Research on Financial Technology, Inclusive Loans and Bank Risks in China

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Abstract. Based on analysis of current situations of commercial banks' financial technology investment, scale of inclusive loans and bank risks, this paper makes a detailed analysis on the effect of financial technology on improving the condition that inclusive loans increase bank risks. There are several findings in this paper. Firstly, investment on financial technology is increasing in Chinese commercial banks. Secondly, the scale of inclusive loans is increasing. Thirdly, there is a negative relationship between the investment on financial technology and bank risks. In addition, in view of the facts that most of inclusive loans of commercial banks is concentrated in state-owned banks, the scale of inclusive loans of other bank types is relatively limited, the increase of inclusive loans leads to the increase of bank risks, commercial banks with less financial technology investment have higher risks. This paper proposes suggestions including but not limited to, increase support for joint-stock commercial banks, city banks and other types of banks to develop inclusive loans; increase contacts with clients to help banks to reduce information asymmetry; create more innovative, reasonably priced and low cost financing models to reduce marginal costs; increase commercial banks' investment in technology to reduce bank risks. All of these will certainly have much practical significance for promoting the development of inclusive loans business in commercial banks.

Keywords: Financial technology · Inclusive loan · Bank risk

1 Introduction

The report of the 19th National Congress of the Communist Party of China emphasizes that the financial industry should better serve the real economy, while the development of inclusive finance is an important path to achieve that goal. Along with the rapid spread of financial liberalization around the world, in order to alleviate existing financial repression, the State Council and competent financial regulatory authorities of China have successively enacted numerous policies to encourage private capital to enter the financial sector to develop inclusive finance, so as to strengthen financial support for micro, small and medium enterprises. Together with the development of Internet technology, especially the mobile Internet, the amount of financial data has increased exponentially. Private capital has seized this historical opportunity, which has gradually formed an Internet financial model that Internet technology with big data as its core and

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traditional finance penetrate with each other. However, the rapid rise of Internet finance has lead to a stagger competition with original banking system, which diverts financial market shares of traditional commercial banks and forces traditional commercial banks to increase financial technology investment. In terms of the role of financial technology, Hasan et al.(2020) studied the relationship between China's regional financial inclusion and fintech, and found that there is some inequality in such regions that adopt fintech to develop financial inclusion[1]; Wang et al. (2020) demonstrated that financial technology improves the financial efficiency of commercial banks [2]; Cheng and Qu (2020), Hu et al.(2022) found that financial technology has a significant role on reducing bank risks [3, 4], Liu et al. (2019) and Chen et al.(2018) proved that inclusive finance has driven the development of commercial banks[5, 6]; Yao and Song (2021) show that the impact of fintech on the profitability of different types of commercial banks presents significant heterogeneity[7], and the financial technology that develops rapidly provides important technical support for commercial banks to serve the real economy. Commercial banks have achieved sound results on risk identification, asset pricing, debt settlement, etc. through artificial intelligence and other financial technology tools (Lin, 2014) [8].

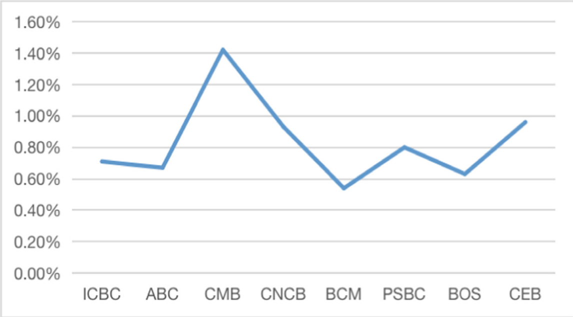
However, judging from existing literature, there are still few researches on whether financial technology can reduce risks of banks' inclusive loans business. In view of this phenomenon, this paper conducts the study from following 4 perspectives: firstly, the analysis on current situations of commercial banks' financial technology investment; secondly, the analysis on current situations of scale of commercial banks' inclusive loans; thirdly, the relationship between scale of commercial banks' inclusive loans and bank risks; lastly, the relationship between commercial banks' financial technology investment and bank risks. Through the research on above issues, this paper aims to provide valuable references for commercial banks to better carry out inclusive financial practices.

The remaining of this paper is organized as follows: Sect. 2 conducts analysis of current situations of commercial banks' financial technology investment; Sect. 3 analyzes the current situations of scale of commercial banks' inclusive loans; Sect. 4 investigates the relationship between scale of commercial banks' inclusive loans and bank risks; Sect. 5 investigates the relationship between commercial banks' financial technology investment and bank risks; Sect. 6 study the main current issues of commercial banks during developing inclusive finance; Sect. 7 proposes the countermeasures of how to employ financial technology to promote development of commercial banks' inclusive financial business; and Sect. 8 concludes.

2 Analysis on the Current Situations of Commercial Banks' Financial Technology Investment

2.1 Overall Trend

In general, commercial banks are increasing their financial technology investment. Taking China Merchants Bank and China Citic Bank as examples, they had an increase of RMB 5.41 Billion and RMB 3.42 Billion respectively from 2018 to 2020. Specifically, according to the disclosure of banks' annual reports on financial technology investment, banks' financial technology investment in 2020 are as shown in Fig. 1, among which,



Note: ICBC presents Industrial and Commercial Bank of China;
ABC presents Agricultural Bank of China;
CMB presents China Merchants Bank;
CNCB presents China Citic Bank;
BCM presents Bank of Communications;
PSBC presents Postal Savings Bank of China;
BOS presents Bank of Shanghai;
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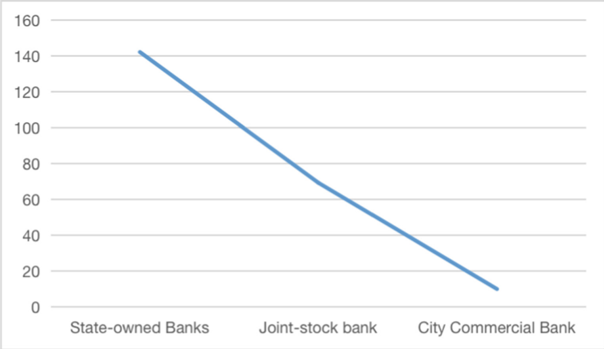
Fig. 1. Financial technology investment of commercial banks in China Unit: %

Industrial and Commercial Bank of China had the most financial technology investment while China Minsheng Bank had the least financial technology investment. Research of Li et al. (2021) had shown that, in general, the adoption of financial technology by commercial banks can improve banks' financial performance[9]. The reason is that the development of financial technology complies with the rules of progressive increase and decrease of marginal benefits. Wang and Luo (2020) also proposed that the effect of financial technology on the banking industry is with heterogeneous characteristic[10]. For large commercial banks and areas with low level of financial development, the effect of financial technology on bank performance is more significant.

2.2 Heterogeneity of Property Right

Figure 2(a) shows average financial technology investment of banks with different property rights in 2020, namely, state-owned banks, joint-stock banks and city commercial banks. Among them, the state-owned banks had the most average financial technology investment amount, while the city commercial banks had the least amount. However, as shown in Fig. 2(b), the percentage of financial technology investment among other investment of joint-stock banks were the highest, which can be found that joint-stock banks attached more importance to financial technology.



(a)

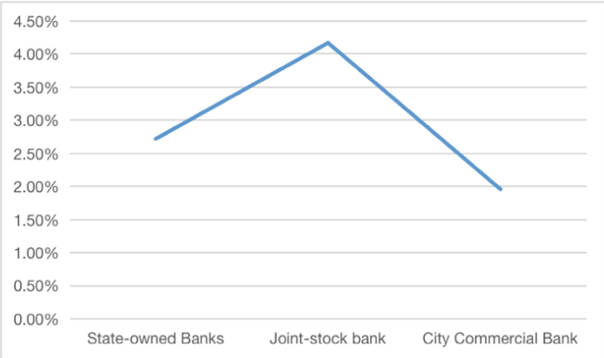


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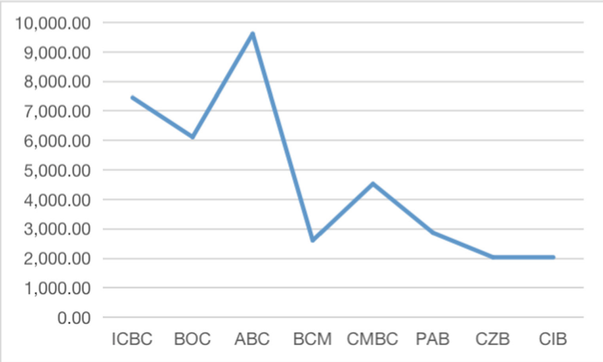
Fig. 2 (a) Average financial technology investments of banks with different property rights Unit: RMB 100 Million. (b) Average financial technology investments of banks with different property rights Unit: %

3 Analysis on the Current Situations of Scale of Commercial Banks' Inclusive Loans

3.1 Overall Trend

Commercial banks are increasing their scales of inclusive loans. Taking Industrial and Commercial Bank of China and Bank of China as examples, they had increases on inclusive loans of RMB 423.242 Billion and RMB 307.5 Billion respectively from 2018 to 2020. Specifically, according to the disclosure of annual reports on banks' inclusive loans, the distribution trend of banks' inclusive loans in 2020 is shown in Fig. 3. Among them, Agricultural Bank of China had the most inclusive loan amount of RMB 961.52 Billion, while Industrial Bank Co., Ltd. Had the least amount of RMB 203.25 Billion. Agricultural Bank of China had the highest growth rate of inclusive loans, an increase of 62.3%; while China Minsheng Bank had the lowest growth rate of inclusive loan, an increase of 12%. It can be seen that Agricultural Bank of China had the largest scale of



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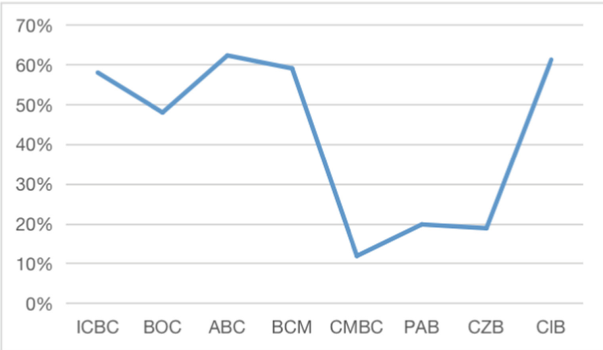
CIB presents Industrial Bank

(a)



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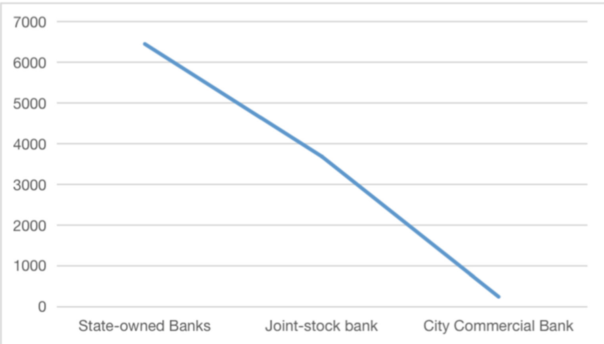
(b)

Fig. 3. (a) Scale of inclusive loans (Unit: RMB 100 Million). (b) Scale of inclusive loans (Unit: %).

inclusive loans. The People's Bank of China stated in the monetary policy's implementation report that measures should be taken on following causes: further encourage local corporate banks to increase support for micro and small enterprises, micro and small business owners and individual business; actively explore new and reasonable financing demands; increase proportion of micro and small inclusive credit loans; continue to promote micro and small inclusive loans to "increase quantity, reduce price and expand coverage"; and effectively alleviate difficulty and high cost of financing encountered by micro and small enterprises.

3.2 Heterogeneity of Property Right

The average inclusive loan conditions of banks with different property rights (namely, state-owned banks, joint-stock banks and city commercial banks) are as shown as follows. As shown in Fig. 4, state-owned banks ranked first on scale of inclusive loans, which was followed by joint-stock banks and city commercial banks. This finding was basically consistent with the research of Xie and Zhang (2021) [11]. The state-owned banks had the highest growth rate of inclusive loan, while the joint-stock banks had the lowest



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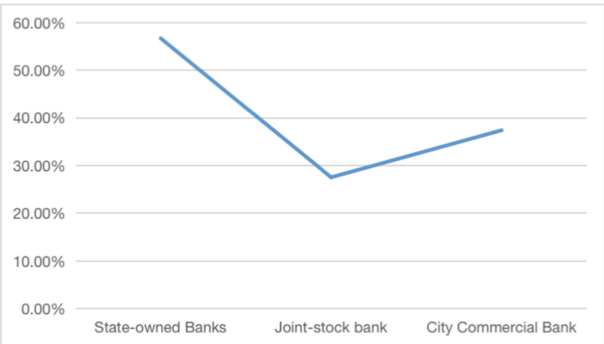

(b)

Fig. 4 (a) Scale of inclusive loans of banks with different property rights Unit: RMB 100 Million. (b) Scale of inclusive loans of banks with different property rights Unit: %

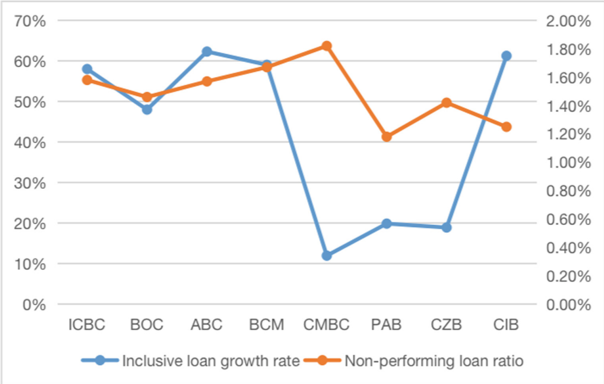

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Fig. 5. Relationship between inclusive loans and bank risks Unit: %

growth rate hereof. It can be seen that state-owned banks have been increasing their efforts in the scale of inclusive loans.

4 Relationship Between Scale of Commercial Banks' Inclusive Loans and Bank Risks

There is no absolute relationship between scale of commercial banks' inclusive loans and bank risks. Taking Agricultural Bank of China and China Minsheng Bank as examples, as shown in Fig. 5, the growth rate of inclusive loans of Agricultural Bank of China reached 62.30% and the bank's non-performing loan ratio was of 1.57%. However, the growth rate of inclusive loans of China Minsheng Bank was of 12%, but the bank's non-performing loan ratio reached 1.82%. It can be seen that there is limited relationship between the scale of commercial banks' inclusive loans and bank risks.

5 Relationship Between Commercial Banks' Financial Technology Investment and Bank Risk

Commercial banks' financial technology investment is negatively correlated with bank risks. Taking Bank of Communications in Fig. 6 as an example, it was with large proportion of financial technology investment, and it was with low non-performing loan ratio

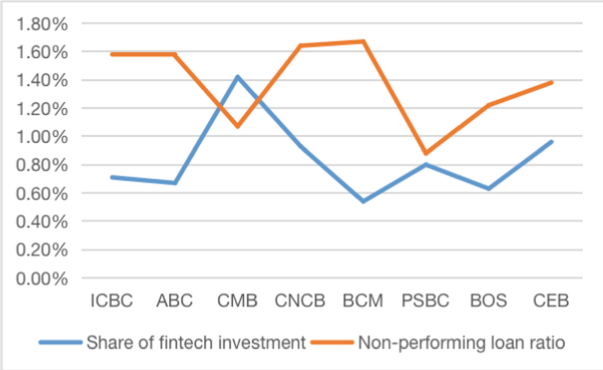

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Fig. 6. Relationship between financial technology and bank risks Unit: %

and small bank risks. While for China Merchants Bank, it was with small proportion of financial technology investment, while it was with high non-performing loan ratio and bank risks. It can be seen that commercial banks' financial technology investment can help reduce bank risks. Meanwhile, Li et al. (2021) also explained from different perspectives that financial technology can improve economic benefits of commercial banks and avoid various bank risks as much as possible, so as to obtain higher returns [12].

6 Analysis of Main Current Problems of Commercial Banks During Developing Inclusive Finance

6.1 Financial Inclusion is Mainly Concentrated in State-Owned Banks

According to Fig. 4, inclusive finance was mostly concentrated in state-owned banks, while other types of banks were with relatively small scales of inclusive finance. In 2020, inclusive loans of state-owned banks reached RMB 644.8 Billion, while the total increase of inclusive loans of joint-stock banks and city commercial banks were of RMB 392.375 Billion. This phenomenon may be caused by that the state-owned banks have a higher sense of social responsibility, it is under stricter requirements from competent supervision departments and it is with relatively large scale.

6.2 Commercial Banks Cannot Meet the Capital Needs of Small and Micro Enterprises

From current development of inclusive loans, micro and small enterprises were with inherent weaknesses. Considering cost and risk control, the loans provided by commercial banks cannot meet the capital needs of micro and small enterprises (Chao, 2021) [13]. Along with the increasing of scale of inclusive financial loans, bank risks would also increase [14]. Gong and Li (2020) also once proposed that inclusive financial services may present the characteristics of high risk, high cost and low benefit[15].

6.3 Commercial Banks with Lower Financial Technology Investment Have Higher Risks

Commercial banks with low financial technology investment had higher non-performing loan ratios and higher bank risks. Guo and Zhu (2021) proposed that banks are more willing to provide financial support to micro and small enterprises in areas with relatively sufficient information and high level of financial technology [16].

7 Analysis of Countermeasures of Financial Technology for Promoting Development of Commercial Banks' Inclusive Finance Businesses

7.1 Greater Support on the Inclusive Finance in Joint-Stock and City Commercial Banks

For different types of commercial banks, enact corresponding support policies to develop inclusive finance businesses. The government should increase support for joint-stock commercial banks, city commercial banks, etc. to develop inclusive finance, so as to achieve their high-quality development of inclusive finance.

7.2 Increase Financial Technology Investment to Control the Risk of Inclusive Finance

Increasing financial technology investment is conducive to controlling inclusive financial loans risks. On the one hand, it integrates clients' background information through external credit information and big data, making a preliminary assessment for the clients' needs and default risks. On the other hand, the intelligent risk control model helps commercial banks discover risks at the first time, formulate risk mitigation plans and reduce potential risks through real-time monitoring, dynamic analysis and timely warning of back-end big data (Chao, 2021)[13]. Although the risks of banks have been rising, they are generally within the controllable range. Gong and Li (2020) proposed that frequent contact with clients should be conducted to help banks reduce information asymmetry and create more innovative, affordable and low-cost financing models, thereby reducing marginal costs[15].

7.3 Increased Investment in Financial Technology Helps Banks Accurately Identify Risks

Since financial technology is conducive to reducing commercial banks' risks, enhancing service sustainability and increasing financial technology investment can help banks accurately identify risks, improve efficiency and quality of client service, eliminate false and fraudulent applications, resolve issues of data missing and fraudulent data and reduce bank risks. The development of financial technology can also directly reduce the demand for manpower (Lei, 2020) [17]. However, commercial banks should pay more attention to risk prevention in the process of promoting financial technology and financial innovation.

8 Conclusions

This paper mainly studies from the following four aspects, the analysis of current situations of commercial banks' financial technology investment, the analysis of current situations of scale of commercial banks' inclusive loans, the relationship between scale of commercial banks' inclusive loans and bank risks, and the relationship between commercial banks' financial technology investment and bank risks. It concludes that: firstly, inclusive finance is more concentrated in state-owned banks, while other types of banks are with relatively small scale of inclusive finance; secondly, along with the increase of scale of inclusive financial loans, the bank risks will increase; thirdly, the commercial banks with relatively low financial technology investment have higher non-performing loan ratio and bank risks. The values of this research include two aspects. For commercial banks, after learning the role of financial technology in reducing risks of inclusive financial businesses, they will increase their financial technology investment, so as to achieve sustainable development of inclusive financial businesses. For policy makers, it suggests that measures should be taken to increase support for rural commercial banks and city commercial banks to provide inclusive loans, so as to achieve high-quality development of inclusive loans in China.

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