

## Article

# Can Access to Financial Markets Be an Important Option for Rural Families to Break the Return to Poverty Due to Illness in China?

Zeyang Sun <sup>1</sup> and Xiaocang Xu <sup>2,\*</sup> 

<sup>1</sup> School of Economics and Business Administration, Heilongjiang University, Harbin 150080, China; 2210076@s.hlju.edu.cn

<sup>2</sup> School of Economics and Management, Huzhou University, Huzhou 313000, China

\* Correspondence: 03122@zjhu.edu.cn

**Abstract:** Background: In China's post-epidemic era, the income of rural households has decreased, and the function of property preservation and appreciation is expected to weaken, which gives the financial market an increasingly prominent role in blocking the barrier of poverty caused by disease. Method: Based on CHARLS data, this paper empirically explores the relationship between financial assets and health expenditure and catastrophic health expenditure (representing the incidence of return to poverty due to illness) to provide evidence for the development of financial markets to help stop the return to poverty due to illness and consolidate the achievements of poverty alleviation. Results: The results show that the influence of financial assets on the incidence of catastrophic health expenditures is significant and has a threshold effect. At the same time, financial assets have a greater impact than housing on preventing the return to poverty due to illness. Therefore, moving to the financial market can be a viable option for rural households to stop the return to poverty due to illness in the future. Policy suggestion: The government should standardize the development of the financial market and scientifically allocate financial resources to ensure the stable preservation and appreciation of household financial investment. Rural family members should actively improve personal financial literacy and reasonable planning of family assets to achieve stable preservation and appreciation of family financial investment.



**Citation:** Sun, Z.; Xu, X. Can Access to Financial Markets Be an Important Option for Rural Families to Break the Return to Poverty Due to Illness in China? *Agriculture* **2024**, *14*, 165. <https://doi.org/10.3390/agriculture14020165>

Academic Editor: Sanzidur Rahman

Received: 4 January 2024

Revised: 16 January 2024

Accepted: 22 January 2024

Published: 23 January 2024



**Copyright:** © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Keywords:** rural families; poverty; catastrophic health expenditures; financial assets; financial literacy

## 1. Introduction

Health expenditures due to physical health problems place a heavy economic burden on households, leading to poverty due to illness. In Kenya, about 1.48 million residents were pushed below the national poverty line due to health care payments in 2007 [1], and Albania and Kosovo are severely suffering from the catastrophic and impoverishing effects of health expenditures as well [2], which all suggests that at a time of illness, a household may divert expenditures to health care to an extent that its spending on basic necessities falls below the poverty line [3]. China's health expenditure has been on the rise in recent years. The total government health expenditure increased from 4.6 trillion yuan to 6.5 trillion yuan between 2016 and 2019, with an average annual growth rate of 12.2% (National Bureau of Statistics, 2020), accounting for 6.16% GDP in 2016 and 6.59% GDP in 2019. In contrast, as early as 2005, only 15 of the 46 African WHO member states spent less than 4.5% of their GDP on health [4]. Li (2012) pointed out that the rate of catastrophic health expenditure in China reached 13.0% [5], which was similar to the most of the areas mentioned above. Unfortunately, three years of the continuous impact of the novel coronavirus epidemic has worsened the condition of rural families who have just emerged from absolute poverty in 2020, and the risk of falling back into poverty due to illness has increased sharply. In this context, the 20th National Congress of the

Communist Party of China (2022) emphasized that “ensuring people’s health should be placed in a strategic position of priority development”, “consolidating and expanding the achievements of poverty alleviation, and enhancing the endogenous development momentum of poverty-stricken areas and people”.

Income, housing, and financial assets are the last barriers that prevent families from falling back into poverty due to illness. (Health insurance, for example, is limited.) However, under the reality and expectation that income increase is difficult under the impact of the epidemic, the real estate market is depressed, and good investment attributes have been lost (supported by the central “housing does not speculation” positioning), can financial assets become the preferred wealth appreciation and maintenance channel to block the return to poverty due to illness? The effective integration of the financial market and the real economy is the basis for the orderly and sustainable development of a country’s economy, and the development potential is huge. However, the average financial assets of rural households in China accounted for only 20.4% of total household assets, which is far less than the nearly 70% of real estate (Urban Household Assets and Liabilities Survey Group of the Survey and Statistics Department of the People’s Bank of China, 2019). Thus, with the expected strong government support, moving into financial markets may be a promising and viable option. In March 2023, the Central Committee of the Communist Party of China and The State Council decided to establish the State Financial Supervision and Administration based on the China Banking and Insurance Regulatory Commission.

The burden of health expenditure is an important factor affecting the vulnerability of multidimensional poverty regression [6,7], which has attracted the attention of many scholars and influenced the concept of catastrophic health expenditure (CHE) to measure it [8–12]. However, there are few studies on the role of financial development in poverty reduction due to illness or health. Gao P. (2009) studied financial poverty reduction earlier [13]. After the 18th National Congress of the Communist Party of China in 2012, many relevant studies emerged and reached a peak in the past three years. Relevant studies have found that poor rural areas can achieve a poverty reduction effect by reducing the incidence of poverty by considering the level of financial development [14–17]. However, the poverty reduction effect of finance has a certain income threshold effect in different regions due to the differences in economic and income development levels [18–21]. When per capita income jumps out of the “poverty trap”, financial development has a clear accelerating effect on poverty alleviation [22,23]. Moreover, digital financial inclusion can contribute to the poverty reduction effect by increasing the availability of financial resources for poor farmers [24–28]. Finally, the level of financial literacy of family members, such as personal financial knowledge and social network relationships, plays a very important role in the poverty vulnerability of rural families [29–33]. All the above research has demonstrated the poverty reduction effect of financial development, but there is scant research related to health poverty. Only Liu H and Wang H et al. (2018) found that the promoting effect of rural financial development on the alleviation of medical poverty has gradually increased [34].

Meanwhile, the impact of health shocks on household financial investment has been confirmed by some scholars [35–37]. Surveys in eighty-nine countries covering 89 percent of the world’s population suggest that 150 million people globally suffer financial catastrophe annually because they pay for health services. However, there is a certain two-way effect between health expenditure and household financial asset allocation, and household financial asset allocation has a certain impact on health expenditure and then on poverty or return to poverty due to illness. However, there are few pieces of relevant literature, and health factors are mostly discussed as one of the dimensions of the multidimensional poverty vulnerability index. For example, Zhou D. and Wang M. (2019) [38] incorporated health factors into their vulnerability poverty alleviation theory and used the data of three rounds of micro-surveys in the China Household Tracking Survey (CFPS) from 2010 to 2014 and built a conditional Markov model to discuss the blocking effect of household asset endowment, including financial assets, on the return to poverty.

Moreover, from the perspective of China's current economic situation, the main investment channels for households are the real estate market and the financial market. However, due to the changes in the economic situation and policy orientation, the value-added function of the real estate market is expected to weaken, while through the continuous improvement and development of the financial market and the continuous improvement of people's financial literacy, the author believes that moving towards the financial market will also become an important choice for rural families in China who have just stepped into a well-off life to prevent them from returning to poverty in the future due to illness. Therefore, based on the data of the China Health and Retirement Longitudinal Survey (CHARLS), this paper analyzes the relationship between rural households' financial assets, health expenditure, and catastrophic health expenditure to provide evidence for the development of financial markets to help stop the return to poverty due to illness. Looking at the previous research literature, it seems that there is no relevant research literature that has carried out a clear in-depth analysis of this. This constitutes the marginal innovation of this paper.

## 2. Materials and Methods

### 2.1. Theoretical Analysis

Grossman's (1972) health demand model included human health as a special capital in the asset accumulation process, and health was regarded as a depreciable capital good, whose stock was dynamically changing; for example, occurrence of diseases and the growth of age would reduce the stock of health. Individuals need health care (for example, investing time and consuming medical products and services) to reap the consumption benefits that health provides (health as a commodity provides utility to the individual) as well as the productive benefits (healthy individuals have greater income). The asset accumulation formula can be expressed as Formula (1):

$$\dot{A}_t = rA_t + Y[t^s(H_t)] - \pi_t^H I_t - \pi_t^Z Z_t \quad (1)$$

$A$  refers to the stock of financial assets,  $r$  is the interest rate (rate of return),  $Y$  refers to labor income,  $t^s$  is a function of "sick time",  $H_t$  is the stock of individual healthy capital,  $Z$  is consumer goods, and  $I$  is healthy capital investment.  $\pi^H$  and  $\pi^Z$  are the marginal (or average) costs of investing in health and consumption.

That is, individual or household asset accumulation is positively correlated with income and financial assets and negatively correlated with healthy capital investment and commodity consumption. When discussing household assets or poverty research, predecessors have rarely taken into consideration the stability of financial assets and their return rate as an important factor. This also provides research space for the possible innovation of this paper.

### 2.2. Research Hypothesis

Firstly, investing in real estate is no longer a good way to preserve and increase the wealth of ordinary Chinese households. Household assets refer to the property, claims, and other rights owned by the family that can be measured in money and can be divided into financial assets, physical assets, intangible assets, etc. From the perspective of multidimensional poverty, household assets are the collection of money, population, and material and social resources, including financial assets, human assets, material assets, society and nature, etc. [39]. Household assets are mainly divided into financial assets and non-financial assets; financial assets include bank deposits, bonds, stocks, investment funds, retirement funds, life insurance, and so on. Non-financial assets include owner-occupied homes, non-owner-occupied homes, commercial assets, automobiles, consumer durables, gold, silver, jewelry, antiques, and art, among others. Zhou and Wang (2019) [38] divided assets into five categories when discussing household asset endowment to prevent the return to poverty, namely production assets represented by machinery and equipment, self-use

assets represented by household durable consumer goods, security assets represented by medical insurance, human assets represented by education level, and financial assets represented by stocks or funds. It is worth noting that unlike Haveman and Wolff (2000) [40], they considered the limited number of real estate owned by poor families and the small possibility of selling them, so they regarded real estate as a component of self-use assets; that is, real estate in relatively low-income groups basically does not have investment attributes, which is also consistent with the empirical results of this paper. It is one of the focus points of this paper's viewpoint analysis. Coupled with the blessing of the central government's future positioning of "housing without speculation", this paper believes that investment real estate will no longer be the best choice for rural families to block return to poverty in the future.

Secondly, China's health insurance market is inadequate, increasing the risk that rural families will fall back into poverty due to illness. To reduce the incidence of catastrophic health expenditure and avoid the return to poverty due to illness, production assets and self-use assets do not constitute the necessary conditions to prevent catastrophic health expenditure. The security assets represented by medical insurance have certain protection functions, but the health insurance market in China is not perfect. Basic medical insurance is not enough to cope with high health costs; the commercial medical insurance market is still quite immature and not practical for rural low-income families; and long-term care insurance, which has been piloted in 49 cities across the country twice, namely in 2016 and 2020, is only in the exploratory stage. Thus, the role of asset protection in interrupting the return to poverty due to illness is not enough, at least at this stage. The human assets represented by the level of education are of great significance in consolidating the achievements of poverty alleviation in China in the future, achieving and sustaining a well-off society and moving towards common prosperity. However, for the current rural low-income families who have just left poverty, the level of education is relatively low and cannot change in a short period of time, and the only hope is placed on the generational replacement of the family. For example, the younger generation of rural families is more educated and can utilize more financial knowledge and concepts, and the improvement of financial literacy will help them choose and invest in investment channels (such as various financial products) other than real estate, which is difficult to achieve with their native family or personal efforts, in order to thwart the possibility of returning to poverty.

Finally, financial assets represented by stocks or funds have significant advantages in preventing rural families from returning to poverty due to illness for four reasons: First, the current investment channels for maintaining and increasing the value of household assets in our country are very limited, and the investment function of the most valuable real estate in the past is not an optimistic option for the future. Therefore, financial investment is a good choice when other good alternative channels cannot be found. Second, the financial market of our country is constantly improving and maturing, and the vigorous government support, combined with the development of the mature financial market in the United States and other countries, has given financial investment a good, stable value preservation and appreciation function in the long term. Third, there are various financial products, including structural collocation choices of long-term and short-term products, as well as high-risk and high-yield futures options and low-risk and low-yield funds, which largely avoid the risk bias caused by the lack of financial literacy of relatively low-income families. Moreover, with the generational change of relatively low-income families, the education level is rising higher and higher, and the improvement of financial literacy will gradually correct this risk bias. Fourth, benefiting from the continuous development of China's medical insurance and long-term care insurance and other security asset markets, rural low-income families will be likely to attain some additional assets from the basic living expenses that may "drip into more" into the financial market. Compared with the huge amount of capital required for real estate investment, the diversity of financial products and the low threshold of the number of funds will constitute a strong temptation for rural low-income families to enter the financial market. Of course, the risks associated with this

temptation will also be reduced with the improvement of financial literacy caused by the increase of education level in the process of family generational change, the development of the digital economy, and the wide spread of the Internet.

Therefore, in view of the above analysis, household income and assets such as real estate and financial assets constitute the last barrier to preventing rural Chinese households from falling back into poverty due to illness. However, the more than three-year continuous epidemic has dealt a heavy blow to rural household income; at the same time, due to the current real estate market downturn, houses have lost the reality and expectation of good investment value, while the financial market is constantly improving and developing. Therefore, this paper proposes the following hypothesis:

**Hypothesis 1.** *Financial assets are an important factor affecting household health expenditures, including the likelihood of visiting a doctor (a proxy for how concerned people are about their health).*

**Hypothesis 2.** *Financial assets significantly influence the incidence of catastrophic health expenditures (representing the return to poverty due to illness) of rural households.*

**Hypothesis 3.** *Financial assets have a greater impact on rural households' catastrophic health expenditures than housing. Entering the financial market, compared to entering the real estate market, is more likely to become a viable option for rural families to block their return to poverty due to illness in the future.*

### 2.3. Data Source

The data for this study come from the China Health and Retirement Longitudinal Survey (CHARLS), which aimed to collect a set of high-quality micro-data representing households and individuals aged 45 and above in China. The CHARLS National Baseline Survey was conducted in 2011, covering 150 county units and 450 village units. The samples were then tracked every two to three years, with the most recent data available in 2018. For this study, the latest 2018CHARLS data were selected, and 6103 rural samples were obtained by screening the samples of middle-aged and elderly people over 45 years old and removing missing values. At the same time, in the last part, to compare rural households with urban households, we also included the urban sample (1009). The statistical software analysis process was completed by STATA 17.0 (64bit).

### 2.4. Variable Selection

Anderson's Behavioral Model of Health Services Use (BMHSU), a mainstream theoretical model in Western countries for explaining individual medical behaviors, was used to select the variables in this paper.

#### 2.4.1. Dependent Variable

- (1) Health expenditure (HE): Health expenditure (HE) refers to the costs incurred by an individual to treat a physical illness and maintain a current state of health, including outpatient and inpatient medical expenses. As rural families gradually improve their health awareness, the purchase of health products has gradually become a trend, resulting in preventive spending. Therefore, this paper also includes the consumption expenditure generated by the purchase of health care products; that is, the study considers the consumption expenditure of outpatient service, hospitalization, purchase of drugs, and purchase of health care products. Among them, the number of outpatient visits (the probability of seeing a doctor) also reflects the extent of rural families' attention to their own health. To avoid heteroscedasticity or skewness, we added 1 to the horizontal value and then took the logarithm;
- (2) Catastrophic health expenditure (CHE): Excessive medical and health expenditure will undoubtedly affect the expenditure of individuals or families in other aspects, have a negative impact on their lives, and may also occur due to illness or poverty,

and CHE indicators can well reflect the family's "illness or poverty" status. There are many definitions of CHE, but the one widely used by scholars is the one proposed by WHO in 2000: When an individual's medical expenditure exceeds 40% of his or her affordability, it means that a current individual has incurred catastrophic medical expenditure [41], and affordability is usually measured by the difference between total consumer expenditure and food expenditure.

When catastrophic health expenditure occurs, we can consider that a return to poverty due to illness (impoverishment) has occurred in rural households, so the incidence of catastrophic health expenditure can also be regarded as the incidence of return to poverty due to illness.

#### 2.4.2. Independent Variable

Household income, as well as assets such as real estate and financial assets, constitute the last barrier against rural households returning to poverty due to illness. Therefore, income and total assets were selected as the core independent variables, and herein, total assets are composed of real estate and financial assets: (1) income (inc): average household income, mainly including wage income, transfer income, agricultural income, and inheritance of each member of the family; (2) total assets (ass): sum of financial assets and real estate; (3) financial assets (fin\_ass): including cash, electronic money, bank deposits, bond funds purchased, etc.; and (4) real estate (hs\_ass): refers to the value of the house owned by the family (including the rural family in the countryside and the purchase of investment property in the town). Similarly, to avoid outliers or extreme observations, we added 1 to each of the above four core independent variables. The reason why these four variables are discussed separately is that income and total assets are different concepts concerning the flow and stock of household wealth, respectively, and their impact on and expectations for health expenditure are different. Financial assets and real estate were taken for comparative analysis.

#### 2.4.3. Control Variable

The control variables are mainly demographic characteristic variables, socio-economic characteristic variables, and some health characteristic variables: (1) demographic characteristic variables: gender, age, and marital status; (2) socio-economic characteristic variables: education level, possession or not of medical insurance, and possession or not of pension insurance, for example, possession or not of medical insurance is specifically reflected in the 2018 questionnaire of the China Health and Pension Tracking Survey: "Do you currently participate in the following medical insurance?"; (3) health characteristic variables: self-rated health status and suffering or not from chronic diseases.

#### 2.5. Empirical Method

Firstly, non-parametric kernel density regression was used to measure HE level and CHE incidence under different income and asset levels. Nonparametric estimation is a method in contrast to parametric estimation, which generally does not emphasize the specific distribution of the model and does not make any assumptions about it. The parameter estimation method assumes that the population follows some specific distribution with unknown parameters, focuses on estimating the parameters of the assumed model, and has strong dependence on the assumptions made by the model. When comparing the two, the non-parametric estimation method is more robust. Its core idea is that the average value of each estimate is first obtained to yield an estimate of the regression function. However, the observed values of real data are limited, and taking the average value as the estimator will easily lead to excessive variance. In order to avoid the problem of data scarcity, the "locally weighted average estimator" is considered [42]. Specifically, in this study, four core independent variables of inc, ass, fin\_ass, and hs\_ass were substituted, and Gaussian kernel was selected to perform kernel density regression for HE and CHE, respectively.

Secondly, the two-part model was used to estimate the parameters of the influencing factors of HE and CHE. Although the non-parametric estimation method has some advantages in practical application, it may face the “curse of dimension” because it has high requirements on sample size and is not suitable for the case of too many explanatory variables. To explore the statistical relationship between variables, this study employed another method, the two-part model, to estimate the parameters of the influencing factors of HE and CHE. In the sample size, nearly 40% of HE is 0, showing a skewed distribution, and a biased estimate may be generated if the conventional OLS estimation is applied. To avoid possible sample selection problems, the “two-part model” was chosen in this study. That is, individual behavior was divided into two stages (participatory decision making and quantitative decision making).

Finally, in the discussion of catastrophic health expenditure, this paper adopts the empirical method of logit regression.

### 3. Results

#### 3.1. Descriptive Statistics

Specific variable descriptions and descriptive statistics are shown in Table 1.

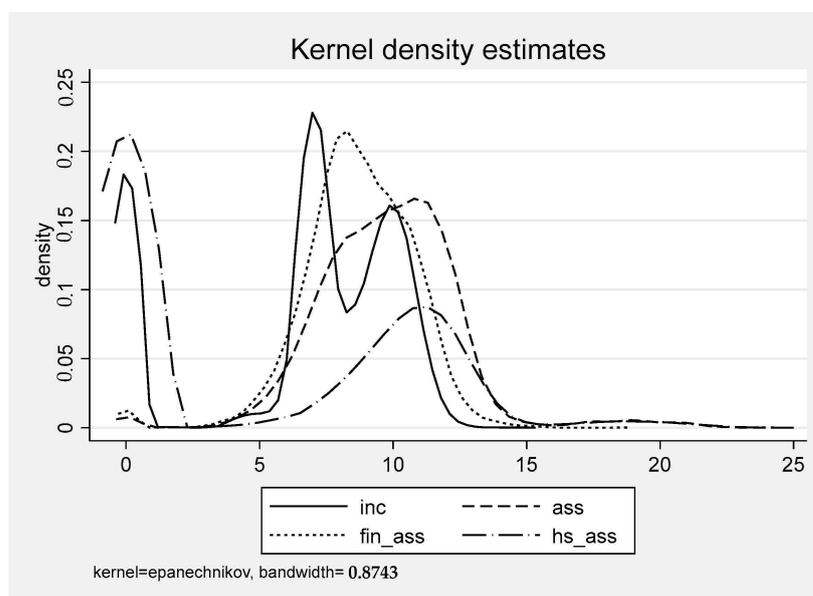
**Table 1.** Introduction of variables and descriptive statistics.

Variable Name		Variable Description	Mean Value	Standard Deviation	Minimum Value	Maximum Value
Dependent variable	Health expenditure (HE)	Logarithm	2.960	2.640	0	10.60
	Catastrophic health expenditure (CHE)	Yes = 1 No = 0	0.283 0.717	0.450 0.450	1 0	1 0
Independent variable	Income	Logarithm	6.546	3.832	0	14.92
	Total assets	Logarithm	9.821	2.668	0	24.12
	Financial assets	Logarithm	8.717	2.042	0	18.52
	House property	Logarithm	4.856	5.726	0	24.12
	Age	Continuous variable	61.67	9.509	45	108
	Education	Complete Secondary education and above = 1 Failure to complete compulsory education = 0	0.291 0.291	0.454 0.454	1 0	1 0
Control variable	Gender	Male = 1 Female = 0	0.450 0.550	0.498 0.498	1 0	1 0
		Having a spouse = 1	0.861	0.346	1	1
	Marital status	Divorced, widowed, unmarried = 0;	0.139	0.346	0	0
	Self-assessment of health status	“Bad”, “very bad” = 1; “Very good”, “good”, “average” = 0	0.284 0.716	0.451 0.451	1 0	1 0
		Chronic diseases	Chronic disease = 1 No chronic disease = 0	0.285 0.715	0.451 0.451	1 0
	Medical insurance	Have either one Health insurance = 1 None = 0	0.811 0.189	0.391 0.391	1 0	1 0
		Endowment insurance	Have either one Basic endowment insurance = 1 None = 0	0.944 0.056	0.231 0.231	1 0

First of all, as shown in Table 1, in this sample, the average logarithmic value of HE is 2.960, and the incidence of CHE is 28.3% (which can also be used to represent the incidence of rural families in the sample returning to poverty due to illness or being in poverty already). It can be seen that the incidence of CHE outstripped 13.0% (of 2008) by a large margin. Only 29.1% of middle-aged and elderly people completed compulsory education, indicating that the current sample is slightly less educated. The proportion of people with poor self-rated health and chronic diseases was similar in the total sample, accounting for about three-tenths of the sample population. In addition, 86.1% of the people in the sample

have a spouse, the average age is 62 years old, the sample is more female, and most of the people have health insurance and pension insurance.

Secondly, combined with Table 1 and Figure 1, the distribution of income and assets of the sample population has the following characteristics: (1) From the peak value, both income and real estate have a peak value near 0, which suggests a significant proportion of rural residents are unemployed or production-self-sufficient. In addition, the income is a double peak, and the proportion of people with lower income is higher in the double peak, indicating that there is a certain income structure in the sample. The asset class variables all have single peaks, which generally conform to normal distribution. (2) From the perspective of span, the span of real estate is the largest (max = 24.12), which also leads to a large span of personal assets, which indicates that individual differences are large, and the realization of common prosperity in the future is not realistic. The span of income is the smallest, followed by financial assets, indicating that the distribution is more concentrated.



**Figure 1.** Kernel density of income and assets.

### 3.2. Non-Parametric Kernel Density Regression Results

First, the kernel density regression of income, assets, and HE has the following characteristics (as shown in Figure 2a): (1) Income: HE gradually declines with the increase in income and rises abruptly when it exceeds a certain threshold. Locally, HE appears at a double peak before the quarter of the income quantile and suddenly rises and falls. On the one hand, it shows that people's concern about their health has a certain correlation with their income. The extremely low-income groups do not care enough about their health problems because their health problems are in a secondary position compared with economic poverty, which is especially obvious in the vast rural areas in the formerly deeply poor areas. On the other hand, it also shows that rural households just out of poverty are very sensitive to health expenditure; one reason is because they are more concerned about their health problems after poverty alleviation, and the other is that a small change in health expenditure may affect their other normal consumption expenditure, increasing the risk of falling back into poverty. (2) Assets: With the increase of financial assets, although there are certain fluctuations, the overall curve is relatively smooth only after a certain critical value is exceeded. It shows a positive correlation with HE in a small range, which indicates that only the development of financial assets can promote people's demand for health quality. However, the linear relationship between real estate and HE is not clear, which is mainly manifested in the curve peaks at the lower and higher asset levels, respectively, showing different monotonicity in different asset ranges as well as a nonlinear relationship. This

shows that financial assets are more sensitive to health quality demand than real estate, and the future prospects are more promising.

Secondly, the kernel density regression of income and assets and CHE has the following characteristics (as shown in Figure 2b): (1) Real estate and total assets: With the increase in the amount of assets, CHE will increase to a certain extent, but then, it shows a downward trend. However, as the amount of assets increases further, the CHE will increase and then decrease. CHE increases approaching the asset maximum. The influence of real estate and total assets on CHE does not show obvious characteristics. This may be because in the current Chinese household, real estate accounts for an absolute majority of the total assets, so the performance characteristics are the same. At the same time, they do not show a clear signature of catastrophic health expenditures, suggesting that rural households cannot effectively prevent return to poverty due to illness through housing investment. (2) Income and financial assets: In addition to the extreme value of financial assets at a lower level, CHE decreases significantly with the increase in income and financial assets as a whole. This suggests that the impact of financial assets on catastrophic health expenditures has a threshold effect that proves Huang and Shi's view [22,23] from the perspective of returning to poverty due to illness. The explanation is that if financial assets are too small, they have little significance in preventing the return to poverty due to illness. Therefore, it is necessary to find ways to increase the financial assets of rural households as soon as possible until the threshold is reached.

### 3.3. Financial Assets and Health Expenditures

In Figure 2a, income, assets, and HE show a U-shaped relationship. To test whether this relationship is valid in statistical regression, the influence of the quadratic term was also considered when studying the influencing factors of health expenditure (HE). The regression results are shown in Tables 2 and 3. In the tables, (2–1)–(2–4) show univariate regression, (2–5)–(2–8) introduce quadratic regression, and the same is true below (Tables 3–6).

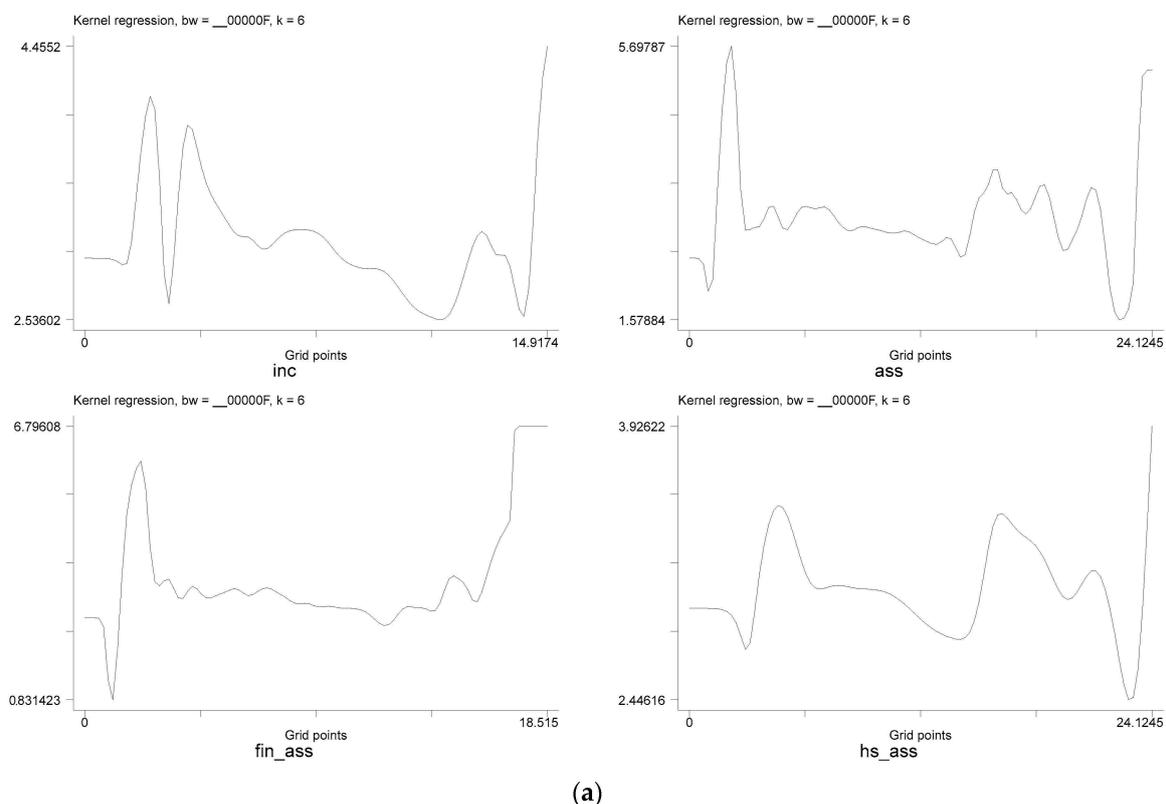
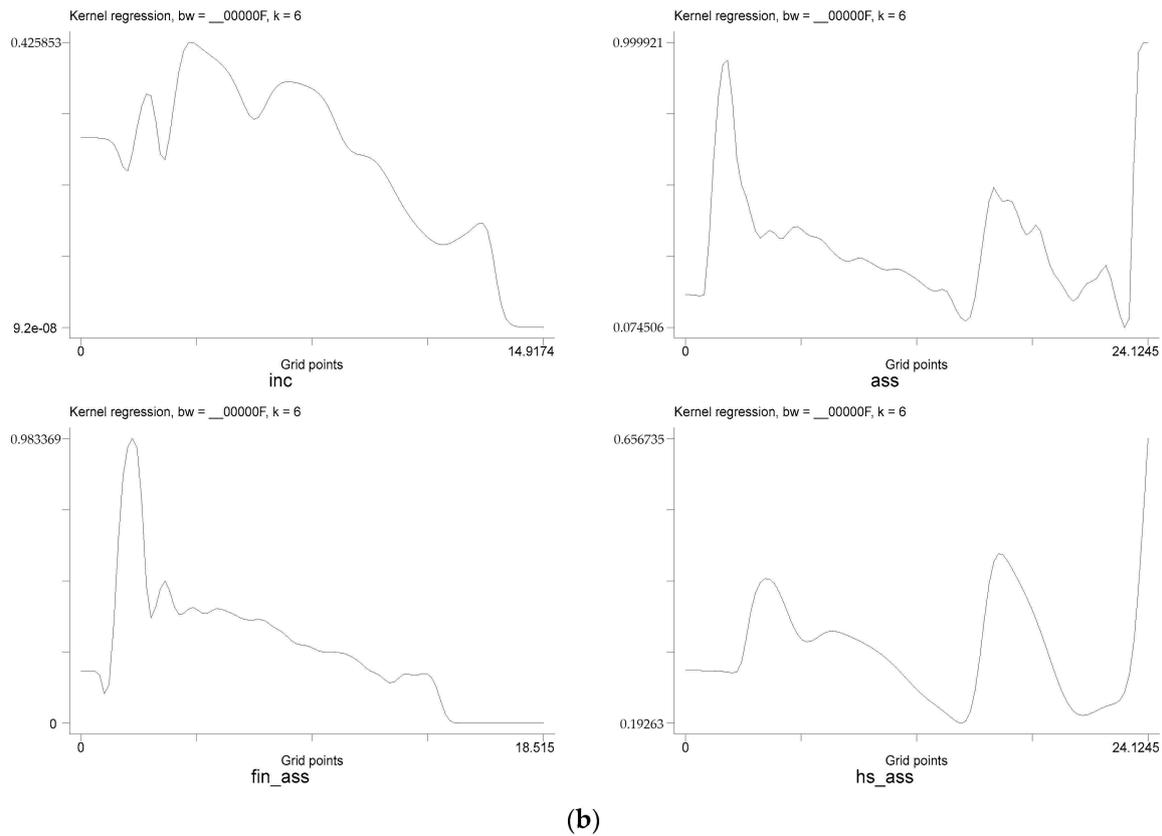


Figure 2. Cont.



**Figure 2.** Kernel density regression of income, assets, and HE and CHE. (a) Kernel density regression of income, assets, and HE. (b) Kernel density regression of income, assets, and CHE.

**Table 2.** Influencing factors for seeking or not seeking medical treatment.

	Margins (Average Marginal Effect)							
	(2–1)	(2–2)	(2–3)	(2–4)	(2–5)	(2–6)	(2–7)	(2–8)
inc	0.001 (0.002)				0.007 (0.006)			
ass		0.005 ** (0.003)				0.015 * (0.008)		
fin_ass			0.015 * (0.009)				0.018 (0.011)	
hs_ass				0.002 (0.001)				0.002 (0.003)
inc2					−0.001 (0.001)			
ass2						−0.000 (0.000)		
fin_ass2							−0.001 (0.001)	
hs_ass2								−0.000 (0.000)
Age	0.001 * (0.001)	0.001 * (0.001)	0.001 * (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 * (0.001)	0.001 * (0.001)	0.001 (0.001)
Education	0.024 * (0.013)	0.022 * (0.013)	0.022 (0.013)	0.023 * (0.013)	0.025 * (0.013)	0.022 (0.013)	0.023 * (0.014)	0.023 * (0.013)
Gender	−0.062 *** (0.012)	−0.063 *** (0.012)	−0.063 *** (0.012)	−0.061 *** (0.012)	−0.062 *** (0.012)	−0.063 *** (0.012)	−0.063 *** (0.012)	−0.061 *** (0.011)
Marital status	0.006 (0.018)	0.003 (0.018)	0.003 (0.018)	0.003 (0.018)	0.003 (0.018)	0.001 (0.018)	0.001 (0.018)	0.003 (0.018)
Health status	0.197 *** (0.013)	0.199 *** (0.013)	0.199 *** (0.013)	0.197 *** (0.013)	0.196 *** (0.013)	0.199 *** (0.013)	0.199 *** (0.013)	0.197 *** (0.013)
Suffering from chronic disease	0.116 *** (0.013)	0.116 *** (0.013)	0.116 *** (0.013)	0.116 *** (0.013)	0.116 *** (0.013)	0.116 *** (0.013)	0.116 *** (0.013)	0.116 *** (0.013)
Medical insurance	0.002 (0.015)	0.003 (0.015)	0.002 (0.015)	0.002 (0.015)	0.001 (0.015)	0.003 (0.015)	0.001 (0.015)	0.002 (0.015)
Endowment insurance	−0.001 (0.025)	−0.002 (0.025)	−0.003 (0.025)	−0.001 (0.025)	−0.000 (0.025)	−0.003 (0.025)	−0.002 (0.025)	−0.001 (0.025)

Standard errors in parentheses. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Table 3. Influencing factors of health expenditure.

	(3–1)	(3–2)	(3–3)	(3–4)	(3–5)	(3–6)	(3–7)	(3–8)
inc	−0.017 *** (0.006)				−0.040 * (0.023)			
ass		−0.001 (0.008)				0.012 (0.030)		
fin_ass			−0.007 (0.013)				0.061 (0.050)	
hs_ass				0.002 (0.004)				0.010 (0.011)
inc2					0.002 (0.002)			
ass2						−0.001 (0.001)		
fin_ass2							−0.004 (0.003)	
hs_ass2								−0.001 (0.001)
Age	0.007 ** (0.003)	0.005 ** (0.003)	0.005 * (0.003)	0.005 ** (0.003)	0.008 *** (0.003)	0.005 ** (0.003)	0.005 * (0.003)	0.005 ** (0.003)
Education	0.037 (0.052)	0.031 (0.052)	0.034 (0.052)	0.029 (0.052)	0.032 (0.052)	0.030 (0.052)	0.040 (0.053)	0.029 (0.052)
Gender	−0.242 *** (0.063)	−0.225 *** (0.063)	−0.229 *** (0.063)	−0.225 *** (0.063)	−0.231 *** (0.064)	−0.226 *** (0.063)	−0.239 *** (0.063)	−0.229 *** (0.063)
Marital status	−0.179 *** (0.046)	−0.193 *** (0.046)	−0.191 *** (0.046)	−0.193 *** (0.046)	−0.182 *** (0.046)	−0.194 *** (0.046)	−0.189 *** (0.046)	−0.193 *** (0.046)
Health status	0.062 *** (0.066)	0.071 *** (0.066)	0.074 *** (0.066)	0.068 *** (0.066)	0.070 *** (0.066)	0.068 *** (0.066)	0.064 *** (0.067)	0.065 *** (0.066)
Suffering from chronic disease	0.872 *** (0.047)	0.882 *** (0.047)	0.880 *** (0.047)	0.883 *** (0.046)	0.876 *** (0.047)	0.884 *** (0.047)	0.879 *** (0.047)	0.883 *** (0.046)
Medical insurance	0.066 (0.056)	0.075 (0.056)	0.074 (0.056)	0.077 (0.056)	0.069 (0.056)	0.076 (0.056)	0.072 (0.056)	0.076 (0.056)
Endowment insurance	0.279 *** (0.095)	0.271 *** (0.095)	0.273 *** (0.095)	0.270 *** (0.095)	0.278 *** (0.095)	0.271 *** (0.095)	0.277 *** (0.095)	0.270 *** (0.095)
Constant term	4.014 *** (0.215)	3.976 *** (0.242)	4.051 *** (0.269)	3.960 *** (0.215)	3.947 *** (0.225)	3.905 *** (0.293)	3.818 *** (0.319)	3.967 *** (0.215)

Standard errors in parentheses. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

As shown in Table 2, among the core independent variables, only total assets and financial assets passed the significance test. The marginal effect of total assets is 0.005 ( $p < 0.05$ ), indicating that every unit increase in total assets increases the probability of seeking medical treatment by 0.5%. When the secondary term of total assets is introduced, although the effect is ignored, the probability of seeking medical treatment is significantly increased to 1.5% ( $p < 0.1$ ). At the same time, for every unit increase in financial assets, the likelihood of an individual seeking medical treatment increased by 1.5%. This suggests not only that there is a relationship between financial assets and how concerned people are about their health but also, indirectly, that housing plays a small role. Among the control variables, the individual's health status has a significant impact on the probability of seeking medical treatment, and the results passed the test at the significance level of 1%. Among them, compared with those with good health and those without chronic disease, the probability of seeking medical treatment increased by nearly 20% and 12%, respectively, with poor health and chronic disease. In addition, women with compulsory education and older age proved more likely to seek medical treatment.

As shown in Table 3, in terms of influencing factors of health expenditure, among the core independent variables, asset variables did not pass the significance test, while the increase of income level significantly reduced HE by 1.7%, and the conclusion was

very significant ( $p < 0.01$ ). After the quadratic term was introduced, HE decreased by 4% for every 1% increase in income over a 10% confidence interval. Among the control variables, at the significance level of 1%, the variables that are more prominent in increasing the level of HE are, in turn, having chronic diseases, having pension insurance, being female, being single, and having poor health, indicating that these variables have a very significant impact on HE. Among them, the level of HE in people with chronic diseases is nearly 90% higher than that in healthy people, explaining the primary motivation for rural residents' medical expenditure. Interestingly, the application effect of endowment insurance is far from that of medical insurance, which may indicate that the current Chinese medical insurance system is more skewed toward the elderly.

**Table 4.** Factors influencing catastrophic health expenditures.

	Odds Ratio							
	(4-1)	(4-2)	(4-3)	(4-4)	(4-5)	(4-6)	(4-7)	(4-8)
inc	0.966 *** (0.007)				1.139 *** (0.033)			
ass		0.985 (0.011)				1.020 (0.039)		
fin_ass			0.956 *** (0.015)				1.255 *** (0.074)	
hs_ass				1.005 (0.005)				1.026 (0.016)
inc2					0.983 *** (0.003)			
ass2						0.998 (0.002)		
fin_ass2							0.982 *** (0.004)	
hs_ass2								0.998 (0.001)
Age	1.028 *** (0.003)	1.024 *** (0.003)	1.022 *** (0.003)	1.025 *** (0.003)	1.020 *** (0.004)	1.024 *** (0.003)	1.021 *** (0.003)	1.024 *** (0.003)
Education	0.940 (0.065)	0.936 (0.064)	0.952 (0.066)	0.927 (0.064)	0.973 (0.067)	0.935 (0.064)	0.976 (0.068)	0.925 (0.063)
Gender	1.037 (0.088)	1.060 (0.089)	1.039 (0.088)	1.068 (0.090)	0.965 (0.083)	1.059 (0.089)	1.008 (0.086)	1.059 (0.089)
Marital status	0.818 *** (0.048)	0.798 *** (0.047)	0.807 *** (0.047)	0.795 *** (0.046)	0.834 *** (0.049)	0.796 *** (0.047)	0.814 *** (0.048)	0.795 *** (0.046)
Health status	1.642 *** (0.143)	1.677 *** (0.147)	1.698 *** (0.149)	1.652 *** (0.144)	1.544 *** (0.135)	1.663 *** (0.146)	1.634 *** (0.143)	1.638 *** (0.143)
Suffering from chronic disease	3.048 *** (0.180)	3.080 *** (0.182)	3.041 *** (0.180)	3.103 *** (0.183)	2.964 *** (0.176)	3.087 *** (0.183)	3.016 *** (0.179)	3.104 *** (0.183)
Medical insurance	1.048 (0.077)	1.065 (0.078)	1.060 (0.077)	1.074 (0.078)	1.018 (0.075)	1.065 (0.078)	1.039 (0.076)	1.073 (0.078)
Endowment insurance	0.997 (0.118)	0.993 (0.117)	1.003 (0.118)	0.984 (0.116)	1.013 (0.120)	0.991 (0.117)	1.011 (0.119)	0.985 (0.116)

Exponentiated coefficients. Standard errors in parentheses. \*\*\*  $p < 0.01$ .

**Table 5.** Robustness test.

	45–60				60+											
	(A-1)	(A-2)	(A-3)	(A-4)	(B-1)	(B-2)	(B-3)	(B-4)								
inc	Probit 0.002	OLS −0.015 **	Probit	OLS	Probit	OLS	Probit	OLS	Probit 0	OLS −0.017	Probit	OLS	Probit	OLS	Probit	OLS
ass	−0.002	−0.007	0.010 ***	−0.007					−0.003	−0.011	0.002	0.001				
fin_ass			−0.004	−0.014	0.009 *	0.006					−0.003	−0.011	0.003	−0.011		
hs_ass					−0.005	−0.021	0.002	−0.004	−0.001	−0.006			−0.004	−0.016	0.001	0.004
Medical insurance	0	−0.021	0.002	−0.008	0	−0.006	−0.001	−0.008	0.002	0.138 *	0.003	0.144 **	0.003	0.141 **	0.003	0.146 **
Endowment insurance	−0.023	−0.091	−0.023	−0.091	−0.023	−0.091	−0.023	−0.091	−0.019	−0.071	−0.019	−0.071	−0.019	−0.071	−0.019	−0.071
	0.0207	0.188	0.02	0.174	0.02	0.169	0.023	0.173	−0.013	0.350 ***	−0.014	0.347 ***	−0.015	0.351 ***	−0.014	0.344 ***
	−0.0407	−0.161	−0.041	−0.161	−0.041	−0.162	−0.041	−0.161	−0.031	−0.118	−0.031	−0.118	−0.031	−0.118	−0.031	−0.118

Standard errors in parentheses. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

**Table 6.** Comparison of urban and rural differences.

	Urban (1009)				Rural (6103)			
	(6–1)	(6–2)	(6–3)	(6–4)	(6–5)	(6–6)	(6–7)	(6–8)
inc	0.982 (0.019)				0.964 *** (0.008)			
ass		0.966 (0.030)				0.989 (0.012)		
fin_ass			0.901 ** (0.039)				0.966 ** (0.016)	
hs_ass				1.006 (0.013)				1.005 (0.005)
N	1009	1009	1009	1009	6103	6103	6103	6103

Standard errors in parentheses. \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

### 3.4. Financial Assets and Catastrophic Health Expenses

When studying the influencing factors of catastrophic health expenditure (CHE), the quadratic term was also introduced into the model, and a significant change of the introduced quadratic term was observed.

- (1) Core independent variable: In models (4–1) and (4–3), both income and financial assets passed the test at the significant level of 1%; that is, with each unit increase of income and financial assets, CHE incidence is 0.966 times and 0.985 times of the original, and when the corresponding quadratic term was introduced into the model, the conclusion still proved valid (models (4–5) and (4–7)). Currently, the regression probability ratio of the primary term is greater than 1, and the regression probability ratio of the secondary term is less than 1. The curve presents an inverted “U” shape, first increasing and then decreasing, and the income and financial assets at the maximum value are 3.824 and 6.306, respectively, both of which are less than the 1/4 quantile at their respective levels, namely 5.994 and 7.550, indicating that the incidence of CHE will decrease when the individual’s income and financial assets exceed a certain amount. The above regression results are consistent with the previous non-parametric kernel density regression. Total assets and housing did not pass the significance test. This suggests that housing plays a small role in preventing rural low-income households from falling into or returning to poverty due to illness, while financial assets and income play an equal or even greater role in this process. The possible explanation is that China’s economy mainly concentrates on urban areas rather than rural areas, leading to the restricted exchange value but rigid self-use demand for rural families. In this context, it is nearly impossible to sell real estate to fund the seeking of medical treatment;
- (2) Control variables: At the 1% significance level, the model (4–1)–(4–8) had a consistent conclusion: CHE risk increased by 1.02 times (OR = 1.02) with each increase in age of 1 year; the incidence of CHE in married people is 0.8 times that of single people (OR = 0.8). In people with poor health and chronic diseases, the incidence of CHE is about 1.65 times and 3 times higher than that of healthy people. However, it is worth noting that the impact of education and health insurance on catastrophic health expenditures is not significant, which may reflect that compared with low-income households; the overall level of education is not high, both have only the most basic health insurance, and the difference is not large.

### 3.5. Robustness Test

To test the above regression results, the samples were grouped for regression. Since the quadratic term plays a testing role in the benchmark regression test and does not affect the actual regression result, only the significance of the primary term was analyzed in the robustness test.

At present, the retirement age in China is generally 60 years old, and when they enter the year “sixty and sixty”, their income and asset structure will change to a certain extent and gradually change into non-earned income such as pensions. In the previous statistical analysis of the samples, different characteristics were shown before and after the age of 60. Therefore, 60 years old was taken as the cut-off point, 45–60 years old was judged as middle-aged, 60 years old and above was considered as elderly, and the HE model was grouped by age for regression.

The regression results in Table 5 show that the probability of seeing a doctor and the level of HE between the middle-aged group and the elderly group show great differences. For the middle-aged group, the probability of seeing a doctor was still affected by financial assets and total assets and was positively correlated. HE, on the other hand, is a function of income. When income increases by 1%, HE decreases by 1.5%, which is significant at the probability of  $p < 0.05$ . For the elderly group, it is not the income and asset level that affect the probability of seeing a doctor and the level of HE but the medical insurance and pension insurance. Medical insurance and pension insurance provide residents with certain medical

protection, which will significantly increase the level of HE. All in all, the main determinant of HE was income, but there was an age difference. The middle-aged people are mainly supported by income, and the elderly are mainly supported by medical insurance and pension insurance. Financial assets in asset class variables are the main determinant of the probability of middle-aged and elderly patients seeking medical treatment.

### 3.6. Urban-Rural Difference Analysis

Due to China's urban-rural dual structure, in addition to the differences in objective living environments, there are also the resulting differences in income, expenditure, assets, insurance, and other social and economic variables; if urban and rural residents are treated equally, it can easily lead to bias in regression. Therefore, it is necessary to group the CHE model according to urban and rural regression.

The regression results in Table 6 show that the decreasing effects of income and assets on CHE are significantly different in urban and rural samples. The accumulation of financial assets significantly reduced the incidence of CHE in both urban and rural subsamples ( $p < 0.05$ ). The difference from the original conclusion is that, compared with the urban group, the CHE of rural residents is also related to income, and CHE decreases by 96.4% when income increases by 1 unit, which passed the test at a significant level of 1%. That is, the main determinants of CHE are income and financial assets, but there are urban-rural differences. Urban groups are mainly supported by financial assets (indicating that urban groups value financial assets more than income due to relatively high education and knowledge quality), while rural groups are mainly supported by income and financial assets. This all indicates that one of the key points for preventing return to poverty in the future should be to improve people's financial assets by improving the financial market and developing the financial market.

## 4. Discussion

### 4.1. Main Conclusions

The COVID-19 epidemic that has lasted for more than three years has not only greatly increased the burden of health expenditure on rural families but also increased the risk for rural families who have just stepped out of absolute poverty to return to poverty due to reduced economic income as a result of illness. The difficulty of liquidity also highlights the importance of household assets, including housing and financial assets, as another important barrier against the return to poverty due to illness. However, the decadence of the real estate market and the central "housing does not speculation" positioning have undercut its preservation and appreciation function and financial assets. Due to its prominent position in the national economy, the strong support of policies, and the general improvement of people's financial literacy, the asset threshold is far lower than real estate investment and other multiple factors superimposed, and the status of the barrier against returning to poverty due to illness is increasingly significant. The empirical results of this paper also support this conclusion. Based on the CHARLS database, this paper discusses the impact of financial assets on the health expenditure and catastrophic health expenditure of Chinese rural households by using non-parametric kernel density regression and two-part model to argue that "moving to the financial market can be a feasible option to prevent Chinese rural households from returning to poverty due to illness in the future". The main conclusions include the following:

First, although it is mobile income that has the greatest impact on rural households' health expenditure, financial assets have a significant impact on the probability of visiting a doctor, which represents people's concern about their health. This can be seen in Tables 2 and 3. This shows that to build a "healthy China" in the future, it is necessary to develop the financial market to enhance the financial assets of the people.

Second, the impact of financial assets on the incidence of catastrophic health expenditures when representatives of rural households return to poverty due to illness is significant. From the results in Table 4, it can be seen that financial assets passed the test at the sig-

nificant level of 1%; that is, with each unit increase in financial assets, the incidence of catastrophic health expenditure is 0.985 times the original. This is basically in line with the view of Zhou D. et al. (2019) [38] that household asset endowment prevents return to poverty, which made a breakthrough in focusing on healthy return to poverty. However, the non-parametric kernel density regression results in Figure 2 also show that the impact of financial assets on catastrophic health expenditure has a threshold effect, and if the financial assets are too few, it has little significance in preventing the return to poverty due to illness [28]. Therefore, it is necessary to find ways to increase the financial assets of rural households as soon as possible until the threshold is reached.

Third, financial assets play a greater role than housing in preventing rural households from falling back into poverty due to illness. The non-parametric kernel density regression results in Figure 2 not only show that rural households cannot effectively block the return to poverty due to illness through real estate investment but also that financial assets are more sensitive to health quality demand than real estate. Table 4 also proves that real estate plays a small role in preventing rural low-income families from falling into or returning to poverty due to illness. This rejects the conclusion of Che [43]. While financial assets and income play an equal or even greater role in this process, this shows that one of the key points of preventing poverty in the future should be to increase the financial assets of rural households by improving and developing financial markets. At present, the only way for people to invest is financial assets such as houses and stocks. In the current situation where the development of the real estate market is not optimistic, the financial market is particularly important and has more advantages than housing investments, such as the original capital threshold requirements, but it puts forward higher requirements for professionalism and people's knowledge quality.

#### 4.2. Policy Suggestion

Therefore, this paper argues that "moving towards the financial market can be a viable option for rural households to prevent the return to poverty due to illness in the future" and puts forward the following policy recommendations:

First of all, the development of financial markets, scientific allocation of financial resources, and expansion of financial channels should be standardized. According to the stage of economic development and regional characteristics, we must scientifically allocate different financial channels and financial resources in rural areas, especially in the formerly deeply impoverished areas that have just achieved poverty alleviation, such as the three districts and three states [14]. Wang H. and Wen T. et al. (2018) claimed that rural finance in China's deeply poor areas shows more obvious features of "benefiting wealth"; that is, the income increase effect of "elite farmers" is much higher than that of "poor farmers" [16]. Therefore, it is necessary to improve the accuracy of financial resource investment in the original deep poverty areas, improve the rural financial system in the original deep poverty areas, and consolidate the basic conditions for rural financial poverty reduction and income increase in the deep poverty areas. Finally, the deep combination of financial resources and production factors can be realized from different dimensions of financial development scale, efficiency, and service degree. In addition, we should strictly regulate the development of the financial market so that ordinary people's financial investment can steadily increase in value.

Secondly, by promoting the development of Internet credit and Internet insurance through digital financial inclusion (i.e., financial availability), rural poverty can be alleviated directly, while rural poverty can be alleviated indirectly by increasing the employment of individuals and private enterprises (i.e., economic opportunities). At present, China's rural digital inclusive finance should still be aimed at directly increasing the financial availability of poor farmers [26]. The realization of financial availability can enable young family members to obtain their benefits through their efforts without requiring too many complicated interpersonal relationships and while avoiding the current powerless mentality of many young people due to high housing prices and other reasons.

Thirdly, the level of education must be improved to promote the improvement of financial literacy. The level of financial literacy of family members, such as personal financial knowledge and social network relationships, plays a very important role in the poverty vulnerability of rural families. Financial knowledge level and social network significantly reduce the possibility of household poverty, and the increase in the breadth and depth of the use of Internet finance can alleviate the multidimensional poverty of farmers by improving non-agricultural employment opportunities, expanding e-commerce business, and improving financial literacy.

Finally, the members of rural families should strengthen the integration and reasonable planning of the family's available resources to maintain and increase the value of financial assets and play the threshold line of blocking the effect of returning to poverty due to illness. One is the accumulation of existing assets, and the second is the combination of high and low risk and utilizing income of different financial varieties.

## 5. Conclusions

The difficulty of income growth of rural households and the expected reduction of the function of property preservation and appreciation have suddenly shown the increasingly prominent role of financial markets. Based on CHARLS data, this paper empirically explores the relationship between financial assets and health expenditure and catastrophic health expenditure (representing the incidence of return to poverty due to illness) to explore whether access to financial markets can be a viable option to prevent rural households from returning to poverty due to illness in the future. Although our study is promising, there are some limitations. For example, in the context of the current downturn in China's financial markets, this study seems inappropriate. In addition, due to the availability of data, this paper adopts 2018 data. Nevertheless, these factors should not constitute a fundamental obstacle to the study in this paper. In future studies, we hope to obtain more updated data for more in-depth research. Moreover, with reference to the economic development trend and financial market trend of countries with perfect market economy systems, such as the United States, we believe that access to the financial market is important for all Chinese people, including rural families, in protecting their wealth in the future, as preliminarily discussed in this paper. It may be difficult in the short term, but in the future, with the improvement of the quality of people's knowledge and the improvement of the economic system, we firmly believe in this view.

**Author Contributions:** Conceptualization, X.X.; methodology, X.X.; resources, X.X.; data curation, Z.S.; writing—original draft preparation, Z.S.; modification, Z.S.; project administration, X.X. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable. The data of this study came from the China Health and Retirement Longitudinal Survey (CHARLS), which Peking University sponsored. It was ethically reviewed by the Biomedical Ethics Committee of Peking University (ethical review and approval No. IRB00001052-11015). We also obtained the confirmation that the need for ethical applications was waived by CHARLS research team since CHARLS is an open and accessible (publicly available) database, and the authors only used the data for academic research.

**Data Availability Statement:** Please refer to: <http://charls.pku.edu.cn/index.html> (accessed on 21 June 2022). If the reader has a personal request for more data, the authors will provide it.

**Acknowledgments:** Thanks to The National School of Development and The Chinese Center for Social Science Surveys at Peking University for providing CHARLS data. We would also like to thank graduate student Zhang Lu for her help in the empirical process and Linhong Chen for her help in the first draft.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## References

- Chuma, J.; Maina, T. Catastrophic health care spending and impoverishment in Kenya. *BMC Health Serv. Res.* **2012**, *12*, 413. [[CrossRef](#)] [[PubMed](#)]
- Bredenkamp, C.; Mendola, M. Catastrophic and impoverishing effects of health expenditure: New evidence from the western Balkans. *Health Policy Plan.* **2011**, *26*, 349. [[CrossRef](#)] [[PubMed](#)]
- Yang, W. Catastrophic health expenditure. *Lancet* **2014**, *362*, 996.
- Kirigia, J.; Preker, A.; Carrin, G.; Mwikisa, C.; Diarra-Nama, A. An overview of health financing patterns and the way forward in the who african region. *East Afr. Med. J.* **2006**, *83*, S1–S28. [[CrossRef](#)] [[PubMed](#)]
- Li, Y.; Wu, Q.; Xu, L.; Legge, D.; Hao, Y.; Gao, L.; Ning, N.; Wan, G. Factors affecting catastrophic health expenditure and impoverishment from medical expenses in China: Policy implications of universal health insurance. *Bull. World Health Organ.* **2012**, *90*, 664–671. [[CrossRef](#)] [[PubMed](#)]
- Sen, A. Capability and Wellbeing. In *The Quality of Life*; Nussbaum, M., Sen, A., Eds.; Clarendon Press: Oxford, UK, 1993; pp. 30–53.
- Zhu, M.; Yu, X.; Wang, M.; Xiong, X. Evaluation of household catastrophic medical expenditure and serious illness insurance compensation model in China. *Econ. Res. J.* **2017**, *52*, 133–149. (In Chinese)
- Cylus, J.; Thomson, S.; Evetovits, T. Catastrophic health spending in Europe: Equity and policy implications of different calculation methods. *Bull. World Health Organ.* **2018**, *96*, 599. [[CrossRef](#)] [[PubMed](#)]
- Tirgil, A.; Dickens, W.T.; Atun, R. Effects of expanding a non-contributory health insurance scheme on out-of-pocket healthcare spending by the poor in Turkey. *BMJ Glob. Health* **2019**, *4*, e001540. [[CrossRef](#)]
- Aryeetey, G.C.; Westeneng, J.; Spaan, E.; Jehu-Appiah, C.; Agyepong, I.A.; Baltussen, R. Can health insurance protect against out-of-pocket and catastrophic expenditures and also support poverty reduction? Evidence from Ghana's National Health Insurance Scheme. *Int. J. Equity Health* **2016**, *15*, 116. [[CrossRef](#)]
- Karan, A.; Yip, W.; Mahal, A. Extending health insurance to the poor in India: An impact evaluation of Rashtriya Swasthya Bima Yojana on out of pocket spending for healthcare. *Soc. Sci. Med.* **2017**, *181*, 83–92. [[CrossRef](#)]
- Xu, X.; Yang, H. Elderly chronic diseases and catastrophic health expenditure: An important cause of Borderline Poor Families' return to poverty in rural China. *Humanit. Soc. Sci. Commun.* **2022**, *9*, 291. [[CrossRef](#)]
- Gao, P. Fiscal Poverty Alleviation: The Practical Guarantee of Rural People's Livelihood in the Financial Storm—Commenting on Yan Kun et al. Research on Fiscal and Tax Policies for Poverty Reduction in Rural China. *Fisc. Res.* **2009**, *5*, 80–81. (In Chinese)
- Fu, Z.; Zhang, Q. Analysis of poverty reduction effect of rural financial channels based on PSTR model. *J. Zhongnan Univ. Econ. Law* **2016**, *3*, 78–86. (In Chinese)
- Liu, F.; Liu, M. Research on the Dynamic Poverty Reduction Effect of Rural Financial Development in Concentrated Contiguous Poverty-stricken Areas: Based on the Empirical Analysis of 435 Poverty-stricken Counties. *J. Minzu Univ. China (Philos. Soc. Sci. Ed.)* **2017**, *44*, 71–79. (In Chinese)
- Wang, H.; Wen, T.; Han, J. Rural Finance and Rural Household Income Growth in Deeply Impoverished Areas: Poverty or Prosperity? *Contemp. Financ. Econ.* **2018**, *11*, 44–55. (In Chinese)
- Zhang, B.; Weng, C. Poverty reduction effect of rural financial development: Spatial spillover and threshold characteristics. *Agrotech. Econ.* **2015**, *9*, 37–47. (In Chinese)
- Kuang, X. The mechanism and effect of China's financial poverty reduction under the guidance of monetary policy. *J. Financ. Econ.* **2019**, *34*, 72–83. (In Chinese)
- Su, J.; Hu, Z.; Tang, L.; Xiao, P. Threshold characteristics and regional differences of poverty reduction effect of rural informal finance development: An analysis based on panel smooth transformation model. *China Rural Econ.* **2013**, *7*, 58–71. (In Chinese)
- Su, J.; Hu, Z. Direct Effects and Mediation Effects of Rural Financial Poverty Alleviation—Dynamic Analysis Based on State-Space Model and Mediation Effect Test. *Financ. Econ.* **2015**, *36*, 33–38. (In Chinese)
- Fu, P.; Zhang, P. The threshold effect and regional differences of rural financial development and poverty reduction—Empirical data from China. *Contemp. Financ. Econ.* **2016**, *6*, 55–64. (In Chinese)
- Shi, R.; Xu, Z.; Zhao, Y. The threshold effect of financial poverty reduction and its empirical test: Based on the interprovincial panel data in western China. *China Soft Sci.* **2013**, *3*, 32–41. (In Chinese)
- Huang, D.; Xu, X.; Fang, J. Research on the poverty reduction effect of financial inclusion in China on rural poor population. *J. Demogr.* **2019**, *41*, 52–62. (In Chinese)
- Huang, Q.; Li, Z.; Xiong, D. The poverty reduction effect and transmission mechanism of digital inclusive finance. *Reform* **2019**, *11*, 90–101. (In Chinese)
- He, Y.; Li, J. The poverty reduction effect and employment mechanism of digital inclusive finance. *Consum. Econ.* **2021**, *37*, 69–79. (In Chinese)
- Liu, J.; Liu, C. The effect of digital financial inclusion on rural poverty reduction: Effects and mechanisms. *J. Financ. Econ.* **2020**, *1*, 43–53. (In Chinese)
- Zhang, D.; Yin, Z.; Sui, Y. Can financial inclusion improve the quality of poverty reduction?—Based on the analysis of multidimensional poverty. *South. Econ.* **2020**, *10*, 56–75. (In Chinese)
- Shi, R. The multi-dimensional poverty reduction effect of financial development in western China: An empirical analysis based on spatial panel quantile model. *Fujian Forum (Humanit. Soc. Sci. Ed.)* **2020**, *2*, 91–99. (In Chinese)

29. Zhang, M.; Li, G.; Hou, Y. From poverty alleviation to rural revitalization: How to prevent financial literacy from falling back into poverty. *Stat. Inf. Forum* **2022**, *37*, 117–128. (In Chinese)
30. Pan, X.; Zhang, W. Is financial literacy good for rural poverty reduction? *Rural Econ.* **2020**, *9*, 99–109. (In Chinese)
31. Wang, Y.; San, D.; Zhuang, T. Research on the impact of financial knowledge and social network on poverty reduction in ethnic areas. *J. Ethnol.* **2020**, *11*, 32–43+127–129. (In Chinese)
32. Li, J.; Shen, Y.; Yang, J.; Chen, Q. Research on the impact of Internet finance use on multi-dimensional poverty reduction of rural households. *Stat. Inf. Forum* **2021**, *36*, 104–118. (In Chinese)
33. Ding, J.; Yuan, Y.; Liang, S. Financial Poverty Alleviation: Analysis of the Interaction between Digital Finance and Traditional Finance and Its Relative Importance. *J. Int. Financ. Res.* **2022**, *9*, 14–24. (In Chinese)
34. Liu, H.; Wang, H.; Xie, Z. Analysis of Rural Financial Development, Financial Support for Agriculture and Poverty Reduction in Western Region: Based on Panel Threshold Model. *Stat. Inf. Forum* **2018**, *33*, 51–57. (In Chinese)
35. Wang, W.; Sun, X. Research on medical insurance, health capital and household financial asset allocation. *Insur. Res.* **2020**, *1*, 87–101. (In Chinese)
36. Fu, X.; Qu, S.; Tian, B.; Li, Y. Research on financial asset decision-making of elderly households in China from the perspective of health shock. *Forecast* **2020**, *39*, 83–89. (In Chinese)
37. Zhang, J.; Shi, X.; Cao, Y. Financial risk assessment of middle-aged and elderly households under dynamic health shock. *J. Financ. Econ.* **2022**, *48*, 153–168. (In Chinese)
38. Zhou, D.; Wang, M. The internal logic of the phenomenon of falling back into poverty: Theory and verification of vulnerability poverty alleviation. *J. Financ. Econ.* **2019**, *45*, 126–139. (In Chinese)
39. Moser, C. *Reducing Global Poverty: The Case for Asset Accumulation*; Brookings Institution Press: Washington, DC, USA, 2008.
40. Haveman, R.; Wolff, E.N. *Who Are the Asset Poor? Levels, Trends and Composition, 1983–1998*; Working Paper No. 00–12; Washington University Center for Social Development: St. Louis, MO, USA, 2000.
41. World Health Organization. *The World Health Report 2000: Health Systems: Improving Performance*; World Health Organization: Geneva, Switzerland, 2000.
42. Nadaraya, E.A. On Estimating Regression. *Theory Probab Its Appl.* **1964**, *9*, 141–142. [[CrossRef](#)]
43. Che, X.; Li, J.; Fu, W.; Fang, F. Association between livelihood capital and catastrophic health expenditure among patients with critical illness: A cross-sectional study in rural Shandong, China. *BMJ Open* **2021**, *11*, e051234. [[CrossRef](#)]

**Disclaimer/Publisher’s Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.