

STURM & DRANG PRIZE 2021
CHRISTOPH HAMBEL
“THE SOCIAL COST OF CARBON IN A NON-COOPERATIVE WORLD”
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Laudatio by Simone Wies

A couple of weeks ago we had the honor and pleasure to welcome four Nobel Laureates in economics here at Goethe University Frankfurt. When asked about the most challenging and pressing topics to focus on in research and knowledge production over the next decade, there was only one, but univocal, answer: how to responsibly address climate change and how to design meaningful incentives to get everyone on board. Revisiting this panel discussion, it was a true delight to see how our very own researchers actually contribute to this knowledge production on climate change, contribute to better exploring the costs of pollution, and optimal abatement policies—and doing so in such a successful manner, meaning a publication in a top journal.

Christoph Hambel and his co-authors, Holger Kraft and Eduardo Schwartz, analyze the social costs of carbon, which reflects all the future damages suffered by releasing carbon dioxide into the atmosphere. As such, the social cost of carbon can be understood as an optimal carbon tax that accounts for the negative externalities created from emitting greenhouse gases and that should serve as a main driver for an optimal carbon abatement policy, the latter which describes the resources society should commit to mitigate the effects of burning fossil fuels.

Now, while Christoph Hambel and his colleagues are not the first to think about a model that could help us better understand the magnitude of such social costs, they enhance existing models in important ways that move us considerably closer to reality—hence, increasing the usefulness of the implications we can derive from such models and that can inform decision-makers like the ones that wrap up the Glasgow Climate Change Conference just at this very moment.

First, a key focus of most existing models rests on conclusions that apply to the *global* economy. If there is one thing we have learnt from the many climate summit attempts and from myopic leaders that win elections by belittling international collaboration, then it is that global agreements regarding climate change policies and carbon prices are far away from reality. Second, another set of existing models assume that countries operate as autarkies, implying that there is no trade between the countries, which is also far away from reality. Christoph Hambel and his co-authors incorporate these two crucial aspects in their model. They analyze the magnitude of the social cost of carbon in an analytically tractable model of optimal carbon taxes and derive an optimal consumption-abatement strategy in a non-cooperative world with international trade.

They show that optimal taxes are proportional to national GDP and can be decomposed into a domestic and a foreign component where the latter results from trade. They also show that countries differ in the degree to which they produce and incur damage from carbon emissions and how the size of exports affect the magnitude of the country's

social cost of carbon. For instance, the higher the respective trade volume, the higher is the influence of the other regions' damage on the own optimal carbon tax.

This paper is a joy to read on an extremely important and timely topic. The ongoing marches of Fridays for Future and the activists' call for actions we observe at Glasgow's Climate Change Conference these days vividly emphasize this point. I would like to congratulate the authors for their technical finesse and non-technical exposition to increase the reach of the work. On behalf of the other member of the jury of this year's Sturm und Drang Prize, I congratulate Christoph Hambel for having published the best paper this year and continuing a wonderful tradition of this prize. Congratulations, very well done, and all the best with your impactful research agenda!