Did Saving Wall Street Really Save Main Street?

~The Real Effects of TARP on Local Economic Conditions~

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Motivation

- Troubled Asset Relief Program (TARP): During 2008:Q4-2009:Q4, the US Treasury infused capital into a large number of banking organizations (709).
  - Goals: Improve the stability of the financial system, increase availability of credit, and improve real economic conditions.

- Did saving Wall Street really save Main Street during the recent financial crisis?
  - That is, did bailing out the banks through TARP have a significant positive impact on the economic conditions of average Americans?

- The program was successful in this respect according to Henry Paulson, the former Secretary of the Treasury who initiated the program.
  - "I was never able to convince the American people that what we did with TARP was not for the banks. It was for them. It was to save Main Street. It was to save our economy from a catastrophe."

- Other observers take the opposite view, including Neil Barofsky, the Special Inspector General for TARP.
  - "To declare TARP a success is revisionist history…TARP was supposed to restore lending, and that didn't happen."

Research Question

- To our knowledge, there is no academic research supporting either of these views. The purpose of this paper is to provide such evidence.

- This paper conducts the first empirical assessment of TARP on real economic conditions.

- Did saving Wall Street really save Main Street during the recent financial crisis?

Literature

Determinants of TARP Participation

- **Decisions to apply for and receive TARP**: Bayazitova and Shivdasani (2012), Cornett, Li, and Tehranian (2013), Duchin and Sosyura (2012, 2014)
- **Decision to exit TARP**: Bayazitova and Shivdasani (2012), Wilson and Wu (2012)

Effects of TARP

- **Lending and Risk-Taking**: Black and Hazelwood (2013), Li (2013), Puddu and Walchli (2013), Duchin and Sosyura (2014)
- **Competition**: Koetter and Noth (2014), Berger and Roman (forthcoming)
- **Returns and Valuation of TARP Recipient Banks**: Ng, Vasvari, and Wittenberg-Moerman (2013), Harrisa, Huertab, and Ngob (2013), Veronesi and Zingales (2010).
- **Returns and Valuation of the Customers of the TARP Recipient Banks**: Norden, Roosenboom, and Wang (2013), Liu (2013)

Effects of Other Government Interventions

- **Risk Taking, Lending, and Liquidity Creation**: Brandao-Marques, Correa, and Sapriza (2012), Dam and Koetter (2012), Hryckiewicz (2012), Berger, Bouwman, Kick, and Schaeck (2014)
- **Competition**: Cordella and Yeyati (2003), Gropp, Hakenes, and Schnabel (2011), Calderon and Schaeck (2012)

Effects of Capital

- Calomiris and Mason (2003), Calomiris and Wilson (2004), Allen, Carletti and Marquez (2011), Mehran and Thakor (2012), Berger and Bouwman (2013)

Our Approach

- As noted, the effects of TARP on the real economy have not been directly studied, likely because of the difficulty of disentangling them from those of other government programs and market events.
- We avoid this difficulty by studying the effects of TARP on local market economic conditions.
- Specifically, we look at changes in local economic conditions as functions of the proportions of banks that received TARP in their local areas.
- If saving Wall Street really saved Main Street, then local markets in which more banks received TARP should have improved significantly relative to local markets in which fewer or no banks received TARP.

Main Findings

- Using a difference-in-difference (DID) analysis, this research suggests that:
  - Banks' TARP bailouts were followed by improvements in economic conditions in the local markets in which they operate:
    - TARP statistically and economically significantly increased net job creation and net hiring establishments.
    - TARP statistically and economically significantly decreased personal bankruptcies.
    - TARP had no significant impact on business bankruptcies.
- As a result, we conclude that extending a lifeline to Wall Street via TARP may have helped save Main Street.

Hypothesis Development

- Primary channels that may **improve** local economic conditions through increases in credit in the local markets:

- ***Predation Channel:*** TARP capital may have made banks better capitalized and these banks may have used this additional capital to act aggressively in the market.
  - **=> higher supply of loans and loan commitments in the local markets**

- ***Safety Channel:*** TARP banks may be perceived as safer due to the bailout and/or due to the selection criteria which targeted "healthy, viable institutions."
  - Customers may demand more loans and loan commitments from TARP banks because these banks are less likely to fail or become financially distressed. Bank creditors may supply more funds and/or charge them lower rates because TARP banks are more likely to pay back. In reaction to the greater availability of loanable funds and/or reduction in funding costs, TARP banks may also supply additional credit.
  - **=> higher demand for and/or higher supply of loans and loan commitments in the local markets**

- ***Cost Advantage Channel:*** TARP funds may be cheaper than non-TARP funds.
  - TARP banks may have an incentive to expand credit because these banks are more cheaply funded.
  - **=> higher supply of loans and loan commitments in the local markets**

- ***Increased Moral Hazard Channel:*** Reductions in regulatory & market discipline may result in increases in risk taking, which may take the form of increased supply of bank loans and commitments to riskier applicants that might otherwise be rationed.
  - **=> higher supply of loans and loan commitments in the local markets**

Hypothesis Development (cont.)

- Primary channels that may **worsen** local economic conditions through decreases in credit in the local markets:
- ***Charter Value / Quiet Life Channel:*** Extra capital from bailout may increase charter value and/or allow for a "quiet life," decreasing incentives for aggressive behavior and risk taking.
  - **=> reduction in the supply of loans and loan commitments in the local markets**
- ***Stigma Channel*:** TARP banks may be perceived as riskier due to the bailout.
  - Customers may demand less credit from TARP banks because these banks are more likely to fail or become financially distressed. Bank creditors may supply them less funds and/or charge them higher rates because TARP banks are less likely to repay. In reaction to the reduced availability of loanable funds and/or increase in funding costs, TARP banks may supply less credit.
  - **=> reductions in the demand for and supply of loans and loan commitments in the local markets**
- ***Cost Disadvantage Channel:*** TARP funds may be more expensive than non-TARP funds.
  - TARP banks decrease their credit because costs of funds are higher.
  - **=> reduction in the supply of loans and loan commitments in the local markets**
- ***Decreased Moral Hazard Channel:*** The increase in capital may result in shifts into safer portfolios by reducing the supply of bank loans and commitments to riskier applicants that might otherwise be rationed.
  - **=> reduction in the supply of loans and loan commitments in the local markets**
- The ***stigma channel*** is the opposite of the ***safety channel***, the ***cost disadvantage channel*** is the opposite of the ***cost advantage channel***, the ***decreased moral hazard channel*** is the opposite of the ***increased moral hazard channel***, and only one of each pair can hold for a given bank at a given time.

Hypothesis Development (cont.)

- Secondary channels that may either **improve** or **worsen** local economic conditions through changes in credit in the local markets.
- As discussed in Berger and Roman (forthcoming), there may also be either an increase or decrease in the market power of TARP banks due to the primary channels described above.
  - An increase in market power may increase the supply of credit to relationship borrowers because limits on competition help banks enforce implicit contracts with relationship borrowers that result in greater credit availability (e.g., Petersen and Rajan, 1995).
  - An increase in market power may decrease the supply of credit to transactional borrowers under the structure-conduct-performance hypothesis.
  - These channels are reversed if market power is decreased.
  - Thus, the change in market power has an ambiguous effect on the total supply of credit in the local markets.
- Finally, bailouts may result in changes in behavior by the competitors to TARP banks that may partially offset or accentuate the increase or decrease in credit supply by the TARP banks (e.g., Hakenes and Schnabel, 2010; Gropp, Hakenes, and Schnabel, 2011; Koetter and Noth, 2014).

Hypothesis Development (cont.)

These primary and secondary channels lead us to our opposing hypotheses:

<u>Hypothesis H1</u>: A higher proportion of TARP banks is associated with improvements in local economic conditions.

<u>Hypothesis H2</u>: A higher proportion of TARP banks is associated with deteriorations in local economic conditions.

- These hypotheses are not mutually exclusive.
  - One can hold in some local markets and the other can hold in other markets.
- We test whether one of these hypotheses empirically dominates the other.

Sample Construction and Data

- TARP transactions data and TARP recipients list from the US Treasury's website (572 bank holding companies (BHCs) and 87 commercial banks).
  - Match by name and location the institutions in the list with their corresponding RSSD9001 (Bank ID) where available.

- Match with bank data from quarterly Call Reports for the period 2005:Q1 to 2012:Q4.
  - We aggregate Call Report data of all the banks in the BHC at the holding company level if the BHC has more than 1 commercial bank owned because TARP funds were primarily distributed to BHCs.

- Other Data Sources: US Department of Labor Quarterly Business Dynamics Statistics (BDS) and Quarterly Census of Employment and Wages (QCEW), American Bankruptcy Institute, US Court Bankruptcy Filings, FDIC Summary of Deposits, List of Corrective Actions, US Census Bureau's Population Distribution, NBER, Tax Policy Center, House of Representatives website, Missouri Census Data Center, Center for Responsible Politics.

- The regressions also lose one quarter of observations because of the use of lagged values for some of the exogenous variables.

- Final regression sample has 1,580 state-quarter observations for 51 states (including Washington, D.C. as a state).

Regression Framework (DID)

$$Y_{st} = \beta_0 + \beta_1 \cdot \textit{TARP Recipient}_{st} + \beta_2 \cdot \textit{Post TARP}_{st} + \beta_3 \cdot \textit{Post TARP}_{st} \times \textit{TARP Recipient}_{st} + \beta_4 \cdot X_{st-1} + \beta_5 \cdot \textit{State}_s + \beta_6 \cdot \textit{Time}_t + \varepsilon_{st}$$

- Y_{st} is an indicator of local economic conditions in state *s* at time *t*: *Net Job Creation / Capita*, *Net Hiring Establishments / Capita*, *Business Bankruptcies / Capita*, or *Personal Bankruptcies / Capita*).
- $\textit{TARP Recipient}_{st}$ is the weighted proportion of banks receiving TARP capital support in the local markets, where the weights are based on the proportion of deposits of the banks in their local markets.
- $\textit{Post TARP}_{st}$ is a dummy = 1 in 2009:Q1-2012:Q4, the period after the TARP program started, following Duchin and Sosyura (2014).
- $\textit{Post TARP}_{st} \times \textit{TARP Recipient}_{st}$ is the DID term.
  - Captures the effect of the treatment (TARP) after the treatment.
    - A positive coefficient in the *Net Job Creation / Capita* or *Net Hiring Establishments / Capita* equations or a negative coefficient in the *Business Bankruptcies / Capita* or *Personal Bankruptcies / Capita* equations would show favorable changes in the local economic conditions as functions of the proportions of the banks that received TARP in their local areas, and vice-versa.
- X_{st-1} are control variables.
- $\textit{State}_s$ are state fixed effects and $\textit{Time}_t$ represents year and quarter fixed effects.

Indicators of Local Economic Conditions

1. Net Job Creation / Capita is the overall net job creation per capita from *t-1* to *t* calculated as: (*Gross Job Creation - Gross Job Destruction)/(Population/1000)*.

- *Gross Job Creation* is the number of jobs created from *t-1* to *t*. It consists of job openings and expansions. Openings are number of jobs created at new establishments. Expansions are number of new jobs created at existing establishments.
- *Gross Job Destruction* is the number of jobs destroyed from *t-1* to *t*. It consists of job closings and contractions, defined analogously.

2. Net Hiring Establishments / Capita is the net hiring establishments per capita from *t-1* to *t*, calculated as: (*Gross Hiring Establishments - Gross Firing Establishments)/(Population/1000)*.

- *Gross Hiring Establishments* is the number of hiring establishments that create jobs from *t-1* to *t*. It consists of establishments that create jobs through job openings and expansions.
- *Gross Firing Establishments* is the number of establishments that destroy jobs from the *t-1* to *t*. It consists of establishments that destroy jobs through job closings and contractions.

Indicators of Local Economic Conditions (cont.)

3. Business Bankruptcies / Capita is the overall number of business bankruptcies per capita, calculated as: (Total business bankruptcy filings at time *t*) / (*Population*/1000).

- Business bankruptcies consist of Chapter 7 filings (corporate liquidations), Chapter 11 filings (large corporate reorganizations), Chapter 12 filings (corporate reorganizations for farms and fisheries), and Chapter 13 filings (orderly plan for small debt repayment) filings.

4. Personal Bankruptcies / Capita is the overall number of personal bankruptcies per capita, calculated as: (Total personal bankruptcy filings at time *t*) / (*Population*/1000).

- Personal bankruptcies consist of Chapter 7 filings (straight bankruptcy or liquidation), Chapter 11 filings (personal reorganization), and Chapter 13 filings (wage earner plan for debt repayment) filings.

Control Variables

- **Proxies for CAMELS** (the declared set of financial criteria used by regulators for evaluating banks, following Duchin and Sosyura (2014)):
  - *Capital Adequacy*
  - *Asset Quality*
  - *Management Quality*
  - *Earnings*
  - *Liquidity*
  - *Sensitivity to Market Risk*

- **Other bank-related and state-related characteristics** (following Bayazitova and Shivdasani (2012), Berger and Bouwman (2013), Berger, Black, Bouwman, and Dlugosz (2014), Berger, Bouwman, Kick, and Schaeck (2014), Duchin and Sosyura (2014), and Berger and Roman (forthcoming)):
  - *DWTAF (*dummy for whether a bank received discount window loans and/or Term Auction Facility (TAF) funding)
  - *Bank Size* (log of gross total assets (GTA))
  - *HHI Deposits*
  - *Metropolitan Dummy*
  - *State No of Banks*
  - *State Minimum Wage*
  - *State Marginal Tax Rate*
  - *State Economic Freedom Index*

Statistical Significance of the Effects of TARP on Local Economic Conditions

Dependent Variable:	*Net Job Creation/ Capita*	*Net Hiring Establishments/ Capita*	*Business Bankruptcies/Capita*	*Personal Bankruptcies/Capita*
Independent Variables:	**(1)**	**(2)**	**(3)**	**(4)**
TARP Recipient	-5.660***	-1.468***	0.039*	0.159
	(-3.288)	(-5.143)	(1.817)	(0.771)
Post TARP	-0.962**	-0.195**	-0.009**	-0.921***
	(-1.979)	(-2.571)	(-2.081)	(-16.612)
Post TARP x TARP Recipient	6.670***	1.302***	-0.020	-0.309***
	(5.206)	(6.172)	(-1.392)	(-2.596)
Bank-Related Controls	**YES**	**YES**	**YES**	**YES**
State-Related Controls	**YES**	**YES**	**YES**	**YES**
State Fixed Effects	**YES**	**YES**	**YES**	**YES**
Time Fixed Effects	**YES**	**YES**	**YES**	**YES**
Observations	1,580	1,580	1,580	1,580
Adjusted R-squared	0.454	0.541	0.625	0.874

- DID terms showing the effect of TARP after treatment are in the shaded box.
- TARP banks' capital injections were followed by statistically significant increases in net job creation and net hiring establishments (columns 1 & 2).
- There is no statistically significant impact on business bankruptcies (column 3).
- TARP banks' capital injections were followed by statistically significant decreases in personal bankruptcies (column 4).
- Overall, results are consistent with the **statistical** empirical dominance of Hypothesis H1 over Hypothesis H2.

Economic Significance of the Effects of TARP on Local Economic Conditions

Dependent Variable:	*Net Job Creation/ Capita*	*Net Hiring Establishments/ Capita*	*Business Bankruptcies/Capita*	*Personal Bankruptcies/Capita*
Independent Variables:	**(1)**	**(2)**	**(3)**	**(4)**
TARP Recipient	-5.660***	-1.468***	0.039*	0.159
	(-3.288)	(-5.143)	(1.817)	(0.771)
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Bank-Related Controls	**YES**	**YES**	**YES**	**YES**
State-Related Controls	**YES**	**YES**	**YES**	**YES**
State Fixed Effects	**YES**	**YES**	**YES**	**YES**
Time Fixed Effects	**YES**	**YES**	**YES**	**YES**
Observations	1,580	1,580	1,580	1,580
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- Hypothesis H1 also **economically** dominates Hypothesis H2.
- The coefficient on *Post TARP*$_{st}$ * *TARP Recipient*$_{st}$ of 6.670 in the *Net Job Creation / Capita* equation in column (1) suggests that the average market had a quarterly increase in the net job creation of 1.0405, given an average TARP recipient value of 0.156. This suggests that over the 16 quarters of the post-TARP period (2009:Q1-2012:Q4), for every 1000 people, 16.65 jobs were created due to TARP.
- Similarly, we find that on average over the whole post-TARP period, for every 1000 people, 3.25 more establishments created jobs, and 0.77 personal bankruptcies were eliminated.
- Results suggest that extending a lifeline to Wall Street via TARP may have saved Main Street to an economically significant extent.

Endogeneity Concern

- TARP capital might be more often provided to the strongest banks, which may be more likely to improve local economic conditions through lending and commitments, yielding a spurious relationship.

- To address this concern, we employ Instrumental Variables (IV).

  - Political & regulatory connections instruments for *TARP Recipient* (following Bayazitova and Shivdasani (2012), Li (2013), Duchin and Sosyura (2012, 2014), and Berger and Roman (forthcoming)).

    - *Subcommitee on Financial Institutions or Capital Markets*, a variable which takes a value of 1 if a firm is headquartered in a district of a House member who served on the Capital Markets Subcommittee or the Financial Institutions Subcommittee of the House Financial Services Committee in 2008 or 2009.
    - *Democrat*, a variable which takes a value of 1 if a bank's local Representative was a Democrat in the 2007-2008 campaign election.
    - *Fed Director*, a variable which takes a value of 1 if the bank's director was on the board of directors of one of the Federal Reserve Banks or branches in 2008 or 2009.

  - All of these variables are positively and statistically significant in the first stage.

Instrumental Variable Analysis (Second Stage)

	Final Stage (IV 2SLS)			
Dependent Variable:	*Net Job Creation/ Capita*	*Net Hiring Establishments/ Capita*	*Business Bankruptcies/Capita*	*Personal Bankruptcies/Capita*
Independent Variables:	**(1)**	**(2)**	**(3)**	**(4)**
TARP Recipient	-8.920***	-1.778***	-0.012	0.038
	(-3.106)	(-3.356)	(-0.472)	(0.129)
Post TARP	-0.998**	-0.199***	-0.008*	-0.910***
	(-2.102)	(-2.684)	(-1.904)	(-16.868)
Post TARP x TARP Recipient	7.804***	1.432***	-0.038**	-0.518***
	(5.413)	(5.887)	(-2.389)	(-3.165)
Bank-Related Controls	**YES**	**YES**	**YES**	**YES**
State-Related Controls	**YES**	**YES**	**YES**	**YES**
State Fixed Effects	**YES**	**YES**	**YES**	**YES**
Time Fixed Effects	**YES**	**YES**	**YES**	**YES**
Observations	1,580	1,580	1,580	1,580
Adjusted R-squared	0.452	0.540	0.619	0.874
First Stage Kleibergen-Paap rk Wald F-test	142.743***	142.743***	142.743***	142.743***

- The final stage results show that the main results continue to hold.
- There are statistically and economically significant improvements in economic conditions.
- We find that on average over the whole post-TARP period, for every 1000 people, 19.48 jobs were created, 3.57 more establishments created jobs, and 1.29 personal bankruptcies were eliminated due to TARP.
- Based upon the IV estimates, we again conclude that saving Wall Street may have saved Main Street.

Additional Robustness Tests

- Placibo Experiment

- Alternative Econometric Approaches
  - State Random Effects.
  - Clustering at the State Level.
  - Excluding Proxies for CAMELS.
  - Excluding Bank-related Variables.
  - Excluding State-related Variables.
  - Remove middle two quartile and middle tercile of the TARP recipient variable

- Subsample Analysis
  - Bank sizes.
  - Involuntary and voluntary participants (8 original large participants).
  - Banks subject to the Stress Tests (SCAP) and those that are not.
  - TARP banks that repaid early and those that did not.
  - High and low capital ratios before the TARP program started (2008:Q3).
  - States in poor and good conditions.
  - States with low and high economic freedom conditions.

Bank Sizes

Dependent Variable:	*Net Job Creation/ Capita*	*Net Hiring Establishments/ Capita*	*Business Bankruptcies/Capita*	*Personal Bankruptcies/Capita*
Independent Variables:	**(1)**	**(2)**	**(3)**	**(4)**
SMALL TARP Recipient	16.441	1.305	0.048	1.944*
	(1.184)	(0.605)	(0.782)	(1.689)
MEDIUM TARP Recipient	-13.977	-2.576*	0.096*	0.233
	(-1.472)	(-1.850)	(1.930)	(0.233)
LARGE TARP Recipient	-5.410***	-1.452***	0.036*	0.117
	(-3.175)	(-5.014)	(1.752)	(0.541)
Post TARP	-0.944*	-0.177**	-0.009**	-0.899***
	(-1.834)	(-2.251)	(-2.188)	(-15.729)
Post TARP x SMALL TARP Recipient	-2.293	-0.801	0.023	-0.647
	(-0.267)	(-0.517)	(0.321)	(-0.683)
Post TARP x MEDIUM TARP Recipient	28.227***	3.644***	-0.111**	-1.499*
	(3.539)	(2.981)	(-2.505)	(-1.732)
Post TARP x LARGE TARP Recipient	6.104***	1.258***	-0.017	-0.246**
	(4.679)	(5.809)	(-1.090)	(-2.200)
Bank-Related Controls	**YES**	**YES**	**YES**	**YES**
State-Related Controls	**YES**	**YES**	**YES**	**YES**
State Fixed Effects	**YES**	**YES**	**YES**	**YES**
Time Fixed Effects	**YES**	**YES**	**YES**	**YES**
Observations	1,580	1,580	1,580	1,580
Adjusted R-squared	0.456	0.541	0.624	0.874

- We consider separately the proportions of different TARP bank sizes in the local markets: small TARP banks (Gross Total Assets (GTA) ≤ $1 billion), medium TARP banks ($1 billion < GTA ≤ $3 billion), and large TARP banks (GTA > $3 billion).

- All effects are concentrated in the medium and large banks, particularly the medium banks.
  - This runs counter to the effects of TARP on lending found in the literature.

TARP Banks that Repaid Early and TARP Banks that Did Not

Dependent Variable:	*Net Job Creation/ Capita*	*Net Hiring Establishments/ Capita*	*Business Bankruptcies/Capita*	*Personal Bankruptcies/Capita*
Independent Variables:	**(1)**	**(2)**	**(3)**	**(4)**
TARP Recipient_Repaid	-4.522**	-1.430***	0.035	0.169
	(-2.489)	(-4.634)	(1.452)	(0.631)
TARP Recipient_Not Repaid	-9.294***	-1.657***	0.053**	0.219
	(-3.702)	(-4.275)	(2.195)	(0.911)
Post TARP	-1.020**	-0.207***	-0.009**	-0.907***
	(-2.086)	(-2.721)	(-2.155)	(-16.430)
Post TARP x TARP Recipient_Repaid Early	5.278***	1.149***	-0.012	-0.175
	(3.715)	(4.935)	(-0.626)	(-1.325)
Post TARP x TARP Recipient_Not Repaid Early	12.198***	1.926***	-0.050**	-0.862***
	(4.812)	(4.701)	(-2.225)	(-3.661)
Bank-Related Controls	**YES**	**YES**	**YES**	**YES**
State-Related Controls	**YES**	**YES**	**YES**	**YES**
State Fixed Effects	**YES**	**YES**	**YES**	**YES**
Time Fixed Effects	**YES**	**YES**	**YES**	**YES**
Observations	1,580	1,580	1,580	1,580
Adjusted R-squared	0.455	0.541	0.625	0.874

- We also test whether TARP may have been more or less effective in improving local economic conditions for banks that repaid early.
  - We replace the $TARP\ Recipient_{st}$ variable with $TARP\ Recipient\_Repaid\ Early_{st}$ (proportions of TARP banks that repaid early in 2009-2010 in the local markets) and $TARP\ Recipient\_Not\ Repaid\ Early_{st}$ (proportions of TARP banks that did not repay early in the local markets).
- Results suggest that most of the gains are due to TARP banks that did not repay early.

States in Poor and Good Conditions

Dependent Variable:	*Net Job Creation/ Capita*	*Net Hiring Establishments/ Capita*	*Business Bankruptcies/Capita*	*Personal Bankruptcies/Capita*
Independent Variables:	**(1)**	**(2)**	**(3)**	**(4)**
TARP Recipient x LOWCOINCIDENT	-6.263***	-1.597***	0.043**	0.240
	(-3.401)	(-5.454)	(2.047)	(1.168)
TARP Recipient x HIGHCOINCIDENT	-5.126***	-1.351***	0.034	0.083
	(-2.876)	(-4.421)	(1.508)	(0.365)
Post TARP	-0.972**	-0.195***	-0.009**	-0.922***
	(-2.016)	(-2.593)	(-2.110)	(-16.610)
Post TARP x TARP Recipient x LOWCOINCIDENT	8.488***	1.606***	-0.029***	-0.465***
	(6.271)	(7.255)	(-2.585)	(-3.289)
Post TARP x TARP Recipient x HIGHCOINCIDENT	4.862***	0.998***	-0.011	-0.154
	(3.354)	(4.156)	(-0.575)	(-1.191)
Bank-Related Controls	**YES**	**YES**	**YES**	**YES**
State-Related Controls	**YES**	**YES**	**YES**	**YES**
State Fixed Effects	**YES**	**YES**	**YES**	**YES**
Time Fixed Effects	**YES**	**YES**	**YES**	**YES**
Observations	1,580	1,580	1,580	1,580
Adjusted R-squared	0.457	0.543	0.625	0.874

- It is possible that the states with worse economic conditions may have improved their conditions more or less after TARP relative to those with better economic conditions.
  - We measure the economic conditions using the *Coincident Index* from the Philadelphia Federal Reserve Bank website. This index combines four state-level economic indicators into a single statistic: nonfarm payroll employment, average hours worked in manufacturing, unemployment rate, and wage and salary disbursements.

- We differentiate between proportions of TARP banks in the states with low coincident indices before the TARP program started *(Coincident Index* 2008:Q3 ≤ median) and those with high coincident indices before the TARP program started *(Coincident Index* 2008:Q3 > median).

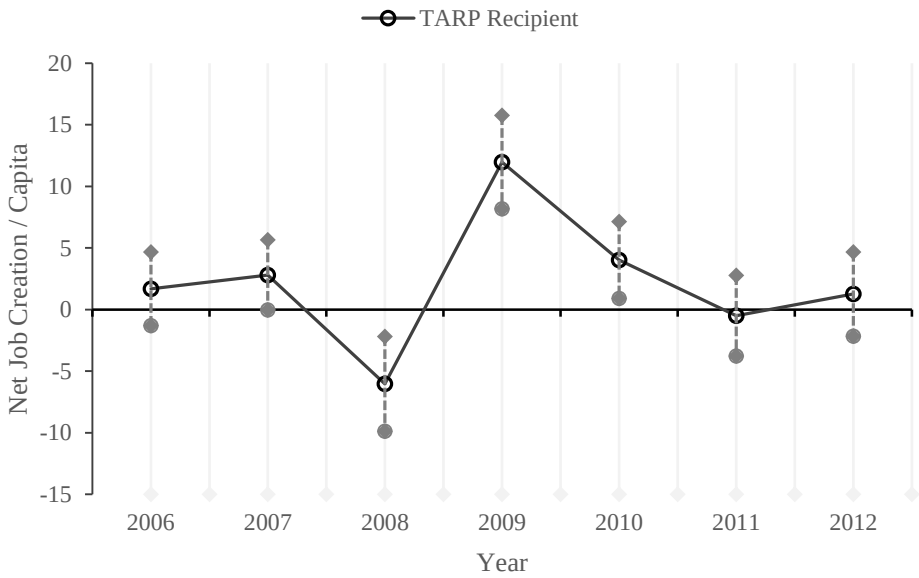
- Results are primarily due to banks in the states with poor conditions.

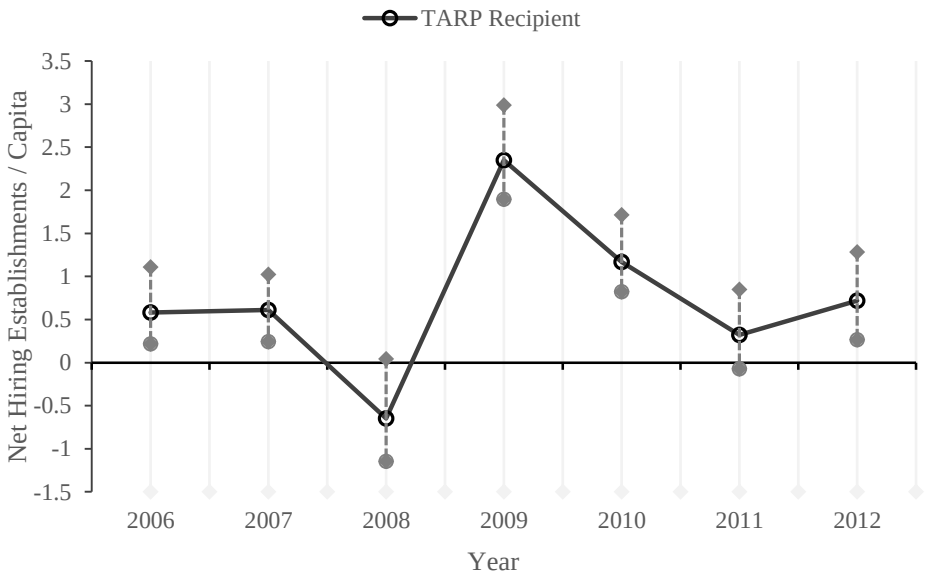
States with Low and High Economic Freedom Conditions

Dependent Variable:	*Net Job Creation/ Capita*	*Net Hiring Establishments/ Capita*	*Business Bankruptcies/Capita*	*Personal Bankruptcies/Capita*
Independent Variables:	**(1)**	**(2)**	**(3)**	**(4)**
TARP Recipient x LOWECFREEDOM	-6.201***	-1.475***	0.043**	0.178
	(-3.466)	(-4.971)	(2.001)	(0.787)
TARP Recipient x HIGHECFREEDOM	-5.263***	-1.417***	0.035	0.133
	(-2.910)	(-4.726)	(1.608)	(0.620)
Post TARP	-0.948*	-0.197***	-0.009**	-0.921***
	(-1.945)	(-2.598)	(-2.106)	(-16.578)
Post TARP x TARP Recipient x LOWECFREEDOM	7.300***	1.500***	-0.029**	-0.381**
	(5.379)	(6.766)	(-2.429)	(-2.314)
Post TARP x TARP Recipient x HIGHECFREEDOM	6.204***	1.142***	-0.013	-0.253**
	(4.349)	(4.846)	(-0.737)	(-2.217)
Bank-Related Controls	**YES**	**YES**	**YES**	**YES**
State-Related Controls	**YES**	**YES**	**YES**	**YES**
State Fixed Effects	**YES**	**YES**	**YES**	**YES**
Time Fixed Effects	**YES**	**YES**	**YES**	**YES**
Observations	1,580	1,580	1,580	1,580
Adjusted R-squared	0.453	0.542	0.625	0.874

- It is possible that the states with less economic freedom may have improved their conditions more or less after TARP relative to those with higher economic freedom.
  - States with high economic freedom (freer competition, better enforcement of contracts, etc.) may have a higher ability to stabilize their local markets without intervention from governments and regulators because their economy is closer to the market economy.
  - Alternatively, banks in states with low economic freedom may have more room for improvement, so they may gain more from the TARP bailouts.
- We differentiate between proportions of TARP banks in the states with low economic freedom indices (*Economic Freedom Index* 2008:Q3 ≤ median) and those with high economic freedom indices before the TARP program started (*Economic Freedom Index* 2008:Q3 > median).
- Results are primarily due to banks in the states with low economic freedom.

Dynamic Effects of TARP on Local Economic Conditions

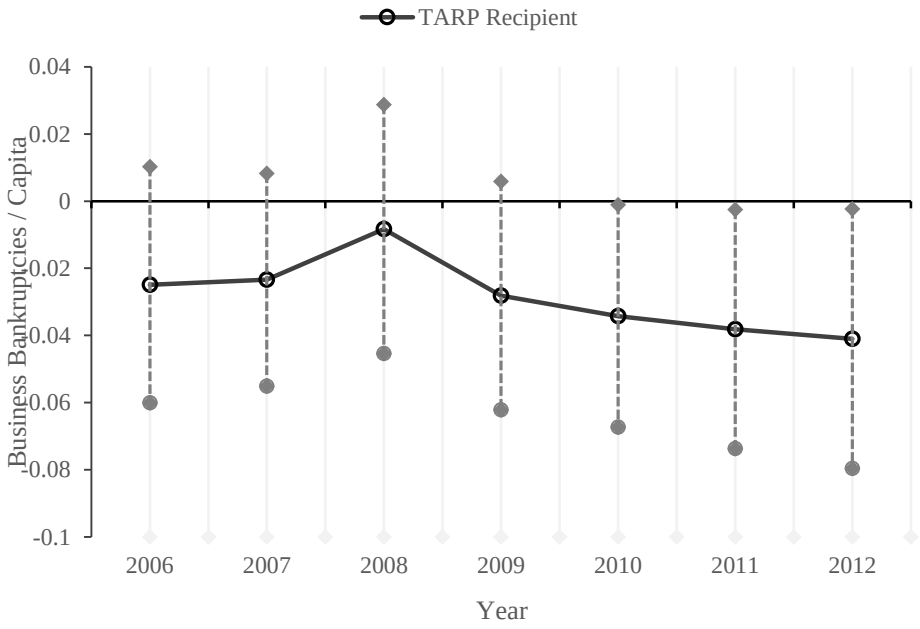


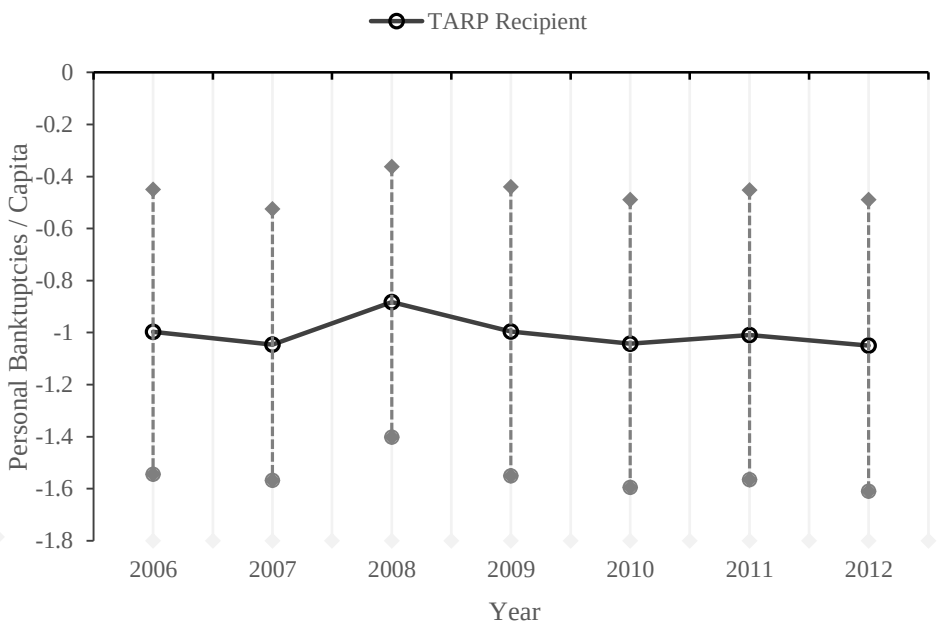


- We next examine the dynamics of the relation between TARP and local economic conditions in a similar fashion to Beck, Levine, and Levkov (2010). We do this by including a series of dummy variables in the standard regression to trace out the year-by-year effects of TARP.
  - In the regressions, we replace the DID term $Post\ TARP_{it}\ x\ TARP\ Recipient_{it}$ with interactions of the $TARP\ Recipient_{it}$ with year dummies for each year before and after the TARP.
  - We plot the coefficients, adjusted for seasonality, with their 95% confidence intervals for the local economic indicators.

- We find that there is an immediate increase in net job creation and hiring establishments in 2009, but this increase is short-lived, only lasting until 2010.

Dynamic Effects of TARP on Local Economic Conditions (cont.)





- We find that there is a decrease in business and personal bankruptcies immediately after TARP injections. This decline is slow and steady over the whole post-TARP period.

Summary of Results

- The results are robust to all these checks and qualitatively similar to our main findings, except that:
  - Only the medium and large banks have statistically significant results, particularly the medium banks.
  - In most cases, the voluntary and non-stress-tested banks appear to be responsible for most of the gains.
  - Most of the gains are due to TARP banks that did not repay early.
  - Results are primarily due to banks in the states with poor conditions and states with low economic freedom.
  - Hiring effects mostly occur in 2009 and generally dissipate thereafter and the bankruptcy effects tend to last longer.

- Overall, the results suggest that saving Wall Street through TARP may have helped save Main Street during the recent financial crisis.

- The measured effects on the economy may be understated because they do not capture the benefits to the economy from any stabilization of the financial system that may have occurred.

Conclusions

- This paper contributes to the policy debate on the costs and benefits of the TARP program.

- Among the costs are:
  - The potential increase in moral hazard incentives to take on excessive risk because of the increased expectation of future bailouts, which may have occurred for large banks (Black and Hazelwood, 2013; Duchin and Sosyura, 2014).
  - Any reduction in lending by large banks (Black and Hazelwood, 2013).
  - Any distortion in competition caused by the bailouts of some banks and not others (Koetter and Noth, 2014; Berger and Roman, forthcoming).
  - Any distortion caused by the bailouts being partially distributed according to political connections (Bayazitova and Shivdasani (2012), Duchin and Sosyura (2012, 2014), Li (2013), Berger and Roman (forthcoming, 2014)).
  - Any reductions in the market values of the TARP recipient banks' customers (Liu, 2013).
  - The small profit to the Treasury that did not compensate for the risks.

Conclusions

- Among the benefits appear to be:
  - The possible increase in lending and reduction in risk by small banks (Black and Hazelwood, 2013; Li, 2013; Puddu and Walchli, 2013).
  - The increases in the market values of recipient banks (Veronesi and Zingales, 2010; Ng, Vasvari, and Wittenberg-Moerman, 2013; Harrisa, Huertab, and Ngob, 2013).
  - Any increases in the market values of recipient banks' customers (Norden, Roosenboom, and Wang, 2013).
  - Any improvement in the short-run overall stability of the financial system, which is difficult to document because so many government programs and market events occurred around the same time period.
  - For a more detailed discussion of TARP costs and benefits, see Calomiris and Khan (forthcoming).
- Our study adds to the debate by offering the first evidence on the TARP effect on local market conditions and finds improvements in local economic conditions.