Learning abatement costs: on the dynamics of the optimal regulation of experience goods

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We study the introduction of new technologies when their costs are subject to idiosyncratic uncertainty and can only be fully learned through individual experience.ă We set up a dynamic model of clean experience goods that replace old polluting consumption options and show how optimal regulation evolves over time.ă In our base setting where social and private learning incentives coincide, the optimal tax on the polluting consumption is increasing over time.ă We show, however, that if social and private learning incentives diverge because the private discount rate exceeds the social discount rate, it may be optimal to temporarily increase the tax rate beyond net marginal external damages to induce more learning before reducing the tax rate to the steady-state level.ă Alternatively, one could complement the tax with subsidies for first-time users which can be phased out over time.ă Similar results apply if consumers have biased expectations.ă We therefore give a rationale for introductory subsidies on new, clean technologies and non-monotonic tax paths from a perspective of consumer learning.

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