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The risks of climate tipping points for financial investors

Paul Waidelich¹, Lena Klaaßen¹, Stefano Battiston^{2,3}, and Bjarne Steffen^{1,4,5}

¹Climate Finance and Policy Group, ETH Zurich, Zurich, Switzerland

²Department of Banking and Finance, University of Zurich, Zurich, Switzerland

³Economics Department, Ca' Foscari University of Venice, Venice, Italy

⁴Institute of Science, Technology, and Policy, ETH Zurich, Zurich, Switzerland

⁵Center for Energy and Environmental Policy Research, Massachusetts Institute of Technology, Cambridge, United States

While financial investors are increasingly alert to the economic threats of climate change, most academic and regulatory assessments of financial risk have not accounted for climate tipping points. Here, we combine recent advances in the integrated assessment modeling of tipping points with return projections for major stock indices to assess index-specific risk exposures to climate change damages. We find that for the MSCI World, a globally diversified stock index, tipping points increase the expected loss due to climate change damages under SSP2-4.5 by 62% (USD 0.2 trillion)—a magnitude comparable to moving from meeting the Paris targets to the "hothouse world" scenario RCP8.5. The reason is that investment horizons are more affected by near-term risks of tipping points than by long-term differences in mitigation outcomes. Risk increases are driven by methane-related tipping points (permafrost thaw and ocean methane hydrates) and ice sheet disintegration, with the highest increases for investments in emerging markets with extensive coastal areas, such as India or Indonesia. The absolute magnitude of financial risks varies substantially across damage functions and assumptions regarding damage persistence. However, the relative importance of tipping points is robust across different damage specifications and investor discount rates. Therefore, our results call for integrating tipping points into climate scenario analyses in the financial sector and climate risk stress tests by regulators.