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Can Adoption of Financial Technology Change Corporate Client Structure in Chinese Banking?

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Abstract

While the effect of Financial Technology on banking risk management attracts public and researcher's attention, how the basic element beneath credit risk, namely client structure, will change with the adoption of technology remains uncovered. This paper intends to figure out whether the adoption of financial technology exerts effect on client structure. Beginning with literature review, we propose related hypotheses on our research question. Applying Fixed-Effect Model, this paper investigates the effect of FinTech on client structure. Estimations show that the adoption of FinTech can improve client structure indeed. Specifically, the proportion of client with nearly no default risk rises while the proportion of default client declines. Then the influencing conduits are examined via Mediating Effect Model. Empirical results demonstrate that FinTech plays this positive role mainly through alleviating information asymmetry.

Keywords

Financial Technology (FinTech), Client Structure, Default Risk, Chinese Banking

1. Introduction

The adoption of Financial Technology (FinTech, hereafter), describing new technology that seeks to improve and automate the delivery and use of financial services, has become the hot issue in recent years. In *Investopedia*, it is defined as an integration of technology including specialized software and algorithms into offerings by financial services companies to improve their use and delivery to consumers. In 2023, the application of ChatGPT in finance, like the BloombergGPT, even entered in the Top 10 list of international financial news released by China Finance. What catches public and researchers' attention most includes

whether FinTech could transform traditional financial corporations like commercial banks and enhance their operation and performance. In China, the effect of FinTech upon risk control and loan delinquency of commercial banks are increasingly eye-catching in the context that government has been firmly promoting both the financial inclusion and financial risk prevention.

Existing literature has documented that FinTech can inhibit credit risk of commercial banks as FinTech help to alleviate information asymmetry (Shim & Shin, 2016), reduce the cost of debt funds, enhance the efficiency of credit resource processing (Fuster et al., 2019), and diversify loan portfolio through enhancing accessibility of financial services and enlarging client base (Mehrotra & Yetman, 2015; Ahamed et al., 2021). And many studies provide empirical evidences. For instance, Zhu & Guo (2024) find that banks benefits from FinTech when issuing inclusive loans since FinTech reduces information asymmetry and transaction costs. Yu (2024) makes investigation on FinTech's impact on the leverage risks of commercial banks and shows that FinTech can decrease leverage risks of large, medium-sized, and listed banks. The results of Sheng (2021) and Yang & Marson (2024) also show that digital transformation significantly and dynamically reduces bank credit risks, indicating the positive effect of FinTech on bank risk decrement. At macro level, Wang et al. (2023b) provide an evidence that financial blockchain curbs the spillover of government implicit debt risk to commercial banks, implying a positive role of FinTech playing in commercial banks' operation. Chang & Hu (2020) believe that improving the capability of Regtech can promote the change of financial regulation model under the situation of network and distributed application of Fintech. However, these researches about nexus between FinTech and banks risk are carried out with data on whole operating performance, like non-performing loan ratio. And how the elements beneath whole loan performance, the client structure, remain uncovered.

Theoretically, the risk structure of client is closely related with credit quality, particularly corporate client structure. The corporate client, such as entrepreneur, usually borrow much more money than individual client, whose risk structure has greater impact on loan performance. Assuming there is a bank delivering same amount to its corporate clients and individual clients, when a corporate client (borrow 1 million dollars) and an individual client (borrow 10 thousands dollars) default, the loan quality corrosion resulting from the former is definitely larger than the latter. Meanwhile, Chinese commercial banks only disclose data on corporate client structure with default risk in their *Pillar 3 Report*, which is one of requirement of *Basel Accord* (An international regulatory accord introducing a set of requirements and reforms to improve the banking supervision).

This paper intends to find answers for two questions: 1) The first is whether Chinese commercial banks improve their loan performance through digging up corporate clients with lower probability of default, namely improve their client structure? 2) And the second question is which are the influencing conduits if the client structure improves indeed? To address these questions, we will discuss

the effect of FinTech on the client structure of commercial banks at the default risk angle with a data sample from Chinese banking. Since only large commercial banks carry out advanced capital management and disclose *Pillar 3 Report* in China, our empirical sample consist of 5 large commercial banks, all of which are globally systemically important banks. This paper employs Fixed Effect Panel Regression Model first to investigate whether FinTech improve corporate client structure. And we document an improving trend of corporate client structure from the point of risk, with the adoption of FinTech. Then Mediating Effect Model is applied to examine the influencing conduits and provide evidence that FinTech exerts this positive effect through alleviating information asymmetry.

The contribution of this paper includes: First, applying data disclosed in Pillar 3 Report, we investigate the nexus between FinTech and banking credit risk from the point of client structure, a more basic element. It presents a relatively deep insight and fills gap in existing literature. Second, employing Mediating Effect Model, this paper investigates influencing conduits through which FinTech influences client structure and measures economic magnitudes. It provides more specific illustration on channel investigation. Third, this paper proposes recommendations based on related empirical results, which offers practical reference to bankers and regulators. The innovation mainly lies in our first contribution that we discuss the "FinTech - Bank Risk" relation from the angle of client structure. Client structure is basic in banking operation but usually ignored in academic research. And we do prove that FinTech works in finding safer client and improve their credit quality.

The remainder is structured as follows: Section 2 briefly reviews the related literature, discusses the theoretical mechanism and presents hypotheses; the model, data, and methodology for the study are introduced in Section 3; Section 4 provides empirical results and analysis; and Section 5 summarizes the main findings and presents the recommendations.

2. Literature Review and Hypothesis Development

Although few research discusses the effect of FinTech on client structure directly, some related studies still provide inference. This section will review related literature on nexus between FinTech and Client Structure and on their influencing conduits. Meanwhile, corresponding hypotheses will also be proposed in this section.

2.1. Effect of FinTech on Client Structure in Chinese Banking

From the perspective of risk, the client structure is closely related with whether commercial banks take risky action. And there are some studies proving that FinTech exerts inhibitory effect on the risky action in commercial banks' loan business.

Using the micro-survey data of 432 branches of the city commercial banks in Beijing from 2005 to 2022, Wang et al. (2023a) find that for every 1% increase in IT personnel inputs, software inputs, and hardware inputs, the non-performing

loan ratio will reduce by 0.091%, 0.055%, and 0.024%, respectively. From the reduction effect, it is clear that inputs in financial technology enhance the likelihood of prudent operation in loan business. This conclusion remains when bank sample enlarges. Applying panel data of 65 commercial banks between 2008 and 2020, Li et al. (2022) show that improvement in the bank's FinTech innovation significantly reduces its risk-taking. Besides, Tan et al. (2024) analyze the impact of FinTech development on the credit risk of non-financial firms. They document that non-financial firms in cities with better FinTech services have lower credit risk, which indirectly show that the adoption of FinTech in commercial banks can bring less risky operation in corporate credit.

Therefore, the first hypothesis **H1** is proposed: FinTech can change the Corporate Client structure and shrink the proportion of client with high default risk in Chinese banking.

2.2. FinTech Helps Alleviate Information Asymmetry

A crucial reason of loan delinquency is information asymmetry between lenders and borrowers. It is documented that FinTech helps commercial banks alleviate information asymmetry and thereby improve loan performance. Fuster et al. (2019) demonstrate that FinTech lenders adjust supply more elastically than other traditional lenders in response to exogenous mortgage demand shocks. Although the benefits they document stem from innovations that rely on hard information, it can still provides evidence that FinTech alleviate information asymmetry. Taking internet finance as the representative of financial technology, Dong et al. (2020) find that FinTech has reduced the information asymmetry between banks and borrowers through technologies like big data, cloud computing and artificial intelligence, thereby contributing to bank risk management. Junarsin et al. (2023) show that FinTech infrastructure also help banks innovate as well as reduce traditional bank information asymmetry. Also, the impacts of bank FinTech on credit risk are examined empirically in the research of Cheng & Qu (2020). Their empirical result show that bank FinTech significantly reduces credit risk in Chinese commercial banks.

Since the quality of client is the base of loan quality, our second hypothesis **H2** is formulated: the effect of FinTech on client structure may be exerted through alleviating information asymmetry.

2.3. FinTech Improves Banks Efficiency

Another channel through which FinTech influences client structure is about bank efficiency in loan business. One of suitable measure of bank efficiency is the ratio of cost to revenue. It's commonly accepted that technology can reduce costs and the cost ratio. Fintech treats data and information as a basic element, which adapts technology to provide financial solutions and results in cost reductions naturally (Aleemi et al., 2023). Moreover, Junarsin et al. (2023) also document that FinTech reduce frictional costs of bank transactions. For instance, the development of FinTech can significantly reduce firms' financing constraints

(Guo et al., 2023), which is an obvious representation of frictional costs in loan business. The other measure is time spent on loan delivery. The empirical results of Fuster et al. (2019) demonstrate that FinTech lenders process mortgage applications about 20% faster than other lenders. And these literature show that bank efficiency improved by the development of financial technology.

Hence, we propose the third hypothesis **H3**: the effect of FinTech on client structure may also be exerted through improving banking efficiency.

2.4. FinTech Strengthens Relationships between Banks and Clients

Compared to traditional deposit and loan business, some non-interest business captures personalized financial needs, which can strengthen relationship between banks and clients. Theoretically, financial technology promotes banking business on Internet, etc., which naturally enrich non-interest businesses. A few researchers has also investigated the effect of FinTech on non-interest business in commercial banks. Financial technology promotes the development of digital banking, and banking profitability in old EU countries is mainly influenced by the digital banking business including e-money payments and internet based transactions (Ganić, 2023). But this positive effect hasn't been observed in NMS countries.

Thus, the last hypothesis **H4** is formulated: the effect of FinTech on client structure may also be exerted through strengthening relationships between bank and their clients.

3. Methodology

This section introduces the setting of empirical analysis, including the sample selection, variable and regression model.

3.1. Commercial Banks Sample Selection

To empirically investigate effects of FinTech on client structure from the perspective of credit risk, it is primary to collect related data on corporate client loan amount categorized by level of risk. According to *Basel Accord Pillar 3 Requirement*, commercial banks satisfying standards are required to disclose data on credit exposure (namely loan) of corporate client. Specifically, commercial banks should provide credit risk exposure grouping by default probability, which help to observe the effect exerted by FinTech on corporate client structure.

In China, commercial banks which are domestically systemically important, listed and belonging to the first class are required to disclose *Pillar 3 Report*. Only large commercial banks are qualified for the aforementioned standards, and they have consecutively disclosed related information since 2015, thereby consisting a panel data for our research. Hence, the research sample includes 5 large commercial banks, namely Bank of China, China Construction Bank, Agricultural Bank of China, Industrial and Commercial Bank of China and Bank of Communications.

3.2. Model

Firstly, this paper applies Fixed Effect Panel Model to examine the basic effect of FinTech on client structure from the point of risk. The models are shown as follows:

$$NDefault_{it} = \alpha_0 + \alpha_1 FinTech_{it} + \beta C_{it} + u_i + \varepsilon_{it} \quad (1)$$

$$LDefault_{it} = \eta_0 + \eta_1 FinTech_{it} + \delta C_{it} + u_i + \varepsilon_{it} \quad (2)$$

$$HDefault_{it} = \varphi_0 + \varphi_1 FinTech_{it} + \vartheta C_{it} + u_i + \varepsilon_{it} \quad (3)$$

$$Default_{it} = \lambda_0 + \lambda_1 FinTech_{it} + \rho C_{it} + u_i + \varepsilon_{it} \quad (4)$$

The dependent variables $NDefault_{it}$, $LDefault_{it}$, $HDefault_{it}$ and $Default_{it}$ respectively demonstrate the proportion of credit exposure to corporate client with nearly no default risk, the proportion of credit exposure to corporate client with low default risk, the proportion of credit exposure to corporate client with high default risk and the proportion of credit exposure to default corporate client. Subscript i and t denotes sample banks and year. Independent variable $FinTech_{it}$ represents the degree of financial technological adoption in sample banks. The specific calculation of dependent variables and independent variables is explained in Table 1.

Table 1. Variables.

Symbol	Variable	Definition or Measurement	Unit
NDefault	Proportion of Corporate Client with Nearly No Default Risk	Credit Exposure to Corporate Client with Nearly No Default Risk/Total Corporate Credit Exposure	%
LDefault	Proportion of Corporate Client with Low Default Risk	Credit Exposure to Corporate Client with Low Default Risk/Total Corporate Credit Exposure	%
HDefault	Proportion of Corporate Client with High Default Risk	Credit Exposure to Corporate Client with High Default Risk/Total Corporate Credit Exposure	%
Default	Proportion of Default Corporate Client	Credit Exposure to Default Corporate Client/Total Corporate Credit Exposure	%
FinTech	Financial Technology	Score of Organizational Intellectualization from *GYROSCOPE Report*	-
I	Information Asymmetry	Unsecured Loan/Total Loan	%
E	Staff Efficiency	Total Cost/Total Revenue	%
R	Relationship between Bank and Corporate Client	Non-interest Revenue/Total Revenue	%
GDP	GDP Growth	The growth ratio of GDP in China	%
TSF	Total Social Finance Growth	The growth ratio of total social financing in China	%
NIM	Net Interest Margin of Commercial Banks	Net Interest Revenue/Average Balance of Interest-Earning Asset	%
NPL	Nonperforming Loan Ratio	Nonperforming Loan/Total Loan	%
CoreCA	Core Tier1 Capital Adequacy Ratio	Core Tier1 Capital/Risk-Weighted Asset	%
CA	Capital Adequacy Ratio	Capital/Risk-Weighted Asset	%

C_{it} are a set of control variables, including both macroeconomic factors and banking characteristics. The Specific controls are also displayed in Table 1. Variable u_i captures the omitted difference which can't be observed by control variables. And variable ε_{it} is error term.

Parameters α_1, η_1, φ_1, λ_1 are key observations. For instance, significantly positive parameter η_1 indicates that the adoption of technology in banking business expands the credit exposure to corporate client with low default probability. This shows that commercial banks dig up more client with low default risk. Meanwhile, insignificant parameter shows that FinTech hardly affects the structure of bank corporate client.

Mediating Effect Model are employed further to discuss and verify the influencing conduit of FinTech. Taking model (1) as an example, specific equations of channel analysis are shown as below:

$$\begin{cases} NDefault_{it} = \alpha_0 + \alpha_1 FinTech_{it} + \beta C_{it} + u_i + \varepsilon_{it} \\ I_{it} = a_0 + a_1 FinTech_{it} + \beta C_{it} + u_i + \varepsilon_{it} \\ NDefault_{it} = b_0 + b_1 FinTech_{it} + b_2 I_{it} + \beta C_{it} + u_i + \varepsilon_{it} \end{cases} \tag{5}$$

where I_{it} represents the conduit of alleviating information asymmetry. Similarly, replacing mediating variables I_{it} with E_{it}, R_{it} can verify whether FinTech influences through staff capability (or efficiency), strengthened client relationships. Specifically,

$$\begin{cases} NDefault_{it} = \alpha_0 + \alpha_1 FinTech_{it} + \beta C_{it} + u_i + \varepsilon_{it} \\ E_{it} = c_0 + c_1 FinTech_{it} + \beta C_{it} + u_i + \varepsilon_{it} \\ NDefault_{it} = d_0 + d_1 FinTech_{it} + d_2 E_{it} + \beta C_{it} + u_i + \varepsilon_{it} \end{cases} \tag{6}$$

$$\begin{cases} NDefault_{it} = \alpha_0 + \alpha_1 FinTech_{it} + \beta C_{it} + u_i + \varepsilon_{it} \\ R_{it} = e_0 + e_1 FinTech_{it} + \beta C_{it} + u_i + \varepsilon_{it} \\ NDefault_{it} = f_0 + f_1 FinTech_{it} + f_2 R_{it} + \beta C_{it} + u_i + \varepsilon_{it} \end{cases} \tag{7}$$

The specific calculation of mediation variables is also presented in Table 1. Likewise, this paper expands model (2), (3), (4) to Mediating Effect Model relatively in the same means.

Significance and values of parameters α_1, a_1, and b_1 are used to infer whether FinTech influences the risk distribution through alleviating information asymmetry. If these parameters are significant, there is a mediating effect between FinTech and credit risk exposure to corporate client with nearly no default risk. Also, corresponding parameters in model (6), (7) and (8) show the mediating effect and influencing conduits.

3.3. Variables and Data Source

Empirical models consist of 4 explained variables, 1 explaining variable, 3 mediating variables and 6 controls. Details on variables are shown in Table 1. The data on explained variables is collected from official website of large commercial banks, where *Pillar 3 Reports* are released. The data on FinTech is collected from *GYROSCOPE Report* released by China Banking Association. Combined with

requirements from regulators, this report aims to evaluate the commercial banks' capability in serving economy and operation from 9 aspects, including Governance (G), Yield Sustainability (Y), Risk Control (R), Operational Management (O), Service Quality (S), Competitiveness (C), Organizational Intellectualization (O), Personnel Competence (P), Equity Funding (E). The aspect of Organizational Intellectualization measures the adoption of financial technology. Sample data on other variables are obtained from Wind database. All variables are from 2015 to 2022.

4. Empirical Findings

This section verifies hypotheses formulated in Section 2. And we present the statistics description first to make univariate analysis on the nexus between FinTech and the proportion of client with different default probability. Then the baseline effect of FinTech on client structure and the examination results on their influencing conduits are displayed.

4.1. Statistics Description

The descriptive statistics of the main variables are reported in Panel A of Table 2. The mean values of the dependent variables NDefault, LDefault, HDefault and Default are 52.08%, 42.18%, 3.83%, and 1.92%, respectively. Those average percents show the distribution of corporate client from the point of credit risk. Although the higher standard deviation indicates that there might be larger difference among banks in the proportion of corporate client with nearly 0% default risk, the coefficients of Variation (Sd/Mean) unmask that larger difference exists in the proportion of corporate client with high default risk. Another main variables FinTech, the independent variable, the mean is 83.69, the minimum value is 59.26 and maximum value is 90.80.

Panel A also show the summary description of mediating variables. The means of mediating variables I, E, and R are 30.85%, 28.19%, and 27.63%. Compared to mediating variables I, E, the disparity of variable R among banks is more noticeable, whose coefficients of variation is over 20%. As for control variables, the mean values of GDP, SFA, NIM, NPL, CoreCA and CA are 5.81%, 11.68%, 2.04%, 1.52%, 11.93% and 15.68%, relatively.

We also report the correlation coefficients of the main dependent variables and independent variables Panel B of Table 2. The significant and negative correlation between Default and FinTech implies that the higher degree of FinTech development helps to suppress the proportion of default corporate client. This univariate relationship shows a vague evolution that corporate client tends to be less risky. The correlations between NDefault, LDefault, HDefault and FinTech are insignificant, which can't provide any univariate evidence now to help judge the effect on banks corporate client structure. The subsequent analysis will investigate these relationships with regression model.

Table 2. Descriptive statistics. (a) Summary statistics; (b) Correlation matrix of main variables.

(a)

Variables	N	Mean	Sd	CV	Min	Max
NDefault	39	52.08	11.58	22.2%	35.88	76.99
LDefault	39	42.18	11.09	26.3%	17.38	59.37
HDefault	39	3.83	2.22	58.0%	0.14	7.25
Default	39	1.92	0.48	25.0%	0.99	3.08
FinTech	35	83.69	7.45	8.9%	59.26	90.80
I	40	30.85	3.07	10.0%	23.53	38.08
E	40	28.19	2.87	10.2%	22.30	34.59
R	40	27.63	6.05	21.9%	17.16	39.98
GDP	40	5.81	1.38	23.8%	2.90	6.90
SF	40	11.68	1.58	13.5%	9.60	14.08
NIM	40	2.04	0.30	14.7%	1.48	2.66
NPL	40	1.52	0.22	14.5%	1.32	2.39
CoreCAR	35	11.93	1.21	10.1%	10.06	14.04
CAR	40	15.68	1.52	9.7%	13.04	19.26

(b)

Variables	NDefault	LDefault	HDefault	Default	FinTech
NDefault	1				
LDefault	−0.9781***	1			
HDefault	−0.3061*	0.1052	1		
Default	−0.1135	0.0100	0.3240**	1	
FinTech	0.0322	0.0091	−0.1137	−0.4457***	1

4.2. Baseline Results

Equation (1) to (4) are constructed to examine the baseline effect of FinTech on corporate client structure in commercial banks. Table 3 reports regression results of Equation (1) to (4), displaying in the second to fifth column respectively. And the coefficients of FinTech are our focus.

Panel A of Table 3 shows estimation results without the control variables. When the dependent variable is NDefault, the coefficient of FinTech, 0.3563, is positive and statistically significant in 1% level. It suggests that the adoption of FinTech enhances commercial banks' capability of identify corporate clients with high credit, thus increasing the proportion of corporate clients with nearly no default risk.

Table 3. Baseline result. (a) Estimation without controls; (b) Estimation with controls.

(a)				
Variables	NDefault	LDefault	HDefault	Default
FinTech	0.3563***	−0.2499**	−0.0716***	−0.0347***
	(0.121)	(0.102)	(0.023)	(0.010)
Constant	23.0458**	62.2396***	9.8876***	4.8269***
	(10.202)	(8.604)	(1.895)	(0.853)
Bank FE	YES	YES	YES	YES
Observations	35	35	35	35
R-squared	0.229	0.170	0.258	0.287
(b)				
Variables	NDefault	LDefault	HDefault	Default
FinTech	0.3639**	−0.2669*	−0.0597*	−0.0357***
	(0.160)	(0.142)	(0.031)	(0.011)
GDPG	−2.9996*	2.6105*	0.2529	0.1192
	(1.610)	(1.430)	(0.312)	(0.112)
SF	1.8463	−1.5892	−0.1916	−0.0676
	(1.246)	(1.106)	(0.244)	(0.088)
NIM	−7.9763	2.9723	3.0528	1.8661*
	(13.590)	(12.067)	(2.650)	(0.952)
CT1CAR	2.7601	−2.3243	−0.5328	0.1714
	(2.821)	(2.505)	(0.525)	(0.189)
NPL	8.5815	−8.0597		
	(6.120)	(5.434)		
Constant	−12.6517	101.8250**	10.0488	−0.7388
	(49.503)	(43.953)	(9.033)	(3.246)
Bank FE	YES	YES	YES	YES
Observations	28	28	28	28
R-squared	0.548	0.472	0.601	0.801

b. Since the proportion of credit exposure to clients with high default risk (HDefault) or credit exposure to clients with 100% default risk (Default) is highly correlated with non-performing loan ratio, the controls NPL is not contained in related regressions to avoid multicollinearity.

When the dependent variable is LDefault, HDefault, and Default, the coefficients of FinTech are −0.2499, −0.0716 and −0.0347, which are negative and statistically significant. As for economic magnitude, a one-standard-deviation increase in FinTech adoption (7.45) resulted in a decline of 18 percents (=−0.2499 × 7.45/0.102), 23 percents (=−0.0716 × 7.45/0.023) and nearly 26 percents

(=−0.0347 × 7.45/0.010) in the proportion of corporate clients with low default risk, high risk and default behavior. These magnitudes show that the adoption of FinTech plays a largest effect on decreasing the proportion of default corporate client .

Results in Panel B includes control variables. After controlling the factors from economic development and banks characteristics, the coefficients are consistent with Panel A. Hence, the hypothesis **H1** that the adoption of FinTech changes corporate client structure are supported. Specifically, the corporate client in commercial banks are safer after applying financial technology. Because the proportion of client with nearly no default risk rises and the proportion of default client drop obviously when commercial banks has higher adoption of technology.

4.3. Influencing Channels Examination

This section presents the regression results of Equation (5) to (7). The estimation results should be shown by three parts: estimation between dependent variable and independent variable, estimation between mediating variable and independent variable, and estimation of mediating effect model, relatively. Since the first part is displayed as baseline effects of FinTech in Table 3, there are only other two parts displaying in Tables 4-7 for conciseness.

1) Channel of alleviating information Asymmetry

Table 4 shows results of whether FinTech exerts effect through alleviating information asymmetry. In alignment with baseline results, this section also shows regression results with and without the control variables.

Panel A of Table 4 shows estimation results without the control variables. When the dependent variable is I (proportion of unsecured loan), proxy of information asymmetry, the coefficient of FinTech 0.1230, is significantly positive, which indicates that the adoption of FinTech alleviates information asymmetry in banking business indeed. Regarding results of Mediating Effect Model, the coefficients of FinTech and I remain significant when the dependent variables are NDefault, HDefault, and Default. And the absolute values of FinTech's coefficients turn lower. Both of them indicate that FinTech plays significant role in promoting proportion of corporate client with nearly no default risk and declining proportion of corporate client with higher or 100% default risk through alleviating information asymmetry. And the mediating effect can be quantified as 0.1281 (=0.1230 × 1.0416), −0.0308 (=0.1230 × −0.2507), −0.0108 (=0.1230 × −0.0881), respectively. The coefficient of FinTech is insignificant when the dependent variable is LDefault, but when controlling the economic and bank factors, it turns significant. And the mediating effect can be calculated as −0.0666 (=0.0816 × −0.8161). Other results in Panel B keeps consistent with Panel A, but the mediating effects shrink a bit. The measures turn to 0.0935 (=0.0816 × 1.1460), −0.0188 (=0.0816 × −0.2309), and −0.0069 (=0.0816 × −0.0847) correspondingly. Therefore, the second hypothesis **H2** that the effect of FinTech on client structure is exerted through alleviating information asymmetry is held.

Table 4. Channel examination: Alleviating information asymmetry. (a) Estimation without controls; (b) Estimation with controls.

(a)					
Variables	I	NDefault	LDefault	HDefault	Default
FinTech	0.1230**	0.2281*	−0.1635	−0.0408**	−0.0239**
	(0.056)	(0.117)	(0.104)	(0.019)	(0.010)
I		1.0416***	−0.7027**	−0.2507***	−0.0881***
		(0.360)	(0.320)	(0.060)	(0.030)
Constant	21.0034***	1.1689	76.9993***	15.1538***	6.6780***
	(4.695)	(11.847)	(10.513)	(1.965)	(0.987)
Bank FE	YES	YES	YES	YES	YES
Observations	35	35	35	35	35
R-squared	0.143	0.406	0.292	0.544	0.455
(b)					
Variables	I	NDefault	LDefault	HDefault	Default
FinTech	0.0816*	0.3095**	−0.2234*	−0.0466*	−0.0367***
	(0.045)	(0.137)	(0.121)	(0.023)	(0.011)
I		1.1460**	−0.8161*	−0.2309***	−0.0847**
		(0.446)	(0.395)	(0.072)	(0.033)
Controls	YES	YES	YES	YES	YES
Constant	51.0540***	−26.1043	104.1377***	15.5446***	4.1694*
	(7.672)	(38.711)	(34.274)	(5.098)	(2.337)
Bank FE	YES	YES	YES	YES	YES
Observations	35	30	30	30	30
R-squared	0.499	0.488	0.377	0.577	0.575

Table 5. Channel examination: Improving bank efficiency. (a) Estimation without controls; (b) Estimation with controls.

(a)					
Variables	E	NDefault	LDefault	HDefault	Default
FinTech	−0.0835***	0.3669**	−0.2833**	−0.0632**	−0.0204*
	(0.027)	(0.142)	(0.119)	(0.026)	(0.011)
E		0.1271	−0.3994	0.1006	0.1717***
		(0.835)	(0.701)	(0.154)	(0.062)
Constant	35.0802***	18.5872	76.2517***	6.3583	−1.1971
	(2.307)	(31.084)	(26.073)	(5.732)	(2.304)
Bank FE	YES	YES	YES	YES	YES
Observations	35	35	35	35	35
R-squared	0.241	0.229	0.180	0.269	0.441

(b)					
Variables	E	NDefault	LDefault	HDefault	Default
FinTech	−0.1573***	0.3593*	−0.2791*	−0.0534	−0.0279**
	(0.035)	(0.175)	(0.149)	(0.031)	(0.012)
E		−0.2200	−0.0737	0.1494	0.1621**
		(0.964)	(0.818)	(0.164)	(0.063)
Controls	YES	YES	YES	YES	YES
Constant	35.5189***	−9.0969	97.0706**	13.2955	−0.0957
	(10.984)	(48.803)	(41.386)	(7.969)	(3.074)
Bank FE	YES	YES	YES	YES	YES
Observations	30	30	30	30	30
R-squared	0.619	0.329	0.251	0.402	0.575

Table 6. Channel examination: strengthening client relationship. (a) Estimation without controls; (b) Estimation with controls.

(a)					
Variables	R	NDefault	LDefault	HDefault	Default
FinTech	−0.0028	0.3546***	−0.2484**	−0.0715***	−0.0347***
	(0.069)	(0.117)	(0.098)	(0.023)	(0.010)
R		−0.5735*	0.5226*	0.0632	−0.0123
		(0.314)	(0.262)	(0.060)	(0.028)
Constant	28.1958***	39.2168***	47.5031***	8.1059***	5.1742***
	(5.812)	(13.208)	(11.025)	(2.546)	(1.165)
Bank FE	YES	YES	YES	YES	YES
Observations	35	35	35	35	35
R-squared	0.020	0.311	0.274	0.286	0.292
(b)					
Variables	R	NDefault	LDefault	HDefault	Default
FinTech	0.1829**	0.3712**	−0.3105**	−0.0480*	−0.0130
	(0.073)	(0.147)	(0.129)	(0.028)	(0.011)
R		−0.7221*	0.7217**	0.0523	−0.0409
		(0.360)	(0.317)	(0.068)	(0.026)
Controls	YES	YES	YES	YES	YES
Constant	77.8954***	95.0857**	−1.7112	0.2425	2.9607
	(16.672)	(41.105)	(36.159)	(6.757)	(2.644)
Bank FE	YES	YES	YES	YES	YES
Observations	35	35	35	35	35
R-squared	0.440	0.563	0.489	0.538	0.665

Table 7. Robustness test: Baseline results.

Variables	NDefault	LDefault	HDefault	Default
FinTech	0.3429***	−0.2430**	−0.0707***	−0.0322***
	(0.126)	(0.104)	(0.022)	(0.010)
Constant	24.1664**	61.6611***	9.8119***	4.6156***
	(11.416)	(9.917)	(2.157)	(0.845)
Bank FE	NO	NO	NO	NO
Observations	35	35	35	35
R-squared	0.493	0.387	0.167	0.090

2) Channel of Promoting Staff Efficiency

Next, this part examines whether one of influencing conduits through which FinTech changes the distribution of corporate client is promoting staff efficiency. Table 5 displays key estimation results.

In the Panel A of Table 5, it is evident that FinTech could decrease the ratio of cost to revenue for the coefficient (−0.0835) is negative and significant. As staff efficiency is one of key factors to operating cost, it shows that FinTech plays a positive part in promoting staff efficiency. Adding the mediating variables into regression models, the coefficients of FinTech are 0.3669, −0.2833, −0.0632, −0.0204, corresponding to dependent variables NDefault, LDefault, HDefault and Default. These results remain significant, which are consistent with results in previous tables. However, the main coefficients of mediating variable E are insignificant in most models except when the dependent variable is Default. It implies that FinTech plays significant role in curbing the proportion of default corporate client via promoting staff efficiency. The mediating effect of FinTech can be measured as −0.0143 (=−0.0835 × 0.1717).

Panel B in Table 5 presents results with control variables. The mediating effects of FinTech in change the proportion of corporate client with nearly no default risk, low risk and high risk still remain statistically insignificant. And the mediating effect of FinTech in decreasing the proportion of default corporate clients magnifies to −0.0255 (=−0.1573 × 0.1621). The regression results only demonstrates that FinTech can decrease proportion of default client through improving banking efficiency. And hypothesis **H3** can't be held.

3) Channel of Strengthening Client Relationship

The channel of strengthening client relationship is investigated in this part. Following the same layout, Panel A and B of Table 6 exhibit the Mediating Effect Model estimation without and with controls, relatively.

In Panel A, it seems that FinTech hasn't exerted obvious effect on strengthening the relationship between commercial banks and clients. Because the coefficient of FinTech is negative and insignificant when the dependent variable is R (proportion of non-interest revenue), the proxy of client relationship. Since the analysis on mediating effect is based on the precondition that there is a significant relationship between independent variable and mediating variable, the me-

diating effect is lack of abundant evidence without controlling other factors.

In Panel B, it's shown that FinTech can improve the client relationship by observing a sifnificant and positive coefficient, 0.1829. When the dependent variables are NDefault and LDefault, the coefficients of independent variable and mediating variable are significant. Whereas, the mediating effect of FinTech in promoting proportion of client with nearly no default risk turns to be −0.1321 (=0.1829 × −0.7221) and the effect in declining proportion of client with low default risk turns to be 0.1320 (=0.1829 × 0.7217), which breaks our expectations. When the dependent variables are HDefault and Default, the coefficients of independent variable or mediating variable is insignificant, denying the existence of mediating effects. These results uncover that the enhancement of relationship between commercial banks and corporate client may not be a conduit through which FinTech changes the corporate client distribution. And the last hypothesis **H4** doesn't exist.

4.4. Robustness Test

The robustness check of empirical results are carried out in two ways: adding into control variables and changing regression model. Tables above have presented results with control variables and it is evident that key coefficients remain stable. Now the results regressed by random effect model are presented and use as robustness check. Related results are shown in Table 7 and Table 8.

In Table 7, coefficients of FinTech stay significant and the symbol has no obvious change, indicating the robustness of baseline results.

Panel A in Table 8 presents the robustness check result of influencing channels. In respect to the first channel, when dependent variable is NDefault and Default, the key coefficients remains same. And the random effect regression results in Panel B and panel C show that the other influencing conduits don't exist.

4.5. Further Discussion

The results above show that commercial banks benefit from financial technology and find more good corporate clients, which bring higher proportion of credit delivered to client with nearly no default risk and lower proportion of credit delivered to default client. This is consistent with our first hypothesis **H1**. Different with our theoretical analysis, alleviating information asymmetry is the only influencing channel by which FinTech exerts this positive effect. Information asymmetry is still the main reason of banking credit default regardless of scale of banks. Information asymmetry hasn't be resolved or obviously alleviated until the adoption of FinTech. Although improving efficiency and strengthening client relationship is believed as effective conduits theoretically, large commercial banks might already operate efficiently and have tightened client relationship since their advantage in scale, non-interest service and dense branches. For large commercial banks, the advantage enhancement from FinTech might be limited and the hypotheses **H3** and **H4** aren't held.

Table 8. Robustness test: Channels examination. (a) alleviating information asymmetry; (b) improving bank efficiency; (c) strengthening client relationship.

(a)					
Variables	I	NDefault	LDefault	HDefault	Default
FinTech	0.1275**	0.2009[c]	−0.1538	−0.0403**	−0.0327**
	(0.051)	(0.132)	(0.108)	(0.019)	(0.013)
I		1.0638***	−0.7152**	−0.2504***	0.0605*
		(0.401)	(0.329)	(0.059)	(0.036)
Constant	32.8059***	2.7502	76.5806***	15.1024***	1.6092
	(5.955)	(13.647)	(11.625)	(2.251)	(1.789)
Bank FE	NO	NO	NO	NO	NO
Observations	35	35	35	35	30
R-squared	0.192	0.405	0.292	0.544	0.430
(b)					
Variables	E	NDefault	LDefault	HDefault	Default
FinTech	−0.0835***	0.1903	−0.1612	−0.0274	−0.0118
	(0.027)	(0.175)	(0.155)	(0.052)	(0.010)
E		−0.2878	−0.0676	0.0374	0.1287***
		(0.790)	(0.703)	(0.201)	(0.042)
Constant	35.0802***	68.1617	38.7585	1.7437	−4.9644**
	(2.307)	(45.329)	(40.232)	(12.345)	(2.530)
Bank FE	NO	NO	NO	NO	NO
Observations	35	30	30	30	30
R-squared	0.727	0.306	0.542	0.221	0.745
(c)					
Variables	R	NDefault	LDefault	HDefault	Default
FinTech	−0.0036	0.1281	−0.2228*	−0.0708***	−0.0293***
	(0.068)	(0.218)	(0.127)	(0.022)	(0.010)
R		1.0429***	−0.0876	0.0578	0.0178
		(0.279)	(0.286)	(0.057)	(0.012)
Constant	28.2578***	12.9814	62.4158***	8.2063***	3.8762***
	(6.503)	(20.127)	(13.710)	(2.762)	(0.942)
Bank FE	NO	NO	NO	NO	NO
Observations	35	35	35	35	35
R-squared	0.019	0.583	0.028	0.044	0.238

c. Coefficient 0.2009 is significant at 15% level.

5. Conclusion

The financial technology has forcefully changed the way through which financial corporations, like commercial banks, access their clients and make credit delivery decision. Many studies has investigated the nexus between FinTech and banking risk proxied by non-performing ratio, but how the basic element beneath credit risk, namely client structure, will change with the adoption of technology remain uncovered. This paper attempts to investigate whether the adoption of financial technology will change client structure.

We begin with discussing the theoretical mechanism between FinTech and Client structure from the angle of risk. Despite the lack of literature, we formulated 4 hypotheses based on inference from related literature. Applying data disclosed from *Pillar 3 Report*, this paper investigates the effect of FinTech on client structure with Fixed-Effect Model. Our regression results demonstrate that the adoption of FinTech improves client structure significantly. Particularly, the proportion of client with nearly no default risk increases while the proportion of default client declines. Then the influencing conduits are examined with Mediating Effect Model. Empirical results show that FinTech plays this positive part through alleviating information asymmetry.

5.1. Recommendations

Utilizing financial technology to improve corporate client structure, especially in the period of economic downturn, and keep good asset quality is our main recommendation.

First, keep applying financial technology in the client access. Benefited from blockchain technology, digital intelligence, and supply chain finance, commercial banks can access more long-detail clients, like small businesses.

Second, identifying target clients more precisely. Besides client access, commercial banks can portrait their client more precisely when banks can obtain much more daily information of clients through financial technology. Correspondingly, it is necessary to make more detailed classification and identification on clients.

5.2. Limitations and Future Research

There are a few limitations in our present research. First, since mainly large commercial banks in China satisfies requirements of Advanced Method in banking capital management and brings limited data, our research is carried out based on a limited sample. The effect of FinTech on joint-stock commercial banks, city commercial banks and rural commercial banks remain uncovered yet. In the future, the effect on joint-stock commercial banks could be examined soon as more joint-stock commercial banks tend to be qualified to adopt Advanced Method in their capital management, which can enrich data sample. Second, individual clients are increasingly important in the loan delivery, but we only investigate the effect of FinTech on corporate clients structure due to the

lack of data. Subsequent studies will pay attention to this shortcoming and find if there are related data can support further investigation.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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