank transfers meaning that they are more likely to have a bank account and save formally. We find some evidence that more educated households save a greater proportion formally.

[INSERT TABLE 5c ABOUT HERE]

4.3 Social capital and savings behavior

We now consider the impact that being part of a formal social network through active participation in Women's Unions and Farmer's Unions has on household savings behavior. Our hypothesis is that members of these groups possess information and knowledge that is disseminated to members through interactions between active participants. In particular, if group members are more knowledgeable about accessing formal savings products then this knowledge may transfer to its members.

We measure the network effects as the average stock of deposits of group members in each province. For households with active group members, their own household savings is excluded from the computation of the average stock measure. We also lag this measure by two periods to eliminate the possibility of reverse causality (i.e. individual household behavior impacting on group behavior). We consider this a measure of the quality of the network in that networks with higher levels of deposit saving are more likely to possess knowledge and information on formal saving that may filter through to group members.

We also control for differences in the density of different groups given that the larger the group the greater the penetration of information. It may also be the case that the larger the group the less effective the group is in influencing behavior since the extent of 'locality' of the group is lessened. Regardless of the direction of the relationship, group size and its interaction with network quality are important control variables. The models are estimated for group members only.[14] All models are estimated using household fixed effects and so time invariant household specific effects are controlled for. All baseline characteristics included in the models presented in Section 4.2 are also included in each model but are not presented for ease of illustration. The results are presented in Table 6.

[INSERT TABLE 6 ABOUT HERE]

Table 6 Panel A reports the results for the Women's Union networks. We find a positive and significant network effect on total savings, on the proportion of savings held in the form of deposits and on the proportion of savings held in the form of formal deposits. The latter effect is most prominent in large networks but has a positive marginal effect of 0.015 at the mean. This implies that a 1 percent increase in the average stock of deposits held by Women's Union members will lead to a 1.5 percent increase in the proportion of savings held formally by group members. This effect is larger for networks with more members. The disaggregation for Southern and Northern provinces reveals that this effect is most prominent in the North

[14] One caveat to this analysis is that group members may be a selected sample in that they possess characteristics that determine group membership and influence savings behavior. We do not control for this in our model but tests for sample selection bias suggest that this is not the case. Results are available from the authors.

suggesting that Women's Unions are more effective in disseminating information and influencing behavior in Northern provinces.

We find similar results for Farmer's Unions as illustrated in Table 6 Panel B although the effect does not filter through to formal deposits. The network effect, on aggregate, is positive and significant (Panel B, column (1)), but is decreasing in the size of the network. At the mean the marginal effect is 0.38. This implies that for every 1 million VND increase in group savings, members increase their savings by 380,000 VND. The network variable also has a positive and significant effect on the proportion of savings held in the form of deposits (column (2)), but this result is driven by informal deposits. Famer's Unions do not impact on the proportion of savings held in formal deposits (column (3)).

Overall, our results suggest that networks can play an important role in disseminating information on formal savings mechanisms thus enabling households to make more efficient savings decisions. Women's Unions appear particularly well placed in this regard with our network measure not only impacting group members in terms of savings levels, but also in terms of the proportion of household saving held formally. It does appear, however, that the size of the network may also be an important factor with larger networks being more effective. Our results suggest that these groups can fill the role of formal institutions in enhancing the knowledge of individuals at local level.[15] In a policy context, targeting information on the benefits of saving in financial institutions through Women's Unions and Farmer's Unions, could be effective in increasing formal savings at grassroots level.

6. Conclusion

Household savings are an important instrument for coping with risk in developing countries. Moreover, savings are an important means of financing productive investment, particularly where there are credit constraints. Savings at the household level, however, are hindered by the fact that financial markets are not particularly well developed in many rural communities and many households either do not possess the information required to set up formal deposit accounts or do not trust formal institutions with their money. As a result, households often opt to hold their savings in the form of cash held at home, an insecure form of saving that does not yield a return. In this paper, we have explored the extent to which social networks in the form of formal group membership can play a role in imparting information about the merits of saving where potential knowledge gaps exist, thus facilitating savings where they would otherwise not be possible.

First, we focus on the factors determining membership of Women's Unions and Farmer's Unions. We find that in both cases membership is associated with younger more educated households. Of particular note is the fact that more vulnerable households in terms of exposure to natural shocks are more likely to be members of both groups while households that receive support from children, and are therefore less in need of local social safety networks, are less likely to be members. We also find that the availability of credit through membership of these groups is an important motivating factor for group membership.

Second, we analyze the determinants of household savings behavior. We find that the most important driver of savings is income, both in terms of total savings and the proportion of

[15] See Hardin (2009) for a full discussion of the role of institutions in spreading both *institutional* and *ordinary* knowledge.

savings held in formal deposits. This, however, is only the case in Southern provinces. Also of note is the fact that households that receive financial support from their children hold a greater proportion of their savings in formal deposits, suggesting a possible link between being formally banked and the receipt of remittances.

Third, our core model explores the relationship between social capital, in the form of active participation in Women's Unions and Farmer's Unions, and savings behavior. We find that groups with higher levels of deposit savings on average induce group members to save more. This is the case for both Women's Unions and Farmer's Unions. For Women's Unions we also find that members in groups with higher levels of deposit savings save a greater proportion in formal financial institutions.

Our findings suggest that disseminating information about formal savings through these groups could potentially stimulate more productive household savings. This is particularly the case for Women's Unions in the North where the effect is largest. Given that members of Women's Unions in the North have lower incomes and a greater proportion of poor households, increasing formal savings in this region is particularly desirable. Household savings generally are an important determinant of welfare and access to formal savings products that yield a return (or include an element of commitment) will facilitate households in accumulating capital for investment or collateral for accessing credit. In the North where formal savings rates are lower and members of Women's Unions are less well off, using Women's Unions to disseminate information on formal savings to its members has the potential to have a significant impact on poverty in the longer term.

Overall, our results suggest that socio-political groups in Vietnam can play an important role in correcting for gaps in information on the merits of saving at the community level. Our results imply that targeting information on the benefits of saving through these groups could be effective in increasing the number of households that save. We propose that the mechanism through which this information sharing happens is through demonstration effects transmitted through reputable inter-personal networks, a mechanism difficult to replicate through formal institutions. The cost of this form of information sharing is small but the benefits could be significant. Future research is required to explore the mechanism through with Women's Unions in particular can influence household savings behavior.

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Tables

Table 1: Household savings behavior

	Total Savings	Deposits	Formal	Informal	Home
% hhs who save (2006)	53.85	16.96	4.86	12.91	43.39
% hhs who save (2008)	43.02	9.19	3.99	5.29	36.69
% hhs who save (2010)	60.67	15.50	5.70	10.51	52.38
For saving households:	*VND*	*Of which (%):*			
Average (2006)	11,465	26.68	7.32	19.37	73.31
Average (2008)	17,061	18.22	7.98	10.24	81.77
Average (2010)	14,084	20.71	7.69	13.01	79.30
For saving households:					
Savings/income (2006)	24.24	11.11	3.82	7.30	13.13
Savings/income (2008)	19.93	4.64	2.47	2.17	15.29
Savings/income (2010)	17.06	5.10	2.78	2.33	11.95
Lag stock deposit savings:		2008 (‘000)		2010 (’000)	
Ha Tay		7,020		10,194	
Lao Cai		3,467		4,433	
Phu Tho		8,049		7,044	
Lai Chau		1,344		144	
Dien Bien		75		429	
Nghe An		10,336		2,875	
Quang Nam		7,382		4,759	
Khanh Hoa		11,147		8,302	
Dak Lak		13,671		5,006	
Dak Nong		2,880		26,595	
Lam Dong		4,117		1,968	
Long An		7,047		13,423	

Note: All value figures are adjusted to 2010 prices.

Table 2: Group membership and savings

	Women's Union			Farmer's Union		
	2006	2008	2010	2006	2008	2010
% hhs active members	53.68	52.95	56.08	39.65	33.35	38.22
% hhs who save	55.97	46.93	63.22	56.35	49.02	65.03
For saving households:						
Mean level of saving ('000)	12,437	15,640	12,989	9,570	13,856	11,262
Total savings as % income	24.44	20.87	17.59	22.47	17.99	15.20
Deposits as % total	28.29	15.81	23.35	24.83	14.77	22.74
Formal deposits as % total	8.53	6.51	6.82	7.57	6.98	7.60

	Women's Union		Farmer's Union	
Network Variables:	2008	2010	2008	2010
Ha Tay	10,744	13,106	4,269	6,198
Lao Cai	6,168	806	8,297	824
Phu Tho	31,779	31,930	5,828	19,562
Lai Chau	2,426	0	789	739
Dien Bien	16	279	16	1,166
Nghe An	9,175	3,695	4,131	4,186
Quang Nam	15,487	6,292	6,202	2,807
Khanh Hoa	240	954	68	47
Dak Lak	10,956	6,252	6,421	1,388
Dak Nong	0	25,221	0	4,284
Lam Dong	3,999	1,390	2,153	1,279
Long An	5,611	11,425	2,174	1,585
Average	11,012	11,319	4,010	6,239

Network savings is defined as the average stock of savings in the form of deposits held by group members within an individual province at the two year's prior to the time period in question (see discussion in Section 2 for the rationale behind this measure).
Note: All value figures are adjusted to 2010 prices.

Table 3: Explanatory variables

Name	Description			
Household variables:		*Mean*	*Std. Dev.*	
Stock	Stock of savings at beginning of year ('000)			
	2006	5,316	28,997	
	2008	4,453	32,164	
	2010	7,162	41,098	
Income	Total household income ('000)			
	2006	36,607	53,536	
	2008	56,967	93,082	
	2010	65,863	116,007	
Household Size	Total number of individuals in household			
	2006	4.54	1.77	
	2008	4.54	1.80	
	2010	4.32	1.75	
Income shock	Dummy =1 if household suffered an unexpected loss to income between due to an exogenous shock	*Frequency (%)*		
	2006	19.33		
	2008	33.09		
	2010	30.02		
Children Support	Dummy =1 if household receives financial support from children	*Frequency (%)*		
	2006	33.33		
	2008	14.31		
	2010	24.19		
Cross-section variables:		*2006*	*2008*	*2010*
Age	Age of household head in years (mean)	33.5	34.7	36.6
Education	Education of household head	%	%	%
	1 Cannot read and write	10.7	10.8	9.6
	2 Can read and write but did not finish primary school	23.3	18.8	17.0
	3 Finished primary school	23.1	35.5	28.9
	4 Finished lower secondary school	30.7	23.6	31.7
	5 Finished upper secondary school	10.2	9.4	10.5
	6 Has a third level qualification	2.1	1.8	2.3
Male head	Dummy =1 if male head of household	79.5	78.3	78.2
Commune variables:		*2008*		*2010*
Number of banks located in the commune		0.91		0.93
Number of natural disasters in last two years		3.30		3.28
Proportion of households classified as poor		0.15		0.15
Group variables:		*Women's Union*		*Farmer's Union*	
		2008	*2010*	*2008*	*2010*
Membership fee	Average reported membership fee of group members in commune	150	134	115	90
Family diversity	Diversity of group in terms of family members within commune	0.09	0.16	0.11	0.15
Occupation diversity	Diversity of group in terms of occupation within commune	0.58	0.55	0.77	0.80
Economic benefits	Members perceive economic benefits of membership (=1)	0.26	031	0.36	0.37
Credit benefits	Members perceive access to credit as a benefit of membership (=1)	0.32	0.24	0.24	0.14

Note: All value figures are adjusted using regional price deflators and are expressed in terms of June 2006 prices. Inflation adjustment is based on Consumer Price Index figures available from the General Statistics Office of Vietnam.

Table 4a: Determinants of Women's Union Membership

	(1)	(2)	(4)	(5)	(6)	(7)
Household Characteristics	*2008*	*2010*	*HH Fixed Effects*		*South*	*North*
Income	-0.0001	-0.0001	-0.0001	-0.0003**	-0.0002	-0.0003**
	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0001)
Total Area Owned	-0.001	0.0002	-0.0004	-0.001	-0.001	-0.002
	(0.001)	(0.001)	(0.0006)	(0.002)	(0.002)	(0.002)
Natural Disaster	0.083***	0.030	0.052***	0.024	-0.011	0.058*
	(0.032)	(0.033)	(0.015)	(0.022)	(0.032)	(0.031)
Household Size	0.007	0.0001	0.031***	0.020	0.041*	0.007
	(0.011)	(0.012)	(0.018)	(0.013)	(0.022)	(0.016)
Children Support	-0.122***	-0.069*	-0.031*	-0.052*	-0.017	-0.072*
	(0.045)	(0.038)	(0.018)	(0.030)	(0.046)	(0.042)
Wealth 2	0.085	-0.016	0.059***	0.033	-0.070	0.083*
	(0.078)	(0.036)	(0.022)	(0.036)	(0.059)	(0.045)
Wealth 3	0.063	-0.031	0.083***	0.051	-0.043	0.088*
	(0.082)	(0.041)	(0.023)	(0.038)	(0.061)	(0.051)
Wealth 4	0.058	-0.052	0.076***	0.059*	-0.053	0.107**
	(0.081)	(0054)	(0.022)	(0.035)	(0.063)	(0.043)
Wealth 5	0.049	-0.251**	0.047**	0.031	-0.054	0.059
	(0.083)	(0.119)	(0.020)	(0.032)	(0.054)	(0.040)
Age	-0.008***	-0.009***				
	(0.001)	(0.001)				
Education 2	0.067	0.156**				
	(0.061)	(0.072)				
Education 3	0.131**	0.153**				
	(0.060)	(0.069)				
Education 4	0.144**	0.270***				
	(0.063)	(0.070)				
Education 5	0.064	0.200**				
	(0.073)	(0.077)				
Education 6	0.043	0.089				
	(0.123)	(0.110)				
Male headed household	-0.027	0.035				
	(0.037)	(0.037)				
Group Characteristics						
Membership fee	0.000	0.0001**		0.000	0.000	0.000
	(0.000)	(0.0001)		(0.000)	(0.0002)	(0.000)
Family diversity	-0.043	0.054		0.025	0.067	0.024
	(0.072)	(0.059)		(0.045)	(0.099)	(0.052)
Occupational diversity	0.054	0.053		-0.004	-0.038	0.001
	(0.035)	(0.041)		(0.032)	(0.056)	(0.039)
Economic benefits	0.043	0.135***		-0.093**	0.059	-0.172***
	(0.045)	(0.051)		(0.036)	(0.065)	(0.044)
Access to credit	0.047	0.084		0.073**	-0.044	0.122***
	(0.040)	(0.064)		(0.036)	(0.064)	(0.046)
Commune Characteristics						
Number of banks	0.010	0.024		0.017	0.061	-0.001
	(0.019)	(0.021)		(0.035)	(0.050)	(0.049)
Number of natural disasters	-0.009	0.035***		-0.010	-0.004	-0.009
	(0.009)	(0.009)		(0.014)	(0.021)	(0.020)
Proportion of poor households	-0.001	0.298*		0.036	0.001	0.564**
	(0.162)	(0.182)		(0.048)	(0.017)	(0.275)
Year 2008			-0.031**	-0.056***	-0.012	-0.076***
			(0.013)	(0.017)	(0.027)	(0.023)
Year 2010			0.018			
			(0.014)			
Constant	0.643***	0.467***	0.356***	0.563***	0.470***	0.523***
	(0.141)	(0.122)	(0.040)	(0.087)	(0.155)	(0.116)
Province Fixed Effects	Yes	Yes	No	No	No	No
Household Fixed Effects	No	No	Yes	Yes	Yes	Yes
Households	1,115	1,064	2,563	2,071	851	1,220
Observations	1,115	1,064	6,870	3,544	1,434	2,110

Standard errors clustered at the household level are given in parenthesis, *** denotes significance at the 1 percent level, ** denotes significance at the 5 percent level, * denotes significance at the 10 percent level. The drop in observations between column (3) and column (4) is because we do not have information on group characteristics in 2006.

Table 4b: Determinants of Farmer's Union Membership

	(1)	(2)	(4)	(5)	(6)	(7)
Household Characteristics	*2008*	*2010*	*HH Fixed Effects*		*South*	*North*
Income	-0.0005***	-0.0002***	-0.0001*	-0.0001	-0.0002	-0.00005
	(0.0002)	(0.00005)	(0.00005)	(0.0001)	(0.0002)	(0.0001)
Total Area Owned	0.001	0.001	0.0002	-0.0001	-0.002	0.004*
	(0.001)	(0.001)	(0.0004)	(0.002)	(0.002)	(0.002)
Natural Disaster	0.038	0.091***	0.023	-0.004	-0.010	-0.007
	(0.028)	(0.027)	(0.015)	(0.027)	(0.044)	(0.034)
Household Size	0.044***	0.013	0.019***	0.017	-0.016	0.033*
	(0.009)	(0.009)	(0.007)	(0.016)	(0.027)	(0.020)
Children Support	-0.051	0.016	-0.010	-0.047	-0.001	-0.106**
	(0.041)	(0.030)	(0.017)	(0.032)	(0.049)	(0.044)
Wealth 2	0.098	-0.018	0.016	-0.058	-0.112*	-0.071
	(0.061)	(0.034)	(0.021)	(0.042)	(0.067)	(0.053)
Wealth 3	0.154**	-0.016	0.026	-0.036	-0.085	-0.057
	(0.064)	(0.035)	(0.022)	(0.044)	(0.062)	(0.061)
Wealth 4	0.108*	-0.055	0.011	-0.048	-0.142**	-0.023
	(0.065)	(0.043)	(0.021)	(0.042)	(0.072)	(0.051)
Wealth 5	0.078	0.009	0.022	0.009	-0.073	0.022
	(0.068)	(0.072)	(0.019)	(0.037)	(0.063)	(0.044)
Age	-0.001	-0.003***				
	(0.001)	(0.001)				
Education 2	-0.005	0.004				
	(0.048)	(0.048)				
Education 3	0.110**	0.098**				
	(0.048)	(0.046)				
Education 4	0.136**	0.140***				
	(0.052)	(0.048)				
Education 5	0.050	0.035				
	(0.062)	(0.057)				
Education 6	-0.073	-0.065				
	(0.113)	(0.092)				
Male headed household	0.192***	0.205***				
	(0.033)	(0.032)				
Group Characteristics						
Membership fee	0.0001*	0.0001		0.0002**	0.0003***	0.0001
	(0.0001)	(0.0001)		(0.0001)	(0.0001)	(0.0001)
Family diversity	-0.051	0.015		-0.013	0.033	-0.045
	(0.072)	(0.048)		(0.044)	(0.126)	(0.049)
Occupational diversity	0.092*	-0.070		0.006	0.047	-0.008
	(0.054)	(0.047)		(0.045)	(0.083)	(0.057)
Economic benefits	0.077*	-0.032		0.006	-0.097	0.057
	(0.047)	(0.037)		(0.033)	(0.061)	(0.042)
Access to credit	-0.018	0.084		0.087**	0.089	0.039
	(0.054)	(0.057)		(0.043)	(0.071)	(0.056)
Commune Characteristics						
Number of banks	-0.018	-0.021		-0.021	0.021	-0.061
	(0.018)	(0.016)		(0.043)	(0.058)	(0.060)
Number of natural disasters	0.004	-0.007		-0.016	-0.071***	0.019
	(0.009)	(0.007)		(0.020)	(0.028)	(0.027)
Proportion of poor households	-0.068	0.024		-0.021	-0.019	0.045
	(0.134)	(0.036)		(0.032)	(0.039)	(0.037)
Year 2008			-0.073***	-0.060***	0.010	-0.118***
			(0.013)	(0.019)	(0.037)	(0.026)
Year 2010			-0.016			
			(0.013)			
Constant	-0.221*	0.274***	0.299***	0.518***	0.882***	0.394**
	(0.118)	(0.096)	(0.038)	(0.133)	(0.214)	(0.178)
Province Fixed Effects	Yes	Yes	No	No	No	No
Household Fixed Effects	No	No	Yes	Yes	Yes	Yes
Households	1,374	1,547	2,563	1,841	726	1,115
Observations	1,374	1,547	6,870	2,944	1,161	1,783

Standard errors clustered at the household level are given in parenthesis, *** denotes significance at the 1 percent level, ** denotes significance at the 5 percent level, * denotes significance at the 10 percent level. The drop in observations between column (3) and column (4) is because we do not have information on group characteristics in 2006.

Table 5a: Determinants of Total Savings

	(1)	(2)	(1)	(2)	(3)	(4)
Household Characteristics	*2008*	*2010*	*HH Fixed Effects*		*South*	*North*
Stock of saving	0.155**	0.007	0.077	0.001	-0.087	0.058
	(0.065)	(0.046)	(0.050)	(0.049)	(0.104)	(0.056)
Income	0.142***	0.135**	0.118***	0.090***	0.139**	0.061
	(0.050)	(0.060)	(0.036)	(0.033)	(0.0580	(0.039)
Total Area Owned	-0.001	0.016	0.052	0.175	0.215	0.046
	(0.086)	(0.084)	(0.046)	(0.158)	(0.224)	(0.063)
Natural Disaster	-0.114	-0.424	-0.095	-0.108	0.687	-0.293
	(1.230)	(0.756)	(0.742)	(0.912)	(2.093)	(0.815)
Household Size	-1.599***	-0.021	-1.455***	-1.437**	-3.429**	-0.331
	(0.580)	(0.460)	(0.403)	(0.732)	(1.605)	(0.639)
Children Support	-0.714	0.415	-1.853*	-2.034	-5.430	0.448
	(0.964)	(2.074)	(1.137)	(2.263)	(4.522)	(1.544)
Wealth 2	-2.970**	-3.949**	0.974	1.163	0.152	1.147
	(1.261)	(2.020)	(1.431)	(1.683)	(3.647)	(1.844)
Wealth 3	-4.497***	-6.260***	0.194	0.177	-1.360	0.202
	(1.398)	(2.160)	(1.205)	(1.488)	(3.283)	(1.652)
Wealth 4	-2.638*	-8.367***	-0.602	-0.371	-1.776	-0.251
	(1.541)	(2.521)	(1.268)	(1.293)	(3.269)	(1.366)
Wealth 5	-0.113	-6.494**	0.866	1.668	2.377	-0.066
	(2.622)	(2.815)	(1.587)	(2.155)	(5.861)	(1.770)
Age	-0.096***	0.078				
	(0.037)	(0.048)				
Education 2	0.413	2.587*				
	(0.842)	(1.461)				
Education 3	0.621	2.098				
	(1.167)	(1.819)				
Education 4	0.964	2.503				
	(1.451)	(1.814)				
Education 5	5.948**	-1.870				
	(3.089)	(2.152)				
Education 6	6.839	-0.015				
	(9.708)	(3.390)				
Male head of household	0.222	-2.580				
	(1.624)	(2.706)				
Region Characteristics						
Average Provincial Saving	-0.034	0.523***		0.070	0.125	-0.043
	(0.212)	(0.183)		(0.212)	(0.232)	(0.193)
Number of banks	-0.679	-0.142		0.688	1.567	0.890
	(0.865)	(0.672)		(1.197)	(2.326)	(1.444)
Number of natural disasters	0.267	0.399		-1.441*	-4.161*	0.231
	(0.365)	(0.341)		(0.831)	(2.242)	(0.309)
Proportion poor	2.107	1.252		-3.123	11.999	0.292
	(4.392)	(4.926)		(2.990)	(11.285)	(2.967)
Year 2008			-1.366*	0.003	0.556	-0.872
			(0.769)	(0.600)	(1.020)	(0.680)
Year 2010			-1.733*			
			(1.036)			
Constant	6.393*	-9.075	7.986***	11.288**	26.185***	2.151
	(3.600)	(5.543)	(2.353)	(4.654)	(10.127)	(4.738)
Provincial fixed effects	Yes	Yes	No	No	No	No
Household fixed effects	No	No	Yes	Yes	Yes	Yes
Households	2,247	2,185	2,563	2,310	998	1,312
Observations	2,247	2,185	6,870	4,469	1,885	2,584

Standard errors clustered at the household level are given in parenthesis, *** denotes significance at the 1 percent level, ** denotes significance at the 5 percent level, * denotes significance at the 10 percent level.
The drop in observations between column (1) and column (2) is because we do not have information on group characteristics in 2006.

Table 5b: Determinants of Proportion of Savings Financial

	(1)	(2)	(3)	(4)	(5)	(6)
Household Characteristics	*2008*	*2010*	*HH Fixed Effects*		*South*	*North*
Stock of saving	0.002***	0.001**	0.002***	0.001***	0.001**	0.001***
	(0.001)	(0.0005)	(0.0003)	(0.0004)	(0.001)	(0.001)
Income	0.0004***	0.0002*	0.0003***	0.0002	0.0003	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)
Total Area Owned	-0.0003	0.00001	-0.0002	0.0004	-0.0003	0.002
	(0.0003)	(0.0005)	(0.0001)	(0.0006)	(0.001)	(0.001)
Natural Disaster	0.012	0.014	-0.005	-0.004	0.037**	-0.028
	(0.011)	(0.014)	(0.010)	(0.013)	(0.018)	(0.019)
Household Size	-0.004	0.007	-0.002	-0.002	0.002	-0.005
	(0.003)	(0.005)	(0.005)	(0.008)	(0.014)	(0.009)
Children Support	0.002	0.014	0.004	0.020	0.017	0.006
	(0.017)	(0.018)	(0.013)	(0.029)	(0.026)	(0.026)
Wealth 2	0.011	-0.029	-0.023	-0.029	0.033	-0.039*
	(0.019)	(0.019)	(0.016)	(0.020)	(0.040)	(0.023)
Wealth 3	-0.016	-0.025	-0.002	-0.013	0.007	-0.016
	(0.018)	(0.021)	(0.016)	(0.022)	(0.040)	(0.027)
Wealth 4	-0.009	-0.041*	0.005	-0.001	0.055	-0.042**
	(0.021)	(0.023)	(0.015)	(0.019)	(0.039)	(0.022)
Wealth 5	0.033	-0.050*	-0.010	-0.016	0.040	-0.056***
	(0.024)	(0.027)	(0.013)	(0.016)	(0.034)	(0.020)
Age	-0.0003	-0.001**				
	(0.0005)	(0.0005)				
Education 2	0.010	0.017				
	(0.015)	(0.019)				
Education 3	0.025*	0.005				
	(0.015)	(0.018)				
Education 4	0.018	0.020				
	(0.017)	(0.021)				
Education 5	0.056**	0.043				
	(0.025)	(0.029)				
Education 6	0.005	0.128**				
	(0.045)	(0.058)				
Male head of household	-0.004	0.003				
	(0.014)	(0.017)				
Region Characteristics						
Average Provincial Saving	0.0003	-0.005***		-0.006***	-0.004***	-0.017***
	(0.005)	(0.001)		(0.001)	(0.001)	(0.004)
Number of banks	-0.001	0.003		-0.002	-0.010	0.010
	(0.007)	(0.008)		(0.020)	(0.031)	(0.021)
Number of natural disasters	0.006*	0.003		-0.003	-0.001	-0.006
	(0.003)	(0.004)		(0.007)	(0.011)	(0.008)
Proportion poor	-0.007	0.024		0.005	-0.087	0.051
	(0.036)	(0.045)		(0.041)	(0.090)	(0.048)
Year 2008			-0.072***	-0.042***	-0.040***	-0.040***
			(0.009)	(0.008)	(0.012)	(0.011)
Year 2010			-0.034***			
			(0.010)			
Constant	0.033	0.116**	0.144***	0.173***	0.100	0.270***
	(0.045)	(0.049)	(0.029)	(0.048)	(0.081)	(0.063)
Households	2,247	2,185	2,563	2,307	995	1,312
Observations	2,247	2,185	6,870	4,466	1,882	2,584

Standard errors clustered at the household level are given in parenthesis, *** denotes significance at the 1 percent level, ** denotes significance at the 5 percent level, * denotes significance at the 10 percent level.
The drop in observations between column (1) and column (2) is because we do not have information on group characteristics in 2006.

Table 5c: Determinants of Proportion of Savings Formal

	(1)	(2)	(3)	(4)	(5)	(6)
Household Characteristics	*2008*	*2009*	*HH Fixed Effects*		*South*	*North*
Stock of saving	0.001**	0.0008**	0.001***	0.001**	0.001	0.001*
	(0.0005)	(0.0003)	(0.0003)	(0.0003)	(0.0005)	(0.0004)
Income	0.0003***	0.0002*	0.0002***	0.0002**	0.0003**	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Total Area Owned	-0.0004	0.001**	-0.0001	-0.0001	-0.0001	-0.0001
	(0.0002)	(0.0004)	(0.0001)	(0.0005)	(0.0006)	(0.001)
Natural Disaster	0.008	-0.010	-0.003	-0.0004	0.014	-0.006
	(0.008)	(0.008)	(0.006)	(0.008)	(0.013)	(0.011)
Household Size	-0.002	0.002	-0.005	-0.009*	-0.017**	-0.004
	(0.002)	(0.003)	(0.003)	(0.005)	(0.009)	(0.006)
Children Support	-0.016	0.042***	0.011	0.038***	0.043**	0.033*
	(0.010)	(0.014)	(0.008)	(0.012)	(0.018)	(0.017)
Wealth 2	-0.015	-0.024*	-0.001	0.003	0.024	-0.005
	(0.015)	(0.013)	(0.011)	(0.014)	(0.025)	(0.016)
Wealth 3	-0.022	-0.014	-0.001	0.008	0.035	-0.008
	(0.014)	(0.014)	(0.010)	(0.014)	(0.025)	(0.018)
Wealth 4	-0.029*	-0.035***	-0.004	-0.0004	0.027	-0.017
	(0.015)	(0.013)	(0.010)	(0.013)	(0.024)	(0.016)
Wealth 5	0.0003	-0.029*	-0.011	-0.014	0.034	-0.038**
	(0.017)	(0.016)	(0.010)	(0.012)	(0.021)	(0.015)
Age	0.0005	0.0002				
	(0.0003)	(0.0003)				
Education 2	0.007	0.0002				
	(0.008)	(0.012)				
Education 3	0.004	-0.001				
	(0.007)	(0.012)				
Education 4	0.024**	0.011				
	(0.011)	(0.013)				
Education 5	0.037**	0.040*				
	(0.018)	(0.021)				
Education 6	0.034	0.015				
	(0.038)	(0.036)				
Male head of household	0.009	-0.005				
	(0.008)	(0.011)				
Region Characteristics						
Average Provincial Saving	0.004*	-0.003***		-0.003***	-0.003***	-0.006**
	(0.002)	(0.001)		(0.001)	(0.001)	(0.002)
Number of banks	-0.005	-0.007		-0.013	-0.001	-0.026*
	(0.006)	(0.005)		(0.014)	(0.022)	(0.015)
Number of natural disasters	0.003	0.0005		-0.001	0.008	-0.005
	(0.002)	(0.003)		(0.004)	(0.007)	(0.004)
Proportion poor	-0.013	-0.008		0.028	0.048	0.015
	(0.030)	(0.024)		(0.022)	(0.060)	(0.021)
Year 2008			-0.006	-0.003	-0.014**	-0.002
			(0.005)	(0.004)	(0.007)	(0.007)
Year 2010			-0.003			
			(0.006)			
Constant	-0.027	0.038	0.050***	0.093***	0.050	0.135***
	(0.029)	(0.031)	(0.018)	(0.031)	(0.051)	(0.042)
Households	2,247	2,185	2,563	2,307	995	1,312
Observations	2,247	2,185	6,870	4,466	1,882	2,584

Standard errors clustered at the household level are given in parenthesis, *** denotes significance at the 1 percent level, ** denotes significance at the 5 percent level, * denotes significance at the 10 percent level.
The drop in observations between column (1) and column (2) is because we do not have information on group characteristics in 2006.

Table 6: Household savings model - network effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Women					*South*			*North*	
	Total	*Financial*	*Formal*	*Total*	*Financial*	*Formal*	*Total*	*Financial*	*Formal*
Network Variable	2.363**	0.034***	0.008	0.562	0.039**	0.004	0.235	0.046*	0.008
	(1.139)	(0.009)	(0.006)	(2.389)	(0.018)	(0.008)	(4.860)	(0.027)	(0.021)
Density	-0.171**	-0.0001	0.0001	-0.930***	-0.002	0.0001	-0.027	0.004***	0.001
	(0.080)	(0.001)	(0.0005)	(0.320)	(0.002)	(0.001)	(0.111)	(0.001)	(0.001)
Density x Network	0.003	0.000	0.0001*	0.028**	-0.0002	0.00002	-0.026	0.0006	0.0005*
	(0.004)	(0.000)	(0.00003)	(0.013)	(0.0001)	(0.00005)	(0.119)	(0.0005)	(0.0003)
Households	1,590	1,590	1,590	643	643	643	947	947	947
Observations	2,432	2,432	2,432	984	984	984	1,448	1,448	1,448
Panel B: Farmers					*South*			*North*	
	Total	*Financial*	*Formal*	*Total*	*Financial*	*Formal*	*Total*	*Financial*	*Formal*
Network Variable	2.721**	0.035**	0.002	0.760	0.035	-0.060*	1.112	0.035	0.029
	(1.380)	(0.016)	(0.009)	(3.210)	(0.066)	(0.035)	(2.620)	(0.034)	(0.026)
Density	0.201*	-0.0005	-0.001	0.105	-0.006	-0.013**	0.205	-0.001	-0.002
	(0.110)	(0.002)	(0.001)	(0.527)	(0.012)	(0.006)	(0.375)	(0.005)	(0.003)
Density x Network	-0.026**	-0.0001	0.00003	0.015	-0.001	0.001**	-0.009	-0.0001	-0.0003
	(0.012)	(0.0002)	(0.0001)	(0.047)	(0.001)	(0.0004)	(0.032)	(0.0004)	(0.003)
Households	1,142	1,142	1,142	440	440	440	702	702	702
Observations	1,601	1,601	1,601	624	624	624	977	977	977