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Analysis of the Impact of Interest Rate Liberalization on Internet Finance

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Abstract: With the wide application of Internet information technology, every industry has been organically combined with the Internet and has gained new development, which is an inevitable trend of social development. Internet financial products are the new products of the combination of Internet and financial industry. At the same time of the birth of Internet finance, China is carrying out financial market reform. In this context, we want to know how its development will be affected. The purpose of this paper is to study the influence of interest rate liberalization on the development of Internet finance. This paper first analyzes the relationship between the internet finance and the interest rate marketization, then analysis the influence of interest rate marketization on internet financial; Finally, an empirical model analysis demonstrates the influence of interest rate marketization on internet financial, the empirical test shows that although a certain time lag, but the money market and bond market is the granger cause of the internet financial. The interest rate marketization will impact the internet financial operations, commercial bank as the conduction intermediary, can make the market interest rates move in same direction with the internet financial interest rates. Therefore, financial enterprises have to adapt to the interest rate marketization and grasp the actively response to the new environment of interest rate liberalization in order to make themselves get better and faster development.

Keywords: Interest Rate Marketization, The Internet Financial, Impact

1. Introduction

As a new thing in the financial industry of our country, Internet finance has brought new vitality to the financial industry and promoted various reforms of the financial industry. The marketization of interest rate of deposit and loan is one of them. Since Internet finance has promoted interest rate liberalization, in turn, what is the impact of Internet Finance on the completion of this system, which is worthy of our attention.

In the 1970s, McKinnon and Shaw proposed the theory of financial deepening in response to the widespread financial repression in developing countries and advocated the relaxation of financial market control in developing countries. As the largest developing country in the world, China has suffered from serious financial repression due to its long-term implementation of the planned economy. Despite more than 30 years of reform and opening up, China has achieved a transformation in which the market mechanism plays a decisive role in resource allocation. However, the financial repression is still serious, and the price of capital -- interest rate -- has long been controlled by the government. New changes did not begin until 1993. After more than 20 years of reform, interest rate liberalization was finally basically completed in October 2015, marked by the central bank's liberalization of deposit interest rate control.

From personal food, clothing, housing and transportation to the daily operation of enterprises, the Internet has dramatically changed people's lives, and its combination with different industries has brought new opportunities to various industries. The Chinese government has also actively supported it to serve the real economy and inject new impetus to economic development.

As a new thing in China's financial industry, Internet finance has brought catfish effect to the traditional financial industry, stimulated the vitality of the traditional financial subject, and promoted various reforms of the financial industry, among which the interest rate liberalization of deposit and loan is one of them. The pace of innovation in

Internet finance has not stopped, and it will bring more changes to the financial industry.

It can be seen that Internet finance has affected the process of interest rate liberalization. On the contrary, after the completion of interest rate liberalization, how will Internet finance be affected? This is worthy of our attention.

2. Analysis of the Relationship Between Internet Finance and Interest Rate Marketization

2.1. The Development of Internet Finance and Its Business Types and Operation Mechanism (The Developmental Stage, Category and Operation Mechanism of Internet Finance)

The people's Bank of China, in China's financial stability report 2014, points out that Internet finance is the combination of Internet and finance. It is a new financial model with the help of Internet and mobile communication technology to achieve financial intermediation, payment and information intermediary function.

At the same time, some scholars have proposed that Internet finance includes a broad and narrow sense[1]. The broad sense of Internet finance refers to financial institutions not only through the Internet, but also as non-financial institutions to engage in financial activities(Internet finance in a broad sense includes not only financial institutions doing business through the Internet, but also Internet enterprises engaging in financial activities.). The narrow sense of Internet finance refers to the Internet enterprises to engage in financial activities. The Internet Finance discussed in this article is a narrow sense of Internet finance.

Internet finance has the following characteristics:

First, the use of cloud computing, large data and other technologies. (Internet finance uses cloud computing, big data and other technologies) Internet finance, through cloud computing, large data and other technologies, has solved the problem of storage and use of massive data on the one hand, so that Internet finance can provide customers with the services needed at a lower cost and higher efficiency. (On the one hand, Internet finance has solved the storage and use of massive data through cloud computing, big data and other technologies, so that Internet finance can provide services needed by customers with lower costs and higher efficiency)On the other hand, it also made the data which was neglected for a long time played its due role and changed the way of operation of the financial industry in the past.

Second, the role of the third party is prominent. At present, third parties are involved in the Internet finance, such as third party payment, and the platform of Internet credit (loan) is also third parties. It is responsible for the trust of funds. The Internet Fund itself is a fund, and it also needs third parties. It can be seen that third parties can provide professional services, form a scale effect, reduce transaction costs, reduce information asymmetry, and reduce the benefits of credit risk. Therefore, the third party is very important in the Internet finance.

Third, the small and Micro customers as the main body. Internet financial products can fully reflect the characteristics of small and Micro customers. For example, the investment threshold of the Internet monetary fund is generally one yuan investment, and the Internet loan is focused on small and micro enterprises. These are all related to the characteristics of the Internet itself, because the Internet has the characteristics of sharing, high efficiency, and so on, so the Internet finance can use the lower cost to serve the small and Micro customers that the traditional finance is ignored by the cost.

From the birth of Internet finance to the present, its development has gone through the following three stages, and its business types (category) are becoming more and more diverse, mainly including network financing, financial network marketing, Internet financial products, crowd funding and third party payment, virtual currency, large (Big) data finance and Internet banking.

Table 1. *The financial development phase of the Internet.*

	Time	Development characteristics
The first stage	before 2005	It is mainly banks that use the Internet to develop their business so as to increase their access to business.
the second stage	from 2005 to 2012	The development of the third party payment in China indicates that the Internet and finance are truly organically integrated and no longer regarded as technology.
The third stage	after 2012	Known as the "Internet financial year", Internet finance has developed rapidly. There are various types of Internet financial products, such as Internet loans, crowd funding and other types of Internet financial products, and the traditional financial institutions have begun to take action to cater for the trend.

With the rise of Internet finance, its universal, convenient and low-cost service mode has also challenged traditional banks. The new Internet financial service mode is gradually replacing the payment and settlement of the traditional bank network and the business of financial sales, which makes the original income of individual business diverted from the non-bank channel. Internet finance has exacerbated the "financial disintermediation", diverting commercial banks' customers and deposits and other products, which have weakened the advantages of commercial banks in terms of payment, deposits and channels; a large number of information are distributed on the Internet platform and are shared and open, and commercial banks are faced with risk that the weakening of financial intermediary roles.

2.2. The Background and Process of Interest Rate Marketization in China

In the 70s of last century, Mackinnon and Shaw studied the relationship between financial development and economic development on the basis of the developing countries, and put forward the theory of financial restraint and financial deepening. Mackinnon believes that financial restraining phenomena are common in developing countries. Excessive government regulation of the financial sector will be detrimental to economic development, and economic development will make it difficult for the financial industry to develop. So Mackinnon advocates financial deepening to promote the effective allocation of resources so as to promote economic development. Such measures as encouraging financial liberalization and reducing financial restraint, including interest rate marketization, strengthening bank competition and various financial reforms, are considered to bring about savings, investment, efficiency, employment and income, and promote economic development. Since this theory was put forward, many developing countries have carried out corresponding financial deepening reform. China, as the largest developing country in the world, has a serious financial restraining problem because of the long-term implementation of the planned economic system. Although after 30 years of reform and opening up, our country (China) has realized the transformation of the decisive role of market mechanism to the allocation of resources, but the financial restraining situation is still relatively strict. As the price of capital, interest rate has been controlled by the government for a long time. Under the conditions of regulation, interest rates can not fully play the role of market allocation of resources; interest rates fail to transmit the national macro-control policy accurately; "financial disintermediation" is becoming more and more intense. To change the traditional business mode, banks need to fully market interest rates. The marketization of interest rate is the operation mechanism of interest rate determined by the supply and demand relationship at a certain point through the market and the law of value. The people's Bank of China started the reform of interest rate liberalization in 1996. In accordance with the interest rate marketization experience of the developed countries such as the United States, Japan, the process of promoting the marketization of interest rates in China has taken a gradual reform, that is, opening up the interest rate of the currency market and the bond market first, and gradually promoting the marketization of the interest rate of the loan deposit. Among them, the interest rate marketization is based on the order of "first foreign currency, then local currency", "first loan, after deposit", "first long term, large amount, short term and small amount". Starting from October 24, 2015, the central bank will not set a ceiling on deposit rates for commercial Banks and rural cooperative financial institutions, which marks the completion of the reform of interest rate liberalization that has lasted nearly 20 years. With the continuous promotion of interest rate marketization, the interest rate difference of deposit and loan gradually decreases, the liberalization of interest rate and the accompanying financial disintermediation will lead to the diversion of financial resources, and further compress the margin space of commercial banks, and many of the institutional dividends that commercial banks have enjoyed will not exist. The marketization of interest rate will adjust the business strategy, adjust the income structure, reduce the dependence on interest income, and expand the intermediary business. This compels commercial banks to turn more attention to personal customers, improve the profits of retail banking, intermediate business and private banking, and also gain more low cost funds on the debt side to slow down the trend of the margin contraction.

Table 2. *Key time points for the process of interest rate marketization.*

Time	Iconic events
1993	The Fourteenth National Congress of the Communist Party of China "the decision on the reform of the financial system" proposed that the long-term goal of China's interest rate reform is to establish a market interest rate management system based on market supply and demand, the central bank's benchmark interest rate as the control core and the market capital supply and demand to determine interest rates.
1996	The establishment of a unified interbank lending market was born in. Called CHIBOR.
1997	The market of interbank bond repo rate;
2000	The interest rate of foreign currency loans and the interest rate of large deposits of more than 3 million dollars are marketization. Then the interest rate of foreign currency small deposits was continuously liberalized.
2013	Loan interest rate marketization
2015	Marketization of deposit interest rate

2.3. The Relationship Between Interest Rate Marketization and Internet Finance

First of all, Internet finance promotes interest rate marketization. As mentioned earlier, China's interest rate marketization work has been promoted in 1993, but it is not until 2015 that the deposit interest rate market is finally realized, which is the result of the accelerated development of Internet Finance in 2012. (As mentioned above, although China's interest rate liberalization started in 1993, it was not finally realized until 2015, which was also the result of the accelerated development of Internet finance in 2012.)Because Internet finance has no strict legal restrictions, but also has the advantages of fast and efficient, they can provide investors with more than commercial banks of similar products, in the process of development, the step by step encroach on the commercial bank's territory. So commercial banks want to stop eroding profits by Internet finance and need to take some measures, one of which is to change the mechanism of deposit and loan pricing, from the

government to the market, in order to increase its competitiveness. Conversely, if Internet finance develops earlier than interest rate marketization, it will certainly have a catalytic effect on the marketization of interest rates. Because the Internet finance itself is the result of the market, for example, the Internet loan is determined by the capital supply and demand side of the market, and the Internet financial products can provide different investment term and risk of the financial products, and it is also determined by the capital supply and demand sides. If the fixed rate is continued, it is likely that a product of two kinds of prices will appear, for example, relative to the current interest rate of the bank, the income of the Internet monetary fund, which is also with the nature of the current deposit, is higher, and the depositors will naturally reduce the bank deposits and buy the internet currency fund. Other Internet financial products that have an alternative to banks also have the same effect, which has also happened between central bank and financial institutions, and some financial institutions used this opportunity to arbitrage because of the interest of the central bank's reloan interest at that time. (Other Internet financial products that have an alternative function with Banks have the same effect, and this phenomenon has also happened between the central bank and financial institutions. At that time, due to the interest rate of the reloan of the central bank could not keep up with the market interest rate, some financial institutions also used this opportunity to carry out arbitrage.)Therefore, as long as there are arbitrage points which are unfavorable to banks, banks will eventually be unable to be changed arbitrage(Therefore, as long as there is an arbitrage point against the bank, the bank will eventually be unable to bear the constant arbitrage and change). In fact, the traditional finance does not wait for death. On the one hand, it promotes interest rate marketization. On the other hand, before the liberalization of the interest rate market, it is also carrying out financial innovations similar to the interest rate marketization, such as the introduction of higher income financial products to absorb deposit in order to break through the limit of interest rate. Banks have the power to support interest rate liberalization in order to compete with Internet finance (Banks are motivated to support interest rate liberalization in pursuit of the strength to compete with Internet finance.).

Conversely, interest rate liberalization can promote the development of Internet finance. First, before the marketization of interest rate, according to the "financial suppression theory" of Mackinnon and Shaw, there is a huge problem of capital supply and demand in China for a long time, which undoubtedly has great market potential for Internet finance, and the arbitrage opportunity in the promotion of interest rate marketization leads to the birth of some internet financial products. Second, interest rate marketization is one of the major reforms in the financial industry in China, which makes the financial institutions have the right to price the funds, which undoubtedly increases the competitive strength of the financial institutions. Therefore, it may impact the Internet financial products in the short term, but in the long run it can make the resources more effective.

To reduce the degree of financial restraint in China, enhance the vitality of the financial industry, increase the income of the residents, promote the development of the national economy, and ultimately the whole market environment is conducive to the development of Internet finance. Third, interest rate marketization has reduced the interest spreads of commercial banks in the past, forcing commercial banks to change the way of operation, actively innovate and develop intermediate business, which will also promote the innovation of Internet Finance accordingly. Fourth, in the process of the interest rate marketization, our country has introduced the loan benchmark interest rate and other products which have the guidance of pricing the price of financial products. This also provides a certain reference for the pricing of Internet financial products. Fifth, interest rate marketization, as the market pricing mechanism of funds, is conducive to stimulating the innovative vitality of financial institutions, thus promoting the emergence of a wide variety of financial products, which is also meaningful for the construction of portfolio of assets by internet financial products.

3. Analysis of the Impact of Interest Rate Liberalization on Internet Finance

3.1. The Influence of Interest Rate Liberalization on the Operation of Internet Financial Business

The marketization of interest rates includes bank deposit and loan interest rates, money market interest rates, marketization of bond market interest rates and the marketization of central bank interest rates(Interest rate liberalization includes bank deposit and loan interest rate, money market interest rate, bond market interest rate and central bank interest rate liberalization). Because the participants in these markets may be involved in two or more markets at the same time, all kinds of Internet financial products may be affected by the interest rate of each market more or less in the profit-seeking activities of the investors.

As mentioned earlier, the Internet banking business mainly includes internet financial products, Internet loans, crowd funding and third party payment (As mentioned above, Internet financial services mainly include Internet financial products, Internet loans, crowd funding and third-party payment.). Since the third party payment is mainly to provide payment services for both buyers and sellers and reduce the transaction costs, there is no significant relationship between their operating activities and interest rates. Yang ling bing (2016) shows that the changes in interest rates have no substantial impact on the changes in the scale of the third party payment through empirical analysis. For crowd funding, it is mainly divided into commodity and equity category. Since crowd funding is mainly concentrated in the sale of goods, it has not much relationship with the interest rate, and the equity category is not active because it is still in the vicinity of the regulatory red line, so this article does not discuss.

3.1.1. The Influence of Interest Rate Marketization on Internet Financial Products

Because the most representative is the Internet monetary fund, so it is discussed. The Internet monetary fund itself is a participant in the money market, so the fluctuation of the money market should affect the fluctuation of its income, which will affect the investor's purchase or redemption. In the context of interest rate liberalization, the income of China's Internet monetary fund may gradually decline, and investors will reduce. Because these monetary funds thrive on the premise that China is still under the dual interest rate system. On the one hand, it is because banks need to absorb deposits to meet the regulation and their own daily operations. On the other hand, the interest rate of current deposit is too low. When there is a product that can meet the liquidity and higher income than the current deposit, the ordinary people choose the latter in accordance with the rational assumption. On this basis, Internet banking can achieve arbitrage in the system(On the other hand, because the current demand deposit interest rate is too low, when there is an investment product that can satisfy the liquidity and higher returns than the demand deposit, according to the rational person hypothesis, the ordinary people of course choose the latter. On this basis, Internet finance can achieve institutional arbitrage.). Alipay's "Yu'E Bao" as an example, firstly, it collected by buying many Alipay users of funds Celestica fund's " Yu'E Bao "(Take yu 'ebao of alipay as an example. First, many alipay users buy yu 'ebao fund.). After that, Tian Hong fund took the money with the bank to make deposit. Because of the large amount of money, it could have a greater negotiating advantage on the interest rate and enjoy a higher interest rate than the bank deposit base interest rate(Later, the yu 'ebao fund took the money to make agreement deposits with the bank. Due to the large amount, it has a greater negotiating advantage in terms of interest rate and enjoys a higher interest rate than the bank's benchmark deposit rate). And higher interest rates can support the "Yu'E Bao" constantly attracting more investors to buy, where only the interests of the banks are damaged, although the amount of deposits is basically unchanged, but their deposits are transferred from one party (personal deposit) to the other (agreement deposit), the cost of funds increases, and the deposit and loan spreads are reduced. Because of the basic completion of interest rate marketization, the double track system of interest rate has no longer exist. Banks can increase deposit interest rate and reduce the loss of individual deposits. This will surely impact Internet financial products that earn profits by arbitrage, and other non arbitrage Internet financial products will be affected because of the enhancement of the competitiveness of the banks.

3.1.2. The Influence of Interest Rate Marketization on Internet Loan

Internet loans can be called the most marketable lending market, because both sides can quickly understand each other through the information published online, or send people to verify the lender's information by the loan platform, and according to the information, each interest rate is the equilibrium price after the game between the borrowers(lenders) and the borrowers. This way can be used to finance funds more quickly than other ways such as bank loans and bond issuance. It is especially suitable for SMEs to cope with temporary capital turnover. But there are also drawbacks, that is, the cost of capital is very high, the average annual interest rate is more than 10%, and even the electronic business platform for its own customers to provide small loans. Such as Jing dong's small loans in Beijing(Such as Jing dong's small loans), also to 0.033% interest per day, a year down to more than 12% interest rates, Ali small loan also to the minimum daily 0.06%, not to mention other small loan platform. And the bank loan interest rate from six months to a year is only 4.35%. Relatively speaking, the cost of Internet loan to SMEs is undoubtedly very great. The marketization of the loan interest rate enables the banks to price their loans by themselves, no longer stipulates the upper limit, and the banks can also raise the loan interest rate according to the actual situation, which will undoubtedly divert a part of the enterprises in the Internet loan. In addition, the Internet loan interest rate pricing will also refer to some other market pricing benchmarks, on the basis of which the risk premium is added, so the interest rate liberalization will affect internet loans.

It can be seen that after the interest rate marketization, the arbitrage opportunities and competitive advantages of Internet finance will be reduced, and this will inevitably affect the future development model of Internet finance. With the continued implementation of financial deepening and the continued advance of financial reform, Internet finance needs to adapt to the new changes in the industry and find a road of development that is in line with its own characteristics.

3.2. Interest Rate Marketization Affects Interest Rate of Internet Financial Products

Through the previous article, we can see that in the Internet financial products, mainly the Internet loan and the Internet monetary fund are affected by the interest rate marketization, and no matter which product, there is a market subject at the same time, that is, commercial banks. It can be said that commercial banks take part in different markets to make the interest rates of different markets affect internet finance. First, in the field of Internet financing, many Internet financial products are launched by financial institutions and Internet financial enterprises, and banks can have business relations with these financial institutions through the money market, and the interest rate marketization of the money market will have an impact on the income of Internet financial products. Second, in terms of Internet loans, it is mainly the participation of individuals and enterprises, and banks have business relations with them in the lending market, so the market promotion of loan interest rates will naturally affect internet loans. Third, the interest rate liberalization of the bond market will enable banks, individuals and enterprises to have a trading relationship again. Because individuals, enterprises and banks can

participate in the bond market, when the interest rate of the bond market fluctuates, it will affect the changes in the investment behavior of the market participants, so it will also affect the Internet finance. Fourth, because the central bank supervises commercial banks, the interest rate system of the central bank can also affect internet finance through commercial banks.

Further, theoretically, the interest rates of all markets and the Internet financial interest rates should be positively correlated. Taking interest rate rises as an example, when the central bank raises the deposit reserve interest rate or the rediscount rate, it implies that the central bank wants to tighten its monetary policy. So commercial banks will increase their deposits, reduce loans and sell bonds, which will lead to higher deposit interest rates, money market interest rates and bond interest rates, resulting in a corresponding increase in the income rate of the Internet Monetary Fund. As banks reduce the supply of loans, some borrowers will turn to Internet loans, leading to a corresponding rise in Internet lending rates.

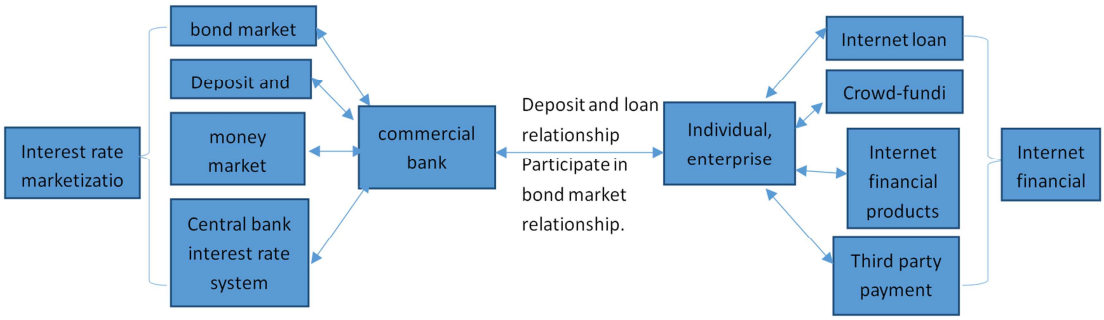

Figure 1. *The conduction relationship between interest rate liberalization and Internet finance.*

In a word, the interest rates of the monetary market, the bond market, the deposit and loan market and the central bank interest rate system can affect the changes in the Internet financial interest rate through the commercial banks, and they should be in the same direction. An empirical model will be used to verify this conclusion.

4. An Empirical Analysis of the Impact of Interest Rate Liberalization on the Interest Rate of Internet Financial Products

4.1. Theoretical Model

The model has included Internet financial products and Internet loans8. The purpose is to study how the market interest rates affect the Internet finance through the commercial banks under the interest rate liberalization.

Suppose that the banking industry has "I" commercial banks(Let's say "E" is the number of commercial Banks), and every bank can not control the market price. "D" represents the amount of deposits, "L" represents the amount of loans, "I" represents the funds borrowed by commercial banks from the Internet financial products. "B" represents the net position of the bond market in the bond market, "A" represents the deposit reserve ratio, "RD" represents the deposit interest rate, "RL" represents the loan interest rate, and "RB" represents the bond market interest rate. "M" represents the net cash position of the commercial bank in the money market. "RM" represents the interest rate of the money market. "RI" represents the yield of Internet financial products. "RA" represents the interest rate of the deposit reserve. "RP" represents the Internet loan interest rate. "C (D, L)" represents the operating cost of bank deposits and loans.

Suppose the bank profit maximization function is shown as follows:

$$max\{L * RL + D * A * RA + B * RB + M * RM - I * RI - D * RD - C(D,L)\} \quad (1)$$

$$I = L + M + B - (1 - A) * D \quad (2)$$

Replace (4-2) into (4-1):

$$max\{L * RL + D * A * RA + B * RB + M * RM - (L + M + B - (1 - A) * D) * RI - D * RD - C(D,L)\} \quad (3)$$

The first derivative of D in equation (4-3) is:

$$A * RA + (1 - A) * RI = RD + C'_D(D,L) \quad (4)$$

The first derivative of L in equation (4-3) is:

$$RL = RI + C'_L(D,L) \quad (5)$$

Suppose the cost function is shown as follows:

$$C(D,L) = \frac{1}{2} * (\delta_D * D^2 + \delta_L * L^2) \quad (6)$$

The δ_D and δ_L represent the marginal management costs of commercial bank deposits and loans, all of which are positive. Thus, it can be obtained:

$$C'_D(D,L) = \delta_D * D \quad (7)$$

$$C_L'(D,L) = \delta_L * L \quad (8)$$

(7) (8) respectively represents the first derivative of D and L in the cost function of commercial Banks.

Substituting (7) (8) into (4), (5)

And arranging available (deducing)(9) (10)

$$L^S = (RL - RI)/\delta_L \quad (9)$$

This formula represents the loan supply function of the commercial bank.

$$D^D = [A * RA + (1 - A) * RI - RD]/\delta_D \quad (10)$$

This formula represents the demand function of the commercial bank.

Suppose that the loan demand function and the deposit supply function of commercial banks are as follows:

$$L^D(RL, RP)$$

$$D^S(RD, RI)$$

The equilibrium conditions of the deposit and loan market are as follows:

Loan market equilibrium conditions:

$$L^D(RL, RP) = L^S = (RL - RI)/\delta_L \quad (11)$$

The equilibrium condition of the deposit market:

$$D^S(RD, RI) = D^D = [A * RA + (1 - A) * RI - RD]/\delta_D \quad (12)$$

The following function can be set according to the loan equilibrium condition

$$G(RL、RP、RI) = (RL - RI)/\delta_L - L^D(RL, RP) \quad (13)$$

$$\frac{\partial RL}{\partial RI} = -\frac{\partial G}{\partial RI} * \frac{\partial RL}{\partial G} = -\frac{-\frac{1}{\delta_L}}{(\frac{1}{\delta_L} - L_{RL}^D{}'(RL,RP))} \quad (14)$$

$$\frac{\partial RL}{\partial RP} = -\frac{\partial G}{\partial RP} * \frac{\partial RL}{\partial G} = -\frac{-L_{RP}^D{}'(RL,RP)}{(\frac{1}{\delta_L} - L_{RL}^D{}'(RL,RP))} \quad (15)$$

In which $L_{RL}^D{}'(RL, RP)$ refers to the "RL" derivative of the $L^D(RL, RP)$ function, and because the loan interest rate and the loan demand are in the opposite direction, so the $L_{RL}^D{}'(RL, RP) < 0$.

So we know $\frac{\partial RL}{\partial RI} > 0$

$L_{RP}^D{}'(RL, RP)$ refers to the "RP" derivative of $L^D(RL, RP)$ function, and because the interest rate of Internet lending is in the same direction with the loan demand of banks. So $L_{RP}^D{}'(RL, RP) > 0$.

So we know $\frac{\partial RL}{\partial RP} > 0$

According to the equilibrium condition of the deposit, the following functions can be set:

$$H(RA、RI、RD) = [A * RA + (1 - A) * RI - RD]/\delta_D - D^S(RD, RI) \quad (16)$$

$$\frac{\partial RD}{\partial RI} = -\frac{\partial H}{\partial RI} * \frac{\partial RD}{\partial H} = -\frac{\left(\frac{1-A}{\delta_D}\right) - D_{RI}^S{}'(RD,RI)}{-(\frac{1}{\delta_D} + D_{RD}^S{}'(RD,RI))} \quad (17)$$

The $D_{RD}^S{}'(RD, RI)$ refers to the "RD" derivation for $D^S(RD, RI)$, and because the deposit interest rate and the deposit supply are changed in the same direction, so the $D_{RD}^S{}'(RD, RI) > 0$.

$D_{RI}^S{}'(RD, RI)$ refers to the "RI" derivation for $D^S(RD, RI)$, because the deposit supply and the interest rate of the Internet financial products change in the opposite direction, so $D_{RI}^S{}'(RD, RI) < 0$.

So we know $\frac{\partial RD}{\partial RI} > 0$

Banks can borrow money in the Internet financial products market, and non-banking sectors such as individuals and enterprises can also participate in it. Therefore, $S(RI, RD, RB, RP)$ represents the fund supply function of the non bank sector in the Internet financial products, and $W(RL, RI, RB, RM, RP)$ represents the fund demand function of the non bank sector in the Internet financial products.

Thus, the market equilibrium condition of Internet financial products can be expressed as

$$S(RI, RD, RB, RP) = I + W(RL, RI, RB, RM, RP) \quad (18)$$

among $I = L + M + B - (1 - A) * D$.

$S(RI, RD, RB, RP)$ functions show that investors who provide market funds for Internet financial products are mainly individuals and enterprises, so the investment in the market will be affected by interest rate of Internet financial products, interest rate of deposit, interest rate of bond market and interest rate of Internet loan. The function of $W(RL, RI, RB, RM, RP)$ shows that the capital demand of Internet financial products not only have financial institutions such as enterprises but also banks(The function of $W(RL, RI, RB, RM, RP)$ shows that the demand for funds of Internet financial products not only includes enterprises but also Banks and other financial institutions,), so it will be affected by the interest rate of Internet financial products, interest rate of loan, interest rate of bond market, interest rate

of money market and interest rate of Internet loan.

(4-18) it shows that the fund supply of the non bank sector in the Internet financial products should be equal to the funds obtained by commercial banks from the Internet financial products plus the capital demand of the non bank sector in the market.

According to the market equilibrium condition of Internet financial products, the following functions can be set:

$$J(RI、RD、RB、RP、RL、RM) = S(RI, RD, RB, RP) - I - W(RL, RI, RB, RM, RP) \tag{19}$$

Among $I = L + M + B - (1 - A) * D$.

The relationship between the yield of Internet financial products and the bond market returns:

$$\frac{\partial RB}{\partial RI} = -\frac{\partial J}{\partial RI} * \frac{\partial RB}{\partial J} = -\frac{S'_{RI}(RI,RD,RB,RP) - W'_{RI}(RL,RI,RB,RM,RP)}{S'_{RB}(RI,RD,RB,RP) - W'_{RB}(RL,RI,RB,RM,RP)} \tag{20}$$

Because the interest rate of Internet financial products has the same direction change with the supply of Internet financial products, it has the opposite direction change with the demand of capital, so $S'_{RI}(RI, RD, RB, RP) > 0$, and $W'_{RI}(RL, RI, RB, RM, RP) < 0$. For Internet financial products, assuming that other markets are unchanged, when the interest rate of the bond market is rising, the demand for funds will be transferred to the market of Internet financial products, and the funds supplied to the market of Internet financial products will be transferred to the bond market. Therefore, the interest rate of the bond market and the supply of Internet financial products is in the opposite direction, and the relationship with the demand of Internet financial products is changed in the same direction, so that $S'_{RB}(RI, RD, RB, RP) < 0$, $W'_{RB}(RL, RI, RB, RM, RP) > 0$.

So we know $\frac{\partial RB}{\partial RI} > 0$.

The relationship between the yield of Internet financial products and the yield of money market:

$$\frac{\partial RM}{\partial RI} = -\frac{\partial J}{\partial RI} * \frac{\partial RM}{\partial J} = -\frac{S'_{RI}(RI,RD,RB,RP) - W'_{RI}(RL,RI,RB,RM,RP)}{-W'_{RM}(RL,RI,RB,RM,RP)} \tag{21}$$

Similarly, for Internet financial products, assuming that other markets are unchanged, when the interest rate of the money market rises, the demand for funds will be transferred to the market of Internet financial products, so the interest rate of the money market is in the same direction as the demand for Internet financial products, so $W'_{RM}(RL, RI, RB, RM, RP) > 0$.

So $\frac{\partial RM}{\partial RI} > 0$.

The relationship between Internet financial product yield and central bank interest rate:

$$\frac{\partial \mathrm{A}}{\partial \mathrm{RI}} = -\frac{\partial \mathrm{J}}{\partial \mathrm{RI}} * \frac{\partial \mathrm{A}}{\partial \mathrm{J}} = -\frac{\mathrm{S'_{RI}(RI,RD,RB,RP) - W'_{RI}(RL,RI,RB,RM,RP)}}{-\mathrm{A}} > 0 \tag{22}$$

From (5-22), the deposit reserve ratio has the same relationship with the yield of Internet financial products, and the central bank is the lender of last resort of the commercial bank, the central bank's policy intention will remain consistent, thus the interest rate of the central bank should also have the same relationship with the Internet Financial products.

Through the above mathematical models, we can prove the influence of interest rate liberalization on Internet financial interest rate. That is, the yield of Internet financial products, the interest rate of the deposit and loan market, the interest rate of the bond market, the interest rate of the currency market and the interest rate of the central bank all have the same relation, and the loan interest rate and the Internet loan interest rate also have the same direction.

4.2. Empirical Research

4.2.1. Data Description

To illustrate the impact of market interest rates on Internet finance, we use "Shibor" as a measure of interest rate in money market. "CBR" is used as a measure of the interest rate in the bond market. The yield of "Yu'E Bao" is "RI", which represents the interest rate of the Internet financial products. The Chinese private lending market interest rate index "RP" represents the Internet lending rate. The data come from the people's Bank of China, the first net loan, the daily fund network and China's currency network. Since different data began to record time, a total of 250 samples were observed from January 2016 to January 2017, and the data have been attached to the appendix.

4.2.2. Descriptive Statistics

Table 3. *Descriptive statistical results.*

	SHIBOR	RP	RI	CBR
Mean	2.074791	9.657320	2.497404	1.899049
Median	2.017000	9.425000	2.460000	1.897050
Maximum	2.345000	12.08000	2.733000	2.501300
Minimum	1.933000	8.230000	2.313000	1.632500
Std. Dev.	0.117259	0.960965	0.110759	0.149584
Skewness	0.952162	0.763271	0.527900	0.865123
Kurtosis	2.436304	2.674724	2.189754	4.385778
Jarque-Bera	41.08541	25.37641	18.45011	51.18889
Probability	0.000000	0.000003	0.000099	0.000000

From the point of view of average, the yield of Internet financial products is higher than that of Shibor and the yield of treasury bonds, which is consistent with the reality. From

the perspective of volatility, Internet loan volatility is the highest, which is more than 8 times of the other three, while Internet financial products has the lowest volatility. The skewness of the other four is not 0, and the kurtosis is not equal to 3, and the JB statistic does not obey the original hypothesis of normal distribution.

4.2.3. Unit Root Test

The unit root test showed that the variables SHIBOR, RP, RI and CBR reached the first order stability at 5% significance level.

Table 4. *Unit root test results.*

variable	ADF	The significant level of 5%	P value	conclusion
SHIBOR	-22.958	-2.873	0.000	stable
RP	-19.466	-2.869	0.000	stable
RI	-3.412	-2.870	0.011	stable
CBR	-13.761	-2.873	0.000	stable

4.2.4. Cointegration Test

Since SHIBOR, RP and RI are not stable in the original sequence and stable in the first order, the co-integration test is conducted to see whether there is a long-term co-integration relationship.

Table 5. *Cointegration test results.*

Cointegration variable	Original hypothesis	Characteristic root	Trace statistics	critical value (5%)	P value
SHIBOR、RP and RI	No cointegration vector	0.125	37.079	29.797	0.0061
	At least one cointegration vector	0.016	4.385	14.495	0.8701
	At least two cointegration vectors	0.001	0.357	3.841	0.5502
SHIBOR and RI	No cointegration vector	0.017	4.541	15.495	0.856
	At least one cointegration vector	0.001	0.328	3.841	0.567
SHIBOR and RP	No cointegration vector	0.036	9.856	15.495	0.292
	At least one cointegration vector	0.003	0.851	3.841	0.356
RP and RI	No cointegration vector	0.030	12.532	15.495	0.133
	At least one cointegration vector	0.005	1.668	3.841	0.197

The unit root test for residuals of regression equations is not stable in the original sequence at 5% significance level. Therefore, there is no co-integration relationship between SHIBOR, RP and RI.

4.2.5. Granger Causality Test

Due to the delayed effect of Grainger causality test, the choice of delayed 1, 2, 3, 4 and 5 periods corresponded to 1, 2, 3, 4, and 5 weeks, respectively.

Table 6. *Results of Grainger causality test.*

Original hypothesis	1 lag phase	2 lag phase	3 lag phase	4 lag phase	5 lag phase
	Value P	Value P	Value P	Value P	Value P
CBR does not Granger Cause SHIBOR	0.8410	0.9788	0.9889	0.9705	0.9252
SHIBOR does not Granger Cause CBR	0.0128	0.0037	0.085	0.0810	0.4794
RI does not Granger Cause CBR	0.1337	0.1184	0.0514	0.3745	0.4491
CBR does not Granger Cause RI	0.6732	0.4934	0.1710	0.0077	0.0312
RI does not Granger Cause SHIBOR	0.0006	0.0002	0.0001	0.1096	0.1450
SHIBOR does not Granger Cause RI	0.4605	0.0053	0.0001	0.0042	0.0027
RP does not Granger Cause SHIBOR	0.0684	0.0727	0.0730	0.0875	0.2083
SHIBOR does not Granger Cause RP	0.1438	0.1520	0.0461	0.0470	0.3122
RP does not Granger Cause CBR	0.0209	0.1821	0.3074	0.3794	0.5569
CBR does not Granger Cause RP	0.9139	0.9385	0.9808	0.8760	0.6760
RI does not Granger Cause RP	0.036	0.0087	0.0323	0.3809	0.2169
RP does not Granger Cause RI	0.6565	0.2220	0.1271	0.5781	0.7692

It can be seen from the table that, at 5% significant levels, lagging 4 and 5, CBR is the Grainger cause of RI. For shibor, it is the granger cause of RI in the 3 period after the lag period 2. In late stage 3 and late stage 4, it is the granger cause of RP. This shows that the money market has an impact on Internet finance, and the bond market only has an impact on RI, while these effects have some time lag.

5. Conclusion

This paper discusses that the marketization of interest rates will impact the original operation of Internet Finance and have a corresponding impact on Internet financial interest rates. It is believed that commercial banks, as conducting intermediaries of this kind of influence, will change the

market interest rate and the Internet financial interest rate in the same direction, and prove it with a mathematical model. The empirical test shows that although there is a certain time lag, the money market and bond market are the Grainger reasons for Internet finance. Therefore, Internet financial enterprises should adapt themselves to and grasp the new environment of interest rate marketization, so as to make them develop better and faster.

Internet banking and other industries as "Internet plus", although these new things is still relatively traditional industry giant is very small, but its inherent potential and kinetic energy is very large(Like other "Internet + industries", Internet finance has great potential and momentum, although these new things are still small compared with the traditional giants of the industry). Every Internet financial innovation has brought new changes to people's lives, and has also solved some chronic problems in traditional industries. I believe that as long as we continue to innovate, Internet financial enterprises will have great prospects for development and provide great impetus for the development of our country (It is believed that as long as innovation continues, Internet finance still has a great development prospect and can provide great impetus for economic development.).

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Appendix

number	Shibor	RI	RP	CBR	number	Shibor	RI	RP	CBR
1	1.995	2.698	11.41	1.927	126	2.0070	2.434	9.06	1.9086
2	1.9980	2.693	11.3	2.027	127	1.9990	2.429	9.5	1.9386
3	1.9800	2.688	11.38	2.009	128	1.9970	2.429	9.16	1.9686
4	1.9660	2.676	10.36	1.955	129	1.9960	2.43	8.62	1.9676
5	1.9580	2.664	9.76	1.947	130	1.9960	2.434	8.95	1.9676
6	1.9510	2.668	9.19	1.94	131	1.9940	2.425	8.65	1.9656
7	1.9510	2.681	9.99	1.9	132	1.9930	2.425	8.68	1.9646
8	1.9500	2.689	10.19	1.9	133	1.9930	2.424	8.89	1.9646
9	1.9500	2.687	11.74	1.9	134	1.9960	2.437	8.85	1.9676
10	1.9560	2.685	11.82	1.876	135	1.9960	2.435	8.54	1.9176
11	1.9540	2.697	10.62	1.874	136	2.0030	2.434	8.88	1.8946
12	1.9590	2.697	10.85	1.974	137	2.0050	2.44	8.59	1.8966
13	1.9830	2.696	10.84	2.074	138	2.0080	2.444	9.09	1.8996
14	2.0140	2.713	10.53	2.1335	139	2.0230	2.454	8.89	1.9146
15	2.0280	2.699	10.51	2.1475	140	2.0320	2.455	9.49	1.9236
16	2.0090	2.701	12.05	2.1285	141	2.0370	2.443	9.35	1.9566
17	1.9970	2.703	12.08	2.1165	142	2.0380	2.444	8.64	1.9576
18	1.9950	2.733	10.2	2.1145	143	2.0280	2.444	8.37	1.9476
19	1.9920	2.724	10.9	2.1115	144	2.0170	2.437	8.5	1.9366
20	1.9890	2.711	10.95	2.1085	145	2.0120	2.442	8.94	1.9508
21	1.9870	2.679	10.56	2.0765	146	2.0080	2.432	8.74	1.9468
22	1.9840	2.701	10.2	2.0435	147	2.0040	2.433	9.25	1.9086
23	1.9830	2.696	11.91	1.9825	148	2.0020	2.434	8.98	1.8866
24	1.9830	2.692	11.71	1.8825	149	2.0020	2.436	8.89	1.9266
25	1.9840	2.668	10.24	1.7825	150	2.0050	2.439	8.59	1.9296
26	2.2810	2.673	10.5	1.8795	151	2.0100	2.439	8.39	1.9346
27	1.9780	2.686	10.33	1.6765	152	2.0170	2.433	9.43	1.9416
28	1.9770	2.688	10.51	1.6755	153	2.0210	2.436	8.72	1.9456
29	1.9740	2.668	10.97	1.6725	154	2.0210	2.438	8.75	1.9456
30	1.9680	2.67	10.35	1.6665	155	2.0233	2.44	9.64	1.9479
31	1.9510	2.672	10.21	1.6495	156	2.0220	2.44	8.23	1.9166
32	1.9380	2.662	10.76	1.6365	157	2.0220	2.441	8.55	1.9166
33	1.9340	2.663	10.9	1.6325	158	2.0230	2.448	8.53	1.9176
34	1.9330	2.66	11.57	1.7325	159	2.0230	2.449	8.73	1.9476
35	1.9560	2.659	10.89	1.7555	160	2.0233	2.448	8.53	1.8979
36	2.0040	2.636	11	1.8035	161	2.0330	2.447	9.44	1.9076
37	2.0480	2.651	11.04	1.8475	162	2.0430	2.447	9.04	1.9176
38	2.0070	2.652	11.18	1.8065	163	2.0440	2.448	8.87	1.8686
39	1.9680	2.644	11.49	1.7675	164	2.0440	2.479	8.66	1.8785
40	1.9620	2.639	11.68	1.7115	165	2.0490	2.478	9.32	1.8835

number	Shibor	RI	RP	CBR	number	Shibor	RI	RP	CBR
41	1.9570	2.636	12.05	1.7065	166	2.0630	2.48	9.08	1.8975
42	1.9500	2.641	10.95	1.6995	167	2.0650	2.482	9.5	1.8995
43	1.9510	2.666	10.36	1.7005	168	2.0660	2.484	9.75	1.8605
44	1.9500	2.652	10.46	1.6995	169	2.0660	2.486	9.81	1.8605
45	1.9500	2.687	9.98	1.6995	170	2.0700	2.486	9.11	1.8645
46	1.9470	2.705	10.73	1.6965	171	2.0770	2.455	9.3	1.8715
47	1.9450	2.695	10.51	1.7791	172	2.0803	2.452	9.03	1.8448
48	1.9490	2.685	12.01	1.7831	173	2.0810	2.451	9.47	1.8455
49	1.9530	2.673	11.75	1.7871	174	2.0850	2.447	8.96	1.8495
50	1.9560	2.66	10.41	1.7401	175	2.0950	2.444	9.69	1.8595
51	1.9700	2.648	10.94	1.7401	176	2.1080	2.442	9.55	1.8725
52	1.9900	2.599	10.63	1.8601	177	2.1280	2.442	9.33	1.8925
53	1.9980	2.579	10.62	1.7597	178	2.1400	2.441	9.5	1.9252
54	2.0070	2.58	10.26	1.8097	179	2.1540	2.437	8.96	1.9392
55	2.0000	2.577	10.78	1.8597	180	2.1590	2.437	8.87	1.9442
56	1.9950	2.578	10.13	1.9397	181	2.1670	2.437	9.36	2.0022
57	1.9890	2.575	10.69	1.9337	182	2.1680	2.435	9.86	2.0332
58	1.9920	2.574	10.8	1.9367	183	2.1668	2.432	9.23	2.032
59	1.9960	2.574	11.7	1.9007	184	2.1640	2.43	9.36	2.0292
60	2.0040	2.566	10.29	1.9507	185	2.1660	2.428	9.16	2.0312
61	2.0170	2.56	10.72	1.9637	186	2.1780	2.426	8.82	2.0312
62	2.0140	2.56	10.89	1.8407	187	2.1880	2.426	8.61	1.9812
63	1.9930	2.555	10.75	1.7997	188	2.3270	2.433	8.88	1.9812
64	1.9830	2.562	10.63	1.7897	189	2.1930	2.439	9.7	1.8472
65	1.9783	2.559	11.89	1.785	190	2.1750	2.442	10.3	1.8292
66	1.9800	2.556	12.07	1.7867	191	2.1620	2.442	8.93	1.8292
67	1.9850	2.561	10.57	1.7417	192	2.1530	2.441	8.83	1.8502
68	1.9930	2.566	10.64	1.7497	193	2.1500	2.439	8.82	1.8472
69	1.9960	2.574	10.7	1.7527	194	2.1510	2.436	8.67	1.8482
70	1.9990	2.576	10.4	1.7557	195	2.1530	2.43	8.93	1.8502
71	1.9950	2.569	10.75	1.7217	196	2.1590	2.424	9.38	1.8562
72	1.9980	2.569	11.52	1.6947	197	2.1730	2.441	9.12	1.8702
73	2.0040	2.569	11.93	1.7507	198	2.1960	2.439	8.89	1.9202
74	2.0180	2.559	10.98	1.7647	199	2.2080	2.437	8.46	1.9122
75	2.0290	2.55	10.17	1.7757	200	2.2220	2.438	8.71	1.9062
76	2.0380	2.546	9.12	1.8847	201	2.2310	2.436	8.61	1.9152
77	2.0450	2.542	9.98	1.9117	202	2.2380	2.428	8.46	1.9517
78	2.0360	2.546	9.53	1.8027	203	2.2480	2.424	9.39	2.0178
79	2.0240	2.545	10.63	1.8407	204	2.2540	2.401	9.95	2.0633
80	2.0210	2.544	10.79	1.8877	205	2.2540	2.397	8.81	1.9976
81	2.0490	2.546	10.09	1.8157	206	2.2530	2.393	8.88	2.0381
82	2.0033	2.543	9.05	1.77	207	2.2520	2.388	8.71	1.9923
83	2.0000	2.544	9.88	1.7167	208	2.2492	2.384	8.76	2.0119
84	2.0010	2.544	9.58	1.7177	209	2.2450	2.378	8.98	1.947
85	2.0000	2.54	9.9	1.7167	210	2.2320	2.376	8.85	1.967
86	1.9990	2.535	10.15	1.7157	211	2.2060	2.372	9.51	1.9411
87	1.9990	2.53	9.98	1.7157	212	2.1870	2.371	8.74	1.9665
88	1.9990	2.522	9.69	1.7157	213	2.1820	2.37	9.02	1.9853
89	2.0000	2.518	9.7	1.7167	214	2.1960	2.368	8.84	1.9653
90	2.0020	2.504	9.63	1.7187	215	2.2110	2.367	8.82	1.9453
91	2.0050	2.5	9.17	1.7217	216	2.2310	2.374	8.79	1.9653
92	2.0110	2.479	9.62	1.7277	217	2.2470	2.375	9.43	1.9927
93	2.0110	2.478	10.17	1.7277	218	2.2570	2.374	9.16	1.9504
94	2.0100	2.477	9.76	1.7267	219	2.2590	2.373	8.8	1.9524
95	2.0080	2.473	9.83	1.7247	220	2.2650	2.372	9.04	1.9584
96	2.0040	2.489	9.26	1.7747	221	2.2710	2.372	8.54	1.9384
97	2.0020	2.487	9.94	1.7727	222	2.2730	2.371	9.22	1.9262
98	2.0010	2.489	9.42	1.8227	223	2.2770	2.364	8.63	1.8762
99	2.0010	2.51	8.89	1.8727	224	2.2820	2.361	9.07	1.8637
100	2.0010	2.508	9.99	1.8727	225	2.2890	2.362	9.87	1.884
101	2.0020	2.504	9.92	1.8737	226	2.2980	2.361	9.03	1.984

number	Shibor	RI	RP	CBR	number	Shibor	RI	RP	CBR
102	2.0100	2.51	10.01	1.8237	227	2.3020	2.357	8.78	2.034
103	2.0060	2.497	9.72	1.8537	228	2.3160	2.359	8.59	2.2536
104	2.0040	2.495	9.61	1.8517	229	2.3250	2.369	8.57	2.4036
105	1.9990	2.486	9.28	1.8467	230	2.3200	2.366	8.37	2.3377
106	1.9980	2.493	9.48	1.7957	231	2.3080	2.367	9.42	2.1722
107	2.0000	2.489	9.65	1.7977	232	2.2990	2.363	9.54	2.1587
108	2.0000	2.486	8.8	1.7977	233	2.2920	2.36	8.81	2.0421
109	2.0000	2.486	8.9	1.7977	234	2.2908	2.359	9.15	2.0198
110	2.0000	2.479	9.15	1.7946	235	2.2925	2.351	8.32	2.0554
111	2.0000	2.476	9.51	1.7446	236	2.2920	2.354	8.72	2.0592
112	2.0000	2.479	9.75	1.6946	237	2.2960	2.353	8.6	2.1181
113	2.0020	2.459	9.79	1.6966	238	2.3000	2.348	9.03	2.0181
114	2.0050	2.456	9.86	1.6996	239	2.3110	2.345	9.48	2.0181
115	2.0100	2.453	9.42	1.6546	240	2.3300	2.344	8.99	2.0371
116	2.0190	2.461	9.33	1.6636	241	2.3350	2.344	8.26	2.2663
117	2.0270	2.457	8.85	1.6716	242	2.3450	2.342	8.75	2.5013
118	2.0320	2.467	9.27	1.6766	243	2.3450	2.321	8.74	2.315
119	2.0350	2.461	9.28	1.6796	244	2.3410	2.318	8.42	2.2915
120	2.0380	2.463	9.6	1.6826	245	2.3230	2.313	8.71	2.2915
121	2.0400	2.462	9.14	1.7846	246	2.2940	2.322	9	2.3115
122	2.0380	2.462	8.55	1.8826	247	2.2640	2.321	8.61	2.2615
123	2.0370	2.439	8.62	1.8816	248	2.2460	2.319	8.68	2.2435
124	2.0270	2.446	8.72	1.8716	249	2.2270	2.333	8.64	2.2245
125	2.0140	2.435	8.91	1.8586	250	2.23	2.329	9.19	2.1752

The data come from the people's Bank of China, the first net loan, the daily fund network and China's currency network. Data selection time is from January 2016 to January 2017, taking into account the reason of working day, a total of 250 sample observations.

References

[1] Xie Ping. Zou Chuanwei. Internet financial model research [J]. Financial research, 2012, (390):11-22.

[2] Miu Hai bin. Interest rate liberalization and Internet Finance: contagion effect and linkage effect [J]. Financial regulation research, 2014, (9):53-67.

[3] Han Peng, you Yang. Similarities and differences and development trend of financial Internet and Internet Finance [J]. economic research reference, 2015, (2704):31-37

[4] Feng Wen Tao. Research on the operation mechanism of Internet Finance under the marketization of interest rate: Taking "balance treasure" as an example [J]. Journal of Shanghai Finance University, 2015, (131):64-76.

[5] Long Yong Li Liyu. Niu run Sheng. Analysis and empirical research on the relationship between Internet Finance and interest rate marketization [J]. Beijing financial review, 2015. (4): 36-49.

[6] Yang Shaofen Wu Yongchao. Influence of Internet Financial Development on interest rate marketization [J]. Financial development review, 2015. (8):95-101.

[7] Tang Ling Ling. Peng pin Luo Changqing. Empirical research on the impact of Internet Finance on interest rates [J]. Quest 2016 (8): 109-114.

[8] He Dong, Wang Hong Lin. Dual interest rate system and China's monetary policy implementation [J]. financial research, 2011 (12): 1-18.

[9] Sun Yi Ming. Internet finance from the perspective of interest rate liberalization -- inspiration from the development of American monetary fund [J]. Shanghai finance, 2014(6):110-112.

[10] Qi Zhi He. Ming Sheng Peng. A study of interest rate characteristics of online loans based on Internet finance.[J]. Financial research, 2016(10):95-110.

[11] People's bank of China financial stability analysis group. China financial stability report 2014[R] China financial press, 2014.

[12] Yi gang. The process of interest rate liberalization in China's 30 years of reform and opening-up [J]. Financial studies, 2009 (1):1-14.

[13] Zheng lian sheng, China Internet finance: model, influence, essence and risk [J]. International economic review, 2014(5): 103-118.

[14] Zhou zhan hong, the significance of interest rate liberalization for China's financial reform -- discussion on the feasibility of starting direct financing market by taking the opportunity of Internet finance [J]People Tribune, 2014 (12): 33-37.

[15] Gao shan wen, interest rate liberalization and the rise of yu 'ebao [J] Banker's Forum, 2014(4): 7-13.