

Equilibrium Effects of Carbon Policy

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- **Main objective.** Regulated vs unregulated plants and imperfect competition: how to correctly estimate the treatment effect (average and aggregated)
- **Methodological discussion.** GMM vs DiD and LA: spillover effects through equilibrium outcomes
 - avoiding misestimations of regulatory impacts
- **Empirical findings.** EU ETS impacts on french regulated firms:
 - ↓ emissions
 - ↑ revenues } consistent with the Porter hypothesis

- **Model features.** Including imperfect competition; "net regulation cost" at unit level (energy price effect vs energy efficiency effect); spillover from regulated to unregulated
- **New for EU ETS literature**
 - (i) methodology employed on treated vs control competing firms
 - (ii) matching considerations lead by the model implemented
- **Model comparison.** Comparing estimates from different methodological procedures and illustrate the potential source of biases

- 1 Regulation costs components (μ_t^z, μ_t^e) are firm/sectoral independent. Intuition?
- 2 EU ETS empirical literature is mainly based on DiD approach, and the estimates of the phases considered seem to be in line with your findings for emissions, at least for a policy-implications perspective (see [Table](#)).
- 3 **Multi-plants potential reallocation of activity**
 - The presence of multi-plants firms and its relevance in the French context is not empirically explored in the EU ETS section (descriptive eventually needed). Are homogeneous multi-plant firms, with plants covered and not by the EU ETS a considerable share?
 - Also, if it's the case: smaller plants (not covered by EU ETS) are less productive and less efficient. Under which condition is it reasonable for the firm to reallocate activity?

| Authors, year | Abatement | Region | Years |
|-------------------------------|-----------|-----------------------|-----------|
| Petrick & Wagner 2014 | 25-28pp | DE | 1993-2010 |
| Wagner et al. 2014 | 15.7% | FR | 1992-2010 |
| Martin et al. 2016 | - | BE, FR, DE, HU, PL | - |
| Jaraite & Di Maria 2016 | 11.4% | LT | 2003-2010 |
| Loschel et al. 2019 | 21% | DE | 2005-2012 |
| Naegele & Zaklan 2019 | - | 25 EU | 2004-2011 |
| Calel 2020 | - | UK | 2000-2010 |
| De Jonghe et al. 2020 | 11.3% | 27 EU | 2013-2020 |
| Klemetsen et al. 2020 | 30% | NO | 2001-2013 |
| Colmer et al. 2023 | 14-16% | FR | 2005-2012 |
| Dechezlepretre et al. 2023 | 7-16% | FR, NL, NO, UK | 2005-2012 |
| Pacelli & Guerriero 2023 | - | IT | 2008-2019 |