



## Master Thesis

# The Leakage-Abatement Trade-off: Quantifying the Effect of Free Allowances on Emissions

The EU ETS relies on pricing carbon to incentivize emission reductions. However, to mitigate the risk of carbon leakage (relocation of production to countries with less stringent climate policies), allowances are allocated for free to at-risk industries. While this policy is designed to protect competitiveness, a concern is that this protection might undermine the price signal and thereby weaken the domestic abatement incentives for regulated installations (European Parliament, 2023; Ulmer, 2022; Verde et al., 2019). Allocation rules have evolved significantly, shifting from historical grandfathering (mostly free allowances) to product benchmarking and auctioning.

The aim of this thesis is to address the trade-off at the heart of the EU ETS: Does the mechanism designed to prevent leakage dilute the effectiveness of emission reduction? To analyze this, a theoretical foundation is to be developed first, covering the economic effects of free allowances on two main dimensions: First, the impact on industry structure (e.g., incentives for existing versus new installations under different allocation rules); second, the effects on ETS prices (considering changes in Marginal Abatement Costs and the role of the Market Stability Reserve). Following this, an empirical analysis is to be conducted to test these theoretical considerations using the large-scale EUTL dataset and panel-data regression methods, aiming to quantify the abatement incentive effect of changes in free allowance allocation at the firm-level (see Abrell (2021)).

## Key tasks and objectives of the thesis

- Literature review on the leakage-abatement trade-off, covering economic theory and empirical evidence on its effect on abatement, industry structure and ETS price dynamics
- Constructing a firm-level panel dataset from the EUTL database and necessary external data (e.g., CO<sub>2</sub> price), and implementing an appropriate panel-data regression model to estimate the effect of free allowance allocation on verified emissions
- Discerning sector- and time-specific effects across carbon leakage-exposed sectors

## Your profile

- Student in economics, best with a background in econometrics and energy economics
- Experience with statistical software such as Stata, R, or Python
- Interest in energy economics and EU climate policy

## Literature

- Abrell, J. (2021). Database for the European Union Transaction Log.
- European Parliament (2023). The EU Emissions Trading System: Method and Effects of Free Allowance Allocation
- Ulmer, C. (2022). Free allowances and the risk of carbon leakage at the beginning of the third phase of the EU ETS. SSRN 3880946.
- Verde, S. et al. (2019). Free allocation rules in the EU emissions trading system: What does the empirical literature show? Energy Policy, 19 (4), 439-452.

## Contact



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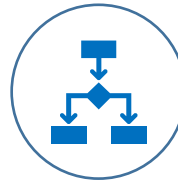
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## Topics



- Industrial abatement
- Carbon Leakage and free allowances
- EU climate policy and carbon pricing

## Methods



- Literature Review
- Data analysis
- Regression analysis