


Editorial

# Economics of Environmental Taxes and Green Tax Reforms

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Environmental taxes and green tax reforms are increasingly seen as powerful tools for promoting a transition to sustainable economies. Indeed, environmental taxes are now commonly known to constitute a cost-effective corrective approach contributing to the development and use of clean technologies. Environmental taxes can actually be applied to most environmental problems—climate change mitigation being a clear candidate—as part of a wider green tax reform with distributional and/or revenue objectives. This Special Issue contains nine papers dealing with questions related to the foundation, design, and implementation of environmental taxes and tax reforms. Three papers discuss optimal tax rates and the theoretical effects of tax deductions for abatement. Another three papers aim to describe and analyze a number of existing environmental taxes, whereas the remaining ones consider the different effects of hypothetical environmental taxes and reform packages.

Within the first group of papers, the author of Contribution 1 analyzes the optimal environmental tax rate to address local air pollution. The paper uses a two-city environmental dynamic stochastic general equilibrium model, which accounts for effects on labor migration, to calculate the environmental tax rate leading to a maximization of household utility. The article shows that the optimal environmental tax rate is more volatile and procyclical than previously indicated by the literature. Furthermore, while a larger environmental tax rate always reduces production in a closed economy, this tax could actually stimulate production in an open economy by discouraging the outflow of labor and promoting labor inflows due to less pollution. Within this context, the optimal environmental tax rate in a city should respond to internal shocks as well as to those taking place in the neighboring city—indeed, it should be counter-cyclical to the economic cycle of the former to optimize emigration.

The authors of Contribution 2 study the effects of an environmental tax deduction related to emissions below a certain level. The paper shows that such a tax device only affects the amount of (emissions) abatement and not the output, which mainly depends on consumer attitudes towards green products and their reaction to prices. In this sense, it is easier for the regulator to promote abatement through tax deduction when consumers show great environmental concern and companies face price-sensitive markets, in which case the regulator can achieve an increase in social welfare. Policy implications are obvious given that fostering environmental concerns of consumers would effectively incentivize companies to introduce sustainable operation and investment practices.

In Contribution 3, the researchers are also interested in optimal environmental prices and consumer preferences. They propose a method for determining optimal environmental tax rates that basically accounts for citizen preferences for specific products. To this end, they conduct an experiment in France to obtain consumer willingness to pay for different types of milk (cow and soy) from a regular or organic production process. They show that a significant tax on regular milk associated with a subsidy on organic milk is the alternative that maximizes consumer welfare. They argue that this optimal tax rate is higher than the figures usually reported by the literature, which would be generally too low to efficiently shift consumption towards sustainable products.

In the first paper on the practical applications of environmental taxes, the authors of Contribution 4 review the literature on the use of market-based instruments (MBIs) in chemical management, studying the potential for increased risk-based taxation in the management of pesticides and other hazardous chemicals. They indicate the presence of a relatively limited use of MBIs in this area given the commonly practiced conventional regulations (bans or quantitative restrictions on chemicals with a very steep marginal damage cost curve), for which they nonetheless also provide evidence concerning their effectiveness in reducing the environmental and health effects of pesticides. However, growing concerns about the cumulative and combined effects of low-dose exposure to multiple chemicals may lead to a greater use of MBIs in the future.

The authors of Contribution 5 analyze experiences with MBIs to reduce air pollution emissions in Asian developing countries, drawing lessons and making room for improvement. Their analysis presents important reasons to believe that Asian countries could benefit from the greater flexibility of MBIs relative to other types of instruments. In particular, taxes and subsidy removal seem to be favored options with respect to emission trading approaches in terms of environmental effectiveness. Moreover, taxes may help mitigate pollution that would otherwise run unchecked in countries lacking a strong regulatory apparatus. The authors argue that a major obstacle to MBIs is that they make the costs of pollution control transparent, which in turn leads to political opposition that could be offset through distributional devices. Finally, the authors underscore the presence of a systematic lack of evaluation of MBIs in Asia, which would be very relevant to improving their design.

In Contribution 6, the researchers carry out a comparative analysis of carbon taxation in three countries (Sweden, Canada, and France) aiming to draw lessons for the future of this essential climate policy instrument. They show that carbon taxes, once established, achieve the desired effect even though the analysis points out very different situations across countries in terms of progress, difficulties, and results. This underlines the need to carefully consider social and political conditions to achieve the acceptance and effective implementation of these instruments. Accordingly, confidence in the government and its capacity to manage tax collection in a transparent, fair, and effective manner is crucial to the acceptability of these policies.

In the first of the three papers devoted to simulating the effects of environmental taxes and tax reforms, the authors of Contribution 7 study the impacts of introducing a carbon tax on petroleum fuels and kerosene in Ethiopia. They use a general equilibrium model to consider different alternatives for revenue use, namely, reductions in taxes on sales, labor income, or capital income; transfers to households; and reduction of public debt. The paper shows that the impact of the aforementioned tax on greenhouse gas (GHG) emissions is significant, although the effects on overall economic activity and emissions are small due to the limited relevance of these energy products in Ethiopia. Furthermore, although receipts would be sizable, the distributional impacts brought about by the tax would be tiny given the scarce use of the taxed products by poor households.

The researchers in Contribution 8 also use a general equilibrium model to assess the effects of a green tax reform in Norway with a detailed distributional analysis on households and regions. They simulate a significant increase in taxes on coke and refined oil products, with two recycling alternatives—lump-sum transfers and reduction of social security contributions. The paper shows an ever-present positive environmental effect from the reform, but the impact on output is positive as long as revenue is recycled through reductions in social security contributions. Regarding distributional impacts, the reform would increase inequality among households as well as among rural and urban areas.

Finally, the authors of Contribution 9 analyze the effects of a third-generation green tax reform in Spain. The paper considers the introduction of different taxes on energy-related environmental externalities with two alternatives for associated receipts—fiscal consolidation and the funding of renewable support costs. The results of the different simulations show the potential of this alternative in clear contrast to their scant use to date. Indeed, the implementation of such a tax reform package

would bring about significant public revenues, a fall in energy consumption and associated GHG emissions, with a limited and generally progressive distributive impact.

We hope that the contents of this Special Issue of *Sustainability* provide the much needed academic contributions to the growing debate on the design and implementation of environmental taxes and green tax reforms, particularly those required to tackle climate change issues. We are grateful to the participants in the Special Issue and the many external reviewers who provided valuable input to the publication process.

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