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On the generation and interpretation of probabilistic estimates of economic impacts of climate change

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One of the dominant sources of uncertainty in orthodox estimates of the economic impact of climate change is uncertainty in the estimate of the climate sensitivity (equilibrium warming for 2xCO2). In most economic modelling, the cost of warming is roughly quadratic in the temperature rise, which means that any tail in the pdf of climate sensitivity has a strong effect. Here we investigate how this tail, and the resulting economic loss estimates, depend on prior assumptions which underly estimates of climate sensitivity. We show that the popular choice of a uniform prior has unacceptable properties and cannot be reasonably considered to generate meaningful and usable results. When reasonable assumptions are made instead, much greater confidence in moderate economic losses due to climate change, which can be estimated (with standard economic models) to have an expected cost of around 2% of global GDP for a doubling of CO2.