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Rising Temperatures, Falling Ratings: The Effect of Climate Change on Sovereign Creditworthiness

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Abstract Enthusiasm for 'greening the financial system' is welcome, but a fundamental challenge remains: financial decision makers lack the necessary information. It is not enough to know that climate change is bad. Markets need credible, digestible information on how climate change translates into material risks. To bridge the gap between climate science and real-world financial indicators, we simulate the effect of climate change on sovereign credit ratings for 108 countries, creating the world's first climate-adjusted sovereign credit rating. Under various warming scenarios, we find evidence of climate-induced sovereign downgrades as early as 2030, increasing in intensity and across more countries over the century. We find strong evidence that stringent climate policy consistent with limiting warming to below 2°C, honouring the Paris Climate Agreement, and following RCP 2.6 could nearly eliminate the effect of climate change on ratings. In contrast, under higher emissions scenarios (i.e., RCP 8.5), 63 sovereigns experience climate-induced downgrades by 2030, with an average reduction of 1.02 notches, rising to 80 sovereigns facing an average downgrade of 2.48 notches by 2100. We calculate the effect of climate-induced sovereign downgrades on the cost of corporate and sovereign debt. Across the sample, climate change could increase the annual interest payments on sovereign debt by US$ 22–33 billion under RCP 2.6, rising to US$ 137–205 billion under RCP 8.5. The additional cost to corporates is US$ 7.2–12.6 billion under RCP 2.6, and US$ 35.8–62.6 billion under RCP 8.5.

Keywords Sovereign credit rating, climate change, counterfactual analysis, climate-economy models, corporate debt, sovereign debt.

JEL Classification C33, C53, G10, G18, H63, O44, Q51, Q54

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