



Big techs in finance: An overview of benefits and risks

Leonardo Gambacorta

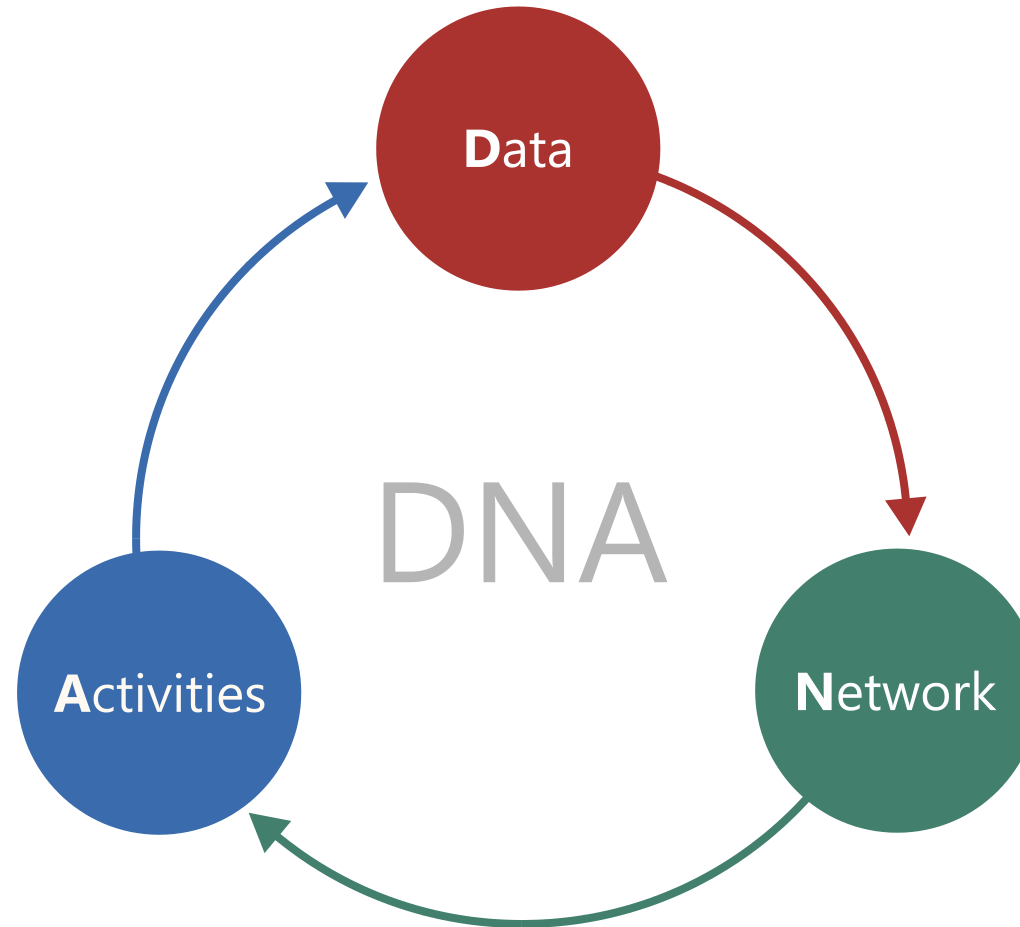
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*The views expressed here are those of the presenter and not necessarily the Bank for International Settlements

The DNA of big techs

- Big techs are large companies whose primary activity is digital services, rather than financial services.
- Big techs' business model rests on enabling direct interactions among a large number of users (e-commerce platforms, social media, search)
- An essential by-product of their business is the large stock of user data which are utilised as input to offer a range of services that exploit natural network effects, generating further user activity
- **Data analytics, network externalities and interwoven activities ("DNA")** constitute the key features of big techs' business models. These three elements reinforce each other.

Data-**N**etwork-**A**ctivities loop



The DNA loop is a source of benefits but also of 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)
- ❑ BT credit can serve households and SMEs that otherwise would remain unbanked (Luohan Academy Report, 2019; Gambacorta et al, 2022)

+ Monitoring and collateral

- ❑ Vendors have high switching costs, easier to enforce loan repayment with threat or exclusion
- ❑ BT credit do not require collateral, asymmetric information problems are solved by the use of data (Gambacorta et al, 2023)

Potential risks

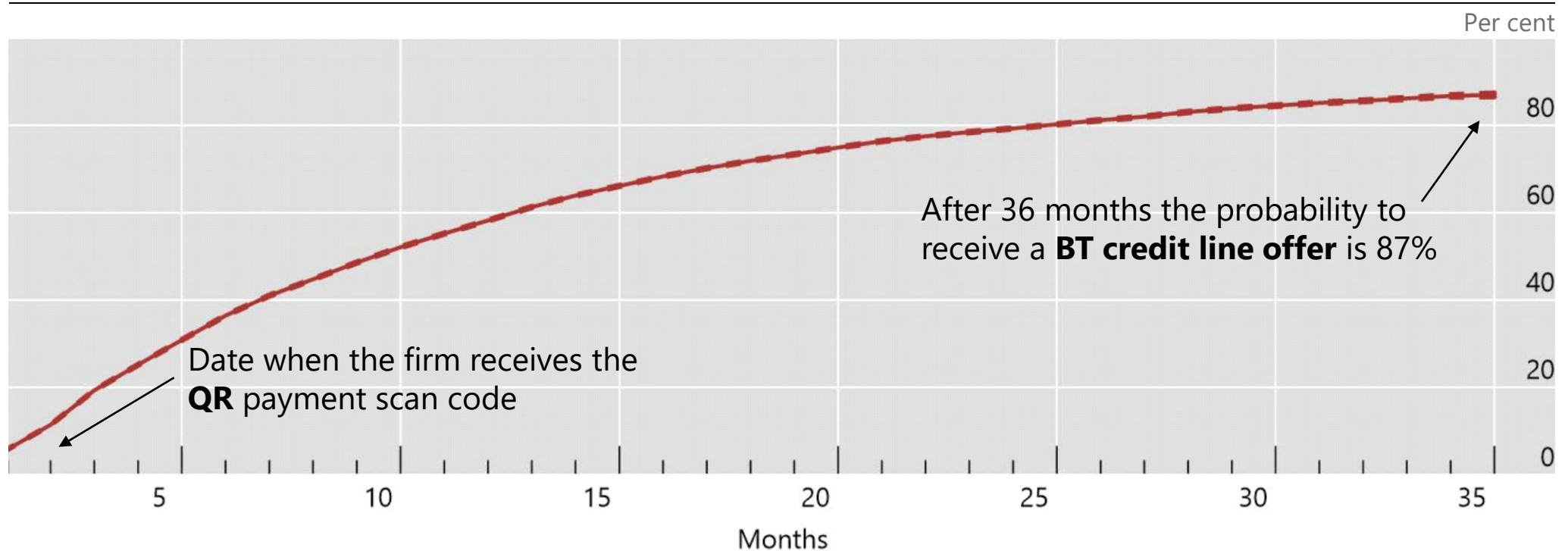
– Market Power

- ❑ BTs can become dominant players, consolidate their position by raising barriers to entry
- ❑ BTs can favour the distribution of their own products at the expense of third party providers

– Misuse of data and digital monopolies

- ❑ Price discrimination and rent extraction
- ❑ Exclusion of high risk groups from socially desirable insurance markets
- ❑ Sophisticated algorithms could develop biases towards minorities (Fuster et al, 2019)
- ❑ Privacy issues (Doerr et al, 2023)

The use of QR code allows firms to have access to big tech credit

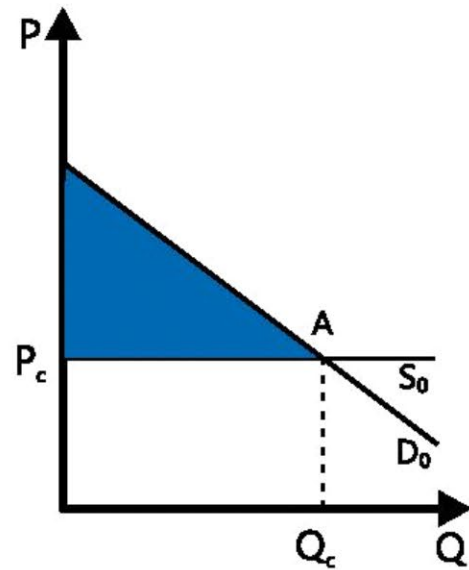


Dashed lines indicate 5th/95th percentiles. The x-axis reports the QR code duration, that is the number of months after the firm started to use the QR code payment system. The y-axis reports the probability for a firm of having access to big tech credit.

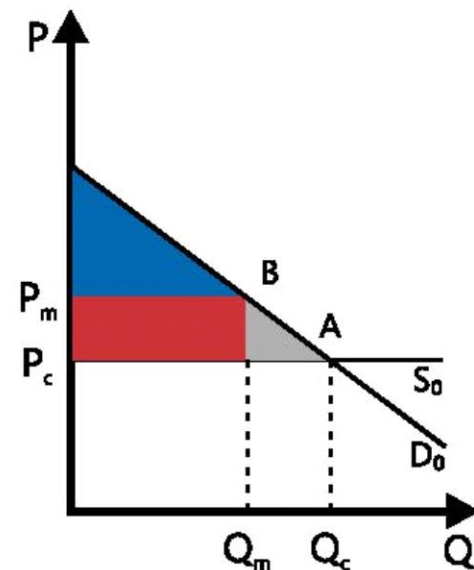
Source: Beck, T, L Gambacorta, Y Huang, Z Li and H Qiu (2022): "Big techs, QR code payments and financial inclusion", *BIS Working Papers*, no1011, May.

Monopolistic use of data for rent extraction

A. Perfect competition

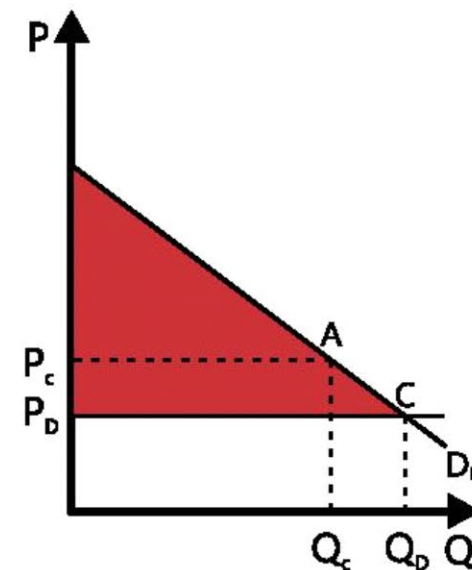


B. Pure monopoly



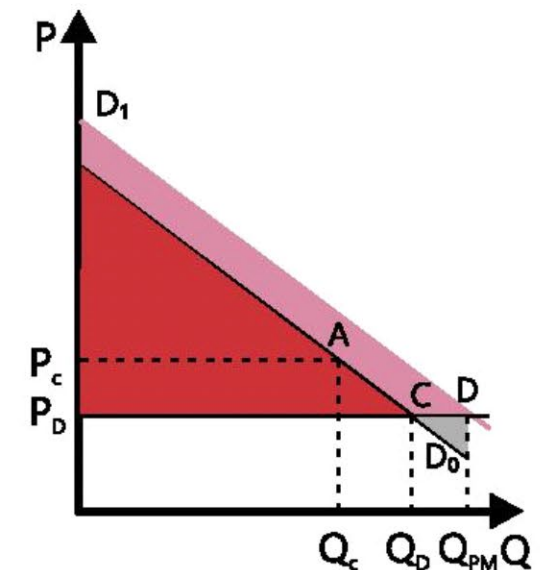
■ Consumer surplus
■ Welfare (dead weight) loss

C. Digital monopoly



■ Monopoly surplus
■ incl. perceived surplus

D. Preference manipulation



Source: Boissay et al (2020); authors' elaboration.

Conclusions

- I. The **business model of big techs** is based on the data-network-activities (“DNA”) feedback loop.
- II. The DNA introduces **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, big tech business model can create new risks: market dominance, price discrimination, algorithmic discrimination and privacy issues.
- III. The **role of public policy** is to find a balance between the opportunities and the new challenges. Big techs bring new and complex trade-offs between public policy objectives: financial stability-competition-privacy. This calls for more coordination between national and international authorities

References

- Bech, T, L Gambacorta, Y Huang, Z Li, and H Qiu (2022): "Big Techs, QR payments and financial inclusion", BIS Working Paper no. 1011, May.
- Boissay, F, T Ehlers, L Gambacorta, and H S Shin (2021): "Big techs in finance: on the new nexus between data privacy and competition", Springer International Publishing, 855-875.
- Doerr, S, L Gambacorta, L Guiso and M S del Villar (2023): "Privacy regulation and fintech lending", BIS Working Paper no. 1103, June.
- Frost, J, L Gambacorta, Y Huang, H S Shin and P Zbinden (2019): "BigTech and the changing structure of financial intermediation", *Economic Policy*, 34(100), 761-799.
- Fuster, A, M Plosser, P Schnabl and J Vickery (2019): "The role of technology in mortgage lending", *The Review of Financial Studies*, 32(5), 1854-1899.
- Gambacorta, L, Y Huang, H Qiu, and J Wang (2019): "How do machine learning and non-traditional data affect credit scoring? New evidence from a Chinese fintech firm", BIS Working Paper no. 834, December.
- Gambacorta, L, Y Huang, Z Li, H Qiu and S Chen (2023): "Data versus collateral", *Review of Finance*, 27(2), 369-398.
- Luohan Academy (2019): *Digital Technology and Inclusive Growth*. Hangzhou.