Insuring Growth: The Impact of Disaster Funds on Economic Recovery

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Disaster funds are a key part of climate change adaptation efforts.

- Damages from extreme weather events are likely to increase in the coming decades
  - Climate change will likely lead to more intense and more frequent storms, Emanuel (2013)
  - Demographic trends imply increased exposure to weather risks, Mendelsohn et al. (2012)
- Governments, in developing economies, have a limited ability to smooth the losses created by extreme weather events.
- Risk-financing instruments could be used to mitigate the losses
  - National disaster funds can be deployed to mitigate the losses from recurrent events.
Can Disaster Funds provide a cost effective way of mitigating these losses?

- Disaster Funds: ex-ante budgeting allocations for post-disaster reconstruction
- Disaster Funds provide a double gain:
  - *Reduce the opportunity cost of reconstruction*
  - Allows firms and households to better manage risk by knowing in advance the government response

*We use a unique dataset and the institutional features of Mexico’s Natural Disaster Fund (FONDEN) to provide some of the first estimates of the impact of disaster funds on local economic activity*
We exploit a nearly ideal research environment: Mexico’s FONDEN
Our source of variation is created by Fonden disaster thresholds.
Heavy Rain Events (2004-2013)

74% of municipalities will request Fonden funding
We measure economic activity using *night lights* imagery.
We measure LOCAL economic activity using night lights
Year the disaster takes place
One year after the disaster occurs
Fonden increases local economic activity
What is the value of the growth created by Fonden?
Back of the envelope

- Word of warning! This number is noisy and hard to pin down.
  - uncertainty of estimating the impact of FONDEN and of estimating the elasticity of light to GDP
- Value of local economic activity generated by FONDEN 2004-2011
  - Mean: USD $6.38 billion
  - Std Dev: USD $ 5.63 billion
- Cost of the program: USD $ 4.9 billion
- Mean benefit-cost ratio: 1.29
Fonden increases local economic activity for up to 2 years 3 months after disaster
Fonden increases local economic activity for up to 2 years
5 months after disaster
Fonden increases local economic activity for up to 2 years
15 months after disaster
Fonden increases local economic activity for up to 2 years
20 months after disaster
Fonden increases local economic activity for up to 2 years
Takeaway

• Fonden is a cost effective component of Mexico’s of climate change adaptation efforts
  • Fonden is capable of boosting local economic activity for as long as 2 years
  • During these two years access to disaster funds led to an increase in local economic activity of as much as 6%

Policy makers interested in learning from the experience of FONDEN have two great resources: Mahul (2011) and World-Bank (2012)

