

otsdam Institute for limate Impact Research

Stressed economies respond more strongly to climate extremes

Robin Middelanis, Sven N Willner, Kilian Kuhla, Lennart Quante, Christian Otto, Anders Levermann

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Thailand flood 2011







Global economic response







Global economic response under stress







The Acclimate model

Otto et al. (2017). JEDC.



- > Myopic agents:
 - > Producers: 26 economic sectors
 - > Consumers: 1 per region
- > 268 regions, daily time steps
- > Local economic shocks $\lambda(t)$
 - C Disequilibrium
 - Endogenous prices
- > Local optimization principles



Simulating indirect impacts under global economic stress





Increasing consumption losses



- Loss increase in all (aggregate) regions
- Losses triple in China, double in the US and increase by about one third in the EU
- > 37% global loss increase





Stronger price response under global stress



- > Seasonal consumption price increase
- > Global stress intensifies price response
- Price gap between scenarios determines consumption loss increase



Aggravated scarcity due to reduced supply capacity



- Similar compensation demand in both scenarios
- Reduced supply capacity due to global stress in stressed scenario
- Aggravated supply-demand mismatch causes higher prices
- Compensation for both direct and remote losses



Take home messages

- > Extreme events:
 - > Local economic impacts can spread in the supply chain network
 - > Resulting price increases cause consumption losses
 - > Regions can be exposed indirectly via their trade relations
- > Under global economic stress:
 - > Consumption losses increase strongly
 - > Intensified price response due to reduced supply capacity
 - > Regional differences due to different direct and indirect exposure







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Contact: robin.middelanis@pik-potsdam.de