Proceedings of the 7th International Conference on Economic Management and Green Development
DOI: 10.54254/2754-1169/29/20231367

The Influence of the Network on the Financial Market: Taking Financial Intermediaries and Internet Finance as Examples

Jiajun Li[1,a,*]

[1]Wuhan University, Wuhan, Hubei, China
a. 2021301051040@whu.edu.cn
**corresponding author*

Abstract: The article investigates the impact of financial intermediaries and internet finance on financial markets. By comparing the existing research data and materials, this paper analyzes the advantages of financial intermediaries in dealing with information asymmetry, controlling credit risk, capital allocation, and conversion. The research shows that both the advantages and disadvantages of financial intermediaries affect financial markets to some extent. The author also found that with the development of search engines and social networks, the rise of Internet finance has a significant status in promoting the efficiency of resource allocation. The results are supported by data generated from previous studies and are consistent across both internal and external conditions. From both positive and negative aspects, the influence of social networks and informatization on financial markets can also provide a positive reform effect on networks and financial intermediaries and put forward some further ideas. Furthermore, based on the analysis, the author also puts forward some measures to utilize financial intermediaries and internet finance.

***Keywords*:** financial intermediaries, internet finance, financial markets, information asymmetry, social networks

1. Introduction

The financial market is the general term for money market, capital market, foreign exchange market, and gold market where participants trade financial instruments for arbitrage, speculation, or hedging. Participants can achieve Pareto Optimal allocation through equitable competition in the financial market, improving the efficiency of financial markets. There are two criteria for financial market efficiency. One is informational efficiency, which means that the market price of a security can fully reflect all available information about the value of a security. The other one is allocative efficiency, which has meaning that the financial market can transfer the idle funds held by savers to the most productive investment project.

Social networks play an important role in financial markets, especially in information transmission. The market information is transmitted in the social network which is composed of enterprises, Governments, individuals, and all kinds of institutions. In such a vast information network, some nodes that represent large companies, commercial banks, and financial intermediaries are in the center and have connections with many other points around them. However, some nodes that represent small

DOI: 10.54254/2754-1169/29/20231367

and medium-sized enterprises, individuals, or families are on the edge and are connected to only very few of them. As we can imagine, information asymmetry happens in the process of information transmission, which means the central nodes have easy access to vast amounts of information, on the contrary, the nodes at the edge tend to inevitably ignore significant information. However, some of the central nodes like financial intermediaries can help resolve some of the contradictions. Strong information acquisition ability and access give them unique advantages to reveal the information, control risk, and allocate funds properly. And some features of social networks like homophily, structural holes, structural characteristics, and so on go a long way toward understanding how the networks influence financial markets concerning the problems of information asymmetry and financial crisis and finally the efficiency of the financial market.

In addition, it has to be mentioned that, internet finance, a very popular form of finance in China at present, is having a fundamental impact on human financial forms. It not only realizes the business of financing, payment, and information intermediary but also profoundly changes the traditional payment mode and the credit and financing mode based on the incorrect information of both parties.

2. Background

Prior to this, some scholars have studied the way financial networks affect the prices of assets and performance in trading, the dynamics of the cluster structures in the financial markets, global financial networks and liquidity risk, etc. They studied the network structure of financial markets and quantified and calculated the stability of various clusters in financial markets through some professional models or formulas and Scientific data. For example, Allen and Gale introduced the concept of complete and incomplete structures and demonstrated that incomplete-structure networks were more susceptible to contagion [1]:

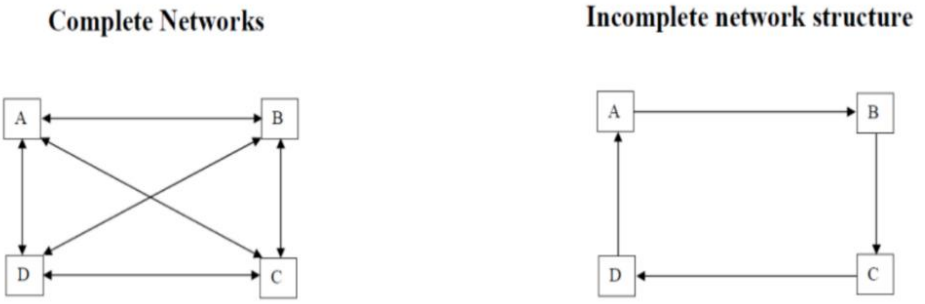

Figure 1: Complete and incomplete network structures.

It is illustrated that the network structure of banks has a decisive effect on whether contagion occurs. In a completely connected network, the influence of a shock is too weak to trigger contagion as the shock is spread. However, if each bank has links to only a fraction of the other banks, those that do have links with the bank initially hit will incur substantial losses when trying to liquidate long-term assets, which in turn will spread the contagion to other banks [2].

In the global unified financial market, a great number of financial institutions in the market can obtain information readily and process them more effectively, and this information advantage enables them to enjoy a more favorable price, outperforming their local counterparts all along. Additionally, if global financial institutions want to reap the benefits of globalization in their local markets, core giant financial centers should be included in their network. From their research, it is not difficult to see that the complex network structure has an important impact on the operation of financial markets. However, they rarely studied the role of financial intermediaries in the financial market system in-depth. In fact, financial intermediaries take an important role in the operation of the whole financial

DOI: 10.54254/2754-1169/29/20231367

market system. A financial intermediary is an intermediary organization that carries out financial financing between the surplus and the shortage of funds. Its essence is to realize indirect financing, and its core feature is to complete financial financing by issuing indirect contracts. In other words, they are financial institutions that issue indirect financing contracts (such as deposit contracts) to those with capital surplus and reach indirect investment contracts (such as loan contracts) or purchase securities issued by those with capital shortage, so as to finance funds between capital supply and demand parties and optimize the inter-temporal and cross-domain allocation of funds. The reason why financial intermediaries with banks as the main body can exist and continue to develop is mainly because for a long time, compared with the financial market, financial intermediaries have had obvious competitive advantages in terms of both asset market share and market position in the broad financial industry.

In addition, the rise of Internet finance in recent years shows that the network has exerted a more far-reaching influence on the financial market. As a new-risen financial pattern depending on the Internet platform, it takes both potentials for growth and predicaments to traditional financial form. Internet finance improves the efficiency of resource allocation and broadens the service boundary of financial products utilizing diversified Internet technology, which has brought a certain impact on the customer base of traditional finance. Despite all this, Internet finance has also inspired the development ideas of traditional finance, increasing the types of financial services, and promoting the advancement of its products to be personalized and diversified, which meets the diversified needs of more investors. In general, Internet finance is characterized by low budget, high efficiency, wide-coverage, weak management, and high risks.

Various studies and data show that the network is exerting more and more far-reaching influence on financial markets and financial intermediaries. For instance, it is found that the dynamic correlation between internet finance and traditional finance industries has been positive practically all of the time. In the bargain, the introduction of internet finance changed the risk transmission effect between the three traditional financial industries, and the internet finance industry has changed the ecological relationship between traditional financial industries [3]. In the following research, the author will follow up with an in-depth analysis.

3. Analysis and Interpretation

3.1 Financial Intermediaries

As we know, financial markets are a complex system involving a variety of different types of players as shown in Figure 2. It’s a pre-crisis interbank lending network in Germany. Its structure is so complicated that the information cannot flow to every individual in the network (It is conceivable that the world's financial networks will be even more complex). As we can see, the diffusions of information are directed and weighted links among nodes in the network. Through the observation, it is not arduous to know that the core banks hold more information about the system than the periphery banks, supporting them to do more reliable predictions and take more precautionary measures. Briefly,

DOI: 10.54254/2754-1169/29/20231367

the phenomenon explains how the problem of asymmetric information is produced. Nevertheless, the actions of the core banks transmit information to the market as a whole in turn.

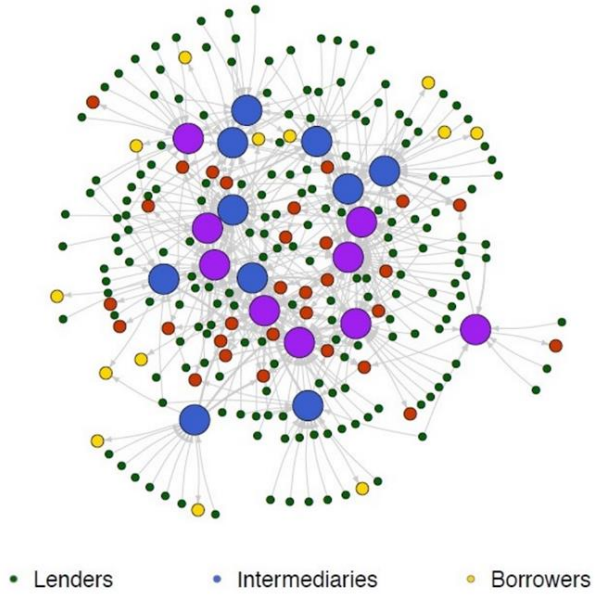

Figure 2: Post-crisis interbank lending network in Germany [4].

The same is true in global financial markets. Large financial intermediaries which are in the core group of the global financial networks are both good and bad in preventing financial contagion because of their special positions.

Bad aspects: Financial intermediaries of different sizes establish links with other individuals, making the cascade structure of the overall financial market more complex, and raising the clustering coefficients, which means that links between nodes become more closely. H ence when one player is hit by a shock, then more players will be influenced, and the effect of a cluster will cause homophily, which means the peripheral nodes (players) will be more likely to take similar actions as the core nodes because they have very little effective information to make accurate predictions. And according to research by Choi, Gallo, and Wallace, contagion is more likely to happen in a core-periphery than in a circle network, and in the core-periphery networks, contagion is more likely if the shock hits a core node [5].

Good aspects: On the bright side, a multitude of different functions of financial intermediaries also give them many advantages. Information asymmetry is widespread, leading to adverse selection and moral hazards prominent in the process of investment and financing of economic entities, and market operation is not smooth. Financial intermediaries represented by banks have rich experience and a strong ability to deal with information asymmetry, effectively guiding funds from surplus units to deficit units.

To begin with, financial intermediaries have an advantage in dealing with the problem of information asymmetry. Through the analysis and evaluation of borrowers' financial statements and the long-term observation of payments in their accounts, financial intermediaries can master important financial indicators such as borrowers' income, wealth, expenditure, cash flow and investment strategy, and can screen borrowers' credit risks effectively.

In addition, financial intermediaries have the advantage of controlling credit risks. under certain circumstances, banks may hold equity in borrowing firms with special shareholder rights (in Japan), or exercise proxy voting rights through shares owned by their funds and entrusted by stock depositors

DOI: 10.54254/2754-1169/29/20231367

(in Germany), thereby forming more equity control on the board of directors of borrowing firms. Both cases alleviate the degree of information asymmetry between banks and borrowers and increase the influence of banks on the investment and operational behavior of firms.

Last but not least, financial intermediaries can quickly realize the allocation and conversion of large-scale funds in the network. They allocate cash flows to invest funds in projects with high yields and long maturities, Improving the utility of consumers of various financial products. In addition, by gathering a large number of deposits and information, financial intermediaries can predict depositors' demand for funds, so as to meet depositors' demand for liquidity at the lowest cost and realize investment returns. Therefore, they can invest surplus funds to increase returns while maintaining the liquidity of their money.

3.2 Internet Finance

Internet finance is a new business model of utilizing the Internet and information communication technologies to accomplish a wide range of financial activities, such as third-party payment, online lending, direct sales of funds, crowdfunding, online insurance, and banking [6]. The author sorted out the dual effects of Internet finance on the financial market.

Bad aspects: In recent years, Internet finance has flourished in China, and financial innovation is very fast. New formats and new models emerge endlessly. However, most formats lack industry supervision. At present, except for third-party payment, which is supervised and approved by the central bank, P2P, crowdfunding and other business forms are not supervised by institutions. These business forms have no access threshold, no industry standard and no department supervision in the development process.

According to a recent study, which applied the DCC-GARCH to estimate the dynamic correlation coefficient between internet finance and the securities, insurance, and banking industries, it is demonstrated that the coefficient is measurable and positive in almost all the time. The ecological subjects of internet finance and the traditional finance industries can form symbiotic relationships [7].

Good aspects: The popularity of Internet finance has improved the integrity of the network. According to Allen’s research, a self-fulfilling expectation of a crisis in one region may occur if a shock in another region serves as a predicting signal for a shock in another region. They reveal that complete networks are less prone to contagion than incomplete structures [8]. So internet finance will help to enhance the stability of the network and improve efficiency.

Equally importantly, the gradual advancement of internet finance has facilitated innovation and development in the traditional insurance field and that of new insurance products. Through Shuping Li, Xinghua Liu, and Chongren Wangs’ research, we know that it also expands the insurance sales channel to a certain extent and reduces the cost of physical agencies, thus reducing the insurance sale’s cost [9].

There is no doubt that the great advantages of the combination of mutual big data and cloud computing have profoundly changed the traditional payment mode, credit granting, and financing mode based on the incorrect information of both lenders and borrowers. Due to the convenience of search engines all over the world, which brings a lower cost in information processing, direct transactions between producers and demanders can achieve identical resource allocation efficiency as financing in the capital market and indirect capitalization in banks, which definitely promotes economic growth.

4. Suggestion

Above all, financial markets involve a multitude of different players and interactions. Incomplete information about the network makes it hard for investors and governments to truly assess the rare

DOI: 10.54254/2754-1169/29/20231367

but potentially catastrophic risk that underlies financial contagions. So, for all market participants, they should enable risk diversification in advance. As they continue to add connections, each company becomes more diversified in its exposure so the risk of financial contagion decreases. Also, Financial intermediaries need to take the responsibility for information disclosure to help market participants and the government to timely identify and avoid potential risks. Besides, as mentioned earlier, market regulators or governments should take the initiative to build information bridges, make the market a complete network, and finally establish a flexible market.

With the development of economies of scale in financial markets, size and diversification increasingly highlights as a double-edged sword. They can easily withstand small or regional downturns, but the failure of one of them leads to financial contagion. So as Haldane, A.G. said, “the regulation of the network is needed to ensure appropriate control of large, interconnected institutions [...] the financial network should be structured so as to reduce the chances of future systemic collapse” [10], the government or central bank should help financial institutions at the core of the market to take precautions (of course they should also do so), such as the deposit reserve policy, so that they can cope with unknown shocks at any time.

However, it should be noted that stringent supervision may not always be conducive to risk control. In a real-world scenario, one of the most persistent concerns is whether the large banks whose bankruptcy will have a significant impact on the whole financial system should face a tighter supervision regime than the small banks. By simulating the different bankruptcy thresholds of core banks and peripheral banks, we can gain an in-depth understanding of this issue. There is research shows that when core banks are judged to be insolvent at a higher market capitalization, a negative shock would spread much more widely through the financial network.

For internet finance, the introduction of Internet finance has altered the risk transmission effect between the three traditional financial industries, as mentioned above. Commercial banks are supposed to use internet financial technology in order to carry out risk management and promote customer information sharing and continue to build online shopping malls to expand the sales channels of Off-Balance sheet activities and financial products. Besides, the rapid growth of online securities business can help to overcome the limitations of physical space and time and save costs and the "dematerialization" of the market. In addition, the rise of internet finance has provided more opportunities and possibilities for brokerage services.

5. Conclusion

In this paper, the author combines the research of some previous scholars to explore the impact of network structure on the financial market. In particular, based on the special position of financial intermediaries and internet finance in the whole financial market network system, the author analyses their functions and their two-sided influence on the financial market and puts forward some practicable suggestions.

On the negative side, due to financial intermediaries, the pair-wise connections between the players are strengthened. Accordingly, this increases the probability that each player will be affected by shocks. In addition, the problem of asymmetry of information easily leads small financial institutions to blindly follow the operation behavior of core financial intermediaries. On the positive side, financial intermediaries have the ability and willingness to solve some problems of asymmetric information, control credit risks, and optimize capital allocation, for the reason that they have special functions and a stable market environment will benefit them (structural hole).

Additionally, internet finance, a popular form of finance, will definitely influence the financial market by changing the way, medium, and speed of information dissemination in the network. With big data and cloud computing, it helps small financial institutions to solve some of the problems of information asymmetry so that they have more independent judgment ability in the face of a complex

DOI: 10.54254/2754-1169/29/20231367

and changing market environment. However, most business forms lack industry supervision, which is an urgent problem to be solved.

References

[1] *Franklin Allen and Ansgar Walther, "Architecture and Stability of the Financial System" , November 8-9, 2018.*

[2] *Asako Chiba, "Financial Contagion in Core–Periphery Networks and Real Economy" , Published online: 19 August 2019, © Springer Science+Business Media, LLC, part of Springer Nature 2019.*

[3] *Shuping Li, Xinghua Liu and Chongren Wang , "The Influence of Internet Finance on the Sustainable Development of the Financial Ecosystem in China", 18 March 2020.*

[4] *Jackson, "The human network", Chapter 4, 2019..*

[5] *Choi, Gallo and Wallace, "Financial contagion in networks: A market experiment", Working paper, 2017.*

[6] *Huang, Y. Shen, J. Wang, and F. Guo, "Can Internet Revolutionize Finance in China?" In China's New Sources of Economic Growth: Reform, Resources and Climate Change, edited by Garnaut et al. Canberra: ANU Press, 2016.*

[7] *Shuping Li, Xinghua Liu and Chongren Wang, "The Influence of Internet Finance on the Sustainable Development of the Financial Ecosystem in China", 18 March 2020.*

[8] *John Nkwoma Inekwe, Yi Jin, Maria Rebecca Valenzuela, "Global financial network and liquidity risk", Australian Journal of Management, 2018.*

[9] *The Influence Shuping Li, Xinghua Liu and Chongren Wang, "The Influence of Internet Finance on the Sustainable Development of the Financial Ecosystem in China", 18 March 2020.*

[10] *Haldane, A.G, "Rethinking the financial network", BoE, 2009.*

[11] *Asako Chiba, "Financial Contagion in Core–Periphery Networks and Real Economy", 19 August 2019.*