

Fintech and Big tech as the new credit provider

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<https://doi.org/10.53465/EDAMBA.2021.9788022549301.82-91>

Abstract. The change that new technologies will bring to the banking sector can take many forms. Some of these can be already seen in the field of payments, various types of investments but also loans for retail clients and small companies. On one hand, current banks could continue to dominate by providing additional benefits to customers through improvements enabled by technological innovation. On the other hand, current banks may find themselves in a customer battle with new, more agile market participants, who are faster in adopting innovations that meet clients' needs. These developments have the potential to make markets more diverse, competitive, and efficient, but also may be a threat for the financial stability. In this paper, we aim to examine growth in Fintech and Big tech loans during recent years around the world. Secondly, we explore the relationship between flows of alternative credit and gross domestic product. Analysis suggests, that there may be polynomial relationship with declining rate past certain point.

Keywords: digital innovation, Fintech, Big tech, loans, technology

JEL classification: G10, G21

1 Introduction

Since the global financial crisis, banking sector has been affected by low interest rates and constantly increasing regulation. These and many more factors, such as technological advancement, allowed new participants to join financial sector with aim to address customer needs more effectively. While before the financial crisis the largest banks were mainly in Europe and the USA, today the banking sector is beginning to be dominated by Chinese banks and other start-ups, which have seen enormous growth in recent years.

The Financial Stability Board (2019) defines Fintech as “a technology-enabled financial innovation that can result in new business models, applications, processes or products with a significant impact on financial markets and financial services

institutions. These companies have different market conditions, regulation but also growth rate. Diversity can also be seen in individual countries. In addition, individual countries also seem to have differences in their attitude and support for these institutions. The most important development of Fintech companies can be seen in the area of mobile payments, alternative financing such as crowdfunding or automatic comparison platforms, which are used mainly for lending to small and medium-sized enterprises, but also to individuals.

In recent years, established players in the technology market (Big tech), such as Amazon or Apple have also gradually become more and more integrated into the financial services markets. Thanks to their existing business models, they have a great advantage over traditional credit institutions. Unlike smaller Fintech companies, Big tech can compete with banks on a larger scale, using large amounts of data and technology to process them. These technologies are either not owned by traditional banks or they are not yet able to use them so well. However, the entry of these giants can bring increased efficiency and availability of advanced financial products.

While the technical innovations that trigger changes in the banking sector are present for a long time, the current pace of Fintech innovation and adoption is creating an environment, in which disruption may happen more quickly than in the past, forcing traditional banks to go the distance in attempt to maintain customer relationships and market share. Some of the examples of technological innovations in the past may be automatic teller machines, internet banking or mobile point of sale devices.

In this paper, we will try to describe the state of Fintech and Big tech loans around the world and discuss their potential as a disrupting power in current banking sector. Also, we would like to explore the relationship between alternative loans and gross domestic product in examined countries.

2 Review of authors

Emergence and diffusion of new technologies in financial sector has been one of most discussed topics during recent years. Introduction of cryptocurrencies as new payment method or crowdfunding as new way of raising capital were just few examples, how Fintech companies change financial wellbeing. However, predicting what the future holds for these new players still needs some further research.

Christian Haddad and Lars Hornuf (2018) investigated economics and technological determinants leading entrepreneurs to establish new Fintech companies around the world. They find, that well-developed countries with more available venture capital are more likely to be the place of new found financial start-ups. Furthermore, the number of secure Internet servers, mobile telephone subscriptions, and the available labor force has a positive impact on the development of this new market segment. Finally, the more difficult it is for companies to access loans, the higher is the number of Fintech start-ups in a country. Altogether, study points out that active policies in the countries may influence the emergence of this new sector of financial intermediaries.

The empirical study done by Stijn Claessens et. al. (2018) looks closer at Fintech credit development around the world. It suggests, that the economy's overall

development, the competitiveness of the economy's formal banking sector, and the strength of its regulatory environment play important role in this relationship. Despite its fast expansion, Fintech credit remains relatively small in most economies. It is, however, considerably larger in China, the United States and the United Kingdom, as well as in specific market segments.

Big tech companies often start with payments. Thereafter, some expand into the provision of credit, insurance, and savings and investment products, either directly or in cooperation with financial institution partners. If we look closer at Big tech credit, Jon Frost, Leondardo Gambarota, Yi Huang, Hyun Song Shin and Pablo Zbinden (2019) show, that Big tech firms lend more in countries with less competitive banking sectors and less stringent regulation. They found, that the drivers of Big tech credit are similar to those of Fintech credit (economic activity, financial regulation and competitiveness) and also showed evidence that Big tech lenders may have an information advantage in credit scoring relative to a traditional credit bureau.

According to Raghavendra Rau (2020), the introduction of explicit legal regulation appears to significantly increase crowdfunding volume. Regulatory clarity, by setting explicit regulatory guidelines, is likely to have a strong positive impact on financial sector development.

Cross-country panel regressions in study by Giulio Cornelli, Jon Frost, Leonardo Gambacorta, Raghavendra Rau, Robert Wardrop and Tania Ziegler (2020) show, that alternative credit is more developed in countries with higher GDP per capita (at a declining rate), where banking sector mark-ups are higher and where banking regulation is less stringent. Fintech credit is larger where there are fewer bank branches per capita. They also found, that Fintech and big tech credit are more developed where the ease of doing business is greater, investor protection disclosure and the efficiency of the judicial system are more advanced, the bank credit to deposit ratio is lower and where bond and equity markets are more developed.

Majid Bazarbash and Kimberly Beaton (2020) use data for 109 countries from 2015 to 2017 to study the relationship between Fintech credit to businesses and consumers and various aspects of financial development. Marketplace lending to consumers grows in countries where financial depth declines highlighting the role of Fintech credit in filling the credit gap by traditional lenders. This result is particularly strong in low-income countries. In the business segment, marketplace lending expands where financial efficiency declines. Findings show that low-income countries take advantage of the Fintech credit opportunity in the consumer segment but face important challenges in the business segment.

We will now proceed to the aim and methodology of our paper.

3 Aim and methodology

The main aim of this paper is to describe development of Fintech and Big tech credit around the world. Secondly, we would like to look closer on the relationship between these types of alternative credit and GDP. Countries with higher GDP per capita are expected to attract more capital and therefore develop and use the newest technologies

to meet the financial needs of customers. However, these new technologies may also be relevant for countries with less developed bank system, because of the transaction cost reduction, information asymmetries but also just because they are easier for customers to use.

To address these aims, we use the same data of Fintech and Big tech credit as G Cornelli, J Frost, L Gambacorta, R Rau, R Wardrop and T Ziegler (2020). Flow of Fintech credit represents volume of new lending during given year in selected countries. Likewise, flow of Big tech credit represents volume of this type of lending. Dataset consists of 102 countries for seven years period from 2013 to 2019. As other source of data, we use available data from World Bank. Specifically, we use gross domestic product divided by midyear population and also total population of selected countries. Since the original dataset of Fintech and Big tech lending contains only data between years 2013 and 2019, we are structuring our analysis in this time period.

Description of mentioned data can be seen below in table 1. In our analysis, we expect, that countries with higher GDP per capita experience more flows of alternative credit. To compare alternative credit on the same scale, we divide it by total population of the country in given year.

Table 1. Description of data used in analysis

Variable	Description	Source
Fintech credit	Flow of new lending over a calendar year	Bank for international settlements
Big tech credit	Flow of new lending over a calendar year	Bank for international settlements
Domestic credit	Total domestic credit by financial sector	Bank for international settlement
GDP per capita	Gross domestic product divided by midyear population.	World bank
Total population	Midyear estimates of total population in the country	World bank

4 Results and discussion

Although Fintech and Big tech may seem similar, there are several important differences between them. Fintech loans started primarily on decentralized platforms,

where the demand for loans from retail clients or small and medium-sized enterprises met the supply of loans primarily from individual investors. These platforms were thriving mainly in an environment of higher interest rates and the unavailability of loans from traditional banks. The advantage of this method of lending is the reduction of asymmetric information and transaction costs. Over time, some platforms have shifted to financing loans from institutional investors and not just individuals.

Large technology companies, on the other hand, have different business lines, of which loans represent only one (often not very big) part, while their main business activity is usually non-financial in nature. Their business model leverages three main factors. First, the data they already have on consumers are helping in understanding the customer needs better. Secondly, they can use extensive user data, which are often obtained from non-financial activities, to alleviate problems with asymmetric information and lastly, they rely on strong networks effects from leveraging their large consumer base. Big volumes of information however, whereas allowing Big tech companies to effectively measure loan quality, can also cause price discrimination and disrupt competition in the banking sector.

Fig. 1. Total flow of alternative credit in given year

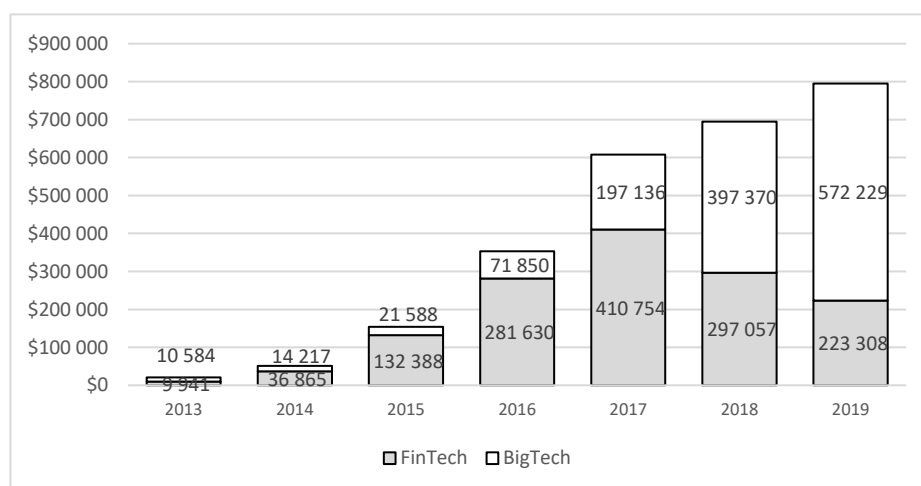
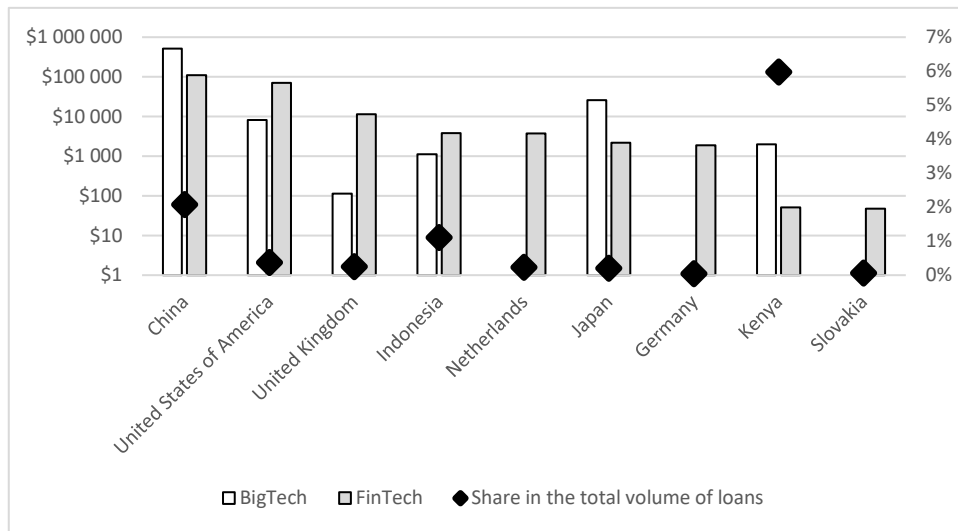


Figure 1. shows the development of new volumes of alternative loans on an annual basis in millions of dollars. Fintech loans recorded the largest increases globally around 2017, but since then the curve has been breaking and gradually declining. This may be because many of Fintech's platforms, such as the Lending Club in the US, are starting to apply for a bank license and becoming banks or being bought by banks. The opposite trend can be seen when tracking loans from Big tech companies. In 2019, the increase in Fintech loans accounted for only 39% of the size of the increase in loans from large non-financial corporations. The main reason for this is likely the significant development of credit products in the markets of China and Japan.

The distribution of the new volume of alternative loans in selected countries can be seen in Figure 2. The primary axis (left) is in logarithmic form, as loans in some countries are orders of magnitude higher than in others. By far the largest Fintech but also the Big tech market in this case is China. The companies providing these loans are primarily Ant Group, We Bank or Du Xiaoman.

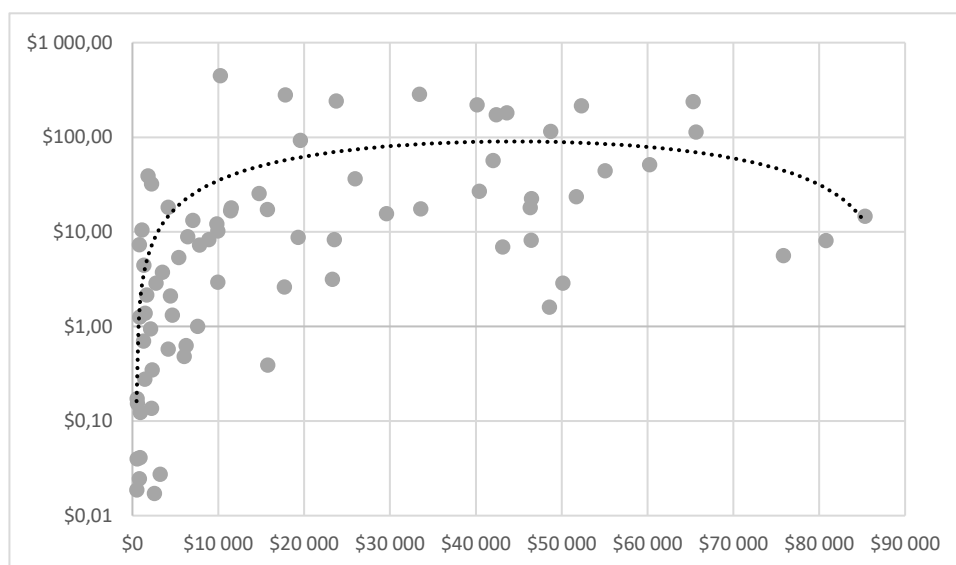
If we look at the market of the European Union without the United Kingdom, we can see that the market for Big tech loans is practically non-existent. The main reason will probably be high regulation and a strong traditional banking market. We have also added data from Slovakia to the chart, where we can see that there is a Fintech loan market slowly emerging.

Fig. 2. Flow of Fintech and Big tech credit within selected countries in 2019



On the secondary axis (right) we can see the ratio of new alternative loans to the total volume of loans in the country in year 2018. This value is below 1% in almost all countries shown. The exceptions are China, Indonesia and especially Kenya - where this ratio is estimated to be more than 5%. As expected, ratio of new alternative loans to the total volume is higher in less developed countries and vice versa. Even though this trend is rising all around the world, it may differ vastly in various countries and it will be exciting to monitor its next development.

Fig. 3. Visualization of gross domestic product per capita and flow of alternative credit in sample of 100 countries in 2019



To visualize the relationship between flow of alternative credit and gross domestic product of countries, we divided these two variables by total population and plotted this dataset on scatter plot. Data used in this analysis are from 2019 and represent 85 countries. Axis Y shows flow of alternative credit per capita on logarithmic scale. Axis X shows gross domestic product per capita. Data points represent individual country and its position in the graph.

If we look at Figure 3., we can see that with higher gross domestic product per capita, countries tend to experience bigger flows of alternative credit per capita. In certain level, however, we can see that this trend starts to decline, suggesting polynomial shape of function. This conclusion is also mentioned in paper by Giulio Cornelli, Jon Frost, Leonardo Gambacorta, Raghavendra Rau, Robert Wardrop and Tania Ziegler (2020).

Some of the other variables connected to the development of these new types of loans that may be relevant for further research are for example strictness of bank regulation or overall bank sector competitiveness.

The more difficult it is for a start-up to enter the banking market, whether due to regulations, market saturation or even, for example, low interest margins, slower the growth of alternative loans in the given countries may be expected. Some of these assumptions may be even relevant for the discussion about the position of Fintech and Big tech market in Europe.

Given how young the industry is, it is too early to properly evaluate impact of these alternative loans on lenders and borrowers, let alone on financial stability and the whole

economy. Therefore, it is important to explore these causalities in more depth and try to better understand drivers of growth in individual countries.

5 Conclusion

Financial technologies are gradually starting to disrupt the traditional banking market and are likely to have a significant say in the upcoming years. Fintech and Big tech players are beginning to acquire several domains in the financial markets, such as payments, savings, investments and, last but not least, loans to retail clients and also to smaller companies. Various forms of these new companies may definitely change the banking market as we know it today. On the one hand, traditional banks can adapt to new technologies and not allow new market players to break through permanently. On the other hand, new start-up companies can replace banks thanks to their speed of adoption of new business models and technologies.

In our analysis, we focused on the development of Fintech and Big tech loans worldwide. We have shown, that the volume of these loans is rising every year and big non-financial players like Apple or Amazon are getting the word out. On the other hand, flow of Fintech loans is slowly starting to decline, which may be due to the fact, that several Fintech companies are obtaining bank licences, banks are catching up in technology or buying simply acquiring them because of their functionalities and potential.

The development of these loans is recorded primarily in China, America, the United Kingdom, but also in Japan, where the big tech market is developing very significantly. If we look at the European market, we can see the opposite case here as in Japan - since Big tech loans are not yet present here, probably thanks to strong banking regulation. The total share of these types of loans in the total amount of loans in the country so far is only around 1%, with the exception of some countries, where the bank loan market is not as saturated as in more developed countries.

In examining the relationship between these loans and the development of countries by gross domestic product per capita, the analysis has showed a polynomial relationship, where loans to a certain point of GDP increase and then the curve begins to rotate. We therefore came to conclusion, that countries with higher GDP per capita seems to have higher flows of alternative capital per capita than countries with less GDP per capita and the objectives of this paper have been met. Our findings may also indicate, that alternative loans have potential to grow mainly in low or middle-income countries, especially where banking sector is not properly developed or is experiencing higher interest rates on traditional loans.

Our analysis is just a peak of iceberg in this important topic, however we hope that the area of financial technologies used in banking sector will get more research attention in years to come.

Acknowledgement

This paper is an output of the science project I-21-104-00 “Analysis of the heterogeneity of euro area countries and its implications for the implementation of the ECB's monetary policy”.

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