Emerging Risks in Finance:
Challenges and Opportunities for Investors, Institutions and Regulators

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Global warming and extreme weather investment risks

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Abstract

Environmentally focused investors often consider climate risks [1], [2]. However, potential liabilities for damages from extreme weather events due to emissions from carbon-intensive sectors present risks that may not be reflected in current share prices [3]. Given the devastation of the 2017 Atlantic hurricane season, it is worth asking how close we are to some companies or sectors being held liable, at least partially, for their activities. The answer may be that this is closer than many expect. The evolving field of extreme weather event-attribution serves as a good example of how new science can both raise thought-provoking and important questions regarding the appropriate actions of both investors and companies under a changing climate, and answer them with increasing confidence. For financial professionals seeking background on global warming, an excellent introduction can be found in [4].

Although the economic impact of extreme weather damage is beginning to be incorporated into some risk assessments, the financial liability of carbon-intensive industries for these damages is a

climate-related risk, which may not be reflected in the companies' market valuations [3]. In recent articles, Rayer and Millar [5], [6], [7] estimate that the top seven carbon-emitting publicly-listed companies, under a hypothetical climate liability regime, might increasingly and frequently see financial losses from North Atlantic hurricane seasons amounting to the order of 1-2% of their market capitalisations (or share prices). This article gives a fuller exposition of how that estimate was arrived at, as well as clarifying how it was quantified. Related aspects from a physical point of view are provided, with an associated overview of the current state of the science of climate change in general, and extreme weather events in particular.

Despite these already substantial and potential financial implications to date, future changes are projected to be even more significant. Recent research suggests that possible share-price impacts for high-emitting firms could be greater.

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References

[1] J. Porritt, "The world in context: beyond the business case for sustainable development," Cambridge: HRH The Prince of Wales' Business and the Environment Programme, Cambridge Programme for Industry, 2001.

[2] N. Stern, "Stern Review executive summary," New Economics Foundation, London, 2006.

[3] C. Krosinsky, N. Robins and S. Viederman, Evolutions in sustainable investing: strategies, funds and thought leadership, John Wiley & Sons, 2012.

[4] HRH The Prince of Wales, T. Juniper and E. Shuckburgh, Climate change, London: Ladybird Books, Random House, 2017.

[5] Q. G. Rayer and R. J. Millar, "Investing in Extreme Weather Conditions," *Citywire Wealth Manager®,* no. 429, p. 36, 8 February 2018.

[6] Q. G. Rayer and R. J. Millar, "Hurricanes hit company share prices," *Citywire New Model Adviser®,* no. 596, p. 18, 11 June 2018.

[7] Q. G. Rayer and R. J. Millar, "Investing in the climate," *Physics World,* vol. 31, no. 8, p. 17, August 2018.

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