

Accepted Manuscript

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PII: S0165-1889(18)30166-0
DOI: [10.1016/j.jedc.2018.06.003](https://doi.org/10.1016/j.jedc.2018.06.003)
Reference: DYNCON 3600

To appear in: *Journal of Economic Dynamics & Control*

Received date: 21 February 2017
Revised date: 18 May 2018
Accepted date: 10 June 2018

Please cite this article as: Vassiliki Manoussi, Anastasios Xepapadeas, Johannes Emmerling, Climate Engineering under Deep Uncertainty, *Journal of Economic Dynamics & Control* (2018), doi: [10.1016/j.jedc.2018.06.003](https://doi.org/10.1016/j.jedc.2018.06.003)

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Climate Engineering under Deep Uncertainty *

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Abstract

Climate engineering, and in particular solar radiation management (SRM), is attracting increasing attention as a climate policy option. However, its potentially strategic nature and unforeseen side effects provide major policy and scientific challenges. We study the role of SRM in a two-country model with the notable feature of deep uncertainty modeled as model misspecification of SRM side effects. We find that deep uncertainty leads to a reduction in SRM deployment under both global cooperation and strategic Nash behavior, and that the effect is larger if countries act strategically. Furthermore, we demonstrate that if countries have different model confidence about SRM impacts, then the more confident country will engage more strongly in using SRM, leading this country to “free drive”.

Keywords: Climate change, solar radiation management, uncertainty, robust control, differential game.

JEL Classification: Q53, Q54.

*The authors would like to thank Massimo Tavoni, Juan Moreno-Cruz, Hermann Held, participants at the FEEM-CMCC convention 2015, Venice and the EAERE 2016 Conference, Zurich, as well as an associate editor and an anonymous referee for very valuable suggestions. The research leading to these results has received funding from the European Union Seventh Framework Programme FP7/2007-2013 under grant agreement No. 308329 (ADVANCE).

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