

Propagation of Shocks due to Natural Disasters through Global Supply Chains

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Summary

(Q1) Can micro-level shocks in a limited region propagate globally?

(Q2) If so, to whom, through what channel?

- ▶ Identification strategy

- ▶ Exploit a natural disaster that creates exogenous variation
- ▶ Apply OLS estimation

- ▶ Main Findings

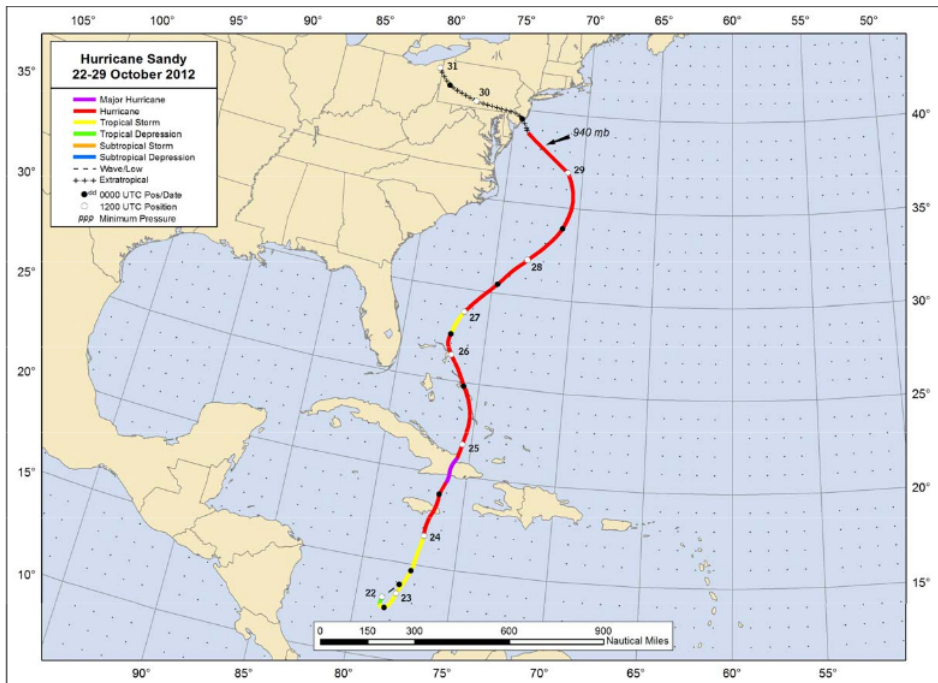
- ▶ The negative shocks hampered the growth of customers of the damaged firms both in the US and Worldwide at equal magnitude.
- ▶ Downstream propagation works, at least, upto the two-step customers.
- ▶ Propagation patterns are heterogeneous depending on the characteristics of firms' networks (i.e., shareholding structure, research collaboration).

Overall Impression

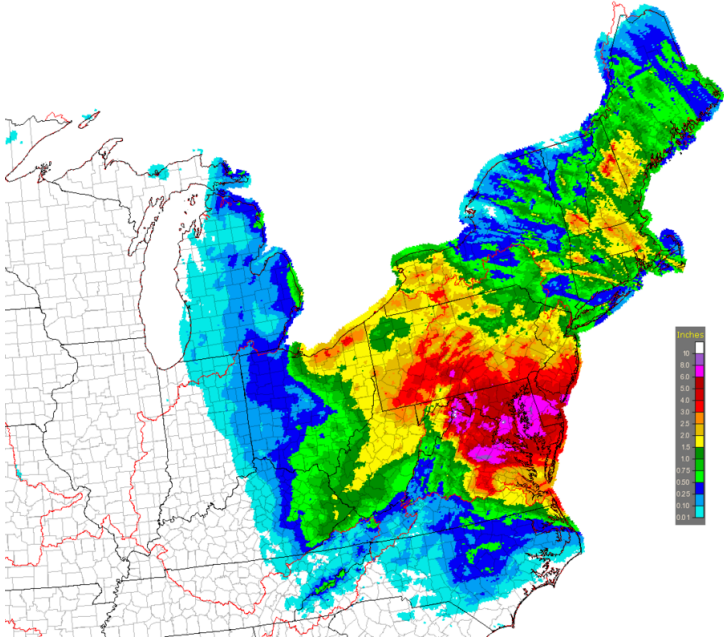
- ▶ Hot topic!
- ▶ A good natural experiment setting
 - ▶ Barrot and Sauvagnat (2016): historical natural disasters in the US
 - ▶ Boehm et al. (2015), Cavalho et al. (2016): the 2011 great east Japan earthquake
- ▶ Not surprising given the literature, but reinforce the evidence with some extensions

Suggestions: More Information

- ▶ Need more description about the event of hurricane Sandy such as...
 - ▶ Which area in the US was particularly hit (the hardest)?
 - ▶ industry composition of the damaged region (compared to the one in other region)
- ▶ Importantly, readers would want to know about the direct effect.
 - ▶ How much regional economies or industries suffered from the disaster?
- ▶ Possible regional network
 - ▶ Given the locality of firm-to-firm connections, many customers of damaged firms could also have suffered directly.
 - ▶ What about customers of customers? where are they located?



Observed Rainfall (sourced from New York Metro Weather Archive)



Comments on Model Specification

- ▶ OLS is fine.
- ▶ Capturing the direct effect.
 - ▶ Include dummy variable that indicates whether firm i was damaged directly.
- ▶ Should we care about the firm's position in the supply chain network?
 - ▶ Degree, PageRank, Burt's constraint, local clustering coefficient
 - ▶ Not clear how they affect the sales growth, but no sufficient explanation.
- ▶ What about some other conventional controls?
 - ▶ Investment in the previous few years, market concentration (e.g., HHI),...

Other (Minor) Comments

- ▶ Economic significance
 - ▶ How big is the indirect effect (compared to the direct effect)?
 - ▶ Contribution of the indirect effect to the US economy.
- ▶ Why only downstream propagation?
 - ▶ Would the shocks propagate to suppliers of damaged firms and their suppliers?
 - ▶ According to Acemoglu et al. (2016), no such upstream propagation.
- ▶ Measure of supply chain ties
 - ▶ the weighted number (or share) of suppliers with the weight being the sales share to firm i
- ▶ Inflation adjustment in the sales term (using GDP deflator...)
 - ▶ Matter for comparison of one-year growth & two-year growth.