Universität Basel

Research Project

Pollution, environmental regulation and firm performance

Third-party funded project

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This project investigates the impact of the EU Emissions Trading Scheme (EU ETS) on rms using administrative data from German manufacturing for the years 2003-2019. We study the implications of climate policy on rms and, indirectly via changes in emissions intensities, on the environment. At the same time, there is mounting evidence that environmental quality also aects rms. The second part of our project focuses on this reverse causality and thus contributes to our knowledge about the interactions between the economy and the environment.

Our work builds on our previous research funded by the SNSF involving the same data. The rst work package examines the long-term eects of the EU ETS via its impact on regulated rms' product choices. The introduction of a price on greenhouse gas emissions changes the relative production costs, which will be reected in product prices. This is the subject of our previous research, in which we show that manufacturing rms in Germany pass on their marginal costs fully to consumers. In that previous work, we took a short-term perspective and examined what happens to the output price if the production costs increase by one Euro. In this project, we focus on the long-term implications in the form of product choice. Over time, consumers can be expected to substitute away from emissions-intensive products, which have become costlier, towards greener products. In order to retain market share and prots in the face of this demand response, rms will need to adjust their product portfolio towards less emission-intensive products over time. In WP1, we investigate whether such a shift can be observed among German manufacturing rms, and whether this shift is stronger for the rms covered by the EU ETS.

Our second work package builds on the recent literature about the eect of air quality and tem-perature on rm outcomes. There is an older literature that documents detrimental health eects as a consequence of air pollution and temperature variations. This is a rst-order reason to establish clean air standards. Environmental policy is usually interpreted as a tradeo between more environmental quality (and better health) on the one hand, and a reduction in GDP and growth on the other. However, if workers (and thus rms) become more productive if the air quality improves, as suggested by the recent literature, then this tradeo may in fact be a win-win-situation, at least within certain pollution bounds. To investigate this question, we will link satellite-based data of ambient air pollution and temperature to the location of individual manufacturing plants in Germany and investigate whether changes in environ-mental quality causally aect rms' productivity. We address the potential endogeneity problem between industrial production/productivity and pollution by using an instrumental variable approach that relies on temperature inversions and prevailing wind directions. As the main measure for productivity, we propose to use the total factor productivity that we have computed for the rms in our sample in the context of our previous project.

There is a high degree of synergy between the proposed and the previous research as both projects rely on the same administrative rm-level data. The data are very rich in terms of information content, but the prevailing condentiality rules render them dicult to work with. Having incurred signicant xed costs in terms of our understanding the data and their limitations, we are now in a position where additional time invested will likely have a high benet-cost ratio. We propose to use the same data to follow up on our previous project with a new set of research questions. Including both a Postdoc and a Ph.D. in the project will furthermore contribute to capacity building in research. We hope that the proposed work will deepen our understanding of the eects of air pollution and its regulation on rms and thus inform policy makers about the costs and benets of environmental regulation.

Keywords EU ETS, climate change, manufacturing, air pollution, AFiD, product selection
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Follow-up project of 4525107 The impact of the EU ETS on productivity and markups

Add publication

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ID	Kreditinhaber	Kooperationspartner	Institution	Laufzeit - von	Laufzeit - bis
4493248	Hintermann, Beat	Di Maria, Corrado, Associate Professor	University of East Anglia	01.11.2015	31.12.2023