An Empirical Study of the Impact of Third-Party Payment on Inflation in China

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A THESIS SUBMITTED IN THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS IN BUSINESS ADMINISTRATION INTERNATIONAL PROGRAM, GRADUATE SCHOOL OF BUSINESS, SIAM UNIVERSITY, BANGKOK, THAILAND

2019

Independent Study Title: An empirical study of the impact of third party payment on inflation in China

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Degree: Master in Business Administration (International program)

Major: Finance, Banking and Management

This is Independent study has been approved to be partial fulfillment of the requirement for the Degree of Master Business Administration in Finance, Banking and Management

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22/ MH/ 2019

ABSTRACT

Third-party payments refers to an independent organization with a certain reputation and credit guarantee, that mainly provides services for e-commerce. For many economists, e-commerce was expected to be a crucial means of stimulating economic globalization. However, the credit system and micropayment settlement system of Chinese commercial banks have not been fully formed, and the function of third-party payments mitigate the gap to some extent. Therefore, the existence of third-party payments plays an important role in China. On one hand, third-party payments are an innovative payment method. Many studies have shown that a change in payment settlement methods and media will

affect China's monetary system, currency circulation speed, money supply, currency multiplier, degree of economic monetization, and degree of financial modernization. The nature of these factors was closely related to changes in inflation. On the other hand, the way third-party payments will stimulate consumer’s purchase decision. The change of demand will lead to a change of price. Price going up or down in a specific period is called inflation or deflation. Excessive inflation will curb the economic stability of a country and lower the level of consumption of residents. Studying the factors that influence inflation helps countries control the currency in macroscopical. The intention of this paper was to prove third-party payments had an impact on China's inflation, by way of theoretically analyzing the effect of third-party payments on several topics, including narrow money multipliers, money supply, currency circulation speed, degree of economic monetization, degree of financial modernization, and regression analysis of third-party payments on money circulation, money supply, the degree of economic monetization, the degree of financial modernization, and the relationship of CPI (consumer price index). According to the theoretical research, third-party payments had both accelerated and decelerated impact on inflation. Currently, a great number of empirical studies had shown that the accelerated effect of third-party

payments on inflation is greater than the decelerated effect. Likewise, this study was designed as an explanation research by way of defining several key factors, collecting secondary panel data and analyzing it with SPSS. The finding also showed that the role of third-party payments in China had a greater impact on inflation.

Keyword : third-party payments, inflation, money suppy, CPI economic monetization, financial modernization

ACKNOWLEDGEMENT

In this section, I would like to express my gratitude to Dr. Theerachote Pongtaveewould, advisor and Dr. Jompong Mongkhonvanit, Dean, Graduate School of Business, Siam University, Bangkok, Thailand for them thoughtful and caring supervision by menas of his educational excellence. I am most grateful to them especially for them deep understanding of the Independent Study and his good commumication skills.

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Content

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Electronic commerce (EC) has been rapidly growing and impacting many businesses and marketing operations since the early 21 st century. With the development of cutting-edge technology and the popularity of the internet in the world, the traditional form of business can hardly adapt to the development of the times and EC emerges. The dramatic expansion of EC has led to a sharp increase in online retail sales. EC sales were estimated at $1.7 trillion in 2015 and over 25% of all purchases in 2016 (Turban et al., 2018). The online auction is projected to reach $3.6 trillion around the world in 2019 (eMarketer, 2015). Accordingly, various payment methods have emerged, and the electronic revolution has begun sweeping the globe.

Indeed, in 2018 report the Bank for International Settlements 1 showed that demand for cash remained strong, but it also pointed out that cash demand in many countries began to decline. According to The New York Times, for instance, only 20% of Sweden's consumption was paid in cash; Denmark and Norway have eliminated most of their cash use. Whether at home or abroad, payment innovation has put pressure on traditional bank-based payment systems, and some central banks are also consideringissuing electronic cash, such as Swedish banks. While the percentage of total transactions is increasing rapidly, it becomes apparent that most commerce will be online in the future and the electronic payment (e payment) will dominate the market. E payment is an act of directly issuing or authorizing others to issue payment instructions through electronic terminals to recognize monetary payment and fund transfer. Based on the automatic payment instruction initiation method, the types of e-payment are divided into online payment, telephone payment, mobile payment,point-of-sale terminal transaction, ATM transaction, and other e payments. In simple terms, e payment connects several parties to engage electronic transactions, including consumers, manufacturers and financial institutions, using secure e payment methods, currency payments or capital flows through the network. E payment is an integral part of the e-commerce system.

The market of e payment multiplied in China in 2005, and many e payment regulations were improved. The emergence of various forms of payment, such as online payment, mobile payment, and telephone payment, accelerated the pace of development of the entire industry. In business services, e payment and other forms of transaction settlement have achieved a leap-forward growth in some enterprises, while traditional forms such as cash on delivery, postal remittances, and bank wire transfersdecreased dramatically.

Indeed, the online payments in China have overthrown cash as significant tools in the digital revolution that has been led by two big players: Alipay and Tenpay. Alipay, the online (digital) payment division of e-commerce entrepreneur Alibaba, has been the market leader in China's third-party e payment market since China's central bank issued licensing regulations for third-party payment providers in 2010. The Tenpay, the mobile payment service by internet giant Tencent, was only launched in late 2012 and has been second place in the mobile payments marketplace ever since. As shown in Figure 1, in 2015 Alipay owned a 47.6% market share, while the rival Tenpay at 20.1%. A recent report by market research services further showed that China's third-party mobile payment market had a total transaction value of RMB 12.8 trillion in Q4 2016. The incredible rise shows that digital commerce in China is an increasing and unstoppable trend.

Figure 1 Alibaba and Tencent in Mobile PaymentsSince early 21century the way that business would be impacted because online shopping, e payments, and mobile devices are all growing at substantial rates. Compared with traditional trade methods, EC relies on internet technology to reduce many unnecessary intermediate links, making the information between the two parties more symmetrical, and the speed and efficiency of transactions are significantly improved. Among them, e payment becomes one of the infrastructures that mostly promote the development of EC.

An e-payment that is made generally comprises five key players: customers, merchants, banks, network, and aggregators (Turban et al., 2018). While customers and merchants that underlie the demand-supply theory are the most fundamental backbone of the digital economy, banks are deemed to the main reason affecting e payments along with the development of wireless networking technology.

In terms of aggregators, e payments are basically in the form of third-party payments, which is an independent organization with a specific strength and credit guarantee. It adopts a contract with major banks to provide a network payment mode for the transaction support platform that interfaces with the bank payment settlement system.In the "third-party payment" mode, after the buyer purchases the goods, the account provided by the third-party platform is used for payment, and the third party notifies the seller of the amount to the report and requests the delivery; the buyer receives the goods and checks the products for confirmation. After that, the third party can be notified to pay the seller, and the third party will transfer the money to the seller's account. While online retail transactions are increasingly made with e-payment around the world, the global tendency indicates that e payment must be the mainstream trend in the future, and it can provide a more convenient, flexible, efficient and economical payment experience than the cash payment.

Nielsen (2016) divided e payment into five categories: credit card, debit card, digital payment, direct debit, and cash on delivery (COD). However, as shown in Table 1, the implementation of e payment has achieved different results in different countries. For example, Scandinavian countries and China are ahead of the world in mobile payments, while the United States and most European and American countries prefer to use credit cards. Meanwhile, the average e payment coverage using credit cards in the rest of the world is only about 25%. Users around the world are becoming more and more dependent on e-payment as a means of daily payment, but the process of epaymentin most countries is prolonged.

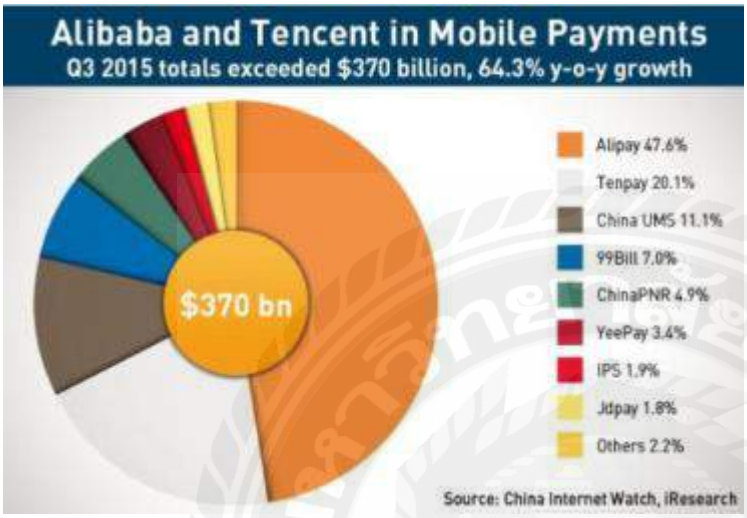


Table 1 Percent of respondents using EC payment methodWith the growing popularity of online shopping, e payment systems have become a must for online consumers. While e payment plays a vital role in the field of EC around the world, one of the kinds is the digital payment that is the most widely used in China (i.e., Alipay and Tenpay). Table 1 shows that China is the country to adopt a large-scale e payment system that combines digital payments (86%) and mobile phones, resulting from the fact that Alibaba is by far the largest EC site in country andAlibaba relies on its proprietary system called Alipay. According to PwC'sEconomic Quarterly 2017, China's online retail sales of goods and services alreadyreached 1.4 trillion yuan in the first quarter of 2017, 32.1% higher than the previousyear. As being the largest EC market in the world, online retailing is expected togrow to 25% by 2020. The current scale and growth have been mainly driven by the innovative business model, technological developments, and competition in thebusiness environment.

The relationship between third-party intermediaries and banks is crucial to boostingsales. In China, third-party payment is currently the primary method of onlinetransactions and credit intermediaries. The most important thing is to establish aconnection between online merchants and banks to achieve third-party supervisionand technical support. It can be seen that banks are the basis of e payment of all kinds,and the relationship between them is very subtle. It is a cooperative relationship,interdependent, and competitive because third-party payment will not only squeezethe intermediary business of commercial banks but also reduce

the potentialcustomers of banks and the total domestic production of existing customers.By contrast, with similar size and the largest population in the world today, Indian e-commerce as shown in Table 1 remains heavily dependent on the cash on delivery(COD) Mode of payment up to 83% of transactions. COD is the process of customerspaying for a good or service in person on its delivery. If the COD buyers fail to makethe payment, then the good or service is returned to the sellers. A report 5 pointed outthat the main reasons that COD rather than digital payments has facilitated much ofthe growth of India e-commerce are familiarity, lack of infrastructure, lack of trust,and absence of cyber laws. In this regard, little research has been undertaken toexplain the reasons why Chinese consumers prefer digital payments to COD.

1.1 Statement of the ProblemThroughout the payment settlement history of human beings in social and economicactivities, the payment settlement method has experienced different payment andsettlement stages such as payment settlement of original objects, payment settlementof physical currency, credit currency, and payment settlement of electronic money. Ingeneral, however , these payment settlement methods are essentially direct payment settlements between the two parties. In the 21st century, China's e-commerce activities have shown a rapid growth trend. However, due to the imperfect creditsystem and micropayment and settlement system in China, the payment andsettlement methods in e-commerce activities are gradually inclined to third-party payment settlement. Third-party payment is not only provided a new payment settlement approach but also promotes the improvement of China's payment settlement system.After more than ten years of development, third-party payment has become anindispensable part of China's payment and settlement system. The rapid growth of third-party payments and the massive scale of pay will first have a specific impact onChina's currency circulation speed and money multiplier or money supply, which willhave an inevitable effect on China's inflation. This paper analyzes from the third party'spayment principle, payment medium and payment process found that third-partypayment mainly affects the speed of money circulation in China's monetary systemand the narrow money multiplier (narrow money supply), which indirectly affectsChina's inflation. The emergence and development of third-party payment have broughtspecific challenges to China's traditional monetary theory, monetary policy, andeconomic policy. From the perspective of the process of payment settlement, thepayment settlement method has become more convenient and faster, and the paymentsettlement media in the payment settlement process has become more convenient toissue and carry. Some existing research results show that: changes in payment mediaand payment settlement methods will have an inevitable impact on the monetary system,which will have an unavoidable effect on inflation (or deflation). For example, the use ofcredit currency instead of real money will affect the currency speed ofcirculation and the currency multiplier, which in turn exacerbates the fluctuations inthe price level and brings about positive inflation (or deflation). All along, the society of different countries is keeping concerned about the issue of increase, and many scholars have continued to study various aspects of increase. Some western scholars divide the causes of increase into demand-driven, cost-driven, structural, etc., while the monetary school believes that inflation

is a monetary phenomenon - that is, thehorizontal fluctuations of price caused by the imbalance of supply and demand ofmoney in social, economic activities. With the development of Internet technology ande-commerce, third-party payment has been dramatically developed and widely used, andthird-party payment has become more and more critical in the entire socialpayment system. Then, how does the substitution of traditional payment settlementmethods for third-party payment settlements affect China's monetary policy andinflation?

1.2 Objectives of the study

At present, Internet finance has become an important part of China's financial system.The convenience and advancement of Internet finance determine its betterdevelopment prospects. Third-party payment is an important part also the foundationof Internet finance. Studying the impact of third-party payment on China's monetarysystem and inflation has certain forward-looking and necessity.

Today, third-party payment has some markets in China's payment and settlementindustry. It is no longer satisfied with micro-payment settlement in e-commerce, andhave begun to expand other businesses in a frenzy, eroding the market share oftraditional commercial banks in the payment settlement system. However, China'scurrent monetary policy and inflation are volatile. The government and thecentral bank often have little effect on their regulation. These phenomena havearoused great concern from all walks of life. Therefore, in the new Internet financialenvironment, from the perspective of the payment medium and payment principle ofthird-party payment and the status quo of its development to research the impact ofthird-party payment on China's monetary system and inflation, which is not only atheoretical discussion and empirical analysis of third-party payment, currency systemand inflation, but also provides some reference for the government, central bank andother relevant departments to better regulate the economy.

1.3 Research conceptual framework and hypothesesIn summary, this paper speculates that third-party payment will have some impact onChina's inflation. First of all, write the research background, object, and literaturereview. According to the existing literature, it is proposed that third-party payment isan important factor affecting the speed of money circulation, money multiplier, andmoney supply. This paper mainly includes the acceleration effect of third-party payment on the velocity of money circulation and the precipitation effect of third-party payment on the narrow money multiplier, and the influence of third-partypayment under the acceleration effect and precipitation effect on inflation. According to the literature review, the theme is analyzed mainly through three parts. Theoretical analysis, direct empirical analysis, and secondary empirical analysis. The empirical study includes mostly the selection of variable indicators, the description of sample data, the practical process and the

analysis of empirical results. Accordingto the theoretical analysis results and the empirical analysis results, the last chapterproposes some new methods and suggestions for regulating China's monetary systemand inflation from the perspective of third-party payment in China.

CHAPTER 2

LITERATURE REVIEW

2.1 .1Research on foreign status

Third-party payment began in the United States. Legendary CEO Elon Musk founded the first third-party payment company of the world in 1998, the earliest third-party payment company in China was founded in 1999 by Shanghai's E-Commerce Co., Ltd. and. Beijing Shouxin Co., Ltd. Because of the emergence of third-party payments have been less than 20 years old, so far there are few references to research on third-party payments at domestic and abroad. With the rapid development and the rapid growth of third-party payments, more and more scholars are payingattention to third-party payment. Compared with foreign scholars, domestic scholars have more research on third-party payment.

The third party is mainly generated to cope with the development of E-Commerce. It primarily acts as a credit intermediary, and the actual transaction partiespay and settle. Thus, to study third-party payment, it is necessary to study e-commerce first. The science and technology in western countries are relativelydeveloped, and the development of e-commerce is more early and complete. Amongthem, e-commerce in the United States is the most perfect. Therefore, Westernscholars have earlier involved e-commerce and research on tripartite payments.Anna Niteberg (1999) argues that the using of third-party payments in e-commerce activities can effectively motivate consumers' shopping motives. D J. Kim (2005) claims that online transactions in e-commerce activities include services from anumber of third-party payment agencies and supporting institutions, such as various commercial banks, credit card authorities, consumer confidence organizations, and consumer online privacy protection, etc., and introduced the third-party payment services provided by eBay in e-commerce activities. Hsite (2005) respectively introduced the development type of e-commerce and the application of third-partypayment institution Paypal in actual economic events.

The rapid development of e-commerce has promoted the development of third-party payment. However, as a non-financial settlement institution independent of thecommercial banking system, third-party payment institutions are engaged in payment settlement business, which inevitably has an inevitable impact on the original financialsystem and economic conditions. Cindy Claycomb (2005) predicts that third-party payments and e-commerce would affect a country's industry. Ray Amyet al. (2006) discuss how small and medium-sized businesses can make benefits byproviding network services to third parties. A country's financial system and stableeconomic development have a significant impact on the prosperity of the country. Therefore, Western scholars are also more concerned about how to supervise thethird-party payment industry. They recommended that regulators regulate the third-party payment industry in case it is against the financial system or harms the economy. Ziqi Liao (2001) studied and summarized the policy guidelinesand regulatory measures of some developed

countries in Europe for e-commerce andthird-party payment industries. Cecelia Kye (2001) reviewed the EU's policy guidelines and regulatory criteria for e-commerce and third-party payment industries. CentenoCr (2010) and Heather Rowe (2010) [9] believe that developed countries in Europeand the United States are extremely focused on exploring laws and regulations thatare suitable for regulating third-party payment platforms in social practice. Tarullo(2011) believes that restrictions and regulation of third-party payment settlementactivities should be strengthened to reduce non-systemic risks in the payment and settlement industry. Third-party payment relies on computer technology and Internet technology to realize the circulation of money. The payment medium in the payment process is similar to electronic money. The most significant difference between the two is that commercial banks issue the issuance of electronic money under the supervision of the central bank. Commercial banks have the ability to create money, so electronic money also has the ability to create money in ordinary credit currencies, while electronic money used in third-party payments does not have the ability to create money. The emergence of electronic money appeared earlier than the emergence ofthird-party payment, so its regulatory laws and regulations are relatively complete, and relevant research results are more abundant. The EU has introduced the"Guidelines for Common Framework for Electronic Signatures" and "Guidelines forElectronic Monetary Institutions" on the supervision of third-party payments. Thedocuments stipulate that third-party payment institutions must obtain the prescribedapplication licenses before they can operate. At the same time, they need to make surein the central bank have a certain amount of funds is retained to ensure the liquidityand security of the funds. This practice of the EU is actually to take third-partypayment institutions into the current financial regulatory system. In 1998, the BaselConference presented in the "E-banking and E-Currency Activity Risk Management"the report that E-money refers to the money of payment through the sales terminal,between different electronic devices, and on the public network during the retailpayment settlement process to implement ‘Restored value' and prepayment. It can bejudged by the definition of electronic money: Electronic money has a certaininfluence on the circulation of money, the European Central Bank (ECB, 1988)argued in the Electronic Money Report that electronic money has the effect ofaccelerating the speed of money circulation. Dom (1996) analyzed from theperspective of controllability. He believes that the impact of electronic money on thevelocity of money is complex and diverse, and it does not only show a unilateral riseor fall. Supriya Singh (1999) combines Australian examples to point out that e-moneycan greatly increase the speed of money circulation and reduce transaction costs fromthe perspective of money users and commercial banks. The third-party paymentprocess also uses electronic money, so it is not excluded that it may have a certainimpact on the speed of money circulation like electronic money. The third-partypayment institution acts as a credit intermediary between the two parties in thepayment process. The essence of the credit intermediary is that the payment andsettlement the funds that are deposited in the third-party payment platform, and thedeposit of the third-party payment platform will temporarily withdraw from thecirculation field, which reduces the amount of money supplied in socio-economicactivities. Vander Bruggen B and Rogge W (2009) believe that payment andsettlement funds in commercial activities must be deposited in third-party paymentplatforms to ensure the credit problems of both parties in e-commerce.

2.1.2 Research on inflationThe electronic money-like characteristics of the payment medium of the third-partypayment determine that it will have a certain impact on the speed of currencycirculation. However, the third-party payment institution is not a commercial bank,and it does not have the ability to create money. Therefore, the use of in-transit funds by third-party payments increases cash leakage, reserve ratio, etc., which reduces the money supply. Changes in the speed of money circulation and money supply will have a certain impact on inflation. Western scholars have studied the theory of the influencing factors of inflation.Traditional monetarism believes that inflation is caused by the mismatch betweenmoney supply and the products of existing production in society, that is, the imbalance between supply and demand for money. One of the theoretical logicsresearched by Mohsin S. Khan (1979) is changes in reserves → domestic currencyinvestment → domestic price fluctuations → import and export prices → worldinflation →Foreign exchange reserves, which not only examined the developedcountries but also the developing countries, also analyzed the situation of fixedexchange rates and floating exchange rates. The conclusions showed that there is apositive correlation between foreign exchange reserves and inflation, and changes inforeign exchange reserves can lead to changes in inflation. Mc Candless G. T andWeber W. E (1995) examined 110 countries and reached the following conclusions,The inflation rate and the change in the money supply have a very strong correlation,and the correlation coefficient is between 0.92 and 0.9. Therefore, in the long run, theincrease in the money supply will eventually lead to the same level of inflation.According to Crowder WJ (1998), theoretically, money supply is the most importantfactor affecting inflation. The central bank's currency policy affects the supply ofmoney, which in turn affects the expected inflation rate and inflation rate. Thechanging in the money supply will eventually make fluctuations in the level of pricesin social and economic activities. Ryota Kojima and Shinya (2005) used the VARmodel to analyze the causes of inflation in China. The study found that wage growthhas largely contributed to China's inflation, so they judged inflation is related to costfactors. Dibooglu Aykut and Kibriteioghi（2004）according to Turkey's statisticalfound that the national balance of payments is an important factor affecting inflation.Komain Jiranyakul and Timothy Opiela (2010) built an ARCH model based onstatistical data and used the Granger causality test to study inflation in five Asiancountries. The results show that residents' inflation expectations are an importantfactor affecting inflation.

2. 2 Research state in China

2. 2. 1 Research on the definition, classification, and mode of third-party paymentCompared with western developed countries, China's e-commerce and third-partypayment appeared later, but relying on China's rapid development and the hugeshopping demand of residents, China has become the world's largest e-commerce country in over a decade. However, the government has not given a unified definitionand classification of third-party payment. Some domestic scholars have given somedefinitions or classifications of third-party payment according to the applicationprinciple and effect of third-party payment. Xie Lin (2003)

believes that third partiespayment institution is a service-type intermediary organization belonging to a thirdparty. It mainly provides basic applications support for e-commerce enterprises anddoes not directly involve in the e-commerce economic activities of both parties.Wang Lifeng (2010) pointed out that China does not have an accurate definition ofthird-party payment. He believes that the third-party payment platform is a creditintermediary platform or an institution that transfers funds. Zeng Honghua (et al. 2013)pointed out that Chinese officials did not specifically define third-party payments. Hebelieved that third-party payment was a kind of new payment model that includingInternet payment companies, mobile payment companies, bank card acquiringcompanies, digital resistive payment companies, and prepaid card companies, etc.Zhao Wei (2014) believes that third-party payment refers to some third-partyindependent institutions with economic strength and credit guarantee strength, usingadvanced technology and network platform, signing with the bank of the country orforeign bank to provide a kind of online shopping payment platform, it's a newpayment model. Han Zhaowei (2012) thinks mobile payment refers to the commercialtransaction activities such as bank transfer, payment, and shopping conducted by thetwo parties through the mobile phone, thus realizing certain economic activities.When a mobile phone pays, the use of the third party payment in the mobile terminalis a form of third-party payment. Liu Fang (2012) and Yan Guofeng (2013) believethat with the development of mobile network and device technology, third-partypayment begins to move to mobile payment from networked payment. Third-partymobile payment is another kind of third-party payment that realized by the wirelessmobile network through mobile terminals such as mobile phones and pocket PC.Since there is no uniform definition and classification of third-party payments, there isno uniform schema definition. Zhao Ying (2006) divides the third-party paymentmodel into an independent third-party gateway mode, a third-party payment gatewaymode with electronic trading platform and guarantee function, and a third-partypayment gateway mode with the e-commerce platform. Lei Jingjing (2008) divided it intotwo types, one is an independent third-party gateway model, and the other is a non-independent third-party payment model with a guarantee function. Yang Xingkai(2008) believes that third-party payment acts as a credit intermediary in e-commerce,and is mainly used in C2C and B2C e-commerce. According to the type of business,Zhu Yuchen (2011) divides it into three forms of expression, based on the gatewaypayment of large B2C, C2C and other websites, offline payment through the point ofsale terminal, and finally the stored value cards, prepaid card service. Tan Kaji (2012)believes that third-party payment has formed three specific types of services, one is athird-party payment type with gateway transfer, the other is a secured third-partypayment type and the third is an independent third-party payment type. Chen Ying(2014) divided the third-party payment into three modes, general mode, C2C modeproviding a guarantee and B2C mode based on virtual account, and analyzed thedifferences between various modes.

2. 2. 2 Research on the acceleration effect of third-party paymentThe emergence and rapid growth of third-party payment make up for theshortcomings of the traditional payment and settlement system represented bycommercial banks in micropayment settlement. The research

shows that thecontinuously improved payment settlement system will increase the speed of moneycirculation. Fang Yiqiang (2009) shows that the development of the paymentsettlement system has an important impact on the circulation speed of money. Hebelieves that after the large-scale payment settlement system has been nationallypromoted, the circulation rate of money would show a certain increasing trend.Secondly, the third-party payment uses the same technology as the electronic moneyin the payment process, however, the third-party payment institution does not have themoney creation function of the commercial bank, so it should have the effect ofincreasing the velocity of the money like electronic money. Pu Chengyi (2002)believes that with the gradual squeeze of digital cash on banknotes, the speed ofmoney circulation first declines with the deepening of digital currency. After reachinga certain level, it will rise with the increase of financial innovation and economicstability. Wang Lifeng (2010) believes that the third-party payment is mainly used toclassify electronic money, which relies on the network to achieve circulation, thusincreasing the circulation speed of money to a certain extent. Wang Liang (2013)believes that the substitution of electronic money for traditional currency has an

alternative acceleration effect. This is because the payment of electronic money relieson the computer network to instantaneously complete the transmission of data andpayment settlement, compared with the traditional purchasing power payment method,the average number of times that the final product and service are settled in electronicmoney is higher, thus increasing the speed of money circulation. Jiang Shaohua (2013)pointed out from the analysis of the characteristics of electronic money that the use ofelectronic money increased the speed of money circulation. Zhang Jia (2014) believesthat with the development of electronic money, the speed of money circulation willfirst decline and then rise. In the long run, with the deepening of China's electronicmoney, financial innovation, and economic development, the speed of moneycirculation will be presented. rising trend.

2. 2. 3 Research on the precipitation effect of third-party paymentThird-party payment is independent of the commercial bank payment system, itdoes not have the money creation function of the commercial bank and mainlyplays the role of credit intermediary in the payment process. In the process of e-commerce activities, the buyer deposits the purchase price in the account of the third-party payment institution, and waits until the goods are received and accepted, andthen notifies the third-party payment institution to pay the seller, and the funds willstay in the account of the third-party payment institution. Simultaneously, the funds ofthe third-party payment institution are mainly used for settlement. Even among thecommercial banks where the third-party payment institutions deposit funds, thecommercial banks must prepare more excess reserves to meet the funding needs of thethird-party payment, which has a certain impact on money multiplier. Li Erliang(2006) analyzed the way of capital circulation in e-commerce activities, and pointedout that in the process, in-transit funds will inevitably stay in the accounts of third-party institutions. If the funds of third-party payment institutions are not stored incommercial banks, it will increase

the regulatory risk and the cash leakage rate ofcommercial banks. Wang Lifeng (2010) believes that the payment medium of third-party payment is essentially electronic money, which requires commercial banks toprepare more settlement cash, which increases the reserve ratio of commercial banks,thus reducing the money multiplier. Bei Weizhi (2011) believes that the third-partypayment platform has a diversion effect on the deposits and loans of commercialbanks, which reduces the ability of commercial banks to derive money. Yang Gefan(2014) believes that third-party payment institutions as the main force of electronicmoney issuance, have the effect of further amplifying the currency multiplier. ZhuYuchen (2011) Wu Xiaoguang (2011) and Zhu Ma (2013) pointed out that most third-party payments use a secondary settlement model, which forms a deposit of clientfunds in third-party payment company accounts, increasing the risk of funds. In orderto seize more markets, our third-party payment agencies charge a very low settlementfee for customers, even for free. Then the profit of third-party payment institutions ismainly concentrated on the use of deposited funds. It relies on huge deposit funds tomake ultra-short-term investments to obtain greater profits, which will inevitably leadto an increase in the cash leakage rate of the commercial banking system and decrease the supply amount. Yang Hongqin (2012) analyzed the problem of the attribution ofdeposited funds in third-party payment, and analyzed the problem of the incomeownership of the deposited funds, he also pointed out that some of the deposited fundswill generate income. Chen Ying (2014) pointed out that the third-party paymentinstitutions through had cooperation with fund institutions, greatly diverted thedeposits of commercial banks, and the investment in the monetary funds of the fundspartially separated from the commercial banking system, increasing the cash leakagerate.

2. 2. 4 Research on inflationInflation refers to under the credit monetary system, the economic phenomenon ofcurrency depreciation and price level rising caused by the amount of money incirculation exceeding the actual demand for social and economic activities. Theexisting research results mainly divide inflation into demand-driven, cost-driven andstructural, for this, Chinese scholars have also studied the factors affecting China'sinflation from various aspects. The empirical research of Zheng Yaodong (1998)shows that there is a stable positive correlation between inflation and the velocity ofmoney in China. Liu Ya (2008) believes that China's inflationary changes are mainlycaused by its own inertia, foreign prices, and food price shocks. The impact ofexchange rate changes on China's inflationary changes is relatively small, and theexchange rate changes are transmitted to China's inflation has a significant hysteresiseffect. Fan Zhiyong (2008) shows that changes in the money supply are the mainfactors leading to changes in inflation in China, rather than changes in excess wagegrowth. Yang Jisheng (2009) believes that excess liquidity is the main cause ofinflation in China, and quasi-currency is the most important factor leading to inflation.Zhang Wei (2009) believes that the expectations of Chinese residents on inflation willaffect actual inflation. Residents consider the historical situation of inflation and theirpast expected deviations to form future inflation expectations and has thecharacteristics of expectation to have self-realization. Gao Yin (2010) believes thatfiscal expenditure has

little impact on China's inflation, while money supply andprices themselves have the greatest impact on inflation. Fu Qiang (2011) found thatthe most important factor affecting China's inflationary change is excess liquidity.The second important factor is demand pull. The third is cost push, and foreigninflation transfer has the least impact on inflation. Liszt (2013) research shows thatthe change in the inflation rate is mainly caused by its own hysteresis, and the moneysupply should be relatively small and have a lagging effect on the inflation rate. ZhouGuangyou (2011) believes that the impact of electronic money on inflation is mainlyreflected in the substitution effect an acceleration effect. The inflation effect ofelectronic money is significant, and the rapid and convenient electronic money has anaccelerating effect on inflation. Shang Zhifeng (2013) believes that the application ofelectronic money is moving forward, and the speed of broad money circulation isgradually increasing, further promoting the acceleration of electronic money toinflation. Zhang Jia (2014) studied the impact of electronic money on inflation byusing M1, CPI and e-currency usage as independent variables. The research resultsshowed that the use of electronic money has an increasing effect on inflation.Summarizing the above literature research, it's not difficult to find that the researchon third-party payment at home and abroad only stays in the principle and theoreticalanalysis. Its role in the financial system and economy is only theoretically analyzed,and no relevant empirical analysis is carried out. As China's third-party payment scalegrows, it is supposed to have a certain impact on inflation, but few scholars study theimpact of third-party payment on inflation. The scale of third-party Internet paymentand third-party mobile payment in China's third-party payment category are extremely large and should have a significant impact on inflation. Therefore, this paperaccording to the principle and theory of third-party payment, and combines theexisting research results on third-party payment, electronic money, and inflation tostudy the impact of third-party payment on inflation. First of all, theoretically analyzethe impact of third-party payment on the speed of money circulation and the narrowmoney multiplier. Then, theoretically infers the impact of third-party payments oninflation. Finally, combining the existing research results on the impact of themonetary system on inflation, the third-party Internet payment is used as an exampleto analyze the impact of third-party payment on China's monetary system andinflation and put forward my conclusions and recommendations based on theoreticalresults and empirical results.

CHAPTER 3

METHODOLOGY

3.1 .1 Object of study

In the Internet financial environment, this paper studies the impact of third-partypayment on China's monetary system and inflation. The time period of the study object is the quarterly data from the first quarter of 2007 to the first quarter of 2015.During this time, with the rapid development of e-commerce and Internet finance inChina, the third-party payment industry scale has experienced rapid growth. Third-party Internet payments in the first quarter of 2007 were 16 billion, by the first quarterof 2015, its scale increased by 2,430.8 billion, which increased by 152 times in just 8years, and became an important part of China's payment and settlement industry.China's monetary hierarchy is divided into M0(Cash in circulation), M1(Narrowmoney supply, M1= M0+demand deposit) and M2(Broad money supply),M3(M3=M2+ highly liquid securities and other assets). Among them, M1 is mainlyused as a means of payment in social and economic activities, reflecting the tightnessof money supply in social and economic activities, and is the leading indicator ofmacroeconomics. Therefore, this paper mainly studies the impact of third-partypayment on China's monetary system (mainly velocity of currency (V1) and narrowmoney multiplier (m1)) and inflation at the M1 currency level.

3.1.2 Research methodologyStudying

the impact of third-party payments on China's monetary system and inflationis a relatively complex issue, In order to ensure the rigor of the research process and31the reliability of the research results, scientific research methods must be adopted.This paper mainly uses the following research methods:3.2.1 Literature reviewThis paper systematically reviews the domestic and foreign research literature on third-party payment, electronic money, currency circulation speed, currency multiplier,inflation, and the relationship between the five, and summarizes the literature to forma literature review, which objectively presents the cutting-edge dynamics of relevantresearch fields.

3.2.2 Combination of qualitative analysis and quantitative analysis

Qualitative analysis is an analytical method based on word definition or principleprocess description, which enables people to have a "quality" judgment on theresearch object. This paper adopts a qualitative analysis in the definition,classification, characteristics, etc. of third-party payments, and the impact of third-party payments on currency circulation speed, currency multiplier, and inflation. Inaddition to this, the paper also applies a lot of quantitative analysis as follows: firstly,descriptive analysis. Describe the variables in third-party payments, currencycirculation speed, currency multiplier, and inflation through time-series graphs ofvariables. Secondly, Statistical analysis. Use statistical indicators to describe

theconcentration and trends of each variable. Thirdly, quantitative analysis, Regressionanalysis of the impact of third-party payment on China's currency circulation speed,money supply, economic monetization, currency modernization, and China's inflation.

3.2.3 Combination of normative research and empirical research

Normative research is research on the desirability of economic goals, outcomes,decisions, and institutions. It aims to solve the problem of "what should be" and judgethe quality of various economic problems. In the fourth chapter of this paper, the normative research method is mainly used in the theoretical analysis of the influence of third-party payment on the velocity of money circulation, narrow money multiplier, and inflation. Empirical research is a study with direct economic characteristics. It is an inductive interpretation based on existing research and discovers the relationship between variables. The fourth chapter of this paper uses empirical research to verify the results of the theoretical analysis.

CHAPTER 4

ANALYSIS

4.1 Theoretical analysis

4.1.1 Definition and classification of third party payments

Third-party payment usually refers to a new payment settlement method in whichsome institutions with strength and good reputation sign an agreement with traditionalfinancial institutions to act as a credit intermediary in e-commerce and to realize thesecure payment settlement of funds between two parties. China's third-party paymentcompanies are mainly represented by Alipay and Tenpay, and foreign countries aremainly represented by Paypal in the United States. Third-party payment can bedivided into three types depending on the payment terminal and operation mode:third-party card-based payment, third-party Internet payment, and third-party mobilepayment. Third-party card-based payment refers to a third-party payment method thatrelies on a bank card or other card to implement secure payment settlement betweentwo parties in a similar POS terminal. In the early days, third-party payment in Chinawas presented in the form of third-party card-based payment, such as karaoke, Alipaycard, etc., because third-party card-based paymentthe relied on the similar stuff ofbank card media and pos machine payment terminals, the convenience is poor and theoperating costs are relatively high. As a result, third-party card-based payments didnot achieve significant results and were quickly phased out by third-party Internetpayments and third-party mobile payments. Third-party Internet payment refers to athird-party payment method that relies on the Internet network terminal to realizesecure payment settlement between two parties. Third-party mobile payment refers toa third-party payment method that relies on a mobile communication device terminal(mainly mobile phones) to realize secure payment settlement between two parties. Forthe time being, third-party payment in China mainly uses third-party Internet paymentand third-party mobile payment.

4.1. 2 Acceleration effect

Third-party payment relies on the Internet to realize cross-regional and cross-timepayment settlement of money, which increases the speed of currency circulation. Asthe velocity of money increases, the demand for money decreases, making the moneysupply relatively surplus, which accelerates the generation or increase of inflation tosome extent. This article named this effect of third-party payment as an accelerationeffect. A detailed theoretical analysis of the acceleration effects of third-partypayments is provided below.

4.1.3 The affects of third-party payment on the velocity of money

Western scholars have long studied the velocity of money and its influencing factors,but so far no unified conclusion has been formed. In 1911, Fisher introduced thefamous Fisher equation in his book "The Purchasing Power of Money"

MV=PT.However, he also believes that financial development, individual psychology andpopulation density are important factors affecting the speed of money flow. The keyfactor in Keynes's monetary theory that affects the speed of currency circulation isinterest rates. Baumol and Tobin believe that the important factors affecting the speedof money circulation are the degree of financial innovation and the actual income ofresidents. Mitchell believes that the degree of economic monetization is an importantfactor affecting the speed of money circulation. In addition to Western theoreticalcircles, Chinese scholars have also conducted a large number of relevant theoreticalresearch and empirical research on the velocity of money circulation. Liu Shining's(2004) research shows that since the reform and opening up, interest rates andeconomic monetization have been two important reasons for the continuous decline ofChina's currency circulation rate, and he believes that improving financialdevelopment can increase the speed of money circulation. Zhang Shuming (2005)through the cointegration model and the error correction model to get a result, themain factors affecting the speed of China's currency circulation are interest rate,savings rate, inflation rate, degree of economic monetization and degree of financialmodernization. Zhou Guangyou (2006) showed that cash ratio, money supply,financial modernization and electronic currency have a significant impact on China'scurrency circulation speed. You Honghui (2007) used the money supply liquidity,financial correlation rate and financial electronic degree as independent variables tostudy the influence of electronic money on the velocity of money circulation. Theresearch results showed that electronic money makes the currency circulation speeddrop first and then rise.

From the above studies of Chinese and foreign scholars, we can see a common point.Most scholars believe that the degree of economic monetization and the degree offinancial modernization (ie, financial innovation and financial development) areimportant reasons for the change in velocity of money. As a new payment settlementmethod, third-party payment is a kind of financial innovation, which has an impact onboth the degree of economic monetization and the degree of financial modernization.

（1） Third-party payment has the effect of reducing the degree of economic monetizationEconomic monetization refers to the process of increasing the amount of currency-mediated transactions in economic activities, that is, the use of money is expandingrelative to the original barter exchange. This indicator reflects the proportion ofcurrency transactions in all transactions in a country's economic activities. The greaterthe proportion of currency transactions, the more adequate the money supply. Thecalculation of this indicator in this paper is based on the ratio of the sum of quasi-currency and currency published by the International Monetary Fund and the WorldBank to the gross national product(GDP). Integrating the current situation in China,the ratio of the sum of money and quasi-currency to GDP is used instead.

$$GZY = \frac{M2}{GDP} \qquad (4.1)$$

Among them, GZY is the degree of economic monetization, M2 is the third level ofmoney supply, and GDP is the gross domestic product.

In the payment process of third-party payment, there is a period of time that a part ofin-transit funds will be deposited in the account of third-party payment institution,which increases the cash leakage rate of commercial banks. Even if the third-partypayment company deposits the sedimentary money in a commercial bank, thecommercial bank needs more settlement reserves in order to cope with the settlementat any time, which increases the reserve ratio of the commercial bank. According tothe generalized money multiplier formula, the increase of the cash leakage rate andthe reserve ratio has the effect of reducing the broad money multiplier, that is, theeffect of reducing the broad money supply (M2). Therefore, from the economicmonetization degree formula, it can be concluded that the use of third-party paymenthas the effect of reducing the degree of economic monetization.

（2） The effect of reducing the degree of financial modernizationFinancial modernization means that with the development of science and technologyand financial innovation, the monetary level is gradually transformed from low-levelcurrency (M0) to high-level currency (M1, M2). Drawing on the existing researchresults, the formula for calculating the degree of financial modernization is as follows:

$$DPF = \frac{M2-M0}{M2} \qquad (4.2)$$

Among them, DPF is the degree of financial modernization, M0 is the first level ofmoney supply, and M2 is the third level of money supply. The reason for choosingthis indicator is because the higher the proportion of non-cash circulation in acountry's monetary system, the higher its electronic degree. In the modern society,the financial system is computers and the Internet are integrated, and the degree ofelectronicization represent the degree of financial modernization. According to theabove analysis, third-party payment has the effect of reducing the broad money (M2).And according to the financial modernization formula, it can be seen that third-partypayment also has the effect of reducing the degree of financial modernization.Since theoretically third-party payment has the effect of reducing the degree ofeconomic monetization and financial modernization those are recognized as factorsaffecting the speed of money circulation, in theory, the use of third-party payment hasa certain impact the speed of money circulation.

4.1.4 The effect of currency circulation speed on inflation

Inflation mainly refers to a phenomenon in which the supply of money in social andeconomic activities for a period of time is greater than the demand for money,resulting in a relative excess of money, which cause in a general rise in prices. Thereare many factors that cause the relative surplus of money. The change in the speed ofmoney circulation can also cause relative excess and shortage of money supply. In1911, Fisher introduced the famous Fisher equation in his book "The PurchasingPower of Money"

$$PT = MV \quad (4.3)$$

M is the money supply, V is the velocity of money, P is the price level, and T is thecommodity supply. Because the variables in the equation are easy to count, the Fisherequation is quickly adopted by countries to calculate the velocity of a country'scurrency. Deriving the left and right sides of the Fisher equation:

$$\frac{dP}{P} = \frac{dM}{M} + \frac{dV}{V} - \frac{dT}{T} \quad (4.4)$$

The left side of the equation is the inflation rate expressed by price. , Assuming thatM and T are constant, the increase of the velocity of money will lead to an increase ininflation. Therefore, third-party payment has a certain impact on the speed of moneycirculation, which in turn accelerates or reduces inflation.

4.1.5 Precipitation effectThird-party payment mainly plays the role of credit intermediary in the paymentprocess.

This function is mainly reflected in the payment settlement funds staying inthe account of the third-party payment institution. Funds that remain in the accountsof third-party payment institutions temporarily exit the circulation area, whichincreases the cash leakage rate. Even if the third-party payment institution deposits allthe settlement funds in the commercial bank, the commercial bank needs to increasethe settlement reserve in order to cope with the payment settlement at any time, that is,increase the excess reserve ratio of the commercial bank. The increase in cash leakagerate and excess reserve ratio reduces the narrow money multiplier, which reduces theamount of money available in society for payment settlement, which makes themoney supply relatively insufficient, which in turn reduces the inflation rate. Thisarticle called this effect of third-party payment as the precipitation effect. A detailedtheoretical analysis of the precipitation effects of third-party payments is providedbelow.

4.1.6 The impact of third party payments on the currency multiplier (money supply)

Karl Brunner and Allan Meltzer created a currency multiplier model based on thetheory of currency credit expansion they established. The model assumes that underthe premise that money is in the form of commercial bank deposits, the central bankonly needs to stipulate a reasonable statutory deposit reserve ratio, which canaccurately control the monetary credit expansion ability of commercial banks, thusachieving control of money supply. The theoretically defined narrow moneymultiplier formula is as follows

$$ml = \frac{k+1}{k+r(1+t)} \quad (4.5)$$

m1 is a narrow money multiplier, k is the cash leakage rate, r is the reserve ratio(including the statutory reserve ratio and the excess reserve ratio), and t is the ratio ofthe time deposit balance to the demand deposit balance. It can be seen from the aboveformula that the cash leakage rate, the reserve ratio, the time deposit and the demanddeposit ratio are inversely proportional to the narrow money

multiplier.Commercial banks have the function of creating money, so they can affect the supplyof money. It called Multi-deposit creation model

$$M1 = m1B \qquad (4.6)$$

M1 is a narrow money supply, m1 is a narrow money multiplier, and B is the basecurrency. The base currency, also known as the high-energy currency, is equal to thesum of the deposit reserve of commercial banks and the currency held by the public,and has certain exogenous nature. Third-party payments change M1 primarily bychanging m1. Today, with the rapid development of Internet finance, the proportionof payment and settlement of third-party payment independent outside the banksettlement system is rapidly expanding. Therefore, whether third-party payments havean impact on the cash leakage rate, the reserve ratio, and the ratio of time deposits todemand deposits, what does the impact it is? These issues require further research.

(1) Third-party payment has the effect of increasing the cash leakage rateThe cash leakage rate (k) is equal to the ratio of cash in the circulation to demanddeposits

$$k = \frac{M0}{C0} \qquad (4.7)$$

k is the cash leakage rate, M0 is the first level of money supply, and C0 is the totalamount of demand deposits.The cash leakage rate reflects the extent to which money flows out of commercialbanks. The calculation method of cash leakage rate used in research has mainly theratio of cash to demand deposits in circulation and the ratio of cash to total deposits incirculation. This article uses the former here, the data comes from the official websiteof the People's Bank of China.

Third-party payment is mainly used as a credit intermediary in e-commerce. In e-commerce activities, funds will stay in the accounts of third-party paymentinstitutions for a while. If the third-party payment company does not deposit theprecipitation funds in the commercial bank, which will increases the cash leakage rate;Secondly, in order to seize the market, third-party payment companies generallycharge low or even free fees to the settlement parties. In order to ensure theprofitability of the enterprises, third-party payment companies use the deposited fundsfor ultra-short-term investment, which also increases the cash leakage rate. Therefore,third-party payment has the effect of increasing the cash leakage rate.(2) Third-party payment increases the reserve for commercial banksReserve ratio (r) equals the ratio of total reserves to total deposits

$$r = \frac{Z}{C1} \qquad (4.8)$$

r is the reserve ratio (including the statutory reserve ratio and the excess reserve ratio),Z is the total reserve, and C1 is the total deposit. The reserve is divided into statutoryreserve and excess reserve. The sum of the two is collectively referred to as thereserve. The reserve rate is the ratio of reserve to the total deposit.In the third-party

payment process, the settlement funds generally settle in the third-party payment institution for a relatively short period of time.If a third-party paymentinstitution deposits funds in a commercial bank, the commercial bank must preparemore settlement reserves in order to meet the settlement needs of the third-partypayment enterprise, which increases the excess reserve of the commercial bank andindirectly increases the reserve ratio of commercial Bank.

$$t = \frac{C2}{C0} \tag{4.9}$$

Where C0 is the total amount of demand deposits and C2 is the total amount of timedeposits. Through more than a decade of development, third-party payment is nolonger satisfied with traditional micropayments, and it has begun to expand into otherbusinesses. Taking Alipay as an example, it cooperated with Tianhong Fund todevelop Yu'ebao. Yu'ebao's yield has been maintained at around 4%, far higher thanthe interest rate of commercial banks' demand deposits and one-year time deposits. Atthe same time, Yu'ebao can be withdrawn at any time, has a high liquidity, and has agreater appeal to deposits in commercial banks. Therefore, some demand deposits andtime deposits flow to third-party payment institutions from commercial banks. Mostscholars believe that Yu'ebao is more attractive to demand deposits than time deposits,and the loss of demand deposits is more serious. Therefore, third-party paymentincreases the ratio of regular deposits to demand deposits.In summary, in theory, third-party payment has the effect of reducing the narrowmoney multiplier, that is, reducing the narrow money supply.4.1.7 The impact of money supply on inflationKeynes in his own monetary theory divides the motives of money demand into threecategories: transactional motives, preventive motives, and speculative motives.Transactional motives refer to the demand for currency by residents and companiesfor normal trading activities. This demand depends on the income level. The higherthe income, the more expenses are spent on transactions, and the greater the amountof money required for trading. Preventive motivation refers to the demand for moneyby residents and companies to prevent accidental expenditures, which is generallyproportional to income. Speculative motivation refers to the demand for money byindividuals and companies in order to obtain a higher yield of securities, which isinversely proportional to the real interest rate. Keynesian currency demand function asfollow：

$$\frac{M^d}{P} = f(i, y) \tag{4.10}$$

The money market tends to be in equilibrium with the supply and demand of money，that is

$$M^d = M^s \tag{4.11}$$

Then the supply and demand equilibrium function of the currency in the market is：

$$\frac{M^s}{P} = f(i, y) \tag{4.12}$$

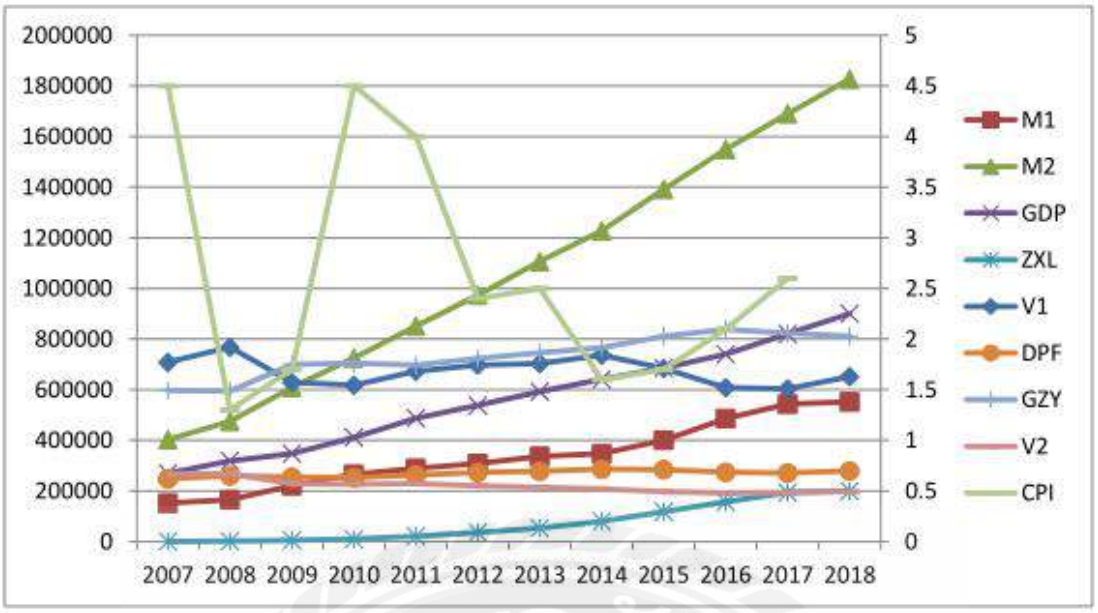
Among them, M^d is the money demand; M^s is the money supply; i is the marketinterest rate; y is the resident income. Taking the logarithm of the money marketsupply and demand equilibrium function and deriving：

$$\frac{dP}{P} = \frac{dM^S}{M^s} - \frac{\frac{af}{ai}di + \frac{af}{ai}dy}{f(i, y)}$$

(4.13)Among them，

$\frac{af}{ai} < 0, \quad \frac{af}{ay} > 0$ The emergence of third-party payments has increased the demand for money held bytrading motives and preventive motives. Mainly because with the rapid developmentof e-commerce, online shoppers will store a certain amount of money in third-partyaccounts to cope with online shopping transaction demand expected onlineshopping demand, and as the income increases, the amount of deposited money willincrease. The sensitivity of demand for money to income y increases, that is $\frac{af}{ay}$ increase.Third-party payments linked to numerous money funds have weakened speculativemotives for money demand. For example, the Yu e bao in Alipay and the Tenpay areconnected with some large money funds, and the yields of such money funds aregenerally higher than the current deposit interest rates and short-term time depositrates of commercial banks. The purchase and redemption are quick and easy, whichweakens the sensitivity of the people to interest rates, and $\left|\frac{af}{ai}\right|$decreases.$\frac{af}{ai} < 0$, so $\frac{af}{ai}$ increases. From the formula (4.3), the inflation rate is equal to thedifference between the rate of change of money supply and the rate of change ofmoney demand. As has been analyzed above, as the use of third-party paymentsincreases, it has the effect of reducing the narrow money multiplier. That isdecreasing narrow money supply, so d decrease. And because third-party paymentincreases residents' trading motives and preventive motives, it reduces speculativemotives. Thus,$\frac{af}{ai} + \frac{af}{ay}dy$ increase。 Therefore, according to formula (4. 13), theinflation rate will decrease, that is, third-party payment has the effect of reducinginflation.

4. 2 Empirical Study4.2.1 Data collectionThe data in this paper was collected during the period of year 2007-2018. M1 is thenarrow supply of money, M2 is the broad money supply, ZXL is the third-partyInternet payment quota, V1 is the circulation speed of narrow money, V2 is thecirculation speed of broad money, DPF is the degree of currency modernization, andGZY is the currency economy. Degree， CPI is the consumer price index。 The datais shown in Figure 4.1. M1, M2, GDP, ZXL with the main ordinate axis ， V1, V2,GZY, DPF, CPI with secondary ordinate axis .



Resources： National Bureau of Statistics， iResearch website Table 4.14.2.2 Regression analysis of CPI and ZXLThis section focuses on the impact of third-party payments on inflation. The mainstatistical indicators for measuring inflation are the Consumer Price Index (CPI), theProducer Price Index (PPI), and the Retail Price Index (RPI), of which the CPI is themost responsive to inflation. CPI is a measure of the relative change in the price levelof a group of representative consumer goods and services over time. It is used toreflect the changes in the price level of households purchasing goods and services.Therefore, CPI is chosen as the explanatory variable. Regress the Consumer PriceIndex （CPI） on the explanatory variables of National saving rate （SV）,Third-party payment scale （ZXL）, an supply of broad money （ M2 ） . Theregresson results show in Table 4.2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.964[a]	.929	.875	.369132

a. Predictors: (Constant), SV, ZXL, M2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.090	3	2.363	17.344	.009[b]
	Residual	.545	4	.136		
	Total	7.635	7			

a. Dependent Variable: CPI

b. Predictors: (Constant), SV, ZXL, M2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	135.811	16.056		8.458	.001
	M2	-1.673E-005	.000	-5.435	-5.347	.006
	ZXL	6.356E-005	.000	4.070	4.959	.008
	SV	-38.292	28.454	-.754	-1.346	.250

a. Dependent Variable: CPI

Table 4.2 Regression Results of the CPIThe regression equation is

CPI = 135.811 - 1.673M2 + 6.356ZXL - 38.292SVR Square indicates the magnitude of relationship between the set of predictors in theregression and the outcome variable. Here CPI represents the predicted value and RSquare in model 1 is . 929 (i.e. 92.8% of the variance in CPI is explained by themodel), the standard error of the estimate is .369.

The beta coefficients are standardized against one another to show the relativestrengths. Table 3 shows that only two predictors are related to the outcome variable.Each predictor is correlated with one or more other predictors, so in the regression,CPI with M2 ,ZXL predictor are significant. The other predictors fail to addsignificantly to prediction above symptoms. Had the predictors all been uncorrelatedwith one another, likely they would each predict unique variance and be significant inthe regression. The sample size of time series is only 12 years, so there isn't a lot ofpower to detect incremental variance contributed by the other predictors. Had thesample size been larger, it is possible that more predictors would be significant.

In addition, since the p-value = 0.009 < .05 = α, the regression model 1 is asignificantly good fit; i.e. there is little possibility of getting a correlation assumingthat the null hypothesis is true. Note that the p-values for all the coefficients with theexception of the coefficient for CPI and SV are less than .05. This means that thisstudy cannot reject the hypothesis that they are zero and so can be eliminated from themodel. This is also confirmed from the fact that 0 lies in the interval between thelower 95% and upper 95% (i.e. the 95% confidence interval) for each of thesecoefficients. In this regard, hypotheses 1 and 2 are supported, while hypotheses 3 arefailed.

4.2.3 Regression analysis of CPI and relevant factorsTaking consumer price index (CPI) as the dependent variable, narrow moneysupply(M1),broad money supply(M2),velocity of narrow money(V1), velocity ofbroad money(V2),the degree of financial modernization(DPF) and degree ofeconomic monetization(GZY) are independent variables and are put into differentmodels. The sesult show in table4.3.

Coefficients[a]

Model 1		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	98.707	3.766		26.211	.000
	V1	-5.837	.984	-.695	-5.931	.004
	V2	25.604	8.382	.921	3.055	.038
	SV	.451	15.466	.009	.029	.978

a. Dependent Variable: CPI

Model 2		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	99.082	17.096		5.796	.004
	M1	2.950E-005	.000	2.766	4.715	.009
	M2	-9.844E-006	.000	-3.198	-4.455	.011

	SV	8.884	30.652	.175	.290	.786

a. Dependent Variable: CPI

Model 3		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	133.309	17.917		7.440	.002
	M1	-4.011E-006	.000	-.376	-.785	.477
	DPF	-35.480	6.235	-.929	-5.690	.005
	SV	-10.112	26.650	-.199	-.379	.724

a. Dependent Variable: CPI

Model 4		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-294.446	138.304		-2.129	.100
	V2	378.370	125.968	13.615	3.004	.040
	GZY	100.128	35.535	13.172	2.818	.048
	SV	14.184	29.268	.279	.485	.653

a. Dependent Variable: CPI

Table 4.3 the regression results of CPI

In model 1, p-value of V1=0.004< 0.05, V2=0.038<0.05; in model 2, p-value ofM1=0.009<0.05, M2=0.011<0.05; in model 3, p-value of DPF=0.005< 0.05; in model4, V2=0.04<0.05, GZY=0.048<0.05. Thus , the results show that more than 95% ofthe confidence proves that CPI is affected by these factors.

4.2.4 Regression analysis of ZXL and relevant factorsTaking the third-party payment scale(ZXL) is the independent variable, the Velocityof broad money (V2), the broad

money supply (M2), the financial modernizationdegree (DPF), and the economic monetization degree (GZY) as the dependentvariables.， results in table 4.4.

Coefficients[a]

Model 1.1		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.603	.016		37.207	.000
	ZXL	-7.089E-007	.000	-.819	-4.521	.001

a. Dependent Variable: V2

Coefficients

Model 2.1		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	212507.480	14053.837		15.121	.000
	ZXL	1.725	.136	.970	12.693	.000

a. Dependent Variable: M1

Coefficients

Model 3.1		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	621707.200	52166.829		11.918	.000
	ZXL	6.084	.504	.967	12.060	.000

a. Dependent Variable: M2

Coefficientsa

Model 4.1		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.653	.010		62.729	.000

	ZXL	2.714E-007	.000	.649	2.698	.022

a. Dependent Variable: DPF

Coefficients

Model 5.1		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.665	.044		38.035	.000
	ZXL	2.335E-006	.000	.868	5.517	.000

a. Dependent Variable: GZY

Table 4.4 The regression result of ZXLAs show as the table 4.4， in model 1.1, -value of V2=0.001 < 0.05; in model 2.1, p-walue of M1=0.000<0.05; in model 3.1, p-value of M2 =0.000< 0.05; in model 4.1,the p-value of DPF=0.022< 0.05; in model 5.1, p-value GZY=0.000<0.05, whichmeans ZXL has significant relation with V2, M1, M2,DPF, and GZY.According to the above analysis, V2, M1, M2, DPF, GZY are important factors in theformation of CPI, and at the same time greatly affected by the scale of third-partypayment. Therefore, it can be indirectly proved that third-party payment will havesome impact on China's CPI, which will have an impact on China's inflation.

CHAPTER 5

CONCLUSION

5. 1 Conclusion

Human "currency history" is also a "payment settlement history", currency form from commodity currency to metal goods Coins, then to banknotes, to current electronic money, convenient and efficient payment settlement is an important reason for the change of currency form. The rise of third-party payment is based on the development of electronic information technology, the popularity of the Internet and the rapid development of e-commerce. Third-party payment has grown in the context of the small payment settlement that commercial banks were initially reluctant to participate in. As a new micropayment settlement method, third-party payment effectively acts as a credit intermediary and payment settlement in e-commerce activities, which promotes the development of e-commerce and improves the efficiency of the entire payment settlement system. After 2007, with the development and innovation of China's e-commerce, network technology, and financial system, China's third-party payment has developed rapidly, and its proportion in the payment and settlement system has also been rising, becoming an indispensable part of it. Throughout the history of money, studies have shown that the substitution of banknotes for metal currency and the substitution of electronic money for banknotes have a certain degree of influence on the monetary system and inflation. This paper believes that the widespread application of third-party payment has an impact on China's monetary system and inflation this paper uses a combination of theoretical analysis and empirical analysis. Taking the third-party Internet as an example to analyze the impact of third-party payment on the velocity of money and the narrow money supply, and then analyzes the impact of third-party payment on inflation.

（1）Third-party payment has the effect of increasing the speed of China's currency circulation, that is, the acceleration effect. The third-party payment is a medium similar to electronic money used in the payment process and has the same characteristics as electronic money, such as high liquidity, low cost, and convenient distribution. With the expansion of the scope of e-commerce use, the scope of application of third-party payment is also expanding, gradually eroding the share of commercial banks in the payment settlement market, which has a certain improvement effect on the speed of money circulation. The theoretical analysis results and empirical analysis results show that third-party payment increases China's currency circulation speed.

（2）Third-party payment has the effect of reducing China's narrow money multiplier, that is, the precipitation effect. Theoretical analysis results show that, third-party payments reduce the narrow money multiplier by increasing the cash leakage rate and reserve ratio (including the statutory reserve ratio and the excess reserve ratio). In the money supply model, that is, the money supply is equal to the product of the base currency and the money multiplier. The base currency is controlled by the central bank and can be considered as established. With the expansion of the scope of use of third-party payments, it began to affect the narrow money

multiplier, which in turn affected the narrow money supply. The theoretical analysis results and empirical analysis results show that third-party payment reduces China's narrow money multiplier or supply.

（3）Third-party payments have an impact on China's inflation. Third-party payment has the effect of increasing the speed of money circulation and reducing the narrow money multiplier. The increase in the velocity of money circulation makes the existing currency in the market relatively surplus, which accelerates the emergence of inflation. The reduction of the narrow money multiplier reduces the supply of narrow money, making the relative shortage of circulating currencies in the market and reducing the emergence of inflation. Therefore, third-party payments have an impact on China's inflation. The direction of the impact of third-party payments on inflation depends on the relative size of acceleration effect and precipitation effect.

6. 2 Policy proposal

（1）Establish and improve the access mechanism and business approval system for enterprises in the third-party payment industry, so that the development of the third-party payment industry is in line with China's overall economic development requirements. Third-party payment is created to make up for the shortcomings of China's existing payment system. This requires strong and stable third-party payment companies to enter, otherwise, it will aggravate the risks of third-party payment industry and financial system. For this time being， China's third-party payment institutions are expanding their business, but they lack the relevant laws and regulations, which exacerbates the risks of China's financial system. Thus， relevant regulatory agencies are required to establish and improve the access mechanism and business approval system for enterprises in the third-party payment industry.

（2）Regulate the payment limit and minimum handling fee of third-party payment users, and strengthen the supervision of the deposit and use of deposited funds of third-party payment institutions. At present, third-party payment institutions in China are no longer satisfied with micropayment settlement, and they have begun to expand to large-value payments. The open network payment adopted by China's third payment lacks the complete norm of laws and regulations, which increases the risk of China's financial system. The minimum handling fee for regulating third-party payment can limit the impact of third-party payment on traditional payment and settlement institutions, and can also give more small and medium-sized third-party payment companies a fair competitive environment. The proportion of the use of sedimentary funds affects the operational risk of the payment institution, and the investment direction of the deposited funds affects the state's regulation of various industries. Therefore, the regulatory body should limit the payment limits and minimum handling fees of third-party payment users, and strengthen the supervision of the deposit and use of deposited funds paid by third parties.

（3）Develop a diversified, efficient, and centrally monitored financial system. The explosive growth of third-party payment scale and the aggressive expansion of business in

China have already caused major threats to traditional payment settlement systems and payment settlement institutions such as commercial banks and Union Pay.If left unchecked, it will enable third-party payments to gradually control the payment and settlement market, posing a threat to China's financial system and weakening the ability of the central bank to regulate China's financial system. Therefore, China should vigorously develop a diversified and efficient payment system and incorporate it into the overall monitoring system of the central bank to reduce the impact of third-party payment on China's financial system.

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