Natural Disasters, Local Bank Market Share, and Economic Recovery

Justin Gallagher (Montana State University),
Daniel Hartley (Federal Reserve Bank of Chicago)

Community Banking Research Conference

October 4–5, 2023
YELLOWSTONE FLOODING

Redlodge, MT on June 14, 2022 (ABC News)
Banking & Economic Recovery - Bozeman, MT

Does regional economic recovery following a disaster depend on the types of banks operating in the community?

- Founded in 1919 in Bozeman, MT
- Serves (only) Gallatin County, MT
- County’s largest bank by deposit market share

- Founded 1852; Corporate headquarters in San Francisco
- 4th largest US bank by assets
- 70 million customers
New Lending following Hurricane Katrina

New quarterly mortgage originations by local and non-local banks to residents of New Orleans in areas that received the worst flooding from Hurricane Katrina

Gallagher and Hartley (2017); Data source: Home Mortgage Disclosure Act (HMDA)
Access to Credit is Important after an Economic Shock

1. Many individuals rely on credit
   - Only 46% of US adults could afford an unexpected $400 expense without borrowing or selling an asset (Federal Reserve, 2016)

2. Credit could affect post-disaster regional economic recovery and growth
   - Path dependence of future economic growth (e.g., Kline and Moretti, 2014)
   - Economies of agglomeration (e.g., Bleakley and Lin, 2012; Glaser, 2011)
   - Social externalities (e.g., Fu and Gregory, 2019; Paxon and Rouse, 2008)

3. Hsiang and Jina (2014) summarize 4 potential development outcomes ranging from “no recovery” to “creative destruction”
Research Questions

1. Do locations with a higher share of local banking at a time of a natural disaster have greater total lending post-disaster?
   - Cortes and Strahan (2017), Gallagher and Hartley (2017) point to opposite conclusions
   - Neither study shows how total lending differs
   - Neither study accounts for endogenous bank development
   - Limitations to research designs in both papers

2. Do (any) differences in post-disaster lending at the time of a disaster, attributable to the role of local banks, affect regional economic recovery and redevelopment?
   - We are not aware of existing research that links the pre-disaster composition of local and non-local banking in a region (bank institutional development) with post-disaster outcomes
Economic theory provides contradictory predictions on how a greater concentration of non-local banking affects overall lending to a disaster region.

We build a new US county-by-year database to test our 2 research questions.

We estimate an event study model that instruments for bank market share in the year before a large natural disaster.

Find that counties with higher concentrations of local banking at the time of a large natural disaster have:

1. Less total post-disaster lending for approx. 6 years post-disaster.
2. Suggestive evidence of lower economic recovery (lower wage and population growth) in the 8 years post-disaster.
Theoretical Framework - Predictions

1. **Capacity**: local banks have *less capacity* to lend to a disaster region
   - Local banks are less geographically diversified and less able to import capital.

2. **Incentive**: local banks have a *greater incentive* to lend to a disaster region
   - A collateral shock to borrowers will make lending to the disaster impacted region more costly due to higher moral hazard.
   - Non-local banks will shift lending to regions that now have a higher expected return.
   - Local banks have fewer opportunities to lend outside the disaster impacted region, and have an interest in promoting the economic recovery of their lending area.

3. **Information**: local banks may be able to better assess risk and to monitor borrowers at a lower cost
   - Relationship lending advantage.
   - Monitoring rebuilding especially important after a natural disaster.
Data Sources

1. **Natural Disaster Incidence and Cost**
   - Presidential Disaster Declarations for all natural disasters (1981-2014)
   - County-level dollars of FEMA’s Public Assistance (1990-2007)

2. **Bank Deposits**
   - FDIC dollar deposits (1981-2014)

3. **Bank Loans**
   - Home Loans (HMDA): number and dollar amount (1990-2014)

4. **State Banking Deregulation**
   - Intrastate and interstate bank deregulation (Morgan, Rime, and Strahan, 2004)

5. **Economic Information**
   - Employment (CBP); Wages (US BEA); Population (NBER)
Main Sample

• Our preferred panel is an unbalanced 1990-2006 sample

• Rationale for time period:
  1. HMDA loan and county-specific FEMA disaster cost (via a FOIA) available in 1990
  2. State deregulation occurs mostly mid-1980s to mid-1990s
  3. End panel before 2007 financial crisis

• Reasons why unbalanced:
  1. Small number county-years with no FDIC deposits data
  2. Drop county obs that have 2 large disasters in 5 years

• Baseline sample defines large disaster as $>75\%$ cost

• External validity: Examine flood-related disasters (hurricanes, coastal storms, severe storms, flooding), approx 80% of all disasters
**Statistical Model**

- Linear projections event study model (Dube et al., 2023; Roth Tran and Wilson, 2023)
  - Estimate the time-varying impact of a large natural disaster on overall credit and local economic outcomes
  - Control for: smaller disasters, pre-period trends in DV, county FE, year FE

- Model allows us to estimate overall impact

- Model allows us to estimate how the impact varies based on the concentration of local banking at the time of a large disaster

- We instrument for the composition of local banking institutions using state banking deregulation
  - Want to separately identify the causal effect of local banking institutions on credit provision and economic recovery
County Local Banking Index

- We use the FDIC bank deposits data to define a lender localness score for each lender, in each county, for each year.

- We then calculate a county local banking index by taking a weighted average of the lender localness scores.

- We interpret the county local banking index, which ranges from 0 to 1, as the degree of local banking (or local banking market share) in each county each year.
US Map Shows County Local Banking Index is Correlated within State

1st Tercile Bank Index (0.00 - 0.27)
2nd Tercile Bank Index (0.27 - 0.57)
3rd Tercile Bank Index (0.57 - 1.00)

1995 US Map. Data source: FEMA.
Bank Deregulation as Exogenous Variation in Local Banking Concentration

- Prior to 1978 every state prohibited banks from other states, and most prohibited branching to other counties in the same state.

- Interstate Deregulation
  - Beginning in 1982 with Alaska/Maine/NY; National law in 1994

- Intrastate Deregulation
  - Occurred from 1970’s to 1990’s

- The timing of state-level banking is uncorrelated with state economic conditions (e.g. Jayaratne and Strahan, 1996; Levine et al., 2020)
There is Less Credit following a Large Natural Disaster
Reduced Lending in Regions with more Local Banking

Approximately 11 percentage points more lending in a county at 25th percentile of Local Banking Index vs. 75th percentile
CONCLUSION

We examine whether the development of local banking institutions impacts

(1) Total credit (lending) following a large natural disaster
(2) Local economic recovery following a large natural disaster

We find

(1) Total credit (lending) is approx. 5% lower for 5 years
   → The reduction in lending is driven by locations with a higher share of local banking at the time of a disaster

(2) There is an approx. 1% increase in wages and employment, and suggestive evidence of a small decrease in population
   → Regions with more local banking appear to have lower wages and population growth