

# Foreword

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A small handful of simple words might describe market-based instruments that address climate change policy: important, accelerating, interdisciplinary, and potential. Taken together, these words underscore the need to continue to study how market-based instruments do and can shape behavior in the face of climate change.

*Important.* While regulations play a strong role in reducing greenhouse gas emissions and adapting to the consequences of climate change, market-based instruments can send price signals that penetrate the complex networks of daily decision making, influencing behavior. Carbon taxes and cap-and-trade systems can harness the marketplace to achieve results. The unique characteristics of market-based instruments make them worthy of study and action.

*Accelerating.* Interest in using market-based instruments to address climate change has intensified rapidly in recent years. An electronic search of scholarly articles and books offers a rough proxy for the escalating trajectory of carbon taxes and cap-and-trade regimes in literature.<sup>1</sup> Works published in 1990 that mentioned ‘carbon tax’ numbered just over 100, rising to almost 800 published in 2000, then to over 4,500 published in 2017. Sources referring to ‘cap-and-trade’ rose from five published in 1990, to almost 200 published in 2000 and over 3,000 in 2017. On the heels of the growth in these terms, ‘carbon pricing’ came to serve as the conceptual umbrella for both carbon taxes and cap-and-trade schemes that cover greenhouse gas emissions. The number of works that mentioned carbon pricing in 2000 was only in the double digits, but over 2,000 works that were published in 2017 used the term.

The acceleration has not just been academic. Carbon pricing instruments have rapidly expanded in number and scope, as the World Bank documents in its recent report, *State and Trends of Carbon Pricing 2017*. In 1990, only two countries had implemented carbon taxes. By 2005, eight countries had adopted carbon taxes, and the European Union’s Emissions Trading Scheme went into effect. Today, 67 national and subnational jurisdictions, constituting approximately half of the global economy, either have a carbon tax or cap-and-trade program in place or are implementing one. Market-based instruments are now mainstays in

the portfolio of climate policies. With carbon pricing's heightened profile comes the need to constantly evaluate what is working and what is not.

*Interdisciplinary.* The growth in carbon pricing instruments to date is the result of legislators' determination to take on the challenges of addressing climate change and to correct market failures. It is also the product of efforts in many disciplines that have come together and built the foundation for political action. Science, of course, helps define the environmental goals. The design of instruments to achieve those goals must then draw upon economics. Economic modeling will shape the contours of pricing systems, and it will evaluate their success over time. Law contains the rules that govern the creation and implementation of new instruments. Public finance comes into play because market-based instruments can generate new revenue. Environmental policy helps evaluate the relative role of different policy instruments, including choices among different types of market-based instruments. Political economy informs decisions about what will be possible. Market-based instruments are the crystallization of many perspectives. Together, these perspectives create policies that can yield a better environmental result. Publications that assemble perspectives from multiple disciplines promote this synthesis.

*Potential.* Despite the trajectory to date, much remains to be done to realize the full potential for carbon pricing, whether in the form of carbon taxes or cap-and-trade regimes. The World Bank's 2017 report indicates that carbon pricing currently covers only 15 percent of global greenhouse gas emissions, a figure projected to rise to between 20 and 25 percent when China launches its national cap-and-trade program. And three-quarters of the covered emissions bore carbon prices that were less than US\$10 per ton of carbon dioxide equivalent. Energy taxes also can put an implicit price on carbon dioxide emissions, as well as other environmental impacts associated with fossil fuel use. However, the OECD's new study, *Taxing Energy Use 2018*, finds that the effective tax rates on carbon from the combined effect of energy taxes and carbon taxes around the world are 'poorly aligned' with environmental costs. There is tremendous potential to expand the role of market-based instruments—and analyses of their role.

These four words yield a simple message for academic literature about climate policy. As carbon pricing moves from theory to practice, sharing analyses and ideas among disciplines and across national boundaries can enrich the understanding of experiences to date, the design of future policies, and the place of market-based instruments alongside other approaches. Few, if any, environmental problems are as fascinatingly crucial, complex and vexing as climate change. Market-based instruments will play a significant role. The challenge now is to ensure that they

contribute as much as possible to the ultimate goal—reducing the effects and consequences of climate change.

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## NOTE

1. The author relied on Google Scholar in performing this electronic search.