Research on development of Finance Technology in China

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Abstract

Finance Technology is the integration of technology and finance. For technology especially in computer communication area such as internet has provided open sharing environment and concept of mutual involved. The strong idea has lead to advanced advantage on data acquisition and quantities' analysis. Another one, finance with internet know-how can easily achieve the asset resources allocation and reduce unbalanced asymmetric information. In recent years, these Chinese technology companies are heavily partnering with finance industry. On the other hand, the traditional financial institutions in China invest millions dollars into technology for the finance technology integration. Finance and Technology are combined together that enable the reform of China's financial industry. Furthermore, the new direction has built different kind of financial ecological environment. These FinTech companies are the highlight of China's economic development and growth. However, during the process of development, the unexpected risk has gradually exposed. For example, recently some large-scale P2P platforms in China have many undelivered payments to their clients or the credit crisis from their investors. Unlike traditional banks, the FinTech has "crossover", "mixed" and "virtual" characteristics that also carries both financial and internet risk, highly infectious and relevant. If governments miss the trigger point of danger, it is easy to cause systemic risk in China. Currently, Chinese governments adopt the monitoring system is "separate operation, and separate supervision". Apparently, this regulatory system is definitely lagged behind the development of Chinese Fin Tech.

Keywords: finance technology, internet finance, P2P, financial risk, regulatory

1. Introduction

Since the emergence of finance technology, the operation mode in China has diversified and not formed a unified division. Early research on finance technology focused on how to move traditional financial products or services into internet or web sites. These sectors were E-commence banks, online security, internet insurance, web payment and settlement or other related financial industry. With the deepening of the concept of FinTech, scholars believe it is an information technology implementation which can help point-to-point financing of resource allocation. For example, Professor Xie Ping in 2012 divided FinTech into 2 areas, mobile banking and P2P lending platforms (Xie Ping 2014). Another scholar Li Shes in 2013 added another 4 modes, third-party payment, network money fund, crowdfunding and electronic currency pattern (Li Shes 2016).

Third-party payment (From $155 billion to $11.4 trillion)

Third party payment refers to the transaction between the buyer and seller according to the agreement with the bank (Poon 2013). The independent institution of transaction service usually has a good reputation as the guarantee of the transaction. During the process, the third-party payment agency works primarily the settlement business that pays product providers from their trading accounts later and takes customers' credit cards or E-payment on the service location. This process helps to speed up the transaction time and reduce the cost. From 2010 to 2016, third-party payment transactions increased by more than 74 times. About 16 per cent of transactions are related to consumption, and 56 per cent of transfers are from individuals.

Money market fund

A money market fund (also called a money market mutual fund) is an open-ended mutual fund that invests in short-term debt securities such as US Treasury bills and commercial paper. Money market funds are widely (though not necessarily accurately) regarded as being as safe as bank deposits yet providing a higher yield (Fink, Matthew 2008). In China, it refers to a fund that invests in short-term monetary instruments (usually within a year, with an average of 120 days). Monetary fund investors absorbed these idle funds, and then take this large sum of money to buy Treasury bills, commercial paper, bank certificates of deposit, short-term government bonds, corporate bonds, and other short-term securities. On the other side, the bank deposits, the monetary instruments are profitable and the threshold is very high that prevent ordinary people participate into this market. Now, with the network money fund, the average investor's money is gathered together for higher profit.

P2P (From $4 billion to $156 billion)

It refers to individual to the individual or partner to partner. Also known as peer-to-peer lending, it is a private micro-lending model that aggregates small amounts of money into loans to people with capital needs. Its social value is mainly in three aspects: in meeting the demand of individual financing, the development of personal credit system and improve the utilization efficiency of social idle funds (United States Government 2011). The E-comm finance company (Third Party Company or website) is the intermediary platform, with the help of Internet, mobile Internet technology to provide information and transaction implementation of network platform, the docking of both debit and credit to realize their borrowing needs. From 2013 to 2016, total Internet lending assets increased 36 times, but compared with China's huge financial system, it accounted for just 0.8% of total social financing.

Crowdfunding

Crowdfunding is the practice of funding a project or venture by raising many small amounts of money from a large number of people, typically via the Internet. Crowdfunding is a form of crowdsourcing and of alternative finance. Although similar concepts can also be executed through mail-order subscriptions, benefit events, and other methods, the term crowdfunding refers to Internet-mediated registries. This modern crowdfunding model is generally based on three types of actors: the project initiator who proposes the idea and/or project to be funded, individuals or groups who support the idea, and a moderating organization (the "platform") that brings the parties together to launch the idea. Crowdfunding has been used to fund a wide range of for-profit entrepreneurial ventures such as artistic and creative projects, medical expenses, travel, or community-oriented social entrepreneurship projects (Steven Dresner 2014).

There are four types of crowdfunding: equity-based, reward-based, debt-based (i.e. peer-to-peer lending) and donation-based. Rreward-based and equity- based are the two main types of crowdfunding In China. It is still in its infancy stage compared to other mature countries. In USA, for example, 5600 projects raised $215 million USD from 2.8 million investors in the first half of 2014. In China, 1400 projects raised $30 million USD from 0.11 million investors in the same period. The distinctive difference can be explained by the regulation and investment style between USA and China

Another area in Chinese FinTech is integrated with Artificial intelligence (AI), intelligent delivery, insurance and investment development (Malcolm Frank and Paul Roehrig 2017). This intelligent delivery is mainly manifested in the perfect combination of wisdom and speed. And intelligent trading equipment can prevent people from malicious financial risk to a great extent and intelligently. For stock investment, AI with FinTech software can replace completely human judgement and come out excellent profit result.

Big Data Fund

The use of big data analysis to form investment strategies has become an emerging trend after major IT companies expanded into the financial sector (Viktor Mayer-Schönberger and Kenneth Cukier 2014). Recently, ten mutual fund companies in China, including GF Fund Management and China Southern Asset Management, have either launched or plan to launch mutual funds that use big data analysis in making investment decisions. For instance, the country's first big data fund, launched by GF Fund Management in October 2014, tracks the CSI Baidu Baifa Strategy 100 index compiled by China Securities Index (CSI) based on the analysis of data from search engine Baidu. Since the launch in October, the fund has recorded a net value increase of 51.62%.

Internet Insurance

Ping An, Tencent and Alibaba joined forces in 2013 to launch Zhong An, China's first truly digital insurer. Zhong An is China's first property insurance company that sells all its products online along with handling claims. Zhong An, the first and only company in China that has an Internet insurance license, has underwritten over 630 million insurance policies and serviced 150 million clients in its first year of operation. Zhong An aims to reshape traditional insurance by applying internet thinking across the insurance value chain from product design to claims servicing. The online model on which Zhong An is based has lower operating and distribution costs. Big data and analytics support ensures accurate product pricing and risk control, making the internet ecosystem more desirable (Roy Rada 2007).

Robo-Advisor

ICBC Officially Launches Robo-Advisor "AI Investment" in Nov 2017. Based on AI technology, the robo-advisor brand "AI Investment" of ICBC has been put into service recently. "AI Investment" offers services with simplified operating procedure

and human-oriented design. Specifically, based on the acceptable investment risk level and investment period chosen by customers, "AI Investment" analyzes such various markets as stock market and bond market through intelligent investment model, so as to recommend fund investment portfolio tailored to customers (Ben Way 2013).

Figure 1 FinTech number (Goldman Sachs, The rise of China Fin Tech)

China FinTech in numbers

THIRD-PARTY PAYMENT GROWTH

$155bn → $11.4trn

Third-party payment value in China grew more than 74X from 2010 to 2016. About 16% of that is consumption-related. 56% is peer-to-peer transfer. (p. 22-29)

INTEGRATION MINDSET

95

Alibaba mentioned the word 'ecosystem' 95 times in their 2016 annual report. Similar mentions are observed from other leading FinTech players Ping An, Tencent, JD, Baidu etc. For context, ICBC mentioned the word 'FinTech' or 'Internet' 22 times. (p. 13)

INTERNATIONAL EXPANSION

Chinese consumers can use their favorite third-party payment method outside of China at physical retailers in 28 countries and regions. (Alipay: 28; Tenpay: 15). (p. 18)

28

CASHLESS

40%

Retail consumption paid via third-party payment companies is growing and now comprise 40% of retail. (US: third-party 7%; total cashless 75% by 2015). We expect this to rise to 68% by 2020. (p. 55-56)

USER BASE

3.4bn

There are in total 3.4bn third-party payment accounts in China (2016). (p. 47)

Alipay: 520mn (Mar 2017)   Tenpay: 600mn (Dec 2016)   For context, Paypal has 197mn users globally (Dec 2016)

INTERNET LENDING

$4bn → $156bn

Total internet loan balance outstanding in China grew more than 36X from 2013 to 2016. But in context it is small compared to China's gigantic financial system, at only 0.8% of total social financing. (p. 13)

PRIVATE CAPITAL OWNING INFRASTRUCTURE

Private companies (non-state owned) own >60% of the new centralized clearinghouse for online payments.

>60%

The largest shareholders besides the Central Bank and the State Administration of Foreign Exchange are Ant Financial (9.61%) and Tencent (9.61%). This compares to China's existing basic infrastructure, which are state-owned. (p. 16)

PAY WITH YOUR PHONE

Third-party payment done via mobile devices account for 75% of the total payment value. For context, 20% of the US e-commerce payment is via mobile devices. (p. 23)

75%

TRANSACTION SIZE

In China, traditional bank cards' average transaction size of US$930 is almost 10X larger than third-party payment's average transaction size of $88. (p. 24)

10x

GAMIFICATION OF CASH

14bn virtual 'red packets' (China's traditional cash-filled red envelope that people give each other during festivals) were exchanged via WeChat Pay on Chinese New Year's Eve in 2017. (p. 43)

新金融世界金派

Figure 2 FinTech systems (Goldman Sachs, The rise of China Fin Tech)

2. Literature review

The development of FinTech in China can be analyzed from the perspective of demand and supply.

Demand level

1. Long tail theory:

Anderson proposed the famous long tail theory of financial markets in 2004. The core of the long tail theory is that there is a large number of financial market and the potential financial investment demand left by traditional financial service companies because of low profit and no motivation. These forgotten demands by traditional financial institutions have the big development potential. If providers can service lower cost to address this new group's financial need, it will form a long tail of the financial market with huge profit (50Minutes.Com, 2015).

Chinese scholars, Bingham Zhang Yan Liang in 2015, applied the long tail theory to the financial technology market in China, they think that traditional financial intermediaries show serious discrimination to small medium-sized enterprises and low incomes people because three factors, information asymmetry, high transaction costs, and risk control ability, have been considered untouched areas for traditional financial industry.

As a result, traditional financial intermediaries tend to focus on high net worth clients represented by state-

owned enterprises. Traditional banks' strategy is only work with Chinese top 20% of high net worth income customers that services those people well to earn over 80% of profits from them. FinTech holds another 80% of Chinese population with reasonable product design.

2.   Policy support inclusive finance:

It is put forward by the United Nations. Because the worldwide spreads financial exclusion, UN strongly advocates financial inclusion. Western Scholars, Kempson and Whyley divide financial exclusion into five categories: opportunity exclusion, price brand, exclusion from market, conditional exclusion and self-rejection. The development of the financial technology with the natural attribute of fragmentation has matched the strong support to agriculture, rural area farmers, small and medium-sized enterprises in term of providing high-quality financial services to meet the needs of inclusive finance. Chinese governments realize this well and vigorously support the development of the FinTech.

Supply level

1.   Market demand innovation:

Chinese scholar, Cao YuanFang in 2009 explained that Chinese financial industry had a distinct monopoly overall and imbalance situation in different regions. The financial monopolization brings low efficiency of market competition. Furthermore, some of the large state-owned Banks have made profit only relying on spreads between deposit and loan. Obviously, there is lack of incentives to innovate suitable financial service (Klaus Schwab 2017).

Scholar, Economides had studied the network economics and concluded the importance of the finance technology to the traditional financial system. In his research, it suggests that the rise of the finance technology will speed up the process of financial disintermediation, puts forward new requirements on the legal and regulatory. According to network economics, the influence of network externalities, under the impact of the technology, the overall liquidity in financial markets will get promoted, market competition will be more intense, the efficiency of financial services will be improved significantly.

2.   Institutional response innovation:

Scholar, Tufano stated financial innovation couldn't be carried out without the efforts of financial intermediaries. He pointed out that financial intermediaries in financial markets were the key financial innovation implementers. From the financial intermediaries' organizational form, it is obvious that the innovative level from multi-services financial model can not compete with the highly concentrated financial model. It is highly professional industry.

Chinese scholars, Shen and Guo Pin in 2015 stated the study found small and medium-sized commercial Banks of financial technology outperformed large banks. This showed that the small and medium-sized commercial Banks have more advantages in the aspect of financial innovation.

3.   The technical system change and reduce the information asymmetry model:

Technological progress is the core driving force. Furthermore, the development of the finance technology induced mandatory financial institutional change at the same time. It also cleared the system barrier.

One of the critical performances in FinTech greatly reduces the asymmetry of traditional financial markets. Recently, cloud computing and big data innovation technology not only can achieve the decentralization of financial transactions but also lead to the speeding up of the financial disintermediation.

Information asymmetry theory

It refers to the competitive advantage is based on amount of information. If individual who obtains more information in economic activities, he or she definitely has more advantages and gains benefit relatively than the other who has insufficient information. It cannot realize this is a fair competition (Ricardo N. Bebczuk 2003).

In Gramrove's study, it had found that seller usually had better information than buyer in the second-hand car market. Because of unfair competition, only the poor car owners agreed to sell in the market, and good car owners tend to be reserved. The reason is the buyer doesn't know the details about car, so buyers end up buying

relatively poor ones. This is the phenomenon of "adverse selection". The same situation is happened in commercial bank lending, In other words, if the bank plans to lend different clients at a fixed interest rate, the borrowers often lose the advantages. As a result, companies with strong credit history will not accept loans with higher interest rates. The best solution is to identify different companies' repayment capabilities and set different interest rates on loans to different companies. However, the existence of information asymmetry prevents this solution from the real life.

The FinTech credit database that can provide rich businesses or individuals' credit information is the solution for asymmetric information issue. The core spirit of the FinTech is to disseminate information and deliver it to the world fast. The technology greatly reduces the cost of information acquisition (Susanne Chishti and Janos Barberis 2016).

3. FinTech's comparison analysis between US and China

Overall: China tries to fill the infrastructure gap and American improves efficiency

Both countries still have long journey to work for future development. However, China is far less than US in term of building up his infrastructure and law regulation for FinTech industry (Paolo Sironi 2016). For Law, there is no special information law or personal information in China, while the United States has a better regulatory system. Currently, United States signs more than 17 regulations such as "The fair credit report act", the "credit repair agency act" and "Credit Repair Organization Act". Except for authoritative credit report coverage, the Chinese credit system also lacks FICO that is a credit score with high credibility and high coverage.

In the transaction process, Chinese domestic third party payment mechanism is facilitating the transaction, and focus on resolving the trust during the process. However, the U.S. third-party payment agency is mature and relies on credit system. The main purpose is to backed up existing credit card delivery efficiency.

Speed: China has the advantage of backwardness; The United States is growing steadily

Internet-based commerce platforms take user behaviour data on the Internet because the company's access to these data is not strictly regulated in China. The development of information technology makes China has the potential to overtake and give full advantages. On the other hand, U.S. has tightly law supervision, traditional financial services or FinTech have not been developed many user data for analysis. But technology level in US is far advanced than China (Andreas M. Antonopoulos 2016).

Regulation: China is getting restrict; America is more timely updated

China's regulatory attitude to the Internet economy is "test the water first, then regulate it". So far, government is inclusive and supportive about financial technology that definitely helps Chinese Internet development with rapid speed. By contrast, US Internet finance has timely management and frequent intervention to stabilize market expectations.

4. Characteristics analysis

Low cost

Under the operation process of finance technology, the two parties of capital supply and demand can complete information selection, matching, pricing and transaction through the network platform, without traditional intermediary, transaction cost and monopoly profit. Furthermore, financial institutions can avoid the investment and operation costs to open business offices and hire employees. For consumers, they can quickly find their own financial products on the open and transparent platform, which reduces the degree of asymmetric information and saves time and effort (Jeff Reed 2016).

Efficient

The business is mainly handled by computer, and the operation process is completely standardized. Customers

don't need to wait in line like traditional banks and FinTech's business process is faster and the user experience is better (Eliot P. Reznor 2017).

For example, Chinese one of the largest FinTech, Ali, is relying on information technology to accumulate credit database, perform data mining and analysis, manage the risk analysis, model credit investigation and apply for a loan. According to statistics, from take the application to distribute the final check only takes a few seconds. On average, daily transactions can reach over 10000 loans. People in China call Ali is the real "credit factory shop".

Covers wide areas

Because of virtual condition, customers do not limit the constraints of time and geography to find the necessary financial resources. As a result, with FinTech help, financial services are more direct to reach clients and the customer base is more extensive (Richard Hayen 2016). In addition, the majority of FinTech customers are small and micro enterprises, which usually not covered by traditional financial industry. Because FinTech has opportunities to provide services to them, it is helpful to improving the efficiency of resource allocation and promoting the development of real economy. Since 2015, with the development of big data and e-commerce, the FinTech industry has been growing rapidly. Taking YueBao as an example, it had been online only for 18 days and accumulated more than 2.5 million users within 18 days. Moreover, the total transferred amount of funds was 6.6 billion Yuan. As today, it is reported that YueBao has become the largest public fund in China.

Weak regulation

In China, it has the weak risk control. All transaction records haven't been connected to the people's bank of China credit reporting system. Furthermore, there is no credit information sharing mechanism, do not have traditional banks' risk control, compliance and recovery mechanism. It will have the systemic risk if many P2P or other large net credit platforms declare bankruptcy or stop the payment service. There is lack of regulation to monitor and mange risks because it is in its infancy in China.

Risky

Because of lacking management, credit risks are large. The present stage of China's credit system is not perfect; FinTech law still has many issues that leads to default cost are low. In other words, it is easy to induce the malicious fraud risk problem. In particular, P2P lending platforms have become hotbeds for criminals engaged in illegal fund-raising and fraud because of low barriers to entry and lack of supervision. Since 2015, many P2P lending platforms, such as the gold rush, have been exposed to the "running away" events. Another area, network security risk is also large. The issue of Internet security in China is prominent. There is many problem of online financial crime. Once hackers attack, the system data contains privacy info will be affected, endangering the security of consumers and personal information.

Useful information

It is a social network generation and dissemination of information, especially for individuals under no obligation to disclose information, makes people's rising levels of "good faith". The information revealed by social networks can be used for financial data analysis. Some information, such as property status, business situation, consumption habits, reputation behavior, etc is prefect factors for data analysis (Bernardo Nicoletti 2017).

5. Challenges in Chinese FinTech

FinTech field is new technology and has grown fast with strong demand. From Chinese scholar Zhang Hui's point of view, the tech companies are dealing these 4 major challenges daily and hope they can resolve these issues as soon as possible. They are data, technology, people and regulation.

Data

There are many necessary data is needed to conclude the correct result. The information is either gathered from outside the companies, governments, partnership with others or purchased from reliable sources. Not only static data is considered but also records with time series are more critical. Gathering, collecting, sorting, analyzing and using the data is their business. However, China has unclear law to prevent data regulation. Some critical

data are difficult to retain or missing reliable source info. This could be issues for FinTech companies.

Technology

It changes fast and dynamically. The billion data needs technology to process. Hardware, software, network, database, mobile phone and finance technology have constantly improved. How to find or build suitable knowhow or solution to stay business is always on the CEO's top list of agenda. Currently, common infrastructure in China is still building.

People

Experts for Multi-subjects or integration between finance and technology are not enough to meet rapidly grown speed. Because of unique requirements, qualified resources are difficult to find. Furthermore, excellent candidates may not choose FinTech field and like to work investment banking or other well respected high tech companies. Chinese leading FinTech such as Baidu, and Ali are working their own college to ensure future technology resource can meet the high demand.

Regulation

Before 2015, Chinese government had widely open mind for FinTech industry. Lately, governments change the direction to closely monitor these companies because it may cause potential financial damage if open the exchange market or lose the track for uncontrolled cash flow. With tightly control environment, Chinese FinTech switches their focus to loose fields such as third-party payment or investment fund.

6. Conclusion

In 2017, Chinese FinTech thinks payment, the most innovative field, is the door of the financial science and technology ecosystem. The proportion of private capital invested in FinTech is more than 60%, which means that the new generation of financial infrastructure is no longer monopolized by Chinese state-owned capital. The FinTech companies in China understand the payment system itself can not bring much revenue. However, the key is to include the payment in the closed ecosystem, then looking for other business models for profit. Overall, integration, regulation and internationalization are three key points to understand China's financial technology.

Integration: through the supply of the entire supply chain and ecosystem. The conglomerate tried to build its own closed loop. This "integrated" thinking reflects the different perspectives of Chinese entrepreneurs on strategy, competition and profitability than western business styles.

Regulation: the role of regulation is crucial. Regulation is still relatively slow in China, but it is becoming more and more adept at risk management and consumer protection. Compared with other industries, private capital has become more involved in the construction of financial science and technology infrastructure.

Internationalization: Chinese finance technology institutions are expanding overseas based on a large user base. However, overseas law, regulation, population and culture all influence the expansion process. That internationalization is a great opportunity for third-party payment agencies to promote their business.

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