On the economic and budgetary effects of a new carbon tax in Portugal

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Alfredo Marvão Pereira received his Licenciatura (1978) from the Technical University of Lisbon, Portugal, and his M.A. (1987) and Ph.D. (1988) from Stanford University. After teaching at the University of California at San Diego for eight years, he joined the W&M faculty in 1995. He has served as consultant/advisor for the Commission of the European Communities, the European Central Bank, the World Bank, the Bank of Portugal, and the Portuguese Ministry of Finance. Alfredo’s main research interests are public finance and economic growth but he has often ventured into development economics and urban economics. His current research focuses on the effects of infrastructure development on economic performance and on social security reform, both in the U.S. and in the European Union. His teaching interests include microeconomics, public finance and mathematics for economists. He is currently working on two undergraduate textbooks for Prentice-Hall with Don Campbell.

[Abstract] We consider the environmental, economic, and budgetary effects of a new carbon tax indexed to the carbon price in the EU-ETS market in the context of a dynamic general equilibrium model of the Portuguese economy. We show that the careful recycling of the carbon tax revenues to finance reductions in the personal income tax, in the social security taxes and increases in investment tax credits, in particular when these changes are connected to energy efficiency promoting activities, allows for the carbon tax reform to yield three dividends – reduction in emissions, improvement in economic conditions, and improvements in the budgetary position. By doing so we show that it is possible to design a carbon tax reform that is politically feasible as it satisfies the main constraints of the domestic economy – the quest for growth and for fiscal consolidation – and can accommodate the legitimate interests and needs of different social players – the focus on environmental goals by environmental groups, the concerns with households distributional issues by consumer advocacy groups, and with international competitiveness by business groups.

We assess the relative role of fossil fuel prices, energy efficiency and carbon taxation in achieving climate policy goals using a dynamic general equilibrium model of the Portuguese economy with endogenous growth and a detailed modeling of public sector activities. We show that to achieve ambitious domestic reductions in emissions, given the expected evolution of international fossil fuel prices, the roles of promoting energy efficiency and of a new significant carbon tax are fundamental. More importantly, promoting energy efficiency improvements and the new carbon tax have significantly different economic and budgetary effects. Energy efficiency improvements achieve reductions in emissions while promoting economic performance at the risk of increasing public and foreign debt. The new carbon tax in turn achieves reductions in emissions at the risk of jeopardizing economic performance while the effects on public and foreign debt are more favorable. This being the case, the relevance of pursuing both strategies in tandem is clear. Finally, domestic efforts toward promoting energy efficiency and the introduction of a new carbon tax need to be calibrated in function of the expected evolution of international fossil fuel prices. This evolution has significant effects on emissions and thereby on the measure of the additional effects required from the domestic authorities. It also has negative effects on economic performance while it may have more positive effects on the evolution foreign and public debts, which provide important leeway for the implementation of the domestic policies without generating a negative impact on the levels of indebtedness assuming that the public sector curtails spending appropriately in response to the increasing opportunity cost of public funds.