# *OPTIMAL ABATEMENT INVESTMENT AND ENVIRONMENTAL POLICIES UNDER POLLUTION UNCERTAINTY*

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The relationship between economic decisions and pollution dynamics has been extensively studied over the last decade. The typical problem analyzed concerns the optimal timing of a discrete policy that a society or a government should adopt to reduce emissions of some environmental pollutant. More recently, Saltari and Travaglini (2011) extended the basic model of option value, shifting the attention from the social net benefits of a policy to the private net benefits of a firm investing in clean capital goods. In this paper we present a continuous time model with reversible abatement capital in order to analyze the effects of environmental policies on the value of the firm and investment decisions. We show that the effects depend on what sort of future policy are implemented. We focus on investment effects of changes in corrective taxes to control the use of polluting inputs, and subsidies to promote abatement investment. We show that (1) while taxes have a depressive effect on capital accumulation, subsidies boost investment; (2) the impact of these policies on the value of the firm is ambiguous. This latter result has important empirical implications insofar as investment are based on the average value of the firm rather than the (unobservable) marginal value.
*Key words:* Pollution uncertainty; externality; capital reversibility;
environmental policy.
*JEL classification codes*: E22, L51, H23, Q28.