

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

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Motivation

A key issue in finance is the extent to which financial markets and institutions are able to relieve financial constraints – provide firms with the funds to undertake positive net present value projects

- Fazzari, Hubbard, and Petersen 1988

Small businesses – which represent a significant fraction of employment and economic growth in the United States and other nations – are generally considered more financially constrained than large businesses.

- This is due to a dearth of available hard, quantitative information (verifiable numbers) on which to base credit decisions (no audited financial statements, no publicly traded securities, etc.).
- Petersen and Rajan 1994; Hubbard 1998; Carpenter and Petersen 2002

Banks can sometimes alleviate small business financial constraints via relationship lending based on soft, qualitative information (e.g., character of the small business owner) gathered over the course of a relationship in place of hard, quantitative information.

- Boot and Thakor 2000

Motivation

Small banks are typically viewed as having comparative advantages over large banks in using soft information because such information is easier to communicate within a small organization with fewer layers of management.

- Berger and Udell 2002; Stein 2002; Berger, Miller, Petersen, Rajan, and Stein 2005; Liberti and Mian 2009; Canales and Nanda, 2012

Given the benefits associated with small business relationship lending, it is potentially concerning that small banks have dropped in number over time.

- Over 1984 – 2014, the number of small banks in the U.S., measured by those with assets under \$1 billion, declined by more than half from 11,497 to 4,864 as the industry has consolidated.
- This raises a concern that something important is being lost – some of the ability to alleviate financial constraints of small businesses.

Research Questions

We address three related questions using a novel dataset:

- (1) Do small banks (still) have comparative advantages over large banks in alleviating financial constraints of small businesses?
 - A classic question in the literature, but revisited.
 - Using a superior measure of small business financial constraints
 - Employing data over a much longer sweep of time
 - Including strong controls to address endogeneity
- (2) Do these comparative advantages change over time?
 - May be higher during adverse economic conditions.
 - Small bank relationship lenders may provide liquidity and interest rate insurance, lending at a loss during such conditions and recouping these losses in later periods.
 - Possible secular decline (transactional lending technology improvements and deregulation, both benefitting large banks) or increase (greater efficiency of small banks surviving consolidation).
- (3) Do small banks also have comparative advantages in providing liquidity insurance to displaced customers of large banks experiencing liquidity shocks during financial crises?
 - Small banks, which tend to rely on relatively steady core deposits, may provide liquidity insurance to small businesses that are rationed.

Main Results

- (1) Do small banks (still) have comparative advantages over large banks in alleviating financial constraints of small businesses?
 - **YES**
- (2) Do these comparative advantages change over time?
 - **YES** – small bank comparative advantages increase when economic conditions are adverse.
- (3) Do small banks also have comparative advantages in providing liquidity insurance to displaced customers of large banks experiencing liquidity shocks during financial crises?
 - **YES**

Novel Survey Data on Small Businesses

Novel survey data on small businesses, available monthly for almost 20 years from June 1993 to December 2012.

- Source: Small Business Economic Trends (SBET) survey from the National Federation of Independent Businesses (NFIB).
- Monthly survey, randomly sampled (average 865 firms per month).
- The identities of the firms are confidential, but we have access to their 3-digit ZIP code location of the firm.

Key advantages of SBET:

- SBET covers a much broader sweep of history than both Survey of Small Business Finance (SSBF) and the Kauffman Firm Survey (KFS).
- SBET survey contains firms that are more representative of small businesses as a whole than the KFS.
- Contains managerial assessments of financial constraints.
 - Researchers using other datasets use indirect constraint measures (loan spreads, loan balances, or use of costly trade credit).
- Also provides details of firm's investment opportunities, allowing us to control for these factors in the regression analysis.

Local Economic and Banking Market Data

Economic data:

- County-level and national unemployment rates and wages (Bureau of Labor Statistics).

Local banking market data:

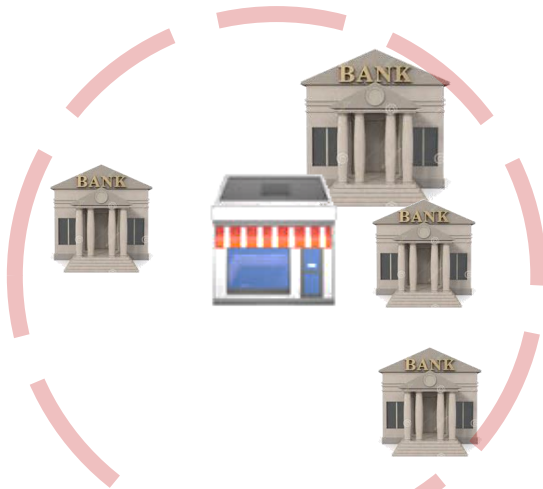
- Summary of Deposits (FDIC): Every June, 1993-2012.
- Commercial bank (Call Reports): 1993:Q1- 2012:Q12.
- Bank holding company (Y-9C): 1993:Q1 – 2012:Q12.

Firms are matched to the local banking market based on ZIP code.

- We cannot observe directly the firm's actual bank relationships

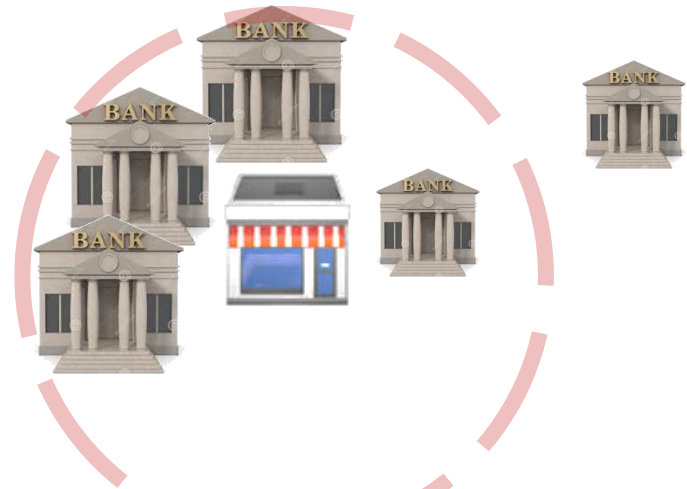
SmallBankShare: Small Bank Accessibility

50 km radius from firm



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

50 km radius from firm



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

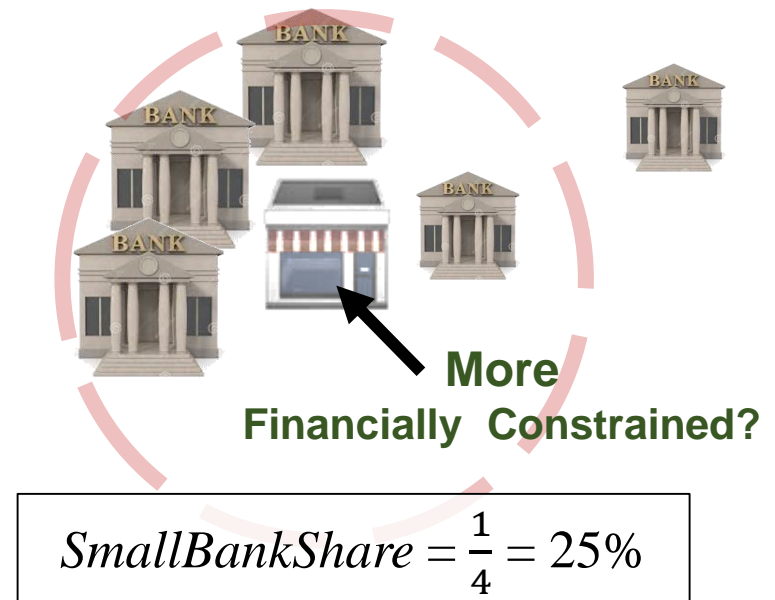
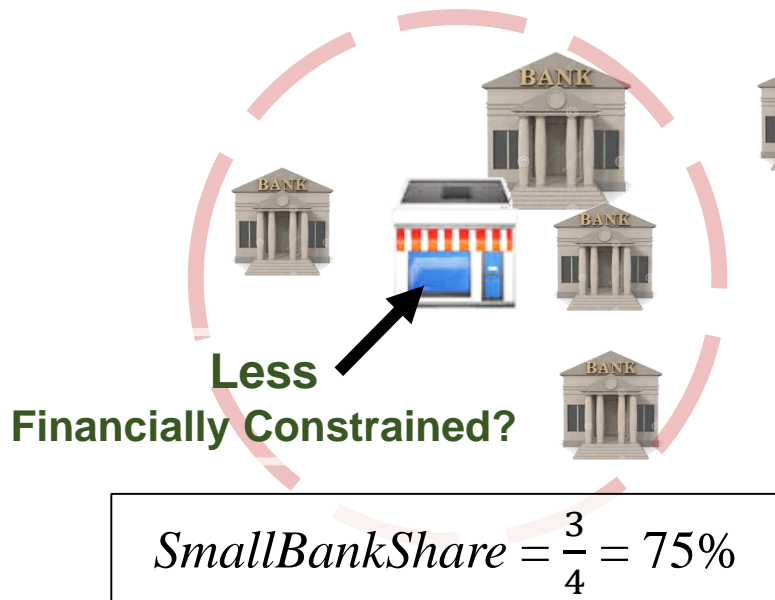
Relative accessibility of small banks.

- Focus is on *SmallBankShare*, rather than actual bank-firm relationships.
 - Relationships are endogenous, while the presence of small banks should be relatively exogenous.

Comparative Advantages and *SmallBankShare*

50 km radius from firm

50 km radius from firm



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

Model for Addressing Question 1

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

$$\begin{aligned} \text{NotSatisfied}_{i,t} &= \alpha_0 + \alpha_1 \text{SmallBankShare}_{i,t} \\ &+ A_2 \text{Local Market Characteristics}_{i,t} \\ &+ A_3 \text{Other Local Bank Characteristics}_{i,t} \\ &+ A_4 \text{Firm Characteristics}_{i,t} \\ &+ \text{Industry} \times \text{Time FE}_{i,t} + \text{State FE}_i + e_{1,i,t} \end{aligned} \quad (1)$$

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 \leq \$1 billion) within a 50km radius of firm. Usual research definition of “community banks.”
 - Results robust to using assets \leq \$10 billion and FDIC community bank definition.
- α_1 measures inversely the comparative advantage of small banks in alleviating financial constraints of small businesses.
 - If small banks have a comparative advantage, α_1 should be negative.

Question 1: Approach (cont.)

Control variables:

- Local market characteristics:
 - *Metropolitan Area Dummy, County Population, County Unemployment Rate, County Wage.*
- Other local bank characteristics:
 - *Equity Ratio, Illiquidity Ratio, Deposit HHI, General Access to Bank Finance (# Branches / Population, Few Banks Dummy).*
- Firm characteristics:
 - *Expected Change in General Conditions, Expected Sales Change, Past Change in Actual Sales, Firm Size ($\ln(\text{Sales})$ and $\ln(\text{Employees})$), firm type (Corporation and Partnership Dummies).*

Fixed effects:

- *Industry \times Time FEs, State FE.*

Double-clustered standard errors by location and time.

Question 1: Results

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

Dependent Variable:	(1) <i>NotSatisfied</i>	(2) <i>NotSatisfied</i>	(3) <i>NotSatisfied</i>	(4) <i>NotSatisfied</i>
<i>SmallBankShare</i>	-0.068*** (-7.47)	-0.070*** (-7.46)	-0.070*** (-7.38)	-0.038*** (-3.32)
Controls:				
Local Market Characteristics:	YES	YES	YES	YES
Other Local Bank Characteristics:	NO	YES	YES	YES
Firm Characteristics:	NO	YES	YES	YES
Time FEs	YES	YES	NO	NO
Industry FEs	NO	YES	NO	NO
Industry × Time FEs	NO	NO	YES	YES
State FEs	NO	NO	NO	YES
N	76973	76973	76936	76936
Adjusted R ²	2.15%	6.80%	6.88%	7.15%

- The coefficients on *SmallBankShare* are all negative and statistically significant, consistent with comparative advantages for small banks.
- The results are also economically significant.
- When *SmallBankShare* moves from 21.9% to 59.1% (from the 25th to the 75th sample percentile), the proportion of small businesses that feel constrained decreases by 9.1%.

Question 1: Robustness

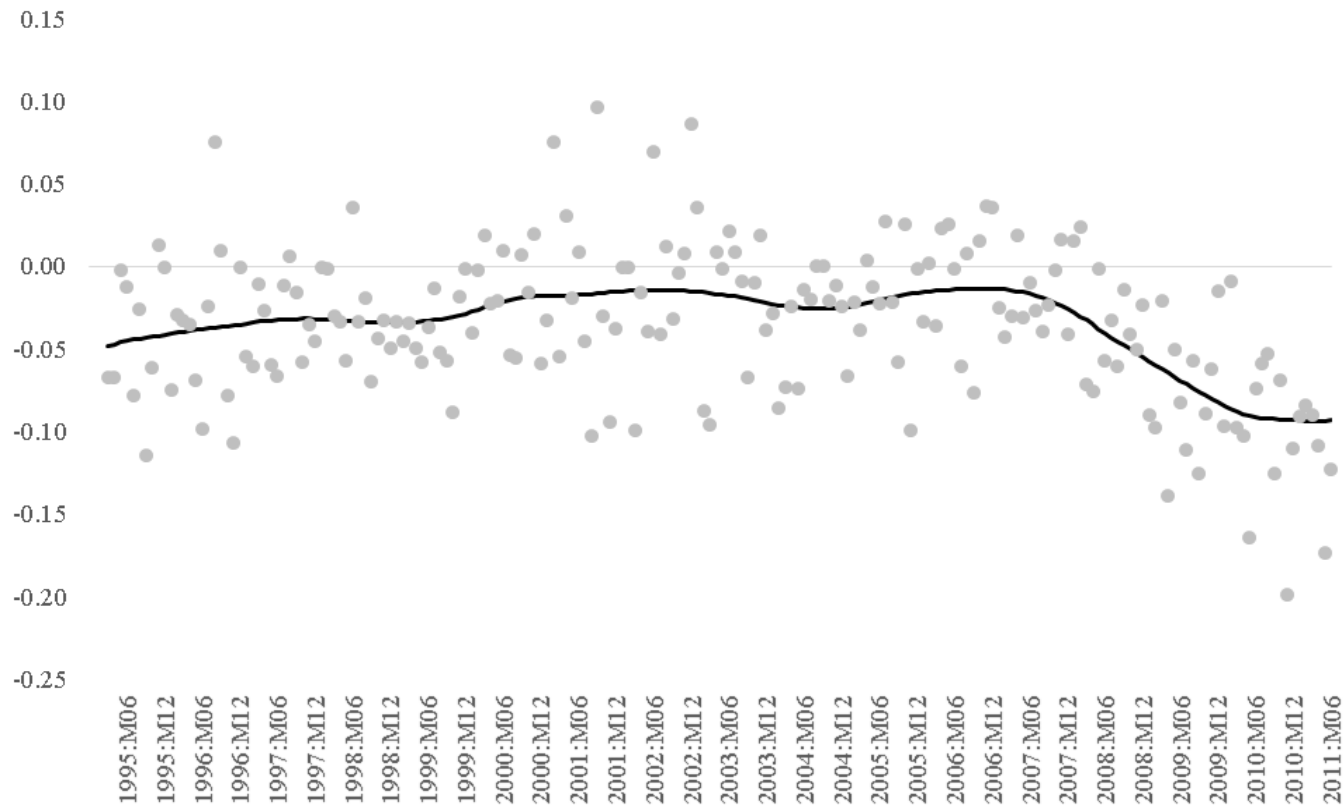
We obtain similar results when:

- We use a non-linear model.
- We run regressions separately for metropolitan and rural areas.
- We use alternative measures of small bank access.
- We include additional control variables.
- We use alternative measures of financial constraints.

Question 2

Do small bank comparative advantages in alleviating small business financial constraints change over time?

- *SmallBankCompAdv_t*: Difference in the average *NotSatisfied* of firms with *SmallBankShare* values above versus below the sample median at time *t*.



Question 2: Results (Simple Approach)

Dependent Var:	(1) <i>SmallBank CompAdv</i>	(2) <i>SmallBank CompAdv</i>	(3) <i>SmallBank CompAdv</i>	(4) <i>SmallBank CompAdv</i>	(5) <i>SmallBank CompAdv</i>	(6) <i>SmallBank CompAdv</i>
<i>Nat'Unempl.</i>	-1.399*** (-8.11)					-1.865*** (-3.66)
<i>ln(Nat'lWage)</i>		0.220*** (5.88)				0.014 (0.30)
<i>SystemicRisk</i>			-0.008*** (-3.22)			-0.000 (-0.10)
<i>FedFunds</i>				0.007** (2.58)		-0.004 (-1.29)
<i>LinearTrend</i>					-0.000 (-1.54)	-0.000 (-0.13)
N	221	221	221	221	221	221
Adjusted R ²	25.72%	17.80%	12.49%	11.51%	5.90%	26.32%

- Column (6) includes all the variables in the same regression, and shows that only *Nat'Unempl* remains statistically significant.
- The coefficient of -1.865 on *Nat'Unempl* in Column (6) is also economically significant
- If the unemployment rate were one percentage point higher, 1.9 percentage points more small businesses would experience financial constraints when they have worse access to small banks compared to those with better access.

Similar results hold when using an alternative approach using the pooled sample that better accounts for credit demand

Question 3: 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 liquidity shocks to large banks may have displaced small businesses.

- Examine whether the presence of small banks helps mitigate effects of these shocks on small businesses.
- Small businesses experienced more credit rationing than larger firms during the recent financial crisis
 - Montoriel-Garriga and Wang 2012; Popov and Udell 2012; Contugno, Monferra, and Sampagnaro 2012; Jimenez, Ongena, Peydro, and Saurina 2012; Iyer, Lopes, Peydro, and Schoar 2013

The liquidity shocks 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 suggests that these disruptions caused problems for large banks whose holding companies had large ABCP exposures.

- An initial check using CRA data suggests that large banks with ABCP market exposure significantly rationed small businesses.

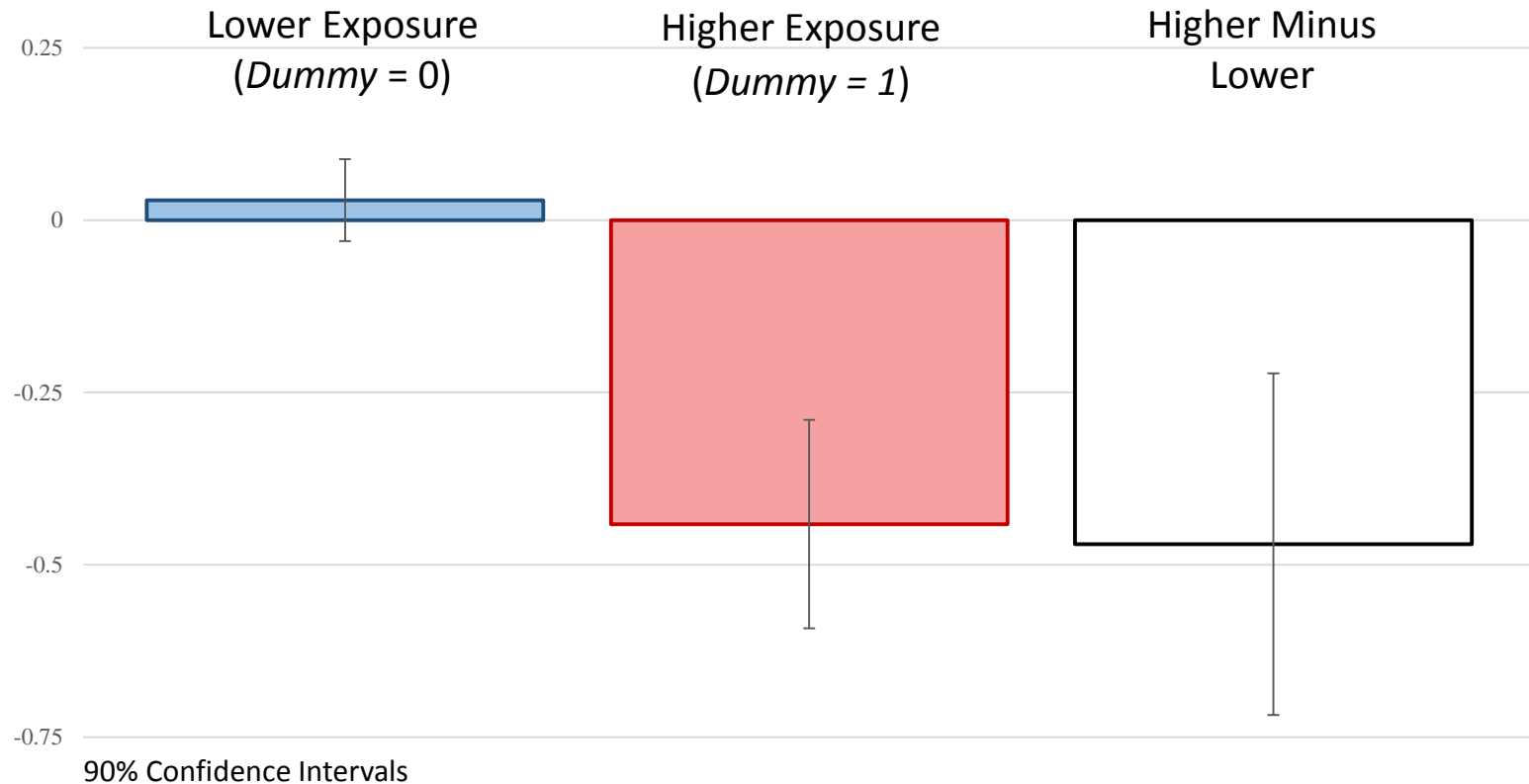
Question 3: Approach (cont.)

We proxy for whether the firm was more likely to be a customer of an ABCP bank based on *pre-crisis* information on local presence of ABCP banks.

- To tease out the effects, we examine triple differences:
 - 1) How do comparative advantages for small banks ...
 - 2) ... change from before to during disruptions in the ABCP markets...
 - 3) ... across firms that were more likely and less likely to be customers of large banks with exposure to the ABCP markets.

If better access to small banks mitigates the effects of credit rationing due to shocks in the ABCP markets, then small bank comparative advantages increase more for small businesses in markets with higher ABCP exposure.

Question 3: Results



- Small bank comparative advantages did not significantly change in areas with lower exposure to ABCP banks (blue bar) from before the crisis to the period when the ABCP markets experienced significant stress.
- However, comparative advantages significantly increased in areas with higher exposure to ABCP banks (red bar).
- The differences in these changes (white bar) are also significant.

Question 3: Robustness

We obtain similar results when:

- Controlling for contemporaneous and pre-crisis changes in local housing market index.
- Using an alternative *SmallBankShare* variable.

Summary and Conclusion

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

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

(3) The advantages extend to the provision of liquidity insurance to displaced customers of large banks experiencing liquidity shocks during financial crises.

Policy Implications

- Many government policies affect large and small banks differently, and therefore influence *SmallBankShare*.
 - Policies such as deregulation and other factors have contributed to reductions in the representation of small banks.
 - The average *SmallBankShare* dropped very significantly by 23 percentage points from 59% in 1993 to 36% in 2012.
 - Our estimates suggest that if *SmallBankShare* had been at the 1993 level in 2012, small businesses would have been 11 percentage points less financially constrained, which is very large relative to the sample mean of 15.5 percentage points.

Policy Implications (Cont.)

- Our results suggest significant social costs from consolidation, given the critical role of small businesses in the economy.
 - These costs should be added to other social costs of consolidation and weighed against its social benefits, such as scale efficiencies of large banks.
 - Berger and Mester, 1997; Wheelock and Wilson, 2012; Hughes and Mester, 2013
- Caveat: Alleviating small business financial constraints may not necessarily be socially beneficial if small banks make loans to back negative NPV investments
 - We provide some indirect evidence from additional tests suggesting that this concern is not warranted (not tabulated).
 - Higher *SmallBankShare* → lower future unemployment rates.