Climate Policies, Macroprudential Regulation, and the Welfare Cost of Business Cycles

Francesca Diluiso*†[1], Barbara Annicchiarico[2], and Marco Carli[2]

[1]Bank of England – United Kingdom
[2]University of Rome Tor Vergata – Italy

Abstract

We compare the performance of a carbon tax and a cap-and-trade scheme in a dynamic stochastic general equilibrium model that includes an environmental externality and agency problems associated with financial intermediation. Heterogeneous polluting firms purchase capital by combining their resources with loans from banks and are hit by idiosyncratic shocks that can lead them to default. We find that financial market distortions strongly affect the performance of climate policy throughout the business cycle. The welfare cost of business cycles is substantially lower under a cap-and-trade system than under a carbon tax if financial frictions are stringent, firm leverage is high, and agents are sufficiently risk-averse. The difference in welfare costs shrinks significantly in the presence of simple macroprudential policy rules that weaken the strength of financial market distortions. These policies can go a long way in smoothing business cycle fluctuations and aligning the performance of price and quantity pollution policies, reducing the uncertainty inherent to the government's chosen climate policy tool.

Keywords: Business Cycle, Cap and Trade, Carbon Tax, Macroprudential Policy

*Speaker
†Corresponding author: francesca.diluiso@bankofengland.co.uk