FinTech Disruption, Payment Data, and Bank Information

Discussion by Cecilia Parlatore

NYU Stern

NBER SI - Household Finance

July 20, 2019

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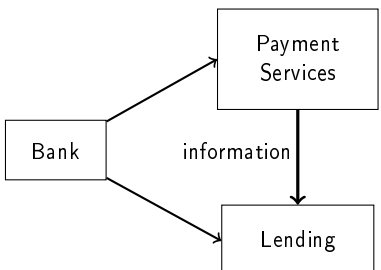

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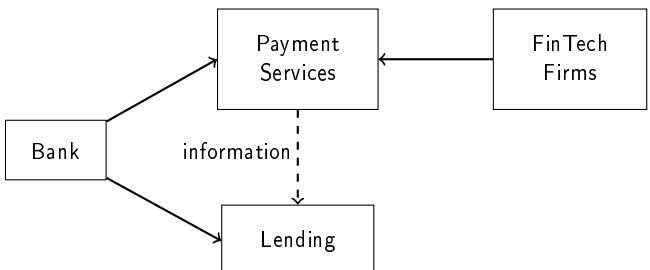

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  - FinTech firms disrupt information production by unbundling services
- **Main result:** FinTech competition can be bad for some consumers!
  - Bank's price for payment services can increase or decrease with competition
  - Consumers who remain bank customers are worse off when price increases

The model

- Two stages
- Strategic bank that offers payment *and* lending services
- FinTech firms that offer *only* payment services

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- Friction: Asymmetric information

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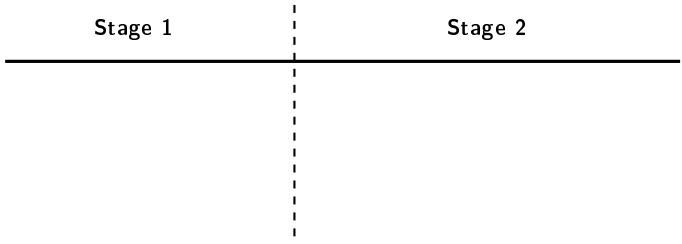
- Assumption: Banks prefer to be informed when lending

Timing



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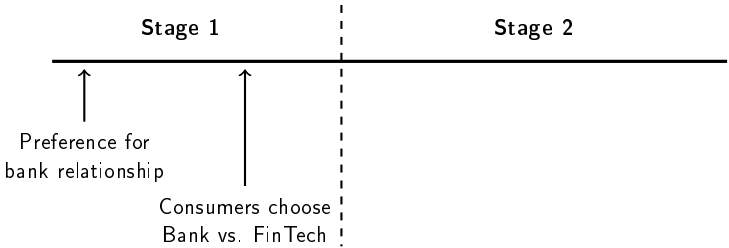
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Consumers choose
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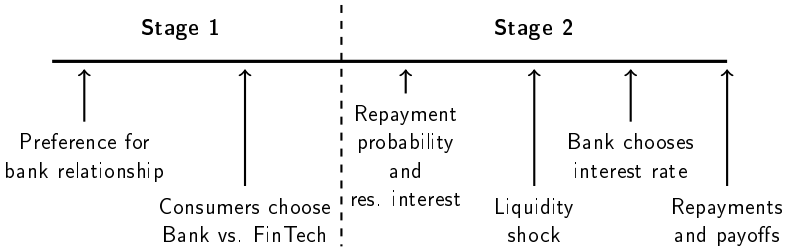
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Preference for bank relationship
Consumers choose Bank vs. FinTech
Repayment probability and res. interest
Liquidity shock
Bank chooses interest rate
Repayments and payoffs

Bank and consumer choices

- Consumers chooses the bank as a service provider if

$$\underbrace{b_i}_{\text{bank relation}} + \underbrace{q\left(\mathbb{E}\left[S_\ell\left(r_I^*\left(\theta\right),\theta\right)\right] - \mathbb{E}\left[S_\ell\left(r_U^*,\theta\right)\right]\right)}_{\text{Expected benefit of borrowing as a bank customer}} > p \Longleftrightarrow b_i > b^*\left(p\right)$$

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- Bank's choose
  - interest rates for loans: $r_I^*\left(\theta\right)$ and r_U^*
  - Bank's expected profits

$$\underbrace{\left(1-F\left(b^*\left(p\right)\right)\right)p}_{\text{payment services}} + \underbrace{q\left(1-F\left(b^*\left(p\right)\right)\right)\mathbb{E}\left[\pi_I^*\left(\theta\right)\right]}_{\text{loans to customers}} + \underbrace{qF\left(b^*\left(p\right)\right)\pi_U^*}_{\text{loans to FinTech customers}}$$

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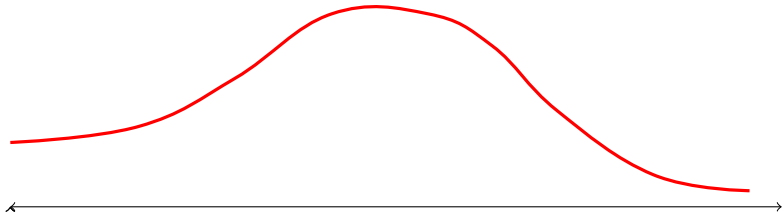
  - price for payment services p

$$\underbrace{\left(1 - F\left(b^*(p)\right)\right)}_{\uparrow \text{ profits on payment services from retained customers}} = \underbrace{f\left(b^*(p)\right)}_{\downarrow \text{ in customers}} \left(p + \underbrace{q\left(\mathbb{E}\left[\pi_I^*(\theta)\right] - \pi_U^*\right)}_{\text{Value of lending to customers}} \right)$$

Distribution of preferences for bank relationship



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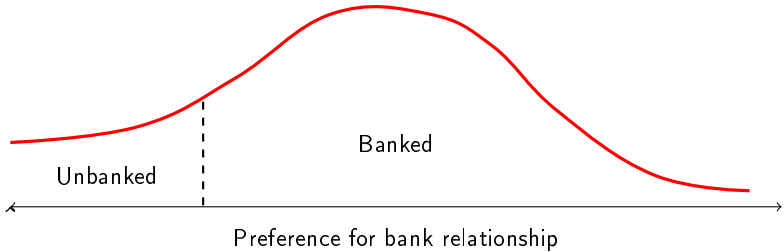

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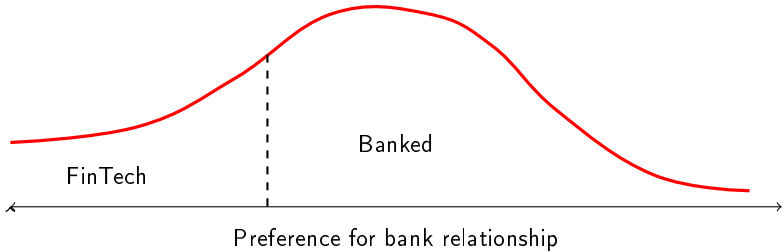

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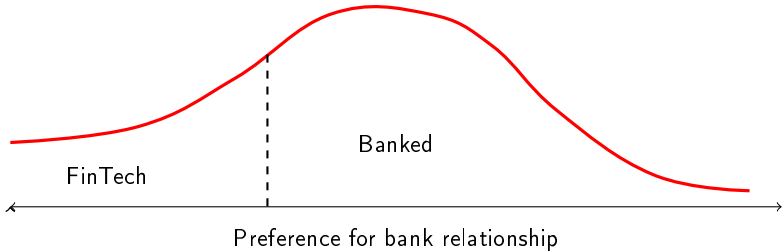

- Bank's price for payment services p^*

$$\frac{(1 - F(b^*(p^*)))}{f(b^*(p^*))} = p + q(\mathbb{E}[\pi_I^*(\theta)] - \pi_U^*)$$

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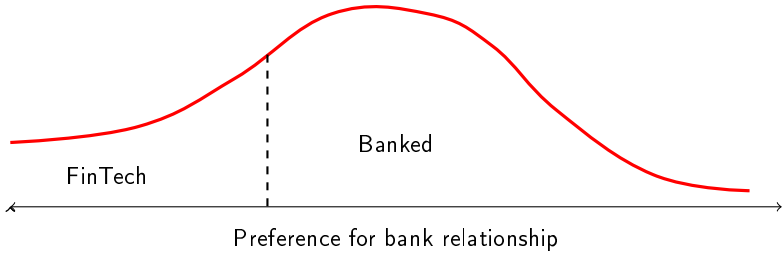

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- Hazard rate of preferences for banking relationship determine p^*
  - If price decreases, all consumers are better off with FinTech ($\nearrow$ Hazard rate)
  - If price increases, consumers retained by the bank are worse off ($\searrow$ Hazard rate)

Comments

1. Asymmetric information is at the center of the result
   - Unobservable preferences for banking relationship
     - do not allow for price discrimination
     - Banks can charge "captive" customers more if they don't care about market share

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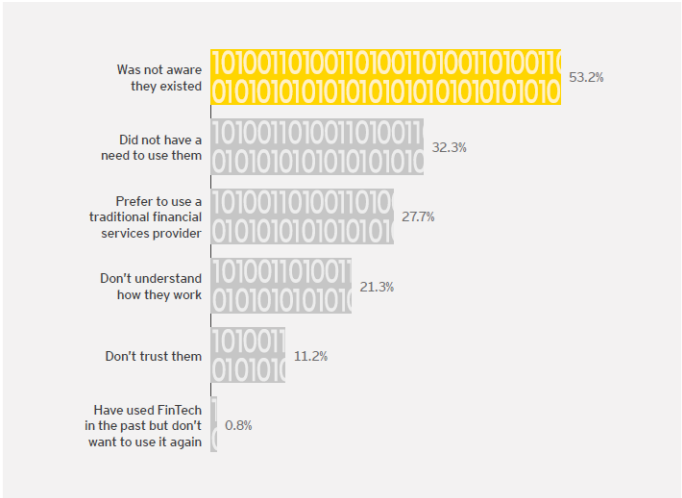
Why not use FinTech?



Base: 7,539 respondents who have not used any FinTech products
EY FinTech Adoption Index 2015

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   - They are important!
3. Alternative interpretation: heterogeneity in probability of needing a loan

Heterogeneous liquidity shocks

- Consumers choose the bank if $q_i > q^*(p)$, $q^*(p)$ linear in p

$$q_i\left(\mathbb{E}\left[S_\ell\left(r_I^*(\theta), \theta\right)\right] - \mathbb{E}\left[S_\ell\left(r_U^*, \theta\right)\right]\right) > p \Longleftrightarrow q_i > q^*(p)$$

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- Price of payment services

$$\frac{1 - F\left(q^*(p)\right)}{f\left(q^*(p)\right)} = \frac{p + \mathbb{E}\left[\pi_I^*(\theta)\right] - \pi_U^*}{\mathbb{E}\left[S_\ell\left(r_I^*(\theta), \theta\right)\right] - \mathbb{E}\left[S_\ell\left(r_U^*, \theta\right)\right]}$$

- Same intuition as before

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4. Other sources of sorting
   - Repayment probability, outside option for loans
   - Correlated shocks
     - Consumers who prefer banks are older. FinTech adopters are young and wealthy

Summary

- Nice model to think about FinTech disruption in banking
  - Spillovers to information production
  - Highlights role of asymmetric information and information production
- Very helpful to think about differences in adoption across countries
- FinTech regulation: not one size fits all!