The Labor Market Effects of Carbon Pricing

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  - → Fix emission quantity and create a price for emission rights
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- We study how **an increase in carbon prices** affects **labor markets**
  - → Firms may lower wages and/or higher less
  - → Workers with emission reduction skills may enjoy higher wages

Framework

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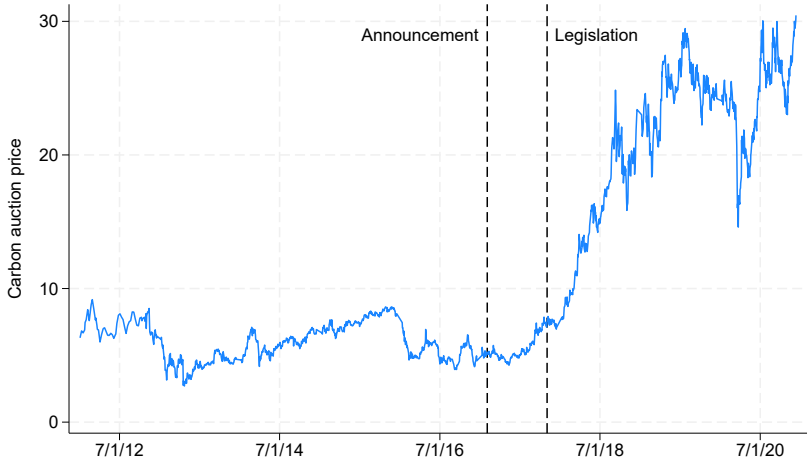
- Address the endogeneity concerns by exploiting **the 2017 reform in the EU ETS**
  → To fix the structural oversupply, the EC made important changes
  → Withdraw a fraction of unused permits from the ETS and permanently destroy them
  → Crucially, this reform was **not anticipated**

Carbon Prices



Empirical Strategy

Exploit the increase in carbon prices in a matched difference-in-differences setting
Matching is done at two levels:

- Worker level: log(wage), age, part-time, tenure, and gender dummies
- Firm level: industry, log(# employees), and profits per worker

$$y_{it} = \beta \, ETS_i \times Post_t + \gamma_i + \delta_t + \epsilon_{it}$$

- ETS_i= 1 for firms/workers that participate into ETS program, ETS_i= 0 for matched units
- $Post_t$: =1 if year$\geq$2018
- y_{it}: log(hourly wages) (but also log(wages), earnings, and employment)

Labor Market Effects of Higher Carbon Prices

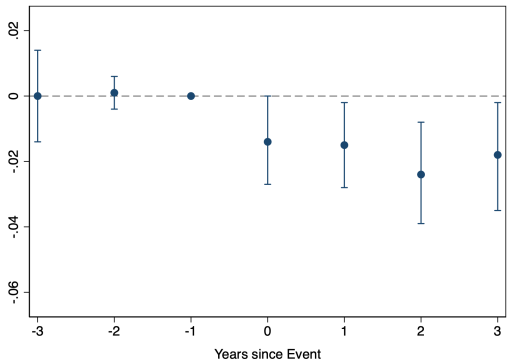
Workers in the ETS firms do not experience any negative labor market effects

Dep. Var.:	Log(Hr. Wage)	Earnings	Log(Wage)	Employed
	(1)	(2)	(3)	(4)
ETS × Post	0.018	2,010.812	0.021	0.007**
	(0.014)	(1,389.491)	(0.016)	(0.003)
R^2	0.916	0.844	0.834	0.371
Obs.	220,186	225,148	220,186	225,148
Worker FE	X	X	X	X
Year FE	X	X	X	X

Policy Design Matters-Allowance Shortfall

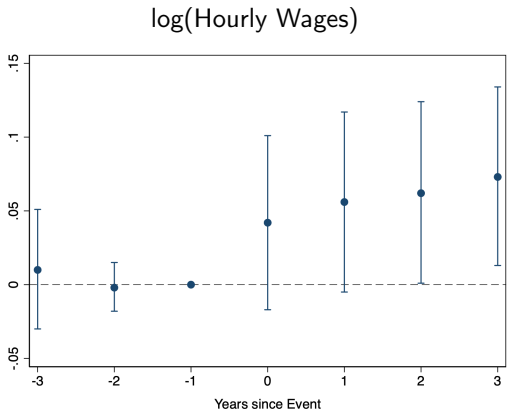
- By design, some firms receive fewer allowances, increasing the cost of carbon pricing
- 1 st dev fewer free allowances $\Rightarrow$ **1.6pp lower wages**

log(Hourly Wages)



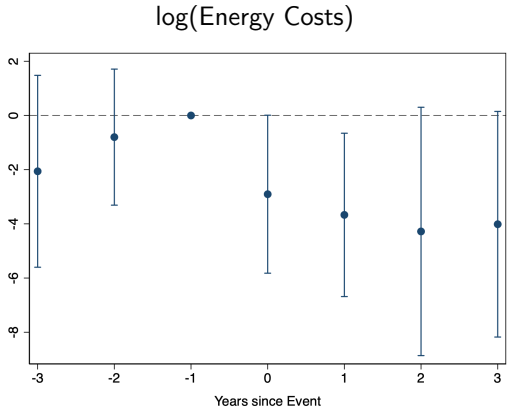
Worker Skill Matters-STEM vs Non-STEM

- ⇑ carbon price ⇒ ⇑ marginal revenue generated by workers who reduce emissions
- STEM workers in ETS firms enjoy **5pp higher wages** compared to STEM in non-ETS
- Stronger if STEM has better outside options & Firm has more free allowances than emissions



STEM Workers Matter-Plant Level Energy Costs

- Within-ETS, plants with higher STEM workers lower their energy costs
- No improvements in other types of efficiency measures



Conclusion

The effect of an increase in carbon prices on the labor market depends on

- A firm's existing permit shortfall
  - if the number of firms with excess permits decreases over time $\rightarrow$ would predict more negative labor market effects
- Worker skills — STEM workers become more valuable

These documented heterogeneities can help us understand the distributional effects of carbon pricing