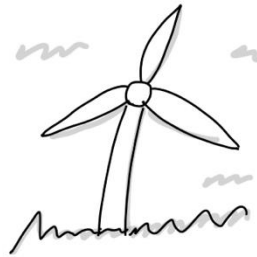# ENECML 2021-2026

- ERC project that examines the impact of the energy transition and current challenges.

- Topics:
  - Power intermittency, transmission
  - Demand response
  - Modeling techniques
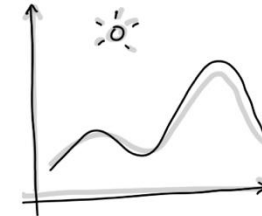 - Market power impacts
  - Climate policy

Understanding the Energy Transition with a Machine Learning Toolbox

Welcome to the research page of the ERC project ENECML (grant agreement 101001732).
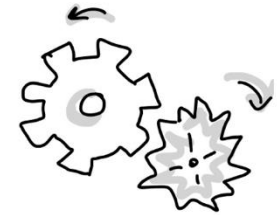
Renewable Power

We analyze the renewable energy boom in the electricity sector. We quantify the benefits and cost...
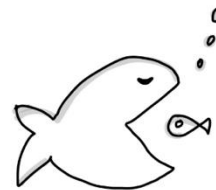
Demand Side Behavior

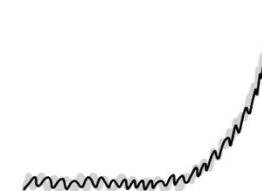We examine the responses and impact to households from the energy transition. In many of hour pro...

Methods and Tools

Some of our work provides guidance on the methods and tools in the literature of industrial organ...

Competition and Markets

Climate Change

Policy Work

Methods and data

Descriptive analysis, visualitzation tools

Regression analysis

Machine learning techniques (kmeans, lasso, etc.)

Modeling techniques (mixed integer programming)

Public aggregate data

Public high-frequency data

Confidential regulator data

Confidential household smart-meter data

Team and collaborations

In-house team

Pre-docs and PhDs
Post-docs

International collaborations

Co-authors
visitor mentoring program

Policy work

Competition authorities
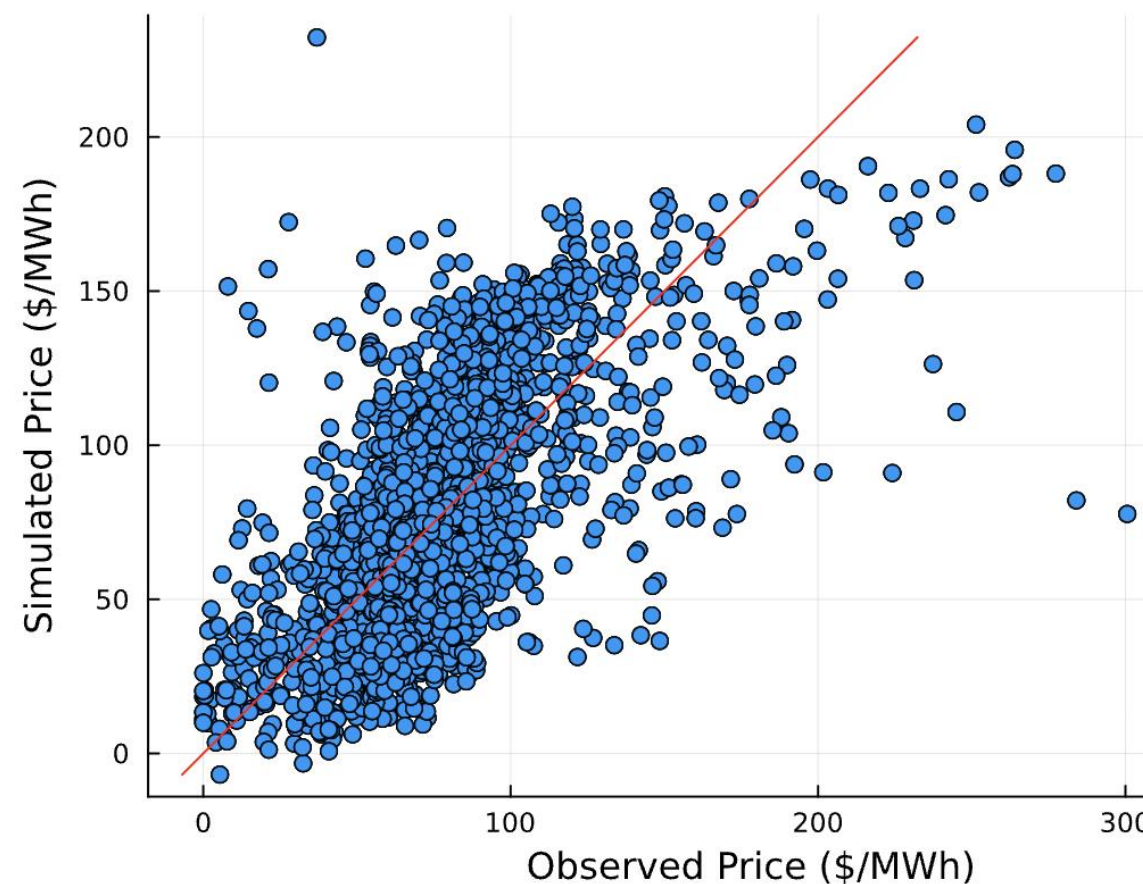Regional and int'l governments

Outreach

Public debates in expert panels
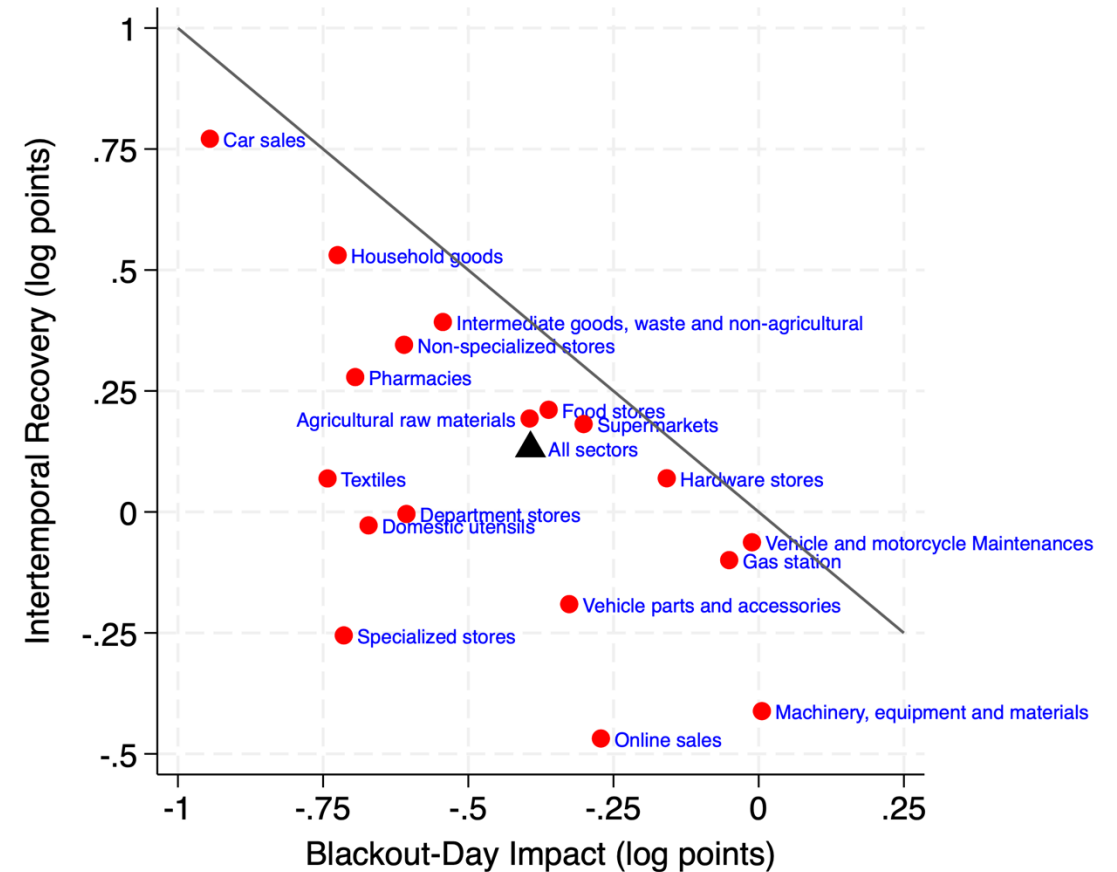Talks in local groups

Project 1: Shifting water in New Zealand

- **Team**: Estelle Cantillon (ULB)

- **Question**: How do firms use their water when they are strategic? How does information about rivals impact equilibrium?

- **Methods**: Theory + simulation model.

- **Data**: Detailed 15-minute data from New Zealand.

- **Main insight**: Trade-off between information and market power, exact quantification still in progress!

Project 2: Blackouts in Chile

- **Team**: Koichiro Ito (U Chicago) and Luis Gonzales (Bank of Chile)

- **Question**: What was the impact of a massive blackout in Chile?

- **Methods**: Regression event study and DiD analysis.

- **Data**: Billing VAT transaction data at the daily level.

- **Main insight**: Big impact but recovery of sales on the next day for many sectors, important implications for the evaluation of impacts.

Project 3: Market design for renewables

- **Team**: David Brown (U Alberta)

- **Question**: How are secondary electricity markets performing with growing wind and solar power?

- **Methods**: Regression analysis, descriptive work.

- **Data**: Detailed quantity, price, and bidding data from OMIE/REE.

- **Main insight**: Renewables have increased competition, but concentration in secondary markets is growing.

Upward