



Local Money for Global Climate ?

Demand- and supply-side effects of a local energy efficiency program

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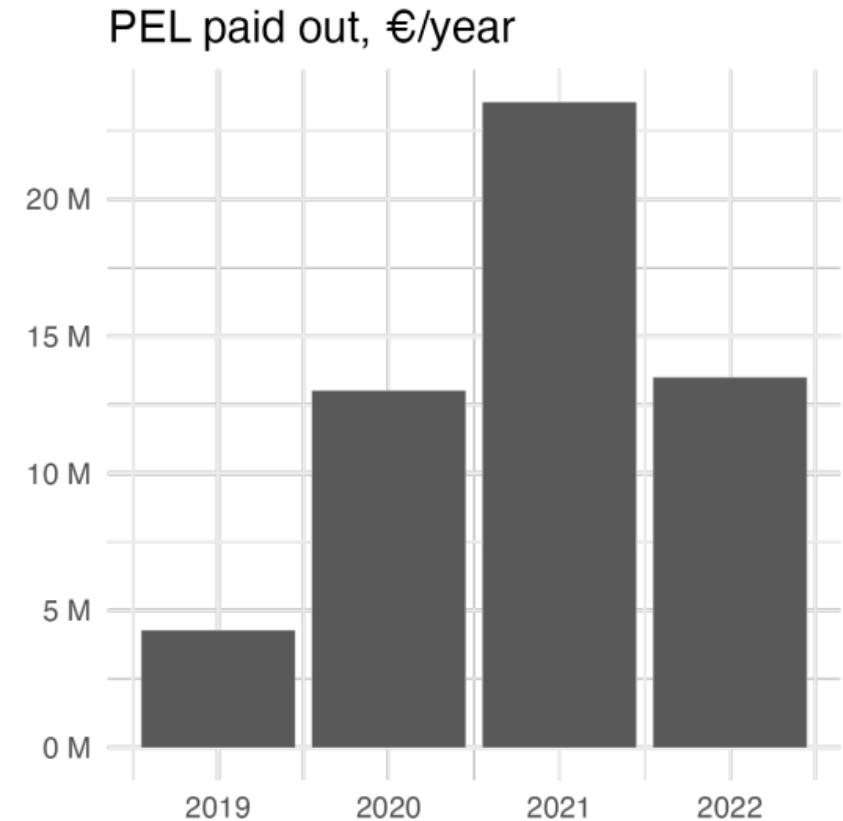
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Motivation

- Subsidy programmes for home energy retrofit in France
 - Mostly **national**: 4 flagship programs (3 public, 1 utility-sponsored), together totalling ~€6 billion/yr
 - Less known: ~560 **local** programs, mostly sub-departmental. Aggregate cost unknown
- Comparative advantages (hypotheses):
 - National programs: economies of scale (administration, business)
 - Local programs: targeting of most cost-effective opportunities, matching with local companies
- **To test the latter hypothesis, we estimate the impact of a local program on**
 - **Energy use**
 - **Job creation in the renovation industry**

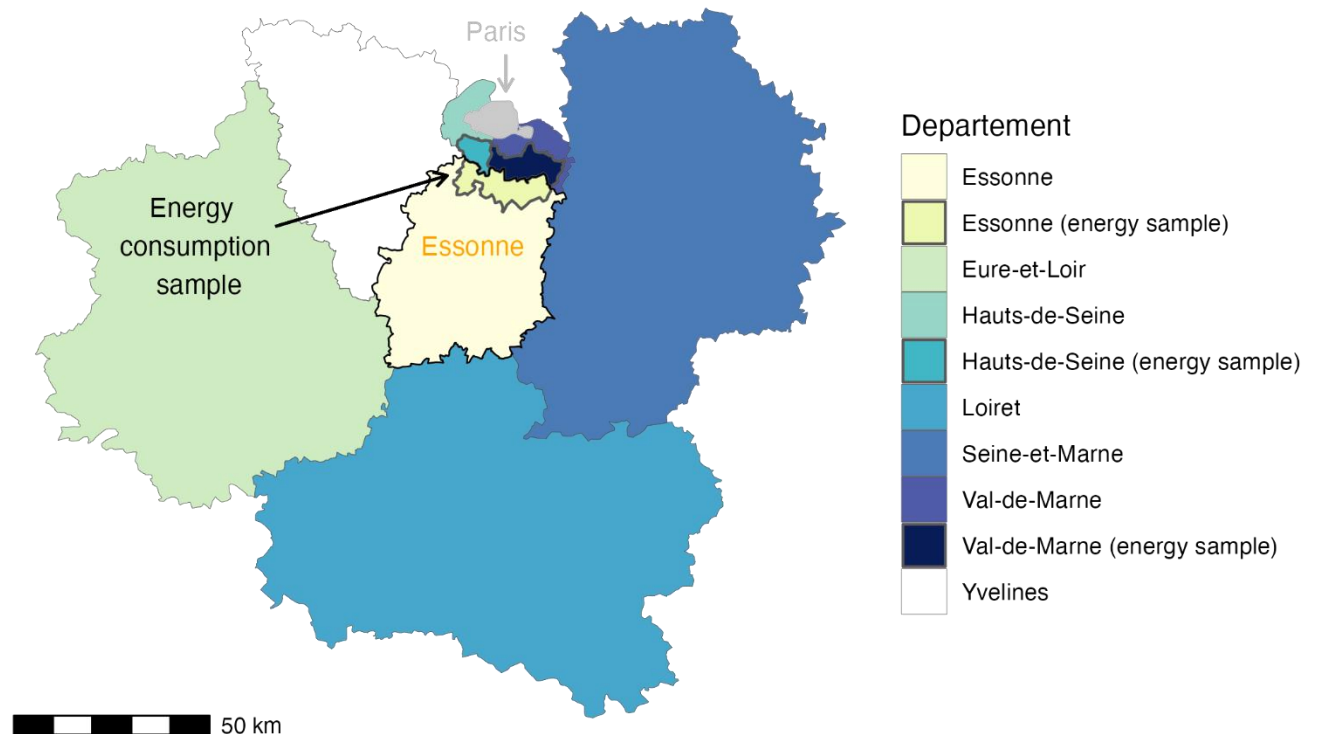
The PEL programme

- « Prime Eco-logis 91 » introduced in 2019 in the French department of Essonne (Ile-de-France region)
- Eligibility
 - Projects $\geq$ €3,000 (5,000 since 2021)
 - Any owner-occupier in Essonne
- Key parameters
 - Ad valorem regime, 30% rate, amount capped at €1,800
 - Since 2020, +€500 for low-income and +€500 for oil heater replacement
- Key stats: 30,339 subsidies paid out by end of 2022
 - Average amount €1,780
 - Average renovation project €8,020



Method: Difference-in-Differences

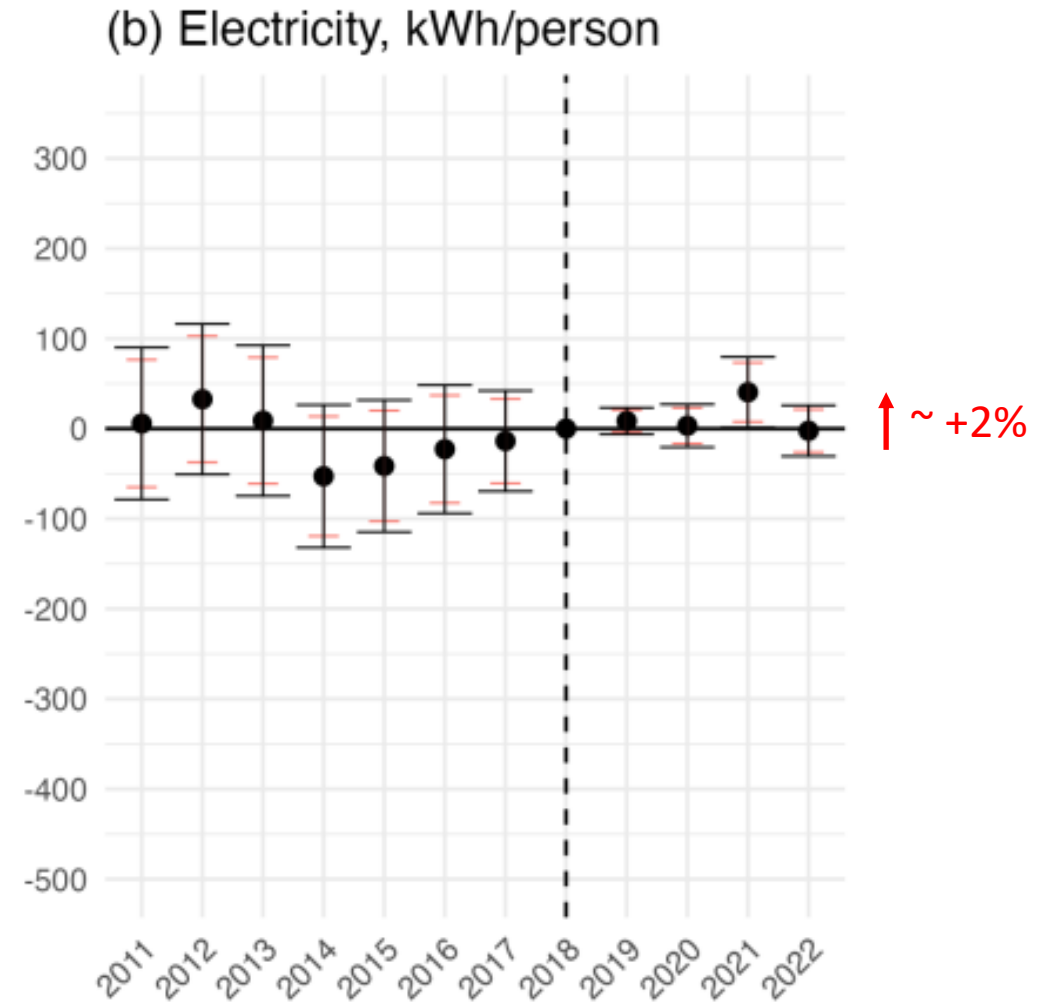
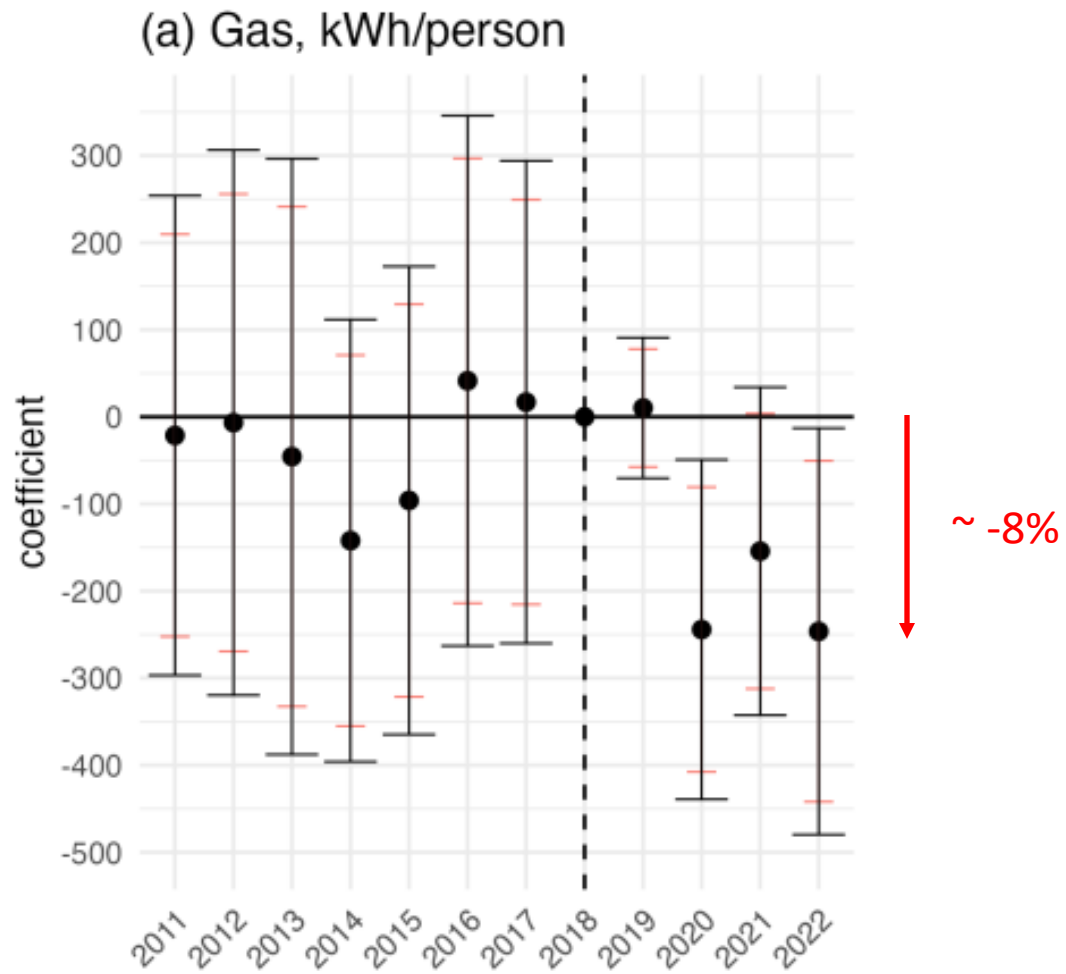
- We compare outcomes
 - Before after introduction of the program
 - Inside vs. outside Essonne
 - We thus catch the effect of the *eligibility* to the program (intention to treat)
- Energy use: focus on dense area, hence 20 Essonian municipalities vs. 29 neighboring ones (5 km bandwidth)
- Job creation: market broader than Essonne, hence focus on the whole of Essonne versus all neighboring departments



Data

- Energy use
 - Electricity and natural gas DSO data (Agence ORE)
 - Municipality level
- Job creation
 - URSSAF data: number of firms and employment by sector
 - Renovation group: HVAC, insulation
 - Control group: >100 others, except construction, manufacturing, teleworkable jobs

Demand-side results (Diff-in-diff)



Supply-side results (Triple diff)

Results: local renovation sector

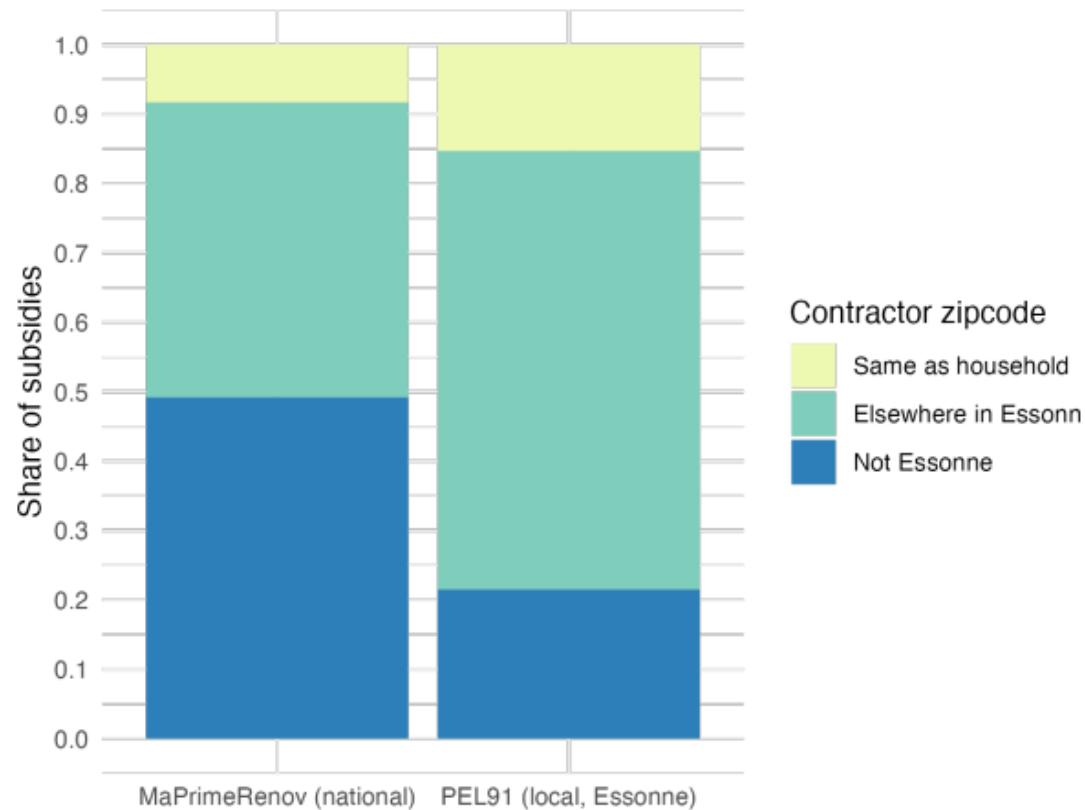
Dependent Variables: Model:	Log(N firms) (1)	Log(N workers) (2)	
<i>Variables</i>			
Renovation sector × Post PEL × Essonne	0.042 (0.067)	0.277*** (0.090)	→ 1040 new jobs in local renovation ~20 jobs per €1M spent
Renovation sector × Post PEL	0.177*** (0.038)	0.164** (0.061)	
Renovation sector × Essonne	0.282 (0.200)	-0.106 (0.259)	
Post PEL × Essonne	0.061 (0.061)	-0.096 (0.079)	
Post PEL	-0.004 (0.027)	0.012 (0.042)	
<i>Fixed-effects</i>			
Sector	Yes	Yes	Popp et al. (2020): American Recovery Act – 15 jobs per \$1M
Department	Yes	Yes	
<i>Fit statistics</i>			
Observations	473	473	
R ²	0.714	0.754	
Within R ²	0.004	0.002	

Underlying mechanisms

- Firm origin
 - PEL91 doesn't require contractor to be from Essonne
 - Why then is the effect stronger in Essonne?
 - Does the program preferentially match homeowners with Essonnian firms?
- Method
 - Matching of PEL and MPR (national program) data to study firms' origin
 - Filtering of MPR beneficiaries based on address
 - Firm identifier from SIRENE database
 - Matching for 5 measures common to both programs: windows, roof insulation, wall insulation, gas boilers, heat pump, wood systems

Preferential matching with local firms?

Contractor origin: MaPrimeRenov vs. PEL



Contractor origin: regression

Dependent Variables:	Contractor from Essonne		Contractor from same zipcode	
Model:	(1)	(2)	(3)	(4)
<i>Variables</i>				
Constant	0.5076*** (0.0131)		0.1487*** (0.0120)	
PEL subsidy	0.2773*** (0.0109)	0.1578*** (0.0067)	0.0469*** (0.0078)	0.0139* (0.0063)
<i>Fixed-effects</i>				
Work type-Municipality		Yes		Yes
<i>Sample</i>				
	Full	Full	Only contractors from Essonne	Only contractors from Essonne
<i>Fit statistics</i>				
Observations	44,248	44,248	31,644	31,644
R ²	0.0711	0.2277	0.0021	0.2323
Within R ²		0.0221		0.0002

Essonne
premium

Proximate
hiring within
Essonne

Policy implications

- Cost-effectiveness of natural gas savings: €44/tCO_{2eq} lifetime discounted (€220/tCO_{2eq} yearly)
- Benefits retained locally: +27% effect on local employment → due to matching, encouraged by local taxes?
- Altogether, strong case for **local** policies

APPENDIX

Energy use

Figure 2: Gas and electricity consumption per capita, Essonne vs. control municipalities



Notes: Average energy consumption per capita calculated on municipality-level panel and weighed by municipality population. Data: Agence ORE.