Some Thoughts on Innovation and Regulation of Financial Technology

-- Taking Ant Financial Services Group as an Example

Zhuoying Li

School of Economics and Management, CUHKSZ University, Shenzhen, 518172, China

Abstract. The recent years witness innovative development of financial industry, which attributes to fast progress and in-depth application of information technologies such as big data, artificial intelligence, and blockchain. But, at the same time, they bring challenges to financial regulation and accelerate rise of regulatory technology. Based on challenges to regulatory agencies brought by financial technology development, this study proposes suggestions for the coordinated relationship between financial innovation and financial technology regulation from the perspective of technology empowerment, in order to improve efficiency of financial markets, and reach a balance between financial technology and prevention of systemic financial risks.

Keywords: Financial Technology; Financial Regulation; Technological Innovation; Ant Financial Services Group.

1. Introduction

In recent years, new finance represented by financial technologies transforms service model and development pattern of traditional finance, bringing opportunities and risks for Chinese financial system. On the one hand, the organic combination of technology and finance can improve quality and efficiency of financial services, and broaden boundaries and audiences of finance. On the other hand, as a “disruptive innovation”, financial technology not only intensifies derivative development of traditional financial risks, but also makes liquidity risks greater, identification more difficult, spread faster, and influence more extensive. In the meantime, new risks are caused, such as innovation risks, cross-border risks, technical risks, operational risks, data risks, and compliance risks, which increase vulnerability of the financial system. In view of this, it has become an important issue to be focused and addressed urgently by relevant regulatory agencies on how to improve efficiency of financial market, achieve a balance between financial technology and prevention of systemic financial risks.[1]

2. Major Business Formats and Functional Attributes in China

Internationally, business formats of FinTech mainly include online mobile payment, payment clearing of digital currency, P2P online lending, equity crowdfunding, electronic transactions, intelligent investment consultants and other online investment management, as well as Internet insurance. From the perspective of implementation entities, FinTech is divided into two categories: “Finance+Technology”.[2] In other words, traditional financial institutions transform business models and management concepts by virtue of emerging Internet and information technology to innovate product services. Another is “Technology+Finance”, that is, information technology companies build a network platform and adopt emerging information technology to develop financial services (such as payment and settlement, fund raising, etc.) or support financial services.

In China, existing FinTech mainly includes the following formats: Internet payment, P2P lending, equity crowdfunding, Internet investment and wealth management, Internet banking, and Internet insurance. In terms of implementation entities, domestic FinTech operations include two types. “Finance + Internet”: Licensed financial institutions apply Internet information technology to upgrade and transform traditional payment and settlement, deposits, loans, wealth management and other financial services, as well as operational modes. “Internet + Finance”: Internet companies or platforms carry out financial services or financial support services, such as Internet payment, P2P

lending, equity crowdfunding, Internet investment and wealth management, etc. (see Table. 1) through Internet information technology.[3]

Table 1. Main Business Formats and Functional Attributes of China's Fintech

Type	Definition	Financial function
Third party payment	Services for initiating payment instructions and transferring currency funds through computers, mobile phones and other equipment relying on the Internet	Payment clearing
P2P lending	①Individual peer to peer lending (i.e., P2P): direct lending between individuals and individuals through Internet platform ②Internet companies provide small loans to customers based on the Internet platform by setting up small loan companies	Debt financing
Equity crowdfunding	Open small equity crowdfunding through the Internet	Equity financing
Internet wealth management	①Fund sales institutions cooperate with other institutions to sell funds and other investment and wealth management products through the Internet; ②Intelligent investment advisor: They provide users with automated and computer algorithm-based online securities investment portfolio management services based on artificial intelligence, data analysis, quantitative models, etc..	Investment and financial management Investment advisor
Internet banking	Banks that offer services via the Internet or mobile terminals (digital banking or mobile banking)	Deposit and loan, payment and settlement
Internet insurance	Insurance institutions carry out insurance contract conclusions and insurance services by relying on technologies such as Internet and mobile communications.	Insurance sales

3. Analysis of Risks of Financial Technology Innovation-taking Ant Financial Services Group as a Case

3.1 Cross-Regional, Cross-industry, and Cross-institutional Risks

Digital financial technology platform of Ant Financial provides digital financial services for 729 million users annually, and 1 billion users use Alipay App. There are as many as 350 financial institutions in cooperation with it across the country.[4] Its sub-businesses include Alipay, Yu'E Bao, Zhaocaibao, Ant Fortune, MY Bank, Ant Credit Pay, and Sesame Credit. Different businesses are interrelated and penetrated, with cross-border mixed businesses more obvious. A single market risk may spread to multiple markets along the capital chain and guarantee chain, enhancing cross-border contagion. At the same time, it is hopeful to effectively improve convenience and availability of financial services because of the application of big data, cloud computing, blockchain and other information technologies. However, financial risks will spread in cross-regions, industries, and institutions if they are improperly applied and surpass regulation.[5]

3.2 Regulatory Arbitrage and Legal Compliance Risks

In the context of financial technology, it is common to see mixed financial operations where multiple businesses intersect and financial essential businesses are hidden. Specifically, some finances or financial products have been whitewashed and wrapped in the name of financial technology, making it difficult to define and identify financial regulation and to prevent risks.

Ant Financial continuously expands through loan assistance and joint loan by relying on cooperative financial institutions. According to Table. 2, as of June 30, 2020, on-balance sheet loans and advances total RMB 36.2 billion, but the actual credit funds reach RMB 2.15 trillion. Ant

Financial operates a joint loan with leverage ratio of 1:60, nearly 18 times higher than required ratio, which intensifies social risks and goes against reduction of leverage in society. It shows from Article 15 of New Internet Microcredit Regulations that proportion of capital contribution of a single joint loan of a small online loan company shall not be less than 30%. Among RMB 2.1536 trillion of credit facilitated by Ant Financial micro-loan technology platform, loans and advances on the balance sheet are only RMB 36.242 billion, accounting for only 1.68%, which lags far behind the 30% stipulated by the regulatory agency.[6]

Table 2. Micro-Loan Technology Platform of Ant Financial (unit: RMB 100 million)

Item	As of 2020.6.30		As of 2019.12.30		
	2020	2019	2019	2018	2017
Income of microloan technology platform	285.86	179.25	418.85	224.21	161.78
Proportion accounted by income of microloan technology platform in Ant Financial total operating revenue	39.41%	34.12%	34.73%	26.16%	54.75%
Proportion accounted by income of microloan technology platform in operating revenue in digital financial technology platform	62.2%	61.2%	61.8%	55.2%	55.8%
Credit balance facilitated by microloan technology platform	21536	13937	20138	10456	6475
Balance of loans and advances issued on the balance sheet	362.42	—	375.11	327.46	256.34
Proportion accounted by balance of loans and advances issued on the balance sheet in credit balance facilitated by the platform	1.68%	—	1.86%	3.13%	3.97%

Note: Data comes from the prospectus of Ant Financial (as of June 30, 2020).

3.3 Systemic Risks Caused by High Leverage

In nature, Ant Financial provides debit and credit with a higher leverage. Seduced by loose review system of the platform, consumers will loan online easily, without considering the high interest rates. According to Jiebei APP, the daily interest rate is as low as 0.4‰; for instance, RMB 10,000 is borrowed from Jiebei online, and borrowers need to repay in 12 installments with equal amount, with each payment of RMB 953.33 that includes the principal of $10000/12 = \text{RMB } 833.33$, and the interest of $10000 \times 0.04\% \times 360/12 = \text{RMB } 120$. However, under this calculation model, borrowers need to pay interest in each installment same as the beginning of the installment (monthly interest is calculated based on initial loan amount). But according to bank model, it is calculated after each repayment of principal, so that the principal owed is becoming less and less, and the interest to be repaid will be reduced correspondingly. In summary, interest rate of money borrowed from Jiebei APP is much higher than 0.4‰. Actually, borrowers should repay the principal and interest in one time a year later, but they are required to do so monthly. After calculation of annualized interest rate, there is:

$$\sum_{t=1}^N \frac{NCF_t}{(1+R)^t} - C = 0$$

Among them, the annualized interest rate is $R \times 12$, N is the number of months of borrowing, NCF_t means the monthly repayment amount, and C represents total amount of borrowing. The actual annual interest rate is as high as 25.59%, which is more than four times the rate quoted by ordinary banks and has violated protection line of private financial lending. Due to limited repayment ability of borrowers, it is extremely prone to risks that get bigger and bigger like snowball. With such a high loan interest rate, any changes in external environment will intensify consumers' credit default risk.

As shown in Fig. 1 and Fig. 2, after the outbreak of COVID-19 in 2020, the overdue rate of Ant Financial consumer credit balance has risen from 1.56% in January 2020 to 2.99% in June 2020, with an increase of 1.43% during the epidemic period. It indicates from Fig. 2 that the overdue rate of credit balance of Ant Financial small and micro operators goes up from 2.06% in January 2020 to 2.72% in June 2020, with an increase of 0.69% during the epidemic period. The risk of consumers'

credit default will increase provided that the COVID-19 spreads continuously so that lots of online lenders are unable to repay their loans at all. In the long run, the loan chain will be broken, risks will gradually spread, and financial chain of derivative products involved will be broken too. Eventually, it will trigger a systemic risk similar to the subprime mortgage crisis in the United States.

Fig 1. Overdue Rate of Consumption Credit Balance
Data source: Ant Financial prospectus (as of June 30, 2020)

Fig 2. Overdue Rate of Credit Balance of Small and Micro Operators
Data source: Ant Financial prospectus (as of June 30, 2020)

4. Countermeasures and Suggestions to Improve China's Financial Technology Regulation System

4.1 Regulatory Technology Empowers Financial Technology Regulation

According to the British Financial Conduct Authority (FCA), regulatory technology means that regulatory agencies innovate regulatory methods and models to improve regulatory effectiveness via modern information technologies such as big data, cloud computing, blockchain, artificial intelligence, and application programming interface (API). As the twin brother of “one mother compatriot” of financial technology, regulatory technology can technically dock the development of financial technology, alleviate asymmetry of scientific and technological resources between two parties, expand regulatory methods, and improve regulatory efficiency. The important role of regulatory technology is not only to improve regulatory efficiency as a technical tool, but also propose technological solutions, to establish regulatory concepts advanced and suitable for development of financial technology, or reconstruct regulatory system to play overall effectiveness of financial regulation.

Different from traditional financial regulation means, regulatory technology has the following characteristics and advantages.

Real-time. With the help of artificial intelligence technology, it directly connects regulatory end with the regulated institution through end-to-end data management function, so as to realize real-time monitoring of corresponding transaction activities and market indicators, and meet requirements of financial regulation and compliance management at a minimum cost.

Digitalization. Regulatory technology manages whole financial business process digitally through big data, cloud computing and other related technologies, which can collect, transmit, integrate and analyze complex data promptly, and improve capabilities of regulatory agencies in rapid deployment and response.

Intelligence. Based on machine learning, natural language processing and other technologies, regulatory agencies can learn independently and automatically generate required analysis reports and response plans. The reports are generated from manually to automatically, realizing automatic collection of data and information required by reports.

Sharing. Innovation of regulatory technology shall help improve convenience of regulatory data recording, storage and contribution, which is conducive to realizing sharing of data resources between regulatory agencies and financial institutions, and within regulatory agencies, and forming a unified standard for regulatory compliance data.

4.2 Transform Supervision Method and Introduce “Supervisory Sandbox” Mechanism

Although China's financial market policies and institutional mechanisms are different from those of Western developed countries, it is possible to improve top-level regulatory design and integrate financial reform pilot systems by learning effective mechanism of “supervisory sandbox” in developed countries such as the United Kingdom. Moreover, financial technology regulation should be enhanced in accordance with penetrating principle, in order to achieve financial technology development characterized by refinement, specialization and differentiation. In light of realities of national system, economy, culture, etc., measures can be taken to build a “supervisory technology sandbox” in Chinese version, incorporate outstanding regulatory technology projects into the sandbox, and allow them to test in practical scenarios application within a safe and controllable range. Meanwhile, it should ensure the compliance of financial technology development, improve efficiency of financial regulation, balance innovation and legal compliance supervision, and eliminate information asymmetry between regulators and the regulated. According to experience summary of the test, continuous self-learning and self-correction are required to form a benign feedback mechanism to improve innovation efficiency of regulatory technology [7].

4.3 Improve Regulatory Framework and Implement Functional Regulation

With respect to regulation on financial technology companies represented by Ant Financial, it depends on whether financial profit model involves five main functions of finance - high leverage, asset securitization, maturity mismatch, information and data advantage, and diversified risk hedging through Financial Holdings Group. They shall be regulated accordingly and at different levels as long as any one of five functions is involved. Opportunistically, based on advantages of information and data, Ant Financial reduces risks through the cooperation of small loan companies and other traditional financial institutions for joint loans, which implies an external financing leverage ratio of more than 5 times. In other words, Ant Financial must be regulated in terms of functions rather than traditional institutional supervision because its financial business models are related to information and data advantages, high leverage, and asset securitization [8].

5. Conclusion

This study mainly coordinates the relationship between financial regulation and financial technology innovation from the perspective of technology empowerment, hoping to reach a balance between efficiency of financial technology and the prevention of systemic financial risks. It aims to build a financial supervision mechanism meeting national conditions, which not only tolerates reasonable innovation, but also holds the bottom line of avoiding systemic financial risks, so as to create a healthy financial technology ecological environment ultimately.

References

- [1] Zhang Yang. International Experience of Fintech Regulatory Practice--An Observation from the Perspective of the Idea of Regulation [J]. Chinese Public Administration, 2021, (7):135-139.
- [2] Du Qingyu, Research on Construction Strategy of Financial Science and Technology Supervision System in China [J]. Techno economics & Management Research, 2020, (1):84-88.
- [3] Liu Mengfei, Feng Jie&Luo Xiaowei.RegTech: The Theoretical Logic and International Practice of Technology-driven Financial Regulation[J].Social Sciences in Shenzhen,2021(09):49-60.
- [4] Yin Ruohan,Chen Xiangyang.Risk Analysis and Regulatory Countermeasures of Financial Technology Companies--Take the Ant Group as an Example[J].Rural Finance Research,2021, (3):69-78.
- [5] LI Min. Empirical Research on the Factors Influencing Alipay Users' Intention to Use the Ant Cash Now Platform [J]. Management & Technology of SME,2021, (3):98-99.
- [6] Wei Mingxia, Zhao Yan, Xia Yu. The Evolution of Online P2P Lending Risk: Game Based on Platform and Supervisor [J]. Management Review,2021, 33(3):54-65.
- [7] Peng Cheng. Internet Finance Enterprise Risk Identification and Control Ant Financial Service as an Example [D]. Southwestern University of Finance and Economics,2019.
- [8] Jia Liwen. RegTech, Financial Development and Innovation of Financial Regulation in China [J]. Financial Development Review, 2019,(08):11-21.