

An Inquiry into the Evolution of Fintech and Its Influence on the Well-being of Rural Households

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Abstract: People's yearning for a better life is becoming more and more intense as China's growth continues, and everyone's attention is still focused on well-being. This study uses data from the 2017 China General Social Survey (CGSS) to experimentally examine how fintech development affects rural family happiness. It has been discovered that the growth of fintech greatly improves rural households' well-being, with educational attainment and self-health ratings having the most effects. According to heterogeneity analysis, the central Chinese sample has a stronger beneficial effect of fintech on the happiness of rural households. According to mechanism analysis, the growth of fintech mostly improves the happiness of rural families by addressing the emotional issues of rural inhabitants, particularly their sense of isolation. This study offers fresh perspectives on how to raise rural family satisfaction and upgrade Internet infrastructure in rural regions.

Keywords: financial technology, household well-being, mobile payment, China

1. Introduction

As electronic communication devices become more widespread and global digital finance continues to progress, fintech has deeply integrated into various aspects of everyday life, making it a crucial factor in the future of financial development. In China, mobile payment, which is closely linked to individuals' daily economic activities, has experienced remarkable growth. With the increasing role of the internet in both economic development and daily life, its influence on residents' well-being has garnered widespread attention. Entering the 21st century, nations have progressively regarded national happiness as a key measure of government performance. A lot of scholarly attention has been drawn to the fintech industry's explosive growth, with the majority of research concentrating on the variables affecting mobile payment usage and how they affect household economic behavior. Few research, nonetheless, have looked at how it affects household happiness [1]. The influence of fintech growth, a significant external element, on well-being is frequently overlooked in these researches [2]. The simplicity of mobile payments and the inclusivity of fintech greatly boost happiness, according to this study, which looks at the causal link between fintech development and rural family happiness. The study examines the effects of fintech on various demographics, demonstrating that those in the central area and those with higher education gain more from it. It also expands the scope of happiness determinants by employing nationally representative data at the city level to increase precision.

2. Research Methods

2.1. The Happiness Paradox

Classical and neoclassical economics link wealth accumulation to happiness, but Easterlin's "happiness paradox" challenges this, showing limited correlation between income and happiness [3]. Cross-country income differences rarely translate to significant happiness disparities, and within countries, income variations have minimal impact on happiness. Beyond a certain income threshold, the correlation further diminishes, sparking extensive theoretical exploration [4,5]. Chinese research shows that financial technology enhances residents' well-being, with younger individuals and men benefiting more. Yan found a 14.1% well-being increase due to fintech, particularly among rural, male, and less-educated residents [6]. Zhao reported that rural residents not using fintech experience 20.2% lower well-being, with impacts varying by age, marital status, and education [1]. Li highlighted a stronger "happiness effect" from fintech use for rural residents compared to urban ones [7].

2.2. Uses and Gratifications Theory

Katz's "uses and gratifications" theory shifted research focus to audience needs, highlighting how individual traits, social contexts, and interactions shape media preferences and expectations [3]. This study applies the theory to explore how internet use affects rural residents' happiness, the mediating role of alienation, and related factors. According to this theory, rural fintech users adopt technology to meet personal needs and mitigate alienation, especially as labor outflows increase. Initially slow, rural fintech adoption has accelerated due to revitalization strategies, expanding its utility and role in reducing alienation among rural residents.

2.3. Research Hypotheses

2.3.1. Impact of financial technology development on the well-being of rural households

Others highlight negative impacts like eroded trust and increased social anxiety, especially in older users [8,9]. Theoretical perspectives view fintech as a public good enhancing social welfare, with welfare economics emphasizing government roles and the uses and gratifications theory highlighting user agency. In the process of economic transformation, FinTech can reduce rural segregation, narrow the urban-rural gap, and support rural development, especially with the development of 5G. Building upon the above, this research posits the following hypotheses: H1: The development of financial technology exerts an influence on the well-being of rural households.

2.3.2. The impact of financial technology development on alienation

China's transformation phase, marked by slower growth and social changes, has heightened alienation among residents. Limited research links fintech to alienation, but studies broadly affirm its role in reducing loneliness and alienation. Choi and Lee found fintech lowers elderly loneliness, while Chen and Schulz noted WeChat users felt less lonely during the pandemic [10,11]. Fan highlighted 'Internet+' education as a support system for left-behind children [12].

2.3.3. The impact of alienation on the well-being of rural families

Empirical studies show that alienation reduces subjective well-being. Saito identified an inverse relationship between well-being and loneliness in the elderly, while Cheng found higher loneliness and lower well-being in rural empty-nest elderly [13,14]. Government support improves resilience and well-being in left-behind children. Cheron found sustainable shopping boosts well-being, while

market alienation harms it [15]. In China, rapid urbanization has deepened the gap in social ties, especially in rural areas, exacerbating feelings of alienation and affecting well-being. Based on this, this study proposes the following hypothesis: H3: Alienation affects the well-being of rural families.

2.4. Sample Selection and Data Sources

This study uses data from the 2017 "Chinese General Social Survey" (CGSS), one of China's earliest and most comprehensive national surveys, initiated in 2003 by the China Survey and Data Center at Renmin University. The survey offers high-quality, representative samples from all 31 provinces, making it a nationwide, comprehensive, and traceable academic project. The sense of isolation is measured in two dimensions: object isolation and self-isolation. Object isolation is measured by the frequency of contact with close family members and friends, including parents, siblings, adult children, and closest friends. The response scale ranges from 1 (every day) to 7 (very few times per year). Self-isolation is assessed through subjective feelings of alienation and discomfort, such as experiencing unease, feeling socially isolated over several years, or perceiving coldness in recent weeks. Responses are rated on a scale from 1 (never) to 5 (frequently). This classification provides a structured way to evaluate social connections and emotional experiences related to isolation.

Table 1: Variable meaning

Variable type	Variable name	Variable symbol	Variable meaning
Dependent Variable	Rural Family Happiness	RFH	Proportion of positive comments
Independent Variable	Development of Financial Technology	FT	Whether using mobile payment: Yes = 1, No = 0
Mediator variable	Alienation	ALIEN	Factor Analysis, see Table 1
Control variables (at the individual level)	Age	AGE	2016 - Respondents' Birth Year
	Sex	SEX	Male = 1, Female = 0
	Employment status	WORK	Employment status No job = 0, Job = 1
	Self-rated health	HEAL	Self-rated health Very unhealthy = 1, Quite unhealthy = 2, Average = 3, Quite healthy = 4, Very healthy = 5
Control variables (at the family level)	Property ownership	EST	Number of properties owned by the family
	Investments	INV	No investments = 0, Investments in stocks, funds, bonds, futures, warrants, real estate speculation, forex, etc. = 1
Control variables (at the area level)	Dummy variables for region	AREA	Setting 2 dummy variables for Eastern, Central, and Western regions

2.5. Model Construction

This paper utilizes the stepwise mediation effect test model and combines the results of Sobel's test to study the mediation effect. According to the mediation effect test process, the model of this study

is constructed as follows: $RFH = \beta_0 + \beta_1 FT + \beta_2 Cnontrols_{i,t} + \varepsilon_1$ (1) $ALIEN * FT = \alpha_0 + \alpha_1 FT + \beta_2 Cnontrols_{i,t} + \varepsilon_2$ (2) $RFH = \gamma_0 + \gamma_1 FT + \gamma_2 ALIEN * FT + \gamma_3 Cnontrols_{i,t} + \varepsilon_3$ (3)

The three main variables of this study—fintech development, alienation, and rural household happiness—are represented by and in models (1)–(3), respectively. The error terms are represented by the control variables, which are collectively referred to as constants. Hypothesis 1 is tested using model (1), hypothesis 2 is tested using model (2), and hypothesis 3 is tested using the combined outcomes of models (1) through (3).

3. Empirical Analysis

3.1. Descriptive Statistical Analysis of Variables

Finding a sample's mean, standard deviation, median, maximum, and minimum values in order to comprehend its dispersion and central tendency is known as descriptive statistical analysis. To get the results of the analysis, you must load the sample data into Stata and follow the instructions. This shows descriptive statistics for the variable. With a mean of 3.830, the median happiness level for rural families is 4.000, suggesting high levels of contentment. Financial technology usage is low, with a median of 0.000 and a mean of 0.260. Alienation has a mean of 0.000, with a standard deviation of 0.615. Most respondents are middle-aged (median age 52), with limited education (mean 2.149). Nearly 80% have a partner, and income disparity is evident. Most are employed, with a mean health self-assessment of 0.219, indicating poor health. Most households own one property, do not have a car, and lack investment experience.

3.2. Correlation Test

This presents the correlation matrix, showing that most Pearson's correlation coefficients are below 0.3, indicating no correlation, with a few in the 0.3-0.8 range, suggesting weak correlations. No coefficients exceed 0.8, indicating generally weak relationships between variables.

Table 2: Variable Correlation Analysis

Variable	RFH	FT	ALIEN	AGE	SEX	WORK	HEAL	EST	INV
RFH	1								
FT	0.086***	1							
ALIEN	-0.188***	-0.206***	1						
AGE	0.036*	-0.624***	0.152***	1					
SEX	-0.0140	0.0220	-0.063***	0.0250	1				
WORK	0.047**	0.439***	-0.089***	-0.454***	0.131***	1			
HEAL	0.157***	0.200***	-0.129***	-0.185***	0.037*	0.220***	1		
EST	0.109***	0.0230	-0.037*	0.0290	0.00200	0.0160	0.0270	1	
INV	0.047**	0.211***	-0.080***	-0.103***	0.0180	0.161***	0.084***	0.120***	1

Note: *, **, *** respectively represent the significance level of 0.1, 0.05 and 0.01

Each variable's variance inflation factor (VIF) was examined to look for multicollinearity. A VIF less than 10 denotes the lack of multicollinearity, according the diagnostic criteria for multicollinearity. Since the probit model cannot analyze VIF, OLS regression was utilized in this investigation. The findings confirmed the lack of multicollinearity by showing that the VIF values of each variable and their means were significantly less than 10.

3.3. Benchmark Regression Results

The result shows that the development of financial technology, particularly mobile payments, significantly improves rural household well-being, supporting Hypothesis 1. Mobile payments offer benefits like easier communication, entertainment, shopping, and public services, enhancing well-being. They also provide farmers with more efficient financial services, reducing borrowing barriers and promoting entrepreneurship. Regression results also highlight the impact of control variables: age positively affects well-being, men experience more pressure than women, higher education is linked to better well-being, and good health and more assets improve well-being by providing security and confidence.

Table 3: Regression Results Analysis

	FT	AGE	SEX	WORK	HEAL	EST	INV	_cons	N
RFH	0.219***	0.010***	-0.063*	0.001	0.300***	0.122***	-0.093	2.805***	2561
	(0.055)	(0.001)	(0.035)	(0.043)	(0.043)	(0.033)	(0.091)	(0.105)	R² 0.072

Note: *, **, *** respectively represent the significance level of 0.1, 0.05 and 0.01. Standard error in brackets.

3.4. Heterogeneity Analysis

The Eastern, Central, and Western areas comprised the survey sample. Thirteen provinces are located in the eastern region (Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Hainan, Liaoning, Jilin, and Heilongjiang); six provinces are located in the central region (Shanxi, Anhui, Jiangxi, Henan, Hubei, and Hunan); and twelve provinces, autonomous regions, and municipalities directly under the central government are located in the western region (Nei Menggu, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang). Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Xizang, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang are among the twelve provinces, autonomous entities, and municipalities that make up the Western area.

Table 4: Heterogeneity Test Results: Regional Characteristics &Mediation Effect Test for Alienation

	Eastern RFH	Central RFH	Western RFH		(1) RFH	(2) M	(3) RFH
FT	0.143*	0.337***	0.180	FT	0.219***	1.948***	0.779***
	(0.078)	(0.101)	(0.114)		(0.055)	(0.020)	(0.119)
AGE	0.012***	0.014***	0.008***	AGE	0.010***	0.002***	0.011***
	(0.002)	(0.002)	(0.003)		(0.001)	(0.001)	(0.001)
SEX	-0.112**	-0.037	-0.071	SEX	-0.063*	-0.025*	-0.070**
	(0.052)	(0.062)	(0.070)		(0.035)	(0.013)	(0.035)
WORK	0.050	-0.082	-0.021	WORK	0.001	0.082***	0.025
	(0.062)	(0.079)	(0.088)		(0.043)	(0.016)	(0.043)
HEAL	0.453***	0.331***	0.000	HEAL	0.300***	-0.078***	0.278***
	(0.054)	(0.067)	(.)		(0.043)	(0.015)	(0.043)
EST	0.105**	0.174***	0.099	EST	0.122***	0.007	0.125***
	(0.044)	(0.061)	(0.074)		(0.033)	(0.012)	(0.033)
INV	-0.174	0.082	-0.293	INV	-0.093	-0.029	-0.101
	(0.121)	(0.156)	(0.248)		(0.091)	(0.033)	(0.091)
_con	2.624***	2.530***	2.889***	M			-0.287***

Table 4: (continued).

	(0.161)	(0.184)	(0.225)				(0.054)
N	1003.000	838.000	720.000	_cons	2.805***	-0.113***	2.772***
R ²	0.116	0.098	0.051		(0.105)	(0.038)	(0.105)
				N	2561.000	2561.000	2561.000
				R²	0.072	0.877	0.082

Note: *, **, *** respectively represent the significance level of 0.1, 0.05 and 0.01. Standard error in brackets

Fintech development and rural household satisfaction have a positive link at the 10% level in the Eastern area, a greater and significant correlation at the 1% level in the Central region, and a positive but non-significant correlation in the Western region, according to Table 4. This shows that fintech's impact on happiness differs by area, most likely as a result of variations in the use of mobile payments. Mobile payments appear to have a stronger effect on enhancing the well-being of rural families in the Central area, as seen by their greater influence on household entrepreneurship.

3.5. Mediation Effect Test

The link between fintech and pleasure in rural households is mediated by alienation, as Table 4 illustrates. With a correlation of 0.219, fintech development and happiness are positively correlated in column (1). Fintech supports Hypothesis 2 by increasing alienation (coefficient = 1.948) in column (2). After accounting for both alienation and the interaction term, the mobile payments coefficient in column (3) is 0.779, which is negatively significant (-0.287). This validates Hypothesis 3 and demonstrates that alienation modulates the impact of mobile payments on wellbeing. Improving rural well-being requires controlling the usage of mobile payments in order to lessen alienation.

3.6. Robustness Test

Robustness analysis validates existing theories and ensures the reliability and general applicability of research conclusions. This paper re-measures rural household happiness using a Likert scale (1-3) with options for "unhappy," "neither happy nor unhappy," and "happy." The results confirm that the robustness test outcomes align with previous conclusions, indicating the reliability of the findings.

Table 5: Regression Results Analysis

	FT	AGE	SEX	WORK	HEAL	EST	INV	_cons	N
RFH1	0.169***	0.006***	-0.032	0.019	0.188***	0.073***	-0.038	0.993***	2561
	-0.04	-0.001	-0.026	-0.032	-0.031	-0.024	-0.067	-0.077	R² 0.061

Note: *, **, *** respectively represent the significance level of 0.1, 0.05 and 0.01. Standard error in brackets.

4. Conclusion and Limitations

This study uses data from the 2017 China Social Survey to examine how fintech affects rural families' well-being. According to the data, fintech significantly raises well-being, particularly in central China and in homes with family members who are more educated and healthier. Robustness tests support these results. Alienation is identified as a key mechanism, with reducing alienation crucial for further improvement in well-being. Limitations include the study's focus on rural China, limiting generalizability, and the narrow examination of alienation as a mediator, with other factors like

entrepreneurship and investment also playing a role. Future research could consider geographical and household debt factors to better understand fintech's effects.

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