

The Impact of Digital Inclusive Finance on Rural Household Financial Vulnerability: An Analysis based on the Ordered Probit Model

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ABSTRACT

The vulnerability of household finance is an extension of the research field of household finance, which has received widespread attention from scholars both domestically and internationally. Especially in rural areas of China, where economic development is relatively lagging and household income levels are low, the degree of financial vulnerability is more significant. In recent years, the vigorous development of digital inclusive finance has to some extent improved the accessibility of financial services for rural residents, providing new ideas and approaches to alleviate this problem. Therefore, in-depth exploration of the impact and mechanism of digital inclusive finance on the financial vulnerability of rural households is of great theoretical and practical significance for improving household financial welfare and maintaining financial stability. This article uses the Peking University Digital Inclusive Finance Index and the 2019 China Household Finance Survey (CHFS2019) data to empirically test the impact and mechanism of digital inclusive finance on rural household financial vulnerability using the Oprobit model and mediation effect model. The research results show that the development of digital inclusive finance can significantly reduce the financial vulnerability of rural households; The mediation effect analysis shows that the financial literacy of farmers plays a significant mediating role in it. Based on the above research conclusions, this article believes that continuously promoting the development of digital inclusive finance and deepening the reform of rural financial services have extremely important practical significance. This not only helps to further enhance the financial well-being of rural households, but also provides strong support for the sustainable economic development of rural areas, while laying a solid foundation for the stability and improvement of China's financial system.

KEYWORDS

Digital inclusive finance; Household finance; Vulnerability; Financial literacy

1. INTRODUCTION

In recent years, China's financial industry has developed rapidly, financial innovation has been continuously promoted, and the complexity and openness of the financial system have significantly increased. However, the rapid development of the financial system has also brought new challenges, and the pressure to prevent financial risks is increasing day by day. In this context, accelerating financial reform and improving the financial regulatory system have become urgent tasks. The Third Plenary Session of the 20th Central Committee of the Communist Party of China made significant arrangements for deepening the reform of the financial system, clearly stating that "all financial activities should be included in supervision in accordance with the law, the regulatory responsibility and accountability system should be strengthened, and the coordination between central and local supervision should be strengthened", which has pointed out the direction for the improvement of the

financial regulatory system. The importance of reducing household financial risks is increasingly prominent in financial risk prevention. In China, rural households face severe financial exclusion, difficulty in accessing financial services, and relatively weak resistance to financial risks, making them more susceptible to financial difficulties. Therefore, effectively reducing the financial vulnerability of rural households has become an important issue that urgently needs to be addressed. In view of this, this article adopts a combination of theoretical analysis and empirical research to deeply explore the impact mechanism of digital inclusive finance on the financial vulnerability of rural households in China. Based on this, policy recommendations are proposed to reduce the financial vulnerability of rural households through the development of inclusive finance, in order to provide theoretical support and practical reference for the optimization of China's rural financial system and effective prevention and control of rural household financial risks.

2. LITERATURE REVIEW

2.1. Research on the Concept and Measurement of Digital Inclusive Finance

The concept of digital inclusive finance is developed from inclusive finance, which was first proposed by the United Nations in 2005, targeting vulnerable groups such as rural residents and small and micro enterprises as key targets for financial services. In 2015, China officially proposed to vigorously develop inclusive finance, and defined the concept of inclusive finance as providing equal, effective, and comprehensive financial services to all groups in society. Due to the relatively short development time of digital inclusive finance, most existing literature studies methods for measuring the level of inclusive finance. Li Tao and Xu Xiang (2016) used the actual service situation of inclusive finance and the geographical coverage of inclusive finance services as indicators to comprehensively study the development of inclusive finance. Feng Xingyuan (2021) constructed an evaluation system for the development index of digital inclusive finance in Chinese counties from three dimensions: breadth, depth, and quality of digital inclusive finance services. Chai Shijun evaluated in 2023 using indicators such as the penetration of inclusive finance (such as the degree of financial service penetration, the proportion of financial service users, etc.), usability (the depth of financial service usage), and financial accessibility. However, most of the existing literature on digital inclusive finance research adopts the "Peking University Digital Inclusive Finance Index" jointly developed by the Peking University Digital Finance Research Center and Ant Group Research Institute (Guo Feng et al., 2020).

2.2. Research on the Concept and Measurement of Household Financial Vulnerability

Family financial vulnerability refers to the possibility of a household falling into financial difficulties due to a lack of sufficient financial buffering capacity when facing economic shocks, risks, or uncertainties. It is a comprehensive reflection of a family's ability to cope with and resolve the impact of uncertainty on their financial situation, reflecting their adaptability in terms of financial security and stability. It was first developed by American economist H P. Minsky (1982) proposed. At present, the assessment of household financial vulnerability is mainly based on clear monetary measures such as savings amount, total expenditure, debt to income ratio, and asset liability ratio. Michelangelo and Pietranti (2014) found through their study of low-income households that households with a debt to income ratio above 30% have poor debt paying ability and are unable to cope with the impact of fluctuations in income and interest rates. Therefore, this indicator can be used to measure whether households have financial vulnerability. Liu Bo (2020) measured household financial vulnerability from two dimensions: "insolvency" and "insufficient income to cover expenses". Li Le (2023) proposed a multidimensional quantitative indicator system to evaluate household financial vulnerability from multiple dimensions such as assets and liabilities, income and expenditure.

2.3. Factors Influencing Household Financial Vulnerability

In existing research, Anderloni et al. (2012) found that education level and monthly income level affect the financial vulnerability of households; Kim et al. (2014) found that divorce, singlehood, or widowhood of household heads can increase household financial vulnerability; Yue Wei et al. (2021) found that the health status of household heads can affect household financial vulnerability, while Yang Weiming et al. (2020) found that the continuous development of digital inclusive finance provides residents with diversified financial services. As a special form of human capital, the positive impact of financial literacy on household financial vulnerability has been proven by many scholars.

3. THEORETICAL ANALYSIS OF THE IMPACT MECHANISM OF DIGITAL INCLUSIVE FINANCE ON RURAL HOUSEHOLD FINANCIAL VULNERABILITY

In the traditional financial system, the allocation of financial resources tends to favor economically developed and affluent regions, while rural areas struggle to access sufficient financial services due to weak infrastructure and information asymmetry. However, the rapid development of digital inclusive finance in recent years has brought significant changes to this situation. Digital inclusive finance has greatly improved the convenience and accessibility of rural households to access financial resources through innovative financial service models and technological means, providing more investment opportunities for rural households, increasing household income, and effectively reducing household financial vulnerability. Based on this, this article proposes hypothesis 1: the development of digital inclusive finance can improve the accessibility of financial resources for rural households, thereby reducing their financial vulnerability.

The rise of digital inclusive finance provides farmers with timely and comprehensive access to financial knowledge and information. The accessibility of this information greatly enhances the financial literacy of farmers, enabling them to make more rational financial decisions. The improvement of financial literacy can effectively reduce the risk of excessive debt, optimize asset allocation, and thereby reduce the financial vulnerability of rural households. Therefore, this article proposes hypothesis 2: Digital inclusive finance plays an important mediating role in reducing the financial vulnerability of rural households.

4. CONSTRUCT A MEASUREMENT MODEL BASED ON FINANCIAL VULNERABILITY INDEX SYSTEM -- EMPIRICAL ANALYSIS

4.1. Data Variable Selection

4.1.1. Data Source

The data used in this article includes the China Household Finance Survey Data (CHFS2019) released by the China Household Finance Survey and Research Center of Southwest University of Finance and Economics in 2019 and the Peking University Digital Inclusive Finance Index (DFIIC). The data processing in this article is as follows: firstly, match the individual, household, and regional data in the CHFS database; Secondly, exclude urban areas and non-agricultural household registration; Thirdly, exclude household heads who are under 16 years old and over 80 years old; Fourth, eliminate outliers and missing values; Fifth, match the digital inclusive finance index to the CHFS database. Finally, 8513 valid sample sizes were obtained.

4.1.2. Variable Selection

(1) Explained variable. The dependent variable is the financial vulnerability of rural households. Most existing research measures household financial vulnerability from two dimensions: excessive debt

and emergency savings. For example, Michelangelo (2014) and Loke (2017) used the Debt to Income Ratio (DIR) to measure excessive debt and defined households with a debt to income ratio exceeding 30% as over indebted households. Based on this, this article adopts this method and sets the threshold for household debt to income ratio at 30%. Specifically, households with a debt to income ratio greater than 30% are defined as over indebted households and assigned a value of 1; On the contrary, assign a value of 0. This article also measures household financial vulnerability from the perspective of emergency savings. When a household's income is impacted, if the family's existing assets (including cash and risk-free assets) can cover the necessary expenses for the next three months (including basic living expenses such as food, water, electricity, and medical care), it is considered that the family's emergency savings are sufficient and assigned a value of 0; On the contrary, if it cannot be covered, it is assigned a value of 1. Taking into account the situation of excessive household debt and emergency savings, this article assigns a value of 0, 1, or 2 to the financial vulnerability of rural households.

(2) Core explanatory variables. The core explanatory variable of this article is the Digital Inclusive Finance Index compiled by the Digital Finance Research Center of Peking University. This index is a multidimensional and comprehensive indicator system aimed at comprehensively measuring the development level of digital inclusive finance. Specifically, this article selects the Digital Inclusive Finance Index as the core explanatory variable, and further incorporates three primary indicators of coverage breadth (Cover), usage depth (Usage), and digitalization degree (Digit) into multidimensional regression analysis to deeply analyze the impact and mechanism of digital inclusive finance on rural household financial vulnerability.

(3) Mediating variables. Most existing literature has chosen the three objective financial knowledge questions about interest rates, inflation rates, and risk selection from the CHFS questionnaire to construct financial literacy indicators. This article will continue to use this method to construct financial literacy indicators. This article constructs financial literacy indicators using principal component analysis based on the results of interest rates, inflation rates, and financial knowledge responses.

Table 1. Construction of Financial Literacy Indicators

	Indicator Name	Assignment
Financial literacy	Is the interest rate question answered correctly?	Answer=1, answer incorrectly or do not know=2
	Is the inflation question answered correctly?	Answer=1, answer incorrectly or don't know=2
	Investment project issues	Choose not willing to take any risks and not knowing to assign a value of 0, with the rest assigned a value of 1
	Level of understanding of financial knowledge	Never pay attention to assigning a value of 0, and assign all other values to 1

When measuring household financial literacy, this article mainly uses factor analysis method for processing. The results of factor analysis show that although only one common factor has a eigenvalue greater than 1, considering the low cumulative contribution rate of a single factor, it cannot fully reflect the multidimensional characteristics of household financial literacy. Therefore, this article selects two common factors with eigenvalues greater than 0.8 for subsequent regression analysis. The cumulative variance contribution rate of these two common factors reaches 66.33%,

which can well represent the overall characteristics of household financial literacy. Meanwhile, the results of KMO test indicate that the KMO values of each factor are greater than 0.6, and the overall mean is 0.668. This result indicates that factor analysis has high applicability and effectiveness in this study, and can reasonably extract key dimensions of household financial literacy. Based on the above analysis, this article uses the proportion of the variance contribution of each factor after rotation to the cumulative contribution as a weight to calculate the comprehensive household financial literacy index. This method not only fully considers the importance of various factors, but also ensures the scientific and representative nature of household financial literacy indicators, providing a reliable basis for subsequent empirical analysis.

Table 2. Factor Analysis

Factor	Eigenvalue	Proportion	Cumulative	Rotate Proportion	Rotate Cumulative
Factor1	1.77931	0.4448	0.4448	0.4448	0.4448
Factor2	0.87394	0.2185	0.6633		
Factor3	0.70012	0.1750	0.8383		
Factor4	0.64662	0.1617	1.0000		

Control variables: Referring to existing research, this article selected two dimensions as control variables: one is household head characteristics, including gender, age, education level, and health status. The second is family characteristics, including the number of properties, population size, and whether insurance is purchased.

4.1.3. Variable Description

Table 3. Descriptive Statistics of Variables

Variables	Variable description	N	Mean	SD	Min	Max
HFV	The greater the value of household financial vulnerability, the higher the household financial vulnerability	8,512	0.333	0.487	0	2
Index	Expressed as the Digital Inclusive Finance Index/100	8,512	3.000	0.229	0	3.777
Cover	Expressed as coverage breadth index/100	8,512	2.804	0.207	0	3.539
Depth	Expressed using the depth index/100	8,512	2.888	0.349	0	4.004
Digit	Digitization index/100	8,512	3.851	0.169	0	4.403
Age	Age of head of household	8,512	58.58	12.15	22	79
Health	Very good=1, good=2, generally=3, not good=4, very bad=5	8,512	2.792	1.034	1	5
Degree	Never attended school=1, elementary school=2, junior high school=3, high school=4, vocational school/vocational school=5, college/vocational school=6, undergraduate degree=7, master's degree=8, doctoral degree=9	8,512	2.854	1.194	1	9
Gender	Male=1, female=2	8,512	1.164	0.370	1	2
House	Number of properties	8,512	1.148	0.408	1	6
Insurance	Participation=1, otherwise 0	8,512	0.0874	0.282	0	1

4.2. Model Construction

4.2.1. Benchmark Model

Due to the fact that the dependent variable "household financial vulnerability of farmers" is a discrete ordered variable, the Ordered Probit model is adopted, and the basic model is as follows:

$$HFV_i^* = \beta Index_i + \gamma X_i + \varepsilon_i$$

In the above equation, HFV_i^* is the latent variable of household financial vulnerability, $Index_i$ the total index of digital inclusive finance for the i household, X_i is the control variable, β and γ are the estimated parameters, and ε_i is the random error term.

The values of the household financial vulnerability variable HFV_i are 0, 1, and 2, respectively, depending on the different ranges of the latent variable HFV_i^* as follows:

$$HFV_i = \begin{cases} 0, & \text{if } HFV_i^* < \theta_1 \\ 1, & \text{if } \theta_1 < HFV_i^* < \theta_2 \\ 2, & \text{if } HFV_i^* > \theta_2 \end{cases}$$

4.2.2. Mediation Effect Model

Based on the theoretical analysis in the previous text, the financial literacy of farmers may play a significant mediating role between the development of digital inclusive finance and the financial vulnerability of farmers' households. Based on this, we will establish the intermediary model as follows:

$$\begin{aligned} HFV_i &= \varphi_0 + \beta_0 Index_i + \gamma_0 X_i + \varepsilon_i \\ IV_i &= \varphi_1 + \beta_1 Index_i + \gamma_1 X_i + \varepsilon_i \\ HFV_i &= \varphi_2 + \beta_2 Index_i + \gamma_2 X_i + \mu_0 IV_i + \varepsilon_i \end{aligned}$$

Among them, HFV_i represents the financial vulnerability of the i household, and IV_i is the mediating variable of financial literacy.

5. CONSTRUCT A MEASUREMENT MODEL BASED ON FINANCIAL VULNERABILITY INDEX SYSTEM -- EMPIRICAL RESULTS ANALYSIS

5.1. Benchmark Regression

According to the estimation results of the model, the coefficient of development degree of digital inclusive finance is significantly negative at the 5% significance level. This result indicates that the promotion of digital inclusive finance can significantly reduce the financial vulnerability level of rural households. Further analysis of marginal effects shows that for every 1% increase in the digital inclusive finance index, the probability of rural household financial vulnerability being equal to 0 in China increases by 5.13%, the probability of being equal to 1 increases by 4.01%, and the probability of being equal to 2 decreases by 3.25%. This indicates that with the improvement of the development

level of digital inclusive finance, the overall financial vulnerability of rural households has decreased, especially the significant alleviation of high-level financial vulnerability. Therefore, the above results strongly validate hypothesis 1 of this article, that is, the development of digital inclusive finance can effectively reduce the financial vulnerability of rural households. This indicates that digital inclusive finance has played an important role in improving the accessibility of financial services for rural households and enhancing their ability to cope with risks, providing strong support for the economic stability of rural households.

Table 4. Benchmark Regression Results

Variable	Oprobit (1)	HFV=0 (2)	HFV=1 (3)	HFV=2 (4)
Index	-0.3505** (0.046)	0.0513** (0.046)	0.0401** (0.046)	-0.0325** (0.046)
Cover	-0.0453 (-0.06)	0.0155 (0.06)	-0.0146 (-0.06)	-0.000909 (-0.06)
Depth	-0.593 (-1.19)	0.204 (1.19)	-0.192 (-1.19)	-0.0119 (-1.18)
Age	-0.0246*** (-17.94)	0.00843*** (18.95)	-0.00793*** (-18.98)	-0.000493*** (-8.11)
Health	0.153*** (10.35)	-0.0526*** (-10.53)	0.0496*** (10.53)	0.00308** (6.88)
Degree	-0.0331* (-2.47)	-0.0113* (2.47)	-0.0107* (-2.47)	-0.000663*** (-2.39)
Gender	-0.0506 (-1.32)	-0.0174 (1.32)	-0.0163 (-1.32)	-0.00101 (-1.30)
House	0.236*** (7.10)	-0.0810*** (-7.16)	-0.0763*** (7.16)	-0.00474*** (5.56)
Insurance	0.0121 (0.24)	-0.00414 (0.24)	-0.00390 (0.24)	-0.000242 (0.24)
N	8512	8512	8512	8512
Pseudo R ²	0.0779			

Note: t statistics in parentheses* p<0.05, ** p<0.01, *** p<0.001.

The control variables selected in this article have mostly had a significant impact on the financial vulnerability of rural households in regression analysis. Specifically, farmers with higher levels of education have a higher acceptance and utilization of financial knowledge, and are able to effectively use financial tools for risk management, thereby reducing household financial risks. Therefore, the improvement of education level can significantly reduce the level of household financial vulnerability. Farmers with better health conditions can access and process financial information more quickly, and use financial tools more effectively to optimize their household financial situation. Good health not only reduces the risk of poverty caused by illness, but also enhances farmers' ability to cope with sudden financial shocks, thereby reducing household financial vulnerability. Compared with farmers who have not purchased insurance, farmers who have insurance can effectively diversify or transfer uncertainty risks when facing risks such as diseases and accidents. Insurance, as an important risk management tool, can significantly reduce the economic burden of rural households and thus lower the level of financial vulnerability of households. These factors not only directly affect the economic

decision-making ability of farmers, but also provide important guarantees for household financial stability by enhancing their ability to cope with risks.

5.2. Intermediate Model Testing

According to the regression results, the regression coefficient of the digital inclusive finance index on household financial vulnerability is significantly negative, indicating that the development of digital inclusive finance can effectively reduce the financial vulnerability of rural households. Meanwhile, the regression coefficient of the Digital Inclusive Finance Index on the level of financial literacy is significantly positive, indicating that the development of digital inclusive finance can significantly improve the financial literacy of rural households. Furthermore, when financial literacy level is included as a mediating variable in the model, the regression coefficient of digital inclusive finance on household financial vulnerability remains significantly negative, but its impact has decreased to some extent. This indicates that the level of financial literacy plays a partial mediating effect between digital inclusive finance and household financial vulnerability. In addition, the Sobel test results showed a P-value of 0.0320, which is significant at the 5% level of significance. This result further confirms the partial mediating effect of financial literacy level, that is, digital inclusive finance reduces household financial vulnerability by enhancing household financial literacy. This not only provides strong evidence for the positive role of digital inclusive finance, but also verifies hypothesis 2 of this article, which is that digital inclusive finance can reduce the financial vulnerability of rural households by improving their financial literacy level.

Table 5. Intermediate Effect Test of Financial Literacy

Variable	HFV(1)	Finlit(2)	HFV(3)
Index	-0.3505** (0.046)	0.3215** (0.1239)	-0.3203** (0.1381)
Finlit			-0.0280*** (0.0121)
Cover	-0.0453 (-0.06)	-0.4532*** (0.0114)	-0.0249*** (0.0015)
Depth	-0.593 (-1.19)	-0.3418 (0.0210)	0.0019 (0.0369)
Age	-0.0246*** (-17.94)	-.01632*** (0.0131)	-0.0379*** (0.0146)
Health	0.153*** (10.35)	-0.0388** (0.0250)	0.0460** (0.0253)
Degree	-0.0331* (-2.47)	-0.1931* (0.0120)	0.1383*** (0.0123)
Gender	-0.0506 (-1.32)	0.0640** (0.0254)	0.1033*** (0.0254)
House	0.236*** (7.10)	-0.1388 (0.0076)	0.0762*** (0.0027)
Insurance	0.0121 (0.24)	0.3862*** (0.0051)	-0.1135*** (0.0052)
Sobel test	Z=-2.201, P=0.0320		
N	8512	8512	8512

6. CONCLUSION AND SUGGESTIONS

6.1. Conclusion

This article explores in depth the impact and mechanism of digital inclusive finance on the financial vulnerability of rural households from both theoretical and empirical perspectives. In the theoretical

section, this article systematically reviews relevant research on digital inclusive finance and household financial vulnerability both domestically and internationally, and summarizes the main viewpoints and research progress of existing literature. On this basis, this article further analyzes the possible impact mechanism of digital inclusive finance on the financial vulnerability of rural households, and proposes a theoretical hypothesis that digital inclusive finance can reduce the financial vulnerability of rural households by improving the availability of financial resources, enhancing financial literacy, and alleviating financial constraints.

In the empirical section, based on the 2019 China Household Finance Survey Data (CHFS2019) released by Southwest University of Finance and Economics and the Peking University Digital Inclusive Finance Index, this article constructed an Oprobit model to empirically test the impact of digital inclusive finance on the financial vulnerability of rural households. The research results indicate that the development of digital inclusive finance can significantly reduce the financial vulnerability of rural households. Further mediation analysis shows that financial literacy plays a significant mediating role between the development of digital inclusive finance and the financial vulnerability of rural households, verifying the theoretical hypothesis that digital inclusive finance reduces financial vulnerability by enhancing household financial literacy.

In summary, this study not only theoretically explains the impact mechanism of digital inclusive finance on rural household financial vulnerability, but also provides strong empirical evidence for this theoretical hypothesis through empirical analysis, providing important policy references for promoting the development of digital inclusive finance and reducing rural household financial vulnerability.

6.2. Suggestions

6.2.1. Accelerate the Development of Digital Inclusive Finance in Rural Areas

We should increase investment in the infrastructure of digital inclusive finance in rural areas, improve network communication facilities, optimize the payment and settlement environment, and provide a solid foundation for the development of digital inclusive finance. At the same time, financial institutions are encouraged to innovate digital financial products and service models that are suitable for rural households, simplify operational processes, and lower usage barriers to meet the diverse financial needs of rural households. In addition, the government can guide financial institutions to increase their resource allocation to rural areas through policy measures such as fiscal subsidies and tax incentives, promote the widespread coverage of digital inclusive finance in rural areas, and effectively improve the accessibility of financial resources for rural households.

6.2.2. Improve the Financial Literacy of Farmers

Actively carry out various forms of financial knowledge popularization activities, using a combination of online and offline methods to teach farmers basic financial knowledge, investment and financial management skills, risk prevention awareness, and other content. Online, easy to understand short videos and online financial courses can be created to facilitate farmers' learning anytime, anywhere; Offline, financial experts and volunteers can be organized to conduct lectures, consultations, and other activities in rural areas to answer farmers' questions face-to-face. Schools should also incorporate financial education into the rural compulsory education system, cultivate young people's financial awareness, and enhance the overall financial literacy of rural areas from a long-term perspective. Financial institutions should strengthen risk warning and educational guidance for farmers in the process of providing services, help them establish correct financial consumption concepts, avoid blind borrowing and investment, and effectively reduce financial vulnerability caused by insufficient financial literacy.

6.2.3. Reduce the Differences in the Development of digital Inclusive Finance between Regions

The government should strengthen the overall planning for the development of digital inclusive finance, formulate regional coordinated development strategies, and guide financial resources to tilt towards rural areas and economically underdeveloped areas. Through policy guidance and incentive measures, financial institutions are encouraged to increase their branch layout and business expansion in these areas, narrowing the gap in financial services between regions. At the same time, promote financial cooperation and exchanges between regions, facilitate the sharing of advanced experience and technology, and help underdeveloped areas improve the level of digital inclusive finance development. In addition, a regional monitoring and evaluation mechanism for the development of digital inclusive finance can be established to regularly assess the development situation in various regions, identify problems in a timely manner, and adjust policy measures to ensure the balanced and coordinated development of digital inclusive finance nationwide, and avoid exacerbating the financial vulnerability gap of rural households due to regional development imbalances.

6.2.4. Strengthen the Supervision of Digital Inclusive Finance

Establish and improve laws and regulations for the regulation of digital inclusive finance, clarify regulatory entities, scope, and responsibilities, and ensure that all digital inclusive finance activities operate within the legal framework in a standardized manner. Strengthen the full process supervision of digital inclusive finance business, strictly control every link from market access, product design, risk assessment to fund flow, and prevent regulatory gaps and loopholes. At the same time, innovative regulatory methods are being employed, utilizing technologies such as big data and blockchain to enhance regulatory efficiency and achieve real-time monitoring and early warning of risks in digital inclusive finance. Strengthen compliance checks and accountability mechanisms for financial institutions, handle illegal and irregular behaviors seriously in accordance with the law, and safeguard the legitimate rights and interests of rural household financial consumers. In addition, we will strengthen the coordination and cooperation between central and local regulatory departments, establish information sharing and joint law enforcement mechanisms, form regulatory synergy, and jointly maintain the stability and healthy operation of the digital inclusive finance market.

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REFERENCES

- [1] Cristina Ottaviani, Daniela Vandone. Financial Literacy, Debt Burden and Impulsivity: A Mediation Analysis[J]. *Economic Notes*, 2018, 47(2-3).
- [2] John Y. Campbell. Household Finance[J]. *The Journal of Finance*, 2006, 61(4):1553- 1604.
- [3] Koomson, Renato A. Villano and David Hadley. Effect of Financial Inclusion on Poverty and Vulnerability to Poverty: Evidence Using a Multidimensional Measure of Financial Inclusion[J]. *Social Indicators Research*, 2020(149): 1-27.
- [4] Marianna Brunetti, Elena Giarda, Costanza Torricelli. Is Financial Fragility a Matter of Illiquidity? An Appraisal for Italian Households[J]. *Review of Income and Wealth*, 2016, 62(4):628-649.
- [5] Chen Chibo, Gong Zheng Can digital inclusive finance alleviate the financial vulnerability of rural households? [J] *Journal of Zhongnan University of Economics and Law*, 2021 (04): 132-143.
- [6] Xu Rongzhen, He Tingting, Wang Sen Research on the Impact of Digital Inclusive Finance Development on Reducing the Financial Vulnerability of Farmers' Households: Analysis Based on Ordered Probit Model [J]. *Price Theory and Practice*. 2022 (04): 1-5.

- [7] Yin Zhichao, Zhang Donghao Financial Inclusion, Household Poverty, and Vulnerability [J]. *Economics (Quarterly)*, 2020, 20 (05): 153-172.
- [8] Yang Weiming, Su Lin, Wang Mingwei Digital inclusive finance and urban and rural residents' income: an analysis of the mediating effect based on economic growth and entrepreneurial behavior. *Journal of Shanghai University of Finance and Economics*, 2020 (4): 83-94.
- [9] Li Yuanyuan, Zhang Chunlei, Sui Lirui Research on the role of residents' financial literacy in preventing financial fraud risks: an analysis of the mediating effect of risk preference [J]. *Price Theory and Practice*, 2020 (08): 92-95.
- [10] Zhang Xun, Wan Guanghua, Zhang Jiajia Digital Economy, Inclusive Finance, and Inclusive Growth [J]. *Economic Research*, 2019, 54 (08): 71-86.