FinTech Lending and Cashless Payments

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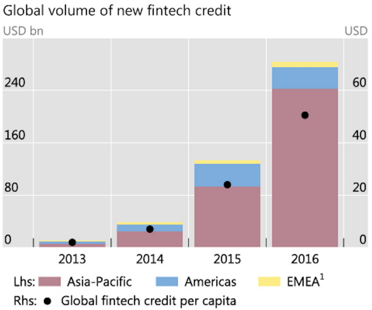
8th South Asia Economic Policy Network Conference
September 2021

Motivation

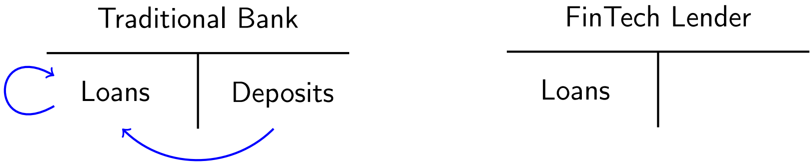
- **FinTech lenders**: relying on electronic technologies and/or **alternative data sources** to screen/extend loans **without taking deposits**

- FinTech Lenders have been **gaining rapid ground** in both retail and SME lending, in both developed and emerging economies



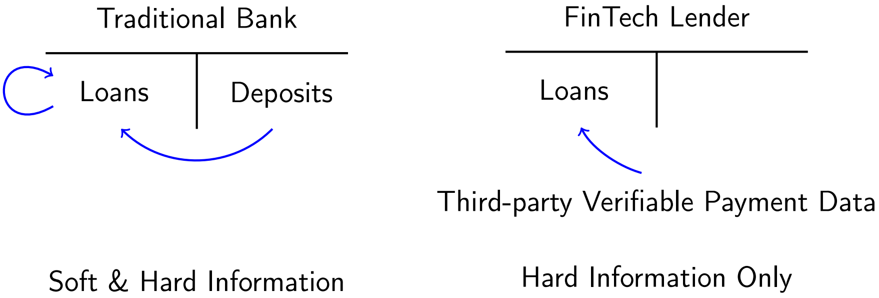
Source: Bank for International Settlements

Our story: Synergy between cashless payment and FinTech Lending

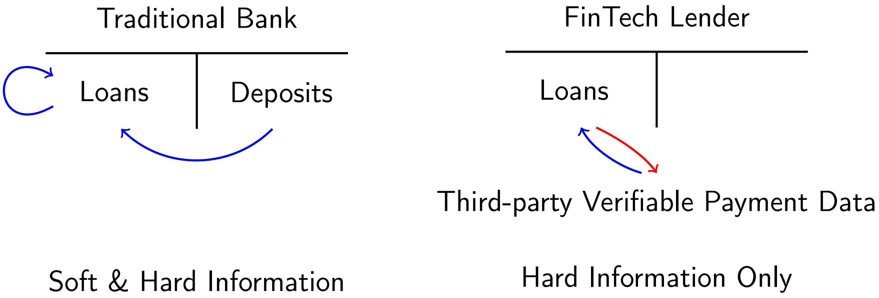


Soft & Hard Information

Our story: Synergy between cashless payment and FinTech Lending

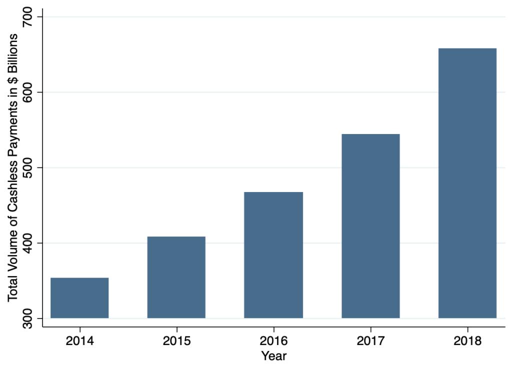


Our story: Synergy between cashless payment and FinTech Lending



Motivation

- In line with the post-crisis rise of cashless payments globally



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Contribution

- Theoretically uncover a **synergy** between FinTech lending and cashless payments
- Novel and **causal evidence** on how the use of outside information of varying verifiability affects lending outcomes
- **Identification** enabled by loan application data from a leading Indian FinTech lender targeting small businesses and an instrumental variable based on the 2016 Indian Demonetization

Model Predictions: Cashless Payments $\rightarrow$ FinTech Lending

- H1: With more verifiable cashless payment records or payment records of higher verifiability, a firm is **more likely to be granted a loan and enjoy a lower interest rate** in expectation
- H2: More verifiable cashless payment records, or payment records of higher verifiability, improve loan approvals and reduce interest rates more for **firms of better quality**, all else equal.
- H3: More cashless payment records lead to **less default** conditional on a given interest rate, all else equal

Model Predictions: FinTech Lending $\rightarrow$ Cashless Payments

- H4: **All firms**, including bad ones, will optimally **adopt** cashless payments (*untested*)
- *Intuition:*
  - Commitment of using cashless payments acts as commitment of disclosing noisy but unbiased signals of quality
  - Good firms will therefore decide to signal their quality
  - Remaining cash user of above average quality has incentive to deviate and adopt cashless payments to stand out from worse ones
  - Creates a cascade effect, where every firm eventually adopt cashless payments
  - In other words, non-adopters will be viewed as "lemons"

Data

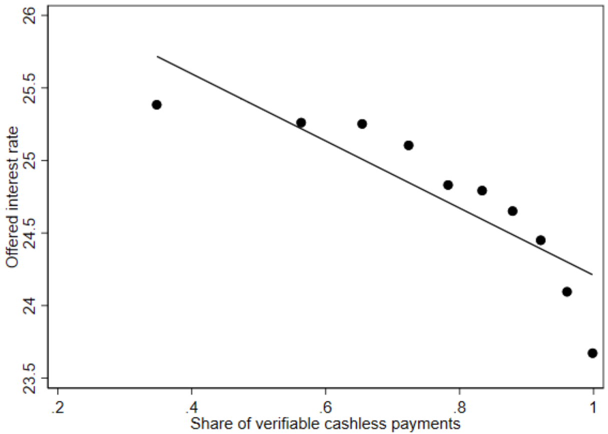
- Indifi: one of the top-3 Indian FinTech lenders focusing on small-business loans
- All loan **applications** from Sep 2015 to Sep 2019
- Loan level:
  - Loan amount and interest rate
  - Default status as of Sep 2019
- Application level:
  - Industry, location, business/owner age, etc.
  - **Credit score**, length, previous loans and credit events, etc., of the owner
  - Decision to offer a loan / interest rate offered
- Transaction level:
  - **Dissagregated bank statements** for the last six months prior to application

Classify payments records by payment types

- We use **text analysis** on the transaction label to classify payment types:
  - **Cash**: direct cash deposit or withdrawal, at a branch or an ATM
  - **Verifiable cashless**: identifiable with a specific cashless payment technology, including certified checks, Internet banking transfers, mobile app/banking transfers, and POS machine transfers
    - Information-intensive: recipients and amount identifiable at transaction level
    - Information-light: recipients unidentifiable and amount aggregated at daily level

H1: More cashless payments → better lending outcomes

Hypothesis 1. With more verifiable cashless payment records or payment records of higher verifiability, a firm is more likely to be granted a loan and enjoy a lower interest rate in expectation.



H1: More cashless payments → better lending outcomes

	Approved Loan (1/0)		Offered Interest Rate	
	(1)	(2)	(3)	(4)
Share of verifiable cashless payments	0.109***	0.087***	-1.718***	-1.556***
	(0.010)	(0.010)	(0.142)	(0.142)
Borrower controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Application month FE	Yes	Yes	Yes	Yes
Cibil score group FE	No	Yes	No	Yes
3-digit zipcode FE	No	Yes	No	Yes
Revenue deciles FE	No	Yes	No	Yes
Observations	53,042	52,696	17,606	17,548
R^2	0.259	0.310	0.446	0.489

- Effect is more pronounced for the **most verifiable type of cashless payments**
- Effect is more pronounced for borrowers **with previous negative credit events**

H1: More cashless payments → better lending outcomes

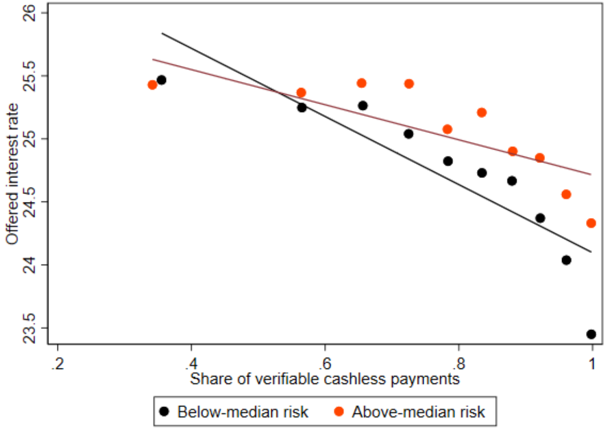
- Empirically observed share of cashless payments may be subject to unobserved variable bias
- Identification relying on **2016 Indian Demonetisation**
- We **instrument** the share of cashless payments with an indicator for banking at a **currency chest bank branch**, where Indian banknotes and coins are stored and distributed
  - Sample restriction: applications after the shock
  - Exclusion restriction: demonetisation largely unexpected
  - Identifying assumption: matching between firms and chest banks orthogonal to unobservable firm credit quality

H1: More cashless payments → better lending outcomes

	Share of Cashless Payments		Approved Loan (1/0)	
	(1)	(2)	(3)	(4)
Borrower banks at Chest Bank (1/0)	-0.028***			
	(0.004)			
Borrower banks at Chest Bank (1/0)× 2017		-0.023*		
		(0.012)		
Borrower banks at Chest Bank (1/0)× 2018		-0.030***		
		(0.006)		
Share of cashless payments			0.827**	0.806***
			(0.305)	(0.285)
Borrower controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Application month FE	Yes	Yes	Yes	Yes
Cibil score group FE	Yes	Yes	Yes	Yes
Revenue deciles FE	Yes	Yes	Yes	Yes
Observations	51,396	51,396	51,396	51,396
F-statistic	43.460	16.960		

H2: Effects stronger for firms with higher quality

Hypothesis 2. The effects of more verifiable cashless payment records or payment records of higher verifiability in improving loan approvals and reducing interest rates are stronger for firms with higher quality, all else equal.



H2: Effects stronger for firms with lower residual risk

	Approved Loan (1/0) (1)	Offered Interest Rate (2)
Share of verifiable cashless payments	0.095*** (0.013)	-2.111*** (0.222)
Share of verifiable cashless payments $\times$ Weekly revenue volatility	-0.152* (0.088)	12.983*** (3.165)
Weekly revenue volatility	-0.505*** (0.069)	-11.428*** (2.724)
Borrower controls	Yes	Yes
Industry FE	Yes	Yes
Application month FE	Yes	Yes
Cibil score group FE	Yes	Yes
3-digit zipcode FE	Yes	Yes
Revenue deciles FE	Yes	Yes
Observations	52,695	17,548
R^2	0.312	0.490

H3: More cashless payments $\rightarrow$ less default

Hypothesis 3. More cashless payment records or payment records of higher verifiability lead to less default conditional on a given interest rate, all else equal.

H3: More cashless payments → less default

	Default (1/0)	
	(1)	(2)
Share of verifiable cashless payments	-0.076***	-0.057***
	(0.013)	(0.015)
Borrower controls	Yes	Yes
Industry FE	Yes	Yes
Application month FE	Yes	Yes
Cibil score group FE	No	Yes
3-digit zipcode FE	No	Yes
Revenue deciles FE	No	Yes
Interest Rate FE	Yes	Yes
Observations	9,084	8,139
R^2	0.055	0.115

Alternative Source of Verifiable Data: Marketplace Records

	Approved Loan (1/0) (1)	Offered Interest Rate (2)	Default (1/0) (3)
Share of merchant payments	0.327***	0.033	-0.040***
	(0.012)	(0.152)	(0.011)
Share of cashless payments	0.097***	-1.585***	-0.059***
	(0.009)	(0.144)	(0.015)
Borrower controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Application month FE	Yes	Yes	Yes
Cibil score group FE	Yes	Yes	Yes
3-digit zipcode FE	Yes	Yes	Yes
Revenue deciles FE	Yes	Yes	Yes
Interest rate FE	No	No	Yes
Observations	52,696	17,548	8,114
R^2	0.307	0.472	0.116

Conclusion

- FinTech lending and cashless payments rise hand-in-hand, posing a challenge to the traditional banking model based on relationship lending

- Theory: uncovers the synergy between lending and cashless payments
- Empirics: identify the effects of cashless payments on lending outcomes

- Speaks to the potential of FinTech lending going forward
- Policy implications on data-sharing, open-baking, and financial inclusion