Impact of Physical Climatic Shocks on the Conditions for Granting Mortgage Loans in Mexico

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Summary

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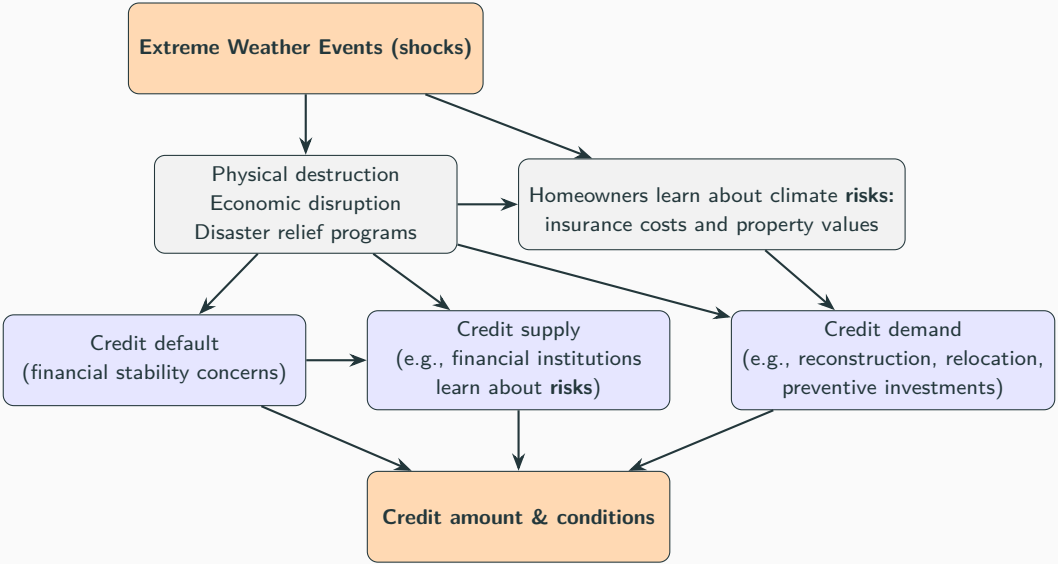
- Research question: causal impact of disasters actue and chronic risks on mortgage credit conditions in Mexico
  - Hurricane Alex (2010), SLP drought (2019), Hurricane Otis (2023)
- Empirical strategy: synthetic control method
  - Treated unit: affected municipalities in each state according to CENAPRED (avg)
  - Donor pool: rest of municipalities in treated state (avg), rest of states
- Interpretation of results:
  - Hurricanes led to acute adjustments in credit conditions $\rightarrow$ Immediate increase in loan amounts, followed by sharp decreases (Alex), Increase in origination fees, followed by declines (Otis).
  - Drought led to gradual and sustained changes $\rightarrow$ Gradual decline in loan amounts (SLP)

Conceptual comments

Framing and contribution

- Previous findings (e.g., Zivin et al., 2023; Garbarino and Guin, 2021; Ho et al., 2023), and what do we learn from this study
  - Developing country setting (shallower mortgage markets, deeper information asymmetries)
  - Extremely detailed data on loan, borrower and lender characteristics
- Risks versus shocks, acute versus chronic (Smith, 2013)
- Interpretation of results: a supply response or a demand response?

Structuring the Hypotheses



Econometric comments

Treatment and control status definition

- What is the spatial delimitation of the treatment? Are there spillovers?
  - Cleaner definition if focusing on a single disaster (e.g., Otis) (Gallagher and Hartley, 2017; Deryugina et al., 2018) or a long period of time (Zivin et al., 2023; Hsiang and Jina, 2014)
- CENAPRED Data: registered disaster declarations receive disaster relief funds, which help mitigate economic (Del Valle et al., 2020) and human (del Valle, 2024) losses.
  - Gallagher and Hartley (2017) homeowners used insurance payouts to pay off mortgages after hurricane Katrina
  - Suggestion: use geospatial exposure data to determine treatment (continuous or discrete)

Implementation of the synthetic control method

- Municipality-level treated units $\rightarrow$ municipality-level control units
- Currently only using dependent variable in $t - s$ for $s \in 1, 6$
  - Growth rate? Other predictors?
  - Balance table: compare observed and synthetic unit on relevant characteristics (Ho et al., 2023)
- "When disaggregated data are available, constructing separate synthetic controls for each treated unit may help avoid interpolation biases" (Abadie and L'hour, 2021)

Implementation of the synthetic control method

- Statistical significance discussion requires more than visual interpretation. Options from Firpo and Possebom (2018): Confidence sets, RMPSE p-values

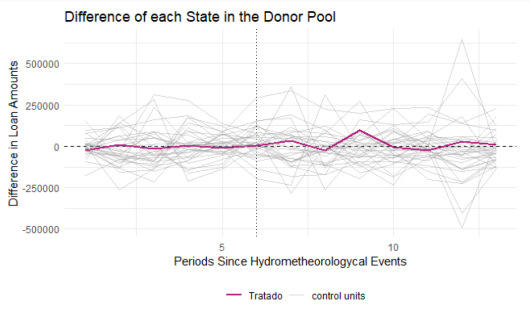


Figure 1: Example: "Alex led to an increase and then a decrease in loan amounts"

Writing/structure comments

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- Visuals could be replaced with specific facts (e.g., increase in the days of extreme drought between 2000-2005 and 2019-2024, change in amount of financial damages from hydrometeorological phenomena on same reference period)
- Contribution should be stated in the last two paragraphs of the introduction, always comparing the paper to the frontier
- Background/Conceptual framework section $>$ Literature review section

$\rightarrow$ Suggested guidance: Bellemare (2022)

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