

Changing the incentive to pollute: Heterogeneous effects of waste pricing policies

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Abstract To internalize pollution externalities of municipal waste, Pay-As-You-Throw (PAYT) policies that price unsorted waste generation are adopted worldwide. This paper estimates heterogeneous causal effects of PAYT, and analyzes the determinants of policy adoption and compliance. The empirical strategy uses a multiple random forest approach on a unique six-year panel data on waste and a large set of covariates for about all municipalities in Italy. Policy adoption is found to be heterogeneous in socio-economic and political variables, and more likely in municipalities with high recycling levels. Results show that PAYT is effective, decreasing per capita unsorted waste up to 40% on average. Effects are mostly driven by an increase in recycling (up to 28%), and less by waste avoidance (up to 7%). In the long run households prefer recycling over waste reduction causing a small rebound effect on total waste. Heterogeneity in policy effects reveals that waste reduction occurs if opportunity costs of recycling are high, and vice versa.

Keywords: Waste generation, Unit pricing, Heterogeneous policy effects, Random forests

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