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THE ROLES OF SOCIAL CAPITAL IN ONLINE P2P LENDING MARKETS UNDER DIFFERENT CULTURES: A COMPARISON OF CHINA AND AMERICA*

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Abstract

Online P2P (People-to-People or Peer-to-Peer) lending has very rapid development since it was appeared in 2005. In order to mitigate asymmetric information between borrowers and lenders, some online P2P market allows members building their social networks (such as Prosper, CommunityLend, PPDai etc). By empirical analyzing the transaction data of Prosper (largest P2P market in US) and PPDai (largest P2P market in China), the paper verifies that the social capital systems have a positive influence on borrower's loan performance on the markets. However, on both markets, the loan interest rate mainly depends on borrower's hard information rather than their social capital. Furthermore, it concludes that borrower's social network in PPDai is much more useful and effective than in Prosper by comparing the empirical results, which could be helpful for the credit system development of Chinese online P2P lending markets based on the conclusions.

Key words: Online P2P Lending Market, Social Capital, Loan Performance, Cross-Culture

Introduction

Online People-to-people (P2P) lending (also called Peer-to-Peer or social lending), allows individuals to lend and borrow directly among each other without the mediation of a creditor bank institution[1]. Online P2P lending achieves the reallocation of small funds between people, and satisfies the needs of society. It appeared in 2005 and has had a very rapid development during past several years. At present, there are about 40 Online P2P lending markets in more than 10 countries in the world wide, such as Zopa in UK and Japan, Prosper and LendingClub in the US, CommunityLend in Canada, LoanLand in Sweden Loanland, and PPDai, YiXin and QiFang in China.

At present, one of the fundamental problems of online P2P lending market is asymmetric information between borrowers and lenders, or in other words we can say that lenders have less information about borrowers' capabilities and

willingness to pay back than borrowers do[1]. How to mitigate the information asymmetric in the interactions is a key issue for the online P2P lending. In order to solve the problem, most P2P lending markets build the social networks credit systems. For example, Prosper and PPDai allow their members to build group or friend relationships with others, Lending Club's members can share their backgrounds with each others, Smava and Zopa UK facilitate forums for their members.

According to the social capital theory, Social capital comes about through changes in the relations among persons that facilitate action [2], and users trust each other more when they have stronger relationships[3]. Nahapiet (1998) concludes that the role of social capital as an influence not only on the development of human capital [2, 4] but on the economic performance of firms [5], geographic regions [6], and nations [7]. According to most of the empirical researches about online P2P lending, the social capital credit system should be helpful for members to lend or borrow money from each others on online P2P lending market, which has been proved by some researches [1, 8-13]. However, almost all of online P2P lending researches only utilize Prosper's transaction data (provided on Prosper.com) and verify the two dimension of social capital [3, 14] positively influence on the loan performance on Prosper. There is no research analyzing or comparing the markets in different countries, or even use other markets' data. Maybe there are some reasons. First, as one of the oldest and largest online P2P lending markets, Prosper has a relative sound credit system and a very large number of consumers. Second, Prosper build a social capital system which is similar to the real world, and it is valuable and comparable in our life. Last and the most, Prosper provides all of transaction data on the website for public, and which is very convenient for people who need to use the data to do researches.

It is not enough for the researches that have been done nowadays, for they have not considered the culture dimension or cognitive dimension. The cultural usually is quite different in different places.

Soare et al say that cultural constitutes the broadest influence on many dimensions of human behavior [15]. Furthermore, lots of online P2P lending markets in different countries also build social capital systems, some of which are quite similar with Prosper's, to help their members to do transactions. Whether it is sensible for them to build such systems is still needed to find out. So it is very worthy for us to do some researches about whether and how the people's social capital works in different countries and provide some suggestions for the online P2P lending markets to build their credit systems under local culture.

Obviously, China has great different culture from America not only in language and history but also religion, physical contacts and social behavior [16]. So, one purpose of this research is to find out the relations between borrower's social capital and loan performance on Chinese online P2P lending market, which is also a main contribution of this research. In this study, we choose two online P2P lending markets, Prosper and PPDai. Prosper is one of the largest and oldest online P2P lending market in US, while PPDai is one of the largest and oldest online P2P lending market in China. The two websites have quite similar structures of the credit systems. In order to mitigate the risk launched by asymmetric information, both Prosper and PPDai build the credit rate systems by some authentications, and build the social capital systems by allowing members to build group or friend relationships. It is feasible to compare the efficiency of social capital of the two online markets.

In short, this research has two main contributions. Firstly, it compares the online P2P lending markets in China and America, and analyzes the different of the markets. Secondly, Based on the previous researches, the study use Nahapiet & Ghoshal's (1998) three dimensions of social capital theory by adding the cognitive dimension into the Granovetter's (1985, 1992) two dimensions of "Embeddedness" theory.

The paper has five main sections. In section two, we put forward study models and some hypotheses by reviewing the previous literatures of social capital theory and online P2P lending. The third section is the methodology of the study which concludes three parts: choosing the variables based on prior literatures, introducing the data used in the study, and describing the empirical results. In the fourth part, it summarizes some conclusions based on the empirical results. It proposes several related future researches we intent to do in the further in the last part.

Literature Review and Conceptual Development

2.1 Literature Review

So far, there have been some literatures about P2P lending market during past 3 years. Many researchers analyze how the present credit mechanism of P2P lending market works based on the sociological theory, and most of which mainly focus on the impacts of borrowers' social capital on the performance of loans by using the data of Prosper [e.g., 1, 8-13].

Social capital theory goes back to the notion of the "Embeddedness" of economic behavior which suggests that economic behavior should not be analyzed without considering the constraints of ongoing social relations between individuals [3]. Burt (1992) [17] describes an individual's social capital as "friends, colleagues, and more general contacts through whom you receive opportunities to use your financial and human capital." Nahapiet & Ghosh (1998) think social capital theory's central proposition is that an individual's network of relationships can provide a valuable resource for conducting social affairs [18].

The two dimensions, structural embeddedness and relational embeddedness [3, 14], are often used by researchers to analyze the P2P lending market [e.g., 10, 11, 19, 20]. Structural embeddedness refers to the position of an actor in the network while relational embeddedness refers to the quality of the relationship among actors in the network [10]. Furthermore, Nahapiet and Ghoshal (1998) identify three main dimensions of social capital by adding cognitive dimension. They think that shared representation, narratives, and systems of meanings enable individuals within a network to have similar interpretations of events [18]. This research bases on Nahapiet & Ghoshal's three dimensions of social capital theory by comparing the markets in China and America and adding the amount of money bid by same state on Prosper.

2.2 Conceptual Development: Models and Hypotheses

In the consumer decision-making process, many scholars have argued that in this process trust is a prerequisite for consumer to make purchases [21]. Trust is considered essential in exchange relations because it is a key element of social capital [22, 23]. In microfinance literature, asymmetric information risk is mitigated by two principal factors: joint financial liability and personal relationships [13]. Some of the online P2P lending researches have proved that social capital can help borrower to obtain money with a lower interest rate, and motivate them to make repayment [e.g., 10, 24-26].

In order to verify borrowers' social capital can mitigate the asymmetric information risk and facilitate the transactions between borrowers and lenders both in China and America, we build the

research model showed in figure 1.

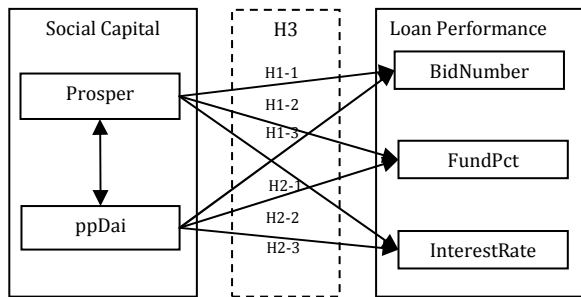


Figure 1: Basic model of the research

According to the previous P2P literatures, most of them use Interest rate, funding probability and default of loan to be the variables of loan performance[e.g.,10, 11, 19, 20, 27]. For we could not get the data about default of loan on PPDai, so in the study, we use bid number instead of it, because bid number also could reflect the performance somehow. It is sensible that the listing will have more lenders to bid when more lenders think the borrower is trustable. Kumar prove that lenders will bid more for loan listings from borrowers that are member of a group or the listings endorsed by the group leader [28].

By using the Prosper’s data, Everett (2008) find evidence that higher bidding by borrowers’ social network are associated with lower default rates, and lower interest rates[13]. Lin et al. focus on the relational aspects of networks, and find that borrower’s relational network is significant predictors of lending outcomes(funding probability, default time and interest rate) through the five levels of borrower’s relational networks[10, 19, 24]. Greiner and Wang (2009) use the Prosper’s data to investigate the influence of social capital on borrower’s chance to obtaining funding, interest rates and loan payment from both borrower’s and lender’s perspective, respectively, and their results suggest that social capital does provide benefits to members but not equal to all members[1]. Lopez et al. (2009) conclude that invite friend and group members to bid on their lists can increase their chance of getting fund[9]. Besides, Freeman (2008, 2009) [20], Berger (2008) [29] are also do some empirical researches about availability of the P2P lending market’s social network systems and their contributions to the transaction performance, and find the similar results. Based on the previous researches, we give the next hypotheses.

H1: On Prosper, borrower’s social capital has a positive influence on loan performance.

The hypothesis H1 is based on the following sub-hypotheses.

H1-1: On Prosper, borrower’s social capital has a positive relationship with the bid number of the

listings.

H1-2: On Prosper, borrower’s social capital has a positive relationship with the funding probability.

H1-3: On Prosper, borrower’s social capital has a negative relationship with the interest rate.

Here we do the same predictions for the influence of borrower’s social capital on loan performance on Chinese PPDai market.

H2: On PPDai, borrower’s social capital has a positive influence on loan performance.

H2-1: On PPDai, borrower’s social capital has a positive relationship with the bid number of the listings.

H2-2: On PPDai, borrower’s social capital has a positive relationship with the funding probability.

H2-3: On PPDai, borrower’s social capital has a negative relationship with the interest rate.

China has great different culture from America not only in language and history but also religion, physical contacts and social behavior [16]. According to Hofstede’s definition of national culture, individualism/Collectivism, as one of the major countries cultural attributes can be used to distinguish countries as different cultural societies[30]. Individualists define the self as autonomous and independent whereas collectivists define the self as interconnected and interdependent with significant others of various groups [31]. Based on his definition, Hofstede categorizes western countries as individualistic societies[32], whereas eastern countries as collectivist societies [30]. Obviously, America and China are highly distinctive on the individualism/Collectivism dimension[33]. China is a typical collectivistic society, while America is a typical individualistic society. During last two thousands years, Chinese social values, norms and behavior have long been governed by Confucian doctrine. Chinese people are more likely to respect the status quo to keep a harmonious society. Chinese culture values interdependence and conformity with groups and organizations, and individuals believe that they should support group values even at the cost of their own interests[33]. Contrarily, individualism is the core social value in America, and Americans care more about independent and seek maximized personal profit [16]. In short, Chinese are more imbedded in their various ingroups and have stronger social identification with these ingroups than Americans (collectivists VS individualists) [31]. According to the difference between China and America, we give the following hypotheses about the difference of influence of social capital on two online P2P lending markets in China and America.

H3: On PPDai, borrower’s social capital has a

greater positive influence on the loan performance than on Prosper.

The hypothesis of H3 is based on the following three sub-hypotheses.

H3-1: Borrower’s social capital has a greater positive influence on borrower’s listing bid number on PPDai than on Prosper.

H3-2: Borrower’s social capital has a greater positive influence on borrower’s funding probability on PPDai than on Prosper.

H3-3: Borrower’s social capital has a greater positive influence on borrower’s interest rate on PPDai than on Prosper.

Methodology

According to previous studies, we can see that the empirical results are closely related to the variables and models used in the researches. In this study, we choose variables and models in our study mainly based on the previous literatures and the theory we used.

3.1 Variables

3.1.1 Dependent Variables

The main purpose of the study is to investigate the influence of social capital on loan performance in the markets. The dependent variables used in the study represent the loan performance. Lots of the previous researches have used interest rate, funding probability and loan default to be the variables of loan performance [e.g.,10, 11, 19, 20, 27]. Based on these researches, this study also uses the variables of interest rate and funding probability as the factors of loan performance, but use bid number to replace loan default. There are two reasons. First, it is impossible for us to get the data about the borrower’s loan default information on PPDai, and replace the variable to make sure the results of the two markets are comparable. Second and foremost, as we mentioned in the second section, the bid number could also reflect the loan performance.

3.1.2 Independent variables

According to the processes of activities on P2P lending market, there are two types of information on the website: hard and soft information.

(1) Hard information variables/Control variables

As far as we know, any person who needs to be a member of a P2P lending market should be verified by the website by providing some personal information, such as social security number, address, valid bank account number etc. We call these kinds of information “hard” information. In our study, we use the borrowers’ credit profile variables such as CreditGrade, DebtToIncomeRatio, IsBorrowerHomeowner, Images etc. to be the hard

information.

(2) Soft information variables/Social capital variables

“Soft information” refers to the borrower’s information generated from social networks [8]. On PPDai and Prosper, users can foster their social capital by two fundamental ways. Members can build their friends networks and endorse each other. They also are able to participate in groups led by other members or themselves. The information that describes users’ relations with each other on the website is called “soft” information or social capital variables.

According to Nahapiet & Ghoshal’s “three dimension” models[18], we divide borrower’s social capital variables into structural, relational and cognitive embeddedness variables. The information that describes the borrower’s position in the network is used as the structural embeddedness information, such as group rating, category of group, friend numbers etc. The information that describes the participation of the borrower’s friends and group members is the relational embeddedness information. The variables of relational embeddedness information in our study include the amount bidding by friends and group members. The information that describes the resources providing shared representations, interpretations, and systems of meaning among parties, and this study uses the amount bid by the members in same state as the cognitive embeddedness variables.

In this study, we divide the borrower’s social capital on Propser into these three dimensions. However, because we can’t get the data about borrower’s group information on PPDai, there are only two variables representing the borrower’s social capital. These two variables are both the relational embeddedness variable. One is the amount bided by borrower’s friends (FrdbidAmount,) and the other is the amount bided by borrower’s friends’ friends(Frd2bidAmount).

All of the variables are shown in table 1, and most of them are based on prior literatures.

Table 1: Variables used in the research

Kind of Variables	Variable name
Dependent variables	InterestRate, FundingProbability, BidNumber
Independent variables: Prosper	
Hard information variables	LNAmountRequested, CreditRate, CurrentDelinquencies, InquiriesLast6Months, LNAmountDelinquent, CurrentCreditLines, BankcardUtilization, Income, ProsperRating, DebtToIncomeRatio, LDescription, listimage, Biddays, IsBorrowerHomeowner, BidMaximumRate

Social capital: 1. Structural dimension	Friendornot, Endorsementsornot, Groupornot, Leader, Lender, GroupCategory, GroupRating, AcceptingNewMembers, ListingReviewRequirement
2. Relational	FrdBidAmt, GrpBidAmt
3. Cognitive	SameStatebidAmt
Independent variables: PPDai	
Hard information	SuclistingNbr, FaillistingNbr, CreditGrade, BCreditScore, LCreditScore, AmountRequested, Loanperiod, Repayment, Bidtype, RemaindAmount, Incomeornot, LDDescription
Social capital	FrdbidAmount, Frd2bidAmount

3.2 Data Collection

PPDai’s data was collected from the web pages of the websites www.PPDai.com. On PPDai, URLs are generated regularly. For example, URLs of the borrowers’ listings is combined by http://www.PPDai.com/list and figure (such as http://www.PPDai.com/list/137271). We can collect the listing data according to the URLs sorted by figures. In this research, we downloaded two kinds of pages. One is listing page which contain listing information and bidding information, the other is users’ credit profile page which we can collect private data of borrowers such as users’ credit scores. We downloaded 1982 listings from 1982 web pages on PPDai with 51058 bid records, and collected 6087 users’ credit profile information from 6087 credit profile pages. Deleting the listings with missing values, we finally have 1976 listing records.

Prosper’s data which is directly provided by the website www.prosper.com was downloaded on May.10, 2010. There are two types of the data, public data and private data. With considering both the accuracy of results and simplicity of the process, we choose 160000 different latest bidding records in the object of bids. By comparing the bid number of listing that we count in the database to the field of BidNumber in the Listings object, we keep the data with same value, and finally we have 19687 listing records.

For it is much harder for us to collect data of PPDai especially private data than Prosper, the variables of PPDai are fewer. For Prosper, there are variables of the three dimensions of the social capital, however, we only get the relational dimension variables (Amount bid by friends and amount bid by friends’ friends) to represent the borrower’s social capital variables.

3.3 Empirical Analysis

3.3.1 Empirical method: linear regression

In the study, we use linear regression method to analyze the models. By adding all variables into linear regressions, we find that some variables are not significant. In our study we adopt Hendry-Anderson’s (1978) general to special principle to choose the explanatory variables.

In order to testify the influence of social capital, we build two levels of regressions, one with hard variables only and one with hard and social capital variables.

The basic two levels of regression models are as follow.

$$DV_i = C_i + \alpha_i H_i + \epsilon_i \tag{1}$$

$$DV_i = C_i + \alpha_i H_i + \beta_i S_i + \eta_i \tag{2}$$

Where

DV_i , is the dependent variable about loan performance;

C_i , is the constant;

H_i , represents the hard information variables;

S_i , represents the soft information variables.

3.3.2 Results of regressions

For each of the dependent variables has two regressions as the regression models (1) and (2), finally we totally have 12 regressions, 6 with Prosper variables and 6 with PPDai variables.

All of the models’ F-statistics are prominent under 1% level, which mean these models are significant.

Comparing the results of the Prosper’s two-level regressions of each dependent variable, we can see that the corresponding coefficients of hard information variables are quite similar, which means the social capital variables do not affect the hard information variables. All of the R-squares and Adjusted R-squares are increased by adding social capital variables into the three regressions. In the second level regression of BidNumber, FundPct and InterestRate, the T-test of some of these social capital variables are significant under 10% level (for example, in regression of BidNumber, SameStatebidAmt, GrpBidAmt, FrdBidAmt, and Lender are significant under 1% level, followed by Friendornot and ListingReviewRequirement (5% level), and Groupornot (10% level)), which means there social capital variables (represent borrower’s social capital) are significantly influence the bid number, funding probability and interest rate of borrower’s loan listing. The coefficients of these variables are positive in BidNumber and FundPct, and negative in InterestRate indicate that borrower’s social capital has positive influence on bid number of his/her loan listing and funding probability, while decreases the interest rate of the loan.

The regressions with PPDai data have quite similar results as the regressions of Prosper. The Adjusted R-squares of three first level regressions of

BidNumber, FundPct and InterestRate are 0.196, 0.16 and 0.139 respectively, which shows the hard information variables can explain the three aspects of loan performance to some extent. Although we only use two variables (FrdbidAmount, Frd2bidAmount) to represent the borrower's social capital, all of the Adjusted R-squares are increased prominently in the second level regressions. All of the T-tests of the variables in the three regressions are under 1% significant level, which means the participation of borrower's friends and friends' friends influences the borrower's loan performance.

The Adjusted R-squares' change of the three two-level regressions are shown in table 2.

Table 2: The percentage change of the Adjusted R-squares of the regressions

Markets	Models	BidNumber	FundPct	InterestRate
Prosper	Level 1 (model 1)	39.28	39.28	42.3
	Level 2 (model 2)	40.4	45.7	43.3
	Change%	1.12	6.42	1
PPDai	Level 1 (model 1)	19.6	16.0	13.9
	Level 2 (model 2)	44.7	31.6	14.8
	Change%	25.1	15.6	0.9

Table 2 shows that by adding social capital variables, the regressions' Adjusted R-squares of BidNumber, FundPct and InterestRate of Prosper increase 1.12%, 6.42% and 1%, respectively. Because the Adjusted R-squares only increase 1% in regressions of BidNumber and InterestRate, we can conclude that the results support the hypotheses H1-2 and partially support H1-1 and H1-3. For the regressions of PPDai, the Adjusted R-squares of BidNumber regression and FundPct regression with social capital variables are 25.1% and 15.6% more than the ones without these variables. However, it only increases 0.9% in InterestRate regression by adding social capital variables into the regression. The results prove the hypotheses of H2-1 and H2-2, and partially support the hypothesis H2-3.

Obviously, the increased percentages of BidNumber and FundPct brought by social capital variables of PPDai and Prosper are quite different, and the data of PaiPaidDai is much larger than the data of Prosper. The results indicate that borrower's social capital is much more helpful for borrower to get more bids and amount of money from lenders on PPDai than Prosper, which verify the hypotheses of H3-1 and H3-2. However, the percentages increased by adding social capital variables in InterestRate regressions of Prosper and PPDai are both around 1%, which means that borrower's social capital could not affect the loan interest rate a lot on both Prosper and PPDai markets, and hypothesis H3-3 is not established.

3.3.2 Further data analysis and explanations for the results of regressions

(1) Explanation for the results of InterestRate regressions

From the regression results in the previous part, we know that the loan interest rate is not influenced by borrower's social capital significant both in Prosper and PPDai, We do the Compare Means Test to check the if the means of loan interest rate are different or not under the participation of borrower's friends.

Table 3: CM-Test for InterestRate group by FrdBidornot

FrdBidornot	InterestRate : PPDai			InterestRate : Prosper		
	0	1	Total	0	1	Total
Mean	0.209	0.206	0.207	0.26	0.231	0.259
N	524	1452	1976	19175	512	19687
Median	0.21	0.21	0.21	0.29	0.23	0.28
Std. Deviation	0.04	0.05	0.05	0.1	0.1	0.1
Variance	0.27	0.27	0.27	0.01	0.01	0.01
Std. Error of Mean	0.002	0.002	0.002	0.001	0.004	0.001

For PaiPaDai, the F-test value of ANOVA is 1.86 (not significant under 10% level), which means the mean of interest rate of loan with friends' participation is not different from the one without friends' bid. The values of Std.Deviation, Variance and Std.Error of Mean are very small and also quite similar for the two groups indicating the high concentration of data.

For Prosper, dispersion tests of data (such as Std.Deviation, Variance and Std.Error of Mean) show that the data is high concentrated. The F-test value of ANOVA is 46 and significant under 1% level. Although the means of data in two groups are significant different, it is little difference between the data (0.029). We can conclude that borrower's friends' participation on the loan transaction could low the loan interest rate, but only a little.

By doing the same test for other two dependent variables, we find out the means of FundPct and BidNumber in the two groups are significant different, and the difference between the data are big. Take PPDai for example, the difference of means of FundPct is 0.22, and it is 0.9 of BidNumber.

If borrower's social capital could not lead the loan interest rate, there must be some other factors influence it. According to previous studies, Credit Grade is used to be a major factor in Electronic market to affect members' behavior. In this research, we choose Exploratory Approach to explore the relationship between borrower's Credit Grade and loan interest rate. The Box plots of the Prosper and PPDai are as follows.

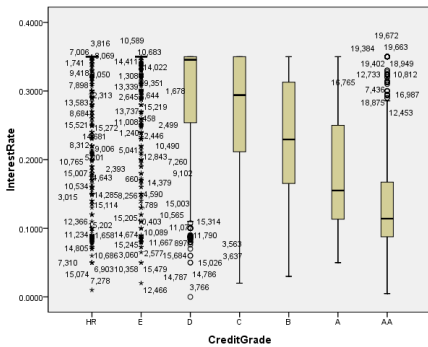


Figure 2: Relationship between Prosper's loan InterestRate and borrower's CreditGrade

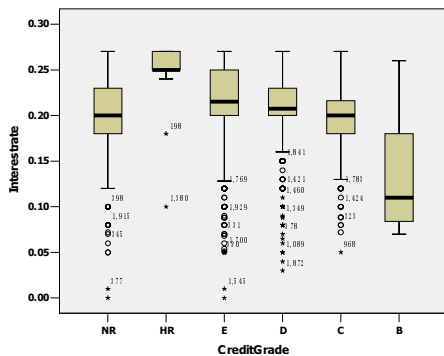


Figure 3: Relationship between PPDai's loan InterestRate and borrower's CreditGrade

The two box plots show that loan interest rate is mainly led by borrower's credit grade on the market. On PPDai, credit grade NR represents the borrowers whose information is not certificated by the website, but they have credit scores which is calculated by their information. Some borrowers with NR credit grade have very high credit scores. So we could ignore the data with credit grade of NR when we analyze the plot. Finally we can conclude from the two plots that the loan interest rate is lower when borrower has a higher credit grade on the two markets, especially Prosper.

(2) Explanation for the difference of regressions between the two markets

Excluding the results of InterestRate regressions, we can see that borrower's social capital on PPDai influences the loan performance much more than on Prosper. The statistics about the social capital variables in table 4 give the reasons.

Table 4: Participation of Social Networks

Markets	Social Networks	Frequenc y	Percen t
PPDai (N:1976)	Bid by Friends	1452	73.48
	Bid by Friends' Friends	1603	81.1
	Borrower with friends	3178	16.14
Prosper (N:19687)	Listing with Endorsement	1664	8.45
	Borrower in Groups	1596	8.11
	Leader	327	1.66
	Lender	4016	20.40

	Bid by same state members	6092	30.94
	Bid by group members	149	0.76
	Bid by Friends	512	2.60

On PPDai, 73.3% of borrowers' loans have their friends' investments, while 81% have their friends' friends' investments. However, the number is much smaller on Prosper with only 2.6% of listings are bid by borrowers' friends. On Prosper, only about 16% borrowers have friends and 8% join in the groups. However, there are 30.9% of listings have bid by the lenders in same states with borrowers, and whether borrower in the same place is one factor for lenders to consider when they bid the listings.

Discussion and Conclusion

Based on the empirical analysis in section 3, we conclude that on the two online P2P lending markets borrowers' social capital can influence their loan performance, which can be summarized in the following conclusions.

Conclusion 1: On Prosper, borrower's social capital has a significant positive influence on the loan's funding probability (supporting H1-2), while has a little impact on the loan's bid number and interest rate (partially supporting H1-1 and H1-3).

Conclusion 2: On PPDai, borrower's social capital has a significant positive influence on the loan's bid number and funding probability (supporting H2-1 and H2-2), while has a little impact on the loan's interest rate (partially supporting H2-3).

Conclusion 3: On both Prosper and PPDai, the loan's interest rate is mainly directed by borrower's credit grade on the market, and borrower's social capital cannot significantly lower interest rate.

Conclusion 4: Except interest rate, borrower's social capital is much more effective for borrower's to get bigger bid number and higher funding probability on PPDai than on Prosper (H3-1 and H3-2 is supported).

The high degree of correlation between borrower's credit grade and interest rate, and the low degree of correlation between borrower's friends' participation in the loan and interest rate explain the results of the interest rate regressions. From the empirical results and conclusions, we can know that on these two online P2P lending market borrowers' interest rates of loan mainly dependent on their hard information (especially Credit Grade on the market), while their social capital could help them to win the loan. Furthermore, as we assumed in the section two, there is a much higher level of participation of borrower's social networks on PPDai than on Prosper. There are two reasons for this phenomenon. First, Prosper has a much more efficient credit system than PPDai. Members' credit grade on Prosper is related to the credit of

their credit cards, while members' credit grade on PPDai is evaluated by the website. Second, the backgrounds of the two online P2P lending markets are quite different. Most of the members on PPDai are Chinese, and most of the members on Prosper are Americans. Chinese advocate collectivism and Americans advocate individualism [16]. The results show that collectivists in ingroup situations exhibit more pro-social attitudes and behaviors than do individualists[31]. Chinese attach important to interpersonal relationships, while Americans pay more attention to independence. Members on PPDai have a closer relationship with each other than the members on Prosper, and lenders would like to lend money to their friends rather than strangers.

From the comparison of two online P2P lending markets, we can see that although the online P2P lending market is developing fast in China at present, it is not enough. Comparing to America, China does not have such credit systems that can provide personal credit information to online P2P lending market. Prosper use the Experian's credit systems to estimate its members' credit. PPDai obtain its members' information only from members, which is much more difficult for it to estimate members' credit. However, under Chinese social culture, people in PPDai have a much closer relationship with each other. It means in PPDai, borrowers' social capital could play a more important role to help borrowers getting the loan, even though they have less valuable hard information. From the website of PPDai, we can see that the social capital system it provides is still needed to improve. According to the empirical results and analysis, PPDai does a good job on building members' relationship network, and borrowers' friends and friends' friends can help them to obtain the loan. However, it does not so good on encouraging its members to build groups as Prosper. Prosper shows us group relationship also could help improving borrower's loan performance, and if PPDai can do much better on group relationship among its members, it will be much more helpful for its borrowers' loan performance. In short, as a typical collectivism country, the online P2P lending markets in China should build a convenient social network system for members to build relationships with each other to mitigate the asymmetric information between borrowers and lenders.

Limitations and Future Research Plan

According to the fundamental works we have done and the results we get from the study, we will improve our researches in following aspects.

For it is difficult for us to collect data of PPDai, we can see that fewer information variables of PPDai used in the research than Propser. So, in the future

researches, we will try to collect more information of PaiPaidai and use them in the researches.

As far as we know, because of the different environments and cultures, social capital may play different roles on online P2P lending market in different regions. In order to prove that social network system could help borrower to obtain loan on online P2P lending market, we will consider more countries in the future researches. By comparing the results in different countries, we try to find some common factors that influence borrower's loan performance on online P2P lending markets.

According to the behavior theories, there are kinds of factors influence people's behavior, and different behavior theories focus on different aspects. For example, Burt's (1992) theory of "Structure Hole" emphasizes on the structure of people's social networks. And in the future researches, we will try to investigate what kinds of factors influence the transactions on P2P lending market based on different social capital theories.

References

- [1]. Greiner, M.E. and H. Wang. The role of social capital in people-to-people lending marketplaces. in *Thirtieth International Conference on Information Systems*. 2009. Phoenix.
- [2]. Coleman, J.S., Social Capital in the Creation of Human Capital. *The American Journal of Sociology*, 1988. 94(Supplement: Organizations and Institutions: Sociological and Economic Approaches to the Analysis of Social Structure): p. S95-S120.
- [3]. Granovetter, M.S., Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology*, 1985. 91(3): p. 481-510.
- [4]. Loury, G., Why should we care about group inequality? *Social Philosophy & Policy*, 1987. 5: p. 249-271.
- [5]. Baker, W., Market networks and corporate behavior. *American Journal of Sociology*, 1990. 96: p. 589-625.
- [6]. Putnam, R.D., Bowling Alone: America's Declining Social Capital. *Journal of Democracy*, 1995. 6: p. 65-78.
- [7]. Fukuyama, F., ed. Trust: Social virtues and the creation of prosperity. 1995, Adamantia Press: London.
- [8]. Lin, M.F., Peer-to-peer lending: An empirical study. *AMCIS 2009 Doctoral Consortium*, 2009.
- [9]. Lopez, S.H., A.S.Y. Pao, and R. Bhattacharya, The effects of social interactions on P2P lending. *Working Paper*, 2009. MAS Final Project.

- [10]. Lin, M., N.R. Prabhala, and S. Viswanathan, Judging borrowers by the company they keep: Social networks and adverse selection in online peer-to-peer lending. *Working Paper*, 2009. Smith School of Business, University of Maryland.
- [11]. Everett, C.R. Group membership, relationship banking and loan default risk: the case of online social lending. 2008 [cited; Available from: Electronic copy available at: <http://ssrn.com/abstract=1114428>.
- [12]. Walter, T., Competition to default: Racial discrimination in the market for online peer-to-peer lending. *Working Paper*, 2008. Wharton.
- [13]. Everett, G.R., Group Membership, Relationship Banking and Loan Default Risk: The Case of Online Social Lending. 2008.
- [14]. Granovetter, M.S., Problems of explanation in economic sociology. *Networks and Organizations*. 1992.
- [15]. Soares, A.M., M. Farhangmehr, and A. Shoham, Hofstede's dimensions of culture in international marketing studies. *Journal of Business Research*, 2007. 60: p. 277-284.
- [16]. Liu, J., Cultural Comparison between China & America from Deep to Superficial Level. *Journal of Zhuzhou Institute of Technology*, 2002. 16(3): p. 75-77.
- [17]. Burt, R., Structural holes. 1992, Cambridge, MA.: *Westview Press*.
- [18]. Nahapiet, J. and S. Ghoshal, Social Capital, Intellectual Capital, and the Organizational Advantage. *Academy of Management Review*, 1998. 23(2): p. 242-266.
- [19]. Lin, M., N.R. Prabhala, and S. Viswanathan, Can Social Networks Help Mitigate Information Asymmetry in Online Markets?, in Thirtieth International Conference on Information Systems. 2009: Phoenix.
- [20]. Freedman, S., Learning by Doing with Asymmetric Information: Evidence from Prosper.com. 2009, Ginger Zhe Jin University of Maryland & NBER.
- [21]. Kim, D.J., D.L. Ferrin, and H.R. Rao, A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support System*, 2008. 44: p. 544-564.
- [22]. Mayer, R.C., J.H. Davis, and F.D. Schoorman, An integrative model of organizational trust. *Academy of Management Review*, 1995. 20(3): p. 709-734.
- [23]. Stewart, D.W., P.A. Pavlou, and S. Ward. Media influences on marketing communications. in *Media Effects: Advances in Theory and Research*. 2002.
- [24]. Lin, M., N.R. Prabhala, and S. Viswanathan, Social networks as signaling mechanisms: Evidence from online peer-to-peer lending. *Working Paper*, 2009. Smith School of Business, University of Maryland.
- [25]. Klaff, M. Online peer-to-peer lending: A lenders' perspective. in *Proceedings of the International Conference on E-learning, E-business, Enterprise Information Systems, and E-government*. 2008. Las Vegas.
- [26]. Ryan, J., K. Reuk, and C. Wang, To fund or not to fund: Determinants of loan fundability in the Prosper.com marketplace. *Working Paper*, 2009. Stanford Graduate School of Business.
- [27]. E.Greiner, M. and H. Wang, The Role Of Social Capital In People-To-People Lending Marketplaces, in Thirtieth International Conference on Information Systems. 2009: Phoenix.
- [28]. Kumar, S. Bank of one: empirical analysis of peer-to-peer financial marketplaces. in *Americas Conference on Information Systems*. 2007: Association for Information System Electronic Library.
- [29]. Berger, S.C. and F. Gleisner, Emergence of financial intermediaries in electronic commerce: The case of online P2P lending. *Working Paper*, 2009. www.business-research.org.
- [30]. Hofstede, G., Culture's Consequences: International Differences in Work-Related Values. 2 ed. 1984, CA: *Sage*. 327.
- [31]. Chen, C.C., M.W. Peng, and P.A. Saporito, Individualism, Collectivism, and Opportunism: A Cultural Perspective on Transaction Cost Economics. *Journal of Management* 2002. 28(4): p. 567-683.
- [32]. Hofstede, G., The Cultural Relativity of Organizational Practices and Theories. *Journal of International Business Studies*, 1983. 14(2): p. 75-89.
- [33]. Schiller, S.Z. and J. Cui, Communication Openness in the Workplace: the Effects of Medium (F2F and IM) and Culture (U.S. and China). *Journal of Global Information Technology Management*, 2010. 13(2): p. 37-75.

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