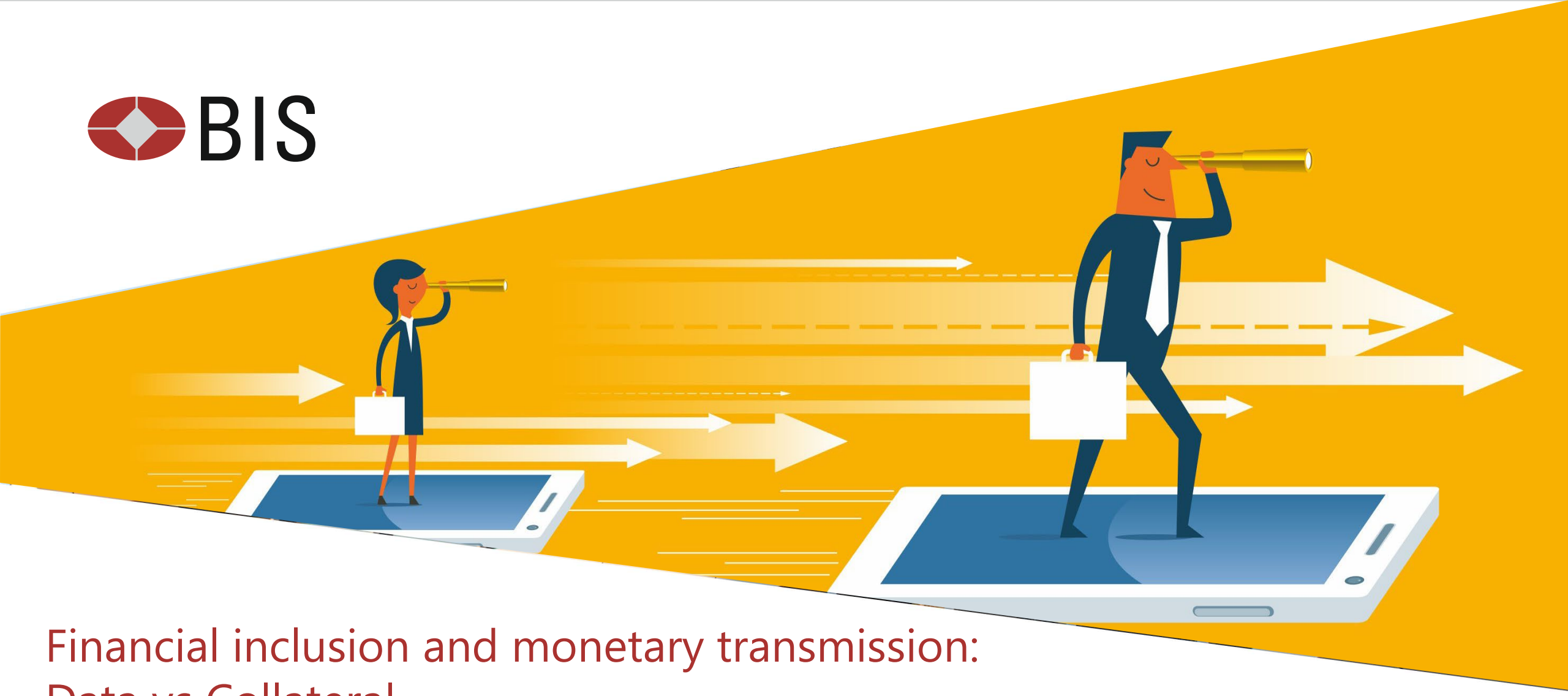

Financial inclusion and monetary transmission: Data vs Collateral

Leonardo Gambacorta

IMF and Reinventing Bretton Woods Committee
"New Technologies, Financial inclusion and Monetary policy in CCA countries" Webinar – 12 July 2021

Disclaimer

Based on “Data vs collateral”, joint work with Yiping Huang, Zhenhua Li, Han Qiu and Shu Chen. BIS Working Paper 881/2020.

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Outline of the presentation

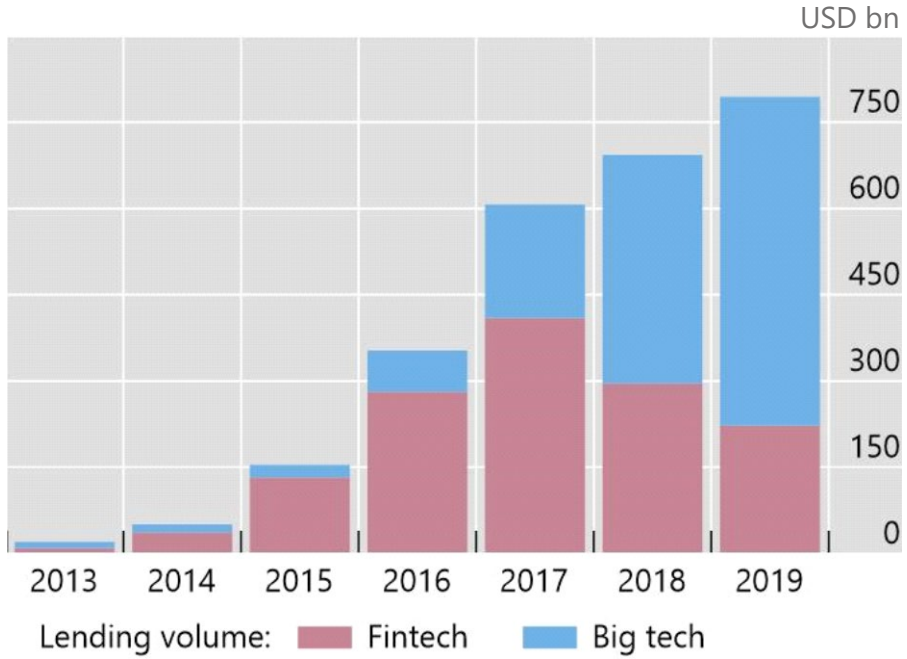
- Big tech credit and the Data-Network-Activity (DNA) feedback loop
- Data vs collateral
- Conclusions and open policy questions

BIS

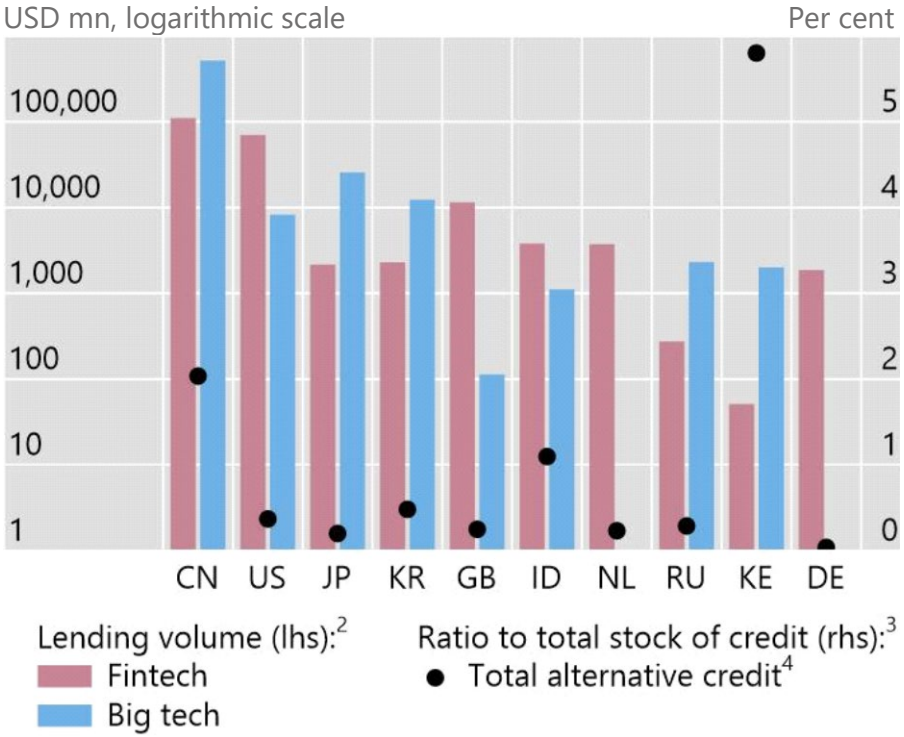
Big tech credit and the DNA feedback loop

Big tech credit is booming – reaching USD 572 bn in 2019

Big tech credit is overtaking fintech credit[1]



These alternative forms of lending are becoming a significant portion of total credit in a few economies

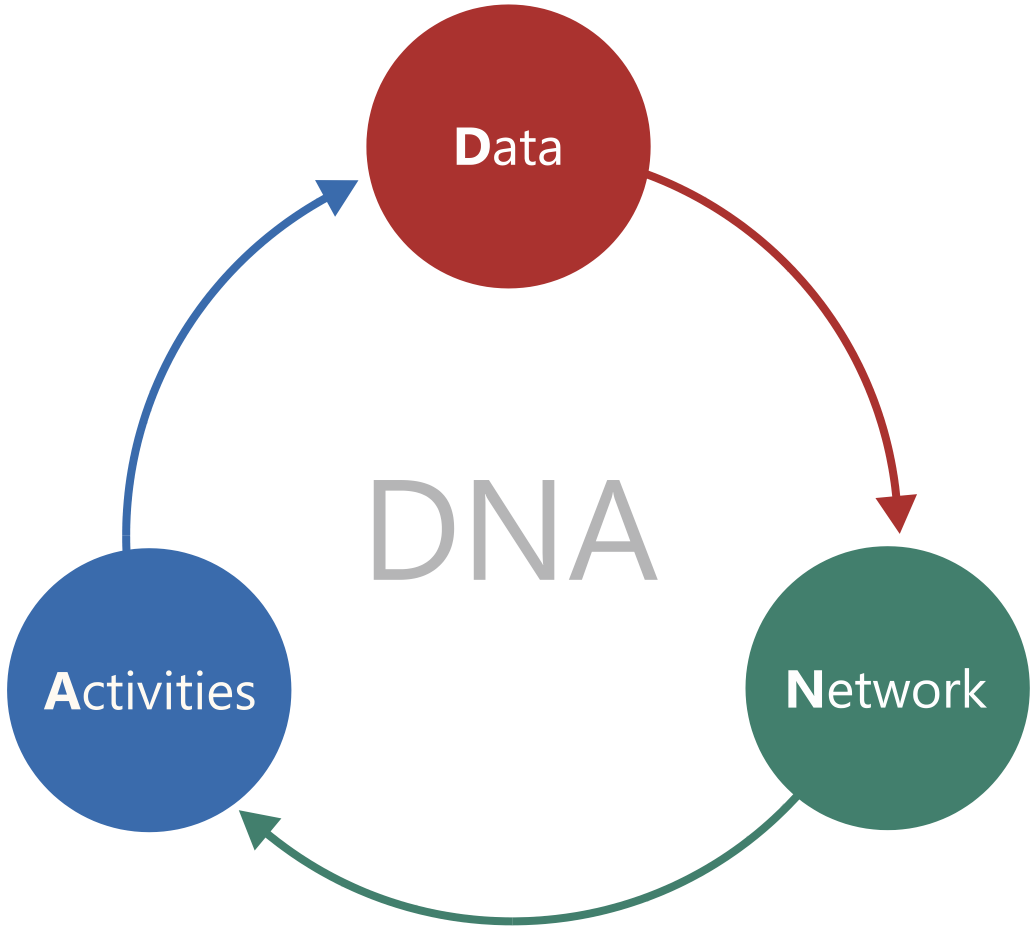


Figures include estimates. CN = China, US = United States, JP = Japan, KR = Korea, GB = Great Britain, ID = Indonesia, NL = Netherlands, RU = Russia, KE = Kenya, DE = Germany.

[1] 2019 fintech lending volume figures are estimated on AU, CN, EU, GB, NZ and US. [2] Data for 2019. [3] Domestic credit provided by the financial sector. Data for 2018. [4] Total alternative credit is defined as the sum of fintech and big tech credit. Data for 2019.

Source: Cornelli et al (2020), "Fintech and big tech credit: a new database", BIS WP 887.

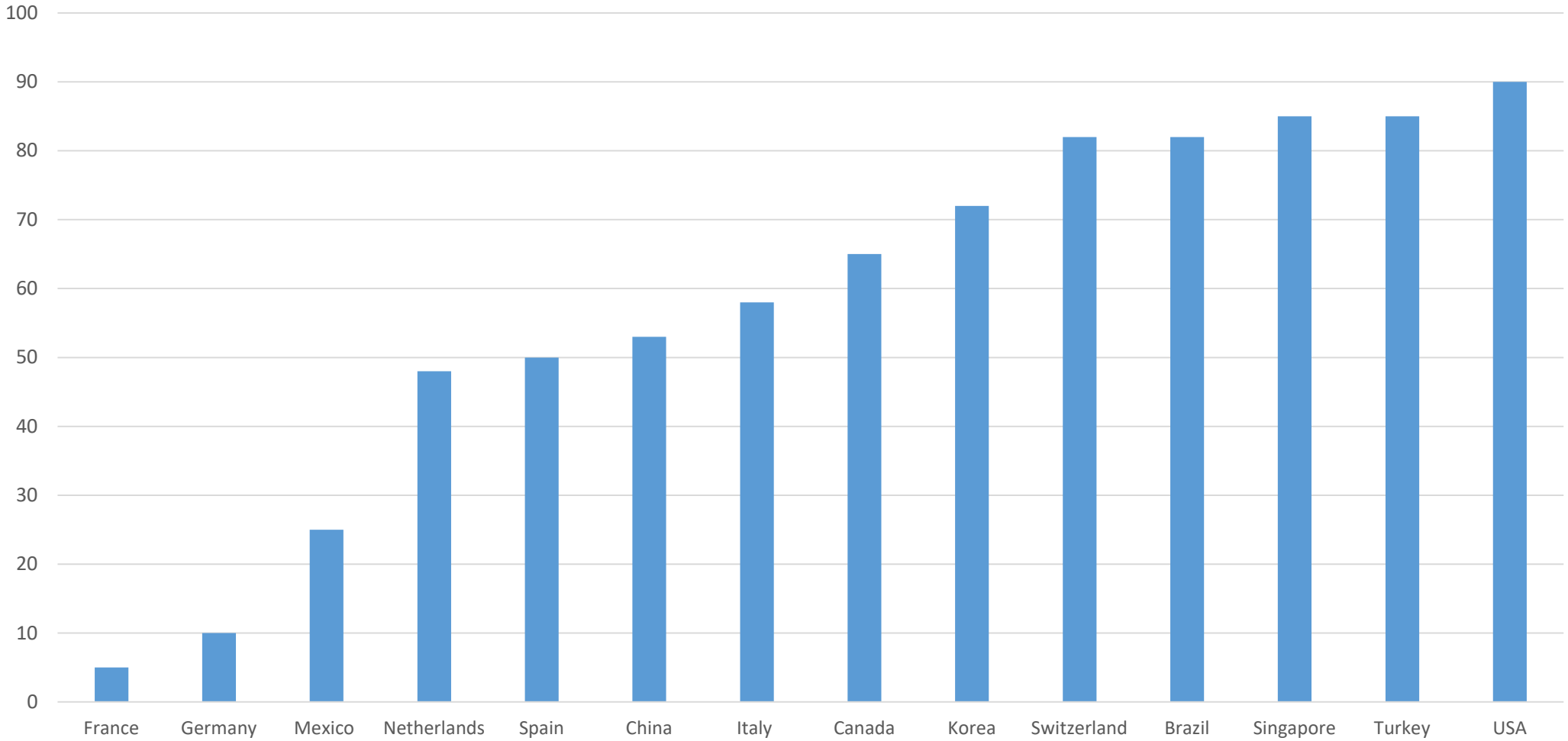
Data-**N**etwork-**A**ctivities loop



Data can replace collateral

- Big techs could address AI problems differently from banks (Hau et al, 2018).
- They can use machine learning and big data to infer the credit quality of a borrower more precisely in real time (Bazarbash, 2019; Frost at al 2019).
- Collateral is used in debt contracts to mitigate agency problems arising from asymmetric information.
- Banks usually require their borrowers to pledge tangible assets, such as real estate, to:
  - lessen ex-ante adverse selection problems (Bester 1985, Chan and Kanatas, 1985; Besanko and Thakor, 1987)
  - as a way to reduce ex-post frictions, such as: i) moral hazard; ii) costly state verification; iii) imperfect contract enforcement

Percentage of bank loans to SMEs that is collateralised



Note: Data for 2017. For Italy, the SME aggregate refers to bank loans to firms with <20 employees. For Spain, the data comes from Spanish Mercantile Registers, which covers around 45% of the total population of SMEs (in terms of number of firms and number of employees). For China, the data comes from OECD (2019)
Source: FSB questionnaire on SME financing. See FSB (2019). OECD (2019).

Research questions

- Do big tech and bank credit react differently to collateral value, local economic conditions and firm-specific characteristics?

- How could the increased use of big data and machine learning in solving asymmetric information problems, in lieu of collateral, impact the collateral channel?

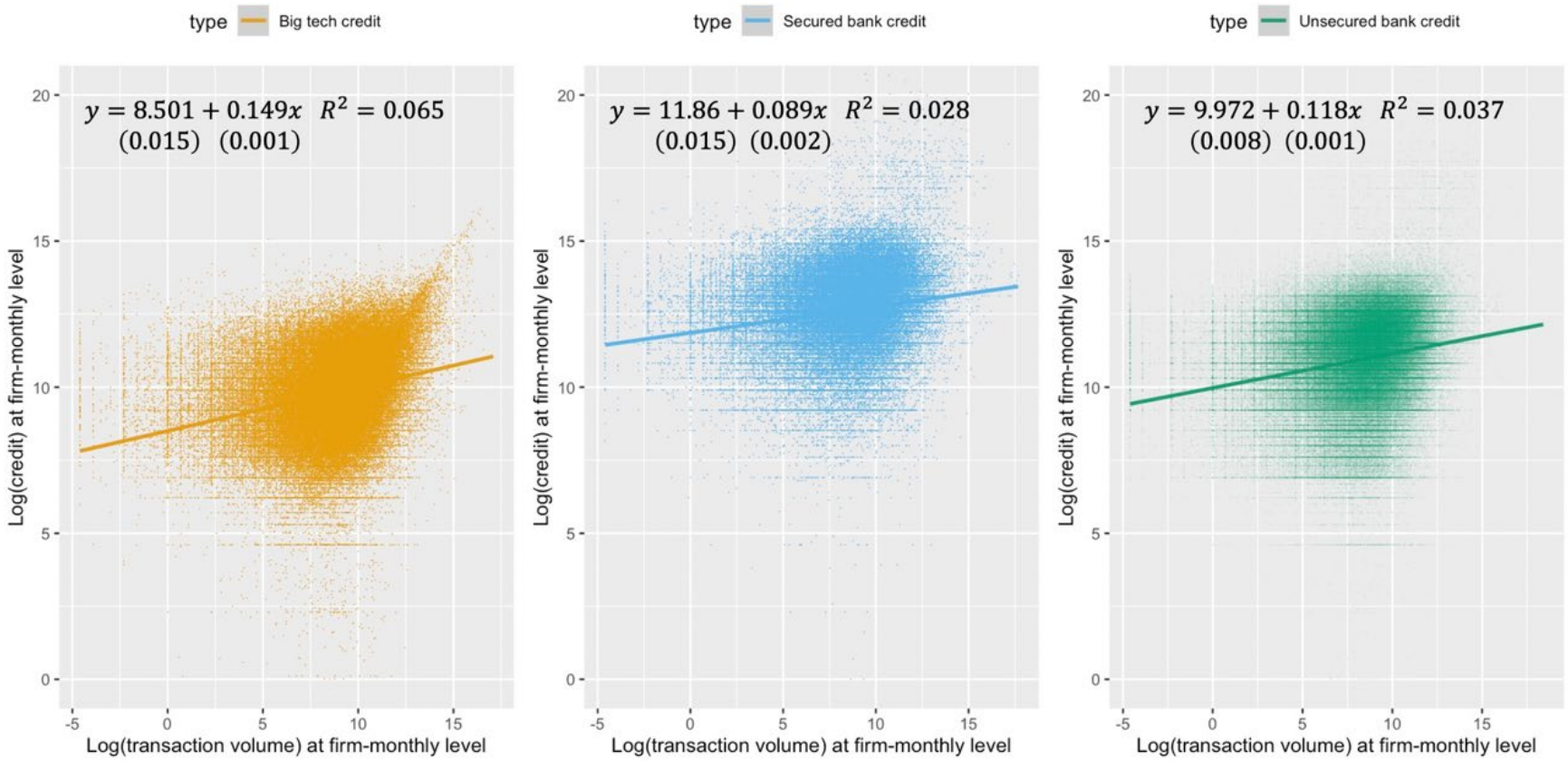
- Do big tech platforms matter? Are there differences between credit granted to firms that operate in the ecommerce platform (online) and credit granted to firms that operate on traditional business channels (offline)?

Data vs collateral

Main characteristics of the study

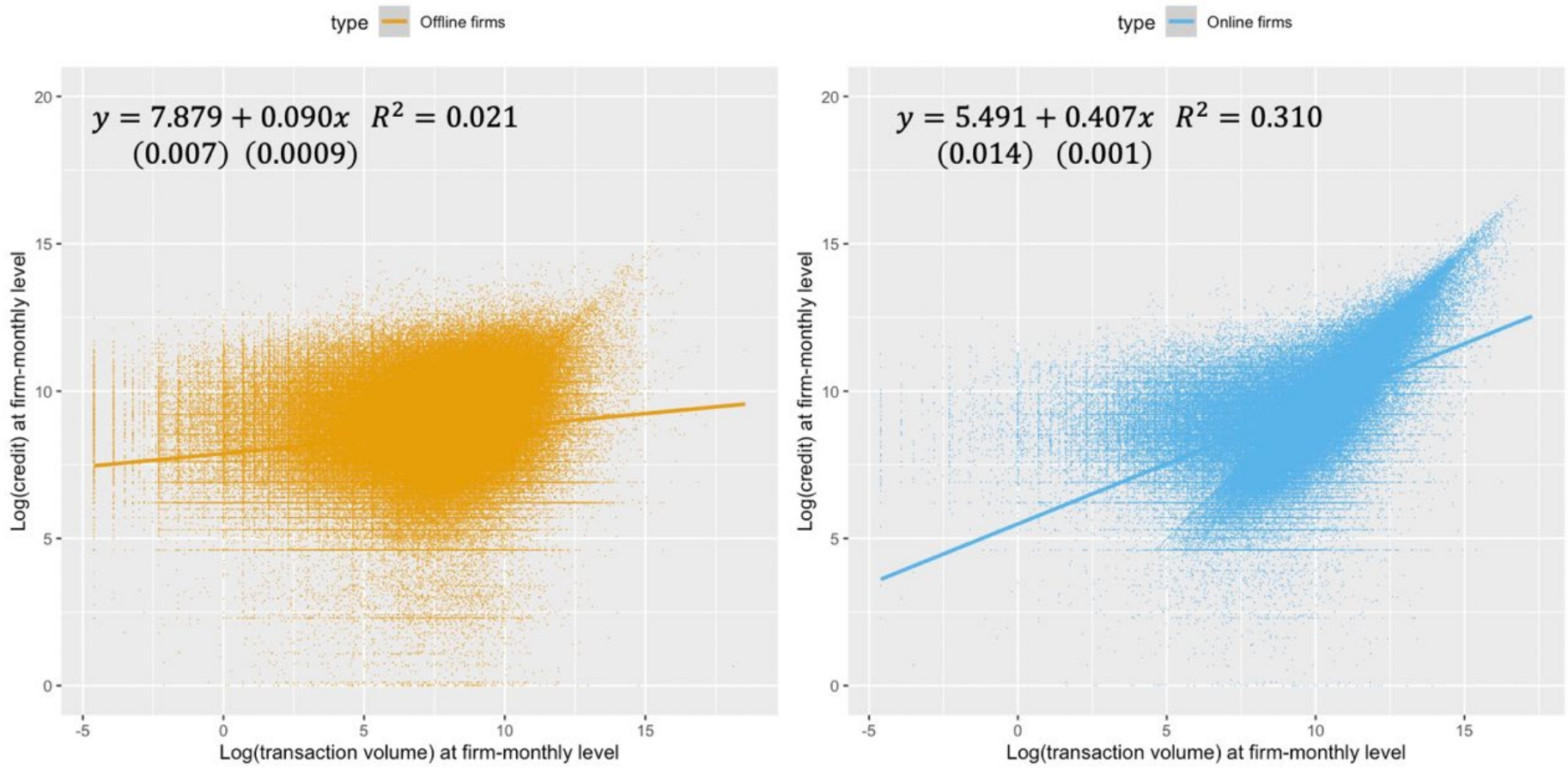
- Unique dataset on credit from MYBank (Ant Group) and Chinese banks.
- Random sample of more than 2 million Chinese firms in 2017:01-2019:04
- Most of the firms have access only to big tech credit, however 47,000 have access to secured bank credit and 120,000 to unsecured bank credit
- On-line firms and off-line firms
- Firm level information at the monthly frequency:
  - transaction volumes and network score
  - personal characteristics such as age, information on car and house property, and total amount of funds into Alipay wallet (proxy for income)
- House price at the city-month level
- GDP at the city-quarter level

Elasticity between credit and transaction volumes



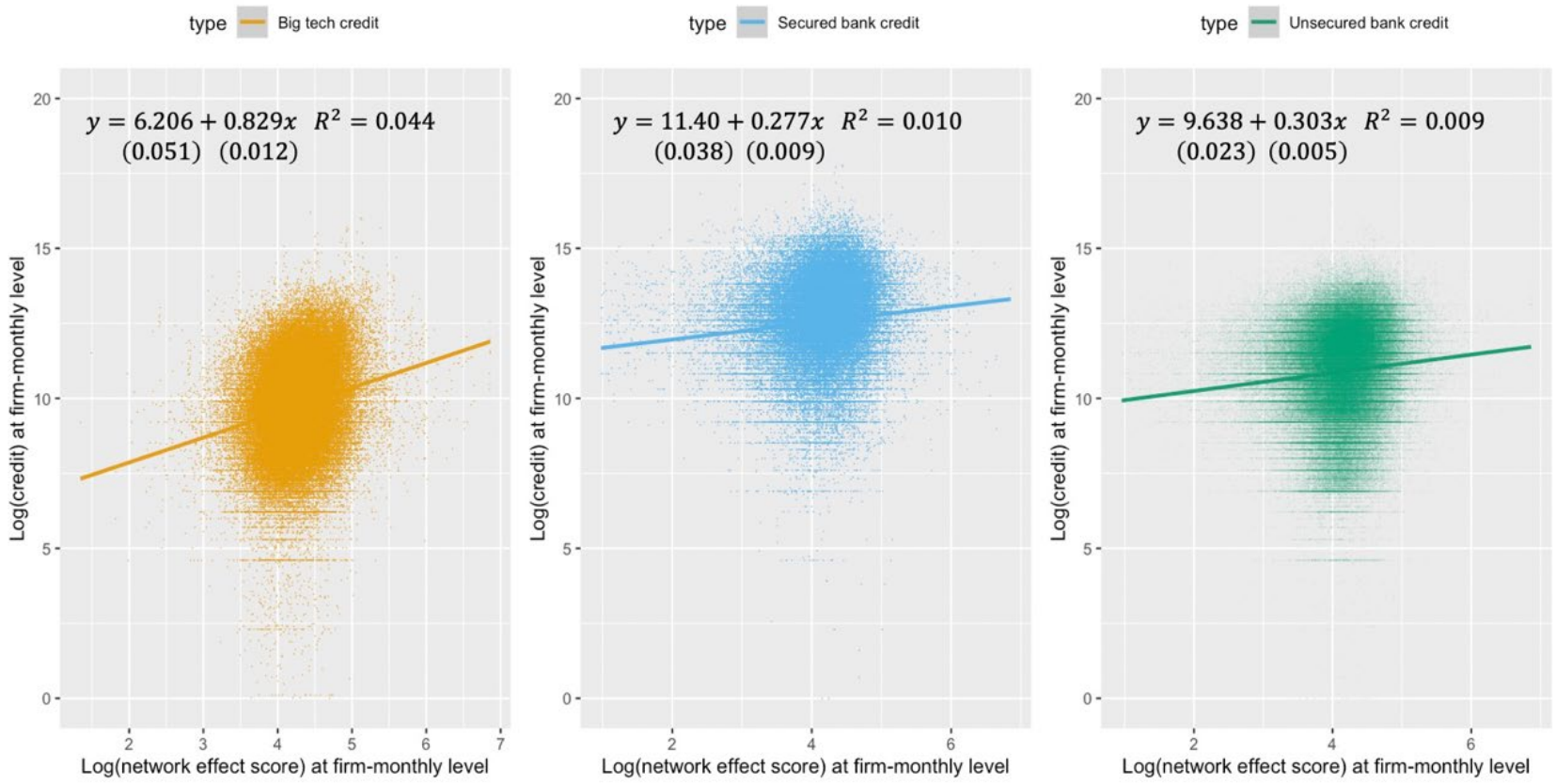
Note: Based on a 100,000 random sample of firms served by both MYbank and traditional banking. The dots in the figure indicates the log of credit use (y-axis) and the log of transaction volume (x-axis) at the firm-month level. The left-hand panel plots big tech credit, the middle panel plots secured credit and the right hand panel plots unsecured bank credit. Linear trend lines are reported in the graphs, together with 95% degree confidence bands. Standard errors in brackets.

Elasticity between big tech credit and transaction volume: offline vs online firms



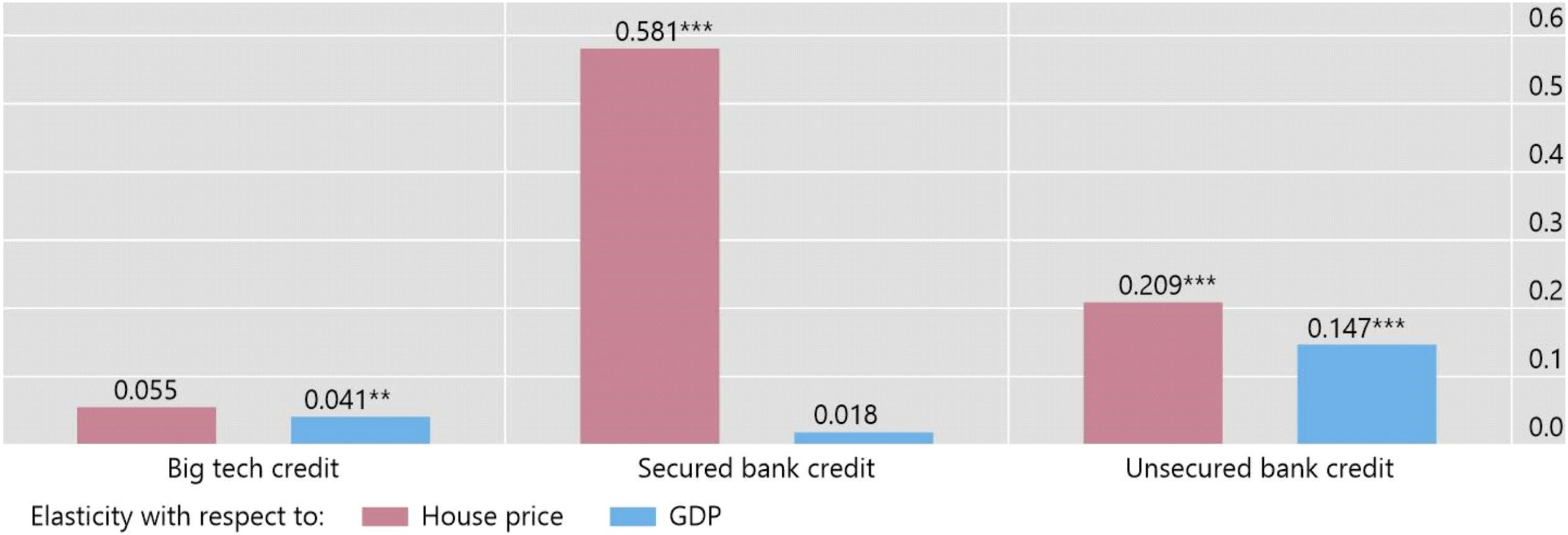
Note: Based on a 100,000 random sample of firms that received credit by MYbank. The dots in the figure indicates the log of credit use (y-axis) and the log of transaction volume (x-axis) at the firm-month level. The left-hand panel plots credit to offline firms and the right hand panel plots credit to online firms. Linear trend lines are reported in both graphs, together with 95% degree confidence bands. Standard errors in brackets.

Correlation between credit and the network score



Note: Based on a 100,000 random sample of firms served by both MYbank and traditional banks. The dots in the figure indicates the log of credit use (y-axis) and network score (x-axis) at the firm-month level. The left-hand panel plots big tech credit, the middle panel plots secured credit and the right hand panel plots unsecured bank credit. Linear trend lines are reported in the graphs, together with 95% degree confidence bands. Standard errors in brackets.

Elasticity of credit with respect to house prices and GDP



The figure reports the coefficient of three different regressions (one for each credit types) in which the log of credit is regressed with respect to the log of house prices at the city level, the log of GDP at the city level and a complete set of time dummies. Significance level: ** p<0.05; *** p<0.01.

Conclusions and open policy questions

Main takeaways and open policy questions

- Big tech credit does not correlate with local business conditions and house prices, but reacts strongly to firm characteristics.

- An increased use of big tech credit could weaken the financial accelerator mechanism. Credit becomes less pro-cyclical.

- Big tech credit to online firms, fully integrated in the e-commerce platform, is more strongly correlated with transaction volumes and network scores than it is in the case of offline firms. Big tech credit to offline firms shows some sign of correlation with local demand conditions.

- Open policy questions:
  - Risk of BT market dominance
  - Misuse of data and digital monopolies