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## Introduction

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We are pleased to introduce the inaugural volume of *Environmental and Energy Policy and the Economy (EEPE)*. All the papers published in this issue were first presented and discussed in May 2019 at the National Press Club in Washington, DC. The conference included participants from academia, government, and nongovernmental organizations, along with a luncheon discussion with Kevin Hassett, who at the time served as chairman of the White House Council of Economic Advisers. The broad aim of the *EEPE* initiative is to spur policy-relevant research and professional interactions in the areas of environmental and energy economics and policy. This is inspired by growing concerns about environmental and energy issues and by the significant economic consequences of policy making in this area. The *EEPE* conference and publication is modeled after the National Bureau of Economic Research's (NBER) other and ongoing initiatives, *Tax Policy and the Economy* and *Innovation Policy and the Economy*.

In the first paper, Robert Stavins contributes to the long-standing debate about price versus quantity instruments for environmental policy. He focuses specifically on climate change and carbon pricing either through a direct carbon tax or indirectly through a cap-and-trade mechanism. Drawing on the theoretical literature, along with the use of carbon-pricing policies in practice, Stavins provides both positive and normative perspectives on the choice between policy instruments. He considers a broad set of issues ranging from efficiency, cost-effectiveness, distributional outcomes, and the likelihood of gaining the necessary political support for actual implementation. The paper combines an extensive review of the literature with real-world perspectives on the future prospects for climate policy in the United States. In addition, Stavins draws two broad conclusions of interest. One is that the particular design elements of either a carbon tax or a cap-and-trade mechanism can be more consequential than the choice between instruments themselves. The other is that, from

a political economy perspective, the political feasibility of either instrument should be viewed as affecting its potential normative merits and vice versa. The paper is especially valuable and timely in light of the wide open, current state of affairs in federal climate policy.

Lucas Davis and James Sallee have written a novel paper based on the initial observation that electric vehicle drivers do not pay a gasoline tax, the revenue from which is used to pay for transportation infrastructure. They first consider whether this implicit subsidy for electric vehicles, compared with gasoline-powered vehicles, is warranted from the perspective of economic efficiency. The answer depends largely on whether gasoline is priced efficiently, taking account of the externalities associated with greenhouse gas emissions and local air pollution. Because gasoline prices do not reflect these social costs, they conclude that the subsidy is likely efficient because it encourages substitution away from gasoline-powered vehicles. Nevertheless, they argue that more research is needed to identify some key model parameters and that a two-part policy instrument, which combines a purchase subsidy with a usage tax, would be even more efficient. Davis and Sallee also provide estimates of the likely foregone tax revenue based on newly available data. They find that electric vehicles have reduced gasoline tax revenues by \$250 million annually, that the foregone revenue is concentrated in a few states, and that the effect is highly regressive. Although the magnitude of the estimate is relatively modest because electric vehicles currently account for less than 1% of US registered vehicles, the authors show how the effect is likely to take on more importance given the ambitious goals to rapidly increase the future adoption of electric vehicles.

Caroline Flammer writes about the rapidly growing market for “green” bonds, which are debt instruments used to finance low-carbon, climate-friendly projects. She begins with an overview of the “green-bond boom,” with issuers that include corporations, municipalities, government entities, and supranational institutions. Although green bonds totaled \$0.8 billion in 2007, the amount increased to \$141.3 billion by 2018, and many commentators point to green bonds as an essential tool for financing the energy transitions to a low-carbon economy. But do green bonds meaningfully affect environmental performance? And what are the financial implications? Using firm-level data on corporate green bonds issued by public companies, Flammer finds evidence that the issuance of a green bond contributes to both the environmental and financial performance of companies, but the effect is only significant when the bond is certified as being green by a third party. These results provide important evidence

on the operation of the green-bond market and raise questions about the potential need for a public governance regime related to green-bond certification. Flammer discusses a range of these financial and environmental concerns in an early contribution to the nascent field of green bonds.

Antonio Bento, Mark Jacobsen, Christopher Knittel, and Arthur van Benthem develop a general framework for evaluating the costs and benefits of fuel economy standards, and they use it to explain discrepancies between recent analyses by the US government. Their framework organizes many of the different effects studied in the literature, showing how they all come together to help understand the consequences of increasing vehicle fuel economy standards. The different elements include private costs (vehicle price and attributes), private benefits (fuel savings, mobility), and externalities (gasoline use, local air pollution and congestion, and safety). The authors then provide theoretical bounds on the different effects and use them to evaluate dueling cost-benefit analyses put out by the Obama and Trump administrations about the imposition and proposed rollback of changes to the Corporate Average Fuel Economy standards. They show how the latter's analysis is inconsistent with standard tenants of microeconomic theory and provides a cautionary lesson in doing piecemeal equilibrium analysis, whereby prices in some parts of a model are not allowed to vary and cause feedbacks in other parts. Overall, the paper provides a foundation upon which future economic analyses of fuel economy standards can be built and evaluated.

Taking a macroeconomic perspective, Nicholas Muller estimates a measure of output in the US economy over the past 60 years that accounts for air pollution damages and shows how the pollution effects are sizable, affect growth rates, and have diminished appreciably over time. His work is not the first to augment a gross domestic product (GDP) measure to account for environmental damages, but his paper is novel because of the way he uses several data sources to construct a long-run perspective. His paper builds on one of the earliest works on the subject by William Nordhaus and James Tobin, which was published in an NBER volume in 1972 (see the reference in Muller's chapter). One striking result that comes out of Muller's analysis is based on a comparison of US economic growth in the decades before and after 1970. Although the standard measure of GDP shows a substantial decline in the average annual growth rate, the slowdown is completely reversed after taking account of lower environmental damages from air pollution. Muller estimates that since 1970, the US economy did not grow 127%, but 211% when accounting for environmental improvements. Muller discusses how these improvements

started to occur at precisely the time of significant environmental regulations in the United States, including the founding of the US Environmental Protection Agency. The paper provides one of the best examples of how we are systematically ignoring the benefits of improving environmental quality because of the way that we do standard national accounting.

Finally, Marc Hafstead and Robertson Williams take on a question of utmost importance to policy makers, yet one that receives relatively little attention from academic economists: How should employment effects be counted when evaluating the costs and benefits of environmental regulations? They emphasize the need for general equilibrium analysis because of spillover effects that can be positive or negative, along with a recognition of the way that heterogeneous skills and frictions in the job market affect the rate and quality of job relocations. They also identify important distinctions between distributional effects of job losses/gains and aggregate social costs/benefits. Hafstead and Williams review the existing literature and point to areas where more research is needed. A large part of their contribution, however, comes from their own general equilibrium model, which they use to analyze the effects of three illustrative policies: a durable manufacturing regulation, a power sector performance standard, and an economy-wide carbon tax. One conclusion (among many) that they draw is that the employment effects of environmental policy are likely to be primarily job relocations, with fewer jobs in some industries and more in others. A further consequence is that the effects of environmental policy on overall employment are likely to be small, especially in the long run. Although different environmental policies will have their own specific effects, Hafstead and Williams provide an important contribution that will help organize the way that policy makers and researchers discuss employment effects, along with several useful benchmarks to get a handle on their potential magnitudes.

Overall, we are very pleased with the papers included in this inaugural volume of *EEPE*. We are grateful to the authors for their time and effort in helping to make the first year a success. We are also grateful to Jim Poterba, president and CEO of the NBER, for supporting the initiative. The NBER's conference staff, including Carl Beck and especially Rob Shannon, helped make the organization a pleasure. Helena Fitz-Patrick's help with the publication was greatly appreciated, and Denis Healy was tremendously valuable in helping to put together the initial proposal. Finally, we would like to thank Evan Michelson and the Alfred P. Sloan Foundation for financial support to get the *EEPE* initiative up and running. We are already looking forward to next year's conference and volume 2.

## **Endnote**

For acknowledgments, sources of research support, and disclosure of the authors' material financial relationships, if any, please see <https://www.nber.org/chapters/c14284.ack>.