

社会资本能否纠正市场失灵？ ——来自中国农村信贷市场的经验证据

目的：信息不对称和强制性是农村信贷市场失灵的两个主要原因。近些年，学者和发展家特别关注那些以非传统的方法成功贷款给穷人的专业的借贷机构。这些小额贷款的成功归因于连带责任借贷减缓了信息不对称和强制问题。文章的主要目的是检测在我国农村特定的经济、社会和文化背景下，连带责任借贷制度是否可以纠正市场失灵，并且识别出影响群体中对社会资本感兴趣的贷款者不同偿还方式的因素。

方法：作者在 2009 年调查了江苏省北部的 110 个贷款组，对其进行回归。

结论：文章以中国农村信贷市场连带责任借贷组为样本，检验了社会资本相关因素能否以及怎样纠正市场失灵。研究表明全体的同质性是连带责任借贷组成功的最重要的基础之一。借款者收集同组中另一个人信息的能力以及对无意识违规者的可信威胁的能力将影响一个组织的连带责任借贷行为。但是，范围狭小的社会资本阻碍了信贷的扩展广度，这会对偿还行为造成不利的影响，同时在中国甚至全世界内，逐渐地使连带责任借贷过渡到个人借贷。

关键词：社会资本；信贷市场失灵；信任；连带责任借贷；小额信贷；农村信贷合作

独创性：这是第一次从中国农村信贷市场社会资本的角度实证地分析连带责任借贷行为，同时，也验证了从连带责任借贷向个人借贷的转换现象。

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Can Social Capital be Harnessed to Repair Market Failures? ——Evidence from Rural Credit Market of China¹

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Purpose: Asymmetric information and enforcement problem are the two main reasons for rural credit market failures. Scholars and development practitioners have in recent years devoted considerable attention to specialized lending institutions that use unconventional methods to lend successfully to poor people. The success of these kinds of microfinance institutions has been attributed to mitigate asymmetric information and enforcement problems using joint-liability lending. The main purpose of this paper is to test whether social capital within the joint-liability lending group can repair market failure under special economic, social and culture context of rural China and identifies factors affecting the different repayment performance of lending groups, with a particular interest in the role of social capital at the group and community levels.

Design/methodology/approach: This paper uses regression techniques based on 110 lending groups which were surveyed by the authors in north Jiangsu Province in 2009.

Findings: The paper tests whether and how social capital related factors repair market failures using joint-liability lending groups sample from China rural credit market. The conclusions from this research suggest that membership homogeneity is one of the most important elements in successful joint-liability lending groups. And the performance of joint-liability lending as an institution is more likely to be influenced by the ability of borrowers to gather information about one another, and the ability of borrowers to credibly threaten to involuntary defaulters in the group. But the narrow radius of social capital may become the stumbling block to the expanding of breadth of credit outreach resulting in negative impact on the repayment performance and make the gradually shifting of joint-liability lending to individual liability lending in China and even all over the world.

Originality/value: This, it is believed, is one of the first empirical studies on joint-liability lending performance from the perspective of social capital in rural credit market of China and provides some evidences for the phenomenon of the shifting of joint-liability lending to individual liability lending.

Key words: Social capital, Credit Market failure, Trust, Joint-liability lending, Microfinance, RCCs

1. Introduction

Rural credit market is always imperfect caused by various problems including asymmetric information and poor enforcement system. Scholars and development practitioners have in recent years devoted considerable attention to specialized lending institutions and schemes such as rotating saving and credit associations, trade credit and joint-liability lending (van Bastelaer, 2000) that use unconventional methods to lend successfully to poor people. Considerable evidence now shows that microfinance institutions (MFIs) such as Grameen Bank (GB) can lend to poor people no ordinary commercial lender would serve and do so with a reasonable degree of financial sustainable and repayment rates that are significantly higher than for comparable loans by conventional financial institutions (Morduch, 1999). Hossain (1988) and Schaefer (1982) report the loan repayment rates of 98.6% and 97.4%, respectively, in MFIs of Bangladesh and Malawi. Many scholars (for example Stiglitz, 1990; Besley and Coate, 1995; Wydick, 1999; Ghatak and Guinnane, 1999; Asif Dowla, 2006; et al.) explore the theoretical mechanism for the success of MFIs from three distinct perspectives. First, joint liability lending used by MFIs can reduce information asymmetries by using local information and social capital that exist among borrowers in the same community. Members of a community may know more about one another (that is, each other's types, actions and reputation) than an outside institution such as a bank and give more trust to fellow group members. Second, Peer pressure or social collateral is also an essential element of the success of joint-liability lending. MFIs use peer pressure or social collateral to guarantee repayment, since all members are jointly liable for the loan. Third, a major source of market failure in rural credit markets is that financial institutions cannot apply financial sanctions against rural households especially the poor who default on a loan. But their neighbors, on the other hand, may be able to impose powerful social sanctions at low cost. So MFIs that give borrowers the proper incentives to use information on their partner and to apply social sanction to delinquent partner

can out-perform a conventional bank. In a word, many literatures have found that higher social capital may lead to the excellent performance of joint-liability lending of MFIs and more effectively repair the rural credit market failure.

The successful experience of joint-liability lending technology has also attracted the interest of practitioners as well as theoreticians in China. After initial experiments by researchers at the Chinese Academy of Social Science (CASS) begun in 1993, more than 300 microfinance pilots [1](including multilateral donors, international and domestic NGOs, domestic government agencies) have introduced a variety of microfinance model to rural China by 2006 (Cheng and Xu, 2006). After initial skepticism toward microfinance models, the Chinese government has become an active proponent. Based on the successful experience of MFIs in China and abroad, the People's Bank of China (PBC) started formulated the guidelines on joint-liability lending management of rural credit cooperatives (RCCs) in January 2000 to extend rural household joint-liability loan nationally which is mainly based on GB model. By the end of 2007, the outstanding joint-liability loans of RCCs have increased to 188.383 billion yuan and accounted for 16.21% of total rural household loan (PBC, 2008).

But the joint-liability lending operated by RCCs has less success than expected in China in recent years. First, the joint-liability lending group is hard to self-formed voluntarily because lack of mutual trust (He Guangwen, 2002), so lending officers often herd some strange borrowers into a loan group to cope with their loan quotas as a result of high dropout rates. Second, the delinquency rates of joint-liability lending have an increasing tendency in different degree in some area. Third, RCCs in some area have gradually converted joint-liability lending to individual-liability in recent years (for example, some RCCs in southern Jiangsu Province [2]), and some RCCs even have no joint-liability lending initially (for example, RCCs in Guangdong Province). At the same time, we can find that micro-lenders around the world, such as the Bank Rakyat Indonesia (BRI) in Indonesia, have expanded rapidly using individual liability loans. Others, like BancoSol in Bolivia, have converted a large share of their joint-liability lending portfolio into individual. Even the Grameen Bank in Bangladesh, the precursor of joint-liability lending, has recently relaxed the joint-liability clause in the Grameen II program by allowing defaulters to renegotiate their loans (Gine and Karlan, 2006).

The shift from joint-liability to individual liability lending and joint-liability lending has becoming unsuccessful in China and even all over the world accelerate us learn about what happened on joint-liability lending; furthermore, as the most important factor affecting the performance of joint-liability lending, whether social capital within the lending group become less useful as the credit market mechanism perfection and economic development [3] or the social capital itself has changed? Whether there are some other group characteristics affect the repayment rates of joint-liability lending besides social capital? So can social capital within the group still be harnessed to repair rural credit market failures? Or even the joint-liability lending of RCCs in China is a pale imitation?

To help provide answers to these and other questions, this paper analyzes data from 110 joint-liability groups which were formed during 2006 and 2009 under RCC in northern Jiangsu. We empirically identify some group characteristics that contributes to the repayment behavior and examine whether and how social capital created by joint-liability lending scheme reduce the cost of imperfect information in micro-credit transactions, and thereby affect the performance of joint-liability lending by RCCs in China. Although increasing literatures have referred to related questions in some developing countries recently (Wydick, 1999; van Bastelaer, 2000; Karlan, 2005; van Bastelaer and Leathers, 2006;

Ahlin and Townsend, 2007), as we know, few empirical literatures have attempted to empirically test the role of social capital in explaining the performance of joint-liability loan programs especially with Chinese characteristics.

The rest of this paper is organized as follows. Section 2 presents the concept of social capital, its role in joint-liability lending models, and how it is expected to affect repayment behavior. Microfinance in rural China and the joint-liability lending methodology of RCCs is briefly described in the next section. Section 4 describes the data and variables used for the analysis, the results of which are presented in Section 5. Section 6 summarizes the main results of the paper and presents policy recommendations for microfinance institutions and RCCs in China.

2. Conceptual Framework

(Theories of Social capital and rural credit market failures—Joint-liability lending models)

The credit transactions are based on the premise of future guarantees and one of the most important characters of credit contracts is credit intensive, so banking as a business requires a lot of information and trust between the bank and its customers. The information or trust between lenders and borrowers as well as legal contract enforcement both determine the likelihood of credit transactions, especially in rural credit market of developing countries context where both are weak. In low-income communities, lending business typically suffers from informational asymmetries, as the borrowers have better information on their creditworthiness and risk taking than does the lender (Armendariz de Aghion and Morduch, 2005). In these circumstances where many borrowers also lack sufficient physical collateral, what matters for allowing access to loans, is how trustworthy the institutions perceive potential borrowers to be. Under these situations, social connections, social collateral and trustworthiness may become important in credit transaction, and all of them are ingredients of social capital (Glaeser et al., 2000). Therefore, we will take one of the most popular credit schemes—joint-liability lending as example to examine how social capital can relieve the credit market failure caused by asymmetric information and weak enforcement mechanism theoretically. But before this, it may be necessary for us to make a simple classification of social capital mentioned in this paper.

2.1 The concept and classification of social capital

The scope of the concept of social capital varies considerably in the literature. The narrowest concept of social capital is associated with Putnam (1993) who defines social capital as a set of horizontal association between people. Coleman (1988) defines relatively broader concept as “a variety of different entities, with two elements in common: they all consist of some aspect of social structure, and they facilitate certain actions of actors within the structure” which expands the concept to include vertical as well as horizontal associations. The most encompassing view of social capital defined by North (1990) takes the social and political environment that shapes social structure and enables norms to develop, also including the most formalized institutional relationships and structures. Until now, the definitional debates are still ongoing. Researchers from the World Bank Social Capital Initiative define social capital of a society includes the institutions, the relationships, the attitudes, and value that govern interactions among people and contribute to economic and social development (Grootaert and van Bastelaer, 2002). And it makes widespread agreement over the concept.

According to different level and scope, social capital can be classified into micro, meso, and macro-level which are defined by an increasing broader unit of observation. But whether present at the micro, meso, or macro-level, social capital can be delineated into two domains: structural and cognitive social capital (Uphoff, 2000). In detail, structural social capital manifest itself through social networks and other structures such as associations, organizations and cultural groups, supplemented by roles and rules, interpersonal relationships, procedures and precedents that govern them; cognitive social capital is expressed by norms, values, trust, attitudes and beliefs. As such, structural social capital assets are extrinsic and relatively observable, while cognitive social capital assets are more intangible. In keeping with this dichotomy, social capital in rural China will be proxies both by the militias, religious organizations, credit unions, farmer cooperatives and some other economic groups that villagers join, and by the trust models and attitudes that they express and consent.

Economic sociology reveals that the social capital exists in community also has economic benefits. The stream of benefits from social capital—or the channels through which it affects development—includes several related elements, such as information sharing, collective action and the reduction of transaction cost and opportunistic behavior.

2.2 The theoretical role of social capital in repairing rural credit market failures: Taking Joint-liability lending as typical case

As we mentioned above, there are many successful lending arrangement and methodology implemented by financial programs that specially targeted the poor. Joint-liability lending innovated by some MFIs is doubtless the most dazzling and attractive one which generated more theoretical and empirical coverage than others. The social collateral, peer monitoring and pressure in joint-liability lending groups is one of the best practice of exploiting social capital to alleviate credit market failures (World Bank, 1999). So we will take joint-liability lending as the main object in the paper. Several recent literatures have proposed several theories of joint-liability lending that stress carious aspects of its informational and enforcement advantages over other forms of lending, and also explored the theoretical effect of social capital within the lending group on repairing rural credit market failure [4]. This paper will draw on and extend recent researches and also provide a terse review focuses on the economic effect of social capital within the lending group, especially the channel of the social capital repairing the market failure.

(1) Local information, positive assortative matching and adverse selection

Adverse selection arises when borrowers have characteristics that are unobservable to the lender but affect the probability of being able to repay the loan. Ghatak (1999) and van Tassel (1999) have argued that joint-liability lending can solve this problem by taking advantage of *local information* villagers have of each other's projects relevant to their creditworthiness, information which is unavailable to the bank. Here we will illustrate the main idea using a simple model.

Suppose borrowers are risk-neutral and of two types, risky (type a) and safe (type b). Each borrower takes a loan to finance a project which has probability of success p_i ($i = a, b$) where $p_a < p_b$. Assumed each borrower's project yield is independent. With a project of type i , yield takes two values, y_i^H (succeed) and 0(fail). If the bank does not know a borrower's type, and if standard screening instruments such as collateral are not available, then the bank has to offer loans to all borrowers at the

same nominal interest rate. So the borrower takes a loan of one unit of capital, and undertakes to pay $r > 1$ (principal plus interest) at the end of the loan time period. Two borrowers voluntarily form a group taking a group loan, and in addition, if his or her partner's project yields low returns, he or she must pay an extra amount $c > 0$. Thus the parameter c measures the degree of joint liability. The expected payoff of a borrower of type i when her partner is type j is

$$EU_{ij} = p_i p_j (Y_i^H - r) + p_i (1 - p_j) (Y_i^H - r - c) = p_i (Y_i^H - r) - p_i (1 - p_j) c \quad (1)$$

Thus the expected payoff to a safe borrower of taking a loan together with another safe borrower is

$$\begin{aligned} EU_{bb} &= p_a p_b (Y^H - r) + p_b (1 - p_b) (Y^H - r - c) \\ &= p_b^2 c + p_b (Y^H - r - c) \end{aligned} \quad (2)$$

Similarly, the safe borrower's expected payoff of taking a loan with a risky borrower is

$$\begin{aligned} EU_{ba} &= p_b p_a (Y^H - r) + p_b (1 - p_a) (Y^H - r - c) \\ &= p_b p_a c + p_b (Y^H - r - c) \end{aligned} \quad (3)$$

Subtracting (3) from (2), we have the net expected loss for a safe borrower of having a risky partner, which is

$$EU_{bb} - EU_{ba} = p_b (p_b - p_a) c > 0 \quad (4)$$

The net expected gain of a risky borrower from having a safe partner is

$$EU_{ab} - EU_{aa} = p_a (p_b - p_a) c > 0 \quad (5)$$

Note that while both (4) and (5) are positive, (4) is larger than (5), since $p_b > p_a$. Thus, while a risky borrower would be willing to pay the r.h.s. of (5) to a safe borrower to accept him as a partner, the safe borrower would not be willing to accept such a side-payment, since she is willing to pay the r.h.s. of (4) to have another safe borrower as a partner rather than a risky borrower. As a result, group formation will display *positive assortative matching* under a joint-liability contract. In brief, safe borrowers will be willing to pay more than the risky borrowers to have safe borrowers as fellow group members.

If the lender offers two contracts, (high joint liability, low interest rate) and (low joint liability, high interest rate), safe borrowers will select the former contract and risky borrowers the latter. Thus, the *repayment rates* are higher under joint-liability contracts as compared to conventional individual-liability contracts because the former effectively exploits a useful resource (social capital) that the latter does not: *local information* (the information borrowers have about each other).

(2) Peer monitoring, positive incentive mechanism and moral hazard

In the absence of collateral, the bank and borrower do not always have the same objectives because the borrower does not fully internalize the cost of project failure. Moreover, the bank cannot stipulate perfectly how the borrower should run the project, in part, because some of the borrower's actions are not costlessly observable.

Theories of peer monitoring are motivated by the fact that group members have an incentive to take action against a partner who mis-uses his/her loan because of joint liability. That is, the principle of joint-liability creates a positive incentive mechanism in which each group member has an interest in screening and monitoring the other members, since the non-repayment of one of the other members will be costly for him/her. The paper by Ghatak & Guinnane (1999) formalizes this idea and they prove that

group members will choose higher effort under joint liability [5]. In brief, borrowers choose actions for project, which can be thought of as a level of effort $p \in [0,1]$, for which they incur a disutility cost of $1/2\gamma p^2$ ($\gamma > 0$). If borrowers take decisions about project-choice non-cooperatively under individual liability, the best respond function is given by:

$$p = \frac{Y^H + \sqrt{(Y^H)^2 - 4\rho\gamma}}{2\gamma} \quad (6)$$

If borrowers decide on project-choice cooperatively they choose when under joint-liability, they will choose

$$p = \frac{Y^H + \sqrt{(Y^H)^2 - 4\rho(\gamma - c)}}{2(\gamma - c)} \quad (7)$$

So the equilibrium value of p and, hence, the repayment rate, is higher under joint-liability lending when borrower's choose p cooperatively compared to individual-liability lending.

Also they prove that as long as social ties are strong enough or monitoring costs are low enough, joint-liability lending will improve repayment rates through peer monitoring.

(3) Peer pressure, social sanction and enforcement

Enforcement arises not from informational asymmetries but from the lender's limited ability to apply effective sanctions against defaulters. Even if the borrower's project succeeds so that he is able to repay, he may still refuse to repay if the legal system does not work very well and if the poverty of the borrower restricts the amount of effective sanctions. Besley and Coate(1995) address the question of how joint-liability contracts affect the willingness to repay. They show that group lending has two opposing effects on repayment rates. The advantage of groups is that they allow a member whose project yields very high returns to pay off the loan of a partner whose project does very badly. The disadvantage is that a moderately successful borrower may default on her own repayment because of the burden of having to repay her partner's loan. However, if social ties among members are sufficiently strong, the net effect is positive because by defaulting willfully a borrower incurs *social sanctions* from both the bank and the community. With sufficient social capital, a borrowing group enforces repayment better than would take place with individual liability. Wydick (1996) shows that a sufficiently strong and credible threat of *social sanctions* against a defaulting group member produce a Nash equilibrium in which group lending is able to deter enforcement problem.

2.3 Social capital and joint-liability lending group repayment model: hypotheses

Based on the analysis in 2.1 and 2.2, we can find that, adverse selection, moral hazard and enforcement problem which arise from asymmetric information and poor enforcement system can be effectively eliminated by social capital between group borrowers. The mechanism of social capital repairing rural credit market failures can be summarized as following: (1) group formation using local information will display positive assortative matching under a joint-liability contract, and member homogeneity as an important feature of the lending group can increase the information available to fellow group members, and thus affecting the group performance. (2) as clients invest in the development networks and mutual trust, the cost of sharing local information about fellow group

members' creditworthiness and repayment ability, about their actions in using loans and truthfulness in reporting loan return, is lowered. (3) networks, associations, and social-attitudes reduce opportunistic behaviors by increasing social costs of non-compliance and increase the ability of group members to act collectively to create pressure and sanctions on potential defaulters.

We therefore submit two hypotheses of this paper:

Hypothesis 1: *Positive assortative matching which means that borrowers will sort themselves into relatively homogenous groups. And membership homogeneity may positively affect group repayment performance.*

That is, if groups are allowed to form themselves, risky and safe borrowers will sort themselves into relatively homogenous groups. This is the theoretical proposition of positive assortative matching which needs to be proved empirically. Also, the effect of positive assortative matching under joint-liability is positive because less adverse selection and better risk type screening among fellow group members may leads lower default rates.

Hypothesis 2: *The more stock of social capital at the micro-level determines the stronger ability of the joint-liability lending group to successfully take on local information gathering, peer monitoring and enforcement responsibilities, and therefore to ensure better repayment performance.*

More specifically, the existence of large numbers of militias, religious organizations, credit unions, farmer cooperatives and some other economic groups—manifestations of structural social capital—provides channels for the gathering of information about mutual creditworthiness, repayment likelihood and loan use monitoring, and resulting in mitigating adverse selection and moral hazard. The threat of exclusion from these groups is often a powerful incentive for repayment. Similarly, the structure of attitudes, trust model, and shared cultural norms—manifestations of cognitive social capital—affects the social perception of non-compliant behavior, and therefore deters enforcement problem and creates a positive incentive for the repayment.

3. Microfinance in rural China and joint-liability lending of RCCs—A Brief Overview

As we mentioned above, the donors and domestic institutions initiated China's microfinance movement in 1993. After that, the microfinance movement has taken China by storm (Park and Ren, 2001). Until now, there are diversified microfinance programs and institutions including donors, NGOs, government supported poverty funds, formal financial institutions (RCCs and ABC) ,private micro-credit companies and non-bank financial institutions...and also most of them are more or less basically Grameen replicates, mainly characterized by small loan size and joint-liability lending contracts. We will take microfinance practice of RCCs as example. After the collapse and closure of Rural Credit Foundations (RCFs) before 1999 and the withdrawal of Agricultural Bank of China (ABC) from rural financial market, RCCs have become the main force of rural credit supply and taken over the monopoly in the market. In order to eliminate the bottle neck of "three rural" development (those of farmers, agricultural and the countryside) caused by credit shortage and solve the high rate of loan delinquency faced by RCCs, central government initiated experimental reform of RCCs in 8 provinces in 2000 and then extended it to other 21 provinces from 2004. By the end of 2007, RCCs have 52000 organization nets in the county area and account for 41.5% of total county financial organization nets which cover almost every town in rural China (PBC, 2008).

One major credit service reform measure for RCCs is extending rural household joint-liability loan nationally uses some principles from GB model. The joint-liability lending methodology with RCCs characteristics operates in the following main manner: loan applicants self-select into groups consisting of five to ten members, compulsory savings (more than 5% of loan balance), 1 percent of principle as group fund deducted at the time of disbursement, regular loan repayment, dynamic incentives and most importantly, jointly liable for the loan repayment. But there are also some significant differences between traditional GB model and joint-liability lending of RCCs. In practice, weekly center meeting is abandoned because of higher borrowing cost for rural clients especially during the busy agricultural seasons (Cheng, 2003). Also, the loan allocation mechanism is changed from group first to individual group member directly which cause high dropout rate and low group stability. And may be the major difference between the RCCs and most MFIs is that RCCs use a diverse mix of lending methodologies including joint-liability loan, fiduciary loan, personal guarantee loan and collateral loan, rather than merely joint-liability loan. So we can observe the changes of joint-liability loans and individual-liability loans directly. According to PBC statistics, the share of joint-liability lending in loan portfolio of RCCs has been always less than individual-liability loans although it has grown fast and now the largest joint-liability lending based micro-credit program in rural China served more than 30 million rural households from 2002 to 2007 (PBC, 2008).

4. Survey Data

4.1 Data source

One hundred and ten farmer groups existed in sixteen villages of Sihong County in north Jiangsu province were surveyed in the summer of 2009. It comprised two units of observation: joint-liability lending group and group members. The group-level questionnaire included questions on the characteristics of the groups (size, age, formation, governance, member homogenous and loan repayment performance) and group member-level questionnaire examined member characteristics (age, income, residence, agricultural production and non-agricultural economic activities). Also questions about provision of the group (joint liability, sanctions for default) and social capital (associational activity, clan net, trust model and strength) in the community are collected in our questionnaire.

4.2 Variables

We use the repayment performance of the group from 2006 to 2009 as our dependent variable. Repayment rate values are measured by a binary dummy variable which are equal to 1 if any member within the joint-liability lending group defaults willfully during 2006 and 2009.

The main purpose of this paper is to test whether social capital within the lending group can repair market failure caused by asymmetric information and weak enforcement mechanism under special economic, social and culture context of rural China and identifies factors affecting the different repayment performance of lending groups, with a particular interest in the role of social capital at the group and community levels. According the discussion and the two hypotheses of the last section, we develop our independent variables in order to be able to measure four types of social capital-related factors, two of them focused on the groups, and the other two on the communities within which the groups function, as follows:

(1) Proxies for group membership homogeneity

These variables measure the extent of membership homogeneity in income, residence include:

—*The income variation degree of members*: Groups repayment performance tend to be more successful when members share the similar economic conditions which affect their credit demand and risk type. But the covariance risk may be higher because of smaller income variation.

—*The members residence geographical distance*: The more closer the residence of fellow members live, the higher ability of collecting information and stronger social cohesion, resulting in better repayment action.

(2) Factors affecting collective action with groups

A number of factors facilitate collective action among the group members, thereby increasing their ability of monitoring loan use and exerting social pressure for repayment. These include:

—*The size of the group*: Small size group allows for closer interaction among members which invariably reduces costs of information and also facilitates loan monitoring, collective action and enforcement, resulting in better repayment performance.[6]

—*Joint liability*.

—*Social sanction taken by group in the event of involuntary non-repayment*.

(3) Proxies for structural social capital within the community

Two proxy variables for structural social capital are used to probe the extent of

—levels of associational activity in the village[7]; and

—networks of tribe power which connect families of the same surname[8].

(4) Proxies for cognitive social capital within the community

These indicators capture the models of mutual trust [9] and levels of mutual trust, which are explored by asking members about their trust identity with different types of people.

(5) Control variable

—*The age of the group and the stability in its membership*: Longer personal relationships among members of older groups means stronger social cohesion which may favorably improve the cost of dropout and also affect expectations of compliance and loan reimbursement.

—*The similarity of occupation*: When all members engage in agricultural production in the same village, their economic activities maybe very similar and easily be monitored. If someone leaves the rural area to work in city, the economic activities with the group maybe diversified and the information about loan use and output will be hard to be collected by each other. But the covariance risk may be lower because of diversified income sources.

4.3 Descriptive statistics and expected signs

Table1. Variables used in the analysis (means, standard deviations, and expected signs)[N=110]

Variables	Definition of variables	Mean	SD	Sign
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<i>Dependent variable</i>					
Repayment performance	Dummy=1 if group report that some members default intentionally during 2006-2009	0.264	0.443	...	
<i>Proxies for group membership homogeneity</i>					
CV of members income (CVI)	The coefficient of variation(CV) of members income means the ratio of the standard deviation to the mean of members net incomes per capita	0.240	0.162	?	
Geographical distance of members residence (GDR)	1-3 indicator, with higher value indicating that members live farther apart	1.391	0.679	+	
<i>Factors affecting collective action within groups</i>					
The size of the group(SG)	Number of members in borrowing group	3.436	0.684	+	
Joint liability(JL)	1-4 indicator, with higher value indicating that weak group responsibility	1.900	0.729	+	
Social sanction on involuntary default (SSID)	Dummy=1 if group takes punitive action for involuntary default	0.655	0.478	-	
<i>Proxies for structural social capital within the community</i>					
Levels of associational activity in the village(AA)	Dummy=1 if existence other economic/cultural/political associations in community	0.255	0.438	-	
Intensity of tribe networks (ITN)	Proportion of biggest clan to the number of families in the village	0.293	0.173	-	
<i>Proxies for cognitive social capital within the community</i>					
Trust model(TM)	Dummy for trust model(1=system trust, 0=personal trust)	0.291	0.456	+	
Trust level in the community(TLC)	Degree of trust in the village(1-3 variable with a higher value indicating less trust)	1.236	0.620	+	
<i>Control variable</i>					
The age of the group (AGE)	Number of years since the group took first group loan	2.845	1.878	-	
Similarity of member occupation(SMO)	Proportion of number of peasant workers to the size of the group	0.201	0.227	+	

5. Empirical Results

5.1 Test for effect of positive assortative matching

As we mentioned above, joint-liability lending group formation using local information will display

positive assortative matching theoretically. That is, if groups are allowed to form themselves, risky and safe borrowers will sort themselves into relatively homogenous groups. And member homogeneity in age, education, occupation, income, residence as an important feature of the lending group can increase the information available to fellow group members, and thus affecting the group performance. This is the first hypothesis we need to test.

Table2. Selected statistics of group homogeneity, by lending group repayment performance

Item	Group repayment performance	
	0	1
CV of member age	0.155 (0.086)	0.129 (0.083)
CV of member education level	0.354 (0.386)	0.210*** (0.256)
CV of member net income per capita	0.412 (0.188)	0.178*** (0.093)
Residence(geographical distance)	1.931 (0.923)	1.198*** (0.431)
Similarity of member occupation	0.398 (0.244)	0.130*** (0.173)
The size of the group	3.793 (0.744)	3.309*** (0.605)
Number of lending groups	29	81

Standard deviation given in parentheses.

*** represent significant difference between good and bad performance groups based on t-statistics at 1% levels.

Due to lack of matched sample (non-group borrowers) for our lending groups, we just compare some characteristics of sample groups with different repayment performance to test the positive assortative matching effect indirectly. That is, whether positive assortative matching can make some groups more successful than others. Table 2 provides comparative statistics on the types of borrowers in the same group. An examination of average CV of member age, CV of member education level, CV of member net income per capita, residence, size of the group by repayment performance shows that latter five items were significantly lower among bad performance groups compared to good performance groups. While no significant difference was noticed in CV of member age. That is, positive assortative matching makes groups with lower education variation and income variation between group borrowers, live closer, smaller occupation difference and less number of members in borrowing group more superior in producing high repayment. Joint-liability lending group member homogeneity in education, income, residence, occupation can increase the information (type and action) available to members as a result of high repayment rates.

5.2 Econometric estimate and results

The discussion of section 4.2 identifies five categories of variables that may influence the performance of lending groups: proxies for group membership homogeneity, factors affecting collective

action with groups, proxies for structural social capital within the community, proxies for cognitive social capital within the community, control variable. The general model to be estimated is as follows:

Group repayment performance

$$= f(\text{group membership homogeneity, group-level collection action, community-level structural social capital, community-level cognitive social capital, } X)$$

where X is a vector of control variables.

Table3 Logit regression results for determinants of repayment performance in joint-liability lending groups in China

	Individual regression 1: group-based factors	Individual regression 2: community-based structural social capital	Individual regression 3: community-based cognitive social capital	Collective regression
<i>Proxies for group membership homogeneity</i>				
CVI	14.728*** (4.523)			12.970** (5.573)
GDR	0.920 (0.631)			0.755 (0.787)
<i>Factors affecting collective action within groups</i>				
SG	0.603 (0.617)			0.574 (0.768)
JL	0.295 (0.745)			0.697 (1.012)
SSID	-2.313** (1.010)			-1.814 (1.277)
<i>Proxies for structural social capital within the community</i>				
AA		-2.858** (1.145)		-0.518 (1.728)
ITN		-7.621*** (2.375)		-2.749 (3.112)
<i>Proxies for cognitive social capital within the community</i>				
TM			2.945*** (0.767)	3.413** (1.615)
TLC			0.488 (0.476)	0.960 (1.023)
<i>Control variables</i>				
AGE	-0.558* (0.334)	-0.869*** (0.247)	-0.422* (0.236)	-0.215 (0.522)

SMO	8.152*** (2.957)	7.414*** (1.912)	7.494*** (1.806)	9.028** (3.859)
Constant	-8.770 (3.978)	1.770* (0.946)	-3.619*** (1.216)	-12.007 (7.517)
Log likelihood	-18.046	-29.908	-32.433	-12.878
LR statistic	90.811***	67.087***	62.035***	101.146***
Obs. with Dep=0			81	
Obs. with Dep=1			29	

Standard errors given in parentheses. Significance at 90, 95 and 99% confidence level denoted by *, ** and *** respectively.

We conduct three “individual” regression analysis examining the impact of each three categories of social capital proxies and one “collective” regression analysis that including all social capital proxies. The results of these two approaches are presented in Table 3. We note that the results of “collective” regression are almost identical to the result of “individual” regressions, whenever the significances of some variables differ between the “individual” or “collective” regression.

The coefficients of variables are discussed below according to the types of social capital-related factors.

(1)Group-based factors

—The income variation degree of members has a highly significant and positive impact on group member default, with smaller variation degree within member incomes performing better. It means that group homogeneity in income does not cause higher covariance risk but easier to collect information about member productions. So the effect of positive assortative matching of joint-liability lending also is verified.

—The distance between group members’ houses does not appear to influence the group’s repayment record, suggesting that farmers in the same village know each other well and information is relatively asymmetrical.

—The size of the group has a positive impact on group member default but not significant statistically. We expect that smaller groups are more effectively at gathering information about loan uses and at enforcing repayment. But according to the survey team, most lending groups in study villages are formed by 3-5 farmers with a mean value of 3.43 and stander deviation of 0.684. This helps explain the insignificant impact of the size of the group on repayment performance.

—The coefficient on “joint liability” is positive but no significant. Joint liability provisions are associated with higher group repayment rates, but we focus more on the average and members’ repayment performance. It may reflect peer pressure among groups is not a powerful tool to enforce repayment behavior.

—Social sanction on involuntary default have a significant impact on repayment behavior in the “individual” regression. It is consistent with our expectations that social sanction imposed upon members who are able, but unwilling, to pay is a credibility threat and sometimes more effective than formal legal system in rural area.

(2)Proxies for structural social capital within the community

—Measures of structural social capital, as proxies by the existence of economic/cultural/political

associations in study villages, is significant in the “individual” regression but become insignificant in the “collective” regression. The influence of the existence of formal groups in the community is consistent with mainstream findings of the social capital literature. As the development of economic and society in rural China, more and more associations were established for cooperate in economical production and other areas, for example a variety of farmer’s cooperatives. Participation in these associations can create a higher degree of social cohesion to bridge the asymmetric information gap and facilitate intra-group insurance.

—Another proxy variable for structural social capital—intensity of tribe networks is also significant in the “individual” regression but become insignificant in the “collective” regression. This finding, supported by social evidence, could be understood as suggesting that the exceptionally strong bonds among members within the “big family” share the same surname are conducive to more cooperation and obligation actions.

(3)Proxies for cognitive social capital within the community

The central element of cognitive social capital is captured by the question “who are the most trusted people in your mind, for example, brothers and sisters, general kin, friends, villagers with the same surname or others?” This dummy variable of personal trust or system trust is one of the generally accepted indicators of trust model (Luhmann, 1979). The regression result shows that member accept traditional personal trust significantly affect the group performance, and its sign indicates that higher level of narrow personal trust in the village, the higher the repayment rates. According to the survey team, most lending groups in study villages are formed by kin and near friends. The existence of higher cognitive social capital appears to create stronger incentives for its members to live up to their commitments and reduce the transaction cost. But the other proxy variable for cognitive social capital—trust level in the community does not appear to influence the group’s repayment performance, suggesting that trust resides largely in families and a rather narrow circle of personal friends in rural China (Fukuyama, 1995).

(4)Coefficients for control variables

As we expect, longer personal relationships among members of older groups are associated with stronger social cohesion, the sign and significant level of group age are consistent with our expectation. The variable measures member occupation is also significantly affect the group performance, means more diversified economic activities and membership fluidity reduce the ability of information gathering and peer monitoring. This finding is also coincident with the actual facts that joint-liability lending rarely implemented by banks in the urban area.

5.3 Further discussion—the radius of social capital

We notice that of the three different measures of social capital-related factors tested in this research, coefficient variation of members’ income, trust model and occupation characteristics (whether members engaged in same economic activity) clearly appears to be the most significant. It means that higher homogeneity in members’ income, tending to traditional personal trust and less diversified economic activities or division of labour are associated with better joint-liability lending group repayment performance. All these variable are pointed to an important concept in social capital literature—the radius of social capital. From the point of view of the mechanism of social capital, such as peer

monitoring, trust building, information gathering and contract enforcement, the efficient affects of social capital are associated with scale of activities of social groups and limited in a narrow scope (Putnam, 1993). And if the scale of activities of social groups is relatively large and exceed the scope and community, the effect of social capital may become less efficiently. This is so called “community failures” mentioned by sociologists (McCay and Jentoft, 1998). From the economics perspective, the narrow radius of social capital (trust, for example) can be explained from the following two aspects: first, sharing and flowing of local information in a relative limited and confined circle is easier and lower-cost; second, contract can be strongly enforced when using traditional social capital (personal trust, for example) to implement sanctions (Chen, 2005). As the descriptive statistics of trust model shows, more than 70 percent of members surveyed put more trust in relatives and near friends. As the research of the enforce contract of ROSCAs by Chiteji (2002), the ability of enforce contract of ROSCAs is affected by the peer monitoring, reputation and information taping ability between members, and also each of these considerations is likely to be affected by membership size and boundary of the groups. His model demonstrates that the optimal ROSCAs should set membership size as low as possible which means that the trust and social capital in the groups will become less efficient as the expanding of group size.

But what we find in this paper is not just the narrow scope of social capital on group level, the efficient affects of social capital are also associated with the traditionality and stability of the community. That is, as the more heterogeneous of members and the change of trust model in the community, the effects of social capital also become weakened gradually. The cooperation, trust and transaction of people inside a traditional community are at the expense of no-trust and no-transaction with outsiders. As a rule, the more introverted the social capital, the higher possibility of narrow radius of trust and limit the building of general trust and impersonal “take it or leave it” transaction. Some scholars find that traditional social ties may become a stumbling block to economic and society development. As Stiglitz (2000) says, social capital can be interpreted in the context of organizational theory as a social means of coping with moral hazard and incentive problems. But as a society develops economically, its social capital must adapt as well, allowing the interpersonal networks to be partially replaced with the formal institutions of a market-based economy, such as a structured system of laws imposed by representative forms of governance. This is what this paper explains for the shift from joint-liability to individual liability lending and joint-liability lending has becoming unsuccessful in China and all over the world.

In all, on the one hand the effect and radius of social capital at the group and community levels provides an explanation for different repayment performances of joint-liability lending groups of RCCs in China, but on the other hand the natural introversion and narrow radius of social capital become the stumbling block to the expanding of breadth of credit outreach resulting in the gradually shifting of joint-liability lending to individual liability lending.

6. Conclusion and policy recommendations

The main purpose of this paper is to test the role of social capital in repairing the rural credit market failure. We take a special lending scheme—joint-liability lending which is commonly considered as an “excotic flower” in rural credit practice as the study object. One hundred and ten lending groups in North Jiangsu province were surveyed to identify the factors that are associated with relatively good repayment performance of joint-liability lending groups, in particular those identified in the growing literature on social capital.

Firstly, we test the effect of positive assortative matching under joint-liability lending by descriptively comparing membership homogeneity within different performance groups and find that in membership homogeneity education, income, residence, occupation can increase the information (type and action) available to members as a result of high repayment rates. So membership homogeneity is one of the most important elements in successful joint-liability lending groups

Then we explore how the social capital-related factors affecting the repayment performance of joint-liability lending groups. The result suggest that some factors facilitating collective action within lending groups, such as group homogeneity in income and social sanction on involuntary defaulters, are associated with higher repayment performance. The distance between members' houses and the size of the group does not appear to affect repayment, which we suggest is a result of "Information Island" in the same village and small variation of sizes, respectively. Joint liability provisions are associated with higher repayment rates, but our findings fail to confirm the expected result that peer pressure among groups is a powerful tool to ensure loan repayments.

Measures of structural social capital such as participation in associations significantly affect the group performance. This result suggests that participation in these associations can create a higher degree of social cohesion to bridge the asymmetric information gap and facilitate intra-group insurance. Intensity of tribe networks as another proxy variable for structural social capital is also significant suggesting that as an important characteristics of village culture in rural China, the strong bonds among members within the "big family" share the same surname are conducive to more cooperation and obligation actions. Cognitive social capital, proxied here by trust model is strongly associated with repayment performance. This suggests that higher level of narrow personal trust in the village create an environment in which borrowers put value in honoring their engagements.

Finally, we reveal the existence and impact of narrow radius of social capital. That is, in a relative narrow and confined circle, sharing and flowing of local information is easier and lower-cost and contract can be strongly enforced. But narrow radius of social capital also limit the building of general trust and impersonal "take it or leave it" transaction. And the effectiveness of social capital may be gradually diminishing and even become a stumbling block to expand the outreach of credit.

What are the implications of this research for joint-liability lending as an innovative product for rural finance in developing countries? First, joint-liability lending may need to be implemented in traditional areas in which social ties are strong for the institution to be able to reduce problems related to asymmetric information and enforcement in rural credit markets. The conclusions from this research suggest that the performance of joint-liability lending as an institution is more likely to be influenced by the ability of borrowers to gather information about one another, and the ability of borrowers to credibly threaten to involuntary defaulters in the group. Second, under the great economic and society transformation background in China, formal institutions of a market-based economy gradually take the place of interpersonal networks and village or family regulation. The social capital such as mutual trust and network embedded in traditional rural society will change with the transformation which will result in less effective in repairing market failures. Microfinance institutions and programs have been successful in extending credit to the poor thanks to joint-liability lending methodologies. The negative impact on the repayment performance of the change of social capital within the borrowing group could reveal the incompleteness of joint-liability lending methodology. So the shift from joint-liability lending to individual liability lending will be inevitable on the whole.

Notes

1. For an overview of the early microfinance movement in China, see Park and Ren (2001), Cheng (2003), Cheng and Xu (2006).
2. The disparity between the economic development of south and north Jiangsu is large which can be confirmed by GDP per capita. The GDP per capita of south Jiangsu, north Jiangsu and China is 10025, 3449 and 3701 dollar in 2009, respectively. Our survey sample was collected in north Jiangsu.
3. Joseph E. Stiglitz (2000) mentioned “As a society develops economically, its social capital must adapt as well, allowing the interpersonal networks to be partially replaced with the formal institutions of a market-based economy, such as a structured system of laws imposed by representative forms of governance. This process may initially involve a depletion in the overall level of social capital, but eventually leads to the creation of a different type of social capital, in which social relations are embedded in the economic system, rather than vice versa”.
4. See Stiglitz (1990), Besley and Coate (1995), Conning (1996), Ghatak (1999), Ghatak and Guinnane (1999), Van Tassel (1999), Guttman(2008), Paal and Wiseman (2009).
5. See Ghatak and Guinnane (1999) for a general theoretical treatment.
6. Group size is a crucial factor in the ROSCAs and microfinance literature. The Grameen Bank and most of its replications use groups of 5 persons. Mosley and Dahal(1985) show that, in a Grameen replication in Nepal, mutual trust was low in groups of more than 20 persons. In RCCs’ practice, the guideline on the group size always changes, from 5-10 persons (guideline of 2000) to 3-5 persons (guideline of 2002), then more than 5 persons (guideline of 2004).
7. Networks, associations, and social attitudes reduce opportunistic behavior by increasing the social benefits of compliance with expected behavior (in this case, full individual loan repayment) or by increasing the social costs of non-compliance (loan default) (van Bastelaer & Leathers, 2006).
8. In many rural villages in China, families sharing the same surname means that they are belong to the same clan and descendants the same ancestor. This kind of “big family” is held together based on blood and some common norms, and become a kind of village social network connecting families. The stronger “big family” ties, the more cooperation and obligation actions within the “big family”.
9. Niklas Luhmann (1979) identified two different models of trust: personal trust and system trust. Personal trust is a social level of trust that focuses on the factors that create or destroy trust relationships between individuals. Personal trust is dependent on familiarity and is thus limited in scope. But system trust builds up through continual, affirmative experiences with the formal system. In Luhmann’s view, the transition from a reliance on personal trust to system trust is part of the “great civilizing processes” of modern life (Luhmann 1979, pp.57-58). Fukuyama (1995) also mentioned “in the Chinese parts of East Asia and in much of Latin America, social capital resides largely in families and a rather narrow circle of personal friends. It is difficult for people to trust those outside of these narrow circles.”

Reference

- [1] Armendariz de Aghion and Morduch, *The economics of microfinance*[M], MIT Press, 2005.
- [2] Ahlin C. and Townsend R.M., Using repayment data to test across models of joint liability lending[J], *The Economic Journal*, 2007, Vol.117 Issue 517, pp. 11-51.
- [3] Besley, T., Coate, S., Group lending, repayment incentives and social collateral[J], *Journal of Development Economics*, 1995, Vol.46, pp.1–18.
- [4] Cheng Enjiang, Microfinance in Rural China[J], In *Rural Financial Markets in China* (Eds.), Asian Pacific Press, 2003.
- [5] Cheng Enjiang and Xu Zhong, The development report of microfinance in China[J], *Caijing*, in Chinese, 2006.
- [6] Chiteji N.S., Promises kept: enforcement and the role of rotating savings and credit associations in an economy[J], *Journal of International Development*, Vol.14 No.4, pp.393-411.
- [7] Coleman J. S., Social capital in the creation of human capital[J], *The American Journal of Sociology*, 1988, Vol. 94, pp. S95-S120.
- [8] Dowla A., In credit we trust: Building social capital by Grameen Bank in Bangladesh[J], *Journal of Socio-economics*, 2006, Vol.35, pp.102-122.
- [9] Francis Fukuyama, *Trust: The Social Virtues and the Creation of Prosperity*[M], New York: Free Press, 1995, pp 83-96.
- [10] Hossain, Mahabub, *Credit for alleviation of rural poverty: The Grameen Bank in Bangladesh*[M], Int. Food Policy Research Institute Res. Report 65, Washington, DC, 1988.
- [11] Ghatak M., Group lending, local information and peer Selection[J], *Journal of Development Economics*, 1999, Vol. 60, pp.27–50.
- [12] Ghatak M. and Guinnane T.W., The economics of lending with joint liability: theory and practice [J] , *Journal of Development Economics*, 1999, Vol.60 No.1, pp.195-228.
- [13] Gine, X. and Karlan, D. S., Group versus Individual Liability: A Field Experiment in the Philippines[J], Yale University working paper, 2006.
- [14] Glaeser, E., Laibson, D., Scheinkman, J. and Soutter, C., Measuring trust[J], *Quarterly Journal of Economics*, 2000, Vol. 65 No.3, pp. 811-46.
- [15] Grootaert, C., and van Bastelaer, T., *Understanding and measuring social capital: A multidisciplinary tool for practitioners*[M], Washington, DC: The World Bank, 2002.
- [16] Karlan D.S., Using experimental economics to measure social capital and predict financial decisions[J], *The American Economic Review*, 2005, Vol.95 No.5, pp. 1688-1699.
- [17] Luhmann, N, *Trust and Power: Two Works*[M], Translation of German originals *Vertrauen* [1968] and *Macht* [1975]. Chichester: John Wiley, 1979.
- [18] McCay B. J. and Jentoft S., Market or community failure? Critical perspectives on common property research[J], *Human Organization*, 1998, Vol.(57) No.1, pp.21-29.
- [19] Morduch, J., The microfinance promise[J], *Journal of economic Literature*, 1999, Vol. XXXVII, pp. 1569-1614.
- [20] North, Douglass, *Institutions, institutional change, and economic performance*[M], New York: Cambridge University Press, 1990.
- [21] Park A. and Ren, Microfinance with Chinese characteristics[J], *World Development*, 2001, Vol. 29 No.1, pp. 39-62.
- [22] Putnam, R.D., *Making democracy work: civil traditions in modern Italy*[M], Princeton: Princeton University

Press,1993.

- [23] Schaefer-Kehnert, W., Success with group lending in Malawi[J], Development Digest, 1982, January, pp.10-15.
- [24] Stiglitz, J.E., Peer monitoring and credit markets[J], The World Bank Economic Review, 1990, Vol.4 No.3, pp. 351-366, World Bank.
- [25] Stiglitz J.E., Formal and informal institutions[J], In P. Dasgupta, & I. Serageldin (Eds.), Social Capital: A Multifaceted Perspective. Washington, D.C: World Bank, 2000.
- [26] Tassel E. V., Group lending under asymmetric information[J], Journal of Development Economics, 1999, Vol. 60, pp.3-25.
- [27] *The People's Bank of China, The development report of rural finance in China*[M], China Finance Press, 2008.
- [28] Uphoff, N., Understanding social capital: Learning from the analysis and experience of participation[J], In P. Dasgupta, & I. Serageldin (Eds.), Social Capital: A Multifaceted Perspective. Washington, D.C: World Bank, 2000.
- [29] van Bastelaer, T., Imperfect information, social capital and the poor's access to credit[J], Working paper NO. 234. College Park: Center for Institutional Reform and the Informal Sector (IRIS), 2000.
- [30] van Bastelaer and Leathers, Trust in lending: social capital and joint liability seed loans in southern Zambia[J], World Development, 2006, Vol.34 No.10, pp. 1788-1807.
- [31] Wydick W. B., Credit access for household enterprises in developing countries under asymmetric information[J], Ph.D. Dissertation, University of California at Berkeley, 1996.
- [32] Wydick W.B., Can social cohesion be harnessed to repair market failures? Evidence from group lending in Guatemala[J], The Economic Journal, 1999, Vol.109 No.457, pp.463-475.

Further reading

Beatrix Paal and Thomas Wiseman (2011), “Group insurance and lending with endogenous social collateral”, *Journal of Development Economics*, Vol. 94, pp.30-40.

Prabal Roy Chowdhury (2007), “Group-lending with sequential financing, contingent renewal and social capital”, *Journal of Development Economics*, Vol.84, pp.487– 506.

Karlan D. S. (2007), “Social Connections and group banking”, *The Economic Journal*, Vol.117, pp. 52-84.

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