

The Macroeconomic Impacts of Climate Policies

Norges Bank Climate Conference

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The climate challenge

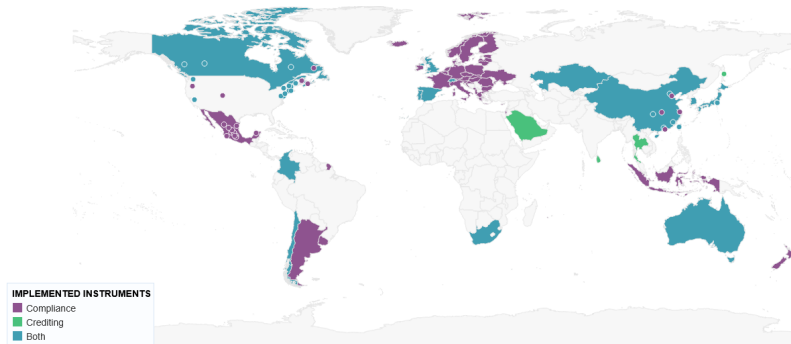
- **Climate change** is the defining problem of our time
- We know the textbook fix: put a **price on carbon**
- Very hard at the global level because of **coordination problems**
- More progress at the **national level**

Carbon pricing around the world



Carbon pricing instruments around the world, 2025

Map shows jurisdictions that have implemented Direct Carbon Pricing Instruments - Compliance instruments (Emissions Trading Systems (ETS) and Carbon taxes) and/or domestic carbon crediting mechanisms, subject to any filters applied. The year can be adjusted using the slider below the map.



Research questions

1. Are national carbon pricing policies effective at reducing emissions?
2. What are the macroeconomic effects?
3. And the distributional impacts?

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Negligible

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- Focus on EU ETS – the largest carbon market in the world (Känzig, 2025)

Identification challenge

- Policymakers **respond** to economic developments when deciding on climate policy
- Cap-and-trade prices are **market prices** driven by demand & supply



Identification challenge

- **Institutional** features allow for credible identification of carbon price impacts
- Cap-and-trade regulates quantity, establishes **market price** for carbon
- Liquid **futures markets** on allowances
- Regulations in the market **changed** considerably over time
- Isolate carbon policy news by price change in **tight window** around **policy events**

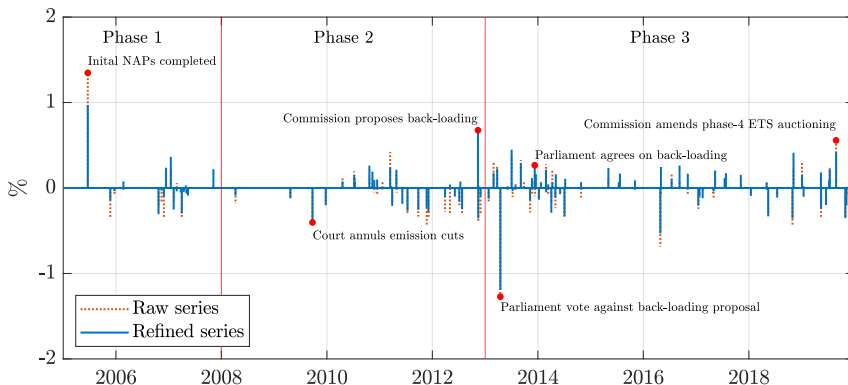
European carbon market

- Established in 2005, covers around **40%** of EU GHG emissions
- **Cap** on total emissions covered by the system, reduced each year
- **Emission allowances (EUA)** allocated within the cap
 - free allocation
 - auctions
 - international credits
- Companies must surrender **sufficient** EUAs to cover their **yearly emissions**
 - enforced with heavy fines
- Allowances are **traded** on secondary markets (spot and **futures** markets)

Regulatory events

- Collected **comprehensive list** of **regulatory update** events
 - Decisions of European Commission
 - Votes of European Parliament
 - Judgments of European courts
- Of key interest: regulatory news on the **supply of allowances**
 - National **allocation plans**
 - **Auctions**: timing and quantities
 - Use of international credits
- **Identified 114** relevant **events** from 2005-2019

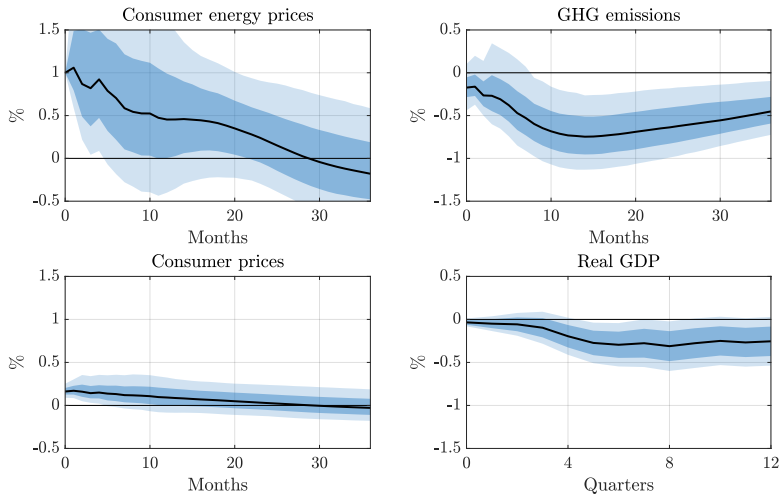
Carbon policy surprises



Source: Känzig (2025)

- Use as instrument to estimate effects of **carbon-policy** induced energy price **shock**

The aggregate effects of carbon pricing



Notes: The solid line is the point estimate and the dark and light shaded areas are 68 and 90% confidence bands.

Source: Känzig (2025)

Revisiting marginal abatement cost

- Back-of-the-envelope estimate based on responses gives **MAC** of $\approx \text{€}107/\text{tCO}_2$
- Higher than engineering estimates & avg. ETS price over the sample $\approx \text{€}12/\text{tCO}_2$
 - Market prices do **not internalize** indirect effects via prices, consumption, employment
 - Higher economy-wide costs of decarbonization
- Important implications for **cost-benefit analyses**

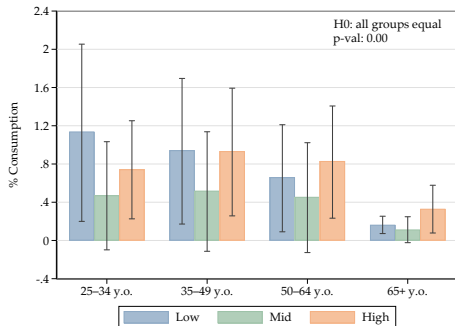
Distributional effects

- Study how carbon price shocks affect different households
- Measure changes in **living standards** by tracking how shocks move key parts of household budgets:
 - prices people pay
 - income they earn
 - value of their savings and transfers they receive
- Combine these channels to get a simple **money-metric measure of welfare loss**

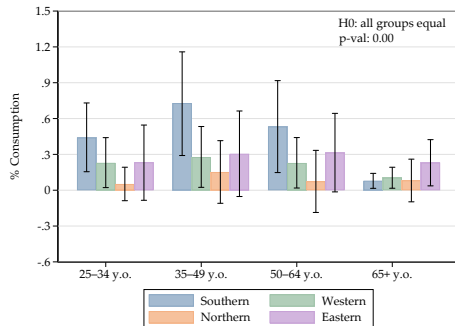
Heterogeneity by income and region

- Low-income households are most affected
 - They have higher energy shares in budgets, but also experience larger income losses
- Southern & Eastern Europe hardest hit due to rigid labor markets

(a) Welfare by income groups



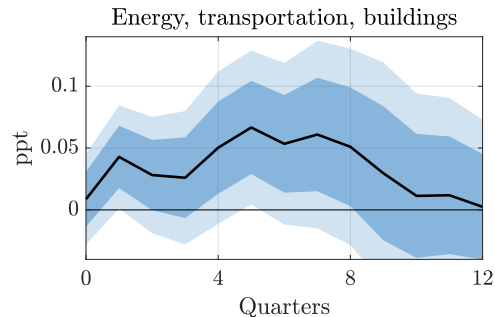
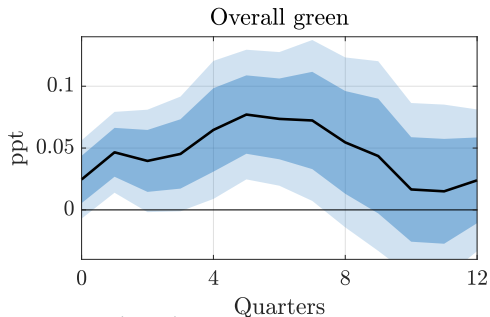
(b) Welfare by regions



Long-run perspective

- Transition policies may have short-run costs but **long-run gains**
 - Innovation, cleaner growth, resilience

Patenting responses

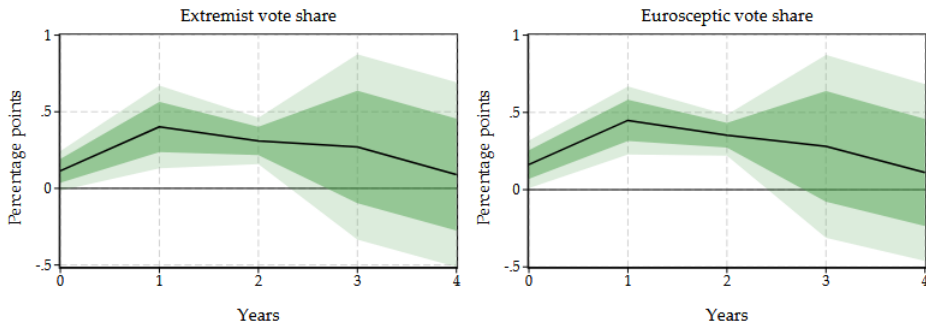


Source: Känzig (2025)

Long-run perspective

- The challenge: managing the transition **without losing public support**
 - Yellow vest movement, Canadian carbon tax, ...

Effect on polarization



Source: Konradt & Mangiante (2025)

Revisiting research questions

Based on experience with **EU ETS**:

1. Are national carbon pricing policies effective at reducing emissions?

Yes, EU ETS led to substantial reduction in emissions

2. What are the macroeconomic effects?

But this comes at a considerable economic cost

3. And the distributional impacts?

Costs are unequally distributed, with poorer households suffering the most

Policy implications

- Important to **address** economic and distributional effects
 - **Targeted transfers** or recycling revenues can offset regressivity
 - Since energy demand is inelastic, redistribution need **not** reduce abatement
- Even without offsetting measures, still **optimal to decarbonize**
 - Recent estimates of Domestic Cost of Carbon $\approx \text{€}200/\text{tCO}_2 > \text{MAC}$ (Bilal and Känzig, 2025)
- **Communicate benefits** of the policy well!
 - For instance as in Switzerland as rebates to health insurance premiums

Thank you!