



Digital banking: opportunities and challenges

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*The views expressed here are those of the presenter and not necessarily the Bank for International Settlements

Outline

I. What is the business model of digital banking?

- *The business model of digital banks centres around the use of financial technology and data. It accelerates the reduction of bank branches and heavily relies on mobile apps and online platforms, minimising the need for human intervention.*

II. Opportunities and challenges

- *The use of machine learning and non-traditional data for credit scoring could enhance financial inclusion. Data reduces the need of collateral. However, the digital banking business model can also create new risks, including market dominance, rent extraction, algorithmic discrimination and privacy issues.*

III. Conclusions

- *The role of public policy is to strike a balance between the opportunities and challenges created by digital banking. This requires making societal choices that depend on preferences and values.*



I. What is the business model of digital banking?

A business model based on technology, data and no human interaction

- Artificial Intelligence, machine learning and data
- From “brick and mortar” to “mobile phones and apps”
- From “relationship banking” to “no human interaction”
- Enhanced customer experience
- Online platforms

Three types of platforms in finance: definitions and examples

Definition

Fintech

Technology-enabled innovation in financial services that could result in new business models, applications, processes or products ... ([FSB](#), 2017)

Big tech

Large companies whose primary activity is digital services, rather than financial services ([Frost et al.](#), 2019; [BIS](#), 2019; Cornelli et al 2023)

Incumbent responses

Move to business model that brings together two or more types of economic agents and facilitates trade between them (Evans and Schmalensee, 2014)

Examples





II. Opportunities and challenges

Digital banking brings new potential benefits but also risks

Potential benefits

+ Screening and financial inclusion

- ❑ Credit scoring techniques based on machine learning and big data outperform traditional models (Frost et al, 2019; Gambacorta et al, 2019)
- ❑ Digital banks can serve households and SMEs that otherwise would remain unbanked (Luohan Academy Report, 2019; Bech et al 2023)

+ Monitoring and collateral

- ❑ Vendors have high switching costs, easier to enforce loan repayment with threat or exclusion
- ❑ Credit does not require collateral, asymmetric information problems are solved by the use of data

Potential risks

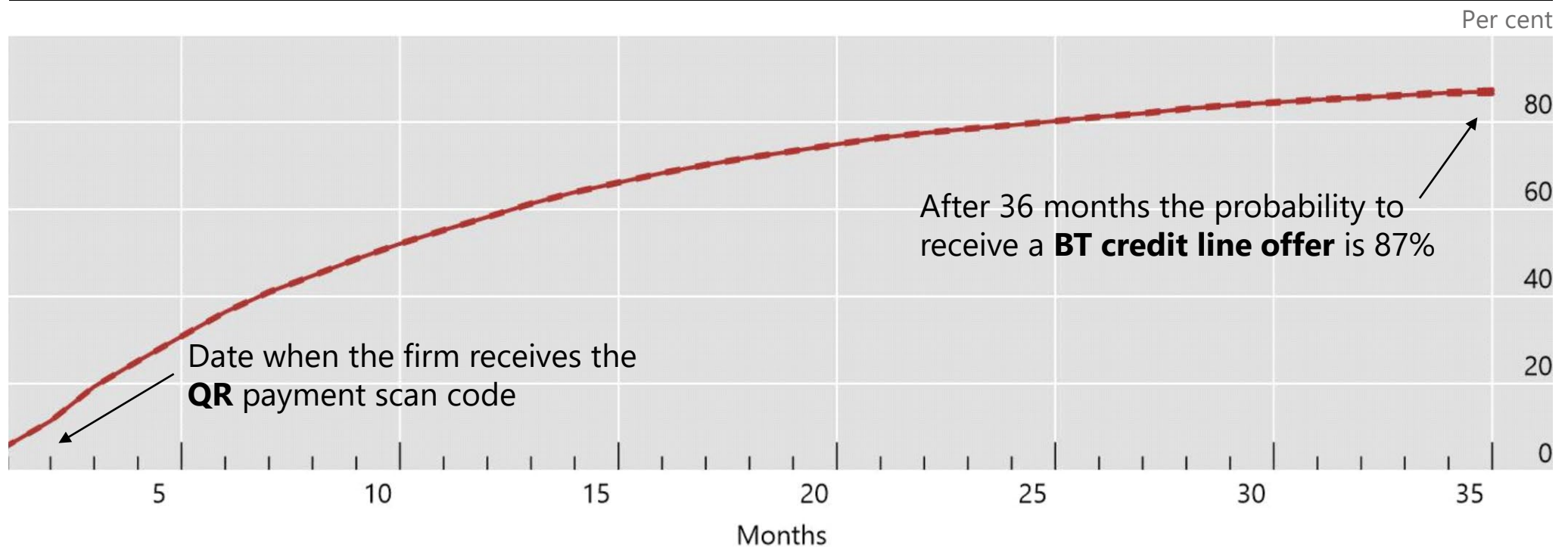
– More reactivity to real and financial shocks

- ❑ Instability of funding sources: deposits of digital banks reacts more to changes in market conditions
- ❑ Loans supplied by digital banks are of transactional type and more procyclical: less protection for SMEs in case of a downturn

– Misuse of data and digital monopolies

- ❑ Price discrimination and rent extraction
- ❑ Exclusion of high risk groups from socially desirable insurance markets
- ❑ Sophisticated algorithms used to process the data could develop biases towards minorities
- ❑ Privacy issues

The use of QR code allows firms to have access to MYbank credit

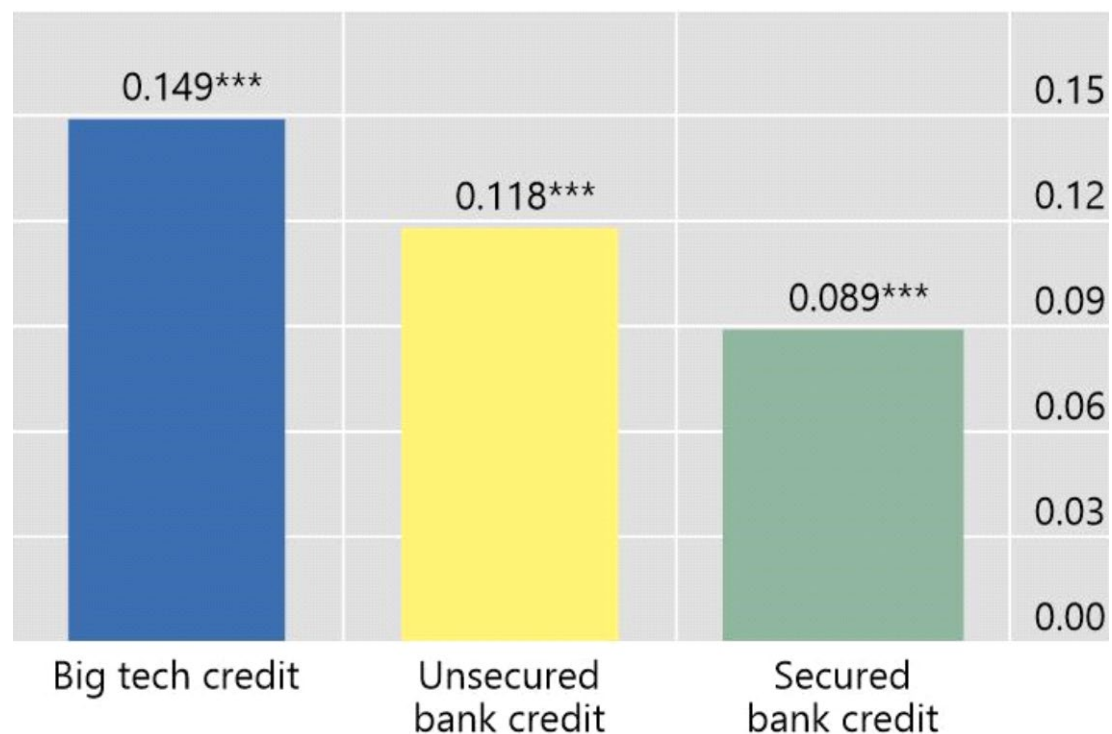


Dashed lines indicate 5th/95th percentiles. The x-axis reports the QR code duration, that is the number of months after the firm started to use the QR code payment system. The y-axis reports the probability for a firm of having access to big tech credit.

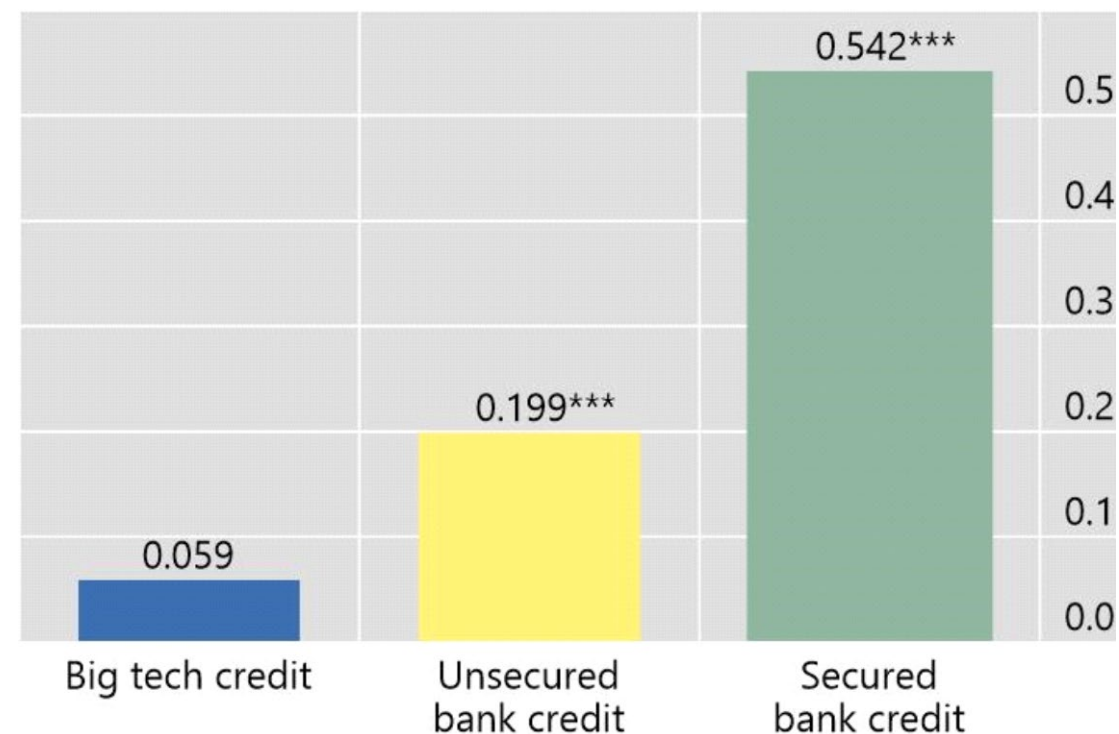
Source: Beck, T, L Gambacorta, Y Huang, Z Li and H Qiu (2022): "Big techs, QR code payments and financial inclusion", *BIS Working Papers*, no1011, May.

Data vs collateral: Big tech credit reacts less to changes in house prices and more to firm-specific characteristics

Elasticities to transactions



Elasticities to house prices



Source: Gambacorta, L, Y Huang, Z Li, H Qiu and S Chen (2022): "Data versus Collateral", *Review of Finance*, vol 27(2), 369–398.

Rent extraction, algorithmic discrimination and privacy issues

- Monopolistic use of data could lead to price discrimination and rent extraction
- The algorithms used to process data may develop biases
 - In the US mortgage market, black and hispanic borrowers were less likely to benefit from lower interest rates from machine learning based credit scoring models than other communities (Fuster et al, 2019)
- Popular health websites were found to have shared sensitive data with big tech firms (Financial Times, 2019)
- The risks of violating consumer privacy are greater when firms underinvest in data security (Carriere-Swallow and Haskar, 2019).



III. Conclusions

Main takeaways

- I. The **business model of digital banks** introduces new **opportunities and challenges**.
 - The use of machine learning and non-traditional data for credit scoring improves financial inclusion. Data reduces the need of collateral.
 - At the same time, digital banks can create new risks: loan and deposits react more to financial and real shocks. The use of data can create situations of market dominance, rent extraction, algorithmic discrimination and privacy issues.
- II. The **role of public policy** is to find a balance between the new opportunities and challenges. Digital banking changes complex trade-offs between public policy objectives: financial stability-competition-privacy (Feyen et al., 2021). This requires making societal choices that depend on preferences and values.

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