An Empirical Study of the Impact of Internet Finance on Chinese Residents' Consumption - Taking the Cosmetics Industry as an Example

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Abstract: *This study focus on the impact of Internet finance on Chinese consumers' online shopping cosmetics consumption. Modeling research on time series data of third-party payment and per capita income, and online shopping cosmetics. The study found that there is a long-term stable relationship between these three variables in the past decade. Finally, conclusions and suggestions are put forward.*

Keywords: Internet finance, Cosmetic industry, consumption, Empirical Research

1. Introduction

Since the emergence of Internet finance, it has developed at an extremely fast pace. Especially after 2004, the emergence of third-party payment has further immersed in the consumer market, and people's consumption patterns have also changed.

At present, China is also a big Internet country. The size of netizens has reached 772 million in December 2017 (China Internet Information Center), and the Internet penetration rate has reached 55.8%. Because of its advantages of transaction security, immediacy, mobility and convenience, Internet finance has quickly become the main mode for people to shop online, manage money, and consume in daily life. It has become a necessary tool for people to consume. Electronic consumption habits have become sticky, and third-party payment has taken a big part. Internet finance companies led by Ant Financial also increasingly occupy the payment market (Yan Xiangru.2017). Its market has great potential and laid the foundation for better and faster development of Internet finance.

In addition, with the rapid development of China's economy, people's disposable income also shows an upward trend, and the level of consumption and the demand for quality of life are also increasing. After solving the problem of food and clothing, more and more people are pursuing beauty and trendy fashion. People pay more attention to their own image and their purchasing power in cosmetics is gradually increasing. Not only do women's demands for cosmetics increase, but men also become the mainstream demanders in the cosmetics market. It can be seen that the proportion of the cosmetics industry in people's consumption cannot be ignored. Especially in today's Internet finance era, people use this platform and various channels to purchase cosmetics. But in the academic world, there are few studies on the impact of people on the consumption of cosmetics in Internet finance. Therefore, this study selects the cosmetics industry as an example, and adopts a method of establishing model analysis to explore the impact of Internet finance on Chinese residents' consumption.

2. Research Background

2.1 China's Internet finance development and current status

The development of China's Internet finance can be divided into four stages. The first stage was the budding period of Internet finance. Before 2004, it was mainly reflected in the business innovation of traditional financial institutions represented by commercial banks through Internet technology, such as online banking, etc. So that residents can handle a variety of banking services at home; the second stage was the gradual rise of e-commerce after 2004. Its rapid development made the company begin to flood into the payment industry. At this time, third-party payment will be generated immediately. The central bank began issuing the Payment Business License in 2011. The third-party payment is legalized and officially incorporated into the central bank's supervision (Shen Yang Jia Yi.2019); the third phase begins after 2013 and stems from a deeper integration of the Internet and finance. Alipay and others began to work in the field of Internet financial management. Internet giants such as Alibaba, Tencent and JD.com have also begun to build new industrial chains. P2P network lending, crowd funding software and other forms of Internet finance have gradually emerged. The fourth stage is the Internet since 2016. Finance began to be properly regulated. Due to the establishment of the China Internet Finance Association in March 2016, Internet finance also entered strict control and began to develop in compliance (Jiang Song, Zhou Hong.2018).

In many forms and models of Internet finance in China, the scale and impact of third-party payment transactions are the largest. Therefore, this study selects the scale of third-party payment transactions as an indicator to reflect the development

of Internet finance. Third-party payment refers to the transfer of funds by an independent third-party intermediary when the buyer and the seller conduct the transaction. It is a mobile payment and other payment service provided by the non-traditional financial institution for the buyer and the seller under the premise of the approval of the central bank. At present, third-party payment platforms have become increasingly mature, and the development in recent years is also very fast. As can be seen from Figure 1 below, from the 300 billion in 2009 to the 120.3 trillion in 2017, the trend of rapid development has emerged. Especially since 2014, the scale of third-party payment has shown a rising trend, showing the momentum of its development and the huge potential in the future.
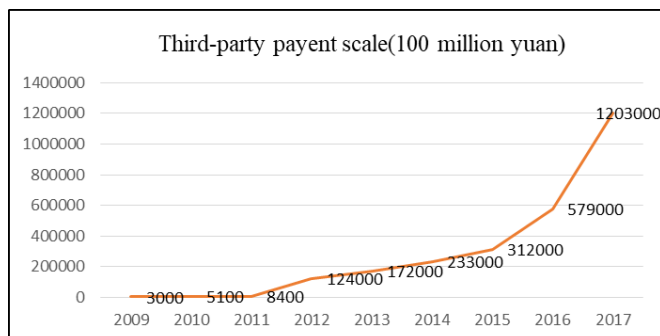

Figure 1: Third-party payment scale from 2009 to 2017
Source: I Research

2.2 Analysis of the current state of online shopping in China's cosmetics industry

In recent years, people are pursuing beauty and fashion. The cosmetics industry is playing an increasingly important role in online shopping and consumption of Chinese residents. There are also a growing variety of cosmetics, such as make-up, skin care, cleansing, hairdressing, etc., which are people's daily needs and eager purchases. Since the development of e-commerce, cosmetics have become the main online shopping target for consumers under the popularity of online sales. Taobao Tmall, JD.com and other well-known e-commerce platforms are also very frequent occurrence of ultra-low-cost discount activities on cosmetics, which has stimulated consumers' desire to buy cosmetics online. According to the scale of online shopping cosmetics transactions in China in recent years (see Figure 2 below), in 2015, the scale of online shopping cosmetics transactions in China exceeded 100 billion for the first time. From 581 billion Yuan in 2013, it has been rapidly increasing to 205 billion Yuan in 2017, achieving a big overhaul. It can be seen that in the consumption of Chinese residents, the demand for online shopping in the cosmetics industry has increased, and the scale of online shopping transactions has also grown rapidly.

Figure 2: China's online shopping cosmetics transaction scale from 2009 to 2017
Source: Prospective Industry Research Institute

3. Problem Definition

When using economics theory to analyze household consumption, residents' income is the main factor affecting their consumption. Therefore, this study uses the per capita disposable income of residents as an indicator to reflect the overall income of Chinese residents; now Internet finance plays an important role in people's daily consumption. In the analysis of the impact of Internet finance on consumption, this study adopts the third-party payment scale with large transaction size and strong influence as an indicator to reflect its development; using Chinese residents to purchase cosmetics on a large scale to reflect the overall consumption of residents.

4. Methodology & Results

4.1 Variable selection

The explanatory variable of this study is the scale of online shopping cosmetics transactions (denoted as Y), and the explanatory variables are per capita disposable income (recorded as X1) and third-party payment scale (recorded as X2). Due to the availability of data, this study selected the scale of online shopping cosmetics transactions, per capita disposable income and third-party payment scale from 2009 to 2017 as sample data analysis, as shown in table 1.

Table 1: Time series of three variables

Years	China's online shopping cosmetics transaction scale Y(100 million Yuan)	Disposable income scale X1（Yuan）	Third-party payment scale X2（100 million Yuan）
2009	125	10755	3000
2010	224	12184	5100
2011	376	14586	8400
2012	581	16674	124000
2013	774	18310	172000
2014	975	20167	233000
2015	1277	21966	312000
2016	1618	23821	579000
2017	2050	25974	1203000

4.2 ADF test

Firstly, the stationary test of the variables is carried out. Because of the different dimensions between the variables, in order to reduce the influence of the dimension on the results and eliminate the heteroscedasticity, obtain a reasonable degree of influence of the variables. This study takes the natural logarithmic transformation of each data. Use lnY to represent the scale of online shopping cosmetics transactions after logarithmization, ln X1 is the disposable income of logarithmic processing, and lnX2 means the third-party payment scale after logarithmization.

Considering that the time series data is performing the analysis operation, there is a certain probability that pseudo-regression will occur. Therefore, before performing the test, the unit root test is performed first for the time series data of each variable. The results are shown in Table 2.

Table 2: ADF test results

Variable name	ADF Statistics	5% threshold	AIC Statistics	Prob.	result
lnY	-3.6605	-4.2465	-3.4539	0.0939	Not stable
lnX1	-0.9740	-4.2465	-4.3943	0.8812	Not stable
lnX2	-1.6206	-4.2465	2.5509	0.6927	Not stable
D(lnY)	-0.6557	-4.4504	-2.6660	0.9233	Not stable
D(lnX1)	-2.0233	-4.7732	-6.1193	0.4818	Not stable
D(lnX2)	-3.0539	-4.7732	2.6983	0.2225	Not stable
D^2(lnY)	-8.9038	-5.3383	-5.2345	0.0075	Stable
D^2(lnX1)	-18.4948	-5.3383	-9.4318	0.0003	Stable
D^2(lnX2)	-7.5137	-5.3383	0.6709	0.0145	Stable

The above data is generated by the software Eviews.8.0, and the length of the lag period is automatically determined according to the AIC indicator. In the unit root test using ADF, if the t-statistic of the ADF is greater than the critical value of the unit root test at the significant level of 0.05, Prob.>0.05, indicating that the sequence contains unit roots, the sequence is not stable. If the t-statistic of the ADF is less than the critical value of the unit root test at a significant level of 0.05, Prob. <0.05, the sequence does not contain a unit root, indicating that the sequence is stable.

According to the data analysis results in Table 2, the zero-order and first-order difference results of lnY, lnX1 and lnX2 are not stable, but the results of the second-order differential data are all stable, indicating that the test passes. After each variable is smoothed by the second-order difference, the co-integration test can be further performed.

4.3 Co-integration test

In this study, the Engel-Granger two-step procedure is used for co-integration test. It is a co-integration test based on regression residuals. If a linear combination of three economic variables is stable, these variables are called co-integration. Indicates that there is a long-term equilibrium relationship.

The first step is to perform co-integration regression and the ordinary least squares method is used to regress ln Y, lnX1, and ln X2 to obtain the equation (1).

$$\ln Y = -23.3763 + 3.0473 \ln X1 + 0.0054 \ln X2 + e_t \quad (1)$$

The second step is to test the singleness of e_t and perform a zero-order ADF test on e_t, The results are as follows.

Table 2: Residual ADF test results

Residual sequence	ADF Statistics	5% threshold	Prob.	result
e_t	-9.0326	-4.2465	0.0007	Stable

A zero-order ADF test is performed on the residual. If the t-statistic of the ADF is less than the critical value of the unit root test at a significant level of 0.05, Prob. <0.05, indicating that the sequence does not contain a unit root, indicating that the sequence is stable. From the data analysis results of Table 3, it is known that the residual time series is a stable sequence. It shows that lnY and ln X1, lnX2 have a long-term stable equilibrium relationship.

5. Conclusion

Through the elaboration of the current state of China's Internet finance and China's online shopping cosmetics, the online shopping cosmetics transaction scale, per capita disposable income and third-party payment scale were selected as indicators to conduct empirical analysis. From the above data analysis of the three variable time series and the results of the model establishment, it can be seen that there is a long-term stable economic equilibrium relationship between the scale of online shopping cosmetics transactions and the disposable income of third-party payment.

When the per capita disposable income increased by 1%, the size of online shopping cosmetics sold by Chinese residents increased by 3.0473%, and the increase in per capita disposable income would cause an increase in the scale of online shopping cosmetics, which played a significant role in promoting. When the scale of third-party payment increased by 1%, the scale of online shopping cosmetics of Chinese residents increased by 0.0054%. The scale of third-party payment also promoted the scale of online shopping cosmetics, but the impact was relatively small.

6. Recommendations

Nowadays, Internet finance has a stable impact on the scale of online consumption of Chinese residents. In order to enable consumers to use Internet financial technology (such as third-party payment) to purchase cosmetics online, the government should improve the Internet financial supervision system. At present, there are still some areas for improvement and revision of Internet finance supervision in China. Many problems such as fraud and information leakage are emerging. For Chinese residents, perfect Internet supervision system and protection of consumer rights are very important (Zhang Chuanyong.2015). For the supervision of online merchants

selling cosmetics, counterfeit and shoddy products and credit risks are the most worrying places for consumers. The state should formulate corresponding policies to provide consumers with a guarantee to make consumers feel comfortable shopping and make the Internet Finance is better infiltrating into the daily consumption of all people and promoting the development process.

Secondly, for the platform of Internet finance, the model of third-party payment should be more perfect in designing and innovating in business technology and level, to achieve a more convenient and safer trading environment. Therefore, it is conducive to the promotion and use of people's life consumption (Yu Hailong.2016). For the Internet financial risk control issue, on the one hand, it is necessary to enhance the relevant capabilities in big data analysis and cloud computing, and strive to build a comprehensive and complete risk view, as well as to strengthen the training mechanism and mode of relevant talents, so as to further Reduce operational risks. Finally, Internet finance should pay special attention to the innovation of products and service models. Only when it fully meets the needs of customers, can it have its own place in the financial industry with homogenization and fierce competition.

Finally, from the perspective of consumers, facing the increasing Internet financial models, when people conduct online lending, wealth management, etc., we have to be rational consumers (Yang Tao.2014). Consumers must strengthen their self-finance knowledge and understanding, as well as their use in daily life, so that they would not be incited by lawless elements in the face of diversified financial products and diversified consumption patterns. Therefore, people can correctly choose the right financial model and become the beneficiary of Internet finance, which can effectively avoid risks (Gross D B.2002).

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