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# Heating externalities in multi-family housing: Significance, regulation and incidence

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## Résumé

Basic physics has it that heat can move across multi-family dwellings. This creates externalities – occupants in one dwelling turning their thermostat down as they benefit from heat transfers from adjacent dwellings, the occupant of which in turn turns her thermostat up – and thus excessive energy use in equilibrium. Using data from the 2013 French housing survey, we quantify these little-discussed externalities. Specifically, we study how energy use varies across floor designations and energy billing contracts and compare these patterns with water use, which arguably is immune from externalities. We address endogeneity problems between floor choice and energy use by using elevator as an instrument. We find that dwellings located on intermediate floors use significantly less energy than those located on either ground or top floors, while water consumption is not significantly different. Overconsumption in ground and top floors (most subject to heat losses) is however economically lower than that due to utility-included contracts (as opposed to individual billing). This has important implications for mandatory substitution of individual billing for utility-included contracts, an increasingly widespread policy that removes contractual incentives to over-use energy while creating heating externalities. Our results suggest that the intervention retains most of its benefits in terms of aggregate energy use reduction but raises equity concerns, as those dwellings suffering most from externalities tend to be occupied by poorer households.

**Mots-Clés:** Energy efficiency, heating, externalities, Moral hazard, Endogeneity

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