

## ‘Climate value at risk’ of global financial assets

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*Nature Climate Change* **6**, 676–679 (2016)

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### Abstract

Investors and financial regulators are increasingly aware of climate-change risks. So far, most of the attention has fallen on whether controls on carbon emissions will strand the assets of fossil-fuel companies<sup>1,2</sup>. However, it is no less important to ask, what might be the impact of climate change itself on asset values? Here we show how a leading integrated assessment model can be used to estimate the impact of twenty-first-century climate change on the present market value of global financial assets. We find that the expected ‘climate value at risk’ (climate VaR) of global financial assets today is 1.8% along a business-as-usual emissions path. Taking a representative estimate of global financial assets, this amounts to US\$2.5 trillion. However, much of the risk is in the tail. For example, the 99th percentile climate VaR is 16.9%, or US\$24.2 trillion. These estimates would constitute a substantial write-down in the fundamental value of financial assets. Cutting emissions to limit warming to no more than 2 °C reduces the climate VaR by an expected 0.6 percentage points, and the 99th percentile reduction is 7.7 percentage points. Including mitigation costs, the present value of global financial assets is an expected 0.2% higher when warming is limited to no more than 2 °C, compared with business as usual. The 99th percentile is 9.1% higher. Limiting warming to no more than 2 °C makes financial sense to risk-neutral investors—and even more so to the risk averse.

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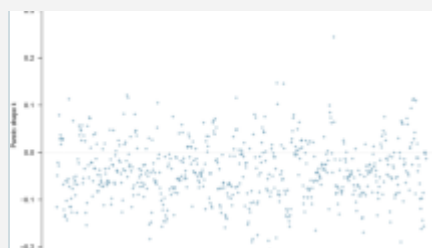
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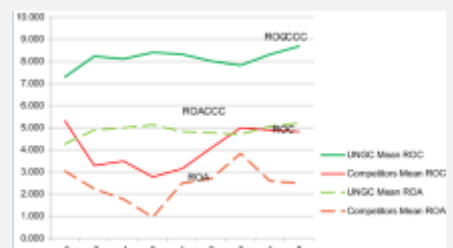
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**13 April 2016** In the version of this Letter originally published, a reference was mistakenly omitted. The new reference 15 – *The Cost of Inaction: Recognising the Value at Risk from Climate Change* (Economist Intelligence Unit, 2015) – is now cited in the sixth paragraph and subsequent references have been renumbered in all versions of the Letter.

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## Acknowledgements

S.D. and A.B. would like to acknowledge the support of the UK's Economic and Social Research Council (ESRC), and the Grantham Foundation for the Protection of the Environment. We are grateful for the invaluable advice of H. Covington and S. Waygood.

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### Contributions

S.D. led the project, from research design through modelling to writing the manuscript. A.B. helped design the research and draft the manuscript. P.G. helped design the research and run the model. C.D. also helped run the model.

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## Ethics declarations

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### Competing interests

No competing financial interests have affected the conduct or results of this research. However, for the sake of transparency, the authors would like to make clear that they were employed by Vivid Economics Ltd during the production of this research. Vivid Economics Ltd is a London-based economics consultancy. Neither the authors nor the company stands to profit directly from this research.

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Cite this article

Dietz, S., Bowen, A., Dixon, C. *et al.* 'Climate value at risk' of global financial assets. *Nature Clim Change* **6**, 676–679 (2016). <https://doi.org/10.1038/nclimate2972>

### Received

27 October 2015

### Accepted

26 February 2016

### Published

04 April 2016

### Issue Date

July 2016

### DOI

<https://doi.org/10.1038/nclimate2972>

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