

The Long-run Environmental Consequences of Land Development

By Congyan Han, Lu Han, Christopher Timmins and Vincent Yao

Discussed by Yu Qin (NUS)

2024 ABFER Annual Meeting

Summary

- A **very cool paper** on how land development affects flooding risk!
- An important contribution to the literature
 - Most of the literature study how flooding impacts economic outcomes
 - Very few papers study how economic outcomes affect flooding!
- Research design: stacked long differences + IV (using state level policy change interacted with initial land development)
- Main findings
 - Land development has a significant positive impact on flood damage
 - Substantial heterogeneity by sources of land and initial development conditions
 - Disproportionally higher flood cost in areas with a higher minority share

Summary

- I really enjoyed reading the paper. Very interesting and important research question + careful research design + rich analysis!
- My discussion is based on the paper that I received last week (January version) + the slides from Congyan last week.
- Apologies if any mistakes as I received the assignment last week...

Actual flooding vs. flooding damage

- In the paper, it seems that the authors try to argue that land development increases actual flood because
 - poorly planned land development can exacerbate flood risks by channeling water into vulnerable areas and reducing natural flood buffers (such as wetlands and floodplains).
 - Urbanization may increase extreme flood events
- The data used is flood damage claims
 - Is it possible that land development increases population density → more claims
 - Consistent with the event study which does not show an immediate effect

Actual flooding vs. flooding damage

- Some new results using NC OneMap Data are very promising!

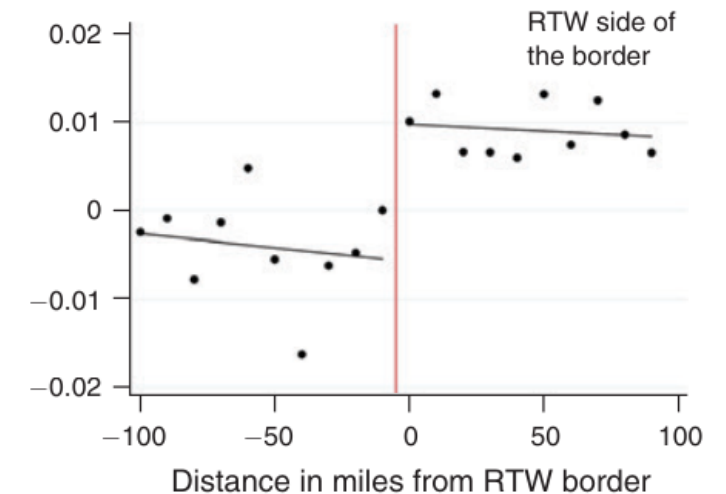
Dep Var	$\Delta\text{Log}(\text{Flooded area})$
$\Delta\text{Log}(\text{Dev})$	2.919* (1.492)
Zip Code Covariates	Yes

- Additionally, can you separately estimate the two different channels (1. an increase in flooded areas/frequency of flooding; 2. conditional on the same climate extreme events, more damages)
- Can you show that “poor planning” in land development lead to these consequences? (e.g. excessive development in flood hazard areas; linking with planning policies)

Identification strategies

- State-wide RTW (Right-to-Work) law adoption at year t interacted with the initial development condition of a locality (high vs. low dummy) as IV for land development level in a locality at year t
- Is it possible that the initial development condition could directly affect changes in flooding risk? (there is a strong heterogeneity of the results by initial development condition...)
- Can you directly use the RTW variation as IV
- To further convince the readers on the exclusion restriction of the IV, you may also consider restricting your sample to around the border, similar to the RD design following Bloom et al. (2019, AER)

Panel B. Incentives management practices



Identification strategies

- State-wide RTW law adoption at year t interacted with the initial development condition of a locality as IV for land development level in a locality at year t
- You may also consider the “Million Dollar Plant” identification strategy (Greenstone, Hornbeck and Moretti, 2010): MDP (county level variation: 47 winning counties and 73 losing counties) → more land development (in winning counties)

Land development sources

- Land developed from treeland and cropland is associated with an increase in flood risk.
 - Because they are more flat?
 - Because they are more likely to be close to waterways (better irrigation)?
 - Because they are more likely to be associated with higher population density (thus more claims)?
 - Because they are subject to different regulations? (Farmland Protection Policy Act...)
 - Are we supposed to see an effect for wetland? (Wetlands are a critical tool for reducing flood risks because they can absorb large volumes of water.)

Other suggestions

- More discussions on the magnitude of the coefficients – they seem to be very large.
- The discussions on benefits (in terms of job access) and costs (flood) look very promising and interesting!
- The discussions on the distributional effects by demographic groups speak to the growing literature on environmental justice.
- I see a lot of potential in this paper with such a rich setting and rigorous empirical design!



A very interesting and promising research!