Is Physical Climate Risk Priced? Evidence from Regional Variation in Exposure to Heat Stress

Viral V Acharya† † Tim Johnson‡ Suresh Sundaresan§
Tuomas Tomunen¶

April, 2023

Abstract

We exploit regional variations in exposure to heat stress to study if physical climate risk is priced in municipal and corporate bonds as well as in equity markets. We find consistent evidence across asset classes that local exposure to heat stress is associated with higher yield spreads for bonds, especially for lower-quality and longer-maturity bonds, as well as higher conditional expected returns for stocks. These results are observed robustly starting in 2013–15, and are consistent with macroeconomic models where climate change has a direct negative impact on aggregate consumption.

Keywords: Climate finance, Physical climate risk, Heat waves, Municipal bonds, Asset pricing

JEL Classification: G12, Q54

*We thank Peter Han, Stefano Pastore, and Tommaso Tamburelli for excellent research assistance. We are grateful to Lorenzo Garlappi (discussant), Richard Berner, Patrick Bolton, Tatyana Deryugina, Rob Engle, Ai He, Matt Kahn, Dana Kiku, Alissa Kleinijenhuis, Glenn Rudebusch, Johannes Stroebel, Gernot Wagner, and seminar participants at Boston College, NYU Stern Volatility and Risk Institute Advisory Board, NYU Stern Quantitative Finance and Econometrics (QFE) Seminar, S&P Global’s Methodologies Forum, University of South Carolina, University of Illinois at Urbana Champaign, Philadelphia FED, AFA 2023, and Jackson Hole Finance Group Conference (2023). We also thank the Q-Group for awarding this paper the 2022 Jack Treynor Prize. All errors are our own. This research was supported by the Chazen Institute for Global Business at Columbia University.

†New York University Stern School of Business, CEPR, ECGI and NBER, vva1@stern.nyu.edu
‡University of Illinois Urbana-Champaign, tcj@illinois.edu
§Columbia Business School, ms122@gsb.columbia.edu
¶Boston College Carroll School of Management, tuomas.tomunen@bc.edu