北京大学互联网金融研究中心
Institute of Internet Finance, Peking University

北京大学互联网金融研究中心工作论文系列

IIF Working Paper Series

NO. IIFWP2016010(总第 13 期)

From Fintech to Finlife: The Case of Fintech Development in China

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2016. 10. 15

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The purpose of technology is not to make finance better, but to make finance serve real life better. Fintech has grown much faster in China than in the United States. In China, this success has come not from an initial technology advantage, but from integration between finance and real-life needs. This experience has important implications for understanding financial innovations, and for the development of inclusive finance.

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From Fintech to Finlife: The Case of Fintech Development in China

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Abstract

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1. Introduction

It is a stunning but often ignored fact that different countries adopt different financial systems. One might think that a good financial product or arrangement should be accepted universally, at least in the economically advanced countries. Yet a quick survey suggests that this is not the case. For example, the United Kingdom and the United States rely much more on direct financing than Germany or Japan does. If one thinks that the United Kingdom and the United States are alike, then one counterexample is that money market funds are much more popular in the United States than in the United Kingdom. These phenomena beg the questions of how a financial innovation can be successful, and, if the nature of a financial product is similar, why it has different fates in different countries. Rajan and Zingales (1995) conclude that our understanding of why different countries have different financing patterns is limited.

These issues remain in the age of Fintech. Fintech refers to innovative financial services or products delivered via technology. Fintech has become a buzzword among Wall Street investors and Silicon Valley entrepreneurs, and its investment is the fastest-growing segment in the technology industry. According to the *Fintech 100* report by KPMG and H2 Ventures in 2016, more than half of the top 50 Fintech "unicorns" were born after 2010.

How should we perceive these Fintech companies? Is their development comparable in different regions? Does the booming Fintech trend in the developed world imply what will happen in China, or will China take a distinctive path?

Many financial studies focus on the trade-off between risk and returns as if we live in a financially mature world. In practice, practitioners care about how to make innovations successful; policy makers care about how to promote financial innovations to support economic growth; and regulators care about the balance between the risk and benefits of innovations.

In this article, I first document the rapid growth of Fintech in China. Although the concepts and business models were usually initially born outside China, in terms of the number of customers and the amount served, China's Fintech coverage has been a lot higher than that of the United States in almost all areas, including payment, wealth

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management, financing, and others.

I then argue that China's success came not from initial technology advancement, but, enabled by technology, from a much better integration between finance and real-life scenarios, a phenomenon I call scenarization of finance. Scenarization promotes a virtuous circle among technology, finance, and real-life needs. If the concept of Fintech emphasizes the importance of technology enabling finance, then "finlife," emphasizing the importance of finance serving real life, seems more appropriate for Fintech's growth path. Put differently, the success of Fintech should start with technology, but end with trust and usage in real life.

Such analysis is not only important for understanding financial innovation, but also useful for the development of inclusive finance, given how rapidly consumers can obtain access to finance through new technology.

The rest of the article proceeds as follows. Section 2 documents the rapid growth of Fintech in China. Section 3 uses the case of Ant Financial, the leading Fintech company in China, to explore why Fintech has grown so fast. Sections 4 and 5 discuss the concept of scenarization and its implications for financial inclusion. Section 6 discusses the implications for government policy and regulation. A short conclusion is drawn in section 7.

2. Development of Fintech in China

Relation between Finance and Technology

There has been a long history of how technology improves the ability of financial institutions. This section discusses the relation between several Fintech-related concepts and why "this time is different."

The core competence of most financial institutions lies in two abilities: the ability to reach a broad range of customers in a safe and efficient manner, and the ability to know their customers, to assess and manage risks. The advancement of technology has been crucial for progress on both fronts. For example, the invention of cable made futures trading much more accessible from far away, and thus promoted the rise of Chicago; the invention of the automatic teller machine (ATM) mitigated the limits imposed on time and location, and thus promoted the accessibility of banks; and the advancement of technology greatly helped the growth of credit bureaus, credit assessment such as FICO, and the popularity of credit cards. Rajan and Zingales (2001) argue that technology can change the availability of finance, and subsequently change the organization and boundaries of corporations.

Thus, the advancement of finance is closely related to the advancement of technology. Even the concept of digital finance was introduced before Fintech. The reason why these concepts were introduced is that we live in an age in which major technological innovations are transforming the infrastructure of finance: mobile Internet improves the accessibility and convenience of financial services; big data redefines how efficiently information is collected and processed, which in turn increases the ability to assess risks; and cloud computing drastically changes the cost

as well as efficiency of financial services.

Both Fintech and digital finance emphasize how technological innovation empowers finance. The major difference between them seems to be that digital finance is broader, and refers to digital financial services provided by financial as well as non-financial institutions. Fintech companies, by contrast, tend to be non-financial institutions.

In China, there has been an ongoing debate on whether it is "Internet + finance" or "finance + Internet," where the former usually refers to digital services provided by non-financial institutions, and the latter refers to those provided by financial institutions. Thus, the so-called Internet finance in China, in a narrow sense, corresponds to Fintech in the United States.

Fintech Progress in China

Although the concept of Fintech was initially introduced in the United States, its development has been much faster in China. This conclusion can be drawn by comparing the sector leaders in these countries.

In the field of online payment, Alipay and Wechat Pay from China provide payment services to hundreds of millions of customers. Alipay alone has more than 450 million users, several times the number of active accounts of PayPal globally. Not only do Chinese payment providers cover more customers, but also they rely much more on mobile technology. Taking PayPal's recent acquisitions of Braintree and Paydiant into account, its annual growth rate of payment transactions is only 25 percent,[3] which is far behind the growth rate of mobile payment by banks and third-party payment providers in China.[4]

In the field of financing, Lending Club issued in total nearly US$16 billion in loans during 2009–16; Sofi issued US$6 billion in loans; Prosper issued US$5 billion; Kabbage issued US$2 billion; and ZestFinance, which received lots of publicity in China, issued no more than a few hundred million dollars. In contrast, China's Ant Financial has issued a total of more than 700 billion RMB (or more than US$100 billion) in loans to small and medium enterprises (SMEs) in the past five years, more than five times that of Lending Club. These loans are without guarantee or collateral, and boast a "310" experience: it takes three minutes to apply, one second to receive the money, and zero personnel to interfere.

In the field of wealth management, the famous Wealthfront has US$3 billion in assets under management, and Motif has 200,000 investors signed up for service. In China, Eastmoney.com's average daily visitors have exceeded 10 million, and more than 280 million accounts have invested in the online money market product Yu'E Bao, which has assets that amount to more than US$100 billion.

In the field of online insurance, several insurance companies, including Zhong An Online P&C Insurance, sold 308 million policies of shipping-return reimbursement

[3] According to information published by Paypal in 2015.

[4] According to the "Operation Report of Payment System in 2015," the number of mobile payments by banks in China grew by 206 percent.

insurance in one day on November 11, 2015. Those sales made history as the largest number of policies sold in any single insurance category.

Therefore, China's Fintech development has been much faster, in terms of breadth and depth, than that in most other countries.

3. Why Does China Lead the Way in Fintech Development?

Two factors explain China's rapid progress in Fintech development. First, China enjoyed the late-mover advantage; second, and more importantly, the integrated growth of technology, finance, and real-life need has been much better in China during this period.

As the financial system in the United States is far more developed than that in China, and the supply of financial services is mostly abundant, the United States has less of a gap in financial services that needs to be filled. After the financial crisis, the major banks in the United States embraced digital finance in combination with retooling the network of retail branches. For instance, Citibank carried out business process re-engineering and service model upgrades based on its existing branches. The goal is to build a seamless service experience by integrating online banking, mobile and tablet banking, and branch services, and thus to make the distinction between online and offline service imperceptible. Customers will choose the most comfortable service channel in different circumstances.

The central role that current financial institutions play in adopting digital technology thus implies that the evolution of digital finance in the United States surrounds the current business models of financial institutions. So far, Fintech companies have played a distant secondary role in this regard.

The case in China is strikingly different. Economic growth in China has long been driven by capital investment. Correspondingly, the traditional financial system is more inclined to provide financial services to large corporations, which leaves much room for development in the fields of payment, wealth management, financing, insurance, and credit rating for retail customers and SMEs. Since accessibility in these areas is precisely the goal of inclusive finance, inclusive finance is still much needed in China, not only for the very poor, but also for average financial investors and SMEs. As China's growth model transforms from investment-driven to consumption-driven, providing better services to consumers and SMEs becomes more important. The leapfrogging of Fintech finance in China has been made possible by the advancement of digital technology closely matching the needs of consumption and financial services.

The following subsections use several cases of Ant Financial, including Alipay, Yu'E Bao, and micro loans, to illustrate how the rapid development of Fintech has been fueled by the real-life needs of businesses and consumers.

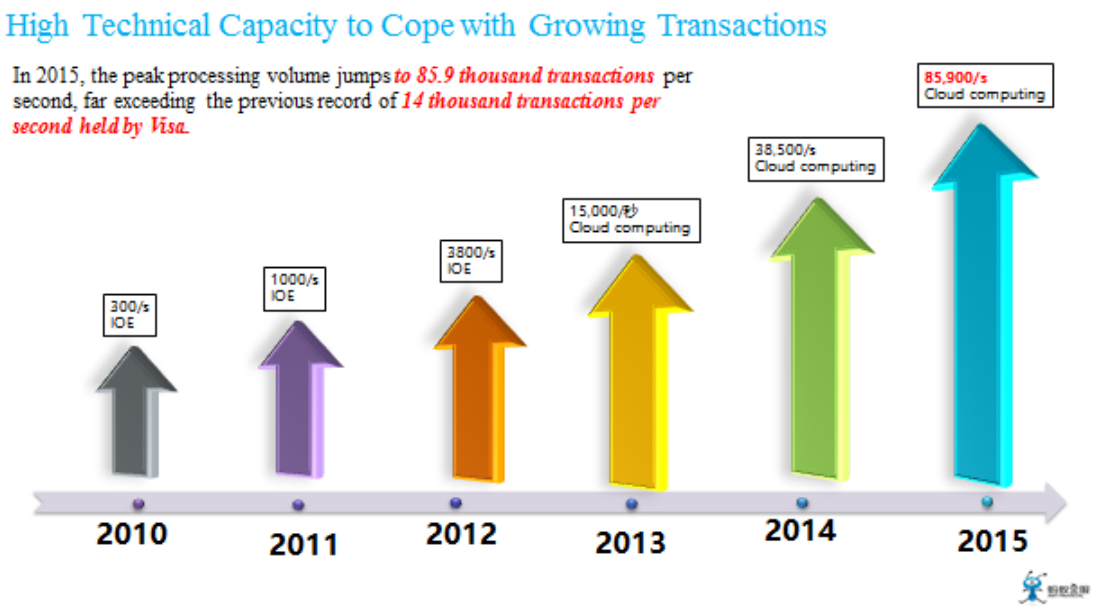
Fintech Development in Online Payment

The parallel growth of online shopping and online payment is a perfect case to illustrate how technology, financial services, and consumption form a mutually supportive wave.

When Alibaba started to build its consumer-to-consumer (C2C) shopping platform Taobao (similar to eBay) in 2003, a major challenge was the lack of trust between buyers and sellers who, unlike in off-line markets, do not see each other in person. To overcome this problem, Alibaba created Alipay with escrow services. It is particularly worth noting that Alipay was created because Chinese banks at that time were unwilling to provide payment services for online shopping; the style of low-amount, high-frequency transactions did not fit the interests of banks' business models.

Supporting each other, the growth of Taobao and Alipay came hand in hand. Within one year, Taobao became the largest C2C platform in China. In 2009, Taobao created the now-famous Cyber-Shopping Day, November 11. By 2010, the scale of online shopping in China had reached 461 billion RMB. At that time, the peak processing volume of Alipay was merely 300 transactions per second, an obvious bottleneck to the rapidly growing online shopping business. Technological innovation was born out of the demand for small-amount, high-frequency payment transactions. In 2013, Alipay began to implement its proprietary cloud-computing technology, with peak processing volume exceeding 15,000 transactions per second. The huge progress between 2010 and 2015 is shown in Figure 1. In 2015, the peak processing volume jumped to 85,900 transactions per second, far exceeding the previous record of 14,000 transactions per second held by Visa.

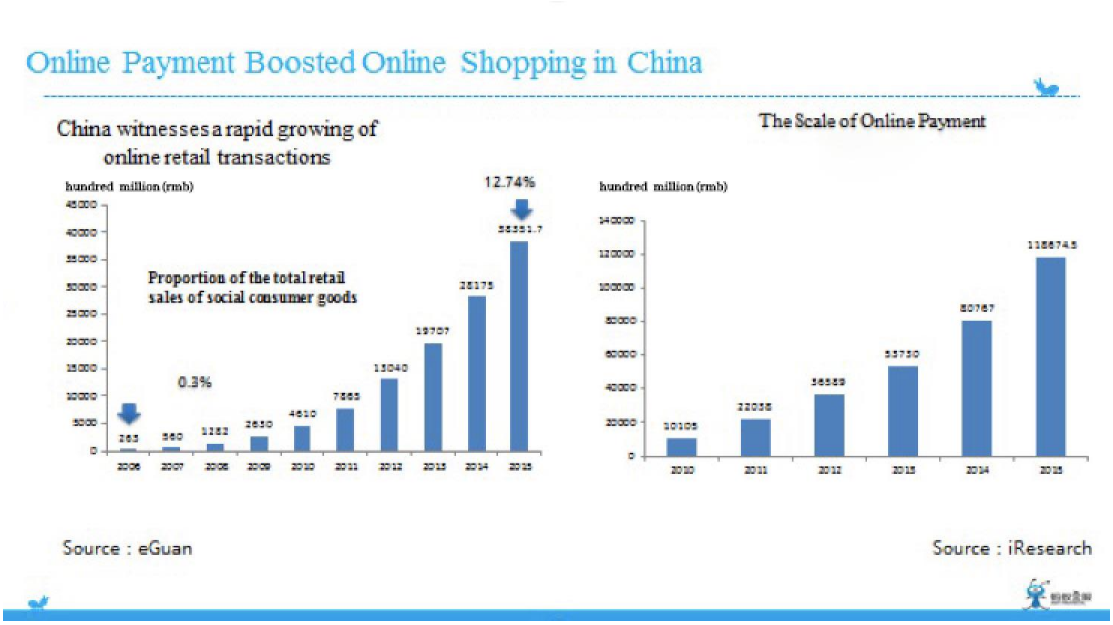
Figure 1: Peak Number of Transactions per Second Processed by Alipay between 2010 and 2015



As can be seen in Figure 2, along with the rapid improvement of online payment technology, the scale of online shopping in China reached 3.8 trillion RMB in 2015, accounting for about 12.74 percent of the country's aggregate retail sales. In terms of absolute amount and percentage, the scale of online shopping in China already exceeded that in the United States in 2014. Empowered by technology advancement,

online shopping and online payments fueled each other's growth.

Figure 2: Online Shopping and Volume of Online Payments in China



The left panel reports online shopping, in volume and as a percentage of total retail volume, between 2006 and 2015. The right panel reports the volume of online payments between 2010 and 2015. The volume of online payments far exceeds the volume of online shopping, because online payment has a much broader definition, which includes non-consumption items such as money transfers and financial payments.

It is important to note that although China's Fintech-driven payments have grown very fast, they still only account for a small portion of total payments. According to China's Payment and Settlement Association, in 2015 payments processed by the country's nonbank financial institutions accounted for only 1.2 percent of the total amount of payments. The bulk of the large transactions are handled by Chinese banks, which are among the largest banks in the world. Fintech payments tend to support small-amount, high-frequency online consumption, complementing the current financial system.

For online payments to grow, the security problem will need to be solved. In this regard, China has also made giant progress. In spite of some scary stories of losses caused by mobile phone thefts or account hijacking, online payment in China is not

only convenient, but also ranks among the top tier in the world in terms of overall security. According to UnionPay, in 2015 the rate of fraud in China's bankcard industry is about 0.02 percent, and for debit cards the rate is 0.01 percent; both numbers are much lower than the industry average in the world. In comparison, Alipay's fraud rate is under 0.001 percent, much lower than the average credit card loss rate in the United States, which is greater than 1 percent, and several hundred times lower than that of the largest nonbank payment provider in the United States. Thus, the safety of digital payment is not inferior to that of traditional payment.

Moreover, not only is online shopping in China more prevalent and safer, it is also more cost-efficient. The average interchange fee charged by payment service providers to merchants in China is on the order of a thousandth, while it amounts to about 3 percent in the United States.

The case of Alipay demonstrates the power of the growth of Fintech in China. Within a decade, the country's online payments, powered by technology, grew from nowhere to the stage of broad coverage (with hundreds of millions of mobile users), technology-efficient (processing a large number of transactions), and cost-efficient (charging very low fees).

This impressive progress followed a path that is distinctively different from that in the United States. Had China's traditional financial system responded more rapidly to the surging needs of online shopping, the country's Fintech development would have been much slower. Growing with demand, convenient, fast, safe, and efficient mobile payment has become an inseparable part of the online shopping experience. Much like how the growth of credit cards, which is a combination of convenient payment and credit, fueled the growth of consumption in the 1960s, Fintech played a similar role in China.

Real-life demand is the mother of innovation. Fintech did not originate from China; nor did China possess advanced technology in the first place. The reason why China's Fintech developed so fast is that its development is tightly knitted to and supports consumption growth. As a result, technology, finance, and real-life need form a virtuous circle.

Fintech Development in Online Wealth Management

The year 2013 was widely branded as the "Year of Internet Finance" in China. That branding had a lot to do with a breakthrough wealth management product called Yu'E Bao. Yu'E Bao is an online money market fund. Online sales of money market funds were common at that time, but none had achieved much success.

The birth of Yu'E Bao was meant to return the interest earned on buyers' deposits in Alipay back to the buyers. Many buyers have "pocket money" deposited in their Alipay accounts; they would like to use the money for online shopping and, thus, safety, liquidity, and easy to use for shopping are their top requirements. Alipay worked with Tianhong Fund Management Company to create a new money market fund called Yu'E Bao, which combines the safety and liquidity of a money market fund with the ease of shopping using Alipay. Buyers earn interest because their money has been used to buy money market funds; they can see their daily interest earned on their mobile phone. If they want to do online shopping, they can quickly redeem the money from the money market fund (without a redemption fee) to serve that purpose.

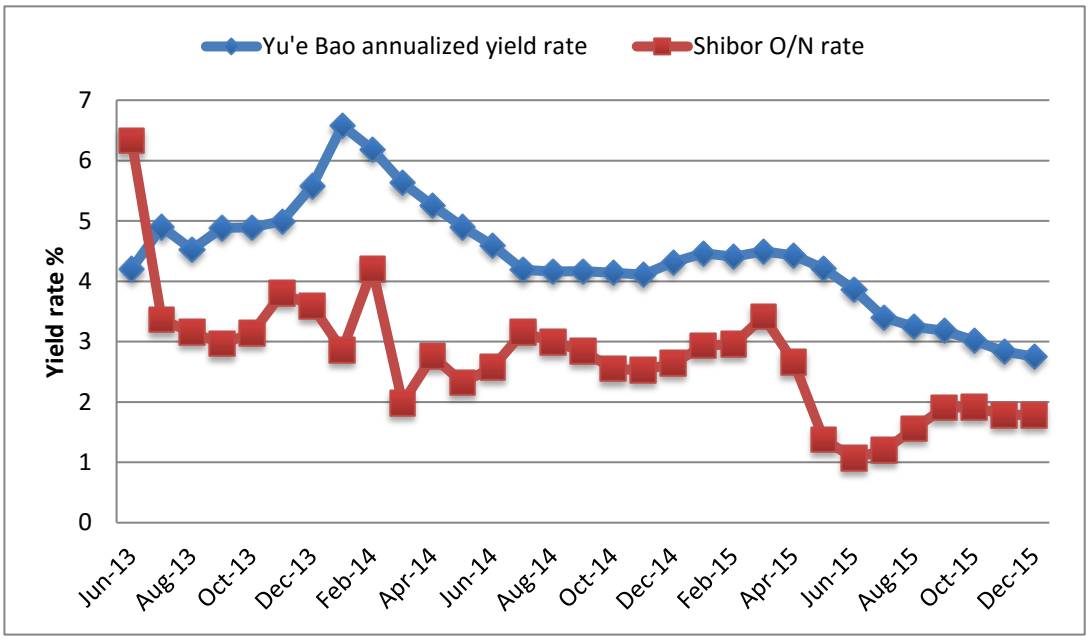
This combination of interest-bearing and payment is not new. The first money market fund was created in the United States in 1971; in 1974, Fidelity provided the innovation to allow money market fund investors to write checks. Unlike banks, since

money market funds were only allowed to invest in short-term debt issued by the best institutions, safety and liquidity are their most important features. Such functions have been served well without reserve or capital requirements so far.[5]

Thus, the nature of Yu'E Bao is to combine the safety and liquidity of a money market fund with easy online shopping, which creates a seamless experience for buyers' pocket money. The effect was immediate and tremendous. China's largest fund company had roughly 300 billion RMB in assets under management when Yu'E Bao was created in June 2013; by spring of 2014, Yu'E Bao had more than 500 billion RMB in assets under management. This experience shocked the finance industry, and thus 2013 became the "Year of Internet Finance" in China.

The safety of Yu'E Bao can be seen from its closely tracking the Shanghai Interbank Offered Rate (SHIBOR). As shown in Figure 3, Yu'E Bao was born when SHIBOR was higher than 6 percent, a period of "money scarcity." Since then, with slower economic growth and supportive monetary policy, the SHIBOR has gone down steadily. The interest rate earned from Yu'E Bao followed a similar track. By December of 2015, the interest rate from Yu'E Bao reached a historical low (lower than 3 percent), but the number of people who had used Yu'E Bao surpassed 250 million, a historical high. This trend, the combination of lower interest rate and more users, continued in 2016.

Figure 3: Yu'E Bao Yield Rate and SHIBOR June 2013 to December 2015



The average amount in Yu'E Bao is less than 10,000 RMB, which suggests that investors use it as a pocket money account for online shopping, rather than as a high-return instrument.

Similar to the role money market funds played in the 1970s in promoting interest

[5] After the financial crisis, the U.S. Federal Reserve decided to impose more requirements on the duration of money market funds, but not on capital requirements.

rate liberalization in the United States, the success of Yu'E Bao effectively helped promote interest rate liberalization in China. Before Yu'E Bao, the starting requirement for wealth management was at least several thousand RMB; highlighting the role of pocket money, Yu'E Bao slashed this threshold to one RMB. The general public started to realize that money with high liquidity can also earn modest returns, and wealth management is important. This development prompted the finance industry to launch all kinds of "Bao" (meaning treasure) products to investors with much lower thresholds than previously.

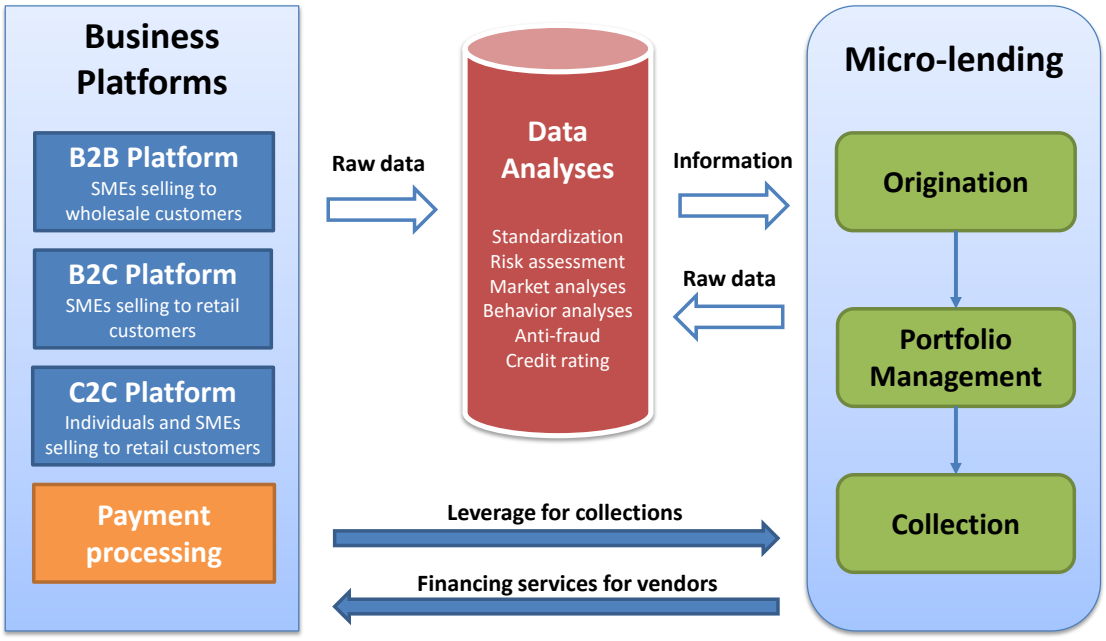
Therefore, on the wealth management front, as seen from the case of Yu'E Bao, the development of Fintech in China helped to promote interest rate liberalization, inclusive finance, and investor education, with profound impacts. Similar to the growth path of online payment, the success came from using technology to match the special features of money market funds with consumption needs.

Micro Credit

As a service to SME vendors on Alibaba's platforms, Ant Financial started to provide loans and short-term working capital financing in 2010. Between 2010 and 2016, Ant Financial provided more than 700 billion RMB (more than US$100 billion) in micro loans to more than four million SMEs. The average loan size is lower than 40,000 RMB, while a typical micro loan from banks is more than one million RMB. The loss rate is usually between 1 and 5 percent.

As shown in Figure 4, at the center of Ant Financial's lending operation is its database of proprietary information on SMEs' activities, credit history, customer reviews, and payment processing records. For credit analysis, Ant Financial leverages the massive amount of proprietary client data accumulated on Alibaba's e-commerce platforms, including business-to-business (B2B), business-to-consumer (B2C), and C2C shopping platforms, and Alipay's payment processing platform. Through cloud computing, these data, along with government and third-party data and information, are analyzed to produce a standardized credit risk rating for companies and individuals on its platforms. Credit limits and loan disbursement decisions are then based on these credit ratings.

Figure 4: Ant Financial's Micro Loan Risk Assessment Process



The case of Ant Financial's micro loans indicates how Fintech might play an important role in inclusive finance. The Internet and mobile phones make access to finance much easier than before, and largely reduce the costs of data collection and monitoring; big data technology largely improves the ability and efficiency of risk assessment; and cloud computing further improves efficiency and reduces costs.

4. Implications of China's Success in Fintech Development

Scenarization of Finance

The cases of Alipay, Yu'E Bao, and Ant Financial's micro lending illustrate that Fintech, when properly satisfying real-life needs, can grow very fast. The purpose of the analysis is not just to document the progress of Fintech in China. The deeper question is how financial innovations can be successful. To this end, it is useful to introduce the concept of scenarization of finance, meaning that the integration of finance and real-life scenarios is the critical source of success.

The fact that for finance to have a long-lasting, real-life impact it must serve real-life scenarios dates back to a long history. The early modern banks were born in Italy and the Netherlands, because these countries were the first to develop a large amount of international trade and thus the need for financial services to handle payments and settlement of currencies. When half of international trade went through Amsterdam, the Netherlands became the world's financial center in the 17th century. England replaced the Netherlands as the world's financial center in the 18th century, with the Industrial Revolution. In the 20th century, as the United States became the largest economy, its capital market followed suit. Similarly, the rise of mass consumption prompted the rise of credit bureaus, credit cards, and debit cards.

It is difficult to think of any long-lasting, successful financial innovation that does

not satisfy real-life needs. The success of financial innovation is judged not by how complicated technology is, but by how much finance satisfies real-life needs. It is in this regard that Paul Volcker, the former chairman of the U.S. Federal Reserve (1979–87), made the following comment on the importance of the ATM:

"The most important financial innovation that I have seen the past 20 years is the automatic teller machine, that really helps people and prevents visits to the bank and it is a real convenience." [6]

The logic that finance should serve real-life needs well seems apparent, yet it is often ignored in academic research or teaching. Finance textbooks almost never discuss why finance is needed in the first place. Financial models, with the assumption of market efficiency, usually start with the principles of no-arbitrage and profit maximization. A representative of such a worldview of finance is Wall Street, whose greed and lack of real-life mission have been widely regarded as part of the reasons for financial crises.

Thus, when we compare the successes of different financial innovations in different countries, it is important to put into perspective the degree to which the innovations are effectively integrated into real-life scenarios. For Fintech companies, the scenarization of financial innovations is a deciding factor. It is not enough to emphasize the advantage of technology; it is also important, based on the technology, to enable finance to serve real-life needs.

Another reason for the importance of scenarization is that, historically, financial consumers have tended to accept financial innovations very slowly. It took a decade for the ATM or credit cards to become popular. Mutual funds already existed in the 1920s in the United States, but it took more than half a century for wide market participation to become popular. Several drivers toward this popularity included the passage of law on deferred taxation and the bull market for stocks and bonds in the 1980s and 1990s.

It can be argued that the reason why different countries have different financial systems is that financial arrangements and innovations were integrated into real-life scenarios with different levels of success. Success in this area depends on the political, economic, and financial environments, as well as financial consumers' conventions and habits. Some countries depend much more on banking rather than direct financing through capital markets. This does not necessarily mean that banking fits the former countries better; it probably means that banking was integrated with real-life scenarios relatively better at that time.

How to bring finance into real life successfully deserves particular consideration for Fintech companies, as mobile technology is making real-life scenarios increasingly accessible for finance anytime and anywhere. The challenge is to encourage financial consumers to accept finance, or even promote such services through their own networks.

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[6] Paul Volcker, The only thing useful banks have invented in 20 years in the ATM, NEW YORK POST (Dec. 13, 2009), http://nypost.com/2009/12/13/the-only-thing-useful-banks-have-invented-in-20-years-is-the-atm/.

In the case of Yu'E Bao, consumers find that their pocket money, which is already in Alipay's accounts, can earn interest when not used. The combination of easy access to shopping and easy access to an interest-bearing facility has expanded the number of users from zero to more than 280 million within three years. Similarly, Wechat designed a game to allow users to send "red bag money" to each other within chat rooms. Gradually users found that their social network accounts were also e-wallets that could be used in many real-life scenarios. The combination of social networking and e-wallet functions made the number of users of Wechat Pay grow from zero to hundreds of millions within several years. The success of Yu'E Bao and Wechat Pay would have been inconceivable were these financial products promoted to potential users as pure financial instruments without leveraging the particular scenarios.

These two cases also indicate that when consumers' real-life needs are smartly satisfied within the scenario, it is not necessary to burn a large amount of money to develop new customers. Such practices contrast with conventional cases, such as PayPal, which burned a lot of money to gain customers in its early stage. Successful scenarization leads to successful integration of finance into real life, and naturally the success of financial innovations.

The rapid growth of Fintech in China does not mean it cannot learn from the rest of the world. To the contrary, Chinese Fintech companies can no doubt keep drawing on the Fintech innovations in the West. Paypal was the earliest innovator in applying Internet technology to a third-party payment service, and Lending Club developed peer-to-peer (P2P) lending in collaboration with regulators. Fintech development in the United States is a vibrant display of innovative finance: Credit Karma helps consumers manage their credit; Chain.com applies blockchain technology in Nasdaq's pre-initial public offering transactions; Ripple facilitates banks to instantly transfer money in any currency; Braintree makes one-step payment possible for customers; Betterment provides intelligent investment advice for investors; Addepar helps investors analyze and manage assets all in one integrated site; Adyen offers cross-border payment service to e-commerce sites; at Fundera one can compare and shop for the lowest interest rate for micro loans; and Kensho channels digested financial information based on machine learning and big data in the public domain.

Innovations taking place in these Fintech companies in terms of technology and business models are improving efficiency and capability in all fields and aspects of the financial industry. The picture points to a bright future in which technology enables more possibilities in financial services. It is this future that inspires investors and entrepreneurs, and is a goal that many governments actively promote.

The Future of Financial Scenarization

The development of Fintech sheds some light on the future of finance. Although profit-seeking is one major goal (but not the only goal) for financial institutions, the long-lasting success of these institutions relies on the degree to which their services can satisfy real-life needs. The core competence of most financial institutions rests in two abilities. The first is the ability to reach customers (the two sides of capital); the second

is the ability to assess and manage risks.

Scenarization is the key to bringing the mission of finance and its abilities together. To serve customers well, finance must be integrated into real life. By providing proper financial services, financial institutions can reach customers and assess risks through knowing their customers.

The digital age provides great potential for scenarization. Mobile phones and the Internet of things mean that customers increasingly have access to financial services anywhere, anytime. This accessibility also means that an unprecedented amount of information is available to know the customers' needs and assess their risks; big data technology and, related, machine learning make the gathering and processing of information much more efficient. The big trend is that in the future, if finance is needed anytime, anywhere, it can be spotted instantly and served. This is the future of scenarization as well as the future of finance.

5. Implications for Inclusive Finance

Inclusive finance refers to providing quality, affordable financial services to people who are not properly covered by formal banking or other institutions. The range of services includes saving, borrowing, insurance, payment, money transfer, and others.

Inclusive finance is increasingly becoming a worldwide priority. It enables previously underserved customers to achieve economic self-determination, mitigates income inequality, and supports job creation. Inclusive finance thus has huge positive social and economic impacts.

According to McKinsey (2010), more than half of the working adults in the world, or 2.5 billion adults, do not use formal or semi-formal financial services. Among them, 2.2 billion are in Africa, Asia, Latin America, and the Middle East.

The key challenges for inclusive finance are the prohibitive costs to reach customers and gather information to assess risks. Potential customers usually do not have enough savings or tangible assets to serve as collateral; they often lack the proper property titles, permanent addresses, pay stubs, prior finance history, and so forth for risk assessment. These problems impose large challenges to traditional finance institutions.

The Grameen Bank, created by Professor Muhammad Yunus, is one case. It took 40 years for the Grameen Bank to establish more than 2,000 branches or posts to reach customers; the cumulative loans amount to about US$17 billion. In comparison, Ant Financial provided more than five times that amount within five years.

M-Pesa has been widely praised as an alternative to the traditional banking model, to promote inclusive finance. Through a well-designed payment product that fits real-life needs, it took less than four years to gather than more than ten million users and become the fastest growing micro finance institution.

With technology support and a large market, this alternative Fintech model has been largely upgraded, as shown, for example, by Alipay's more than 450 million customers (accumulated within 12 years) and Yu'E Bao's more than 280 million accounts (accumulated within three years).

It is obvious that Fintech has great implications for inclusive finance. Digital inclusive finance can be achieved by traditional financial institutions through digital technology, or by Fintech companies. The difference is that Fintech companies, which still must properly manage risks, are not built around traditional banking models. Aided by technology, their success is usually due to the scenarization of finance.

6. Implications for Government Policy and Regulation

Although Fintech can be beneficial to all parties, its development for example in Kenya and China indicates that it has bigger growth potential in areas where financial inclusion is also needed. Regulation of Fintech needs to balance supportive flexibility and consumer protection.

One important dimension of supportive flexibility is to allow non-finance institutions, leveraging their technology or distribution advantages, to provide multiple services that are suitable for the related scenarios. The international community has made steady progress in this regard. For example, Brazil used to allow only banks to open payment and savings accounts; since 1999 the regulators have allowed non-bank institutions to work as bank correspondents to provide financial services. The regulators in Kenya allowed the country's mobile network operator to offer digital financial services. Diconsa offered financial services to rural Mexican families through its nationwide network of 22,500 rural stores. Chinese regulators allowed Alipay to provide payment services with an escrow function, which brought about the boom in online consumption and Fintech growth at the same time. Overall, such evidence suggests that Fintech companies can improve financial inclusion given supportive flexibility.

The other side of regulation is to ensure consumer protection. Many countries have made steady progress in this area. For example, the United States developed a sequence of regulations to improve disclosure and consumer protection, including the Trust in Lending Act (1968, disclosure to consumers), Electronic Fund Transfer Act (1978, fund transfer), Financial Service Modernization Act (1999, third-party payment), JOBS Act (2013, crowdfunding), and others. China also developed a sequence of similar regulations between 2005 and 2015.

The balance between supportive flexibility and consumer protection is crucial. If regulations mainly surround the current financial system and consumption protection, but without supportive flexibility, then Fintech is likely to develop slowly, even though technology itself can be developed fast.

Many developed countries, heralded by the United Kingdom, are paying close attention to the development of Fintech, and consider it as part of the solution to deal with weakening economic growth. The accelerating advancement in Fintech in the past few years, in particular P2P lending and Internet crowdfunding, owes thanks to some degree to a pack of policies boosting the development of Fintech.

The policy pack started with a manifesto, "UK Fintech 2020," which stated clearly the goal to make London "the global centre for Fintech." Prime Minister David Cameron and his government lent support to the goal by promising on many occasions proactive policy and regulative environments encouraging financial innovations like

mobile payment and bitcoin.

In addition, the policy pack aims at strengthening regulations and relevant laws. For instance, in March 2014, the United Kingdom's Financial Conduct Authority (FCA) published its regulatory approach to crowdfunding over the Internet. The FCA provided clear and detailed stipulations regarding the minimum capital requirements for crowdfunding and crowdlending, management of client funds, transfer of investment assets, information disclosure, and qualified investors, and put consumer protection in the paramount position.

The policy pack also strives to establish a self-discipline mechanism within the industry. Industry organizations like the Peer-to-Peer Finance Association and UK Crowd Funding Association collaborate closely to establish a series of regulations and documents on Internet finance practices. The policies specifically target operational risks and the risks of Internet security breach, and emphasize secure funding or insurance plans to be provided by Internet loan platforms to ensure secure custody of client funds.

Last, the policy pack includes preferential taxation policies. For example, the UK Treasury announced that the first £1,000 of P2P earnings will be tax-free from April 2016. It is estimated that this will effectively boost the penetration rate of Internet finance among mid- and low-income investors and SMEs.

Similarly, the development of Fintech is important for alleviating the downward pressure on the economy and pushing China's supply-side reform forward. Although it has made great progress, Fintech in China is still in its early stage. Proper government policies and regulations that can balance the benefits and risks will keep financial innovation on a steady path, provide momentum to the "new economy," and propel social transformation.

7. Conclusion

This article has documented the rapid growth of Fintech in China. The analysis of its causes suggests that successful integration between finance and real-life needs is an important reason for this fast growth. Technological progress enables finance to serve real-life needs better. The success of financial innovation thus rests not on the technology itself, but on how well finance serves business and real-life needs. China's experience sheds fresh light on the development of financial innovations, and especially on inclusive finance.

Bibliography

Arner, Douglas W., Janos Nathan Barberis, and Ross P. Buckley. 2015. "The Evolution of Fintech: A New Post-Crisis Paradigm?" Research Paper No. 2015/047. University of Hong Kong Faculty of Law. http://ssrn.com/abstract=2676553.

Chaia, Alberto, Tony Goland, and Robert Schiff. 2010. "Counting the World's Unbanked." *McKinsey Quarterly*.

FCA (Financial Conduct Authority). 2014. "The FCA's Regulatory Approach to Crowdfunding over the Internet, and the Promotion of Non-Readily Realisable Securities by Other Media." PS14/4. FCA, London. http://www.fca.org.uk/static/documents/policy-statements/ps14-04.pdf.

KPMG and H2 Ventures. 2015. *The Fintech 100 Leading Global Fintech Innovators Report 2015*. https://assets.kpmg.com/content/dam/kpmg/pdf/2015/12/Fintech-100-leading-innovators-2015.pdf.

Lee, David K. C., and Ernie G. S. Teo. 2015. "Emergence of Fintech and the Lasic Principles." http://ssrn.com/abstract=2668049 or http://dx.doi.org/10.2139/ssrn.2668049.

McKinsey, October 2010, Global Financial Inclusion, McKinsey Publishing.

PBOC (People's Bank of China). 2015. *China Payment and Settlement System Development Report*. Beijing: China Social Sciences Academic Press.

Pilkington, Marc. 2016. "Does the Fintech Industry Need a New Risk Management Philosophy? A Sequential Blockchain-Based Typology for Virtual Currencies and e-Money Services in Luxembourg." http://ssrn.com/abstract=2744899 or http://dx.doi.org/10.2139/ssrn.2744899.

Rajan, Raghuram, and Lougi Zingales. 1995. "What Do We Know about Capital Structure? Some Evidence from International Data." *Journal of Finance* 50: 1421–60.

———. 2001. "The Influence of the Financial Revolution on the Nature of Firms." *American Economic Review* 91: 206–12.

Volcker , Paul, The only thing useful banks have invented in 20 years in the ATM, NEW YORK POST (Dec. 13, 2009), http://nypost.com/2009/12/13/the-only-thing-useful-banks-have-invented-in-20-years-is-the-atm/.

Zhou, Weihuan, Douglas W. Arner, and Ross P. Buckley. 2015. "Regulation of Digital Financial Services in China: Last Mover Advantage." *Tsinghua China Law Review* 8 (1): 25–62; University of Hong Kong Faculty of Law Research Paper No. 2015/044; UNSW Law Research Paper No. 2015-62. http://ssrn.com/abstract=2660050 or http://dx.doi.org/10.2139/ssrn.2660050.