

Discussion: Natural Disasters, Loan Loss Accounting and Subsequent Lending

2019 January 13

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Paper recap

Main idea

What is the relationship between banks' Loan Loss Provisions (LLPs) and Natural Disasters?

- Research questions:
 1. How do banks adjust LLPs for natural disasters?
 2. Do LLP policies influence lending after natural disasters?
 - And if so, how?

Method

- “Banks” are US county level aggregations of 1 or more bank branches
- Unit of analysis is Bank \times County \times quarter
- 1:1 matched pairs DID design
 - Treatment: Affected by natural disaster in a quarter
 - Post (for DID): Disaster quarter + following 3 quarters
 - Match on financial/banking characteristics
 - Exact match on if part of a holding company
 - With replacement

Highlights

1. A lot of effort put into the empirics
 - 17 panels in the paper + another 15 supplemental panels
2. Examining at county level is a clean way to examine the questions asked
3. The question of how natural disasters impact LLPs is natural to ask
 - It makes sense: natural disasters *should* impact loans' collateral

Motivation

A question...

Should *natural* disasters effect banks the same way as *financial* crises?

Perhaps, as...

1. Both impact the financial well-being of banks' clients
2. Both will lead to an increased demand for lending
3. Both can impact a bank branch's ability to provide capital to those that need it (thus introducing financing constraints)

A question...

Should *natural* disasters effect banks the same way as *financial* crises?

But...

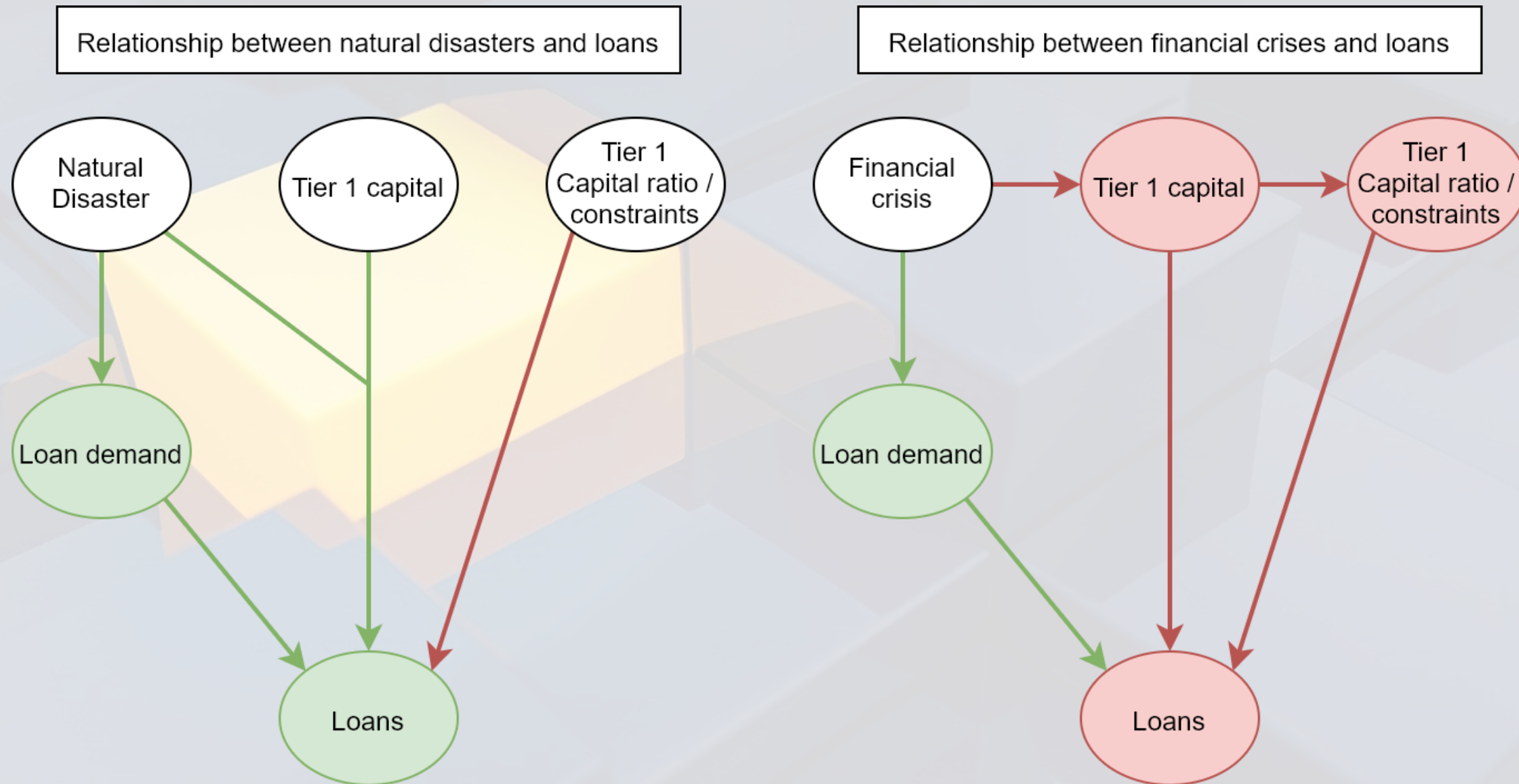
1. Natural disasters are localized and therefore diversifiable, whereas financial crises are less diversifiable
 - Which means bank group size naturally increases robustness to natural disasters
2. There are no bank runs associated with natural disasters, while there are with financial crises
 - Indicating a differing mechanism in terms of bank capital

Prior literature: Natural disasters and banking

1. Banks *gain* deposits after natural disasters (Steindl and Weinrobe 1983)
2. After deregulation allows banks to operate in more locations, banks in locations with more natural disasters diversify location (Gropp, Noth, and Schüwer 2019)
3. Banks branches that set interest rates locally attract more deposits after a disaster, leading to higher lending (Dlugosz et al. 2019)
4. Credit supply is restricted after disasters, but banks focus on lending to disaster-affected firms with which they have relationships, at the expense of other non-affected firms. (He 2019)

This literature is relevant and can help to better understand how banks respond to natural disasters.

Exploring further

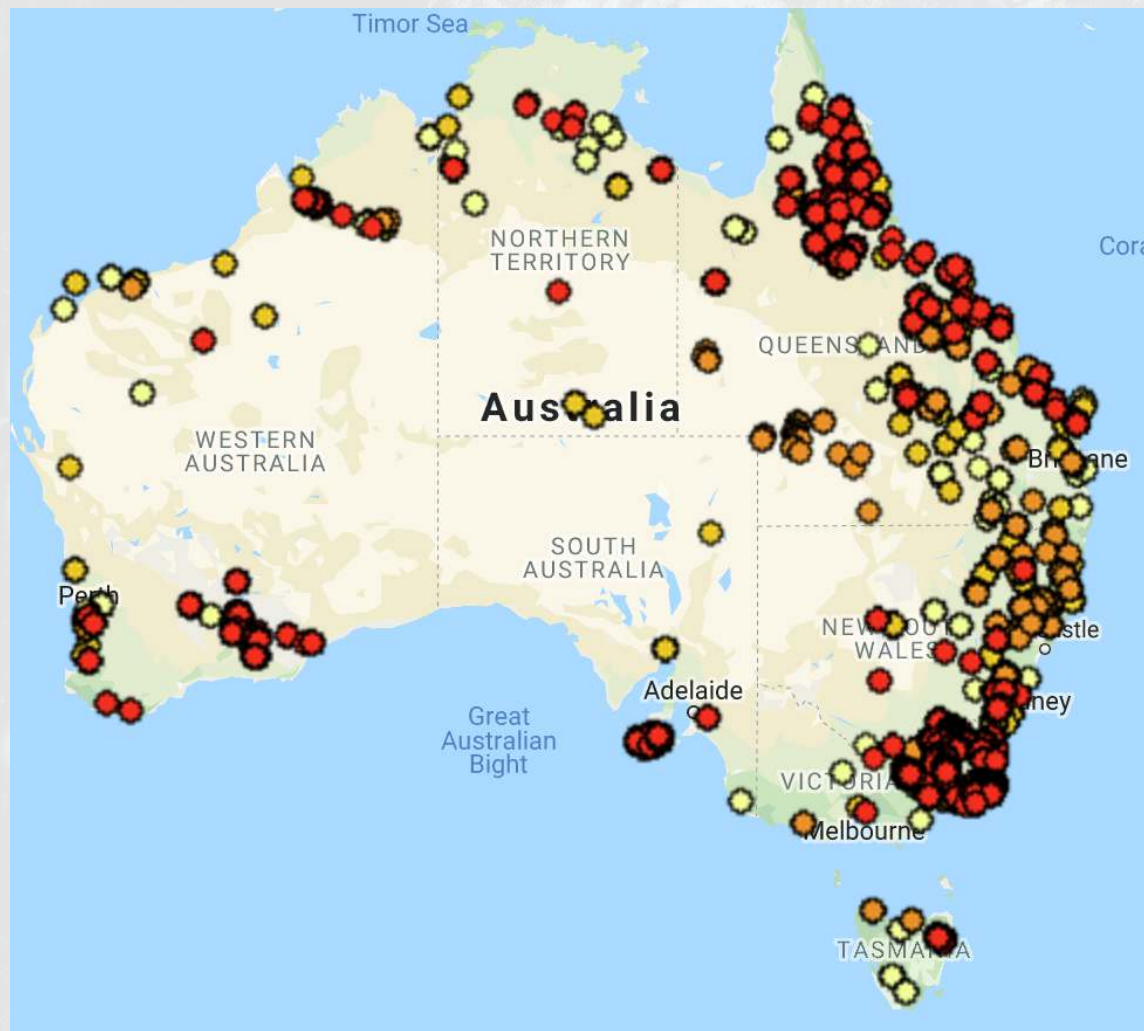


Where does LLP fit in?

Empirics

Difficulty in this data

What I was expecting:

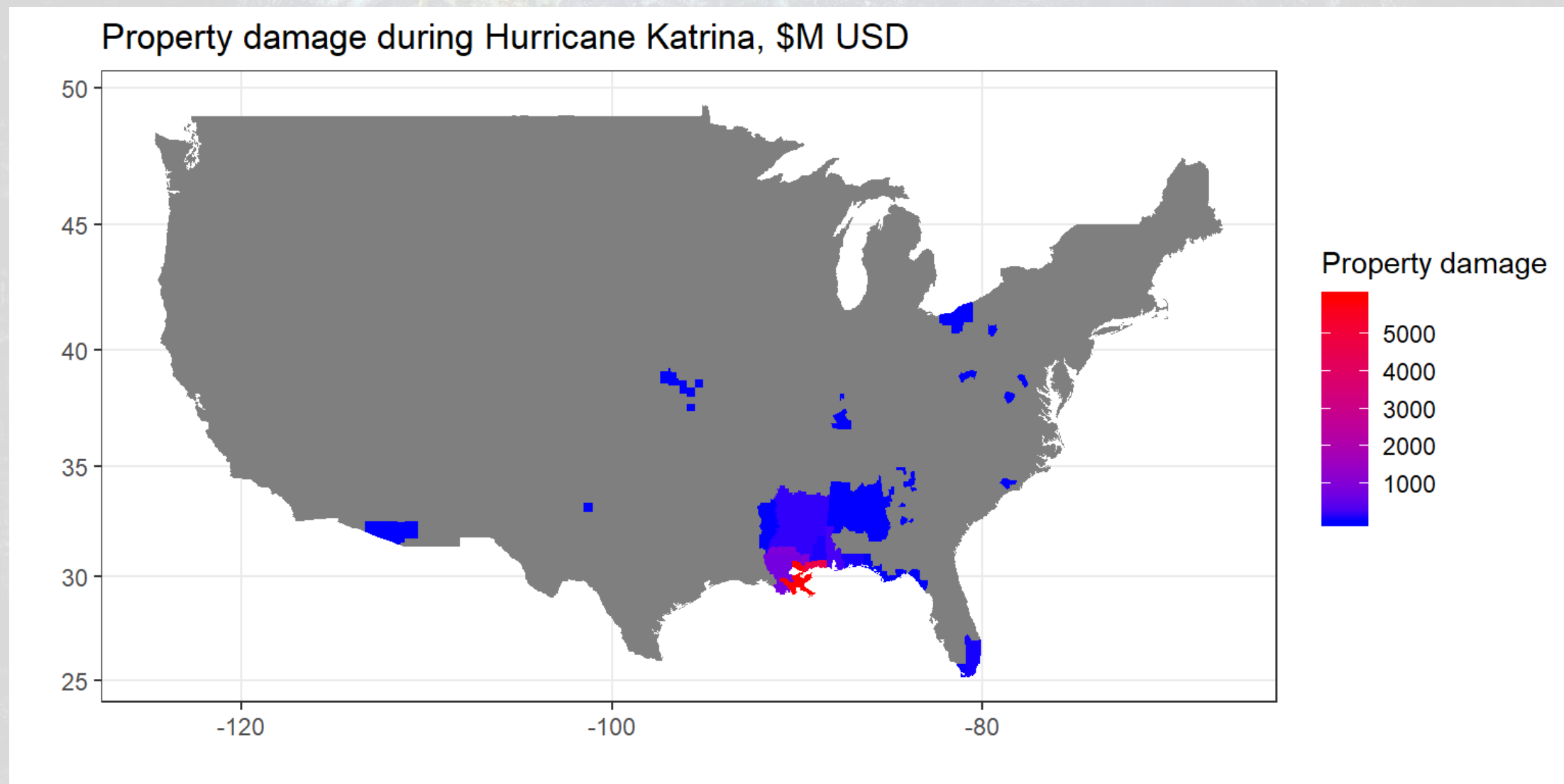


What is also included:



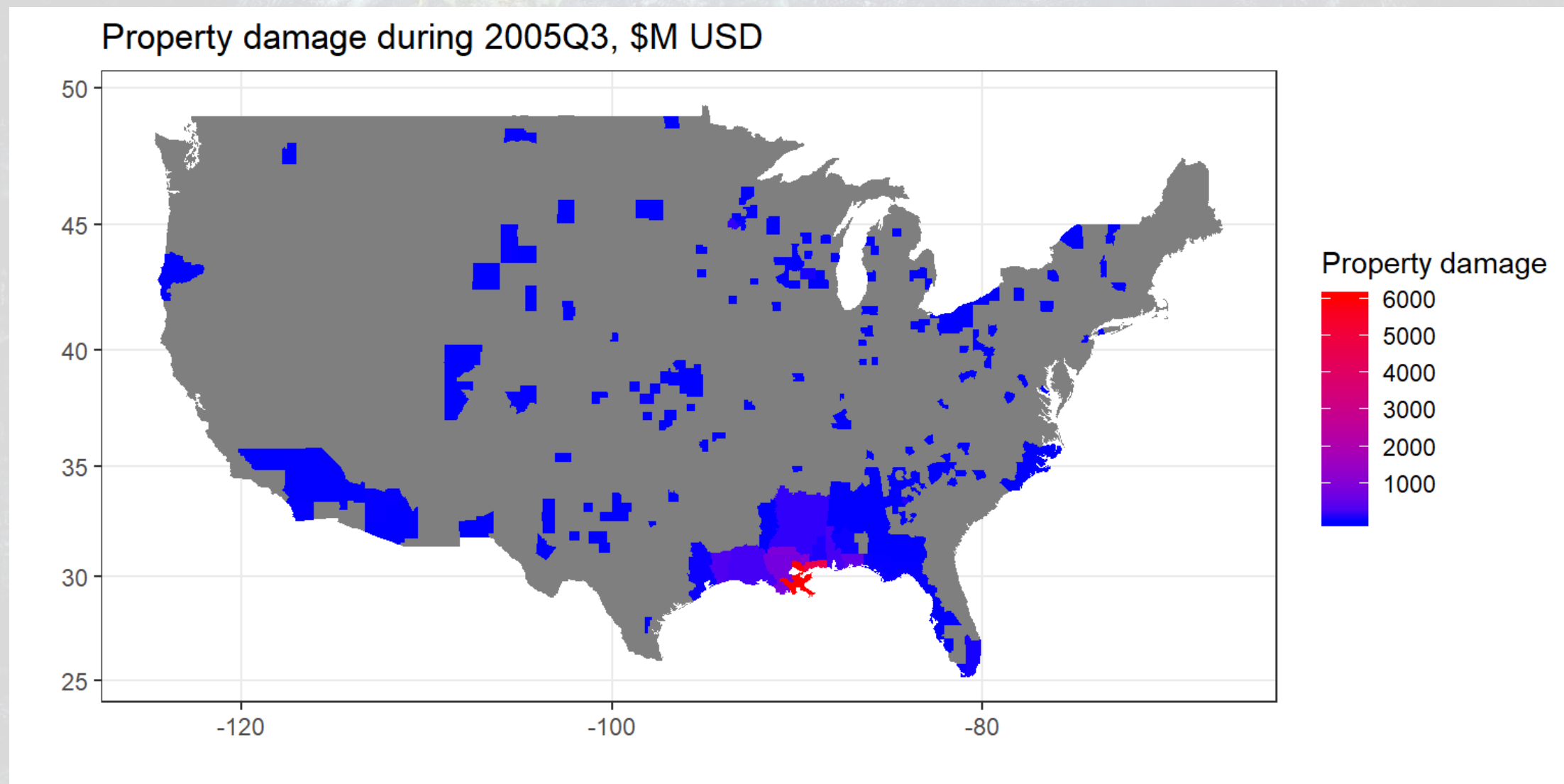
The SHELDDUS data

- Based on an old copy of SHELDDUS through 2012 from `shelddus_r`



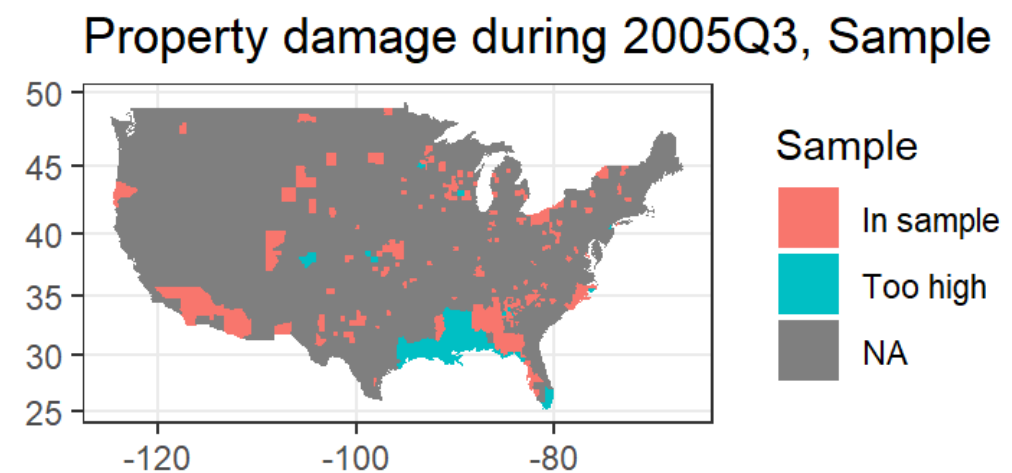
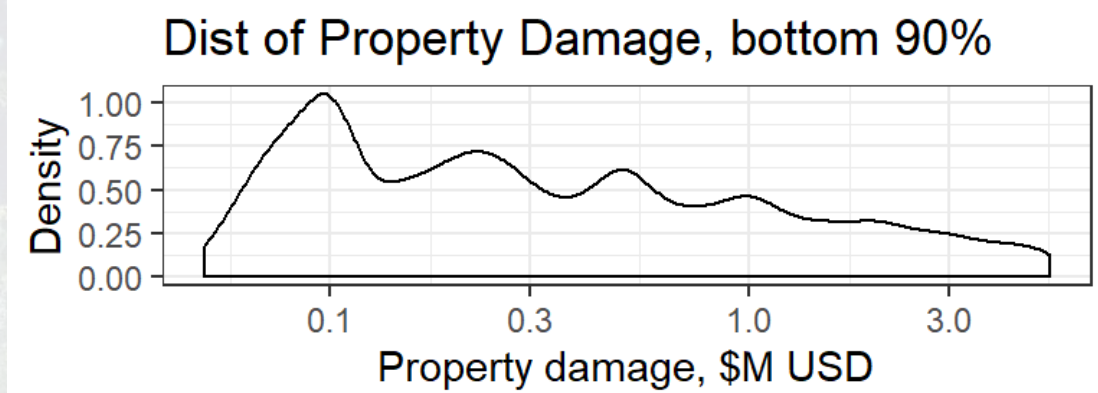
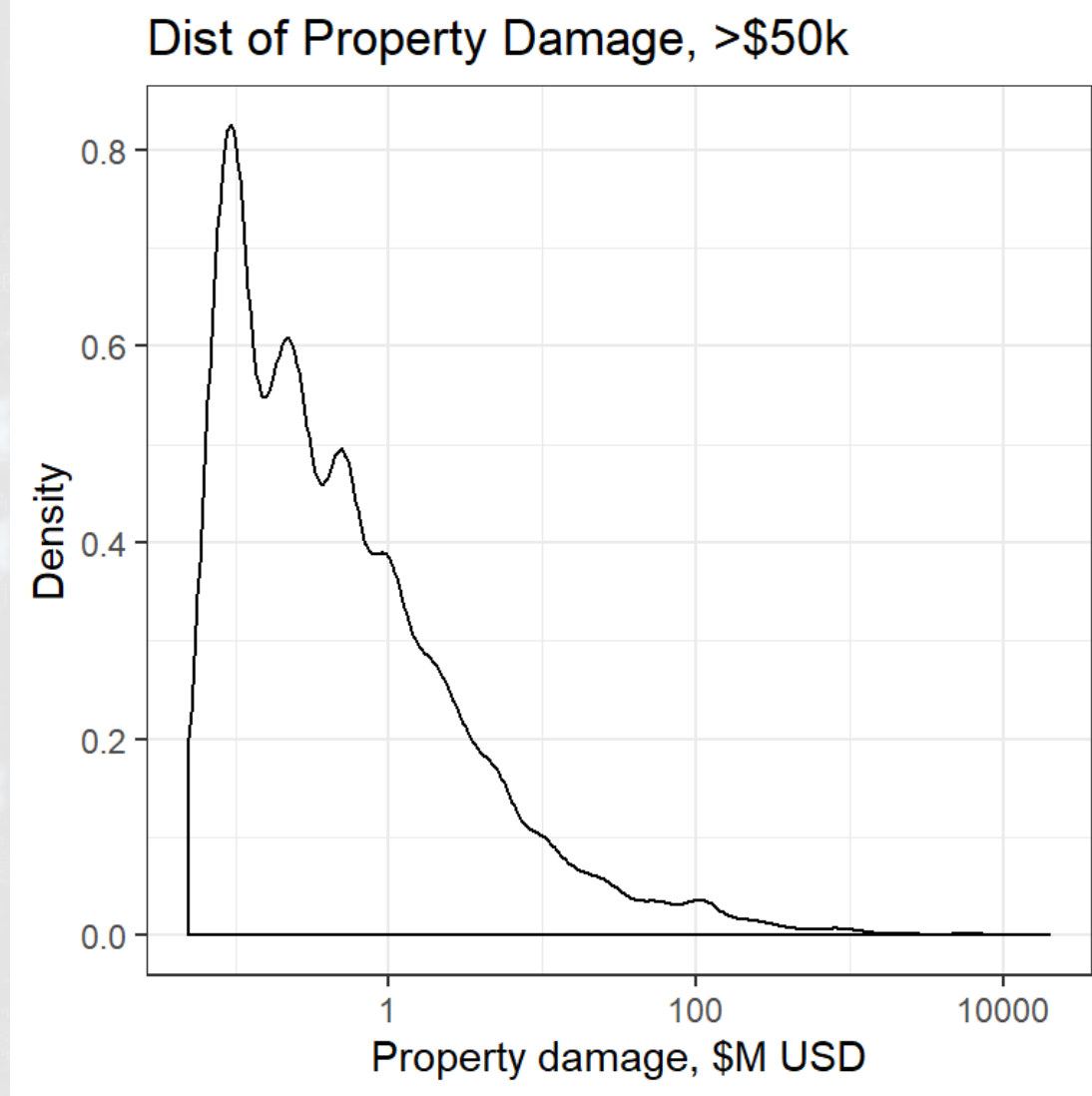
The SHELDUS data

- Based on an old copy of SHELDUS through 2012 from `sheldus.r`



Distribution of property damage

- Based on an old copy of SHELDDUS through 2012 from `shelddusr`



Can we treat all disasters as homogenous?

Matching

- Are bank characteristics the only relevant part to match on?
- What about location?
 - For instance, Gropp, Noth, and Schüwer (2019) show that bank locations are endogenous
 - Banks in areas that more frequently experience disasters tend to diversify into other areas that experience similar disasters
 - Is there enough data to look at adjacent counties or states?
 - **Caveat:** Banks may often lend to adjacent counties
 - Even better: Match within bank, across counties?
 - I.e., Chase in Chicago vs Chase in Champaign

Learning test

- Current test examines banks relation between $LLP(\%)$ and ΔNPA based on the number of disasters in the county experienced over the prior 3 years

Consider the effect of *PastDisaster* on
 $Treat \times Post \times NPA_*$

- Banks learning from past disasters should impact how they react to disasters in the future
 - This is particularly a concern for larger bank groups

Consider aggregating at a more coarse level than county

Large disconnect

- The paper argues and shows a positive effect of conservatism on lending post-disaster
 - Supplementary results do not support this, showing no effect
- The paper argues and shows a negative effect of timeliness on lending post-disaster
 - Supplementary results show a positive effect, which is now in line with Beatty and Liao (2011)

Why are the results so different? Is it just due to differing matching methodologies?

Is it due to removing the largest natural disasters? *Do banks behave differently based on disaster magnitude?*

Comments on supplemental tables

- Is this paper about...
 1. Loan loss accounting around natural disasters and its role in recovery? Or,
 2. The impact of natural disasters on banks' future actions, including setting their LLP and lending behavior?
- How do the results on LLP recognition effect loan origination post-natural disaster?
- Can you examine the interactions between LLPs and each of deposits, tier 1 capital, and restructured loans?

Missing details

- Why are so many observations unmatched?
- What is the homogenous / heterogenous loan split exactly? What cutoff is used?
 - And how does it refute the Ryan and Keeley (2013) argument?
- Comparing between large and small banks – are the differences actually significant though? Can test with a χ^2 test.
- Writing: four different hypotheses in motion – mention which coefficient gives the conclusion alongside the results
 - E.g.: Discussion of Table 5 Panel B (supplement Table 4)
- A written definition of variables – the call report items are useful to those familiar with the database, but not for others

Conclusion

Looking forward

- The focus on the impact of natural disasters on loan loss provisions is interesting
 - It makes sense: natural disasters *should* impact loans' collateral
- The motivation of natural disasters as a similar mechanism to financial crises seems tenuous
 - As does the tension between this paper and Beatty and Liao (2011)
 - This tension isn't needed!
- The latter research question on lending behavior could be more fully explored
- More on the disasters themselves would be helpful
 - Distributions, charts, or testing different disaster types, magnitudes, ...

Thanks!

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loan
banks
disasters
nonperforming
bank
capital
ratio
asset
yes
total
hit
column
useable
period
scaled
evidence
event
mean
regarding
rubin
explain

Citations (other than those in the paper)

- Steindl and Weinrobe. 1983. “Natural hazards and deposit behavior at financial institutions: A note”. *Journal of Banking & Finance*. 7(1): 111–118.
- Dlugosz, Gam, Gopalan, and Skrastins. 2019. [SSRN](#)
- Gropp, Noth, and Schüwer. 2019. [SSRN](#)
- He. 2019. “Exogenous Shocks and Real Effects of Financial Constraints: Loan- and Firm-Level Evidence around Natural Disasters.”

Packages used for these slides

- data.table
- knitr
- revealjs
- sheldusr
- tidyverse
- tm
- wordcloud