

Study on the Effect Path of Different Equity Backgrounds on the Volume of Transaction of P2P

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Abstract This paper uses 403 P2P platforms' data from January 2014 to June 2018 in China, and uses the mediation effect model to analyze according to the different equity background. It is found that the P2P platform can increase volume of transaction in the case of venture capital, state-owned enterprises, listed companies, and banks, and it acts through two paths. On the one hand, in the case of venture capital, state-owned enterprises, listed companies, and banks, the credit level of the platform has been implicitly guaranteed, which has led to an increase in the number of investors and borrowers. This intermediary effect has increased the volume of transaction of the platform; On the other hand, under the above circumstances, the platform's technical level, financial strength and other comprehensive operational capabilities are higher, directly increasing the volume of transaction. Through data analysis, the equity background of this platform has a greater impact on investors. There are also differences in the impact of different equity backgrounds on platform volume of transaction.

1. Introduction

P2P network lending is a new type of peer-to-peer private lending method that collects personal funds and lends them to people with financial needs. With the rapid growth of China's economy in recent years and the popularity and application of Internet technology, the P2P lending model has become a very important part of China's financial services. Compared with traditional loans, the P2P platform has many advantages that enable it to rise rapidly in the financial sector. P2P network lending can be implemented within the platform. The borrower provides relevant materials according to the requirements of the platform. The platform will review the borrower's materials and rate the borrowers according to past credit terms. Investors can choose a borrower based on individual risk appetite and rate of return requirements. On the P2P platform, borrowers' borrowings can be jointly tendered by multiple investors, and investors can freely choose the amount of their own investment.

For fund surpluses, the P2P platform gives investors a financing method with lower thresholds and more convenient risk diversification; for fund demanders, the P2P platform broadens the financing channels in the areas of startups and personal consumption, reducing the borrower's lending process and steps.

2. Literature Reference

MK. Hulme and C. Wright (2006) are based on the study of Zopa, a UK online lending platform. They believe that the emergence of P2P online lending in the information age is a direct response to social trends and the need for new relationships in the financial sector. ^[1] However, P2P network lending has been developed to date, and there are still many problems, the most serious of which is the information asymmetry between the borrower and the lender. In other words, the lender does not understand its reputation as the borrower does. This information asymmetry may lead to the adverse selection proposed by Akerlof (1970) and the moral hazard problem proposed by Stiglitz and Weiss

(1981).^[2] In theory, some of these problems can be alleviated by regular monitoring, but because borrowers and buyers can't really meet, this approach has encountered challenges in the online environment.

To this end, people began to study the factors that affect the risk of default. Carlos Serrano-Cinca (2015) used the univariate mean and survival analysis methods for the first time and found that the factors that led to default included loan use, annual income, current housing status, credit history and debt.^[3] Riza Emekter and Yanbin Tu (2014) used Lending Club as an example to find that loan default rates with lower credit ratings and longer maturities are higher;^[4] Interestingly, J. Duarte (2012) believes that The look and feel of more trustworthy borrowers has a better credit score, their loans are more likely to receive funds, and the frequency of defaults is lower.^[5]

China's research on P2P can be divided into six categories, namely: research on online lending platform, research on behavior of online lender participants, research on loan success rate, research on P2P platform supervision, research on relevant laws and regulations, and P2P insurance. Research and credit rating research.

Li Yuelel et al. (2013) showed that the borrowing rate, the borrowing period, the bidding time, the borrowing credit, the number of successful borrowings, and the age all have different degrees of the loan order completion rate, the number of borrowing orders, and the full-order order transaction rate. Impact.^[6] Wang Huijuan et al. (2014) based on the "everyone's loan" platform data, compared with the simple online credit authentication method, the combination of online and offline credit authentication methods can improve the success rate of borrowing and reduce borrowing costs.^[7] Li Yan et al. (2014) based on data from the auction platform, sufficient characterization will weaken the negative impact of information asymmetry and enhance their confidence in borrowing activities, thereby increasing the borrower's success rate.^[8]

3. Research Hypothesis

3.1 Platform classification

According to the different equity backgrounds, this paper divides the existing P2P platforms into five categories, namely, VC, LC, SE, and BK. The listing class includes the listed holding platform and the listed participation platform.

3.2 Research hypothesis

This paper takes the private sector as the reference object and conducts empirical analysis on the venture capital class, the state-owned class, the listing class and the bank class. Assuming that there is information asymmetry between investors, P2P platform and borrowers, both borrowers and lenders can only judge the operation status, risk control capability and liquidity of the platform through the equity background of the platform. Different equity backgrounds do have an impact on the operational status of the platform. The relationship between the borrowers and the lenders in this relationship is reflected in the number of investors, the number of borrowers, and the volume of transaction. Both borrowers and lenders are more willing to use a safe, reliable and well-functioning platform, which will also increase the volume of transaction of the platform. Based on the above analysis and assumptions, the following assumptions are made:

H1: Venture capital, state-owned enterprises, listed companies and banks' participation or holding platforms can attract more borrowers and investors and increase platform volume of transaction.

H2: The platform for venture capital, state-owned enterprises, listed companies and banks to participate in or hold shares makes the platform's business performance higher, and thus increases the platform volume of transaction.

The direct effect assumes that different equity backgrounds will directly increase the performance level of the platform, thereby increasing the trading volume of the platform. Conversely, the mediating effect suggests that the impact of different equity backgrounds on the number of investors

and borrowers is not directly related, but rather by mediating the credit level of the platform. The process is expressed as Figure 1, and the comparison between the two is directly reflected in Figure 2.

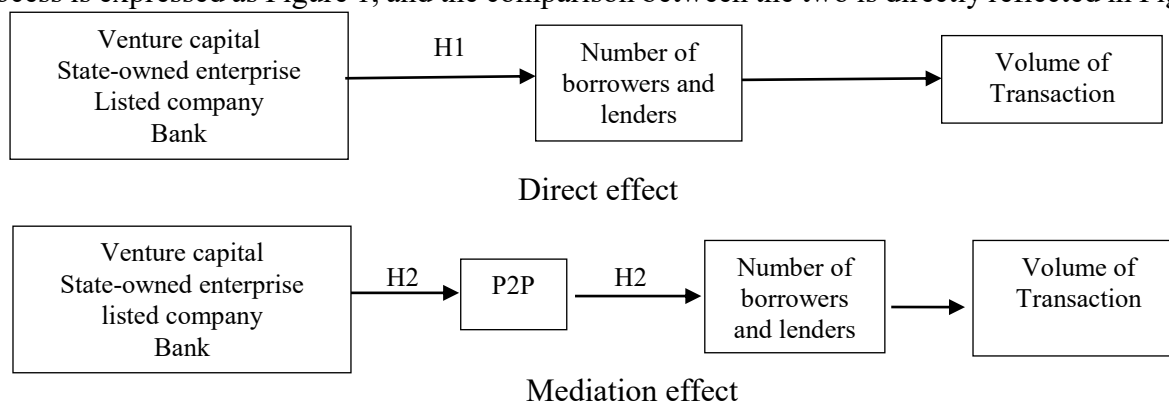


Fig. 1. Effect of different equity backgrounds on volume. The direct effect assumes that different equity backgrounds will directly increase the performance level of the platform, thereby increasing the trading volume of the platform. Conversely, the mediating effect suggests that the impact of different equity backgrounds on the number of investors and borrowers is not directly related, but rather by mediating the credit level of the platform.

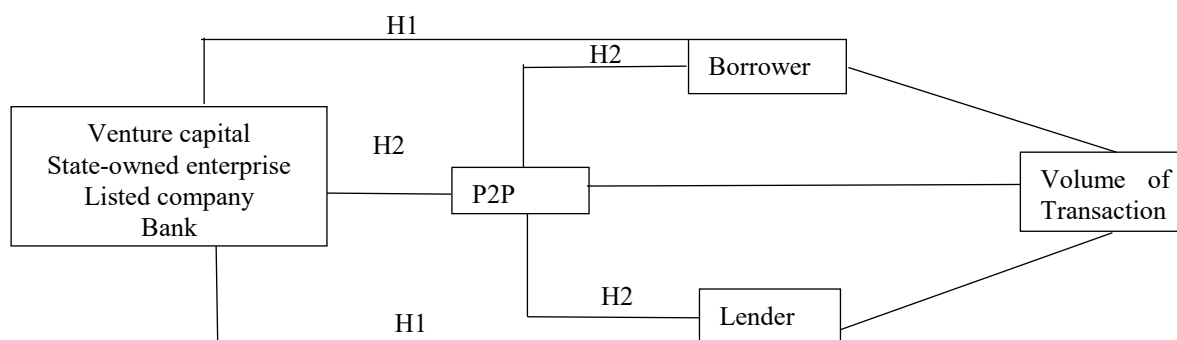


Fig. 2. Comparison of direct and indirect effects. This picture shows the difference between direct and indirect effects more intuitively.

4. Data and Empirical design

4.1 Data

The data in this article was obtained from the online loan home using the Python crawler tool. A total of 403 platforms' data was obtained. The data was recorded on a monthly basis. The time period for the transaction data is from October 2018 to November 2013. According to the equity background of the platform, the series of each platform is classified. For the platform with diversified ownership structure, statistics are performed in each classification data. For example, the equity background of Lujinfu is in line with the characteristics of the listing system and the characteristics of the banking department. It is separately counted in the listing department and the banking department.

For the platform data that stopped operating during the observation period, this paper did not eliminate the processing. The reason is that the information asymmetry of the P2P platform, even if the investor fails to get the news within one month after the platform stops operating, according to the assumptions in the previous section of this article, the investor can only rely on the historical background information of the existing stock. The platform is judged, so most investors will still invest in the platform that stops operating.

Due to the incomplete data of the platform in 2013, in order to maintain the consistency of the data time, the final data selection time is from January 2014 to June 2018, with a monthly frequency. In the end, 54 sets of data were obtained for each different equity system. Each set of data includes volume of transaction, loan balance, borrowings, investment number, borrowing period and comprehensive

interest rate. The comprehensive interest rate refers to the interest rate after the weighted average of the funds.

Table 1. Variable definition and description.

| Variable symbol | Explanation | Value |
|-----------------|------------------------------|---|
| VOT | Volume of Transaction | Monthly volume of transaction |
| EB | Equity Background | VC,SE,LC,BK |
| VC | Venture Capital | VC = 1, otherwise = 0. |
| SE | State-owned Enterprise | State-owned enterprises=1, otherwise=0. |
| LC | Listed Company | Listed companies=1, otherwise=0. |
| BK | Bank | Bank=1, otherwise=0. |
| Pr | Private | |
| NOL | Number of Lender | Monthly Number of Lender |
| NOB | Number of Borrower | Monthly Number of Borrower |
| Rate | comprehensive borrowing rate | Monthly weighted average interest rate |

Descriptive statistics are performed on all data first, and the results are shown in Table 2.

Table 2. Describes statistics.

| | Volume of Transaction | | | | Number of Borrower | | | |
|----|-----------------------|--------------------|---------|---------|--------------------|--------------------|---------|---------|
| | Mean | Standard deviation | Minimum | Maximum | Mean | Standard deviation | Minimum | Maximum |
| VC | 474.28 | 409.45 | 4.25 | 1088.03 | 66.82 | 80.34 | 0.11 | 221.61 |
| SE | 104.89 | 82.29 | 0.97 | 243.53 | 13.78 | 15.30 | 0.03 | 45.27 |
| Pr | 639.90 | 315.68 | 93.75 | 1088.40 | 71.88 | 66.28 | 2.37 | 212.99 |
| LC | 338.78 | 297.59 | 0.74 | 947.27 | 44.76 | 50.10 | 0.02 | 136.80 |
| BK | 168.01 | 179.46 | 4.20 | 691.54 | 18.40 | 18.85 | 0.11 | 58.85 |

| | Number of Lender | | | | Rate | | | |
|----|------------------|--------------------|---------|---------|-------|--------------------|---------|---------|
| | Mean | Standard deviation | Minimum | Maximum | Mean | Standard deviation | Minimum | Maximum |
| VC | 91.94 | 77.32 | 0.67 | 207.79 | 10.52 | 1.59 | 7.88 | 13.27 |
| SE | 20.60 | 15.33 | 0.14 | 41.59 | 9.02 | 1.13 | 6.88 | 12.72 |
| Pr | 127.02 | 59.72 | 14.64 | 185.72 | 13.94 | 3.71 | 10.32 | 23.03 |
| LC | 65.12 | 54.68 | 0.12 | 136.80 | 10.22 | 2.71 | 7.16 | 14.75 |
| BK | 31.55 | 31.85 | 0.66 | 125.62 | 7.06 | 1.01 | 5.33 | 9.91 |

4.2 Empirical Analysis

In this paper, the mediation effect model is used to test the data, and the stepwise regression method is used in the analysis method. Finally, the regression results are tested. First, for the analysis of direct effects, the model (1) is established to test that the model can also extract the total effect of different equity backgrounds on the volume. For the analysis to further analyze the mediating effect, judge the partial intermediary and the complete intermediary to provide the basis.

$$VOT_{i,t} = \beta_0 + \beta_1 EB_{i,t} + \beta_2 Controls_{i,t} + \alpha_i + e_{i,t} \quad (1)$$

Where i and t represent the type and month indicator of the platform, respectively, and the values of i are EC, VC, SE, LC, BK. $Controls_{i,t}$ is the control variable including the loan interest rate, and $e_{i,t}$ is the random disturbance term.

$$NOL_{i,t} = \gamma_0 + \gamma_1 EB_{i,t} + \gamma_2 NOB_{i,t} + \gamma_3 Controls_{i,t} + \delta_i + \tau_{i,t} \quad (2)$$

$$NOB_{i,t} = \rho_0 + \rho_1 EB_{i,t} + \rho_2 NOL_{i,t} + \rho_3 Controls_{i,t} + \varepsilon_i + \theta_{i,t} \quad (3)$$

$$VOT_{i,t} = \varphi_0 + \varphi_1 EB_{i,t} + \varphi_2 NOB_{i,t} + \varphi_3 NOL_{i,t} + \epsilon_i + \omega_{i,t} \quad (3)$$

Where , $\tau_{i,t}$, $\theta_{i,t}$ and $\omega_{i,t}$ are random disturbance terms. According to the mediating effect hypothesis of H2, this paper expects to introduce the mediating effect of “EB→NOL→VOT” and “EB→NOB→VOT” in VC, and the VC has a partial mediating effect on the volume ($\varphi_1 > 0$) .

5. Empirical Results

Taking the private sector as a reference, for the listing department, the state-owned department, the venture capital department and the banking department, according to the models (1) - (4), the SPSS22 is used to gradually return the existing data. The regression results of the VC class are shown in Table 3. The regression results of the state-owned class are shown in Table 4. The regression results of the listed company class are shown in Table 5, and the regression results of the bank class are shown in Table 6.

Table 3. Results of the VC class.

| | Variable | Constant | VC | NOB | NOL | F | Sig | R ² |
|-----------|----------|-------------------------|------------------------|-----------------------|--------------------|---------|-------|----------------|
| Model (1) | NOL | 639.905*** (-12.863) | -165.624** (-2.354) | | | 5.554 | 0.020 | 0.050 |
| Model (2) | NOL | 70.716*** (-11.166) | -31.119*** (-4.232) | 0.783*** (-15.555) | | 132.370 | 0.000 | 0.716 |
| Model (3) | NOB | -41.201*** (-4.508) | 26.171*** (-3.236) | | 0.890 (-15.555) | 121.182 | 0.000 | 0.698 |
| Model (4) | NOB | -25.561* (-1.461) | 20.366* (-1.370) | 5.322*** (-29.196) | -0.147 (-0.860) | 942.003 | 0.000 | 0.965 |

Table 4. Results of the SE class.

| | Variable | Constant | SE | NOB | NOL | F | Sig | R ² |
|-----------|----------|-------------------------|--------------------------|---------------------|-----------------------|----------|-------|----------------|
| Model (1) | NOL | 639.905*** (-20.385) | -535.016*** (-12.052) | | | 145.242 | 0.000 | 0.578 |
| Model (2) | NOL | 80.648*** (-13.174) | -68.942*** (-9.942) | 0.645 (-10.384) | | 215.441 | 0.000 | 0.804 |
| Model (3) | NOB | -27.873*** (-2.615) | 25.479* (-2.458) | | 0.785*** (-10.384) | 93.463 | 0.000 | 0.640 |
| Model (4) | NOB | -6.402 (-0.365) | 5.964 (-0.35) | 0.247** (-1.583) | 4.949*** (-28.79) | 1482.810 | 0.000 | 0.977 |

Table 5. Results of the LC class.

| | Variable | Constant | LC | NOB | NOL | F | Sig | R ² |
|----------|----------|-------------------------|-------------------------|----------------------|----------------------|---------|-------|----------------|
| Model(1) | NOL | 639.905*** (-15.329) | -301.128*** (-5.101) | | | 26.017 | 0.000 | 0.197 |
| Model(2) | NOL | 73.322*** (10.986) | -41.646*** (-5.705) | 0.747*** (12.232) | | 112.725 | 0.000 | 0.826 |
| Model(3) | NOB | -28.032*** (-2.902) | 21.575** (2.596) | | 0.787 (12.232) | 81.723 | 0.000 | 0.609 |
| Model(4) | NOB | -25.865* (-1.543) | 23.212* (1.622) | 0.016 (0.099) | 5.232*** (31.302) | 999.706 | 0.000 | 0.966 |

Table 6. Results of the LC class.

| | Variable | Constant | BK | NOB | NOL | F | Sig | R ² |
|----------|----------|------------------------|------------------------|-------------------|----------------------|----------|-------|----------------|
| Model(1) | NOL | 639.905*** (18.314) | -471.897*** (-9.55) | | | 91.198 | 0.000 | 0.462 |
| Model(2) | NOL | 77.199*** (11.467) | -58.405 (-7.792) | 0.693 (10.207) | | 158.116 | 0.000 | 0.751 |
| Model(3) | NOB | -19.387** (-1.917) | 15.119* (1.596) | | 0.719*** (10.207) | 84.184 | 0.000 | 0.616 |
| Model(4) | NOB | -21.831* (-1.301) | 25.41* (1.625) | 0.163 (1.023) | 5.117*** (31.583) | 1319.719 | 0.000 | 0.974 |

Note: *, **, *** indicate significant levels of 10%, 5%, and 1%, respectively.

In order to test the stability of the mediating effect, the regression results were tested. Firstly, the regression coefficients of the four processes of venture capital, state-owned, listed, and banking are tested in turn. And for partial mediation. In order to ensure the accuracy of the test results, the path analysis of the regression results is performed again. After the median variable, the product of the corresponding regression coefficients is significant. After testing, the products of all corresponding regression coefficients on the four paths are significantly less than 0. Pass the test. Using the Sobel test, the results are shown in Table 7. The mediating effects of the risk department, the investment department, the listing system, and the banking system all passed the test, indicating that the previous conclusion was established.

Table 7. Mediation effect test.

| | Mediation effect path | Inspection process | Path | coefficient | Standard error | t-value | Sobel Test | Mediation effect |
|----|-----------------------|--------------------|-------------|-------------|----------------|---------|------------|------------------|
| VC | VC→NOL→VOT | NOL=f1(VC) | γ_1 | -31.119 | 7.353 | 11.166 | 0.17 | Pass |
| | | VOT=h(VC,NOL) | φ_1 | 20.336 | 14.861 | 1.37 | | |
| | | | φ_2 | -0.147 | 0.171 | -0.860 | | |
| | VC→NOB→VOT | NOL=g1(VC) | ρ_1 | 26.171 | 8.088 | 3.236 | 0.83 | |
| | | VOT=h(VC,NOB) | φ_1 | 20.336 | 14.861 | 1.37 | | |
| | | | φ_3 | -0.147 | 0.171 | -0.86 | | |
| SE | VC→NOL→VOT | NOL=f2(VC) | γ_1 | -68.942 | 6.935 | -9.942 | 9.4 | Pass |
| | | VOT=h(VC,NOL) | φ_1 | 5.964 | 17.018 | 0.35 | | |
| | | | φ_2 | 4.949 | 0.172 | 28.79 | | |
| | VC→NOB→VOT | NOL=g2(VC) | ρ_1 | 25.479 | 10.366 | 2.458 | 1.33 | |
| | | VOT=h(VC,NOB) | φ_1 | 5.964 | 17.018 | 0.35 | | |
| | | | φ_3 | 0.247 | 0.156 | 1.583 | | |
| LC | VC→NOL→VOT | NOL=f3(VC) | γ_1 | 21.575 | 8.31 | 2.596 | 0.09 | Pass |
| | | VOT=h(VC,NOL) | φ_1 | 23.212 | 14.31 | 1.622 | | |
| | | | φ_2 | 0.016 | 0.163 | 0.099 | | |
| | VC→NOB→VOT | NOL=g3(VC) | ρ_1 | -41.646 | 7.3 | -5.705 | 0.1 | |
| | | VOT=h(VC,NOB) | φ_1 | 23.212 | 14.31 | 1.622 | | |
| | | | φ_3 | 0.016 | 0.163 | 0.099 | | |
| BK | VC→NOL→VOT | NOL=f4(VC) | γ_1 | 15.119 | 9.473 | 1.596 | 1.59 | Pass |
| | | VOT=h(VC,NOL) | φ_1 | 25.41 | 15.634 | 1.625 | | |
| | | | φ_2 | 5.117 | 0.162 | 31.583 | | |
| | VC→NOB→VOT | NOL=g4(VC) | ρ_1 | -58.405 | 7.495 | -7.792 | 1.01 | |
| | | VOT=h(VC,NOB) | φ_1 | 25.41 | 15.634 | 1.625 | | |
| | | | φ_3 | 0.163 | 0.159 | 1.023 | | |

6. Summary

This paper uses the data of 403 platforms from January 2014 to June 2018 in China, and uses the mediation effect model to analyze according to the different equity background. Compared with the

private sector, the P2P platform can increase the volume of transaction in the case of venture capital, state-owned enterprises, listed companies, and banks, and it acts through two paths.

The existing research on P2P in China focuses on the research of user portraits and supervision, and there are few studies on the P2P platform itself. The research results in this paper are conducive to improving the operational efficiency of the P2P platform from the diversification of equity structure. By introducing venture capital, or by state-owned enterprises, banks, and listed companies, it is beneficial to improve the operational efficiency of the platform, and indirectly provide more platform information for both borrowers and lenders, which is conducive to reducing the degree of information asymmetry.

However, there are still many shortcomings in this article. First, the platforms that can obtain investment from state-owned enterprises, banks, listed companies, and banks may have better operating conditions or inherent advantages in other aspects. Second, this paper aggregates 403 platforms' data into 5 categories, which may be over-integrated, ignoring the differences in the internal platforms of each platform series.

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