

Big techs, QR code payments and financial inclusion

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Abstract

Using a unique dataset of around half a million Chinese firms that use a QR code-based mobile payment system, we find that

- The creation of a digital payment footprint allows firms to access credit provided by the same big tech company;
- Transaction data generated via QR code generate spillover effects on access to bank credit;
- There are positive effects of access to big tech credit on sales, including during the Covid-19 shock.

These findings suggest that access to innovative payment methods helps micro firms build up credit history, and that using big tech credit can ease access to bank credit.

Introduction

The presence of information asymmetries between small and medium enterprises (SMEs) and credit intermediaries is a serious problem that may reduce financing of good investment opportunities and the development of promising entrepreneurs' projects. Artificial intelligence, however, has provided a new solution, allowing large technology firms (big techs) to use credit-scoring techniques—based on a vast amount of data and machine learning techniques—to better capture the riskiness of clients operating in their business platforms.

It is widely known that big techs operate e-commerce platforms that enable direct interaction among a large number of online merchants. Furthermore, in more recent years, the increasing use of quick response (QR) payment has allowed big techs to get information not only on e-commerce platforms, but also offline transactions, for example, at shops or restaurants.

In addition to more effective payment services, QR code-based mobile payments can have also positive effects for financial inclusion. The use of QR code payments generates a vast amount of data that big techs can use to better assess the risk profile of customers and provide them with credit services. It is therefore interesting to evaluate whether (i) the use of QR code payments gives merchants who use QR code payments access to big tech credit, (ii) whether access to and use of big tech credit gives firms access to more traditional bank credit, and (iii) whether there are real effects of the use of QR code payments and the subsequent provision of credit on firms' business volume.

Data and Empirical Strategy

The database is constructed at the firm-month level over the period 2017:01 to 2020:07. The sample includes around 500,000 firms that have been randomly selected from a larger sample of more than 80 million firms that recorded transaction records every month and obtained bank credit since January 2017. We use two different samples in our estimations, one on a monthly basis from 2017 to 2019 and one on a weekly basis from the end of October 2019 to June 2020. The initial sample of 500,000 firms have been reduced to 475,000 firms, excluding the top 5% of firms by transaction size. This allows us to exclude very large enterprises (i.e., supermarkets, good producers)

We use duration models to gauge the time period that elapses between when a firm starts to use the QR code for payments and a given event referring to this time as QR Code duration. We consider three main events in our paper: (i) the time that elapses between the date a firm starts to use the QR code and the date the firm gets access to big tech credit, (ii) the time that elapses between when a firm starts to use the QR code and when the firm starts to use big tech credit, and (iii) the time that elapses between when a firm starts to use the QR code and when the firm obtains a loan from a traditional bank.

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Results

With respect to the first question, we find that the collection of data on digital payments allows firms to access credit provided by the same big tech company operating the platform. Chart 1 shows a rapid increase in the likelihood of gaining access to big tech credit the longer the firm uses QR codes in payments. One year after starting to use QR code payments, the probability to have access to a big tech credit line reaches almost 60%. This probability increases to 80% after two years.

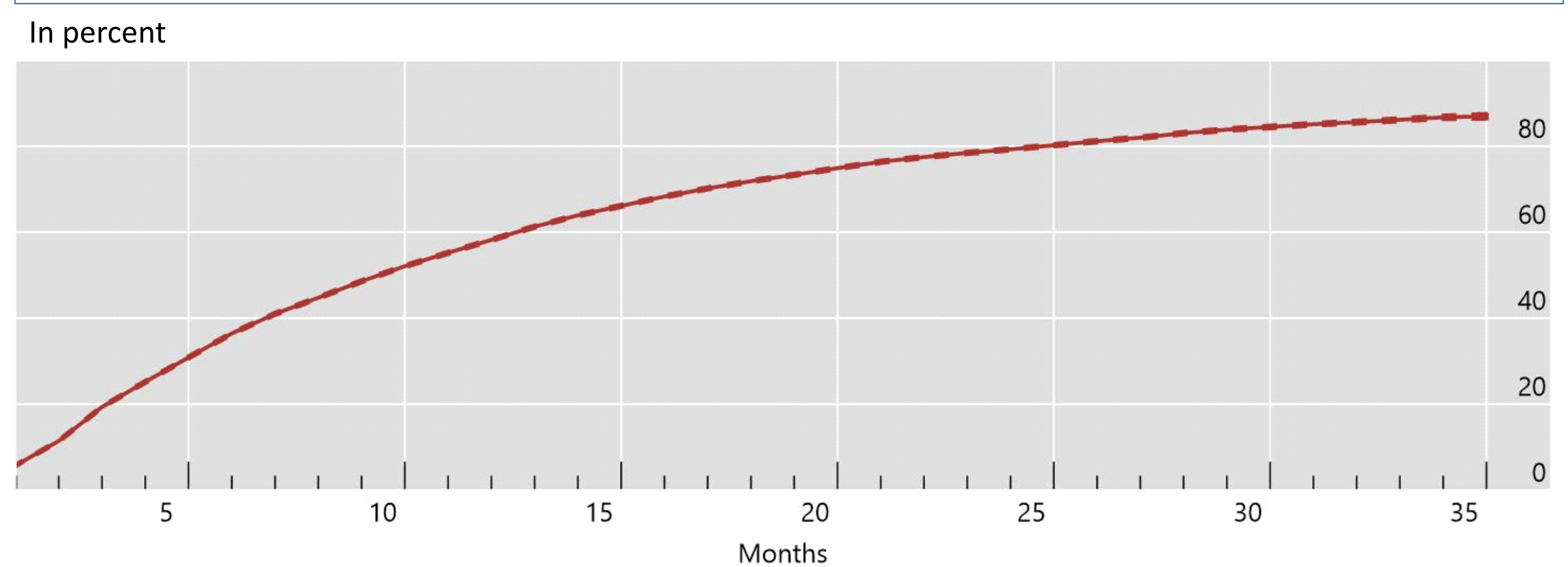


Chart 1. Does the Use of QR Codes in Payment Give Firms Access to Big Tech Credit?

Answering the second question, we find that transaction data generated via QR code payments generate spillover effects on the use of bank credit. However, Chart 2 shows that there are substantial differences between the effects of simple access to big tech credit and the actual use of it. Controlling for demand effects, when firms have only access to big tech credit (but do not use it), the spillover effects on bank credit are quite limited. This is because simple access to big tech credit is not visible to banks in the credit registry.

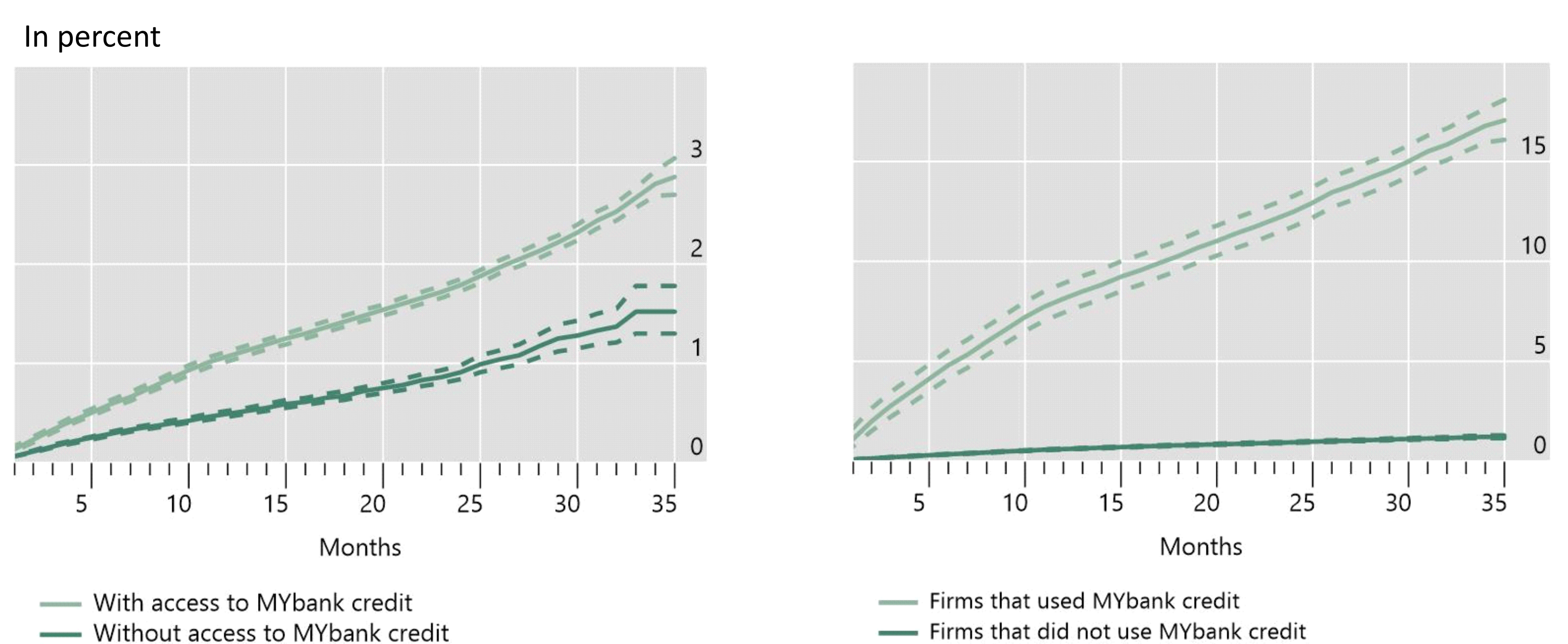


Chart 2. Spillover Effect from Big Tech Credit to Bank Credit

To answer the third question, we use three different tests to verify whether access to big tech credit produces real effects for firms' activity. The first test analyses the pre-COVID-19 period of 2017–2019, while the second test considers only the exogenous shock generated by the introduction of the big tech loan product in August 2017. The third test compares the pre-pandemic period to the pandemic period, considering firms with and without access to big tech credit. Chart 3 reports the results of the three different tests on firms' transaction volumes.

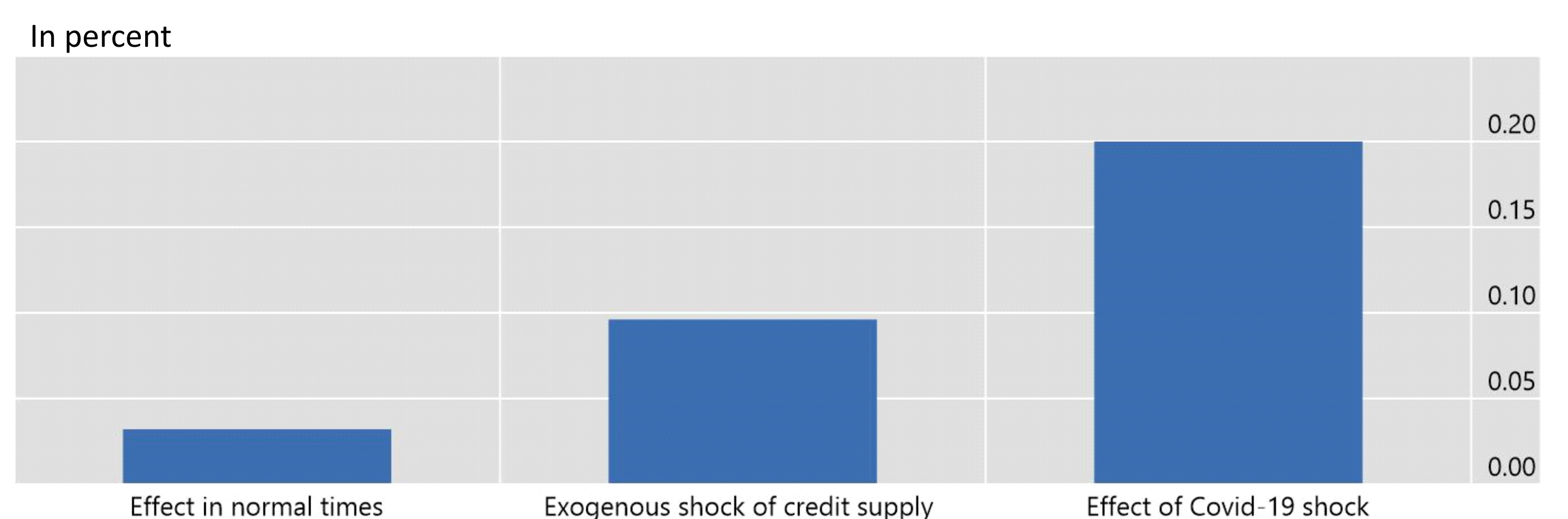


Chart 3. Real Effects of Access to MYbank Credit on firms' transaction volumes

Conclusions

The use of QR codes has positive effects on financial inclusion that go well beyond the efficient processing of payments. Our analysis notably shows that the use of digital payments allows firms to access credit services offered by big techs. Moreover, the use of big tech financial services produce spillover effects on access to bank credit. Specifically, the inclusion of big tech credit exposures in the credit registry acts as a signaling device that gives SMEs access to more traditional banking services. Finally, access to big tech credit has also positive effects on firms' volume of business. These effects are significantly larger during the COVID-19 period, when credit lines were used to insulate the effects of an unexpected shock.