

Discussion of
“Macroeconomic outcomes in
Disaster-Prone Countries”
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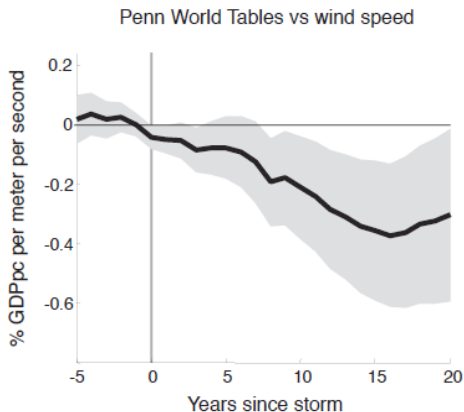
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The question

- What are the macro effects and welfare costs of being **exposed** to natural disasters?
- Compare two otherwise identical countries that draw from \neq distribution of “shocks”
- Two channels:
 - \neq direct and indirect effects of **realizations**
 - \neq ex-ante choices given \neq **distribution**

Motivation

- Prototypical story: small island faces cyclone risk
 - large shocks, fairly frequent
 - Hsiang and Jina (2014): very persistent effects



Model framework

- Standard RBC model with some additions:
 - “disaster” shocks: affect level TFP and destroy capital
 - Epstein-Zin utility
 - Fiscal rules for tax rates + public invt
 - Debt bought by foreigners at increasing interest rate

Key results

Higher exposure to natural disaster:

1. Reduces average growth substantially (1pp)
2. Reduces welfare (growth, uncertainty, ex-ante choices)
3. Large international aid can help
4. Adaptation (increase capital resiliency) has minor effects

Mechanisms

- Effect of **realizations**:
 - if model linear + higher variance shocks: no LR effect
 - but here: negative mean shocks \rightarrow cumulate over time
 - also: nonlinearities
- Effect of **distribution**:
 - invest less because of the risk
 - spend more more adaptation

- First order effect: lower avg. TFP growth

Comment 1: low benefits to adaptation?

- Model assumes permanent TFP decline if disaster
- To match IRF of Hsiang and Jina
- Adaptation mitigates capital destruction, not TFP decline

- Need to understand why is TFP falling
 - lower invt in HK or innovation post-disaster?
- Some adaptation decisions might protect TFP
 - e.g., industry specialization, insurance, etc.

- Does TFP actually fall permanently?

Comment 2: calibrating adaptation

- Model nicely calibrated to match the “well identified” effect of disaster **realization**
- Also need to calibrate cost of **adaptation**
- Harder but in principle, could compare the responses to a cyclone of high risk vs. low risk countries
 - e.g. Gourio and Fries (2020) for US and temperature

Comment 3: Risk-Sharing and Policy

- Risk-sharing sounds promising...

but the problem is the mean effect on TFP growth!

Not a risk

- However, insuring against a change in the distribution going forward would likely be valuable
In practice, long-term insurance at locked-in rates

Summary

- Important topic
 - esp. for small, disaster-prone countries
- Are TFP effects really permanent? If so why?
- Can adaptation mitigate TFP declines?
- How to measure the cost of adaptation?
- Can risk-sharing be useful?