Bank Concentration and Monetary Policy Pass-Through
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Motivation
• Rise in U.S. bank concentration
  - Average local Herfindahl-Hirschman Index (HHI) increased from 15% to 26% between 1994 and 2019
  - Asset share of giant banks increased from 10% to 60% during the same time
• Research question: How does the rise in bank concentration affect monetary transmission?
  - Market power channel
  - Capital allocation channel
• Matters for: Effectiveness of monetary policy, financial stability, distributional effects

The Paper in a Nutshell
• Uses granular deposit and loan rate data from RateWatch to quantify
• Cross-sectional pass-through of monetary shocks to loan rates
• Contribution of local bank concentration and capitalization
• Uses theoretical model to rationalize empirical findings
• Accounts for differences across banks and branches
• Explicit modeling of bank market power and capital ratios
• Uses quantitative model to assess macroeconomic impact
• Embeds theoretical model into New Keynesian model
• Quantifies change in transmission due to rising bank concentration

Empirical Model
Local projections:
\[ r_{t+h,i,c} - r_{t-1,i,c} = b + b_s + b_{s,i} \times X_{1,i,c} + \delta h X_{1,i,c} + \eta h Z_{t,c} + \epsilon_{t+h,i,c} \]
- \( b \): base rate
- \( b_s \): slope in market power channel
- \( b_{s,i} \): slope in loan rate to households
- \( \delta h \): impact of local HHI on bank capitalization
- \( \eta h \): national and local economic conditions
- \( \epsilon_{t+h,i,c} \): error term

Asset: county-level HHI, bank capital to assets ratio
- \( s_i \): monetary surprise (Nakamura and Steinsson, 2018)
- \( Z_{t,c} \): controls for national and local economic conditions
- Pass-through: \( b + (\delta h X + \eta h Z) \)

Figure: Loan rate responses to a monetary shock for high/low state

Pass-through of a 100 b.p. policy rate shock increase to loan rates
- 50 b.p. higher for branches in high vs. low concentration markets
- 25 b.p. higher for banks with low vs. high capital ratios

Theoretical Model
\[ \max \Pi = r_{l,c} L_l(r_{l,c}) + r^{f,c} R^{f,c} - r^{d,c} D(r_{l,c}) \]
\[ \text{s.t.} \]
- Bank capital requirement: \( K^{h,c} \geq \rho c L_{l,c} \)
- Local loan demand: \( L_{l,c} = f(c_{l,c}, c_{l,c}, \rho c, L_{l,c}) \)
- Local deposit supply: \( D^{f,c} = f(D_{l,c}, \rho c, \phi c, D_{l,c}) \)
- Balance sheet constraint: \( L_{l,c} + R^{f,c} = D^{f,c} + K^{h,c} \)

Optimality conditions:
- Pass-through varies across banks due to differences in \( \rho c \)
- Pass-through varies across locations due to differences in \( c_{l,c} \)

Quantitative Model
Credit and Banking New Keynesian Model (Gerali et al., 2010)
+ heterogeneity in banking sector along two dimensions:
- Different demand elasticities in local markets
- Size-dependent bank capital requirements

Bank types

<table>
<thead>
<tr>
<th>Regional</th>
<th>Giant</th>
<th>Share</th>
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</thead>
<tbody>
<tr>
<td>Low ( r^{f,c} = \frac{\rho c}{\rho c} R^{f,c} ) ( r^{f,c} = \frac{\rho c}{\rho c} R^{f,c} ) ( (1 - m) ) m</td>
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<tr>
<td>High ( r^{f,c} = \frac{\rho c}{\rho c} R^{f,c} ) ( r^{f,c} = \frac{\rho c}{\rho c} R^{f,c} ) ( (1 - m) ) m</td>
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<td>Share ( K^{h,c} = \left( \frac{1}{1 - b} \right) )</td>
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- \( \rho c \) calibrated to markups in high/low-concentration markets
- \( R^{f,c} \) depends on \( \rho c \), calibrated to capital ratio by bank size

Counterfactual: Rise in Bank Concentration
- Amplifies pass-through to loan rates and transmission to lending
- Amplifies transmission to output; dampens effect on inflation
- Leads to a flattening of the Phillips curve

Figure: Impulse responses to a monetary shock in 1994 vs. 2019

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Rate Dispersion and Spreads
• Average IQR across banks in the same market: 1.03 p.p.
• Average IQR across branches of the same bank: 0.32 p.p.
• Dispersion and spreads higher in times of low rates