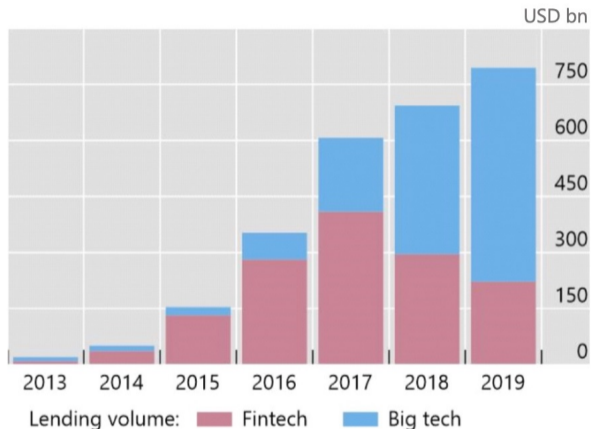# Discussion of
"The Big Tech Lending Model"
by Lei Liu, Guangli Lu, and Wei Xiong

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The Wharton School, University of Pennsylvania

Capital Market Development: China and Asia

Webinar Series

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Background

The rise of "Big Tech" lending

Source: Cornelli et al. (2020)

What is the "Big" part in the background

- Existing tech-enabled eco-systems matching lots of merchants and consumers
  - Examples: Alibaba, Amazon, Apple, Paypal, etc.
  - A priori, unclear why they can ever become banks
- Big Tech firms have been increasingly the lending space, question is why and how
- Two common narratives about the advantages of Big Tech lending
  - The process of super information on Big Tech platforms
  - The ability to directly seize money from platform activities
- Little direct evidence in the literature due to the lack of data

This paper

A thought-provoking paper

- A comprehensive paper about the nature of Big Tech borrowers and loans
- Key interpretations of findings
    1. Compared to traditional bank lending, Big Tech lending helps achieve financial inclusion without suffering excessive risk-taking (robust to aggregate shocks)
    2. Convenience plus higher interest rates help Big Tech lender screen borrowers with short-term liquidity needs, resulting in advantageous selection into Big Tech lending
- Contribution in several important dimensions
    1. Unique administrative data: same bank, same borrower, different loan products
    2. New and surprising facts about the risk of Big Tech loans
    3. Interesting exploration of underlying mechanisms connecting to several classic economics literatures
- Potential to set standards for a new literature

Comments focused on fleshing out the "Big" economics

- Authors very transparent that "it is impossible to attribute [Big Tech lending's] success to any single mechanism"

- I view this as strength rather than weakness of the paper

- And paper has already done a great job identifying the mechanisms

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- Instead of asking for tighter "identification" or lots of robustness checks, I will focus on the interpretations and provide suggestions accordingly

- Goal: bringing the "Big" part economics even more front and center
  - Recall: we are talking about existing tech-enabled eco-systems

#1: How risky are Big Tech loans

... depends on how we see them

- Authors very transparent that Big Tech loans are safer conditional on observable borrower and loan characteristics and macroeconomic, regional, and industry conditions, and notably, first payback record for the same loan product

- At the same time, Big Tech loans are unconditionally riskier (Table 4)

	Panel A: Summary Statistics of Payments Overdue					
	Number of Loans			Ever Overdue >= 30days		
	w/o payback record	w payback record	Total	w/o payback record	w payback record	Total
Big Tech	215,135	239,272	454,407	4.2%	1.2%	2.6%
Online	4,048	64,769	68,817	1.1%	1.1%	1.1%
Regular	6,706	12,629	19,335	1.5%	1.7%	1.6%

... depends on how we see them

- ▶ Authors very transparent that Big Tech loans are safer conditional on observable borrower and loan characteristics and macroeconomic, regional, and industry conditions, and notably, first payback record for the same loan product

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- ▶ The risk may be largely compensated given Big Tech's higher interest rates
  - ▶ I.e., Big Tech loans may have a higher Sharpe ratio; no private inefficient risk-taking

More interesting question is why and how Big Tech lends to the "unbanked"

- ▶ Big Tech could have rejected all the unbanked and gotten lower unconditional risk
- ▶ Rather, they go after the "unbanked." Why and how?

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- ▶ A selection view: I'm curious to know more about these "unbanked"
  - ▶ Try sub-sample of the unbanked and repeat the main analysis whenever possible?
  - ▶ If data permits, try if they have stable payment flows even without a credit history?
- ▶ A treatment view: what does Big Tech do for the unbanked?
  - ▶ E.g., when firms successfully repay the first loans, are they more likely to borrow repeatedly and repay subsequent loans even faster?
- ▶ No excessive risk-taking from a social welfare point of view: higher unconditional defaults may be compensated by the social benefits to battle the "credit trap"

#2: Advantageous selection into Big Tech lending

Sources of advantageous selection

- ▶ Authors creatively use the Chiappori and Salanie (2000) positive correlation test and detect advantageous selection into Big Tech lending
  - ▶ Those who buy more insurance end up spending more on healthcare
  - ▶ Those who take larger Big Tech loans end up defaulting less (Table 6)

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- The insurance literature does study the sources of advantageous selection
  - de Meza and Webb (2001, RAND) predict that hidden risk aversion may lead to advantageous selection into some health insurance products
  - Fang, Keane, and Silverman (2008, JPE) famously detect advantageous selection in Medigap, ascribing it to income, education, financial planning horizons, etc.

- This is likely the first paper about advantageous selection in credit markets; would encourage authors to highlight the contribution and explore the sources as well

- Link the sources to the "Big" part

Selection or treatment

- The Chiappori and Salanie (2000) test is essentially a joint test
  - It also detects moral hazard: who buy more insurance less likely to quit smoking, etc.
  - Einav, Finkelstein and Mahoney (2021, Handbook of IO Chapter 14): impossibility of separating adverse selection from moral hazard using observational data
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- But again, I view this as strength rather than weakness of the paper
- Advantageous selection plus advantageous treatment of Big Tech loans?
  - Big Tech loans allow firms to manage their business better, leading to lower defaults?
  - E.g., do Big Tech loans lead to faster inventory turnovers and payment flows?
  - I would keep both interpretations open and do what's feasible to detect treatment

#3: Repayment speed as a proxy of short-term liquidity demand

Repayment speed: feature or outcome

- Big Tech borrowers tend to repay faster (Table 7)
- Authors interpret fast repayment speed as capturing short-term liquidity demand

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- Repayment speed as both a feature and an outcome?
  - Unlike other loan characteristics, repayment speed is endogenous to loan take-up
  - Big Tech loans allow firms to manage their business better, leading to faster repayments?
  - E.g., do Big Tech loans lead to faster inventory and payment inflows?
  - I would still vote for keeping both interpretations open and do what's feasible
- Towards a potentially more cohesive story of better screening and monitoring

#4: What's unique about Big Tech lending:
"Big" convenience as a new form of collateral/relationship

"Big" convenience in an eco-system as a new form of collateral/relationship

- Authors convincingly use overlapped borrowers and a "revealed-preference" approach showing that firms are willing to take more expensive Big Tech loans in exchange for the convenience (Tables 8 and 9)

- Very plausible; would encourage the authors to do more here

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- More direct proxies for convenience if data permits?
  - E.g., Loan processing time?
  - E.g., different reliance on online selling by different industries?
  - Or event study using industry by holiday cuts (e.g., online vs. offline goods, Valentines' vs. Double Eleven)?

- A possible re-write to put the "Big" part front and center and potentially tighten all the results together, leveraging the convenience aspect

Paper focuses on uncollateralized loans (Table 3)

- Authors currently being modest about this finding but could highlight it as a puzzle to the traditional banking literature
  - Well known that collateral helps with screening and monitoring
  - Not against the current pitch: uncollateralized loans typically riskier

Panel A: Overall Statistics

	Number of Loans	Interest Rate	Credit Limit (RMB)	Loan Size (RMB)	Maturity (Months)	Repay Once
Collateralized						
Big Tech	12,099	9.0%	840,509	135,741	11.2	63%
Online	37,917	5.1%	1,186,890	296,619	13.4	93%
Regular	152,991	5.5%	1,277,106	352,571	14.9	90%
Uncollateralized						
Big Tech	843,678	14.6%	71,963	8,367	10.0	15%
Online	113,233	8.6%	180,858	99,487	9.9	90%
Regular	34,933	8.5%	183,644	120,284	13.0	71%

"Big" convenience in an eco-system as a new form of collateral/relationship

1. Big Tech loans carry an eco-system-specific convenience (Tables 3, 8 and 9)

2. Big Tech lenders charge a price for that convenience (Tables 3 and 9)

3. Big Tech's convenience includes both current and future access to the eco-system; current convenience and the fear of losing future convenience may help screen in the right borrowers and improve their repayment abilities (Tables 4-7)

4. Convenience becomes an implicit form of collateral/relationship; puzzle resolved (Table 3)

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▶ A related literature highlights the importance of access to future contingent claims markets in motivating agents' default and debt repayment behaviors
  ▶ E.g., Kehoe and Levine (1993, ReStud); Kocherlakota (1996, ReStud); Alvarez and Jermann (2000, Econometrica), etc.

Analogy to trade credit

- Burkart and Ellingsen (2004, AER) provide an interesting theory benchmark

In-Kind Finance: A Theory of Trade Credit

By MIKE BURKART AND TORE ELLINGSEN*

It is typically less profitable for an opportunistic borrower to divert inputs than to divert cash. Therefore, suppliers may lend more liberally than banks. This simple argument is at the core of our contract theoretic model of trade credit in competitive markets. The model implies that trade credit and bank credit can be either complements or substitutes. Among other things, the model explains why trade credit has short maturity, why trade credit is more prevalent in less developed credit markets, and why accounts payable of large unrated firms are more countercyclical than those of small firms. (JEL G32)

- Big Tech lending of course much broader; important to explore how
- But the eco-system-specific "restrained lending advantages" may be common

Conclusion

- Comprehensive and important paper on the economics of Big Tech lending
- I expect many follow-up papers, both theoretically and empirically
  - Anyone who's interested in banking should read this paper
- I suggest a slight re-write of the paper to hopefully further highlight the uniqueness of Big Tech lending, but will leave this choice to the authors' creative license and look forward to reading the next version