Wide or Narrow?
Competition and Scope in Financial Intermediation

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NBER IO
Juuly 22-23, 2022
Motivation

Over the past 30 years, U.S. companies have expanded their scope of operations, with many firms now providing multiple goods and services (Hoberg and Phillips, 2021).

In terms of welfare, is broader scope good news? What do we need to quantify?

1. Economies (or Diseconomies) of Scope
   - Does the cost to produce a product decline as the variety of products increases?

2. Market Power
   - Do consumers prefer multi-product firms?

   - 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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This Paper – Scope of Financial Intermediaries

Scope is at the core of what banks do.

- Traditional banks take short-term deposits and issue long-term loans → This maturity transformation function requires banks to have a wide scope.
- 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.
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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

Setting:
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.
- Credit Cards: usually better for payments and liquidity.

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

⇒ (Dis)Economies of scope: Marginal costs are a function of market shares for other products.

⇒ Market Power: Differentiated products + Firm preferences for multi-product lenders

⇒ Multi-product Incentives: Banks can steer firms and distort quantity and product choices.
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What Do We Learn?

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).

Counterfactual 1:
- Quantify relative importance of cost synergies, market power and steering.
  ⇒ Steering reduces firm welfare, but less so than the benefits from cost synergies.

Counterfactual 2:
- Role of non-bank competitors and regulation
  ⇒ Non-banks prevent banks from increasing prices and steering even more.
  ⇒ Regulating banks as non-banks still leads banks to capture most of the benefits from lower costs.
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Related Literature (Not Exhaustive)

- **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...)

- **Competition between banks and non-banks**
  - Focus on differences in liabilities and regulation (Buchak at al., 2018, 2020, Jiang et al., 2020, Fuster et al., 2018, Begenau and Landvoigt, 2018)

- **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)

- **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)
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Credit Registry Data
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

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

<table>
<thead>
<tr>
<th>Product</th>
<th>N</th>
<th>Limits ($1K)</th>
<th>Balances ($1K)</th>
<th>Delinquent (0/1)</th>
<th>Rates</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>CARD</td>
<td>99,028,805</td>
<td>18</td>
<td>9</td>
<td>59</td>
<td>4</td>
</tr>
<tr>
<td>LOAN</td>
<td>13,674,444</td>
<td>138</td>
<td>41</td>
<td>237</td>
<td>101</td>
</tr>
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</table>
Facts and Suggestive Evidence
(Focus on Multi-product Incentives)
Some banks, particularly larger banks, have significantly reduced loans below a threshold $50K or simply limit time-consuming applications from small businesses. 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.


⇒ Quantity Incentives: Bunching above $50K loans for banks (and not for non-banks)
⇒ Product Incentives: Excess mass of firms using 100% of credit card limit
Do (Multi-Product) Banks Distort Firms’ Credit Choices?

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Banks’ Quantity Incentives

Bunching at $50K Loan Amount
Banks’ Product Incentives

Excess Mass in 100% Utilization

![Graph showing the distribution of utilization rates for Lender (Banks) and Non-banks.]
Real Effects: Higher Defaults

(Quantity Incentives)

(Product Incentives)
Real Effects: Lower Survival Rates

(Quantity Incentives)  (Product Incentives)
Banks have increased sales of credit cards and large-size term loans, and reduced their sales of small-size term loans.

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- These incentives result in higher defaults rates, lower survivals, lower credit scores and lower employment and sales growth for distorted firms.

- Not fully explained by demand effects or selection or lower prices.
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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
Each firm $i$ observes its investment opportunity $\hat{q}_i \rightarrow$ Optimal borrowing amount

- Simple way to capture optimal capital structure in a reduced form way
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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.
- Non-banks (single-product) offer credit cards or loans, but not both.
- Simultaneously, banks choose how strongly to discourage small-sized term loans (i.e., “steering”)
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Each firm chooses how much to borrow and a product from lenders.
- 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, $\bar{q}_{jlm}$ product minimum quantities.

- **Unobservables:** $\xi_{lmj}$ unobservable characteristics and common shocks; $(1 - \sigma)\epsilon_{ilmj}$ T1EV shock, where $\sigma$ correlation across products within nest (lender); $\hat{q}_i$ firm optimal quantities.
Firm Credit Demand

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$$- 1 \begin{cases} \hat{q}_i < q_{jlm} \quad \text{Small borrower} \\ \gamma_{jlm} \times 1[q_i^* = \hat{q}_i] \quad \text{Non-price steering} \\ \lambda (\overline{q}_{jlm} - \hat{q}_i) \times 1[q_i^* = \overline{q}_{jlm}] \quad \text{Inefficiently sized large loan} \end{cases}$$

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$$- \psi \ln{\hat{q}_i} \times 1[j = CC]$$

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Both banks and non-banks choose rates, $r_{jlm}$, to maximize expected profits.

Simultaneously, banks (multi-product) also choose how much “steering” ($\gamma_{jlm}$) to do away from small-quantity term loans.
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**Lender markup/profit:**

$$\pi_{ijlm} = \left( r_{jlm} - mc_{jlm} \right) q_{ijlm}$$

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

$$mc_{jlm} = \text{Product}_j \times (\bar{\eta}_1 \text{Deposits}_{jlm} + \bar{\eta}_2 \text{Mortgages}_{jlm} + \bar{\eta}_3 \text{Other Products}_{jlm}) + \nu_{mi} + \nu_j^S + \omega_{jlm}$$
Estimation
Estimation - Key Parameters

Parameters

- $\alpha$: price sensitivity
- $\lambda$: penalty on quantity distortion
- $\psi$: suboptimality of cards for large investments
- $\sigma$: nest parameter
- $\hat{q}_i \sim \log N(\mu_{\hat{q}}, \sigma_{\hat{q}}^2)$: firms’ optimal borrowing amounts
- $\gamma_{lmt}$: steering away from small term loans
- $mc_{jmt}$: marginal costs
- $\eta_1, \eta_2, \eta_3$: 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
## Estimated parameters

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<thead>
<tr>
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<th>Value</th>
<th>Interpretation</th>
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<tbody>
<tr>
<td>$\alpha$</td>
<td>0.31</td>
<td>Elasticity = 2.62</td>
</tr>
<tr>
<td>$\sigma$</td>
<td>0.27</td>
<td>Within-lender elasticity = 4.07</td>
</tr>
<tr>
<td>$\lambda$</td>
<td>0.16</td>
<td>$1k$ too-large $\approx 50$ bps rate increase</td>
</tr>
<tr>
<td>$\tilde{\gamma}$</td>
<td>0.23</td>
<td>Average steering $\approx 74$ bps rate increase</td>
</tr>
<tr>
<td>$\psi$</td>
<td>1.47</td>
<td>1% larger size $\approx 474$ bps higher rate</td>
</tr>
<tr>
<td>$\mu^q$</td>
<td>9.42</td>
<td>$31K$ average loan size</td>
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<tr>
<td>$\sigma^q$</td>
<td>1.36</td>
<td>Standard deviation of $71K$</td>
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<th>SD</th>
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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

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## Counterfactuals

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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!