

Hedging against climate policy and technology uncertainty: implications for technology mix and policy instrument choice

Authors: E. De Cian and M. Tavoni

Abstract. There is considerable uncertainty over future climate policies and abatement costs of low carbon technologies, with important implications for the optimal investment portfolio and the costs of meeting climate stabilization objectives. Such sources of uncertainty are also motivating the discussion about policy instruments choice, and the role of regulation as a complement to market based approaches in order to diversify away both risks. In this chapter we analyze this issue by using a stochastic programming version of an integrated assessment model to evaluate the effect of uncertainty in future carbon prices and technology costs of three main low carbon power generation technologies. We assess the implications of either and both risks on the optimal technology mix under a variety of assumptions and evaluate the potential for regulation on emissions performance and renewable portfolio in accompanying a market based climate policy.

Keywords. Climate change, Information and uncertainty, Environmental policy