Fintech Credit and Firm Volatility

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Importance of SMEs and Financing Gap

- SMEs and consumers are crucial forces for economic development but are under-financed

SME contribution in Mainland China
(State Council of China, 2018)

- **50%** taxes
- **60%** GDP
- **70%** innovation
- **80%** employment
- **90%** of enterprise population

SMEs in Hong Kong
(Trade and Industry Department of Hong Kong, 2019)

- **340,000** SMEs
- **98%** of business units
- **46%** employment

Consumption
(World Bank, 2019)

- **60%** of global GDP
- **75%** of HK GDP

- Huge financing gap for SMEs and consumers
  - **40%** of SMEs in developing countries are financially constrained.
  - In developing countries

    2 billion — 2 billion people without bank account

    10% — Only 10% have credit card

    21% — Among those with financing needs, only 21% get loans from formal FIs

SME Finance Gap, US$ trillions

Source: IFC (2017)

Potential Solution: FinTech

- SMEs and consumers often lack "hard information".
  - "Hard information" include financial statement, collaterals, past credit history, etc.;
  - "Hard information" is used by the traditional banking sector for credit allocation.

- The collection, processing, and analysis of "soft information" is very difficult.

- How to convert "soft information" into "hard information" and change the "relationship lending" into "transactional lending" is a real challenge.
  - "Soft information" consists of various hard-to-quantify behavioral traits and features.
  - Potential solution: Portray customer risk profile using FinTech
    - High frequency, high dimensions, high granularity and high coverage digital footprints.
    - Behavioural science/economics + Machine Learning Algorithms
    - Real time measures of industrial/macro cycles using remote sensing data and mobile data.
    - Empirical/Experimental design (e.g. RCT) to conduct FinTech program evaluation.

First-Order Questions

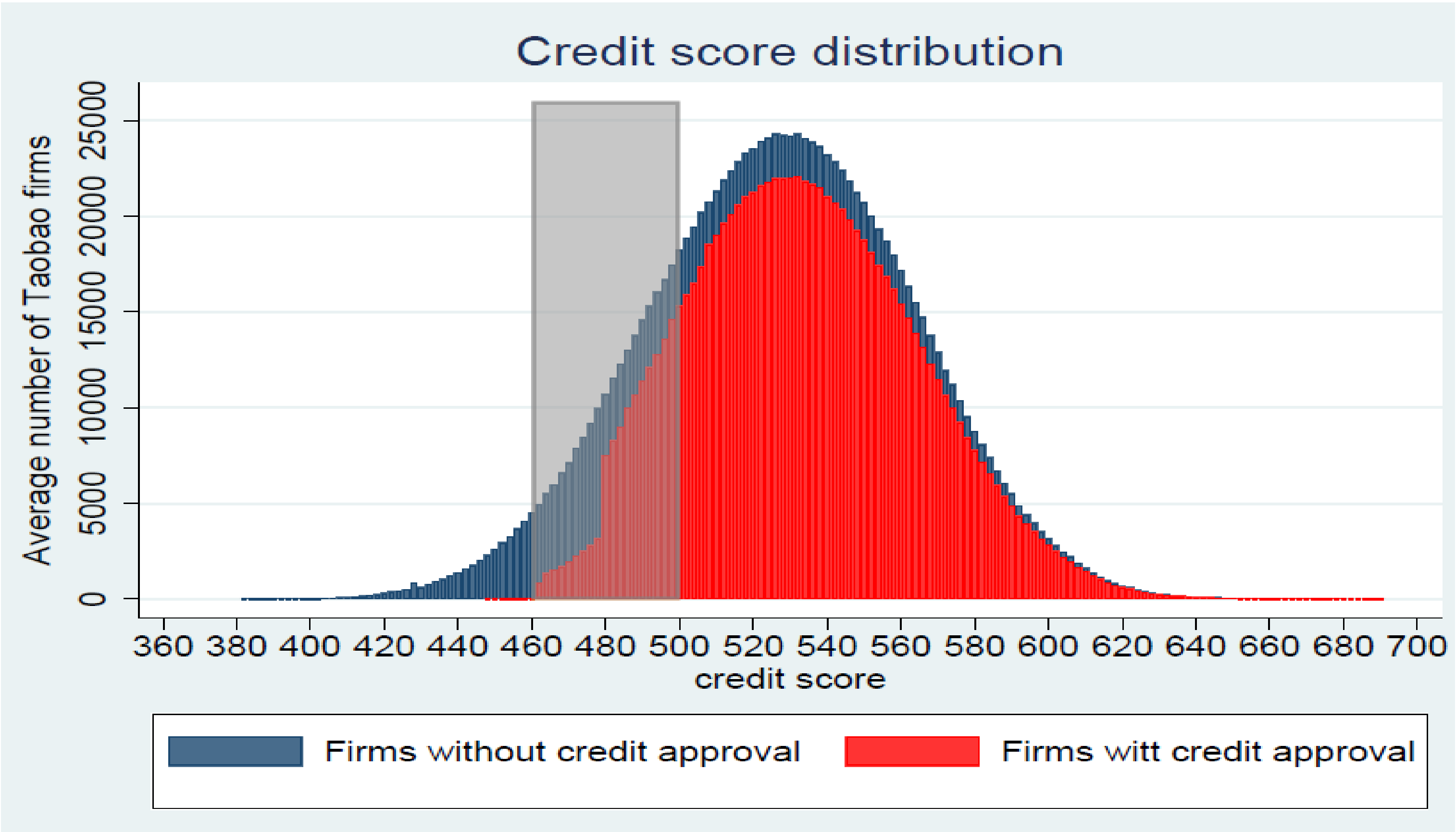
- How can we understand and evaluate FinTech as one of the most important financial innovations in the post-crisis era?
  - What are the implications on traditional banking sector and credit market?
  - Any real effects on firms?
    - Any effect on firm volatility?
    - Any effect on firm survivorship and resilience?

- We aim to answer these questions in the context of China given its leading role in FinTech.

Finance and Firm Volatility: Evidence from Small Business Lending in China

- Real Financial Inclusion Effects of FinTech Credit Lending
- Joint with Tao Chen, Yi Huang and Zixia Sheng
- Forthcoming, Management Science

Automated Credit Approval Process



- Distribution of credit scores for more than 2 million Taobao firms.
- The **red** bars mark the 79% of Taoboa firms with credit approval and the (upper) **blue** bars represent the 21% without credit approval.
- The **grey** shaded region marks the sampling interval for the **fuzzy random discontinuity design (RDD)** with the discontinuity at the credit score of 480.

Graphical analysis of the RDD results

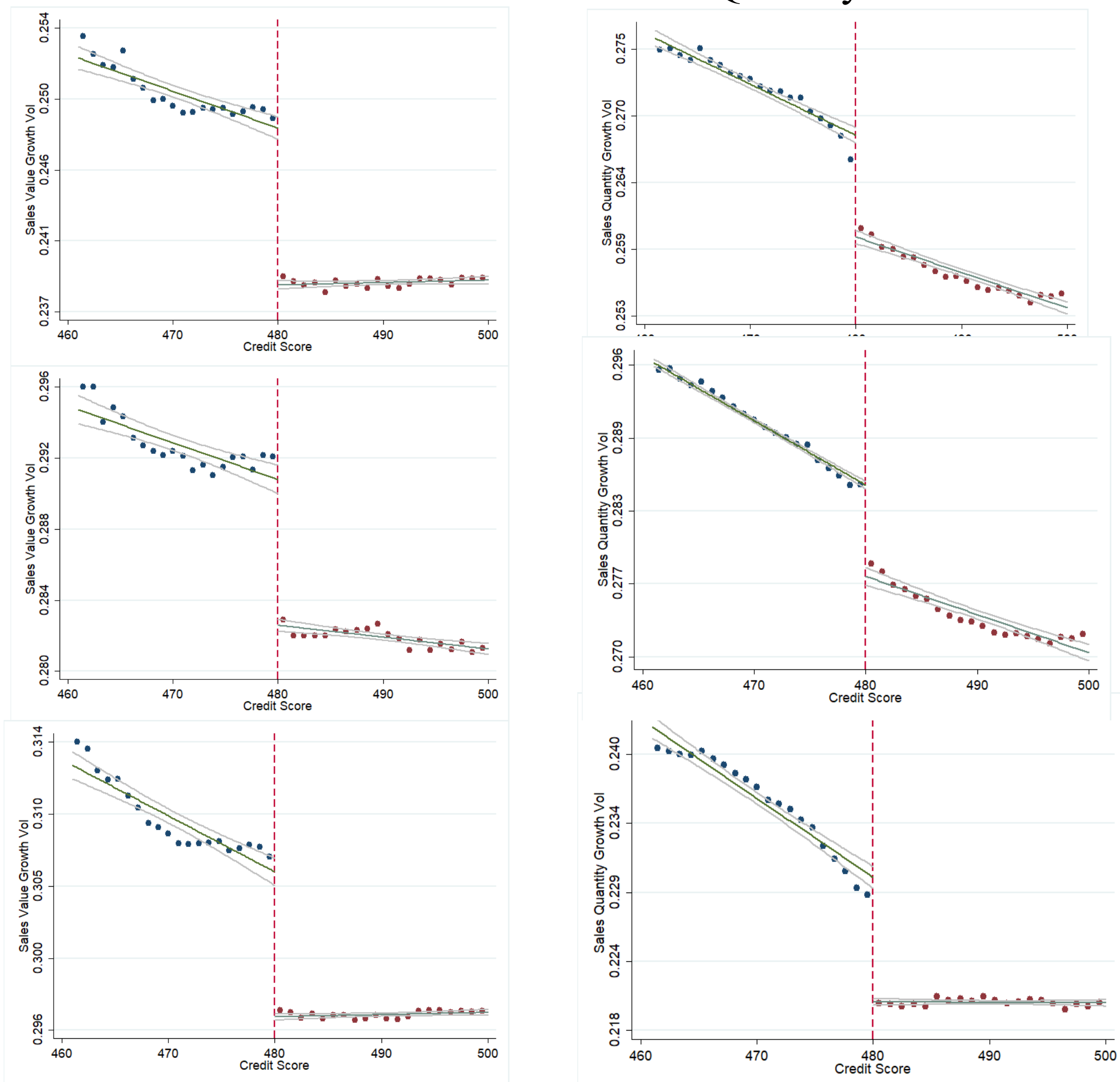
Sales Value Growth Vol

Sales Quantity Growth Vol

T+1

T+2

T+3



Conclusions

- Using a novel dataset of daily sales and an internal credit score threshold that governs the allocation of credit, we apply RDD to explore the causal effect of credit access on firm volatility.
- FinTech credit significantly **reduces firm volatility.**
- Firms with FinTech credit **are less likely to go bankrupt to exit the business**.
- *Channel/Mechanism Tests:*
  - Invest more in advertising
  - Invest more in diversification
    - Product diversification
    - Sector diversification
  - Particularly during business downturns
- Overall, our findings contribute to a better understanding of the role of FinTech credit in MSMEs.