Political Connections and Households' Access to Bank Loans: Evidence from China

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Abstract

In this paper we focus on the relationship between political connections of households and their access to bank loans. We use data from a large household survey among 8,438 households in China, which has been carried out by the Survey and Research Center of China Household Finance in 2012. The survey covers the economic and financial activities of Chinese households in 2011. We analyze whether the fact that a household head is a member of a political party in China increases the probability that the household has access to a bank loan. We investigate how these connections influence the decision of households to apply for a bank loan (i.e. the demand side) and the decision of the bank to approve the loan (i.e. the supply side). Using the two-stage Heckman Probit model, which allows for examining the demand and supply side separately, we find evidence that political connections are positively associated with both the households' willingness to apply for a loan, as well as with the probability that they get a loan by the bank. We make two contributions to the literature on the determinants of households' access to credit. First, to the best of our knowledge, we are the first to analyze the role of political connections as a determinant of households' access to bank loans. Second, we analyze the role of political connections throughout the bank loan allocation procedure, i.e. we decompose the loan application process into the household's self-selection process and bank's selection process. The separate discussion of different stages of the bank loan allocation process enables us to analyze the impact of political connection on both the credit demand and credit supply side.

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1. Introduction

It is well acknowledged that the inability of acquiring bank credit prevents households from engaging in profitable activities and diversifying their household income (see, e.g., Aghion and Bolton, 1997; Foltz, 2004; Boucher et al., 2009). Households facing credit constraints have also limited possibilities to smooth consumption and improve welfare (Coleman, 1999; Karlan and Morduch, 2009; Li, et al., 2013). One of the main challenges households face in obtaining a loan comes from the fact that the bank has asymmetric information with respect to the probability of repayment of the loan (Stiglitz and Weiss, 1981). Households may circumvent this challenge by signaling their repayment probability. One way of doing this is by putting up valuable collateral (Bester, 1985). Alternatively, households may try to develop political connections to reduce credit constraints. Having such connections may show that the household has access to additional social resources that can be used in case of repayment problems because they tend to have larger or more diversified social network than households without political connections (Li; et al., 2008; Zhou, 2009). They may also be used to influence decisions regarding the allocation of loans by bank officers. Having political connections is often associated with political power, which can be used to negotiate with bank officers. The importance of political connections in obtaining bank credit has been established for firms (see, e.g., Khwaja and Mian, 2005; Faccio, 2006; Zhou, 2009), but to the best of our knowledge it has not been studied for households.

In this paper, we add to the literature investigating the determinants of credit constraints faced by households in two important ways. First, we focus on the role political connections (members of) households may have. In particular, we use data from a large household survey carried out in China and analyze whether the fact that a household head is member of the ruling political party in China increases the probability that the household has access to a bank loan. To

the best of our knowledge this has not been studied before. Second, we investigate the role of political connections at sequential stages of the bank loan allocation process. More specifically, we look at how these connections influence the decision of households to apply for a bank loan, as well as how they influence the decision of the bank to approve the loan. On the demand side, households with political connections may self-select when applying for a loan, e.g., because they are more confident to get a loan due to their connections. On the supply side, banks may use information about political connections as a screening device when allocating loans. Only a few studies have investigated the determinants of households' access to bank loans by disentangling the process into the decision of households to apply (i.e. the demand side) and the decision of the bank to approve the loan (i.e. the supply side) (see, e.g., Chakravarty and Xiang, 2009; Cole, 2013). None of these studies take into account the role of households' political connections.

Our data come from a large survey covering 8,438 households in China, which has been jointly carried out by the was jointly conducted by People's Bank of China (the central bank of China) and Southwestern University of Economics and Finance in 2011, covering the economic and financial activities of Chinese households in 2010. Using a two-stage Heckman Probit model examining the decision-making process of the demand side and the supply side separately, we do find that political connections are positively associated with both the households' willingness to apply for a loan, as well as with the probability that they get a loan by the bank. These results suggest that political connection are influential throughout the bank allocation procedure.

The remainder of this paper is organized as follows. Section 2 discusses the related literature and develops the hypotheses. Section 3 continues with a discussion of the data set, while section 4 provides a description of the empirical methodology. In section 5 we present our empirical results. The paper ends with a conclusion in section 6.

2. The importance of political connections: A review of the literature

In the literature, the advantages of having political connections has been investigated in the context of (listed) firms. Firms are faced with financial constraints and limited access to bank loans. Several studies show that political connections can help firms in obtaining bank credit (Khwaja and Mian, 2005; Faccio, 2006; Zhou, 2009; Leuz and Oberholzer-Gee, 2006; Claessens et al., 2008; Infante and Piazza, 2014; Guo et al., 2014; Feng et al., 2014). For firms, these connections prove to have even wider implications. Liu et al. (2013) show that for Chinese firms political connections facilitate the probability of IPO approval from the central government. Francis et al. (2009) provide evidence that Chinese firms with political connections experience a number of economic benefits during the process of going public, such as a higher offering price, lower underpricing and lower fixed costs. Feng et al. (2014) also focus on Chinese listed firms and find that political connections contribute to the firm's post-IPO stock value and accounting performance. These outcomes help explain why firms are encouraged to actively develop political connections (Yueh, 2009).

Households usually also have difficulties in obtaining a bank loan due to asymmetric information with respect to the probability of repayment of the loan (Stiglitz and Weiss, 1981). Banks do not have sufficient information with respect to the creditworthiness of households and are generally also not willing to invest in collecting this type of information due to the small loan amount and the fixed cost nature of collecting information (Beck et al., 2008). This may be particularly true for households in emerging and developing economies where financial markets are less developed and information problems are more prevalent. In these circumstances,

households may only get access to loans if they can put up valuable collateral. Yet, for most households in emerging economies providing collateral is usually problematic [1].

One alternative for these households may be to develop political connections. Having such connections may serve two purposes. First, having such connections may show that, at least potentially, a household has access to a larger pool of resources embedded in their political network. These resources may then be used in case of default risk. This may increase the willingness of the bank to provide a loan. Second, these connections may help to indirectly influence credit allocation decisions made by the bank. Political connections are often associated with political power, which is still an important factor in markets of many transition economies (Khwaja and Mian, 2005; Faccio, 2006).

We investigate the importance of having such connections in the context of China. In particular, we address the question whether and to what extent politically connected households have better access to bank loan allocation. We define households as being politically connected in case the household head is member of the Communist Party, the leading political party of the country, or one of the political parties and movements linked to it, such as the Minor Democratic Parties and the Communist Youth League. Several studies document that in transition economies the government or the ruling party exercises considerable control over key economic resources through state-owned enterprises and their involvement in financial markets (i.e. stated-owned banks) (McMillan, 1997). This is certainly also the case in China with its one-party political system (Liu, 2003). Hence, the fact that the household head is politically affiliated with the political party may be an indicator of the household having access to party officials, such as local

[1] For instance, land is a traditional and prevalent collateral in developing countries when applying for bank credit. But in the case of China, land is the state-owned property by law, households are not allowed to use it as collateral (Park and Ren, 2001). This exacerbates the difficulty for households accessing to bank credit.

party leaders and/or bureaucrats, bank officers of state-owned banks, etc. Political affiliation provides exclusive opportunities to attend political activities, such as official meetings with other Party members, and have frequent interactions with these party members, which enriches the household's social network. Developing relationships with politically and economically important people enable politically connected households to overcome regulatory constraints and receive preferential treatment from the government (Feng et al., 2014). In particular, when it comes to access to bank loans, connections to bank officers being party officials may be important. Using these connections, households may negotiate access to bank loans more successfully (Dickson, 2003).[2]

In the process of obtaining a bank loan, three separate steps can be distinguished (Cole, 2013). First, a household has to decide whether it needs (i.e. has demand for) a bank loan. This may be correlated with the household's economic characteristics, such as income status and level, the propensity to consume and/or invest, etc. Having a diversified or large social network (which may or may not include political party members) may, at least potentially, influence the demand for loans, because such a network may increase the household's awareness of banks as a source of external finance, the procedures of how to apply for a loan, and the economic benefits of using bank credit (Okten and Osili, 2004; Wydick et al., 2011).

Second, households in need of a bank loan have to decide (i.e. self-select) whether they want to apply for (i.e. demand) a bank loan. In the literature there is some empirical evidence on the importance of self-selection of firms whether or not to apply for a loan. Cavalluzzo et al.

[2] In practice, many people who have successful performance are invited to be Communist Party members as representatives of their working field, such as prominent entrepreneurs, skilled workers and well-known scientists. To some extent, Party membership is considered as the official reward for their contributions to the society (Feng et al., 2014). Hence, the political status enables households to enjoy privileged treatment during the interaction with official institutions (such as state-owned banks) and receive particular support from the Communist Party branch and the local government (Zhou, 2009).

(2002) shows that nearly half of small business firms are discouraged to apply for a bank loan. Chakravarty and Xiang (2009) report that one third of small business firms do not apply, because they think they will turned down by loan officers. Kon and Storey (2003) and Han et al. (2009) stress that imperfect information is the major reason why financially constrained firms are discouraged to apply, because most of them have difficulties with signaling their credibility and repayment capability to banks. Cole (2013) estimates that about 20 to 50 per cent of firms that do not apply would have been approved a loan, which suggests that self-selection plays an important role in determining the allocation of bank loans. We are not aware of similar research for households, however.

Households with political connections are more likely to become bank credit applicants, because they may have more confidence in passing the bank's selection process as compared to households without such connections. This confidence may be based on their ties with Party officials. Regular participation in political activities enhances the opportunities to cultivate close relationships with Party members, such as bank officials. Close relationships and frequent contacts facilitate mutual trust and eliminates the information asymmetric problem between households and loan officers, which may increase the probability to get a loan (Cole, 1998). Thus, politically connected households may be more motivated to apply for a bank loan. Based on our discussion above, we derive the following hypothesis:

H1: Households with political connections, who have demand for a bank loan, are more likely to apply for a loan than households without such connections.

The third step in obtaining a bank loan consists of the screening and selection process of clients by the bank. In this step, loan officers collect information with respect to the applicant's social

background, economic conditions and the reasons applicants give for applying for the loan. One important source of information loan officers use in this process may come from the connections they have with loan applicants through Party membership. These connections provide additional information about the creditworthiness of applicants. This puts households with political connections applying for a loan in a better position to actually get the loan as compared to households without such connections. Being a Party member allows the household head to develop private relationships (i.e. friendship) with other Party members (including bank officials) in political activities. The private link may enhance a household's accessibility to bank credit as the friendship is established on the basis of mutual trust and support. Based on this, bank officials may decide to provide (i.e. supply) credit to households with whom they are linked as a form of friendly assistance. Politically connected applicants may thus gain preferential treatment when applying for a loan (Zhou, 2009; Feng et al., 2014). Thus, we expect that applicants with political connections show preferential treatment in the screening process, which leads us to derive the following hypothesis:

H2: Politically connected households show a higher probability of passing the screening and selection process of the bank as compared to households without such connections

It is important to explicitly take into account the different stages of the bank loan allocation process, as a simple comparison of the incidence of bank loan acquisition between politically connected and non-connected households may lead to biased results (Li et al., 2007). For instance, the higher incidence of bank credit allocation to politically connected households may not be the result of the advantage households have in the bank's screening process due to their political connections, but may be due to the fact that households with political connections are also more

entrepreneurial, which increases the probability that they apply for a bank loan. Therefore, an unbiased investigation of the determinants of bank loan allocation should take into account both the bank's decision-making stage (i.e. the supply side) and the household's decision-making process (i.e. the demand side). Yet, the decision of households to apply for a loan is rarely taken into account in empirical studies (Han et al., 2009; Cole, 2013). Hence, we examine the role of political connection in household's self-selection process, which combines both household's need stage and application stage, and the role of political connection in bank's selection process, which denotes bank's decision on credit approval among all applicants.

3. Data

We use a dataset provided by Southwestern University of Economics and Finance. The survey, named China Household Finance Survey (CHFS), was jointly conducted by People's Bank of China (the central bank of China) and Southwestern University of Economics and Finance in 2011 and aims to provide representative information on economic conditions and financial activities of Chinese households in 2010. The dataset has been used for several recent research projects, leading to publications in leading English and Chinese academic journals.[3] The survey employs a stratified sampling strategy using three-stage randomization. In the first stage, 80 counties are randomly selected from a total of 2,585 counties in 25 provinces (all mainland provinces except for Tibet, Xinjiang and Inner Mongolia). In the second stage, four residential communities are randomly selected from each of the 80 counties. In the final stage, between 20 and 50 households are randomly selected from each of the four communities to be interviewed

[3] See, e.g. Gustafsson et al. (2014), Lu and Turvey (2014), Zhu et al. (2014), Yin et al. (2014) and Liang and Guo (2015).

for the survey. At each stage, the probability proportion to size method is applied and weighted by the population size[4]. The final dataset consists of answers of 8,438 households spread all over China.

The survey contains questions on non-financial assets, financial assets, debt, insurance and social welfare, expenditure and income, and total wealth. Moreover, it contains information on household members' demographics and work characteristics, including gender, age, marriage status, educational attainment, ethnicity, political affiliation, occupation, salary and involvement in agricultural and commercial activities[5].

The dataset also holds data on whether or not a household needs bank credit, whether or not a household decided to apply for bank financing, and whether or not the bank accepted the household's loan application. Having this information allows us to explicitly distinguish between the household's loan application and the bank's loan approval decision. This is a clear advantage of our dataset as compared to other datasets that have been used to analyze the determinants of access to loans for households and/or firms. The questions on loan application and loan approval are only available for a sub-sample of the selected households, i.e. those who are involved in agricultural and/or commercial activities, because the purpose of the loan application is to invest in agricultural or commercial business. The sub-sample we use in the analysis consists of 3,858 households.

Two questions in the survey enable us to identify a household's bank credit status. The first question asks whether the interviewed household has a bank loan for commercial and agricultural activities or not. Households answering "Yes" are labeled as members of the group of

[4] For detailed description of the dataset, see Gan et al. (2014).

[5] For the English version of the questionnaire, see http://www.chfsdata.org/upload/CHFS-Questionnaire-CAPI-English.pdf.

households that need a bank loan, have applied for a loan and have successfully obtained it. Households answering "No" indicate the reason why they do not have a bank loan in the second question. This second question has four options: (1) I don't need a bank loan; (2) I had a bank loan before and I paid it off; (3) I need a bank loan but I never applied; (4) I applied for a bank loan but was rejected. Based on answers to the second question, we label households who choose the first or the second option as those who do not need bank credit. Households choosing the third option are identified as the group that needs a bank loan but decided not to apply. Households choosing the fourth option are identified as those that need bank credit and applied for a loan but were rejected by the loan officer.

As illustrated in Figure 1, we use the above two questions to identify households in the three stages of the bank credit application procedure. Specifically, in the first stage, the whole sample of 3,858 households is sub-divided into a group of households that needs a bank loan and a group that does not. In the second stage, households in need of a bank loan make decision whether or not apply. At this stage we divide households into those that apply and those that do not. In the third stage, applicants are screened by loan officers and those that meet the bank's eligible criteria are granted a loans; the other ones are rejected.

<Insert Figure 1 here>

Figure 1 shows that about one third of the households in the sample say they need a bank loans. However, more than half of these households (54 per cent) do not apply for a loan. This indicates that Chinese households show a high probability of not applying for a loan in comparison to what other studies have found for non-applying small businesses (Cavalluzzo et al., 2002; Chakravarty and Xiang, 2009; Brown et al., 2009; Cole, 2013). Of those who do not apply,

51 per cent states that they think the chances of getting accepted are minimal as the reason for not applying. This may indicate they lack the confidence being successful in passing the bank's selection process. Twenty four per cent say they were discouraged by the bank's documentation requirements, 13 per cent say they lack the knowledge with respect to the application procedure and 22 per cent give other reasons.

Of those households that do apply 68 per cent also receive a loan. The survey includes a question focusing on those households that applied for a bank loan but were rejected, asking them about the possible reason for their failure to pass the screening process. More than 35 per cent of rejected households think they were unsuccessful because they did not have a guarantee from a wealthy individual or company; 32 per cent state their income was too low; 26 per cent mention the fact they lacked collateral; and 17 per cent stress they did not have a personal relationship with the loan officer. Apparently, households' subjective beliefs of why they were not granted a bank loan can be described either due to poor of economic conditions (i.e. income, collateral) or as the result poor social relationships (i.e. guarantee from others, relationship with the loan officers). The latter is consistent with results from previous studies on social capital, showing that borrowers who are more engaged in social activities and have broader social networks are more likely to be granted bank loans (Okten and Osili, 2004; Wydick et al., 2011; Dufhues et al. 2013).

The importance of borrower-bank relationships for the availability of bank loan is also confirmed by households that have obtained a loan. The survey contains a question asking these households about the reasons for choosing a particular bank to apply for a loan. While most households answer stating that there were no alternatives (24 per cent) and/or the bank was located nearby (24 per cent), 23 per cent states that the main reason was they have business contacts with the bank and/or a personal relationship with bank officials.

4. Empirical Methodology

In the empirical analysis, we first create three binary variables to specify households' bank credit status. The first is *Need Bank Loan*, which equals one when a household reports it was in need of bank credit and otherwise zero. The second binary variable, *Bank Loan Applied*, captures a household's decision to apply, which equals one for households that need a loan and decide to apply for it and zero for households that need a loan but do not apply. The third binary variable, *Bank Loan Granted*, exhibits the bank's selection decision. It equals one for households applying and successfully obtaining a loan, and zero for households applying but getting rejected by the bank. We use these three binary variables to decompose the bank loan allocation process of the bank into the self-selection process of households and the selection process of the bank, and examine what role political connections play at each of the sequent stages in the process.

4.1 The household self-selection process

To examine the determinants of the households' self-selection process, we need to take into account both the first stage (identifying households' demand for bank credit), and the second stage (specifying households' decision to apply). This is because the decision to apply is conditional on whether a household needs bank credit. If we conduct a simple probit regression using a sample that only covers households that are in need of bank credit, this may lead to sample selection bias as the households in the sample are not randomly selected (Heckman, 1979; Coady et al., 2009). Unobserved factors may influence both a household's need for a loan and the decision to apply. To control for the possible sample selection bias, we apply the Heckman probit approach (Van de Ven and van Praag, 1981; Das, 2015) and identify the selection equation and outcome equation as follows:

$$Need\ Bank\ Credit_i = \alpha_1 + \beta_1 \text{Political Connection}_i + X_i\beta + \delta_i \quad (1)$$

$$Bank\ Loan\ Apply_j = \alpha_2 + \theta_1 \text{Political Connection}_j + Y_j\theta_2 + \text{Mill's Ratio1} + \varepsilon_j \quad (2)$$

Selection equation (1) is a simple probit model estimating the propensity of household *i* (=1, 2, ..., 3,858) to show a need for a bank loan. *Political Connection* is the variable of primary interest, which has the value one if the household head is member of the Communist Party or one of the political parties and movements linked to it (e.g. the Minor Democratic Parties and the Youth League), and zero otherwise; X_i is a vector of control variables that affects household *i*'s need for bank credit. β_1 and β are parameters to be estimated. α_1 is the constant and $\delta_i$denotes the error term. The outcome equation (2) is also a probit model estimating the probability for household *j* (=1, 2, ..., 975) to apply for a loan, conditional on the need for bank credit. Y_i, θ_1, θ, α_2 and ε_i are analogous to X_i, β_1, β, α_1 and δ_i in the selection equation (1). Both ε_i and δ_i are assumed to be standard normal distributed.

As mentioned above, unobserved factors may influence both $Need\ Bank\ Credit_i$ and $Bank\ Loan\ Apply_i$ because the sample used in the estimations is non-randomly selected. If the simple probit model is employed to estimate equation (2), the endogeneity problem may arise because the error terms of two equations may be correlated (*corr* (δ_i, ε_j) = $\rho_1 \neq 0$). Therefore, the Heckman probit model addresses the sample selection bias through estimating inverse Mill's ratio, which is based on the correlation between error terms δ_i and ε_j (ρ_1), and adding it into the outcome equation as an independent variable. The extent of sample selection is reflected in the significance level of the inverse Mill's ratio. If the inverse Mill's ratio is significant, it denotes that the null hypothesis of $\rho = 0$ is rejected and a selection bias exists in the decision-making

process. Our approach is different from the standard use of the Heckman selection model in that our dependent variable in the outcome equation is a discrete choice variable, while in the traditional Heckman model it is a continuous variable. This is why we apply the Heckman probit model rather than the ordinary least squares version of the model.

One important feature of the Heckman selection strategy is that the two-step model has to be estimated using an exclusion restriction (Heckman and Navarro-Lozano, 2004). For this, one or more additional independent variables should be used to estimate the selection equation. The additional variable(s) should not be included in the outcome equation. Thus, the additional variable(s) (or exclusion variable(s)) should be associated with the dependent variable of the selection equation but not with the dependent variable of the outcome equation, because the exclusion variable(s) is (are) expected to be the instrumental variable(s), affecting the dependent variable in the outcome equation only through its impact on the dependent variable of the selection equation. In the household's self-selection process, the exclusion variable should be associated with the household's need for a bank loan, but not with the household's decision to apply.

As our exclusion variable, we take a dummy measuring whether or not a household owns a car. In general, households owning a car have two distinct characteristics as compared to households without a car. First, having a car effectively enables the household to more conveniently visit distant friends and relatives whom they do not often contact. As noted by sociologists, interactions with friends and relatives outside the household's core social network contain new information (Lin, 1999; Dufhues et al., 2013). Therefore, having a car expands the breadth and depth of the household's information channels. Among other things, this may increase the awareness of the benefits of accessing bank credit and bring possible investment opportunities for investment, which may stimulate the demand for bank credit. Second,

households with cars show a higher marginal propensity to consume than those without. Hence, households with cars are expected to have a higher need for a bank loan, while at the same time there is no reason to expect a correlation between owning a car and applying for a bank loan.[6] [7]

4.2 The bank's selection process

When deciding on approving loans to (new or existing) clients, the bank collects information on the economic performance and potential repayment capacity to verify which applicants satisfy the eligibility criteria for granting a loan. Similar to the self-selection process, the sample of households applying for a loan is non-randomly selected, as unobserved factors may influence both household's decision to apply and the bank's decision to approve the loan. Therefore, we again employ the Heckman probit model when examining the bank's selection process as follows:

$$Bank\ Loan\ Apply_j = \alpha_3 + \gamma_1 \text{Political Connection}_j + Y_j\gamma_2 + \text{Mill's Ratio1} + \varepsilon_j \quad (3)$$

$$Bank\ Loan\ Granted_k = \alpha_4 + \mu_1 \text{Political Connection}_k + Z_k\mu_2 + \text{Mill's Ratio2} + \sigma_k \quad (4)$$

Equation (3) specifies the selection equation and is similar to equation (2), and equation (4) is the outcome equation. The model specification investigating the bank's selection process is similar to

[6] Admittedly, households with cars are possibly more wealthy than those without, but since we control for various dimensions of a household's wealth, such as income, liquid assets value and durable goods value, the income and wealth difference between two group of households may not be a major concern. Another concern is that if the car can be used as collateral for households to obtain bank credit, this may lead households with a car to be more likely to apply for the bank credit than households without. Nevertheless, we checked the regulation of major banks in China (four big state-owned banks, Bank of Communication, China Merchants Bank and China Minsheng Bank Corp.) and it turned out that cars and other automobiles are not allowed to use as collateral in the credit application processs, because of the high depreciation rate.

[7] To examine the validity of our exclusion variable, we use a simple probit model to check its association with *Need Bank Credit* and *Bank Loan Apply* separately. The results confirm that having a car is positive and strongly significant in the model for *Need Bank Credit*, while it is insignificant in the model for *Bank Loan Apply.*

the model investigating the self-selection process except for two differences. First, since a household's decision to apply is conditional on the need for a loan, we keep the inverse Mill's ratio of the self-selection process ($\text{Mill}'\text{s Ratio1}$) in the selection equation (3) as a regressor. Second, sample selection is also, at least potentially, at stake in the bank's selection process, which is why the inverse Mill's ratio of selection equation (3) is calculated based on ρ_2 (*corr* $(\varepsilon_j, \sigma_k)$) and adopted in the outcome equation (4) as an additional regressor ($\text{Mill}'\text{s Ratio2}$).

The exclusion variable we use in the estimations of the bank's selection process is a measure of the household head's subjective evaluation of the safety and security of the area where the household resides (*Public Security Evaluation*). In the survey, household heads are asked to grade the safety in the area where the household lives on a five-point Likert scale ranging from 1 to 5 (where 1 is very dangerous and 5 is very safe). Intuitively, household heads who believe they live in a safe area environment are expected to show a higher propensity to apply for a loan, because they may be less worried about unexpected shocks, such as assault, robbery and theft, which may threaten their business and thus their capacity to repay the loan. At the same time, these households' subjective beliefs are not expected to influence the bank's decision with respect to approving a loan. This decision is based on objective information about the applicants' trustworthiness, their repayment capabilities and the potential risks of their projects.[8]

[8] Again, we conduct simple probit models using selection equation (3) and outcome equation (4) and add *Public Security Evaluation* to both regression models. Results confirm that *Public Security Evaluation* and *Bank Loan Apply* are positively and statistically significantly associated, whereas this is not the case for the association between *Public Security Evaluation* and *Bank Loan Granted*.

4.3 Control variables

In order to capture the role of political connections in the household's self-selection process and the bank's selection process, we control for a number of variables that capture households' socio-economic characteristics, human capital, economic conditions and financial characteristics.

Socio-economic characteristics

With respect to the socio-economic characteristics, we use gender and age of household heads, household size and household location. First, previous literature documents that women have more difficulty in obtaining a loan, which is due to both self-selection of these women and gender discrimination in formal financial markets (Powell and Ansic, 1997; Alesina et al., 2008; Bellucci et al., 2010). Hence, a dummy variable *Female* is included in the models for self-selection as well as the bank's selection process to capture the presence of demand-side obstacles and the impact of supply-side discrimination.

Second, with respect to age we expect that households with younger and middle-aged heads will show a stronger motivation to apply for a loan, because they may be more ambitious in expanding their business as compared to older people. On the other hand, in the bank's selection process, older household heads may have an advantage because they are more experienced in doing business and in negotiating with bank officers (Cole, 2013). We add three dummy variables proxying different age categories, i.e. young household heads (under 30 years old), middle-aged household heads (between 30 and 60 years old) and old household heads (over 60 years old), to both models.

Third, household size is added to both models as the number of household members is expected to positively affect household income and consumption, which may be positively

associated with the intention to apply for a loan, as well as with the probability of being approved a loan by a bank.

Finally, because there is considerable variation regarding local infrastructure, labor opportunities, technological endowments and tax rates between urban and rural regions in China, we take into account whether a household lives in a rural or urban area. We include a dummy variable *Rural* in both models, which takes the value one if the household lives in a rural area and zero otherwise.

Human capital

Political connections of household heads may be positively associated with their human capital (Li et al., 2008). Party members are often selected from individuals with outstanding performance in their work or study fields, which is positively associated with higher educational attainment and skills in their fields. Moreover, more educated and knowledgeable individuals are more able to identify profitable investment opportunities and thus seek bank credit. Finally, individuals with better work performance are expected to have a stronger capability of repayment because they are more capable of overcoming difficulties and challenges in operating a business, which means they are more likely to pass the bank's selection process. Therefore, we include dummy variables for the household head's education attainment and occupation type to control for the impact of human capital on loan approval. The educational attainment is divided into three levels, for which we create three dummies, indicating whether the highest level of education of the household head is *Primary School or less*, *Middle School or Vocational School*, or *Bachelor Degree or Above*.

With respect to the type of occupation of the household head, we create four dummy variables: *Unemployed*, *Freelance or Farmer*, *Entrepreneurs* and *Employees (at private companies or state-owned institutions)*.

Economic conditions

A household's economic condition may be associated with the decision to apply for a loan, as well with the bank's choice to approve a loan. To control for this, we include various indicators of economic conditions to the models. First, we include annual household income. In particular, we create three dummy variables indicating whether a household's income is in one of three income classes in a particular province, i.e. *Top-Income Class*, *Middle-Income Class* or *Low-Income Class*. We take the 25^{th} percentile of household incomes representing the low-income class and the 75^{th} percentile of household incomes as the top-income class; the remaining incomes are classified as middle-income.

Second, we control for the household's wealth status by measuring the market value of durable goods (e.g. televisions, refrigerators, computers, furniture etc.) and liquid assets (e.g. bank accounts, market value of stocks, the amount of money lent to others and cash held at home). We create three dummy variables, classifying households into the *High-Wealth Group*, *Middle-Wealth Group* and *Low-Wealth Group*. We take the 25^{th} percentile of household wealth values representing the low-wealth group and the 75^{th} percentile of household wealth values as the high-wealth group; the remaining wealth values are classified as the middle-wealth group.

Third, we include a dummy variable indicating whether a household owns a house (i.e. having the officially certificated property right) or not. Owning a house may be positively associated with obtaining a loan, because it can be used as collateral. Moreover, it may also positively affect loan applications, because it represents a higher level of wealth.

Financial characteristics

Financial characteristics of the household include two variables, i.e. borrowing from informal financial sources and the household head's subjective attitude towards risks. The first variable is measured as a dummy indicating whether or not the household borrows from relatives, friends or non-bank financial institutions (*Informal Lending*). The impact of informal lending on the bank loan allocation procedure is ambiguous. With respect to the self-selection process, households with informal lending may have less incentives to apply for a bank loan, since lending from the informal financial sector is generally easier, i.e. no guarantee or strict collateral are required. At the same time, however, loans from the informal sector are usually charged higher interest rates than bank loans (Zhang et al., 2012). Moreover, lending from acquaintances is usually viewed as financial assistance and support from socially related people. In the Chinese society with a tradition of mutual support and reciprocity, a borrowing household is responsible to provide additional assistance when the lending household asks for help (Tang, 1995), which may leave economic and/or psychological burden on the borrowing household. Hence, this may stimulate households to resort to bank loans. In the selection process of the bank, households with informal loans may have a lower probability to obtain a loan, because having informal debt may be seen as increasing the household's default risk.

Second, our dataset allows us to take into account the household head's subjective attitude towards risk, which may affect decisions at various stages of the bank loan allocation process. The question capturing risk preferences of household heads is as follows: if you have some idle assets, would you like to invest in a project that is (1) the least risky and the least profitable; (2) relatively less risky and less profitable; (3) neither lower, nor more risky and profitable; (4) relatively more risky and more profitable; (5) the most risky and the most profitable. Options from (1) to (5) classify household heads into five groups from the most risk-averse to the most

risk-seeking; the higher the score of the variable *Risk Preference*, the more risky project the household head prefers. More risk-seeking household heads are expected to show a higher probability of applying for a loan. In contrast, if their risk attitudes are exposed to the loan officer, this will lead to a lower probability of being approved a loan.

4.5 Econometric strategy

Since there are significant differences in the economic and social environment across different regions in China (Liu, 2003), the development of formal financial markets varies dramatically between provinces. For instance, the China's Regional Financial Operation Report (2010) shows that in 2010, Shanghai has 2,312 commercial bank branches with total assets reaching ¥5,172 billion ($764 billion). In the western province, Qinghai, the corresponding numbers are 449 branches and ¥214.8 billion ($31 billion). Both regions are covered in our dataset. Moreover, even in the same province, the economic conditions and social context are heterogeneous across areas. Therefore, in all regression models we use robust standard errors that are adjusted for clustering observations at the community level[9].

In addition, since the dataset we use is a cross-sectional stratified random sample, each household is endowed with a sampling weight representing their selection probability (Cole, 2013). According to the sample design, households in wealthy regions and urban regions are oversampled as compared to households in underdeveloped and rural areas (Gan et al., 2014). Therefore, the sampling weight is adopted to obtain results that are representative for all households in China.

[9] In total, we have 320 communities from 25 provinces of our whole sample. The large number of communities ensures the effectiveness of clustering standard errors in our model.

Moreover, in all tests regression coefficients are calculated as average marginal effects with the finite-difference method[10], so the parameter of each independent variable is interpreted as the probability for the dependent variable equaling to one.

Since we use cross-sectional data, it is impossible to investigate the impact of changes in the variable of interest, i.e. analyzing the impact of the acquisition or loss of political connections. Moreover, we are unable to observe the decision-making process of the bank loan allocation procedure over time. Since we use cross-sectional data, we cannot rule out the possibility that our specification suffers from unobserved heterogeneity using panel data techniques. Yet, by using an IV approach we are able to control for reverse causality and/or omitted variable bias.

5. Descriptive Statistics and Empirical Results

5.1 Descriptive statistics

Tables 1-3 show descriptive statistics. Table 1 (column [1]) provides the means and standard deviations (in brackets) of all variables for the households in our sample. Politically connected household heads account for 12.3% of the total sample.[11]

With respect to the social-economic characteristics, 18.1% of household heads are females. Middle-aged household heads constitute the major group of our sample (72.2%). The average household size is 4. This is relatively low due to the one-child policy of the Chinese

[10] The finite difference method means that the numerical derivative of each variable is the mean derivative of the sample rather than the derivatives evaluated at the mean of the variable. That is, we calculate the derivative (or the finite difference for binary variables) for each observation and report the (weighted) sample mean (Heckman et al., 2003).

[11] According to the Xinhua News Agency (the official press agency of the People's Republic of China), in 2010 the number of Communist Party members was 80.269 million; the total number of Minor Democratic Party members and the Youth League members was estimated around 80 million. Given that the total Chinese population in 2010 is estimated at 1.339 billion, the actual share of individuals who have a party membership is 12%. This suggests that our sample is representative for the total Chinese population in terms of Party membership.

government. Since the households in our sample are engaged in agricultural or commercial activities, most of them reside in rural areas (64.9%).

Table 1 also shows that 41.8% household heads are illiterate or only attended primary school; 55.3% achieved middle school education or went to vocational schools. Unemployed household heads account for 10.4% of our sample; more than half of the sample (56%) are farmers or freelancers. Entrepreneurs and employees account for 16.9% and 16.6%, respectively.

With respect to the financial characteristics, the table shows that 26% of households have loans from informal financial sector, which is much higher than the percentage of households having bank loans (7.8%). This suggests that it is difficult for households to access bank loans in China, and that they therefore rely more on lending through informal financial channels.

Columns [2] and [3] of table 1 show the means and standard deviations of all variables for the sub-sample of households that need a bank loan and the sub-sample that do not need a loan. Column [4] of the table shows results of the t-test to examine whether the mean values of variables are statistically significantly different for the two sub-samples of households. Sample weights are adopted in the estimation of the t-test, and robust standard errors are clustered at the community level. The results show that although the sub-sample of households in need of a loan are more politically connected than the sub-sample without the need, the difference between the mean values for this variable is not statistically significant. With respect to the control variables the table shows that the two sub-samples of households are different on a number of dimensions. In general, households in need of a loan have a household head who is middle-aged, have larger family size, have a higher probability of living in rural regions, have worse economic conditions (e.g. lower income and wealth), have more informal loans and are more risk-seeking.

Table 2 provides information on the sub-sample of firms that say they need a bank loan. Columns [2] and [3] show the means and standard deviations of variables for households that do

not apply and households that do apply for a bank loan, respectively. Column [4] shows results of the t-test comparing the mean values of variables for both sub-samples. Most importantly for the discussion in this paper, the table shows that for households that apply for a loans, 18.3% have political connections, which is significantly higher than the percentage for those households that do not apply (8.0%). This suggests that politically connected households that are in need of bank credit are significantly more strongly motivated to apply for loan as compared to households without such connections.

With respect to the control variables the table clearly shows that both sub-samples are different with respect to a number of household characteristics. In particular, households applying for a loan have a higher probability of having a male household head, have households heads who are younger and are better educated, are more entrepreneurial, are less active in farming, have higher income and wealth, have less informal finance and are risk-seeking.

Table 3 focuses on those households that have applied for a loan. This sub-sample is further separated into a sub-sample of those that were not granted a loan (column [2]) versus those that did obtain a loan from the bank (column [3]). Results from a simple t-test (column [4]) show first of all that households that received a loan have a significantly higher probability of being politically connected as compared to households that did not obtain a loan (22.9% versus 9%). Second, regarding the control variables, the table shows that both sub-samples differ with respect to various household characteristics. In particular, households which access to bank loans have a higher probability of having a young household heads, locating in urban areas, having better educational background, higher income and wealth, owning houses, having lower informal lending and are more risk-seeking.

5.2 Empirical results

Column [1] of table 4 shows the results of selection equation (1), investigating the likelihood that a household is in need of bank credit. The exclusion variable, *Own a Car*, is significant at 10% level. The Wald test of the Selection Equation (1) is significant at 1% level, which strongly rejects the null-hypothesis that $\rho_1 = 0$, indicating the existence of sample selection bias.

Most importantly, the results show that the coefficient for the variable *Political Connection* is not statistically significant, suggesting that the fact that the household head is politically connected is not associated with the household's need for a loan. Apparently, political connections do not increase the demand for bank loans as such. With respect to the control variables, the results in table 1 indicate that the need for a bank loan is positively associated with the age of the household's head, family size, living in rural areas, educational level, the household's wealth, informal lending, and risk-seeking behavior.

Column [2] of table 4 provides the results of the analysis in which we investigate the determinants of applying for a loan, conditional on whether households say they need a bank loan. The results show that *Political Connection* is statistically significant and has a positive sign ($p<0.01$), indicating that politically connected households are more likely to apply for a bank loan as compared to households without such connections. This result confirms our hypothesis 1. We interpret this as evidence for the argument that households with political connections may self-select when applying for a loan, because they are more confident to get a loan due to their connections. As a robustness check we present in column [3] the results of a simple probit estimation model (e.g. not controlling for selection bias) of the model in column [2]. Compared with the Heckman probit model, *Political Connection* is again positive and strongly significant. Results for the control variables show that households in need of a bank loan are more likely to

apply for a loan when they have a male household head, have higher income and wealth, and are more risk-seeking.

Table 5 displays the results of the investigation focusing on the selection process applied by banks to screen loan applications. Column [1] shows results describing the households' decision to apply for a bank loan, which is similar to the results in column [2] of table 4 except for two things. First, to control for the sample selection bias in the self-selection process, we add the inverse Mill's Ratio from the household's self-selection equation (*Mill's Ratio1*) as an additional regressor. Second, we use the household head's subjective attitude towards the public safety of the living environment (*Public Security Evaluation*) as the exclusion variable in the bank loan application equation presented in column [1]. The results show that *Public Security Evaluation* is statistically significant. The results also show that while the *Mill's Ratio1* is significant, the Wald test of the bank selection process is significant as well. This rejects the null-hypothesis of $\rho_2 = 0$, and confirms the existence of the sample selection bias in household's self-selection process and bank's selection process.

Most of our results in column [1] of table 5 are consistent with the results in column [2] of table 4. Household heads with political connections have a higher probability to apply for a bank loan when they report they need a loan. As discussed above, this may be driven by the confidence they have that these connections will help them obtaining a loan.

Column [2] of table 5 shows the results of the bank's screening process. The coefficient of the variable *Political Connection* is statistically significant and has a positive sign, suggesting that politically connected households are more likely to being approved a bank loan as compared to households without such connections, which supports our hypothesis 2. This result may be explained by the fact that these connections provide additional information about the creditworthiness of applicants. This puts households with political connections applying for a

loan in a better position to actually get the loan as compared to households without connections. Such connections allow for developing private relationships (i.e. friendship) with other Party members, including bank officials. The private link may enhance a household's accessibility to bank credit as the friendship is established on the basis of mutual trust and support. Based on this, bank officials may decide to provide (i.e. supply) credit to households with whom they are linked as a form of friendly assistance. Politically connected applicants may thus gain preferential treatment when applying for a loan.

With respect to the control variables, most results in this equation are not statistically significant, i.e. most household characteristics do not affect the bank's decision to approve a loan, except for the age of the household head and the educational background of the head.

As a robustness check, in column [3] of table 5 we use a simple probit model and re-estimate the model displayed in column [2]. The most important outcome of this exercise is that *Political Connection* remains statistically significant and has the expected sign. Whereas several control variables are significant in the simple probit model, they lose significance when controlling for sample selection bias, indicating the importance of using the Heckman probit model instead of the simple probit model.

5. Conclusions

In this paper, we investigate the role politically connected households may have in obtaining a bank loan. We use data from a large household survey carried out in China and analyze whether the fact that a household head is member of a political party in China increases the probability that the household has access to a bank loan. We investigate the role of political connections at different stages of the bank loan allocation procedure. More specifically, we look at how these

connections influence the decision of households to apply for a bank loan as well as the decision of the bank to approve the loan. Households with political connections may self-select when applying for a loan, e.g. because they are more confident to get a loan due to their connections. Banks may use information about political connections as a screening device when allocating loans. Our data come from a large survey covering 8,438 households in China, which has been carried out by the Survey and Research Center of China Household Finance in 2012, covering the economic and financial activities of Chinese households in 2011. Using the two-stage Heckman probit model in both household's self-selection process and bank's selection process, we find evidence that political connections are positively associated with both the households' willingness to apply for a loan on the demand side, as well as the probability that they get a loan by the bank on the supply side. These results thus confirm our hypotheses.

We make two contributions to the literature on the determinants of households' access to credit. First, to the best of our knowledge, we are the first to analyze the role of political connections as a determinant of households' access to bank loans. Second, we analyze the role of political connections throughout the bank loan allocation procedure, i.e. we decompose the loan application process into the household's self-selection process and bank's selection process. The separate discussion of different stages of the bank loan allocation process enables us to analyze the impact of political connection on both the credit demand and credit supply side. Only very few studies have used this strategy of disaggregating the bank loan allocation process (Chakravarty and Xiang, 2009; Cole, 2013).

Since we use cross-sectional data, it is impossible to investigate the impact of changes in the variable of interest, i.e. analyzing the impact of the acquisition or loss of political connections. Moreover, we are unable to observe the decision-making process of the bank loan allocation

procedure over time. Future research should focus on creating panel data to allow further investigation of these issues.

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Figure 1 Bank Credit Allocation Procedure

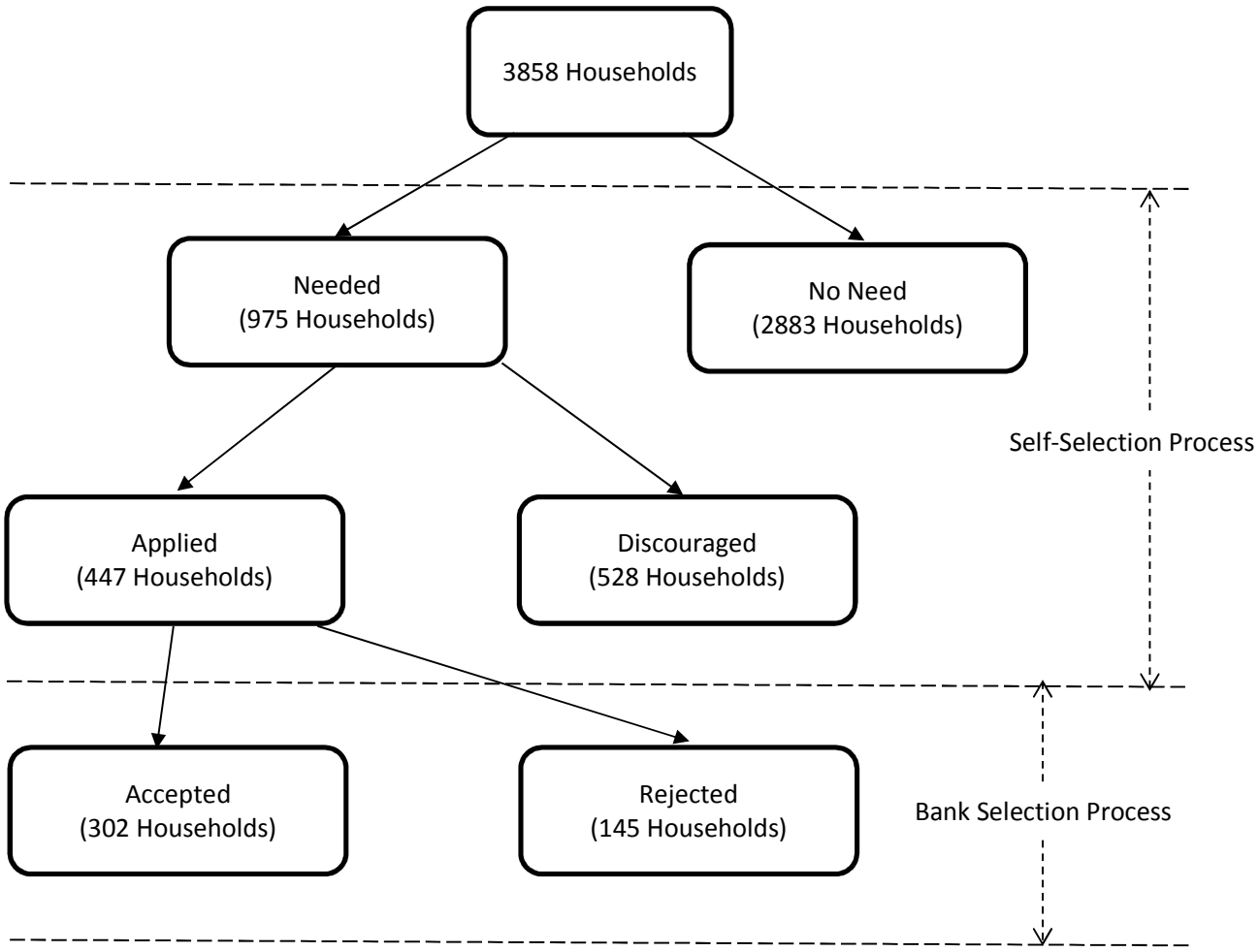

Table 1 Univariate Analysis of Bank Loan Need

Explanatory Variables	(1) All HHs 3,850	(2) No Need 2,875	(3) Need 975	(4) T-Test 3,850
Political Connection (=1)	0.123	0.120	0.127	0.0157
	(0.328)	(0.326)	(0.334)	(0.0348)
Social-Economic Characteristics				
Female (=1)	0.181	0.185	0.175	0.00409
	(0.385)	(0.387)	(0.379)	(0.0215)
Young (=1)	0.048	0.047	0.047	-0.00783
	(0.213)	(0.213)	(0.214)	(0.0452)
Middle-Aged (=1)	0.722	0.706	0.759	0.0705***
	(0.448)	(0.454)	(0.428)	(0.0199)
Old (=1)	0.255	0.273	0.219	-0.0629***
	(0.436)	(0.443)	(0.413)	(0.0219)
Household Size	3.981	3.935	4.114	0.0167***
	(1.625)	(1.653)	(1.533)	(0.00507)
Rural (=1)	0.649	0.634	0.698	0.0585*
	(0.477)	(0.482)	(0.458)	(0.0317)
Educational Attainment				
Primary School or less (=1)	0.418	0.426	0.413	-0.0221
	(0.493)	(0.494)	(0.492)	(0.0158)
Middle School or Vocational School (=1)	0.553	0.546	0.558	0.0185
	(0.497)	(0.498)	(0.497)	(0.0153)
Bachelor Degree or Above (=1)	0.019	0.018	0.021	0.0606
	(0.137)	(0.135)	(0.143)	(0.0662)
Occupation Types				
Unemployed (=1)	0.104	0.105	0.104	-0.0127
	(0.306)	(0.306)	(0.304)	(0.0316)
Freelance or Farmer (=1)	0.560	0.559	0.576	0.0147
	(0.497)	(0.497)	(0.495)	(0.0247)
Entrepreneurs (=1)	0.169	0.162	0.185	0.0171
	(0.375)	(0.370)	(0.390)	(0.0434)
Employees (=1)	0.166	0.174	0.135	-0.0344
	(0.372)	(0.381)	(0.343)	(0.0260)
Household Income				
Low-Income Class (=1)	0.253	0.252	0.268	0.0193
	(0.435)	(0.432)	(0.443)	(0.0188)
Middle-Income Class (=1)	0.510	0.520	0.480	-0.0162
	(0.500)	(0.500)	(0.500)	(0.0183)
Top-Income Class (=1)	0.237	0.227	0.252	0.00232
	(0.425)	(0.421)	(0.436)	(0.0265)
Durable Goods Value				
Low-Durable-Value Level (=1)	0.276	0.268	0.313	0.0548***
	(0.447)	(0.441)	(0.463)	(0.0186)
Middle-Durable-Value Level (=1)	0.478	0.484	0.456	-0.0237
	(0.500)	(0.500)	(0.498)	(0.0175)
Top-Durable-Value Level (=1)	0.246	0.248	0.231	-0.0475**
	(0.431)	(0.434)	(0.422)	(0.0211)

Liquid Assets Value				
Low-Liquid-Value Level (=1)	0.294	0.283	0.345	0.0689***
	(0.456)	(0.448)	(0.474)	(0.0206)
Middle- Liquid-Value Level (=1)	0.466	0.466	0.459	-0.00478
	(0.499)	(0.499)	(0.499)	(0.0206)
Top- Liquid-Value Level (=1)	0.240	0.250	0.196	-0.0676***
	(0.427)	(0.436)	(0.398)	(0.0253)
Real Estate				
Own House (=1)	0.956	0.958	0.953	0.0275
	(0.204)	(0.201)	(0.214)	(0.0460)
Financial Characteristics				
Informal Lending (=1)	0.260	0.171	0.522	0.347***
	(0.438)	(0.376)	(0.500)	(0.0249)
Risk Preference	2.162	2.094	2.357	0.0315***
	(1.258)	(1.213)	(1.364)	(0.00731)
Exclusion Variables				
Own Car (=1)	0.138	0.125	0.171	0.0580**
	(0.345)	(0.333)	(0.376)	(0.0289)
Public Security Evaluation (=1)	3.556	3.570	3.505	-0.00997
	(0.880)	(0.863)	(0.928)	(0.0110)

Standard Deviations in parentheses of columns (1), (2) and (3); Robust standard errors in parentheses of column (4) are adjusted for 320 clusters in community. Sample weight is adopted in the estimation of the T-test (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$)

Table 2 Univariate Analysis of Bank Loan Application

Explanatory Variables	(1) All Needing HHs 975	(2) Discouraged 528	(3) Applied 447	(4) T-Test 975
Political Connection (=1)	0.127	0.080	0.183	0.214***
	(0.334)	(0.270)	(0.390)	(0.0615)
Social-Economic Characteristics				
Female (=1)	0.175	0.205	0.141	-0.111**
	(0.379)	(0.402)	(0.348)	(0.0532)
Young (=1)	0.047	0.027	0.072	0.0877
	(0.214)	(0.162)	(0.260)	(0.0949)
Middle-Aged (=1)	0.759	0.739	0.783	0.0724
	(0.428)	(0.440)	(0.413)	(0.0485)
Old (=1)	0.219	0.258	0.174	-0.0629
	(0.413)	(0.437)	(0.378)	(0.0506)
Household Size	4.114	4.078	4.157	0.0104
	(1.533)	(1.525)	(1.544)	(0.0153)
Rural (=1)	0.698	0.722	0.671	-0.0701
	(0.458)	(0.448)	(0.469)	(0.0565)
Educational Attainment				
Primary School or less (=1)	0.413	0.458	0.360	-0.0934**
	(0.492)	(0.498)	(0.480)	(0.0404)
Middle School or Vocational School (=1)	0.558	0.521	0.602	0.0750*
	(0.497)	(0.500)	(0.490)	(0.0438)
Bachelor Degree or Above (=1)	0.021	0.011	0.031	0.143
	(0.143)	(0.107)	(0.176)	(0.167)
Occupation Types				
Unemployed (=1)	0.104	0.089	0.121	0.110
	(0.304)	(0.287)	(0.323)	(0.0730)
Freelance or Farmer (=1)	0.576	0.610	0.537	-0.0544
	(0.495)	(0.489)	(0.499)	(0.0411)
Entrepreneurs (=1)	0.185	0.136	0.242	0.146**
	(0.390)	(0.346)	(0.431)	(0.0607)
Employees (=1)	0.135	0.165	0.101	-0.155***
	(0.343)	(0.372)	(0.303)	(0.0523)
Household Income				
Low-Income Class (=1)	0.268	0.288	0.244	-0.0730
	(0.443)	(0.453)	(0.429)	(0.0446)
Middle-Income Class (=1)	0.480	0.538	0.412	-0.107***
	(0.500)	(0.499)	(0.492)	(0.0408)
Top-Income Class (=1)	0.252	0.174	0.345	0.226***
	(0.436)	(0.382)	(0.477)	(0.0571)
Durable Goods Value				
Low-Durable-Value Level (=1)	0.313	0.375	0.239	-0.166***
	(0.463)	(0.484)	(0.426)	(0.0435)
Middle-Durable-Value Level (=1)	0.456	0.473	0.436	0.0312
	(0.498)	(0.500)	(0.496)	(0.0451)
Top-Durable-Value Level (=1)	0.231	0.152	0.324	0.250***
	(0.422)	(0.357)	(0.469)	(0.0551)

Liquid Assets Value				
Low-Liquid-Value Level (=1)	0.345	0.409	0.268	-0.139***
	(0.474)	(0.492)	(0.441)	(0.0427)
Middle- Liquid-Value Level (=1)	0.459	0.460	0.459	0.0709
	(0.499)	(0.499)	(0.499)	(0.0508)
Top- Liquid-Value Level (=1)	0.196	0.131	0.273	0.0892
	(0.398)	(0.340)	(0.447)	(0.0741)
Real Estate				
Own House (=1)	0.953	0.955	0.951	0.0356
	(0.214)	(0.210)	(0.218)	(0.0916)
Financial Characteristics				
Informal Lending (=1)	0.522	0.551	0.488	-0.0946**
	(0.500)	(0.498)	(0.500)	(0.0450)
Risk Preference	2.357	2.135	2.619	0.0817***
	(1.364)	(1.300)	(1.393)	(0.0139)
Exclusion Variables				
Own Car (=1)	0.171	0.110	0.244	0.208***
	(0.376)	(0.313)	(0.429)	(0.0531)
Public Security Evaluation (=1)	3.505	3.386	3.644	0.103***
	(0.928)	(0.915)	(0.923)	(0.0269)

Standard Deviations in parentheses of columns (1), (2) and (3); Robust standard errors in parentheses of column (4) are adjusted for 320 clusters in community. Sample weight is adopted in the estimation of the T-test (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$)

Table 3 Univariate Analysis of Bank Loan Approval

Explanatory Variables	(1) All Applied HHs 447	(2) Rejected HHs 145	(3) Approved HHs 302	(4) T-Test 447
Political Connection (=1)	0.183	0.090	0.229	0.227***
	(0.390)	(0.289)	(0.422)	(0.0542)
Social-Economic Characteristics				
Female (=1)	0.141	0.124	0.149	0.0499
	(0.348)	(0.334)	(0.355)	(0.0767)
Young (=1)	0.072	0.048	0.083	0.130*
	(0.260)	(0.217)	(0.277)	(0.0744)
Middle-Aged (=1)	0.783	0.752	0.798	0.0980
	(0.413)	(0.437)	(0.401)	(0.0605)
Old (=1)	0.174	0.241	0.142	-0.173**
	(0.378)	(0.432)	(0.345)	(0.0666)
Household Size	4.157	4.138	4.166	-0.0303
	(1.544)	(1.548)	(1.545)	(0.0223)
Rural (=1)	0.671	0.710	0.652	-0.102*
	(0.469)	(0.455)	(0.476)	(0.0583)
Educational Attainment				
Primary School or less (=1)	0.360	0.483	0.301	-0.191***
	(0.480)	(0.502)	(0.458)	(0.0617)
Middle School or Vocational School (=1)	0.602	0.490	0.656	0.151**
	(0.490)	(0.502)	(0.475)	(0.0601)
Bachelor Degree or Above (=1)	0.031	0.014	0.040	0.256***
	(0.176)	(0.118)	(0.197)	(0.0702)
Occupation Types				
Unemployed (=1)	0.121	0.110	0.126	0.0574
	(0.323)	(0.308)	(0.330)	(0.0786)
Freelance or Farmer (=1)	0.537	0.579	0.517	-0.0863
	(0.499)	(0.496)	(0.501)	(0.0625)
Entrepreneurs (=1)	0.242	0.235	0.245	0.0882
	(0.431)	(0.428)	(0.432)	(0.0716)
Employees (=1)	0.101	0.076	0.113	-0.00421
	(0.303)	(0.268)	(0.318)	(0.100)
Household Income				
Low-Income Class (=1)	0.244	0.324	0.205	-0.172***
	(0.429)	(0.467)	(0.406)	(0.0643)
Middle-Income Class (=1)	0.412	0.469	0.384	-0.113**
	(0.492)	(0.501)	(0.487)	(0.0555)
Top-Income Class (=1)	0.345	0.207	0.411	0.268***
	(0.477)	(0.410)	(0.493)	(0.0449)
Durable Goods Value				
Low-Durable-Value Level (=1)	0.239	0.352	0.185	-0.163***
	(0.426)	(0.479)	(0.388)	(0.0591)
Middle-Durable-Value Level (=1)	0.436	0.455	0.427	0.00863
	(0.496)	(0.499)	(0.496)	(0.0564)
Top-Durable-Value Level (=1)	0.324	0.193	0.387	0.200***

	(0.469)	(0.399)	(0.488)	(0.0509)
Liquid Assets Value				
Low-Liquid-Value Level (=1)	0.268	0.359	0.225	-0.137**
	(0.441)	(0.477)	(0.418)	(0.0618)
Middle- Liquid-Value Level (=1)	0.459	0.434	0.470	-0.0115
	(0.499)	(0.499)	(0.500)	(0.0554)
Top- Liquid-Value Level (=1)	0.273	0.207	0.305	0.171***
	(0.447)	(0.410)	(0.461)	(0.0526)
Real Estate				
Own House (=1)	0.951	0.924	0.964	0.235*
	(0.218)	(0.268)	(0.189)	(0.133)
Financial Characteristics				
Informal Lending (=1)	0.488	0.559	0.454	-0.112*
	(0.500)	(0.498)	(0.498)	(0.0594)
Risk Preference	2.619	2.423	2.712	0.0341*
	(1.393)	(1.385)	(1.389)	(0.0184)
Exclusion Variables				
Own Car (=1)	0.244	0.172	0.278	0.177***
	(0.429)	(0.376)	(0.449)	(0.0627)
Public Security Evaluation (=1)	3.644	3.43	3.745	0.0695**
	(0.923)	(0.926)	(0.906)	(0.0282)

Standard Deviations in parentheses of columns (1), (2) and (3); Robust standard errors in parentheses of column (4) are adjusted for 320 clusters in community. Sample weight is adopted in the estimation of the T-test (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$)

Table 4 Heckman Probit Model of the Self-selection Process

Explanatory Variables	(1) Selection Equation (1) Need Bank Credit (=1)	(2) Outcome Equation (1) Bank Loan Apply (=1)	(3) Simple Probit Bank Loan Apply (=1)
Political Connection (=1)	0.000675	0.0369*	0.113*
	(0.0334)	(0.0221)	(0.0632)
Social-Economic Characteristics (Age reference group: Young Heads)			
Female (=1)	0.0105	-0.0560*	-0.128***
	(0.0223)	(0.0289)	(0.0460)
Middle-aged (=1)	0.0622*	0.0153	0.150**
	(0.0328)	(0.0301)	(0.0631)
Old (=1)	0.0166	0.0215	0.0941
	(0.0392)	(0.0269)	(0.0688)
Household Size	0.00734	-0.00327	0.00407
	(0.00466)	(0.00407)	(0.0127)
Rural	0.0675**	-0.0262	0.0337
	(0.0281)	(0.0260)	(0.0526)
Educational Attainment (Reference group: Primary School or less)			
Middle School or Vocational School (=1)	0.0208	-0.00866	0.0133
	(0.0173)	(0.0152)	(0.0385)
Bachelor Degree or Above (=1)	0.160***	-0.0746	0.0614
	(0.0541)	(0.0839)	(0.161)
Occupation Types (Reference group: Unemployed)			
Freelance or Farmer (=1)	-0.0298	-0.0162	-0.107*
	(0.0292)	(0.0260)	(0.0620)
Entrepreneurs (=1)	-0.0254	-0.0178	-0.0974
	(0.0371)	(0.0318)	(0.0715)
Employees (=1)	-0.0627**	-0.0739	-0.292***
	(0.0294)	(0.0472)	(0.0549)
Household Income (Reference group: Low-Income Class)			
Middle-Income Class (=1)	-0.0232	0.000527	-0.0407
	(0.0192)	(0.0172)	(0.0415)
Top-Income Class (=1)	0.00854	0.0316	0.105**
	(0.0330)	(0.0250)	(0.0528)
Durable Goods Value (Reference group: Low-Durable-Value Level)			
Middle-Durable-Value Level	-0.0231	0.0196	0.0300
	(0.0182)	(0.0161)	(0.0382)
Top-Durable-Value Level	-0.0538**	0.0748***	0.172***
	(0.0253)	(0.0214)	(0.0532)
Liquid Assets Value (Reference group: Low-Liquid-Value Level)			
Middle-Liquid-Value Level	0.00203	0.0175	0.0659
	(0.0179)	(0.0169)	(0.0412)
Top-Liquid-Value Level	-0.0280	0.0218	0.0550
	(0.0282)	(0.0246)	(0.0601)
Real Estate			
Own House (=1)	0.0112	-0.00459	0.0128

	(0.0354)	(0.0379)	(0.0887)
Financial Characteristics			
Informal Lending (=1)	0.323***	-0.195***	-0.0691*
	(0.0258)	(0.0222)	(0.0389)
Risk Preference	0.0220***	0.00939	0.0603***
	(0.00573)	(0.00674)	(0.0133)
Exclusion Variables			
Public Security Evaluation	-0.00706	0.0267**	0.0717***
	(0.00966)	(0.0113)	(0.0212)
Own Car (=1)	0.0462*	--	--
	(0.0247)	--	--
N	3,776	961	961
$\boldsymbol{\rho_1}$	-0.9353***		
	(0.0564)		
χ^2 (Wald test of $\rho_1 = 0$)	14.19***		--
Prob (> χ^2)	0.0000		--
Pseudo R^2	0.1258	--	0.1397
Standard Errors Cluster at Community Level	Yes	Yes	Yes

Robust standard errors in parentheses are adjusted for 320 clusters in community. Average Marginal Effects are calculated with finite-difference method. Sample weight is adopted in all estimations of the model (*** p<0.01, ** p<0.05, * p<0.1).

Table 5 Heckman Probit Model of the Bank Selection Process

Explanatory Variables	(1) Selection Equation (2) Bank Loan Apply (=1)	(2) Outcome Equation (2) Bank Loan Granted (=1)	(3) Simple Probit Bank Loan Granted (=1)
Political Connection (=1)	0.110*	0.0873*	0.158***
	(0.0633)	(0.0466)	(0.0575)
Social-Economic Characteristics (Age reference group: Young Heads)			
Female (=1)	-0.158***	0.0446	-0.00159
	(0.0469)	(0.0525)	(0.0718)
Middle-aged (=1)	0.0261	-0.0497	-0.00822
	(0.0930)	(0.0599)	(0.0832)
Old (=1)	0.0713	-0.114	-0.104
	(0.0713)	(0.0745)	(0.0925)
Household Size	-0.0123	-0.0226	-0.0279
	(0.0150)	(0.0155)	(0.0174)
Rural	-0.114	-0.00521	0.00449
	(0.0838)	(0.0461)	(0.0603)
Educational Attainment (Reference group: Primary School or less)			
Middle School or Vocational School (=1)	-0.0362	0.0695*	0.0961*
	(0.0478)	(0.0398)	(0.0533)
Bachelor Degree or Above (=1)	-0.245	0.137*	0.215**
	(0.168)	(0.0731)	(0.101)
Occupation Types (Reference group: Unemployed)			
Freelance or Farmer (=1)	-0.0331	-0.00212	-0.0483
	(0.0745)	(0.0731)	(0.0876)
Entrepreneurs (=1)	-0.0606	-0.0329	-0.0922
	(0.0763)	(0.0873)	(0.0936)
Employees (=1)	-0.161	-0.0507	-0.199*
	(0.103)	(0.114)	(0.112)
Household Income (Reference group: Low-Income Class)			
Middle-Income Class (=1)	0.0118	0.0448	0.0471
	(0.0504)	(0.0467)	(0.0634)
Top-Income Class (=1)	0.0762	0.0968	0.178**
	(0.0531)	(0.0634)	(0.0763)
Durable Goods Value (Reference group: Low-Durable-Value Level)			
Middle-Durable-Value Level	0.0706	0.0314	0.0617
	(0.0434)	(0.0504)	(0.0596)
Top-Durable-Value Level	0.282***	0.0369	0.112
	(0.0743)	(0.0630)	(0.0684)
Liquid Assets Value (Reference group: Low-Liquid-Value Level)			
Middle-Liquid-Value Level	0.0599	0.00659	0.0389
	(0.0412)	(0.0483)	(0.0624)
Top-Liquid-Value Level	0.104	-0.0249	-0.00855
	(0.0662)	(0.0671)	(0.0864)
Real Estate			
Own House (=1)	-0.0148	0.179	0.243*

	(0.0889)	(0.135)	(0.126)
Financial Characteristics			
Informal Housing Lending (=1)	-0.487***	-0.0223	-0.0654
	(0.0970)	(0.0426)	(0.0510)
Risk Preference	0.0141	-0.00479	0.0186
	(0.0262)	(0.0153)	(0.0147)
Exclusion Variables			
Public Security Evaluation	0.0850***	--	--
	(0.0216)	--	--
Mill's Ratio 1 ($\boldsymbol{\rho_1}$)	-0.804*	--	--
	(0.415)	--	--
NO. of Observations	961	441	441
$\boldsymbol{\rho_2}$	-0.6563*		
	(0.2313)		
χ^2 (Wald test of $\rho_2 = 0$)	3.74*		--
Prob (> χ^2)	0.0530		--
Pseudo R^2	0.1437	--	0.1378
Standard Errors Cluster at Community Level	Yes	Yes	Yes

Robust standard errors in parentheses are adjusted for 320 clusters in community. Average Marginal Effects are calculated with finite-difference method. Sample weight is adopted in all estimations of the model (*** p<0.01, ** p<0.05, * p<0.1).