Moral Hazard and Solar Geoengineering

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Key Points

- Moral hazard is typically defined as the lack of incentive to guard against risk when one is protected from its consequences.
- In the context of solar geoengineering (SG), "moral hazard" is often discussed as the risk that mere mention of SG might detract from efforts to mitigate greenhouse-gas emissions in the first place. Technically, that is not moral hazard *per se* but rather a version of crowding out.
- Fear of this type of crowding out may be the single most important reason for the long-standing taboo prior to about a dozen years ago against SG research.
- Concerns about crowding out must be taken seriously, since vested interests will surely use SG as yet another excuse to delay necessary mitigation action.
- But these concerns must not be an excuse to avoid or limit SG research. The stakes are too high.

Moral hazard ['môrəl 'hazərd, *noun*] The lack of incentive to guard against risk when one is protected from its consequences.

The first thing to know about "moral hazard" in the context of solar geoengineering (SG) is that it is a misnomer. The possibility that merely discussing SG could weaken efforts to mitigate greenhouse-gas emissions is not a case of moral hazard as much as it is a simple case of SG "crowding out" mitigation.

The second thing to know is that whatever we call this crowding-out phenomenon, it is clearly real. And well beyond crowding out emissions abatement, vested interests will surely exploit the availability of SG as yet another reason to do too little to reduce greenhouse-gas emissions in the first place.

The third thing to know is that none of this should be an excuse not to consider – or not to conduct research into – SG. The remainder of this brief discusses each of these points in turn.¹

¹ This essay, to a large extent, is based on Wagner and Merk (2018). For a longer prior exploration of "moral hazard" in the context of SG, see, e.g., Lin (2013).

"Moral hazard" it is not

The term "moral hazard" has been a core part of SG discourse long before the recent resurgence in SG research.² Strictly speaking, the concern about SG is not, in fact, moral hazard, as the term is typically defined in economics where it usually refers to adverse incentives between two parties (for example, in the context of one party providing insurance to the other). Here the problem is more akin to a "lack of self-control"³ or an escape from "moral responsibility."⁴

Perhaps the main consequence of using the term "moral hazard" is that any tradeoff between SG and greenhouse-gas mitigation comes to be seen as a moral failing of sorts. That connotation is unfortunate.

In fact, it is highly unclear whether mere talk of SG poses a moral problem of sorts, or whether the greater moral problem is not talking about SG. In fact, Paul Crutzen, who jump-started the broader SG discussion in his taboo-breaking 2006 essay in *Climatic Change*, zeroed in on a key moral quandary of SG: the tradeoffs inherent in using tropospheric air pollution to cool the planet.⁵ In an essay introducing a special issue of *Earth's Future* on "Crutzen + 10," he revisited the issue in a co-authored essay, asking in the title: "Was breaking the taboo on research on climate engineering via albedo modification a moral hazard, or a moral imperative?"⁶ This essay concludes "that the overall verdict is still out" and calls for further SG research.

"Moral hazard" is real

"Moral hazard" is a misnomer. Yet the phenomenon itself is real. It is also ever present. There are indeed tradeoffs between SG and cutting greenhouse-gas emissions, akin to there being tradeoffs between taking a pill of statins each day on the one hand and diet and exercise on the other. Those exercising the rational amount each day might scale back their exercise ever so slightly, once their physician introduces them to statins to help control their blood pressure.

More important than the real, rational tradeoffs, however, are those linked to the fact that the world is far from a rational climate policy in the first place. Few exercise the "optimal" amount. In fact, most don't at all. The big question, hence, is what introducing an "easier" choice – statins, in the case of high blood pressure, and SG, in the case of climate change –does to those who are not exercising (or cutting emissions) nearly enough. On an individual level, some might use the potential availability of SG as yet another reason to avoid the harder task of cutting

² Keith (2000) first introduced the term to geoengineering discussions.

³ See Wagner and Weitzman (2015, p. 197).

Winickoff *et al.* (2015) argues that SG research might be seen as "an intervention in the ongoing ethical debate about proper remedies for climate change" (p. 631). See also Burns *et al.* (2016) for a further parsing of the definition of "moral hazard" in the context of SG.

⁵ See Crutzen (2006).

⁶ Lawrence and Crutzen (2017) explore this question in depth. The question, in turn, already mixes up the moral responsibility of researchers with actual crowding-out effects. A more accurate phrasing of the question might be: "Even with crowding out, might breaking the taboo on SG research still have been a moral imperative?"

emissions. However, the opposite might hold true, too: introducing SG could serve as a wake-up call of sorts, much like a first-time prescription for statins might jolt a patient to start dieting and exercising. The question of whether "crowding out" or "crowding in" dominates – and under what circumstances – is indeed important.⁷

At least as important is the question of how political interests vested in the fossil-fueled status quo would misuse the possibility of SG and underplay its side effects. Fossil fuel interests would surely use SG as yet another excuse to lobby against necessary greenhouse-gas emissions reductions. That goes for fossil-fuel-exporting states as much as for fossil fuel companies, and for politicians beholden to them.⁸

"Moral hazard" should not be a distraction

"Moral hazard" and its variants are ever present. Whether attention to SG crowds out emissions abatement, or whether – under certain circumstances – it has the inverse effect, the (policy) interaction between SG and emissions abatement matters. It matters because of the real tradeoffs involved. It matters because of politics, in particular because those already opposed to emissions reductions will use SG as yet another excuse not to act.

The flipside is that "moral hazard" concerns should not distract from SG research.

Health insurance, condoms, seat belts, and even Ben Franklin's Philadelphia fire brigade – all these innovations were met with cries of "moral hazard": What if the existence of a fire brigade discouraged citizens from taking precautionary measures to avoid fires? "Moral hazard," or a version of it, plays a role in each of these examples.⁹ But in each case, it is clear that opposing the policy intervention on moral hazard grounds would be counterproductive. All four interventions have reduced unnecessary deaths and suffering. SG research could do the same.

By the same token, however, SG research should not distract from sensible emissions-abatement policies either. That points to the importance of accounting for – and controlling – vested interests and adverse incentives that stand in the way of a more rational climate policy portfolio.

⁷ See, e.g., Merk *et al.* (2016, 2015) for further exploration, especially Merk *et al.* (2016) for the first revealed-preference study, which finds weak crowding in. See also Burns *et al.* (2016) for a review of the literature, as well as ongoing research (see: geoengineering. environment.harvard.edu/moral-hazard). Mahajan *et al.* (2018) points to the possibility that acquiescence bias is responsible for much of the weakly positive support for the "moral hazard" argument in prior stated-preference surveys of first-order beliefs about moral hazard.

⁸ See, e.g., Gingrich (2008).

⁹ For discussions of moral hazard in relation to health insurance, condoms, seat belts, and Ben Franklin's fire brigade see, respectively, Finkelstein (2014), Cassell *et al.* (2006), Cohen and Einav (2003), and Grinols and Henderson (2009, p. 113).

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