

The Impact of Financial Technology on Consumer Finance: Mechanisms and Empirical Evidence from China

Yiran Teng

School of Business, Nanjing Normal University, Nanjing, Jiangsu, 210023, China

Abstract: Under the background of China's policy of expanding domestic demand, this paper uses the panel data of 31 provincial regions from 2011 to 2023 to construct the index of Fintech development level, and uses the two-way fixed effect model to empirically test the impact of Fintech on consumer finance. And further through the instrumental variable method, replacing the core explanatory variables, eliminating special years and other methods for endogenous and robustness tests. The results show that FinTech has significantly promoted the development of consumer finance, which is still valid after a series of robustness tests. Mechanism analysis shows that FinTech mainly promotes the development of consumer finance by increasing residents' disposable income and reducing the uncertainty risks faced by residents. Heterogeneity analysis shows that this effect is stronger in eastern China and regions with lower levels of financial development. These findings expand the literature on financial technology and consumer finance, and provide policy implications for the use of financial technology to stimulate consumption and promote high-quality economic development.

Keywords: Financial Technology; Consumer Finance; Mediation Effect; Heterogeneity.

1. Introduction

FinTech has moved well beyond a small set of online financial services. Banks and other financial institutions now use big data, artificial intelligence, and cloud computing in routine tasks such as collecting information, screening customers, evaluating risk, and processing transactions. As these tools enter ordinary business processes, the cost and speed of providing financial services change, and some services that once depended on physical branches can be delivered through digital channels. Lenders also receive information about potential borrowers sooner, which can change how credit decisions are made.

This technological shift is relevant to China's effort to expand domestic demand because household consumption is partly shaped by access to credit. Consumer finance allows households to bring some future purchasing power into the present, but conventional providers do not serve all borrowers equally well. Customers with thin credit records are harder to evaluate, branch based service is less convenient in some areas, and small loans can be relatively costly to process. FinTech changes these conditions by giving financial institutions additional data and new ways to reach and assess borrowers. The question is therefore not simply whether finance has become more digital, but whether this change has translated into a broader consumer finance market.

Research on the economic consequences of FinTech has developed across financial institutions, financial markets, and household consumption. In financial services, a common finding is that technological change can reshape the financial system by lowering transaction costs, improving information processing, and changing how resources are allocated. Gąsiorkiewicz et al. (2020) argue that digitalization and artificial intelligence can partly reduce reliance on traditional financial intermediation, lower transaction costs, and create new operating opportunities and economic benefits for conventional financial institutions [1]. Huang and Qiu (2021)

show that digital lending makes financing more accessible to individuals who lack conventional credit records and therefore extends the reach of inclusive finance [2]. Ren (2023) finds that FinTech innovation can raise market transparency, reduce the cost of financial services while strengthening risk prevention, and support the transformation and upgrading of production technologies [3]. As artificial intelligence has become more widely used in FinTech, Mo (2025) further finds that generative AI can foster consumer-finance innovation in precision marketing, intelligent risk management, smart customer service, and automated collections [4].

Studies that focus more directly on FinTech and consumer finance mainly examine consumer-finance market development and household consumption behavior. Using household microdata, Xie and Wu (2020) find that digital financial services ease household credit constraints and, in turn, promote consumption [5]. Based on provincial panel data in China, Li and Jiang (2021) report that Internet-based technological innovation significantly enlarges the consumer-finance market and improves its structure [6]. Li and Li (2023) show that digital financial inclusion raises household consumption through innovation effects and industrial transformation [7]. As FinTech applications have expanded, attention has gradually shifted toward the mechanisms behind these effects. Peng (2024) argues that FinTech narrows information disparities between borrowers and lenders, improves the allocation efficiency of economic resources, and thereby promotes consumer finance [8]. Using a quasi-natural experiment, Yang and Wu (2025) find that FinTech-related policies promote the downward expansion of consumer markets into lower-tier cities and counties through industrial upgrading [9].

This literature leaves room for a more direct test at the regional level. A large share of the existing evidence takes household consumption, digital financial inclusion, or financial institution performance as the outcome, so consumer

finance development itself is less often placed at the center of the analysis. The mechanism evidence is also scattered. Credit constraints and service convenience are commonly discussed, whereas income changes and household uncertainty are rarely examined together within the same empirical framework. Regional differences are another open issue because China's provinces differ markedly in economic conditions, financial infrastructure, and the maturity of their financial systems.

Against this background, the paper uses a panel of 31 provincial level administrative regions from 2011 to 2023. The analysis begins with the overall association between FinTech and consumer finance and then turns to residents' disposable income and the uncertainty faced by residents as two possible channels. It also asks whether the estimates differ by region and by financial development level. In this way, the paper shifts the empirical focus from household consumption alone to the development of consumer finance and connects the baseline result with two mechanisms that can be tested using provincial data. The regional grouping also allows the analysis to test whether FinTech produces similar marginal effects under different local financial conditions.

2. Theoretical Analysis and Research Hypotheses

2.1. The Impact of Financial Technology on Consumer Finance

FinTech can affect consumer finance because it changes how households reach financial services and how lenders screen and serve borrowers. Its influence can therefore appear on both sides of the market, through credit demand as well as credit supply.

On the demand side, FinTech can expand consumer finance by widening service coverage and increasing consumers' willingness to use credit. Digital financial services are easier to access and use, which supports more inclusive consumer finance. Rural residents, low-income households, and other underserved customers can use digital payments and online lending platforms across time and location, reducing the temporal and spatial constraints of traditional financial institutions [10]. Wider access helps ease financial exclusion and liquidity constraints and allows consumer credit to reach more households. FinTech also improves product matching. With big-data mining, intelligent algorithms, and related technologies, financial institutions can assess consumer preferences, creditworthiness, and risk characteristics more precisely, design differentiated products, respond to personalized financial needs, and further strengthen demand for consumer credit.

On the supply side, FinTech affects consumer finance through lower operating costs, higher processing efficiency, and innovation in credit products. Its development can strengthen the ability of banks and other traditional financial institutions to expand credit supply [11]. Automated procedures, cloud computing, and digital risk-control systems can reduce operating costs and shorten the time required for loan application, approval, and disbursement, making small consumer loans less costly to provide. FinTech also supports new forms of service, including peer-to-peer lending, installment arrangements, and mobile payments, thereby increasing consumer choice and diversifying the market. Cooperation among banks, FinTech firms, and e-commerce platforms can further broaden consumption scenarios,

improve precision marketing, and make customer acquisition more efficient [12]. At the same time, big-data analysis and intelligent algorithms allow institutions to monitor risk dynamically and issue earlier warnings. Stronger risk-management capacity can increase their willingness to provide consumer-finance services. These demand- and supply-side changes lead to the following hypothesis:

H1: FinTech has a significant positive effect on the expansion of consumer finance.

2.2. Financial Technology, Residents' Income, and Consumer Finance

FinTech may raise residents' disposable income through three routes, including making better use of idle funds, supporting employment, and improving the industrial structure. By combining the Internet, big data, mobile payments, and related technologies, digital financial services lower some of the barriers to formal financial participation. Residents can therefore enter financial markets more conveniently and obtain returns from funds that would otherwise remain idle; this income effect is especially evident among middle- and low-income groups [13]. FinTech can also ease financing constraints faced by small and micro enterprises. Better access to finance supports business expansion, increases labor demand, and can raise labor compensation [14]. A further effect comes from the digital transformation of traditional financial institutions. When technology improves resource allocation, it can support changes in regional production methods and the upgrading of industrial structures, which provides another channel for income growth [15].

Higher disposable income can subsequently contribute to consumer-finance development. From the perspective of income determination, stronger income raises households' capacity and willingness to consume, making consumer credit easier to use. Friedman's permanent-income hypothesis also implies that more stable expectations of future income increase households' willingness to smooth temporary income fluctuations through borrowing and therefore expand credit demand. Higher income matters to lenders as well. Stronger repayment capacity lowers expected credit risk and can encourage financial institutions and consumer-finance companies to relax lending conditions and better meet financing needs [16]. On this basis, the following hypothesis is proposed:

H2: FinTech increases residents' disposable income and thereby expands consumer finance.

2.3. Financial Technology, Uncertainty Risk, and Consumer Finance

FinTech may also reduce the uncertainty faced by residents through household asset allocation and insurance. Modern portfolio theory suggests that diversification can lower investment risk. By improving access to financial information and participation in financial markets, FinTech helps households adjust their financial portfolios and reduce uncertainty about future income; applications such as robo-advisory services can also lower the probability of extreme-risk investment [17]. For rural households, digital finance provides a wider range of investment channels and financial products, allowing asset allocation to be adjusted to individual needs and improving the ability to smooth risk [18]. Insurance provides a second form of protection. FinTech strengthens cooperation between traditional financial

institutions and technology firms, makes insurance promotion and purchasing more convenient, increases trust in commercial insurance, and raises household demand for risk protection [19]. Together, these effects can reduce households' concerns about future uncertainty.

A reduction in uncertainty can, in turn, promote consumer-finance development. Precautionary-saving theory holds that households save more when future income is uncertain. When risk falls, this motive weakens, and residents become more willing to use consumer credit to smooth consumption and support consumption upgrading. As uncertainty declines, credit demand rises and consumer finance expands [20]. Lower uncertainty can also increase the risk tolerance of financial institutions. Digital risk-control systems improve risk identification and differentiated pricing, enabling lenders to serve more customers who were previously difficult to reach and to broaden the coverage of consumer-finance services [21]. Accordingly, the following hypothesis is proposed:

H3: FinTech reduces the uncertainty faced by residents and thereby expands consumer finance.

3. Research Design

3.1. Sample Selection and Data Sources

The empirical analysis uses annual data for 31 provincial level administrative regions in China from 2011 to 2023, giving 403 province year observations. The outstanding balance of personal consumption loans, taken from the Wind database, is used to measure consumer finance. The FinTech measure is constructed from Baidu Index search data and combined with the entropy weight method. The mediating variables and the remaining controls come from the China Statistical Yearbook for the same period.

3.2. Variable Definition

3.2.1. Dependent Variable

Consumer finance (CF) is the dependent variable. Following Li (2022) [22] and considering both data availability and indicator relevance, this study measures consumer-finance development by the outstanding balance of

personal consumption loans in each provincial-level administrative region. The data are obtained from the Wind database.

3.2.2. Independent Variable

The core explanatory variable is regional FinTech development (Fintech). Existing studies use different methods to measure regional FinTech. Drawing on Guo et al. (2023) [23], this study constructs a provincial FinTech index with text-mining and web-scraping techniques, but the underlying data differ from those used in that study. Guo et al. (2023) [23] measure the frequency of FinTech-related terms in Baidu News, whereas this paper uses the Baidu Search Index for the selected keywords. Search-index data can be used to monitor changes in prevailing economic conditions and are directly available at both provincial and annual levels. This makes it possible to construct a consistent province-year panel over 2011–2023. Thus, the adjustment changes the underlying Internet indicator while retaining the general idea of constructing a regional FinTech measure from online information, and the provincial annual structure can be kept consistent throughout the sample period.

The index is constructed in three steps. First, following the classification framework of Sheng et al. (2020) [24], FinTech-related keywords are compiled from the *FinTech Development Plan (2022–2025)* and the annual *China FinTech Operation Reports*. This produces a database of 25 terms across four dimensions, as reported in Table 1. Second, Python-based web scraping is used to obtain the annual average daily search index for each keyword in each province from the Baidu Index platform over 2011–2023. The resulting province-year observations reflect the relative search intensity of different FinTech-related concepts across regions and years. Finally, the entropy-weight method is applied to determine the weight assigned to each indicator. The weighted indicators are then aggregated to form the provincial FinTech development index used in the empirical analysis. In this way, the construction procedure moves from keyword selection, to provincial search data collection, and finally to weighted aggregation.

Table 1. FinTech Keyword Database

Basic Technologies	Payment Technologies	FinTech Intermediary Service Models		Direct Terms and Related Context
Big Data	Online Payment	Online Lending	Online Banking	Internet Finance
Cloud Computing	Mobile Payment	Online Loans	Microcredit	Financial Technology
Artificial Intelligence	Third-Party Payment	Online Banking Services	Robo-Advisory	FinTech
Blockchain	NFC Payment	Online Banks	Intelligent Customer Service	Digital Economy
Biometrics		Electronic Banking	Direct Banking	
Internet of Things		Internet Banking		

3.2.3. Mediating Variables

Two variables are used to examine the proposed mechanisms. Residents' disposable income (INC) is calculated as annual regional disposable income divided by total population. The second variable, INS, is intended to capture uncertainty in household income and expenditure. Premium income is used as its proxy because social and commercial insurance provide protection against property losses and future living standard risks. Under this measure, a higher value of premium income corresponds to lower

uncertainty faced by residents.

3.2.4. Control Variables

Personal consumer credit can be influenced by several regional characteristics. Following Li and Jiang (2021) [6] and Liu et al. (2024) [25], the model therefore controls for per capita gross domestic product (RGDP), population density (POP), government intervention (GOV), education level (EDU), labor force level (LAB) and industrial structure (IS). These controls are included to improve estimation precision. Their definitions are reported in Table 2.

Table 2. Variable Definitions

Variable Type	Variable Name	Symbol	Measurement
Dependent Variable	Consumer Finance	CF	Outstanding balance of personal consumption loans
Independent Variable	FinTech Development	Fintech	FinTech development index constructed in this study
Mediating Variable	Residents' Disposable Income	INC	Regional disposable income / total population
	Uncertainty Faced by Residents	INS	Premium income
Control Variable	Gross Domestic Product per Capita	RGDP	Regional GDP / total regional population
	Population Density	POP	Year-end resident population / land area
	Government Intervention	GOV	Regional fiscal expenditure / regional GDP
	Education Level	EDU	Population with higher education / population aged 6 and above
	Labor Force Level	LAB	Natural logarithm of employment
	Industrial Structure	IS	Value added of the tertiary industry / regional GDP

3.3. Descriptive Statistics

Table 3 shows that the panel contains meaningful variation across provinces. Consumer finance averages 0.934, with a standard deviation of 1.171 and a range from 0.004 to 7.715. The Fintech index varies from 0.002 to 0.810 and has a mean of 0.182. The dispersion of the two mediating variables is also visible in the data: the standard deviations of INC and INS are 1.318 and 0.908. Among the controls, RGDP has a standard

deviation of 3.179. Population density ranges from 0.003 to 3.951, while government intervention ranges from 0.107 to 1.379 and has a mean of 0.279. Labor force and industrial structure vary less than several of the other variables, but neither is constant across the sample. Education, labor force, and industrial structure also vary across provinces and years. The overall data is reasonable, there is no abnormal value, and further research can be carried out.

Table 3. Descriptive Statistics

Variable	Symbol	Observations	Mean	Std. Dev.	Minimum	Maximum
Consumer Finance	CF	403	0.934	1.171	0.004	7.715
FinTech Development	Fintech	403	0.182	0.152	0.002	0.810
Residents' Disposable Income	INC	403	2.633	1.318	0.752	8.483
Uncertainty Faced by Residents	INS	403	0.994	0.908	0.008	4.836
Gross Domestic Product per Capita	RGDP	403	6.225	3.179	1.641	20.028
Population Density	POP	403	0.457	0.702	0.003	3.951
Government Intervention	GOV	403	0.279	0.204	0.107	1.379
Education Level	EDU	403	0.154	0.079	0.024	0.505
Labor Force Level	LAB	403	7.517	0.863	5.223	8.864
Industrial Structure	IS	403	0.486	0.096	0.297	0.848

3.4. Model Specification

3.4.1. Baseline Model

To test the impact of FinTech on consumer-finance development, the following two-way fixed-effects model is specified:

$$CF_{it} = \alpha_0 + \alpha_1 Fintech_{it} + \alpha_2 X_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad (1)$$

where i and t index provinces and years, respectively; CF_{it} denotes consumer finance; $Fintech_{it}$ denotes the level of FinTech development; X_{it} is the set of control variables; province and year fixed effects are represented by the corresponding fixed-effect terms; and the residual term captures random disturbances. The controls include gross domestic product per capita (RGDP), population density (POP), government intervention (GOV), education level (EDU), labor force level (LAB), and industrial structure (IS).

3.4.2. Mediation Model

To further examine the mechanisms through which FinTech affects consumer-finance development, the following

mediation models are estimated:

$$M_{it} = \beta_0 + \beta_1 Fintech_{it} + \beta_2 X_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad (2)$$

$$CF_{it} = \gamma_0 + \gamma_1 Fintech_{it} + \gamma_2 M_{it} + \gamma_3 X_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad (3)$$

where M_{it} denotes the mediating variables, namely residents' disposable income (INC) and the uncertainty faced by residents (INS). All other variables are defined as in Equation (1).

4. Empirical Results and Analysis

4.1. Baseline Regression Results

A two-way fixed-effects model controlling for both province and year effects is used for the baseline estimation. To assess the stability of the baseline results, control variables are added progressively, and the results are reported in Table 4. Column (1) presents the basic specification without controls. The coefficient on FinTech is 6.105 and is positive at the 1% significance level. As the controls are added one by one, the coefficient on FinTech remains positive and

significant at the 1% level, indicating a robust positive association between FinTech and consumer finance and supporting H1. According to the specific coefficient, for every 1 unit increase in the level of financial technology, consumer finance will increase by 4.957~6.105 units.

For the control variables, government control and labor level are significantly positive at the 1% level, suggesting that both promote consumer-finance growth. Education is significant only at the 10% level, with a coefficient of -2.734,

indicating a weak negative effect. One possible explanation is that better-educated residents may rely more on savings or other financial instruments to meet consumption needs rather than on consumer credit, creating a substitution effect and a negative association with consumer credit. The coefficients of per capita GDP, population density, and industrial structure are positive but insignificant, suggesting that increases in these factors may support consumer-finance growth, although their effects remain relatively weak.

Table 4. Baseline Regression Results

Variable	(1) CF	(2) CF	(3) CF	(4) CF	(5) CF	(6) CF	(7) CF
Fintech	6.105*** (0.673)	5.941*** (0.749)	5.114*** (0.777)	5.003*** (0.781)	4.957*** (0.771)	5.117*** (0.781)	5.063*** (0.808)
RGDP		0.022 (0.031)	-0.022 (0.037)	-0.003 (0.041)	0.006 (0.042)	-0.005 (0.042)	0.001 (0.043)
POP			7.537* (4.320)	7.342* (4.347)	7.888* (4.126)	5.525 (4.080)	5.445 (4.136)
GOV				1.230** (0.561)	1.373** (0.556)	1.520*** (0.553)	1.465*** (0.560)
EDU					-2.794* (1.452)	-2.755* (1.454)	-2.734* (1.441)
LAB						1.186** (0.466)	1.249*** (0.453)
IS							0.851 (0.662)
Constant	-0.177 (0.117)	-0.281 (0.183)	-3.298* (1.804)	-3.655** (1.829)	-3.559** (1.792)	-11.405*** (3.278)	-12.271*** (3.161)
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	403	403	403	403	403	403	403
R ²	0.867	0.867	0.872	0.873	0.874	0.876	0.876

Notes: Standard errors are in parentheses; *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

4.2. Endogeneity Test

Table 5. Endogeneity Test Results

Variable	First-Stage Regression	Second-Stage Regression
	Fintech	CF
L.Fintech	0.834*** (0.027)	
Fintech		7.052*** (0.672)
Control Variables	Yes	Yes
Province and Year Fixed Effects	Yes	Yes
Kleibergen-Paap rk LM Statistic	69.855***	
Cragg-Donald Wald F Statistic	978.554 [16.38]	
R ²	0.9524	0.6735

Note: [] is the critical value for weak instrumental variable testing at the 10% level

The baseline regression may still be subject to reverse causality, as a larger consumer finance market could itself create demand for FinTech development or adoption. To address this issue, the one period lag of Fintech (L.Fintech) is used as an instrument for current Fintech in a two stage least squares estimation. The first stage coefficient is 0.834 and significant at the 1% level. The Kleibergen-Paap rk LM statistic is 69.855, rejecting underidentification, and the Cragg-Donald Wald F statistic of 978.554 is far above the reported Stock-Yogo critical value of 16.38. In the second stage, the Fintech coefficient is 7.052 and remains significant at the 1% level (Table 5). These diagnostics and estimates do not change the direction of the baseline finding. The IV estimate is somewhat larger than the baseline coefficients, but its sign and significance are unchanged, so this treatment of reverse causality does not overturn the main result.

4.3. Robustness Checks

Three additional specifications are used to see whether the baseline result depends on the particular FinTech measure, control set, or sample period. The corresponding estimates appear in Table 6. Each check changes a different part of the empirical design.

For the first robustness check, the self-constructed Fintech index is replaced with the Peking University Digital Financial Inclusion Index (SZ), following Guo et al. (2020) [26]. The second check adds the urbanization rate as an additional control because urbanization may affect regional consumer finance. The third removes observations for 2020-2022 to account for the unusual effects of the COVID-19 pandemic on economic activity, after which the model is re-estimated.

All three checks preserve the positive 1% significant effect. The alternative index enters at 0.028, the Fintech coefficient is 5.159 after urbanization is added, and it is 4.127 after the 2020-2022 observations are removed. The above results show that the role of financial technology in promoting the development of consumer finance has strong stability, and the benchmark regression conclusion is reliable.

Table 6. Robustness Check Results

Variable	CF Alternative Core Explanatory Variable	CF Additional Control Variable	CF Excluding the Pandemic Period
SZ	0.028***		
	(0.004)		
Fintech		5.159***	4.127***
		(0.795)	(0.810)
Control Variables	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
R ²	0.859	0.879	0.858

4.4. Mechanism Analysis

4.4.1. The Mediating Role of Residents' Disposable Income

Column (1) of Table 7 examines the first mechanism by taking residents' disposable income as the dependent variable. The coefficient on Fintech is 0.399 and is significant at the 5% level, showing that higher FinTech development is associated with higher disposable income. This result is consistent with the proposed income channel. Higher income directly strengthens households' repayment capacity and lowers the credit risk perceived by financial institutions, which can support an expansion of credit supply (Lin, 2020)[27]. It can also ease household liquidity constraints (Shen et al., 2024)[28]. With weaker liquidity constraints, residents are better able to use consumer credit to allocate large rigid expenditures such as housing, education, and medical care across different periods (Cheng, 2019)[29]. The improvement in income and repayment capacity can therefore affect both household credit demand and institutions' willingness to lend. Taken together with the baseline result, the mechanism regression supports H2 and indicates that FinTech promotes consumer finance in part by increasing residents' disposable income.

4.4.2. The Mediating Role of Uncertainty Risk

Column (2) of Table 7 turns to the uncertainty mechanism and uses premium income as the mediating variable. The Fintech coefficient is 3.383 and is significant at the 1% level.

Under the variable definition used in this study, higher premium income indicates lower uncertainty, so the result is consistent with the proposed direction. FinTech applications across the insurance value chain have supported intelligent insurance advisory services, smart risk control, automated claims settlement, and precision pricing, which can encourage insurers to increase product supply (Zhou et al., 2020)[30]. Greater financial accessibility can also raise household participation in commercial insurance (Xie et al., 2024)[31]. As insurance coverage expands, uncertainty is reduced, precautionary saving is crowded out, and households become more willing to consume (Nan et al., 2020)[32], which can generate additional demand for consumer finance. These results support the uncertainty mechanism and H3.

Table 7. Mediation Effect Regression Results

Variable	(1) INC	(2) INS
Fintech	0.399**	3.383***
	(0.193)	(0.415)
RGDP	0.200***	0.082***
	(0.019)	(0.027)
POP	4.503***	0.041
	(1.119)	(1.796)
GOV	1.373***	1.311***
	(0.442)	(0.378)
EDU	2.324***	-1.158
	(0.679)	(0.909)
LAB	-0.072	-0.030
	(0.162)	(0.196)
IS	0.921***	0.823*
	(0.264)	(0.449)
Constant	-1.389	-0.506
	(1.141)	(1.450)
Province Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
R ²	0.989	0.944

4.5. Heterogeneity Analysis

4.5.1. Regional Heterogeneity

Due to the obvious differences in the level of economic development, financial infrastructure and the application of digital technology in different regions of China, this paper divides the samples into eastern, central and western regions according to the regional division criteria of the National Bureau of Statistics of China. The results are shown in Table 8. The impact of fintech on the development of consumer finance is significantly positive in different regions. The regression coefficients of the eastern, central and western regions are 5.014, 3.346 and 2.930, respectively, and all pass the significance test, indicating that fintech can promote the development of consumer finance in different regions. At the same time, the promotion effect follows the order eastern > central > western. The possible reason is that the level of economic development in the eastern region is relatively high, the financial infrastructure is more perfect, and the consumption capacity of residents and the demand for digital finance are strong. Therefore, financial technology is more likely to be transformed into the driving force for the

development of consumer finance. In contrast, the central and western regions are limited by the economic foundation, market size and the application of financial technology, and the role of financial technology in promoting the development of consumer finance is relatively weak. In addition, the Chow test results show that there are significant differences in the regression coefficients between groups, indicating that the impact of financial technology on the development of consumer finance has regional heterogeneity.

Table 8. Regional Heterogeneity Regression Results

Variable	Eastern Region CF	Central Region CF	Western Region CF
Fintech	5.014*** (1.162)	3.346** (1.523)	2.930*** (0.518)
Control Variables	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
R ²	0.875	0.927	0.909
Between-Group Coefficient	Chow Test = 2.75		
Difference Test	P-Value > F(38,315) = 0.0000		

4.5.2. Heterogeneity by Financial Development Level

Regional financial development may also shape the effect of FinTech. Following Sun and Feng (2025) [33], the provinces are divided into high-, medium-, and low-level groups according to high-quality financial development, with the grouped estimates reported in Table 9. FinTech is positive in all three groups, but the coefficient sizes differ. The estimates are 3.650 for the medium-level group and 5.831 for the low-level group, and both are significant at the 1% level. By contrast, the coefficient for the high-level group is 2.082 and statistically insignificant. The resulting pattern is low > medium > high, so the estimated FinTech effect is larger where the level of financial development is lower.

Table 9. Heterogeneity Regression Results by Financial Development Level

Variable	High Level CF	Medium Level CF	Low Level CF
Fintech	2.082 (2.466)	3.650*** (0.857)	5.831*** (0.513)
Control Variables	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
R ²	0.908	0.932	0.928
Between-Group Coefficient	Chow Test = 9.48		
Difference Test	P-Value > F(38,315) = 0.0000		

This result may be due to the insufficient coverage of traditional financial services in areas with low levels of financial development. Fintech can effectively make up for the gap in financial services and improve the availability of

financial services for residents, so the marginal promotion effect is stronger. In areas where the financial system is relatively perfect, traditional financial services have become more mature, and financial technology has played a more important role in optimization and upgrading, and the marginal impact on the development of consumer finance is relatively limited. In addition, the Chow test results show that there are significant differences in the regression coefficients between groups with different financial development levels, which further verifies the heterogeneity of the impact of fintech on the development of consumer finance.

5. Conclusion and Implications

The provincial-level analysis for the period 2011–2023 yields a consistent set of empirical findings. FinTech is positively associated with consumer finance in the baseline regressions, and the sign remains positive after the instrumental variable estimation and the three robustness checks. The mechanism estimates show that provinces with greater FinTech development also have higher residents' disposable income and higher premium income, which represents lower uncertainty under the measure used in this paper. The size of the relationship is not uniform: it is larger in eastern China than in the central and western regions, while the grouping by financial development shows the largest coefficient in the low development group.

One implication concerns the practical conditions under which FinTech can affect consumer finance. Technology by itself does not expand credit coverage unless financial institutions can use it in customer screening, loan processing, risk assessment, and service delivery. Investment in digital financial infrastructure therefore remains important, especially where data systems and service networks are still incomplete. For financial institutions, the more immediate task is to use digital tools to reduce information and transaction costs, shorten unnecessary procedures, and make appropriately priced consumer finance products accessible to a broader set of borrowers.

The mechanism results point to a second policy focus. Consumer finance is more sustainable when households have both repayment capacity and some protection against unexpected shocks. FinTech can contribute to the first condition if it improves financing for small and micro enterprises, supports employment, and broadens access to financial services, all of which can raise residents' disposable income. The insurance related result highlights the second condition. Wider use of digital tools in insurance distribution, risk assessment, and household financial services can make risk protection easier to obtain. Better protection against uncertain future income and expenditure may reduce precautionary saving and provide a more stable basis for the use of consumer credit.

The heterogeneity estimates also show why a single regional policy is unlikely to be efficient. Eastern China already has relatively mature digital and financial infrastructure, so further gains are more likely to depend on product innovation, customization, and service quality. In the central and western regions, basic digital infrastructure, financial service networks, and financial literacy remain more important constraints. The results by financial development level reinforce this distinction: the largest Fintech coefficient appears in the low level group. Additional policy support and financial resources in these areas may therefore have a larger

marginal effect by filling gaps that conventional financial services have not yet covered.

The analysis has two limitations that follow directly from the data and measurement used here. Provincial data are suitable for identifying regional differences, but they do not show how a particular household or firm changes its borrowing behavior after adopting a specific financial technology. Combining provincial measures with household or firm microdata would allow that question to be examined more directly. The FinTech index is also an aggregate measure. As artificial intelligence and other applications become more differentiated, separating individual types of FinTech may reveal effects that are hidden when they are combined into one regional index.

References

- [1] Gąsioriewicz, L., Monkiewicz, J., & Monkiewicz, M. (2020). Technology-driven innovations in financial services: The rise of alternative finance. *Foundations of Management*, 12(1), 137–150.
- [2] Huang, Y. P., & Qiu, H. (2021). Big tech lending: A new credit risk management framework. *Management World*, 37(2), 12–21. (In Chinese)
- [3] Ren, X. P. (2023). Theoretical logic, practical challenges, and path choices for high-quality FinTech services supporting rural revitalization. *Contemporary Economic Management*, 45(7), 63–70. (In Chinese)
- [4] Mo, F. Y. (2025). Challenges and countermeasures of generative AI empowering consumer finance. *China Journal of Commerce*, 34(5), 112–115. (In Chinese)
- [5] Xie, J. Z., & Wu, J. R. (2020). Digital finance, credit constraints, and household consumption. *Journal of Central South University (Social Sciences)*, 26(2), 9–20. (In Chinese)
- [6] Li, L., & Jiang, L. (2021). Internet technology empowering the high-quality development of the consumer finance industry. *The Theory and Practice of Finance and Economics*, 42(4), 10–15. (In Chinese)
- [7] Li, F. K., & Li, X. Y. (2023). Mechanisms through which digital financial inclusion affects residents' consumption levels. *Credit Reference*, 41(3), 87–92. (In Chinese)
- [8] Peng, Z. X. (2024). The logical mechanism of FinTech empowering consumer finance: A study based on the financial functions perspective. *Journal of Hunan Administration Institute*, (5), 58–67. (In Chinese)
- [9] Yang, P., & Wu, S. F. (2025). The impact of technology finance policies on the downward expansion of consumer markets: A quasi-natural experiment based on pilot policies promoting the integration of technology and finance. *Journal of Commercial Economics*, (8), 53–56. (In Chinese)
- [10] Nan, Y. Q., Song, M. Y., & Xiao, H. R. (2020). Digital financial inclusion and the release of urban residents' consumption potential. *Contemporary Economic Research*, (5), 102–112. (In Chinese)
- [11] Dong, X. L., Xiong, J., & Zhang, Y. (2023). The impact of FinTech development on commercial bank credit supply: Perspectives from market competition and technological empowerment. *Finance and Trade Research*, 34(12), 51–63. (In Chinese)
- [12] Yang, W., & Wang, Y. Q. (2023). The logic of consumer finance in promoting consumption. *Sci-Tech Finance Monthly*, (10), 67–68. (In Chinese)
- [13] Duan, P. L., & Wang, S. M. (2021). Digital financial inclusion and residents' income growth: Evidence from prefecture-level cities and CLDS. *Finance and Accounting Monthly*, (10), 153–160. (In Chinese)
- [14] Ji, X. M., Wang, K., Xu, H., et al. (2021). Has digital financial inclusion narrowed the urban-rural income gap? The role of entrepreneurship in China. *Sustainability*, 13(15), 8292. <https://doi.org/10.3390/su13158292>.
- [15] Li, H. Q., & Zhang, J. (2022). The impact of FinTech on the optimization and upgrading of China's industrial structure. *Statistical Research*, 39(10), 102–118. (In Chinese)
- [16] Li, Y. H., & Zeng, J. H. (2024). Digital financial inclusion, urban residents' income, and personal consumer credit. *Journal of Zhaotong University*, 46(2), 89–97. (In Chinese)
- [17] Wu, Y., Li, X., Li, J., et al. (2021). Digital finance development and the efficiency of household financial asset portfolios. *Management World*, 37(7), 92–104+7. (In Chinese)
- [18] Luo, H. H., & Huang, H. Q. (2024). The impact of digital finance use on the economic vulnerability of rural households. *Commercial Science Research*, 31(5), 108–118. (In Chinese)
- [19] Wang, R. Z., & Huang, X. Y. (2021). An empirical study of the impact of digital financial inclusion on household demand for commercial insurance. *Journal of Northwest Minzu University (Philosophy and Social Sciences)*, (4), 123–137. (In Chinese)
- [20] Si, L. J., & Shi, K. X. (2024). How does digital village construction affect rural residents' consumption? An empirical analysis based on county-level matched data. *Shanghai Journal of Economics*, (6), 62–82. (In Chinese)
- [21] Research Group of the Business Management Department of the Chengdu Branch of the People's Bank of China, & Zhou, F. (2023). Reshaping and optimizing the rural financial market structure from a digital perspective. *Southwest Finance*, (1), 71–86. (In Chinese)
- [22] Li, L. (2022). High-quality development of regional consumer finance markets driven by digital technological progress: A financial geography perspective. *Hunan Social Sciences*, (2), 44–51. (In Chinese)
- [23] Guo, P., Cheng, M. Y., & Shen, Y. (2023). The impact of FinTech development on banking systemic risk: Theoretical mechanisms and empirical evidence. *Modern Economic Science*, 45(5), 15–29. (In Chinese)
- [24] Sheng, T. X., & Fan, C. L. (2020). FinTech, optimal banking market structure, and credit supply to small and micro enterprises. *Journal of Financial Research*, (6), 114–132. (In Chinese)
- [25] Liu, K. L., Wu, Z. X., & Li, C. X. (2024). The impact of the digital economy on household consumer credit: Evidence from provincial panel data. *Scientific Decision Making*, (11), 16–30. (In Chinese)
- [26] Guo, F., Wang, J. Y., Wang, F., et al. (2020). Measuring China's digital financial inclusion: Index compilation and spatial characteristics. *China Economic Quarterly*, 19(4), 1401–1418. (In Chinese)
- [27] Lin, X. (2020). The impact of consumer credit on the level and structure of household consumption in China [Master's thesis, Jinan University]. CNKI. (In Chinese)
- [28] Shen, Y., Liu, Y. J., & Li, Z. M. (2024). The impact of digital financial inclusion on residents' income mobility. *Rural Finance Research*, (11), 14–27. (In Chinese)
- [29] Cheng, S. L. (2019). A study on the development of consumer credit in Jiangsu [Master's thesis, Nanjing University]. CNKI. (In Chinese)
- [30] Zhou, L., Qiu, X., & Wang, Y. M. (2020). InsurTech empowering the high-quality development of the insurance industry in the new era. *Southwest Finance*, (2), 57–67. (In Chinese)

- [31] Xie, M. M., Yan, W. J., & Yang, Y. F. (2024). The impact of digital financial inclusion on household demand for commercial insurance: Tests based on mechanism analysis and threshold effects. *Financial Theory and Practice*, (5), 108–118. (In Chinese)
- [32] Nan, Y. Q., He, P. H., & Zhou, Q. (2020). The impact of commercial insurance on household consumption: Evidence from Chinese provincial panel data. *Insurance Studies*, (3), 23–40. (In Chinese)
- [33] Sun, G. L., & Feng, Q. Y. (2025). Measuring China's high-quality financial development in the context of building a financial power. *Journal of Finance and Economics Theory*, (2), 27–38. (In Chinese)