Physical propagation of climate extremes across global value chains.

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Abstract

This paper presents a theoretical frame relying on the graph theory for assessing extreme weather events relative impact on global value chains. The approach is defined in three steps: the first part of the paper presents the intuition inspiring the defined model and associated theory, the second part is focused on a scenario analysis declining extreme events relative severity by countries, the third part leverages on thegraph theory to decline damages associated to extreme events into macro-sectorial value chains disruptions. Across literature, catastrophic events damage is often linked to a temperature threshold, in this paper, we chose to calibrate damages with a vector scoring extreme events frequential historical occurrence. Using the graph theory, we incorporate these damages to a network of countries moving from a disequilibrium state of constant flows before impact to a modified state considering the extreme events occurrence.

Keywords: Extreme Events, Physical Risks, Climate Damages, Global Value Chains, Graph Theory

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