Summer 6-19-2015

Herding Behavior in Online Microloan Markets: Evidence from China

Dongyu Chen
1Soochow University, China, chendongyu@suda.edu.cn

Huiling Hu
Standard Chartered Bank, China

Hao Lou
Ohio University, USA

Wang Yong
Ohio University, USA

Recommended Citation

Herding Behavior in Online Microloan Markets:
Evidence from China

Dongyu Chen[1]*, Huiling Hu[2], Hao Lou[3], Wang Yong[3]
[1]Soochow University, China
[2]Standard Chartered Bank, China
[3]Ohio University, USA

Abstract: Lenders' herding behavior in the peer-to-peer (P2P) lending platform in China is examined. Based on the data from PPdai.com, the largest online P2P lending market in China, we found that herding behavior is salient in P2P lending market in China, and such herding is associated with higher default rate.

Keyword: Rational herding, information cascade, peer-to-peer online lending

1.   Introduction

Several prior studies have examined herding behaviors for P2P lending markets. Some scholars found that relational aspect of a borrower's social capital is a consistently significant predictor of lending outcome. Stronger and more verifiable relational network measures are associated with a higher funding probability, a lower default rate and lower final interest rate. Based on the data from Prosper.com, search and herding effects is evidenced in this market. Existence of herding behavior is also found by Herzenstein, et al. (2011) who discovered that lenders have a greater likelihood of bidding on an auction with more bids, but only to the point at which it has received full funding. He also discovered that after borrowing listing is fully funded, herding diminishes. In addition, a positive association between herding in the loan auction and its subsequent performance is founded, indicating that herding behavior might be rational in this market. Such findings are quite contradicted with prior studies of herding behavior regarding traditional financial market.

Online P2P lending markets have experienced fast growth since its inception.Prosper.com, the largest P2P lending market, has attracted over one million members and sought over 32,000 funded loans, totaling over $193 million (Prosper, 2010). While PPdai.com (www.ppdai.com) is one of the biggest lending markets in China, which has attracted 500,000 members and sought about 100 million RMB loans in 2011. As there are few opportunities that potential borrowers and lender could make face-to-face contact, the problem of information asymmetry is even greater in this market than in the conventional lending settings. As most lending platforms provide functions of displaying a borrowing listing's bids number and bidders, lenders can easily see others' lending decisions. Therefore, herding behavior might be more salient in this market.

Although some scholars have carefully examined the rationality of herding behavior in the online lending market in the Prosper.com in the U.S. (Herzenstein et al., 2011; Zhang & Liu, 2012), the studies for such market in developing countries are still limited. As the market environment and investment experiences are quite different for investors in different countries, studies of lending behavior should be conducted in different peer-to-peer lending platforms (Herzenstein et al., 2011).

In this study, we aim to investigate the lending behaviors of lenders in the online peer-to-peer lending market in developing countries through the data from China. We focus on two major questions:

---

* Corresponding author. Email: chendongyu@suda.edu.cn

    ✓   Does herding behavior exist in this market?

    ✓   What is the impact of herding behavior on loan performance?

2.   Data Description

The data are from Ppdai.com, one of the largest online peer-to-peer lending platforms in China. This lending platform was founded in 2007, and had attracted more than 500 thousand registered members, as well as more than 100 million loans by the end of 2011. The data include two sets of information: information of registered borrowers and information of borrowing listings/loans. The former includes such variables: credit level, age, gender, education, marriage status, friendship, etc; while the later includes borrowing listing variables, such as borrowing amount, initial interest rate, descriptions, final interest rate, period of repayment, total bidding number, total amount attracted, current amount attracted, current bidding number, etc. and repayment variables, such as repayment time, repayment amount, loan status, etc. The data are extracted from database of transactions from June 2007 to August 2011.

3.   Results of Data Analysis Association between bidding number and attraction of future bids

Each bidding is regarded to be an observation in this logistic regression analysis. The dependent variable takes the value of one if at least one more bid was placed after it and zero otherwise (Herzenstein et al., 2011). Model 1 is the basic model, in which current bidding number is the main effect variable; and the information of borrowing listings, borrower's personal information, and status of borrowing listing that varies with time are used as covariates. The time span of the data is from 2007 to 2011. After controlling for other variables, the current number of bidding for each borrowing listing has a significant impact on the probability of receiving future bidding (b=0.593, p<0.001), indicating that herding behavior exists in the online lending market in China. As whether a borrowing listing is fully funded will have a significant impact on lenders' willingness to lend, we take account of the interaction effect of "current bidding number" and "fulfilled" in the regression model (Model 2). This interaction effect is quite significant (b=-0.224, p<0.001), indicating that future bidders have to bid at a lower interest rate when a borrowing listing is fully funded and their willingness to lend decreased significantly. Such result is consistent with findings of Herzenstein et al. (2011). After taking account of this interaction effect, the main effect variable is still significant (b=0.603, p<0.001), indicating that herding effect is quite robust.

Based on the above findings, we can confirmed that herding behavior is significant in this P2P markket.

Association between herding and loan performance

Cox Proportional Hazard Model is used in this analysis. Model 1 is the basic model, with total number of bids as the main effect variable, time to default as the dependent variable, and information of borrowers and borrowing listings as the covariates. The data are successful borrowing listings (loans), ranging from year 2010 to 2011. After controlling for the effects of covariates, we found that total bidding number of a borrowing listing don't have a significant positive impact on decreasing default rate, but rather it increases default rate (b=0.314, p<0.10). That is, after controlling for the effects of covariates, an increase of one unit of bidding number, the rate of default increases 37%. Such result is stable if we use total bidder number as the main effect variable (b=0.325, p<0.10) to substitute total bidding number (Model 2). If we use simple Logistic regression rather than Cox Proportional Hazard Model by deleting data that are in the status of "current", the result is almost the same (b=0.068, p>0.01), indicating that total bidding number is not negatively associated with default rate. Similarly, if we use total bidder number as the main effect variable in the simple Logistic regression mode, the result is quite the same (b=0.041, p>0.01).

The above findings show that mimicking with other's decisions can't help lenders to identify better quality borrowers, but rather make them suffer losses. That is, lenders are not rational in their herding behaviors in this online P2P lending market.

4. General discussion and Conclusions

Although there are many literatures investigating the rationality of herding behavior and proposed that rationality and irrationality may co-exist in an individual's decision process, there are few empirical literatures with regard to the issue of online peer-to-peer lending market in China. Using data from PPdai.com, we empirically examined the existence of herding behavior in this market and its rationality.

We verified that herding effect significantly exists in the online peer-to-peer lending market, but such herding behavior is not useful for lenders to identify better quality borrowers, but rather harmful to their investment performance. Such result is quite different from the conclusions drawn in the micro loan market in the Prosper.com in the US (Herzenstein et al., 2011; Zhang & Liu, 2012) where herding behavior can lead to better loan performance.

The difference of the results between Herzenstein et al. (2011)'s work and ours may be attributed to two possible reasons. First, the loan market in China is quite immature compared to that in the US, and lenders in China get much less information. For example, the credit scores of borrowers in the Prosper.com are from the independent third party Fair Isaac Credit Organization, so lenders could comprehensively evaluate the creditworthiness of borrowers in this market. In contrast, the credit scores of borrowers at PPdai.com are computed based only on the information provided by borrowers. So the credit scores in Propser.com are much more reliable than those in PPdai.com. As the problems of information asymmetry is serious in China, the decision quality of lenders in China is not as good as their counterparts in the US; therefore, they would be more likely to herd in an irrational way. Second, the reason may be attributed to the investment experiences of lenders in China and in the US. As the loan market in China is not as good as that in the US, investors in this market are inexperienced at identifying good quality borrowers. As they are incapable of conducting comprehensive, rational analysis during lending process, they are more likely to mimic other's lending behaviors and thus are mislead by others. The findings imply that lending behaviors will vary in different market environment and for different people with different lending experiences. Therefore, the findings in the US lending market can't be simply applied in emerging markets such as China.

The findings of this research could make us to have a better understanding of the rationality of investors in the developing countries. As a special type of micro loan, online peer-to-peer lending is relatively new. The study shows that rationality of lenders varies in different settings, therefore marketing policies should be diversified to suit different market environments.

REFERENCES

Alevy, J. E., Haigh, M. S., & List, J. A. (2007). Information cascades: Evidence from a field experiment with financial market professionals. *The Journal of Finance, 62*(1), 151-180.

Anderson, L. R., & Holt, C. A. (1997). Information cascades in the laboratory. *The American Economic Review*, 847-862.

Avery, C., & Zemsky, P. (1998). Multidimensional uncertainty and herd behavior in financial markets. *American Economic Review*, 724-748.

Banerjee, A. V. (1992). A simple model of herd behavior. *The Quarterly Journal of Economics, 107*(3), 797-817.

Berkovich, E. (2011). Search and herding effects in peer-to-peer lending: evidence from prosper. com. *Annals of Finance, 7*, 1-17.

Herzenstein, M., Dholakia, U. M., & Andrews, R. L. (2011). Strategic herding behavior in peer-to-peer loan auctions. *Journal of Interactive Marketing, 25*(1), 27-36.

Lee, E., Lee, B., & Chae, M. (2011). *Herding behavior in online P2P lending: An empirical investigation.* Paper presented at the Pacific Asia Conference on Information Systems, PACIS 2011

Lin, M. F., Prabhala, N. R., & Viswanathan, S. (2012). Judging borrowers by the company they keep: Social networks and adverse selection in online peer-to-peer lending. *Management Science, forthcoming*.

Prosper. (2010). Prosper closing in on $200 million in loans and series D. *http://blog.prosper.com/2010/03/31/prosper-closing-in-on-200-million-in-loans-and-series-d/*

Shiller, R. J. (2006). Tools for financial innovation: neoclassical versus behavioral finance. *Financial Review, 41*(1), 1-8.

Simonsohn, U., & Ariely, D. (2008). When rational sellers face non-rational buyers: evidence from herding on eBay. *Management Science, 54*(9), 1624-1637.

Sydnor, J. R., & Pope, D. G. (2010). What's a picture? Evidence of discriminations of loan fundability in the prosper.com marketplace. *Journal of Human Resources, Forthcoming*.

Zhang, J. J., & Liu, P. (2012). Rational herding in Microloan markets. *Management Science, Article in Advance*, 1-21.