Wide or Narrow?
Competition and Scope in Financial Intermediation

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     - Do multi-product firms have incentives that could affect consumer choices?
- Why do we care?

  → Regulating/taxing products within a multi-product firm can have spillovers and unintended consequences in other sectors and markets

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- Scope is at the core of **what banks do**.
  - Traditional banks take short-term deposits and issue long-term loans
    $\rightarrow$ This maturity transformation function requires banks to have a wide scope.
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  - Modern banks have increased the number of products and services they offer (Cetorelli, Jacobides and Stern, 2017).
- Scope is also relevant for **competition and modern banking architecture**
  - In many markets, banks compete with non-bank financial intermediaries (e.g., fintech, hedge funds).
  - Non-bank competitors are very specialized, often offering only one product.
  - (Unexplored) Differences in scope between banks and their competitors.

Data and Setting

Data:

- Credit registry data for U.S. firms from major commercial credit bureau
  → New, very detailed data at the firm-product level.
  → Data on *both* banks and non-banks/fintechs + Excellent coverage for small businesses

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- Firms (in need of credit) can borrow via two products: credit cards and term loans.
- These are imperfect substitutes (DeMarzo and Sannikov, 2006; DeMarzo and Fishman 2007):
  - Term Loans: usually better for investment.
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Goal:

- Quantify cost synergies with other products (e.g., deposits, mortgages) + market power + multi-product incentives

Model of Demand and Supply of Firm Credit

DEMAND: Firms have investment opportunities determining their optimal borrowing amounts.
Firms demand credit from lenders and choose products.

SUPPLY: Banks are multi-product, offering credit cards and term loans to firms.
Non-banks are single-product, offering credit cards or loans, but not both.

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⇒ **Multi-product Incentives:** Banks can steer firms and distort quantity and product choices.

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Model Estimates:

1. Multi-product banks have market power and (because of that) can distort quantity and product choices of firms.
2. Cost synergies across assets are quantitatively important and larger than synergies between assets and liabilities (i.e., deposits).

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$\Rightarrow$ Steering reduces firm welfare, but less so than the benefits from cost synergies.

Counterfactual 2: Role of non-bank competitors and regulation

$\Rightarrow$ Non-banks prevent banks from increasing prices and steering even more.

$\Rightarrow$ Regulating banks as non-banks still leads banks to capture most of the benefits from lower costs.

Related Literature (Not Exhaustive)

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- Economies of scope in banking → Focus on cost complementarities between loans and deposits (Diamond and Dybvig 1983; Kashyap, Rajan and Stein 2000; Gatev, Schuermann and Strahan 2009; Keister and Sanches 2019; Piazzesi and Schneider 2020; Norden and Weber 2010; Egan, Lewellen and Sunderam 2017; Aguirregabiria, Clark and Wang 2020; Mayordomo, Pavanini and Tarantino 2022; Albertazzi, Burlon, Jankauskas and Pavanini 2022...)

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- Merger literature on cost synergies and market power → Focus on economies of scale (Nocke and Schutz, 2018; Bernard, Redding, and Schott, 2010; Mayer, Melitz and Ottaviano, 2014; Mazzeo, Seim, and Varela 2018; Fan 2013; Fan and Yang, 2020, 2022)

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- Pricing and taxation of multi-product firms (Edgeworth, 1925; Amstrong and Vickers, 2018; Agrawal and Hoyt, 2019; D'Annunzio and Russo, 2022; Dubois, Griffith and O'Conell, 2020, 2022)

Credit Registry Data

Data I

US Firm Credit Registry (Firm-Product Panel)

- **Time period:** March 2009 - September 2019
- **Coverage:** Almost 12 million U.S. firms with over 112 million credit products.
  Lenders include banks, non-banks and credit unions.
- **Products:** Term loans and revolving credit (i.e., credit cards).
- **Variables:** Number of accounts, type, balances, limits, delinquencies, credit score, employment, sales and establishments.

Data II

Price Data: RateWatch

- Interest rates on corporate credit cards and term loans.
- Rates for each product, lender, county and year.

Mortgage Data: HMDA

- Mortgage originations for each lender, county and year.

Deposit and Branch Data: Call Reports

- Deposits for banks, county and year.
- Branch locations for banks, county and year.

Summary Stats for Credit Registry

	Actively Borrowing	Credit Card	Term Loan	Top 4 Customer	Other Bank Customer	Fintech/Non-Bank Customer	Single-Lender Customer
# Firms	11,917,634	10,725,871	2,145,174	5,362,935	5,601,153	5,005,406	8,714,480

		Limits ($1K)			Balances ($1K)			Delinquent (0/1)			Rates		
Product	N	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
CARD	99,028,805	18	9	59	4	1	40	0.05	0	0.22	11.2%	11.6	3.09
LOAN	13,674,444	138	41	237	101	25	162	0.02	0	0.14	5.1%	6.0	3.05

Facts and Suggestive Evidence

(Focus on Multi-product Incentives)

Do (Multi-Product) Banks Distort Firms' Credit Choices?

Industry Reports

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"Often times, the biggest banks refer small businesses below certain revenue thresholds [$50K] or seeking low dollar loans to their small business credit card products, which earn higher yields."

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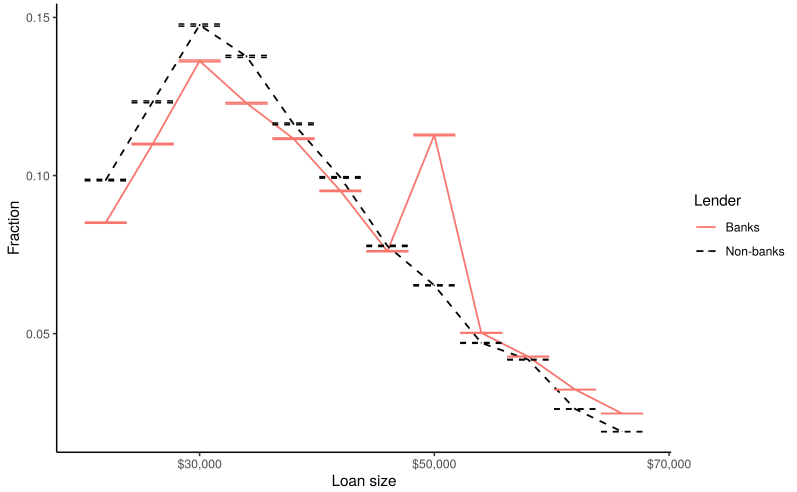
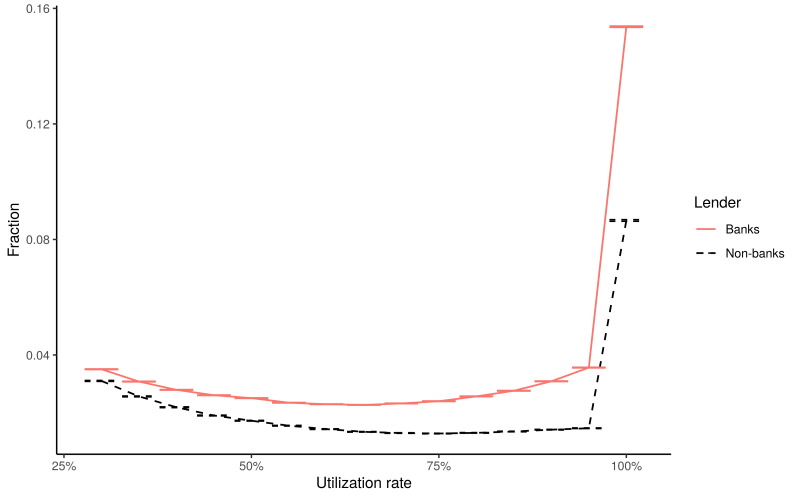
Banks' Quantity Incentives

Bunching at $50K Loan Amount

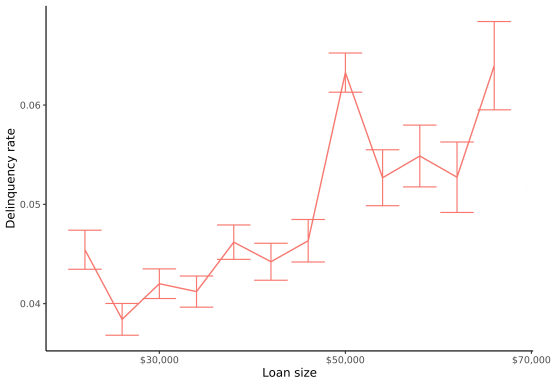


Banks' Product Incentives

Excess Mass in 100% Utilization



Real Effects: Higher Defaults



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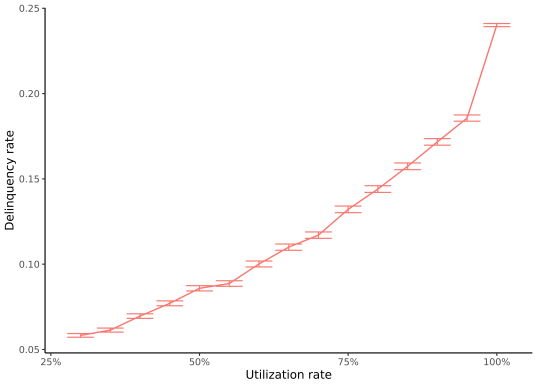

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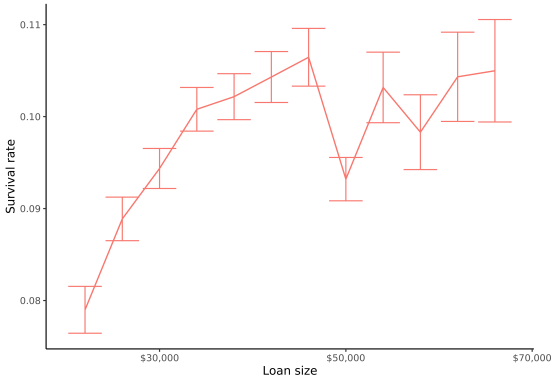
Real Effects: Lower Survival Rates



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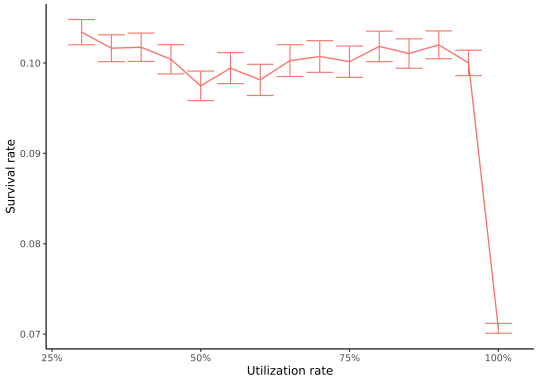

(Product Incentives)

Taking Stock

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  - Not fully explained by demand effects or selection or lower prices.
- Need a model to understand how banks' multi-product incentives interact with economies of scope and market power and their equilibrium effects and welfare implications.

Model

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2. Lenders set interest rates for each of their products: term loans and credit cards.
   - Banks (multi-product) offer credit cards and term loans to firms.
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3. Each firm chooses how much to borrow and a product from lenders.

Firm Credit Demand

- Firms have heterogeneous preferences (e.g., depending on their optimal loan size $\hat{q}_i$)
- Firm i chooses the product j from lender l in market m that maximizes its indirect utility:

$$U_{ijlm} = -\alpha\, r_{jlm} + X'_{jlm}\,\beta + \xi_{jlm} + (1-\sigma)\epsilon_{ijlm}$$

- **Observables:** r_{jlm} interest rates; X_{jlm} observable product characteristics, $\overline{q}_{jlm}$ product minimum quantities.
- **Unobservables:** ξ_{lmj} unobservable characteristics and common shocks; $(1-\sigma)\epsilon_{ilmj}$ T1EV shock, where σ correlation across products within nest (lender); $\hat{q}_i$ firm optimal quantities.

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Lender Credit Supply

- Both banks and non-banks choose rates, r_{jlm}, to maximize expected profits.
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- **Lender markup/profit:**

$$\pi_{ijlm} = \underbrace{(r_{jlm} - mc_{jlm})}_{\text{Markup}} \underbrace{q_{ijlm}(r_{jlm}, \gamma_{jlm})}_{\text{Quantity}}$$

where lender's heterogeneous marginal costs are defined as a function of other products:

$$mc_{jlm} = \underbrace{Product_j \times (\overrightarrow{\eta}_1 Deposits_{jlm} + \overrightarrow{\eta}_2 Mortgages_{jlm} + \overrightarrow{\eta}_3 Other\ Products_{jlm})}_{\text{Synergies}} + \nu^S_{ml} + \nu^S_j + \omega_{jlm}$$

Estimation

Estimation - Key Parameters

Parameters

- α: price sensitivity
- λ: penalty on quantity distortion
- ψ: suboptimality of cards for large investments
- σ: nest parameter
- $\hat{q}_i \sim \log \mathcal{N}(\mu_{\hat{q}}, \sigma^2_{\hat{q}})$: firms' optimal borrowing amounts
- γ_{lmt}: steering away from small term loans
- mc_{jmt}: marginal costs
- η_1, η_2, η_3: cost synergies

Estimation

- Nested Logit + Outer Loop + Additional Micro Moments + Lenders' FOCs
- IVs for endogeneous (1) price, (2) within-group share, (3) share of deposits, and (4) share of mortgages

Demand Estimates

Estimated parameters

Parameter	Value	Interpretation
α	0.31	Elasticity $= 2.62$
σ	0.27	Within-lender elasticity $= 4.07$
λ	0.16	\$1k too-large $\approx$ 50 bps rate increase
$\bar{\gamma}$	0.23	Average steering $\approx$ 74 bps rate increase
ψ	1.47	1% larger size $\approx$ 474 bps higher rate
$\mu^{\hat{q}}$	9.42	\$31K average loan size
$\sigma^{\hat{q}}$	1.36	Standard deviation of \$71K

Supply Estimates

Estimated Mark-Ups

	mean	sd	p10	p50	p90
Top 4 Banks					
Credit Cards	3.3	0.41	2.9	3.3	3.9
Large Term Loans	4.7	0.91	3.6	4.5	6
Small Term Loans	0.89	0.54	0.29	0.78	1.7
Other Banks					
Credit Cards	2.9	0.2	2.7	2.8	3.1
Large Term Loans	4.3	0.62	3.6	4.3	5.2
Small Term Loans	0.31	0.25	0.076	0.26	0.56
Non-Banks					
Credit Cards	3.9	0.35	3.6	3.8	4.3
Term Loans	3.6	0.064	3.5	3.6	3.7

- We find that a 10% higher mortgage share in a market reduces marginal costs by 22% on average, while a 10% increase in deposit share reduces marginal costs by only 3% on average.

Counterfactuals

Counterfactuals

	No Steering (1)
Steering	
Top 4	-100%
Other Banks	-100%
Rates	
Top 4 CC	0.07%
Top 4 Loans	-9.67%
Other Bank CC	0.08%
Other Bank Loans	8.22%
Non-Bank CC	0.01%
Non-Bank Loans	0.00%
Profits	
Top 4	0.09%
Other Bank	0.22%
Non-Bank	-0.02%
Firm Surplus	0.41%

Counterfactuals

	No Steering (1)	No Synergies (2)
Steering		
Top 4	-100%	-41%
Other Banks	-100%	-189%
Rates		
Top 4 CC	0.07%	1.52%
Top 4 Loans	-9.67%	-9.21%
Other Bank CC	0.08%	4.82%
Other Bank Loans	8.22%	8.25%
Non-Bank CC	0.01%	0.05%
Non-Bank Loans	0.00%	0.01%
Profits		
Top 4	0.09%	-5.11%
Other Bank	0.22%	-3.22%
Non-Bank	-0.02%	0.01%
Firm Surplus	0.41%	-0.36%

Counterfactuals

	No Steering (1)	No Synergies (2)	None (3)
Steering			
Top 4	-100%	-41%	-100%
Other Banks	-100%	-189%	-100%
Rates			
Top 4 CC	0.07%	1.52%	1.56%
Top 4 Loans	-9.67%	-9.21%	-5.79%
Other Bank CC	0.08%	4.82%	4.79%
Other Bank Loans	8.22%	8.25%	10.73%
Non-Bank CC	0.01%	0.05%	0.04%
Non-Bank Loans	0.00%	0.01%	-0.01%
Profits			
Top 4	0.09%	-5.11%	-5.03%
Other Bank	0.22%	-3.22%	-3.20%
Non-Bank	-0.02%	0.01%	0.01%
Firm Surplus	0.41%	-0.36%	-0.13%

Counterfactuals

	No Steering (1)	No Synergies (2)	None (3)	No Non-Banks (4)
Steering				
Top 4	-100%	-41%	-100%	113%
Other Banks	-100%	-189%	-100%	82%
Rates				
Top 4 CC	0.07%	1.52%	1.56%	34.00%
Top 4 Loans	-9.67%	-9.21%	-5.79%	-10.19%
Other Bank CC	0.08%	4.82%	4.79%	23.97%
Other Bank Loans	8.22%	8.25%	10.73%	-0.39%
Non-Bank CC	0.01%	0.05%	0.04%	–
Non-Bank Loans	0.00%	0.01%	-0.01%	–
Profits				
Top 4	0.09%	-5.11%	-5.03%	32.13%
Other Bank	0.22%	-3.22%	-3.20%	6.76%
Non-Bank	-0.02%	0.01%	0.01%	–
Firm Surplus	0.41%	-0.36%	-0.13%	-84.68%

Counterfactuals

	No Steering (1)	No Synergies (2)	None (3)	No Non-Banks (4)	No Regulation (5)
Steering					
Top 4	-100%	-41%	-100%	113%	33%
Other Banks	-100%	-189%	-100%	82%	160%
Rates					
Top 4 CC	0.07%	1.52%	1.56%	34.00%	-1.40%
Top 4 Loans	-9.67%	-9.21%	-5.79%	-10.19%	-7.83%
Other Bank CC	0.08%	4.82%	4.79%	23.97%	-2.97%
Other Bank Loans	8.22%	8.25%	10.73%	-0.39%	-10.63%
Non-Bank CC	0.01%	0.05%	0.04%	–	-0.01%
Non-Bank Loans	0.00%	0.01%	-0.01%	–	0.00%
Profits					
Top 4	0.09%	-5.11%	-5.03%	32.13%	5.61%
Other Bank	0.22%	-3.22%	-3.20%	6.76%	2.20%
Non-Bank	-0.02%	0.01%	0.01%	–	-0.01%
Firm Surplus	0.41%	-0.36%	-0.13%	-84.68%	0.74%

Bottom Line

- There is a trade-off of having financial intermediaries with wider scope.
  - Cost synergies, market power and product/quantity distortions are quantitatively important.
- We find that cost synergies across assets are quantitatively larger than those between assets and liabilities.
- Regulation needs to account for the multi-product nature of banks, and how they interact with their unregulated, more specialized competitors.

Thank you very much for your comments!