Small Bank Comparative Advantages in Alleviating Financial Constraints and Providing Liquidity Insurance over Time

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Motivation

One of the most important issues in finance is the extent to which financial markets and institutions are able to relieve financial constraints (i.e., provide firms with positive NPV investments the funds to undertake these projects) (Fazzari, Hubbard, and Petersen 1988).

- Small businesses are often considered more financially constrained than large businesses due to lack of available hard, quantitative information on which to base credit decisions (no audited financial statements, no publicly traded securities, etc.) (Hubbard 1998; Carpenter and Petersen 2002).

Banks as relationship lenders can alleviate frictions that reduce credit availability to these borrowers using soft, qualitative information in place of hard, quantitative information (Boot and Thakor 2000).

Small banks (or "community banks") are typically viewed as having comparative advantages in using soft information gathered over the course of a relationship because soft information is easier to communicate within a small organization (Berger and Udell 2002; Stein 2002; Berger, Miller, Petersen, Rajan, and Stein 2005; Liberti and Mian, 2009).

Motivation

A second issue is whether small banks as relationship lenders are better than large banks at providing liquidity insurance to their customers when economic conditions are adverse. May be the case for at least two reasons.

1. As relationship lenders, small banks may be able to lend short-term at a loss and recoup these losses in the long term through earnings from future loans or elsewhere in the relationship (Petersen and Rajan 1995).
2. Soft information gathered through relationship lending may be relatively more reliable than hard information when economic conditions are adverse (e.g., knowing the character of a small business owner may not lose its effectiveness during downturns as much as credit scores).

A third issue is whether small bank comparative advantages may have decreased over the past few decades.

- Some have argued: improvements in transactional lending technologies that rely on hard information, such as credit scoring, have reduced the relative importance of soft information (Berger and Udell 2006).
- Deregulation may have also helped large banks more than small banks.

Motivation

Finally, small banks may also have comparative advantages in providing liquidity insurance to the displaced customers of large banks experiencing liquidity shocks during financial crises

- Some large banks rely on relatively volatile, short-term purchased funds, while small banks generally rely on steady, core deposits.
- If these large banks ration credit to some of their small business customers during these periods, small banks in the area could provide liquidity insurance to some of these displaced customers.

Questions Asked

We examine these issues by addressing four questions:

(1) Do small banks (still) have comparative advantages over large banks in alleviating financial constraints of small businesses?
   - Addressed empirically before, but we revisit the question using a superior measure of small business financial constraints, using better controls for investment opportunities, and employing data over a longer sweep of time.

(2) Are these advantages greater during adverse economic conditions, resulting in superior ability to provide liquidity insurance to their customers?
   - The literature has looked at loan interest rate insurance (Berlin and Mester 1999), but not at liquidity insurance.

(3) Have these advantages declined over time?
   - Brought up in the literature, but has not been addressed empirically.

(4) Do small banks also have comparative advantages over large banks in providing liquidity insurance to displaced customers of large banks experiencing liquidity shocks during financial crises?
   - New question.

Main Results

(1) Do small banks (still) have comparative advantages over large banks in alleviating financial constraints of small businesses?
   - **YES**

(2) Are these advantages greater during adverse economic conditions, resulting in superior ability to provide liquidity insurance to their customers?
   - **YES**

(3) Have these advantages declined over time?
   - **NO**

(4) Do small banks also have comparative advantages in providing liquidity insurance to displaced customers of large banks experiencing liquidity shocks during financial crises?
   - **YES**

In every case, small banks appear to be beneficial for small businesses.

Novel Survey Data on Small Businesses

We address these questions using novel survey data on small businesses from 1993:M7–2012:M12.

- Source: Small Business Economic Trends (SBET) survey from the National Federation of Independent Businesses (NFIB).
  - Largest U.S. small business organization (> 350,000 members).
- Generally used for aggregate trends. We use firm-level outcomes.

SBET has key advantages over the commonly used Survey of Small Business Finance (SSBF) and the Kauffman Firm Survey (KFS).

- *SSBF: surveys firms up to 500 FTEs every 5 years from 1988 – 2003.*
- *KFS: follows firms that started up in 2004 annually from 2004 – 2011.*
- SBET survey contains firms that are more representative of small businesses as a whole than the SSBF and the KFS.
- SBET survey covers a much broader sweep of history.
- SBET survey includes manager's perceptions of the firm's operations.
  - Perceived financial constraints, economic outlooks, and business conditions.

Novel Survey Data on Small Businesses (cont'd)

Survey allows us to overcome data limitations faced in the literature.

- Contains managerial assessments of financial constraints.
  - Literature uses indirect constraint measures (loan spreads, loan balances, or firm's use of trade credit).
- Also provides details on the firm's investment opportunities, related to expectations on changes in future business conditions and performance, allowing us to account for these factors in the regression analysis.

We only consider firms that have recently sought bank financing (i.e., in the past three months).

Local Economic and Banking Market Data

Local economic data:

- County-level unemployment rates and wages (BLS).

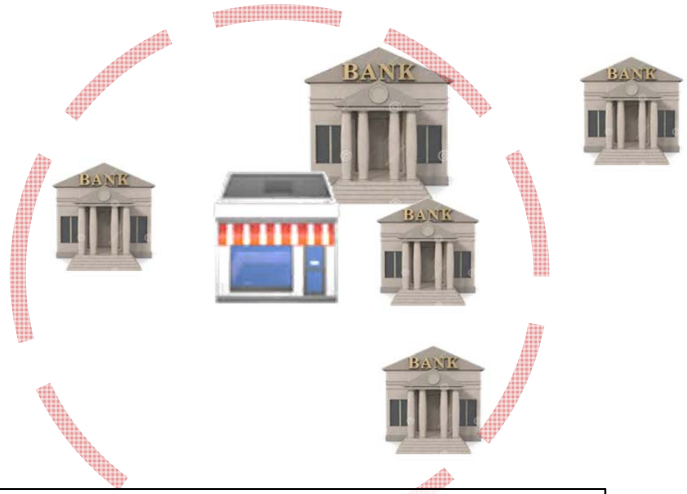
Local banking market data:

- Summary of Deposits (FDIC): Every June, 1993-2012.
- Commercial bank (Call Reports): 1993:Q1- 2012:Q12.
- Bank holding company (Y-9C): 1993:Q1 – 2012:Q12.

Firms are matched to the local banking and economic data based on ZIP code, though we cannot observe the firm's actual lender relationships.

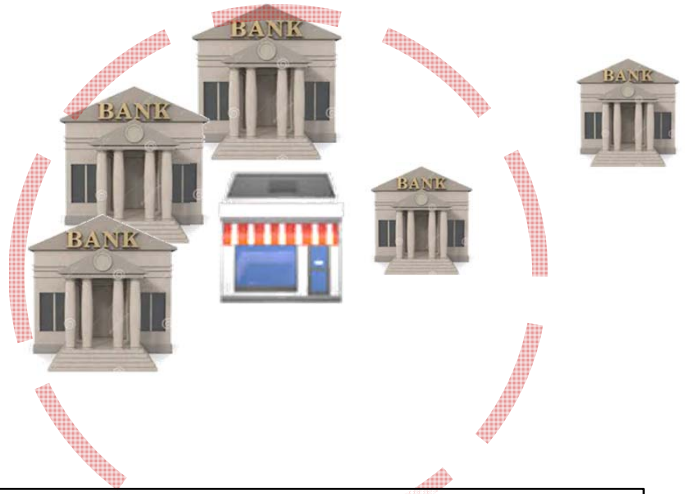
SmallBankShare: Small Bank Accessibility

50 km radius from firm



$$SmallBankShare = \frac{3}{4} = 75\%$$

50 km radius from firm



$$SmallBankShare = \frac{1}{4} = 25\%$$

We focus on the accessibility of small banks relative to large banks, measured by *SmallBankShare*, rather than actual relationships.

- Bank-firm relationships are endogenous, while the presence of small banks should be relatively exogenous.

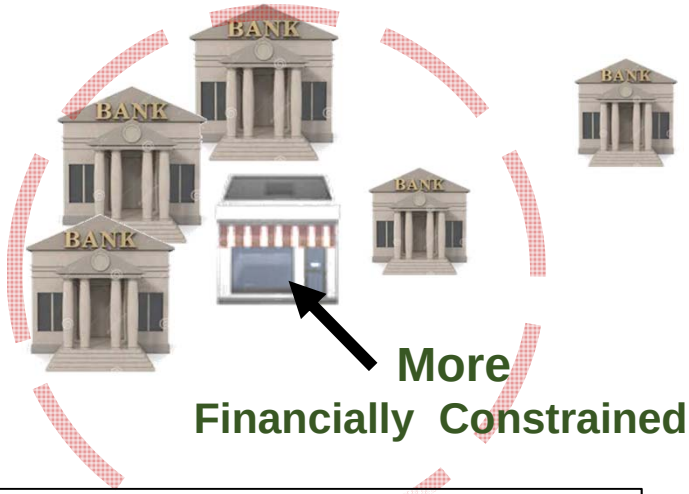
Comparative Advantages and *SmallBankShare*

50 km radius from firm

Less
Financially Constrained?

$$SmallBankShare = \frac{3}{4} = 75\%$$

50 km radius from firm



More
Financially Constrained?

$$SmallBankShare = \frac{1}{4} = 25\%$$

Small banks have a comparative advantage over large banks if better access to small relative to large banks (i.e., higher *SmallBankShare*) reduces financial constraints for small businesses.

Question 1: Approach

Do small banks (still) have comparative advantages over large banks in alleviating financial constraints of small businesses?

$$NotSatisfied_{i,t} = \beta_0 + \beta_1 SmallBankShare_{i,t} + \boldsymbol{\beta_2 Other\ Local\ Bank\ \&\ Market\ Characteristics_{i,t}} + \boldsymbol{\beta_3 Firm\ Characteristics_{i,t}} + \eta_{ind} + \tau_t + e_{i,t} \quad (1)$$

Key financial constraints measure:

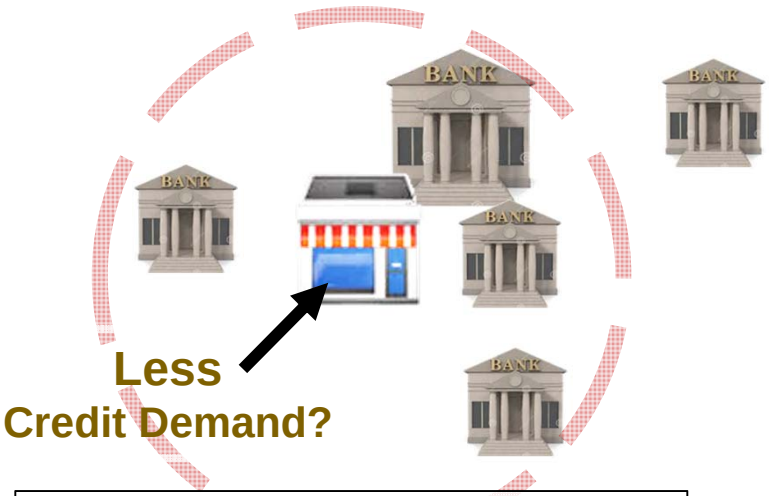
- *NotSatisfied*: "No" response to "During the last three months, was your firm able to satisfy its borrowing needs?"

Key explanatory variable:

- *SmallBankShare*: Proportion of branches of small banks (assets ≤ $1 billion) within a 50km radius of firm. Based on the usual research definition of "community banks."
  - Results robust using assets ≤ $10 billion and FDIC community bank definition.
- β_1 measures inversely the comparative advantage of small banks over large banks in alleviating financial constraints of small businesses.
  - If small banks have a comparative advantage, β_1 should be negative.

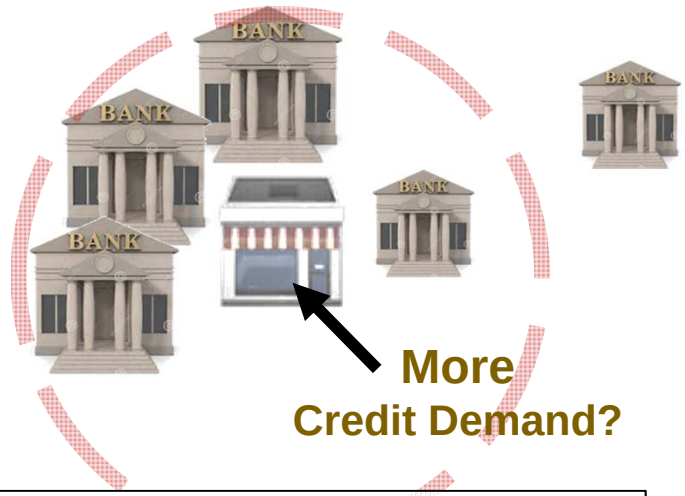
Endogeneity Concerns

50 km radius from firm



$$SmallBankShare = \frac{3}{4} = 75\%$$

50 km radius from firm



$$SmallBankShare = \frac{1}{4} = 25\%$$

Larger banks may be attracted to areas with better investment opportunities, so that firms in these areas may be associated with greater credit demand.

- Customers of small businesses generally local, so that investment opportunities should be captured by local market conditions and firm forecasts of future conditions reasonably well.

Question 1: Approach (cont.)

Control variables:

- Local bank & market variables:
  - Local bank characteristics: *General Access to Bank Finance (# Branches / Population, Few Banks Dummy), Equity Ratio, Illiquidity Ratio, Deposit HHI.*
  - Local market characteristics*: Metropolitan Area Dummy, County Population, County-level Unemployment Rate, County-level Per-Capita Wage.*
- Firm-level variables:
  - Firm characteristics*: Firm Size (ln(Sales) and ln(Employees)), firm type (Corporation and Partnership Dummies).*
  - Managerial forecasts of future conditions and performance*: Expected Change in General Conditions, Expected Sales Change, Past Change in Actual Sales.*

Fixed effects:

- Industry FEs plus Year-Month FEs.

Double-clustered standard errors by year-month and 3-digit ZIP code.

Question 1: Results

Do small banks (still) have comparative advantages over large banks in alleviating financial constraints of small businesses? YES

Borrower Subsample:	All
Dependent variable:	*NotSatisfied*
SmallBankShare	**-0.070***** **(-7.45)**
N	76973
Adjusted R^2	6.80%
Controls and FEs included	

- Firms with better access to small banks relative to large banks are less prone to experiencing financial constraints, controlling for other factors.
- Economic significance:
  - Increasing *SmallBankShare* from 25th to 75th percentile decreases predicted financial constraints by 2.61 percentage points, or 17% of the sample mean.

Question 1: Robustness

We obtain similar results when:

- Using alternative specifications for *SmallBankShare*.
  - Based upon deposit share instead of branch share.
  - Alternative distance thresholds (40km or 100km, instead of 50 km).
  - Lagged *SmallBankShare* (three years ago).
  - Controlling for the change in *SmallBankShare* (over past three years).
- Splitting sample by borrower frequency (*regular/non-regular* borrowers).
- Splitting sample by urban and rural regions.
- Using Logit model instead of OLS.
- Using Heckman corrections to address two sample selection issues.
  - *NotSatisfied* is only available for firms that borrowed or tried to borrow (46.8% of firm year-month survey responses).
  - Non-regular borrowers (28.8% of all borrowers) may be weaker credits.
- Using alternative measures of financial constraints instead of *NotSatisfied*.
  - Economic and statistical significance when using expected financing difficulties.
  - No economic (only statistical) significance when using loan rates or rate changes.
    - Consistent with firm perceptions of financial constraints being better measures of these constraints than loan rates or rate changes.
- Controlling for housing market factors.
  - Estimates stable when adding controls for local housing prices, changes in prices.

Question 2: Approach

Are these advantages greater during adverse economic conditions, resulting in superior ability to provide liquidity insurance to their customers?

Distinguish between local and national economic conditions.

- Local: Small bank customers generally concentrated geographically.
- National: Lending behavior at large banks and other factors.

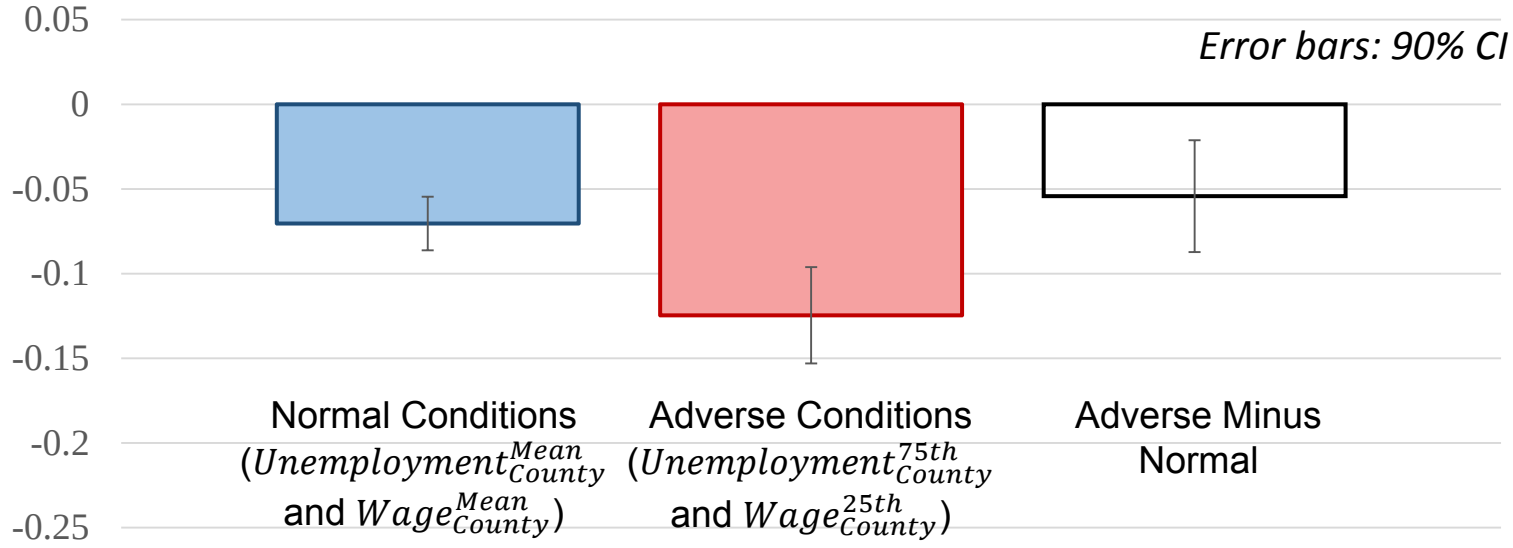
For the tests, the baseline model is augmented with interaction terms between *SmallBankShare* and local economic conditions.

- Local economic conditions: County unemployment rate
County per-capita wages
- Additional controls: *SmallBankShare* interacted with national economic conditions and *SmallBankShare* interacted with bank funding conditions.

We test whether the *SmallBankShare* coefficient becomes more negative during adverse local economic conditions.

Question 2: Results

Graphical representation of results for normal and adverse conditions:



Bars represent the *SmallBankShare* coefficient, or comparative advantages (of small banks over large banks in alleviating small business financial constraints), for normal and adverse conditions.

- Blue bar: for areas with unemployment, wages at mean. (Normal conditions.)
- Red bar: for areas with +1.4% unemployment, -$8K wages from mean.
- White bar: difference between red and blue bars.

Evidence of better ability to provide liquidity insurance by small banks.

Question 3: Approach and Results

Have small bank comparative advantages declined over time?

Simple approach: estimate model for different sample periods.

- Split the 20-year sample into 1993-2002 and 2003-2012 subperiods.

Subperiod:	1993-2002	2003-2012
Dependent Variable:	*NotSatisfied*	*NotSatisfied*
SmallBankShare	**-0.070*** **	**-0.068*** **
N	36276	40697
Adjusted R^2	5.00%	7.75%

Controls: Controls and Time FEs included

Results remain significant and quite stable across the sample period.

- Similar findings when using a more refined approach based upon linear trend in comparative advantages over the full sample.

Question 4: Approach

Do small banks also have comparative advantages in providing liquidity insurance to displaced customers of large banks experiencing liquidity shocks during financial crises?

We identify areas where small businesses are more likely to have been displaced due to liquidity shocks for some large banks and see if small bank comparative advantages are greater there.

- Examine whether the presence of small banks helps mitigate effects of these shocks on small businesses.

The liquidity shocks during crises that we examine are the funding shocks caused by the disruptions in the asset-backed commercial paper (ABCP) markets during the recent financial crisis.

- The literature provides evidence that disruptions in short-term debt markets caused problems for some large banks. These large banks:
  - Reduced lending to larger firms (Ivashina and Scharfstein 2010).
  - Reduced lending to small businesses (Community Reinvestment Act data).

Question 4: Approach (cont.)

We proxy for whether the firm was more likely to be a customer of an ABCP bank (i.e., a bank with exposure to the ABCP markets) based upon *pre-crisis* information on local presence of ABCP banks.

To tease out the effects, we examine triple differences:

How do comparative advantages for small banks over large banks…

… change from before to after disruptions in the ABCP markets…

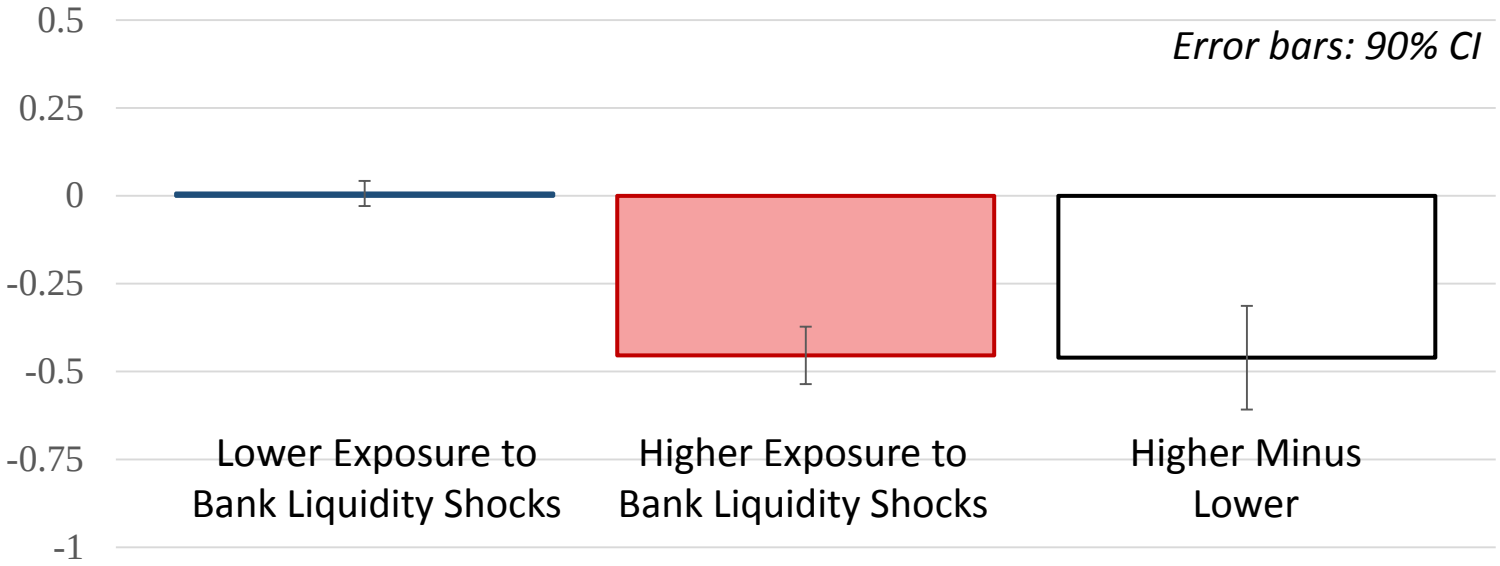
… across firms that were more likely and less likely to be customers of large banks with exposure to the ABCP markets.

If better accessibility to small banks mitigates the effects of credit rationing due to these shocks, then should see small bank comparative advantages increase more for ABCP bank customers.

- *SmallBankShare* effect should become more negative for the displaced borrowers only.

Question 4: Results (cont.)

Do small banks also have comparative advantages in providing liquidity insurance to displaced customers of large banks experiencing liquidity shocks during financial crises? YES



Bars represent *changes* in the *SmallBankShare* coefficient, or small bank comparative advantages, from pre-crisis to crisis.

- Blue bar: firms *less* likely to be affected by liquidity shock. (Lower exposure.)
- Red bar: firms *more* likely to be affected by liquidity shock.
- White bar: difference between red and blue bars

Driven by areas where borrowers are more likely to be displaced.

Question 4: Robustness

Results robust to alternative specifications for *SmallBankShare* excluding ABCP bank branches.

Results hold for firms with different borrowing frequency.

Results also hold after controlling for local housing market prices, and banking market fragility due to local bank failures.

Summary and Conclusion

(1) Using novel survey data, we provide evidence that small banks have comparative advantages in relieving small business financial constraints.

(2) Comparative advantages are stronger when local economic conditions are adverse, consistent with the provision of liquidity insurance.

(3) Comparative advantages have not diminished over time.

(4) Small banks also appear to relieve financial constraints of displaced small business borrowers from large banks subject to liquidity shocks during financial crises.

Policy Implications

Many government policies, including competition-related antitrust policy, as well as prudential policies for regulation and supervision, may affect small and large banks differently.

- These policies can influence the composition of small and large banks in local markets.
- Our findings suggest that those in charge of these policies may want to consider the presumably positive effects of small banks we document, and weigh them against concerns about competition, scale efficiencies, and risk.

One caveat is that alleviating small business financial constraints may not necessarily be socially beneficial.

- Some argue that small banks may make loans to back negative NPV investments.
- It is generally difficult to determine whether this is the case.
  - We find some indirect evidence from additional tests suggesting that this concern is not warranted.
    - Future unemployment rates are lower when small bank accessibility is higher.