

# BIG DATA & ALGORITHMIC FINANCE



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I am PhD candidate in Finance at Maastricht University with a research focus in climate finance and in the specific on the impact of weather related natural disasters. Currently I am employed in a PhD fellowship in the Sustainability Team at the Statistics department of the Dutch Central Bank and at Nuvolos. My research is being financed by an Inquire Europe Grant and won the best paper award at the 7th SIIC conference in Rome. I have working experience in the public sector in several roles such as a financial risk analyst and trainee at the European Central Bank in the Directorate Risk Management, as an intern at the Deutsche Bundesbank in the Directorate for Financial Stability and Macroprudential policy and as a student research and teaching assistant at the chair of International Economics and European Integration and Applied Econometrics at Tübingen University as well as at the Institute for Applied Economic Sciences in Tübingen. I also worked in the private sector where I was admitted in the SAP Fast-Track Program, reserved to 10% of the best students in Germany, Austria and Switzerland and worked as an intern and working student in the department of Finance and Administration- Business Insight & Technology in the Cross-Controlling Team.

## STORMY INVESTMENTS: NAVIGATING PREFERENCES AND BARRIERS IN WEATHER DISASTERS

Rob Bauer, Dirk Broeders and Flavio De Carolis.

In this event study, we exploit Geographic Information Systems (GIS) to show that weather-related disasters negatively surprise equity investors under informational frictions. We determine the exposure of firms to weather-related disasters by overlaying the locations of production facilities with geographic regions affected by hazards. We complement this data with firms' financial information, the ownership structure of the facilities, investors' ownership of companies, and disasters' vulnerability on a facility level. For winter windstorms, we find a negative cumulative average risk-adjusted abnormal daily return of 99 basis points at the event date. Furthermore, if the firm's impacted facility is located abroad with respect to the firm's headquarters, the negative impact on stock returns reaches up to 139 basis points. The magnitude of the negative surprise is reduced in two cases: i) when the impacted facilities are located in the home country of the publicly listed firm's headquarters ; ii) for those companies whose institutional investors' base features home equity investment preference. We base our findings on a sample of 600 unique companies, 1,748 facilities, 68 floods, 16 winter storms, and 2,332 wildfires from 2014 to 2021. Our results are statistically and economically significant for investors.

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