



# 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



Red Lodge, 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



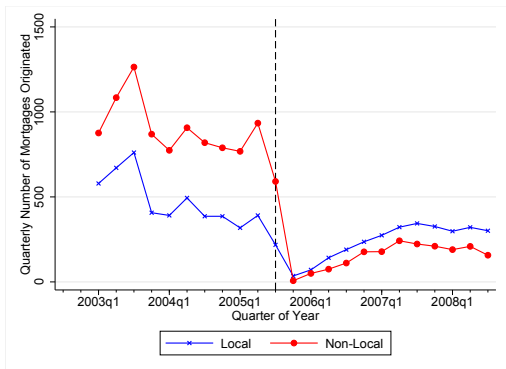
- Founded 1852; Corporate headquarters in San Francisco
- 4th largest US bank by assets
- 70 million customers





# 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





## PROJECT OVERVIEW

- 1 Economic theory provides contradictory predictions on how a greater concentration of non-local banking affects overall lending to a disaster region
- 2 We build a new US county-by-year database to test our 2 research questions
- 3 We estimate an event study model that instruments for bank market share in the year before a large natural disaster
- 4 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





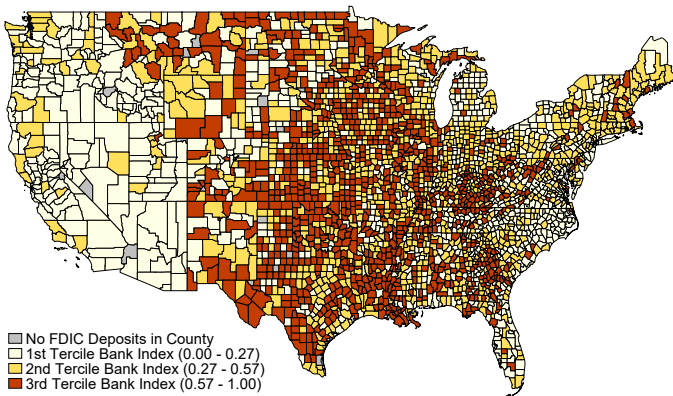
# COUNTY LOCAL BANKING INDEX

- 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



1995 US Map. Data source: FEMA.





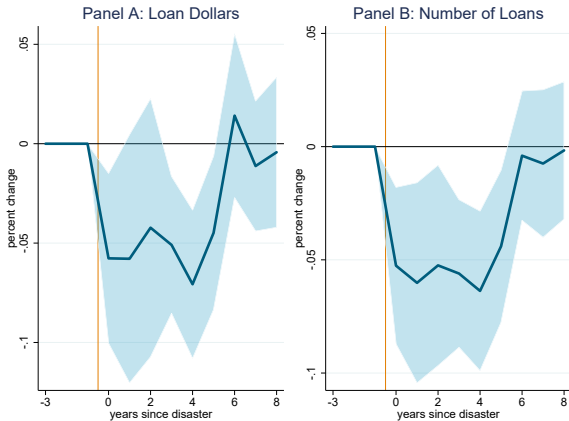
# BANK DEREGULATION AS EXOGENOUS VARIATION IN LOCAL BANKING CONCENTRATION

- 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)





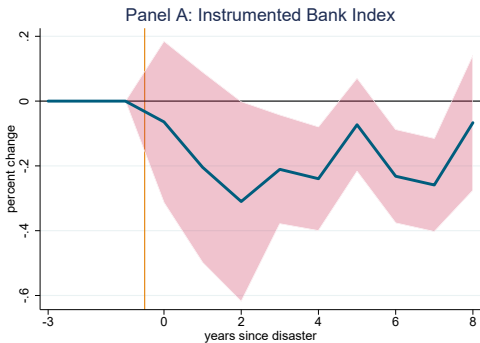
# THERE IS LESS CREDIT FOLLOWING A LARGE NATURAL DISASTER





# 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

- 1 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
  
- 2 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

