The Social Cost of Carbon under Climate Volatility Risk

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Abstract

We calculate the social cost of carbon (SCC) under stochastic climate volatility resulting from uncertainty about future climate risk regimes where weather extremes are becoming more frequent and intense. Using a stochastic dynamic integrated climate-economy model where representative agents are endowed with Duffie-Epstein recursive preferences, we find that climate volatility risks substantially increase the SCC both in the business-as-usual and optimal abatement policy scenario. We also show that switching to a regime with more intense disasters increases the SCC more than a switch to a regime with more frequent disasters for equal expected value. Overall we show that stochastic volatility has a major impact on the SCC.

Keywords: stochastic volatility, social cost of carbon, climate damage, integrated assessment model

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