Study on the Impact of Social Networks on Household Financial Vulnerability

Path Choice under the Empowerment of Digital Finance

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Abstract. In order to reduce the risk of returning to poverty and reduce the financial vulnerability of households, it is very important to improve their anti-risk ability. Using the panel logit model and the data of China Household Finance Survey (CHFS) in 2015, 2017 and 2019, this paper finds that social network can reduce the financial vulnerability of households and realize the sharing of household risks. At the same time, it is found that the development of digital finance strengthens the risk sharing effect of social network on household financial vulnerability.

Keywords: Social networks, Household financial vulnerability, Digital finance, Risk sharing.

1 Introduction

The No. 1 Central Document in 2024 proposes to "implement the monitoring and assistance mechanism to prevent the return to poverty", and reducing the financial vulnerability of households and improving the anti-risk ability of households are the key to preventing the risk of large-scale return to poverty. China, as a country dominated by "human relations", has highlighted the network of family social relations. Social networks play an important role in enabling information exchange, easing liquidity constraints, and promoting employment and private lendin[1][2]. At present, the rapid development and popularization of digital finance has broadened the channels for households to obtain information, reduced transaction costs, improved the relative income level of households, and eased the financial vulnerability of households[3][4]. In summary, the role of social networks in risk sharing of household financial vulnerability and whether digital finance can promote this process? This is the main issue of this paper.

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2 Research Design

2.1 Data Selection

This paper uses the panel data of China Household Finance Survey Database (CHFS) of Southwestern University of Finance and Economics in 2015, 2017 and 2019 for empirical analysis. After deleting samples with extreme outliers and missing relevant variables, more than 100,000 sample data will be retained.

2.2 Variable Setting

Explanatory Variable: Social Network. Based on the methods of Li Ding, this paper combs the CHFS questionnaire, and selects expenditures related to family social networks for calculation. The main variables are as follows: "dining out expenditure", "local transportation expenditure", "average communication expenditure", "average entertainment expenditure", "total tourism expenditure", "holiday transfer expenditure", "Red and white wedding event transfer expenditure"[5]. In order to avoid the multicollinearity problem, the principal component analysis method is used to conduct factor analysis, and a comprehensive social interaction index is established.

Explained Variable: Household Financial Vulnerability. Referring to Ampudia et al. (2016) and O'connor (2018), this paper mainly considered the debt repayment ability and capital flow ability of a family, and held that when the sum of current capital and current assets of a family was not enough to repay debts, a family would be in financial trouble[6][7]. The specific formula is as follows:

$$\mathrm{FV_{it}} = \mathrm{FM_{it}} + \mathrm{LA_{it}} \tag{1}$$

$$\mathrm{FM_{it}} = \mathrm{Y_{it}} - \mathrm{DP_{it}} - \mathrm{LC_{it}} \tag{2}$$

Among them, FM_it stands for Current financial margin,Y_it represents total household income, DP_it represents debt expenses, and LC_it represents daily living expenses. Considering the influence of current assets on household financial vulnerability, if a household's current assets LA_it is still difficult to fully cover the expenditure when the financial margin MF_it is negative, it is defined that the household has financial vulnerability. To sum up, this paper represents FVi of household financial vulnerability as follows:

$$\mathrm{P_r}(\mathrm{FV_{it}} = 1) = \mathrm{P_r}(\mathrm{FM_{it}} + \mathrm{LA_{it}} < 0) \tag{3}$$

Moderating Variable: Digital Finance. Based on the practice of He Jing and Li Qinghai (2019), this paper measures the use of household digital finance from three dimensions: digital lending, digital finance and digital payment[8]. In the questionnaire survey, if the family has the intention to borrow or has borrowed from the online lending platform, it is considered that the family has digital borrowing; If the family

holds Internet financial products, it is considered that the family has Internet financial behavior; If a household has opened a third-party payment account such as Alipay or wechat Pay, or uses mobile banking or credit cards for daily payments, it is considered that the household has used digital payment. In the above questions, if any of the interviewed households have one or more conditions, the digital financial variable is assigned a value of 1, otherwise the value is assigned to 0.

Control Variables. Household financial vulnerability is affected by many factors such as the characteristics of household head and family. According to the practice of Zhao Yaxiong and Wang Xiuhua (2022) [3] and existing literatures, the selection variables are shown in Table 1:

Table 1. Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
FV	0.281	0.449	0	1
Socialnet	-0.009	0.621	-0.3	26.726
work	0.476	0.338	0	1
total number	3.27	1.606	1	20
health	0.827	0.379	0	1
male	0.768	0.422	0	1
edu	15.748	5.883	0	22
hk	0.535	0.499	0	1
marriage	0.853	0.354	0	1

2.3 Model Design

First, the impact of social network on household financial vulnerability is investigated. Considering that the core explained variable of this paper is a binary variable, Logit model is adopted for analysis according to variable characteristics to ensure the accuracy of the results. The following measurement model is set in this paper:

$$FV_{it} = a + \beta_1 Social_{it} + \gamma X_{it} + \lambda_t + \varepsilon_{it} \quad (4)$$

Secondly, in order to investigate the impact of digital finance on household financial vulnerability and whether digital finance can play a regulating role in social network and household financial vulnerability, the following econometric model is set up:

$$FV_{it} = a + \beta_1 Social_{it} + \beta_2 DFI_{it} + \beta_3 Social_{it} \times DFI_{it} + \gamma X_{it} + \lambda_t + \varepsilon_{it} \quad (5)$$

Where i represents the number of each household surveyed. FV_it represents the financial vulnerability of the i households in the t year. The core explanatory variable is whether they participate in the social network Social_it, and the moderating variable

is DFI_it. X_it is the control variable, including the family characteristic variable, ε_it is the unobservable error term, λ_t is the time fixed effect.

3 Empirical Analysis and Test

3.1 Reference Regression

As shown in Table 2, Model (1) reports the regression results without adding digital finance. From the results, we can see that the regression coefficient of social network is -0.2388, which is significant at 1% level. It shows that social network is significantly negatively correlated with household financial vulnerability, indicating that social network can significantly reduce household financial vulnerability. Model (2) reports the regression results of the inclusion of digital finance. After the inclusion of digital finance, social network still significantly reduces household financial vulnerability, which further explains the research hypothesis of this paper, that is, social network can reduce household financial vulnerability. Therefore, hypothesis 1 of this paper cannot be rejected: social networks can alleviate household financial vulnerability.

Table 2. Reference regression

	(1)	(2)
VARIABLES	FV	FV
Socialnet	-0.2388***	-0.1965***
	(-13.8618)	(-11.4697)
DFI		-0.6426***
		(-14.6632)
Constant	-1.5432***	-1.4575***
	(-47.5789)	(-44.4574)
Observations	109,807	109,807
Year	YES	YES

3.2 Regulating Effect

The results are shown in Table 3, it can be found that the impact of social network on household financial vulnerability is still significantly negative, and the coefficient of digital finance is also significantly negative, which is consistent with the previous theoretical basis and research hypothesis. The interaction term is the cross-multiplication term of social network and digital finance. Under the condition that control variables are not added and control variables are added, the coefficient of the interaction term is significantly negative, which indicates that the negative effect of social network on household financial vulnerability will increase with the increase of digital finance, indicating that digital finance can promote the inhibitory effect of social network on household financial vulnerability. Therefore, hypothesis 2 of this

paper cannot be rejected: digital finance promotes the easing effect of social network on household financial vulnerability.

Table 3. Moderating effect

	(1)	(2)
VARIABLES	FV	FV
jh	-0.2529***	-0.1983***
	(-6.1590)	(-5.3016)
Socialnet	-0.2212***	-0.0456
	(-6.3537)	(-1.4313)
DFI	-0.8794***	-0.6278***
	(-20.4172)	(-14.3074)
Constant	-1.2654***	-1.4487***
	(-88.6627)	(-44.1541)
Observations	109,807	109,807
Year	YES	YES

3.3 Robustness Test

For further verification, we perform the robustness test in the following way. The specific contents are shown in Table 4. First, reduce the sample range, choose to exclude the sample of family workers with financial workers; Second, replace the explanatory variable (choose to use communication expenses as a measure of social network); Third, replace the regression model with probit for regression. It can be seen from the results that the robustness test using the above three methods did not change the symbol and significance level of social relationship network and digital finance, indicating that social network and digital finance can still reduce household financial vulnerability, indicating that the benchmark regression result is robust.

Table 4. Robustness test results

	(1)	(2)	(3)
VARIABLES	FV	FV	FV
Socialnet	-0.1986***		-0.0958***
	(-11.4718)		(-11.0052)
DFI	-0.6261***	-0.7179***	-0.3334***
	(-14.1696)	(-16.4812)	(-14.7407)
communication		-0.0136***	
		(-3.4960)	
Constant	-1.4569***	-1.2208***	-0.8466***
	(-44.3656)	(-25.1982)	(-43.9419)
Observations	108,667	106,050	109,807
Year	YES	YES	YES

4 Conclusion and Suggestion

4.1 Conclusion

Based on the data of the third Chinese Household Finance Survey (CHFS), this paper empirically examines the impact of social networks on household financial vulnerability. The main results show that: First, social networks significantly reduce household financial vulnerability. Second, digital finance significantly reduces household financial vulnerability and strengthens the negative effect of social networks on household financial vulnerability.

4.2 Policy Implication

(1) Residents should actively participate in social networks. Expand their own social network, and constantly enrich social capital.

(2) Promote the development of digital finance. Support digital financial innovation and increase the accessibility and convenience of financial services.

(3) The government should strengthen the supervision of the financial market, ensure the transparency and fairness of financial products, and protect the rights and interests of consumers.

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