House on Fire: Climate Risk, Mortgages, and Monetary Policy

Bonfim, Zhao

Gazi Kabas

Tilburg University

IBRN Workshop

October 2025

Summary

- How does climate change affect the financial system?
  → An adverse effect would undermine the financial stability, making the fight against climate change more difficult
- Transitional risk, physical risk

Summary

- How does climate change affect the financial system?
  → An adverse effect would undermine the financial stability, making the fight against climate change more difficult
- Transitional risk, physical risk

This paper

- Uses wildfire as the climate risk, and combines it with detailed mortgage-level data
- Focuses on the risky areas that are not burnt (yet)
- Mortgages in risky areas are 3% smaller and have 1 to 2 bps higher spreads
  → Monetary policy shocks amplify these effects

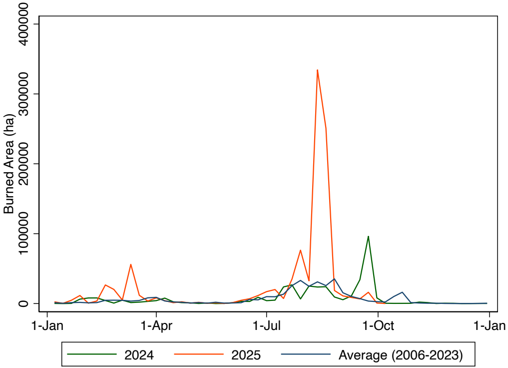
Wildfires

Are wildfires important?

Wildfires

Are wildfires important?

YES!

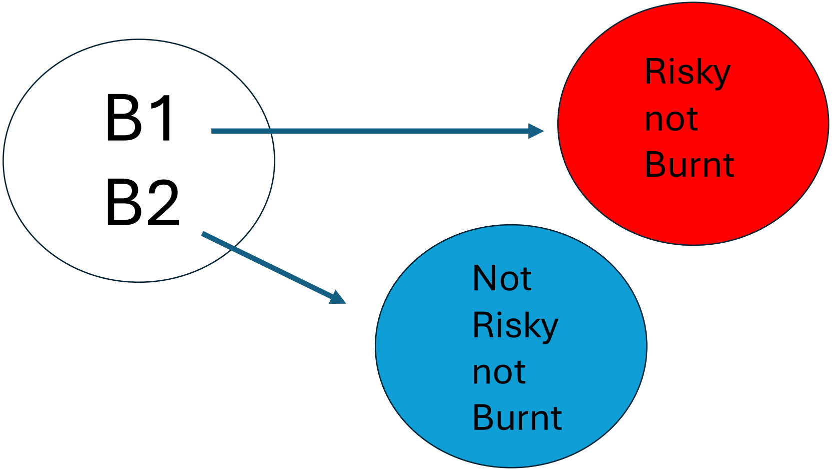


- WB estimates that global economic losses due to wildfires are around \$80bil
- In Southern Europe, regions with at least one wildfire experience 0.11% reduction in GDP growth (Meier et al. 2023)

Roadmap

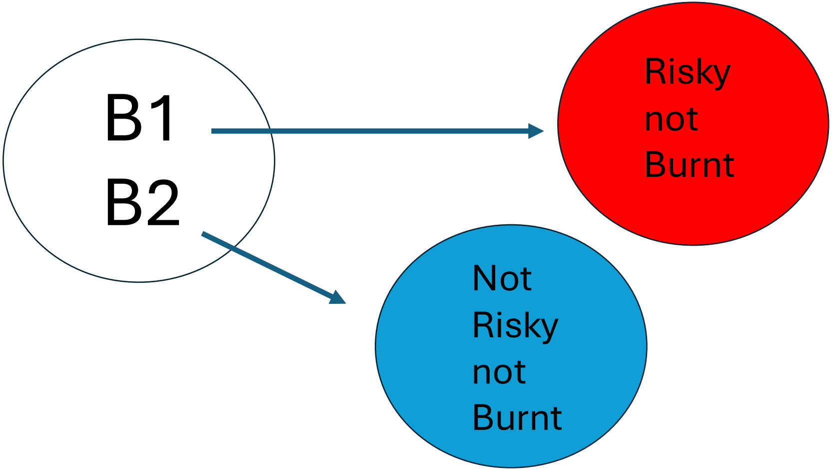
- How should we interpret the results?
- Alternative comparison
- Monetary policy and wildfire risk

Understanding the results



- Similar borrowers (same location, same loan characteristics) within the same bank-month

Understanding the results



- Similar borrowers (same location, same loan characteristics) within the same bank-month
- Obtain smaller mortgages with higher rates! Also, they live in a risky area. **Why?**

Understanding the results

Why do people live in riskier areas with more expensive mortgages?

1. Location-specific characteristics
2. Borrower-specific characteristics
3. Location-borrower specific characteristics

Understanding the results

Location-specific characteristics

- Even though the wildfire risk may change over time for a certain location, this change doesn't seem to be large enough to do a within-location comparison.
  → Cannot include location FEs
- Do locations with wildfire risks offer better amenities?
  → Better job opportunities
  → Lower house prices (models control for house prices)
  → Proximity to certain locations
- A simple comparison table at the location-level can be helpful

Understanding the results

Borrower-specific characteristics

- Ideal setting: The same borrower obtains a mortgage from the bank for the same house in two different locations
  → Not possible
- Approximation: Using observables to make borrowers similar
  → Unobservables can be important

Understanding the results

Borrower-specific characteristics

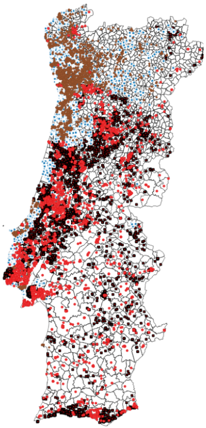
- Ideal setting: The same borrower obtains a mortgage from the bank for the same house in two different locations
  → Not possible
- Approximation: Using observables to make borrowers similar
  → Unobservables can be important
- **Concern 1**: Liquidity constraints
  → Wildfire risks lower house prices. HHs with liquidity constraints prefer risky locations, as they can buy a house only in these locations
  → Welfare implications are uncertain

Understanding the results

Borrower-specific characteristics

- Ideal setting: The same borrower obtains a mortgage from the bank for the same house in two different locations
  → Not possible
- Approximation: Using observables to make borrowers similar
  → Unobservables can be important
- **Concern 1**: Liquidity constraints
  → Wildfire risks lower house prices. HHs with liquidity constraints prefer risky locations, as they can buy a house only in these locations
  → Welfare implications are uncertain
- **Concern 2**: Borrower (lack of) sophistication/Inattention
  → Even though the information on risk is public, not all HHs are aware of it, or don't understand its implications.
  → Banks exploit such borrowers (findings with insurance)
  → Clearly, there is room for **policy intervention**!

Alternative comparison



- Four areas: not risky not burnt, risky and burnt, risky not burnt, and not risky but burnt
- Compare risky not burnt areas to not risky not burnt areas.

Alternative comparison

Risky not burnt areas vs not risky not burnt areas

- Is this the most interesting comparison?
- A comparison that may allow a within-location difference would be useful
- Can we take the wildfires in **not risky but burnt** as shocks and compare lending behavior in risky and burnt areas before and after the fire?
  → Assumption: Banks and households adjust their expectations after a realization.
  → This would control for location-specific confounders
  → The direct effect of the wildfire is controlled for
- You can check whether borrower characteristics change because of the unexpected wildfires.
  → Do HHs with lower income start to move into these areas?
  → Do you see a decline in education levels?

Monetary Policy and Wildfire Risk

Related to earlier points, there could be two additional channels that may influence how wildfire changes monetary policy transmission to mortgages

- House prices: If risky areas face a different demand than other areas, monetary policy can change the demand for riskier areas, inducing an additional house price effect.
  → A quick way to check this is looking at whether house prices react differently in risky areas
- Borrower pool: The same story may work for the borrowers. If house prices react differently in riskier areas, the borrower pool may also change. The increase in the spreads may simply reflect a riskier borrower pool.

Minor comments

- Why don't the shares of employed, unemployed, and self-employed add up to one?
- The treatment is at the location and bank level. Therefore, a double clustering over the location of the mortgage and the bank would capture the standard error structure better.
- Is there a way to assess the importance of banks' internal capital movement? Lower loan supply to one area may mean higher loan supply to other areas. This would contaminate the control group.
- The findings regarding the insurance are interesting. Is it possible to know how popular non-banks are in this market? If they are popular, sample splits with bank-provided-insurance would tell another story about banks exploiting their borrowers.