Connecting Climate Impact Assessments and Economic Growth Theory: the Case of Tropical Cyclones

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Résumé

The economic literature suggests that countries' differences in economic growth can be partially explained by their respective exposure to natural catastrophes. The integration of damages from natural catastrophes in economic models, however, may be improved. We propose a new methodology in that direction, which consists in combining a general equilibrium model of economic growth with a probabilistic disaster impact model. We focus on tropical cyclones (TC) and use a 10x10 km spatial distribution of economic assets in two regions of the world: the US and the Caribbean islands, in order to evaluate their respective exposure to TC. From these estimates, we analyze and quantify the intertemporal effects that result from the modified growth path of the two economies after a year of TC activity. We find both a short-term reconstruction boom as well as a long-run recovery path. We show that the type of economic growth specification, either exogenous or endogenous, can have large impacts on the results. This aspect is often overlooked in the literature and helps to better explain why countries might differ in their immediate response to TC shocks as well as in their post-disaster growth trajectories. Such results are also useful to guide public policies aiming to improve the post-disaster resilience of their economy.

Mots-Clés: Tropical Cyclones, Climate, Growth, Numerical Analysis

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