

Analysis of the Impact Mechanism of Green Finance on Household Economic Development in the Context of Climate Change

-- Taking Shanghai as an Example

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Abstract

The development of green finance can have a certain impact on the economic behavior of families by changing the consumption habits and investment decisions of residents, and it is one of the important paths to achieve high-quality development and sustainable development in China. This paper analyzes the development of green finance in Shanghai through data, green finance has entered a period of rapid development, the scale is expanding year by year, but there are problems such as a single structure of the main body and an imperfect system. At the same time, through the data analysis of climate change in Shanghai's green finance on the impact of the mechanism of the family economy, found that by the development of green finance, the impact of the family residents to consume more rationally, live a healthier life, more cautious investment, but there is also a family economy by the immature development of personal green finance limitations. Based on the above conclusions, China needs to improve the green financial system, while expanding the business scope of personal green finance, so that green finance is more down to the individual level.

Keywords

Climate Change; Green Finance; Household Economy; Green Consumption; Development Strategy.

1. Introduction

Natural disasters have occurred frequently in recent years, which may cause global climate change. At the same time, the world economic situation is also changing rapidly, such as the trade war between the United States and China, and the difficulties in the recovery of the world economy under the epidemic. In addition, the international situation is also complicated and volatile, such as the outbreak of the Russia-Ukraine war, the hegemony and power politics of the Western countries. Against this backdrop, China issued a white paper entitled "China's Policies and Actions to Address Climate Change". The launch of the white paper and the country's solemn commitment to the goals of carbon peaking and carbon neutrality indicate that the importance of increasing the support of green finance has increased significantly. In order to do so, China needs to develop a more complete green financial system and a healthier and more solid household economic structure.

Since the development of green finance, significant results have been achieved, and China has entered a period of accelerated development by continuously consolidating the green financial infrastructure and promoting market innovation, with the scale of green credit, green bonds, green stocks and carbon finance gradually expanding. Shanghai has actively responded to the national call to strongly support the development of green finance, which has provided strong support for the transformation of the economy. However, the challenges posed by climate change may have an impact on the development of green finance in Shanghai. It is expected that

the green financial system and green financing structure will be gradually improved, and the scale will still increase, but the growth rate will slow down significantly.

The development of green finance will lead to certain impacts on households' consumption psychology, economic structure, and living behavior. Due to the vulnerability of the family economy and the demand of Chinese residents for the stability of savings for a long time, it is expected that families will be more inclined to stable investment, such as life insurance, and at the same time, they will pay more attention to green consumption and green life under the impetus of green finance. Influenced by the development of green finance, the family economy has made a certain degree of development leap, but it is still limited by the immature development of personal green finance business and products.

Shanghai, as the economic center of China, has a typical and exemplary mechanism of green finance development on family economy. Therefore, studying the impact of green financial development on household economy in Shanghai at the current stage can simultaneously grasp the economic situation from both macro and micro perspectives, so as to achieve the purpose of predicting the future situation, stabilizing the economy, and coping with climate risks, and to play a good role as a demonstration.

In this context, this paper expects to explore the impact mechanism of green finance on household economy in Shanghai to deeply study the impact mechanism of green finance on household economy in the whole country.

2. Literature Review

Most of the research on green finance in China is reflected in the macro aspect. Sun Qiufeng and Nian Zongqian (2022) believe that China's market-led green financial system is still in its infancy, and the organizational system is still unsound[1]; Zhang Li (2019) believes that green finance promotes economic development, but the development of inter-regional imbalance[2]; Yang Xiaolu (2020) believes that there is a positive correlation between green finance and upgrading of China's industrial structure, and it promotes China's economy to change from rough to refined[3]. From the system of green finance itself to the impact of green finance on macroeconomics, industry, regional economy, etc., this aspect of the research has been relatively abundant, roughly summarized in the above points.

This paper studies the relationship between green finance and family economy and individuals, more in the micro aspect. In terms of commercial banks' personal green financial business, Cao Mingdi and Qin Yixuan (2018) pointed out that the development of green finance cannot be separated from the family's support for credit cards, and credit cards as a financial carrier promote the development of the green economy[4]. In the era of big data, Wu Jiaying et al. (2019) argued that the development of green finance requires platforms to enrich the use of personal carbon account scenarios to incentivize individual and family low-carbon behavior[5]. In terms of green consumption, Bo Fan and Zhuang Guiyang (2022) believe that the final landing point of energy saving and emission reduction is still on the consumption side, and the development of green finance promotes the green consumption of families and individuals, low-carbon life, and promotes the development of the family economy[6]. Although there are not many related studies, it can be roughly summarized that green finance promotes the development of family economy in terms of green consumption and personal green financial business of commercial banks. This paper is to study the impact of green finance on the family economy in the micro aspect, to enrich the research in this aspect in China.

3. Overview of Green Finance, Household Economy

3.1. Green Finance

1) Definition

Green finance can be traced back to the 1970s and 1980s, and Germany is its main birthplace. In 1974, Germany established the world's first bank specializing in providing financial services related to the protection of the ecological environment, so the German policy and system are more mature. In fact, due to the different definitions of "green" in each country, there is no clear global definition of green finance.

We can simply define green finance as the provision of financial services for the protection of the ecological environment, energy saving and emission reduction, which can include a series of services such as investment and financing, risk assessment and management.

2) Development Mode

Green finance development model can be roughly divided into two types, one is market-led, and the other is government-led. At present, developed countries are mainly market-led, and its green financial development needs to rely more on institutional investors, such as investing more in some companies that are consistent with the concept of green finance; while developing countries rely more on government regulation. Both models have advantages and disadvantages, market-led spontaneous regulation is not strong enough, the government-led type may be over-intervention, market vitality is not enough, so nowadays there is a big tendency for the two models to integrate with each other.

3) Significance and Impact

The development of green finance is crucial for every country, especially for China, which is in a new development pattern of international and domestic double cycle.

Promoting high-quality economic development. China's economic growth rate has long slowed down and gradually shifted to a high-quality stage. From a macro point of view, green finance enables the whole industry to upgrade and transform from the traditional mode, including optimization of enterprise structure and resource allocation, improvement of economic efficiency, and formation of scale effect; from a micro point of view, green finance can promote technological innovation of enterprises to reduce energy consumption and improve resource utilization, and then improve their own competitive advantage, which will ultimately bring about better benefits.

Promote innovation. Enterprises and financial institutions will respond to the national call and actively launch related products and services; the industry will also carry out corresponding technological innovation, and the industry will accelerate the aggregation. Green finance, in fact, can be regarded as a kind of orientation, leading to new green credit, changing the situation of some projects that were previously difficult to invest and finance; in addition, it can even lead to a new industrial chain, enhance market vitality, and the market system will be gradually developed and improved as a result.

Protect the ecological environment. In recent years, China's environmental problems have become more and more acute, water pollution, air pollution, extreme weather, over-exploitation of resources and energy, etc., green finance is very good at reducing environmental risks. Green finance is the main content of China's supply-side structural reform, which takes into account both economic benefits and ecological problems, so that development is no longer at the expense of destroying the ecological environment, easing the pressure on China's environment, and is a necessary condition for sustainable economic development. "Green" and "development" are contradictory, the key is how to balance them.

3.2. Household Economy

1) Definition and Characteristics

Family economy refers to the economic activities carried out by the family as a unit. First of all, because of the inherent vulnerability of finance, macroeconomic shocks will affect the household economy, leading to the vulnerability of the household economy. In fact, macroeconomic crises on the household economy are universal, and what really contributes to the vulnerability of the household economy are the differences in the ability of different households to cope with risk. And the so-called vulnerability, as Ethan Ligon and Laura Schechter (2004) argue on the basis of the expectation effect, is the difference between the expected utility of household consumption[7]. Zhang Ji et al. (2016) argue that household economic vulnerability reflects the impact of risky shocks on household consumption, and differences in the ability of households to take measures as reflected[8]. Second, the size of the household economy is destined to be relatively small, the size of the household's investment and consumption are smaller, but due to its inherent kinship, it is more conducive to the consistency of the behavior of investment decisions, reducing many unnecessary management costs and more flexible. Finally, the family economy is also the basis of the private economy.

2) Practical significance

First, it promotes consumption. Family economy, in the final analysis, is rooted in the consumer side, rooted in the masses. Improving the supply side, high-quality supply will inevitably pull demand, create new demand, and then stimulate consumption, pulling the economy up.

Secondly, expanding employment. In today's situation, employment difficulties have become a common global problem, the number of unemployed people is gradually increasing, one of the reasons is the solidification of employment. The development of the family economy is a good solution to this problem, support for family entrepreneurship, which in turn creates more jobs, forming a virtuous circle.

Finally, it promotes investment. The development of the family economy encourages investment, forming a multi-faceted economic growth point.

4. Green Finance in Shanghai

Last October, Shanghai launched 24 initiatives to create a green finance hub. In fact, the development status and problems of green finance in Shanghai are roughly the existing problems and situations of green finance in China.

4.1. Development Status

1) Green Credit

Table 1. Statement of green credit balances

Unit: billion

	China Merchants Bank	Pudong Development Bank	Bank of China
2012	61.057	150.359	227.48
2013	116.372	152.104	258.759
2014	150.947	156.374	301.043
2015	156.503	171.785	412.315
2016	143.664	173.812	467.342
2017	157.103	180.145	538.799
2018	166.033	217.648	632.667
2019	176.773	226	737.57
2020	207.133	262.8	896.798

Since there is no full-coverage, systematic and structured official data on green credit at the provincial and municipal levels, and there is no unified disclosure channel, we will use the relevant data on green credit of banks to discuss for the time being. The green credit of banks is also very representative, which largely determines the green credit situation. Therefore, the more representative banks, China Merchants Bank, Pudong Development Bank and Bank of China, are selected here.

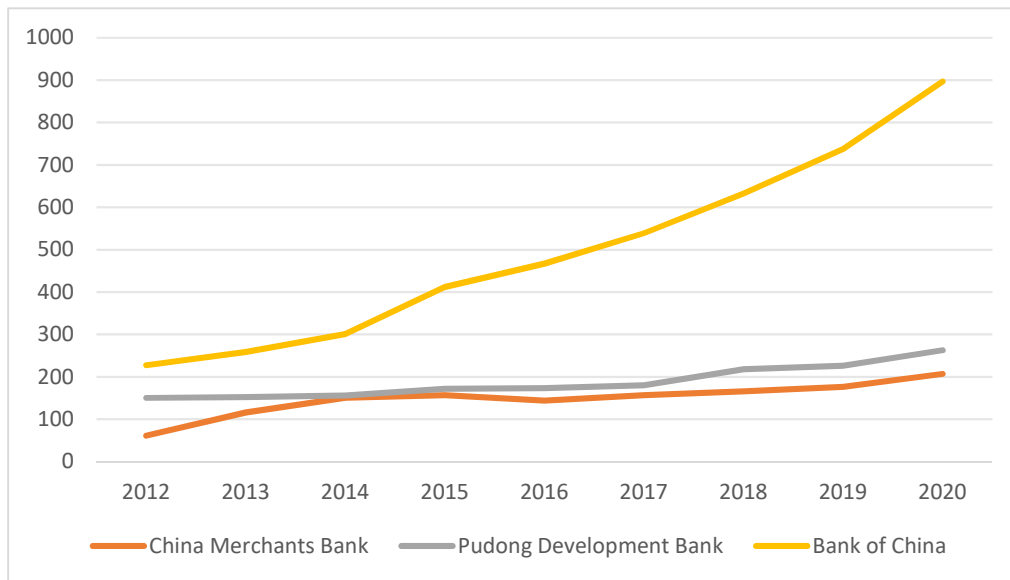


Fig.1 Green credit balance line graph
Data from Cathay Pacific database

Shanghai's green credit development is flat, with low NPLs and high quality. As shown in Table 1, it is the green credit balance data of three banks from 2012 to 2020, and Figure 1 is their line graph. From the figure, we can clearly see that from 2012 to 2020, Pudong Development Bank and China Merchants Bank, their green credit balance of the rise is not large, slow growth, China Merchants Bank from 61 billion to 207.133 billion, Pudong Development Bank from 150.359 billion to 262.8 billion, and the Bank of China's rate of increase is larger, faster growth, from 227.48 billion to 896.798 billion. Overall, the three banks have different degrees of growth. Pudong Development Bank and China Merchants Bank are joint-stock commercial banks, and Bank of China is a state-owned commercial bank, proportionally speaking, the proportion of green credit balance from state-owned banks is expanding year by year. This phenomenon can be seen from these three banks. The reason for this is that state-owned banks have a larger scale and higher proportion of green credit balance due to national policy support. In fact, from the national point of view, the main body of green credit from the state-owned banks, which shows that the main body of China's green credit structure is relatively homogeneous, most of the state-owned banks and a small number of policy banks, and commercial banks and other banks accounted for a very small proportion.

2) Green Bonds

Shanghai's bond issuance, both in terms of type and quantity, is huge compared to other provinces, but the volume is not large compared to foreign countries. According to the data of Shanghai Stock Exchange, up to now, there are 412 green bonds with a scale of 290.783 billion yuan.

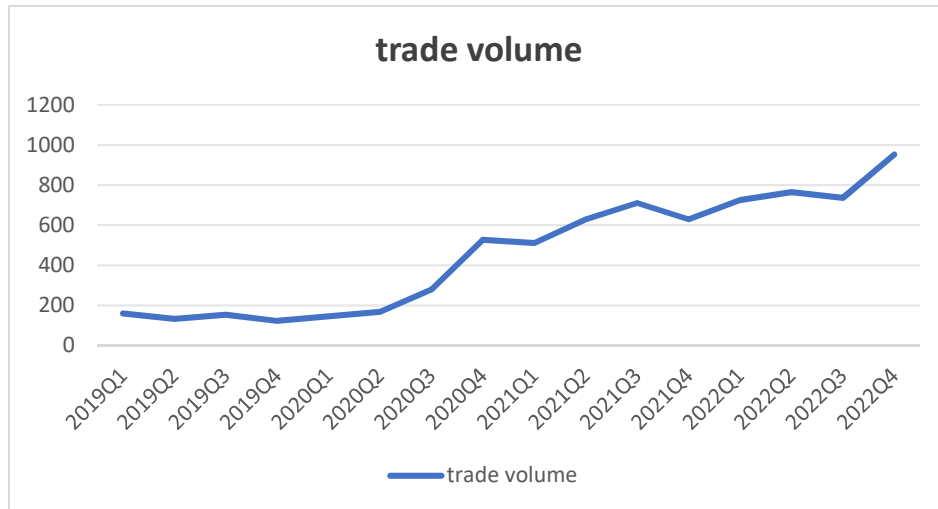


Fig. 2 Line graph of green bond trading volume
Data from Shanghai Stock Exchange

As seen in the chart, the overall green bond trading volume scale has expanded year by year, especially from 2020 onwards, the trading volume has risen substantially. In fact, from the line graph can still be seen from the epidemic, climate uncertainty on the impact of green bonds, 2019 to 2020, the second quarter of the issuance volume is not big, due to the epidemic and climate and other factors, most of the enterprise operations have been affected by varying degrees of impact on their own solvency, no confidence in their own debt service ability, financing needs are also insufficient, so the issuance of green bonds are more cautious. Unlike green credit, the main body of green bond issuance is commercial banks, especially Shanghai's Pudong Development Bank and Xinye Bank, which are the leaders in the development of green bonds.

3) Green Operation

Simply put, green operation means that the enterprise always carries out the concept of sustainable development in the process of operation, and is a practitioner of ecological civilization, which is embodied in commercial banks to a greater extent in the saving of resources. Take the per capita water and electricity consumption of Agricultural Bank of China as an example to discuss.

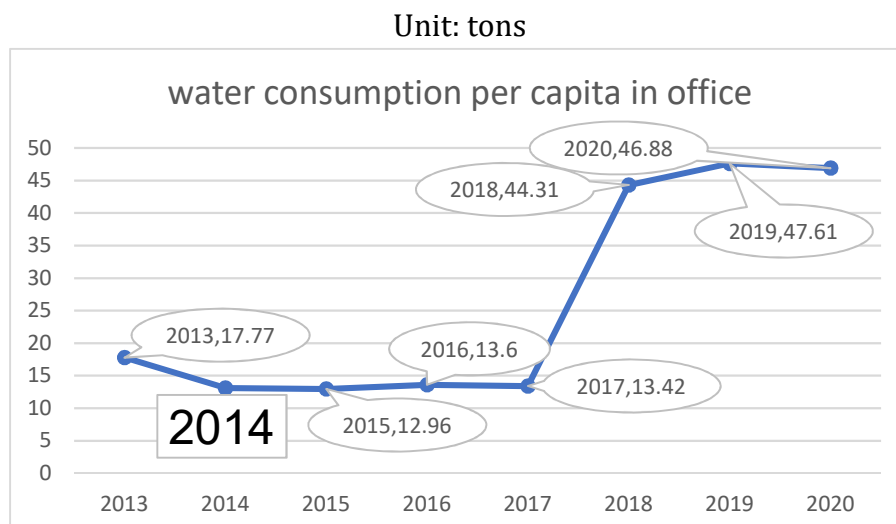


Fig. 3 Line graph of water consumption per capita in the office of Agricultural Bank of China

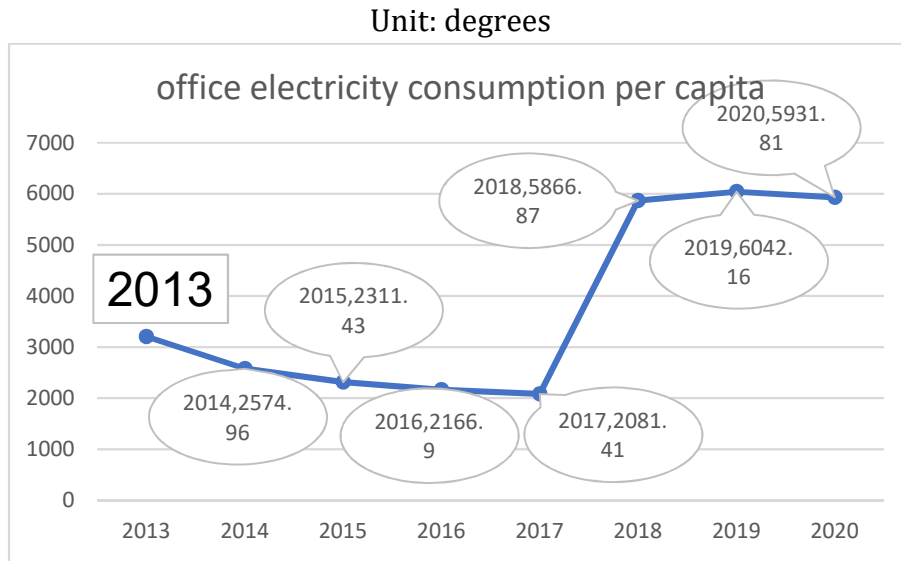


Fig. 4 Line graph of per capita office electricity consumption of Agricultural Bank of China
Data from Cathay Pacific database

The trends in Figures 3 and 4 are similar, with a slow decline from 2013 to 2017, followed by a sudden and significant increase starting in 2017. The rise in per capita water and electricity consumption may be due to the following reasons: first, the economic development is improving, leading to the rise in water and electricity consumption; second, the impact of climate, extreme weather and other factors; third, the change in the mode of operation and so on. Adhere to the green office, green management, help "carbon to reach the peak".

4) Carbon Finance

On the definition of carbon finance, Lu Minfeng (2021) believes that "carbon finance refers to the general term of financial services provided around the realization of the 'double carbon' goal", and more clear purpose, that is, all financial activities should be conducive to solving the problem of carbon emissions, whether it is carbon finance or green finance is the key to high-quality development. Both carbon finance and green finance are the requirements of high-quality development[9]. The carbon emission right turnover of Shanghai in recent years is selected for study.

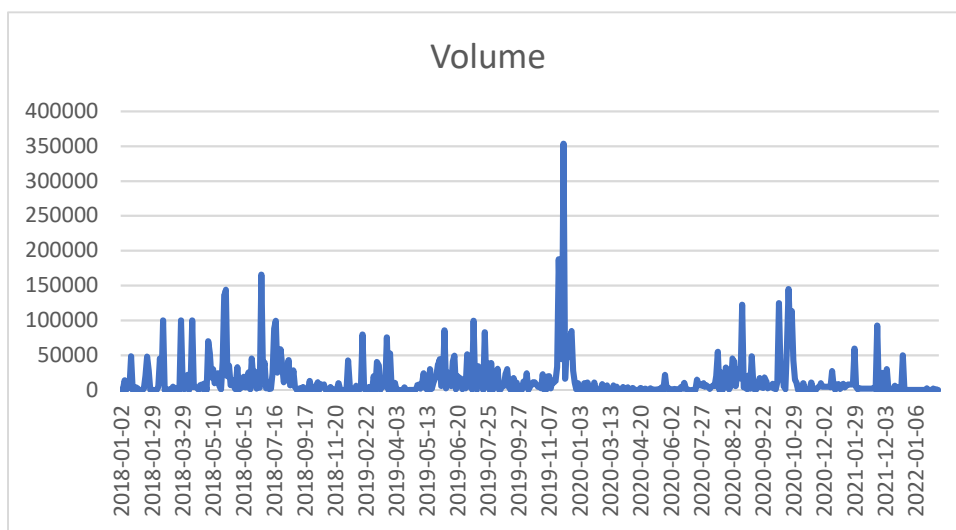


Fig. 5 Carbon Emission Right Transaction Volume in Shanghai from 2018 to 2022
Data from Cathay Pacific database

From the chart you can see that the volume of transactions is fluctuating, individual dates of the volume of transactions is very high or very low. It can be noted that before 2019, in addition to the individual date of the volume is very high, most of them are still maintained at a low level, the second half of 2019 compared to the previous volume has risen, speculation is the impact of Australia's mountain fires on the climate and thus lead to the global trading of carbon emissions rights, the Shanghai Municipality is of course inevitable. 2020 before the first six months of the volume is not high, it can be speculated that the new crown epidemic on the impact, resulting in a downturn. The impact of the new crown epidemic can be inferred, leading to a downturn.

4.2. Constraints

1) Green credit

First of all, although the development of green credit is expanding in scale, the main structure is single, mainly state-owned banks; secondly, as the People's Bank of China Dazhou City Central Sub-branch Group (2017) believes that although China's green credit policy framework is basically established, and the relevant system has been gradually perfected, the national level policy is not part of the legal category, and the legal level is relatively low, with no authority and coercive force[10]; then, green credit Lack of incentives, lack of motivation, some enterprises due to insufficient supervision of the relevant departments, and will not borrow to combat pollution; Finally, the lack of innovation and professional talents.

2) Green Bonds

Firstly, although the rating quality of green bonds is mostly good, the quality of their rating agencies is uneven; secondly, Ji Guangsheng, Gao Wenjun, etc. (2021) believe that there is an information asymmetry between the issuers of green bonds and investors because of the imperfect disclosure of information[11]; lastly, it is the same problem as that of the green credits, the main body has a single structure, and most of it is the state-run enterprises, and there are very few private ones.

3) Green Operation

First of all, it contains moral factors, some enterprises lack a certain sense of responsibility, only know the pursuit of profit, but ignored the protection of the environment; secondly, the lack of green management; then, the supervision of the relevant departments is not effective, the lack of perfect management mechanism, resulting in excessive pollution in the process of business operations; finally, the lack of a legal mechanism is not sound, the cost of enterprises to violate the law is low, and the cost of law-abiding is high. The cost of law-abiding is high.

4) Carbon Finance

Firstly, there is a big shortage of carbon finance talents in Shanghai, so the design and innovation of related products are greatly affected; secondly, the carbon finance market in Shanghai is less active because the investors in the market are narrower in scope and less active; then, climate change has a certain impact on the development of carbon finance in Shanghai, such as the difficulty of transformation of the commercial banks, and the increase of the risk factor of credit, etc. Finally, the carbon finance market in Shanghai is not as active as that of the commercial banks in the past few years, so it is difficult for the commercial banks to transform into the carbon finance market in the future, which is not the best way for the carbon finance market in Shanghai to be more active. Finally, as Bin Hui (2021) believes that the function of Shanghai carbon financial market needs to be further developed, although Shanghai has carried out a series of carbon financial business exploration, but the overall scale is not large, and the types of derivatives are small[12].

4.3. Countermeasures

1) Green Credit

First of all, improve the legal mechanism, improve the level of legislation, so that green credit has a more secure and effective legal development environment; secondly, cultivate professionals, innovative development, so that green credit to meet the different needs of enterprises and individuals; finally, due to the single structure of the main body, you can set up incentives, such as increasing the strength of preferential policies to stimulate the participation of commercial banks and other enterprises, you can also set up a mechanism of punishment, so that the environmental protection is mandatory. It is also possible to set up a penalty mechanism, which makes environmental protection mandatory.

2) Green bonds

First, strengthen the supervision of rating agencies to ensure the quality of green bonds; second, accept the acceptance of the Equator Principles [Equator Principles refers to the voluntary nature of the financial industry benchmarking standards aimed at determining, evaluating and managing environmental and social risks in project financing]; then, establish an incentive mechanism, such as increasing preferential incentives to stimulate the participation of commercial banks and other enterprises, and also establish a punitive mechanism to make environmental protection mandatory. Then, establish a sound incentive mechanism to motivate small and medium-sized enterprises to participate more in the market, and increase the welfare policy so that they can expand the scale of issuance of green bonds; then, improve the information disclosure system, the transparency of the information is an indispensable factor in the development of green bonds in Shanghai, on the one hand, it can get the welcome of the investors, on the other hand, it can reduce the issuance costs of green bonds, etc.; lastly, cultivate innovative talents, and strengthen research on the theory and practice. Finally, cultivate innovative talents and strengthen the research on theory and practice.

3) Green Operation

First of all, to strengthen the sense of responsibility and moral consciousness of enterprises, establish the consciousness of environmental protection and green consciousness, implement the concept of ecological civilization and sustainable development, and cultivate and publicize the green culture of enterprises; secondly, Zhang Tao and Tian Tian (2008) believe that the establishment of green operation system should start from the green strategy, strengthen the green management of enterprises, coordinate all departments, and implement it into all aspects of the operation to make the interests and green operation reach an effective balance, so that the enterprises can realize the green operation and the interests and green operation[13]. Then, the relevant departments to establish a regulatory mechanism, the government to improve the environmental protection law and other regulations, macro-control, increase penalties and the cost of violation of the law to ensure that enterprises abide by the law, green and effective operation; Finally, training of talents, innovation and development, research and development of new products, can ensure sustainable development and maximize the pursuit of interests.

4) Carbon Finance

First of all, strengthen the construction of relevant laws and regulations, so that the development of carbon finance market has a perfect and safe judicial environment; secondly, promote the internationalization of carbon finance in Shanghai, to create an influential international exchange, at present, Shanghai and even the country's carbon finance market in the international scale is still relatively small, the status of the status of the lower, the degree of development is also relatively insufficient; and then, strong support for the development of carbon finance, and build more market platforms to solve the related institutions to participate in the active participation of the market, so as to ensure sustainable development and maximize the pursuit of profit. Then, strongly support the development of carbon finance, and build more market platforms to solve the problem that the relevant institutions do not participate in the enthusiasm; finally, cultivate the talent team, the development of carbon finance is not

separated from the professional team, and it is necessary to strengthen the training of the team and enrich the professional knowledge.

5. Shanghai's Family Economy in the Context of Green Finance Era

Family is not like a business, eventually become a single producer, not like a customer, just a consumer, more, it is a set of production, consumption, and even investment, services and other properties of a complex.

5.1. Development Status

1) Per capita household income

Due to the high economic level of Shanghai, both the average annual income of Shanghai families and the annual consumption of each family are higher compared with other provinces and cities. In 2019, the RMB savings deposits of urban and rural residents in Shanghai will have exceeded 3 trillion yuan, and in 2020, it will exceed 3.6 trillion yuan. In this paper, the per capita disposable income of households in Shanghai from 2012 to 2020 is selected.

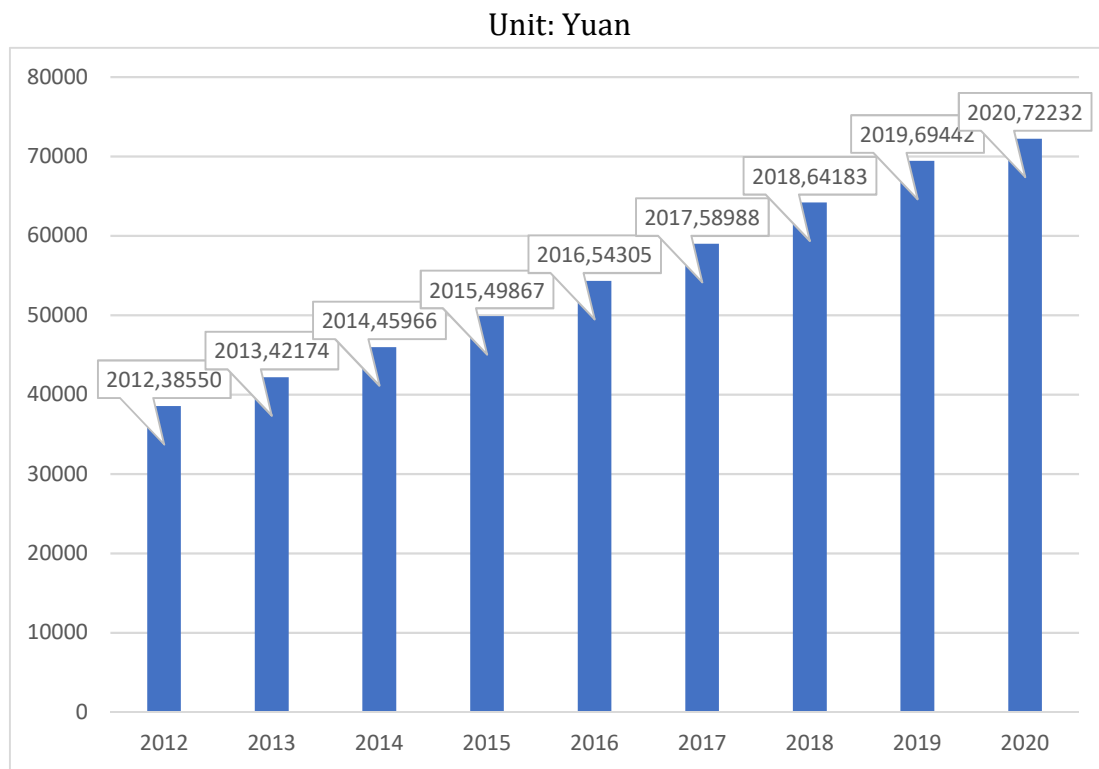


Fig. 6 Disposable income per capita in Shanghai
Data from National Bureau of Statistics

As can be seen from the chart, the per capita disposable income of Shanghai residents has been rising steadily year by year, and household savings are also on the rise. The rise in per capita income and savings is due to economic development on the one hand, which is a big reason; in addition, climate change and the development of green finance to enhance people's rational consumption awareness and other factors should not be ignored.

2) Annual per capita household consumption expenditure

The annual per capita consumption of Shanghai households and the change of consumer price index can also reflect the influence of climate in a certain way.

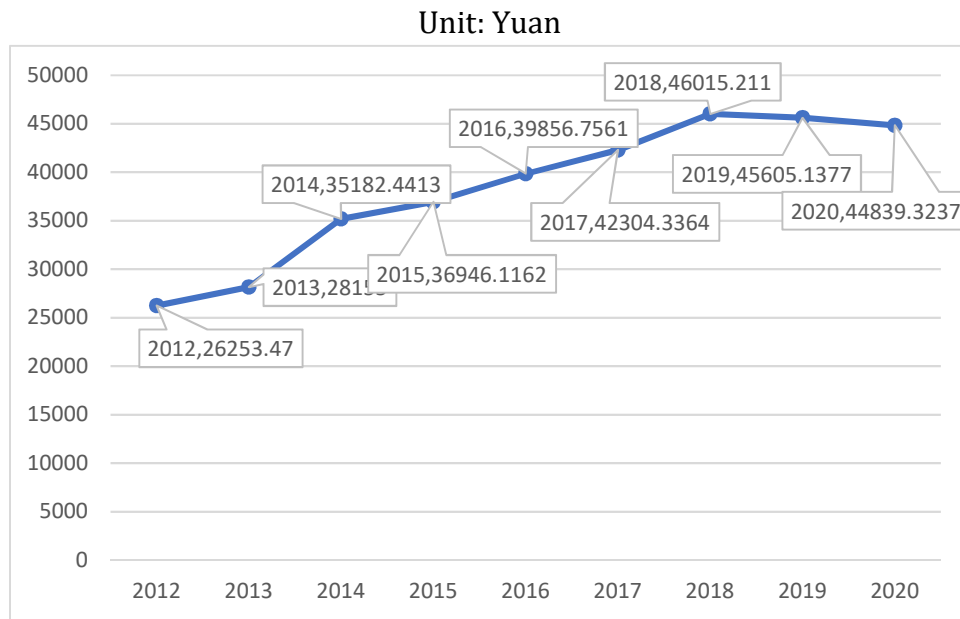


Fig. 7 Average annual consumer spending per person in households
 Data from Cathay Pacific database

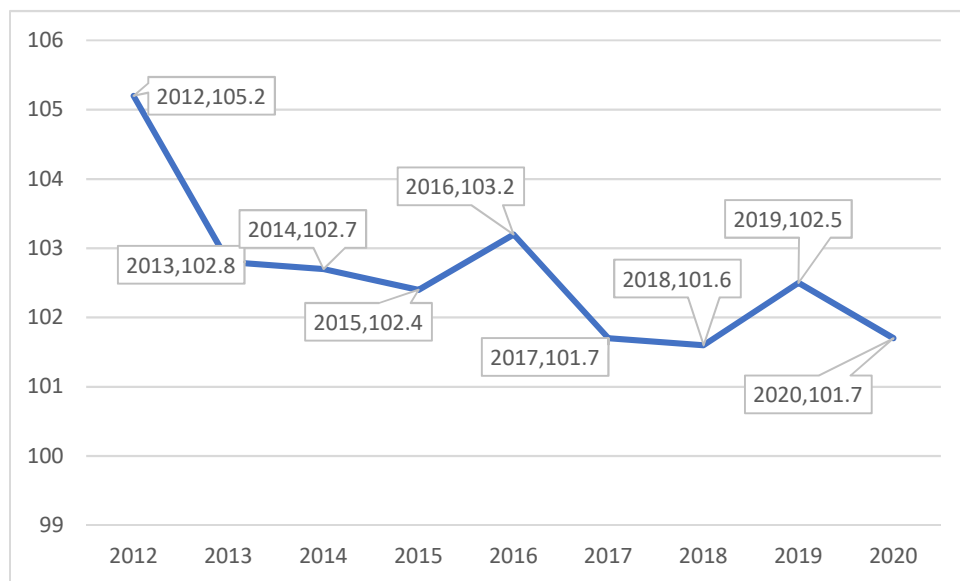


Fig. 8 Shanghai Consumer Price Index
 Data from National Bureau of Statistics

As can be seen in Figure 7, from 2012 to 2020, overall per capita annual household consumption in Shanghai is increasing, with an upward trend from 2012 to 2018, but a downward trend from 2018 to 2020, although the decline is not large. On the one hand, there are factors that the country vigorously advocate the concept of green consumption, and the development of green finance, consumers have a new understanding of the concept of consumption, consumption is more rational, at the same time, environmental protection awareness, sense of responsibility has also been enhanced, conscious of saving water, electricity resources, reduce exhaust emissions, etc.; on the other hand, extreme weather, climate change and other uncertainties exacerbate the people's uneasiness, pessimism and other psychological, the people's willingness to save. On the other hand, extreme weather and climate change uncertainty

aggravate people's anxiety and pessimism, and people's willingness to save money becomes stronger, which leads to the decline of per capita annual consumption of Shanghai households. In Figure 8, although the overall trend is down, the calculation of the consumer price index (previous year = 100) is greater than 100 every year, so prices are rising every year, but the upward trend is declining. Although the price increase is by no means a party can control, there are a variety of objective factors such as climate change and brought about by changes in the relationship between supply and demand of prices, and cost factors, monetary factors caused by price increases, in addition to the development of the green economy is not fully mature, relatively speaking, the cost of the required will be larger, the overall market price will also rise, but, in the country's macroeconomic regulation and control, and the role of the market However, under the national macro-control, and the role of the market, prices are still growing within a controlled range.

3) Property insurance

The existence of the accident has the inevitability, and the accident has the accidental occurrence, in today's environment, the accidental occurrence of the accident has greatly increased. People not only for their own life safety, but also for the safety of property is full of worry. 2020 Shanghai personal insurance premiums reached 135.571 billion yuan, an increase of 13.4%, this paper selects the 2012 to 2020 Shanghai family property insurance premiums.

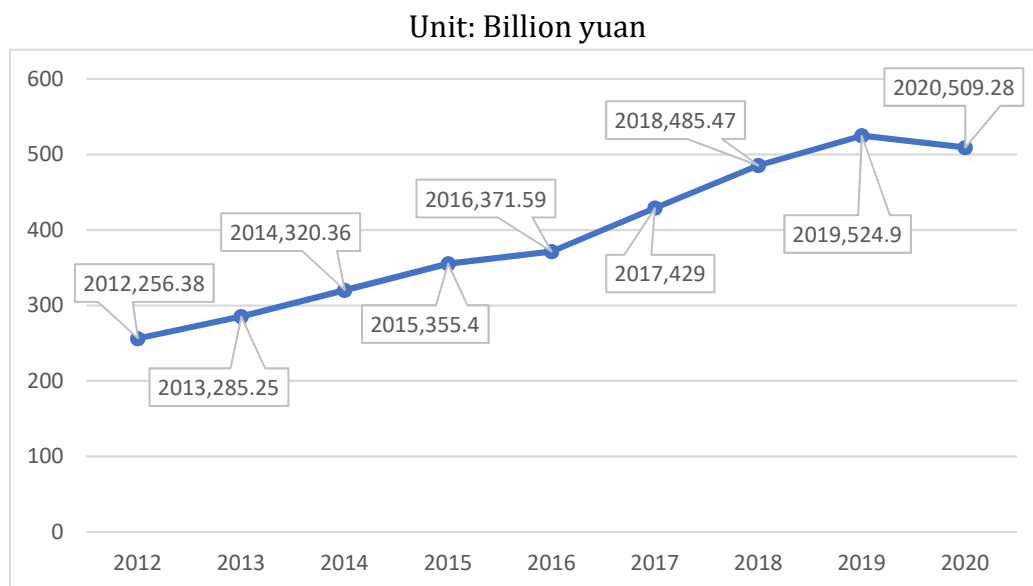


Fig.9 Property Insurance Premiums in Shanghai
Data from National Bureau of Statistics

Consistent with expectations, the rise in premiums is the broader trend, easing the unease about the element of chance, and while there has been a slight decline after 2019, the uncertain impact of climate change still cannot be ignored.

4) Credit cards

In recent years, the development of the business about credit card is more and more rapid, more people tend to credit card consumption payment, the use of credit card reduces the circulation and use of paper cash, including online ticketing, but also reduces the use of paper materials, credit card as a carrier of green finance plays an increasingly important role. This paper selects the credit card circulation of Pudong Development Bank from 2015 to the first half of 2021 to analyze the credit card use in Shanghai.

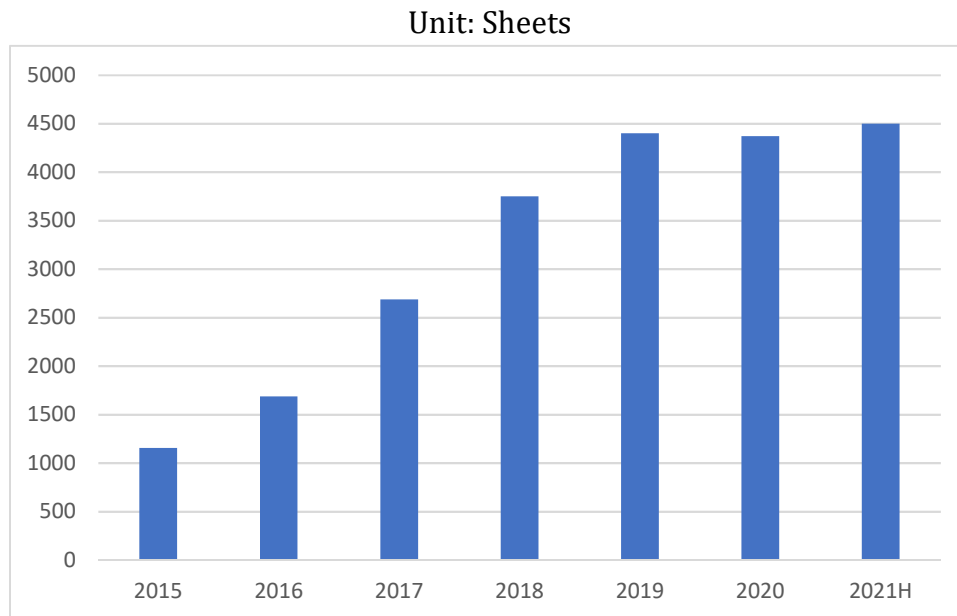


Fig.10 Pudong Development Bank Credit Card Cards in Circulation
Data from Pudong Development Bank Annual Report 2021

As seen in the chart, Pudong Development Bank credit card circulation from 2015 to 2021 substantial growth in the last three or four years gradually tend to be saturated, the magnitude of change is not large. From the development of credit card, see the rapid development of green finance in China. In this era, the green payment, green consumption scenarios are more and more widely used, prompting the development of credit cards.

5.2. Constraints

1) Effective investment portfolio

According to Markowitz's modern portfolio theory, a variety of investment portfolio, so that it reduces the systematic risk, but does not reduce the rate of return[14]. However, Shanghai residents currently have low investment diversification and cannot effectively reduce risks because of the lack of relevant financial knowledge. Although they have a strong sense of financial management compared to the past, they do not have a matching financial management theory, and are unable to integrate the family situation to invest effectively, thus hindering the development of the family economy to some extent.

2) Consumption and supply

At present, the living standard of our people has improved significantly, but the consumption level has not increased significantly, and there is still a certain gap with other countries. In addition, the demand of our families is stable, but the supply of high quality is not able to keep up with it, which has a certain impact on the high quality consumption of families.

3) Employment and income

Households' employment and production patterns are too homogeneous, and their sources of income are also too homogeneous, which increases the vulnerability of households in coping with risks.

4) Green Finance

The development of personal green finance business is relatively fast, but it is not fully mature, and the scope of business involved is relatively narrow, including personal green financial products, personal green financial bonds, personal carbon accounts, etc., which also affects the consumption and investment of families to a certain extent.

5.3. Countermeasures

- 1) Popularize relevant financial knowledge, so that more and more people can use financial knowledge to theoretically reduce the risk of family economy and expand the source of family income. On the one hand, families should take the initiative to understand, learn and participate in the financial market, accumulate investment experience, learn to think independently and be rational; on the other hand, financial institutions should lower the threshold of financial investment.
- 2) Vigorously develop a high-quality economy, raise residents' income, stabilize growth, and at the same time vigorously innovate, develop high-tech industries, provide better services and products, and promote consumption and its quality.
- 3) Encourage family entrepreneurship, vigorously develop the tertiary industry, give more preferential policies to entrepreneurial families, small and medium-sized enterprises and private enterprises, promote employment through entrepreneurship, create a favorable employment environment, build a platform for flexible employment, and provide protection measures such as unemployment benefits.
- 4) Expand the scope of personal green finance business, green consumption application scenes, so that more people come into contact with green finance, understanding of green finance, research and development of innovative products, to give customers a better service experience.

6. Conclusion

Under the challenge of climate change, Shanghai's green finance is now expanding in the scale of green credit, but the structure is single, the main body is state-owned banks, and the relevant system needs to be gradually improved, the lack of incentives, lack of incentives for the development of the lack of motivation, and insufficient regulatory efforts. In green bonds, there is also a single structure of the main body, uneven quality of rating agencies, and information asymmetry between issuers and investors. Green business needs to be further developed and deepened, moral risk control needs to be strengthened, and laws and regulations need to be improved. There is a lack of relevant talents in the international market for carbon finance, and there is a large gap and a low degree of activity.

At the same time, the family economy is affected by the green finance to change the residents' consumption habits and investment decisions. In terms of employment and income, the family employment and production mode is too single, and the source of income is also relatively single. In terms of consumption supply, consumption has become more rational, but the level has not been significantly improved, and high-quality supply cannot keep up. In terms of investment, they have a strong sense of financial management, but they lack relevant theoretical knowledge and prefer low-risk financial products. Nowadays, the business scope of personal green finance is relatively narrow, the related products are immature and not rich in variety, all these factors affect the investment and consumption of families and individuals, and it is necessary to research and develop related new products, so that the green finance is more down to the individual level, not only in the enterprises and organizations, such as the development of credit.

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