The political economy of climate change regulation

Rent-seeking in the European Union Emissions Trading Scheme (EU ETS)

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Broader research agenda

- Broader research agenda:
  - How do firms and interest groups engage with their non-market environment (e.g. regulators, politicians etc.)?
  - How do firms and interest groups capture value through these processes? (e.g. lobbying, rent-seeking)
  - Particular focus on political economy of new climate change regulations

- European Union Emissions Trading Scheme (EU ETS)
  - World's largest cap and trade program for greenhouse gases
  - Unprecedented scale: 27 countries and > 11,000 plants
  - Carbon markets: economic rents worth €42 billion (2008)
  - Multinational regulatory experiment

Research question and motivation

- Research question: How do different institutional and political characteristics influence the size of rents that industry groups can capture within environmental regulation?

- Motivation:
  - Rent-seeking has long been studied in political economy, but mostly in contexts other than environmental regulation (e.g. trade policy, agricultural support, tax policy)

  - However, environmental regulations are subject to heavy rent-seeking efforts by interest groups

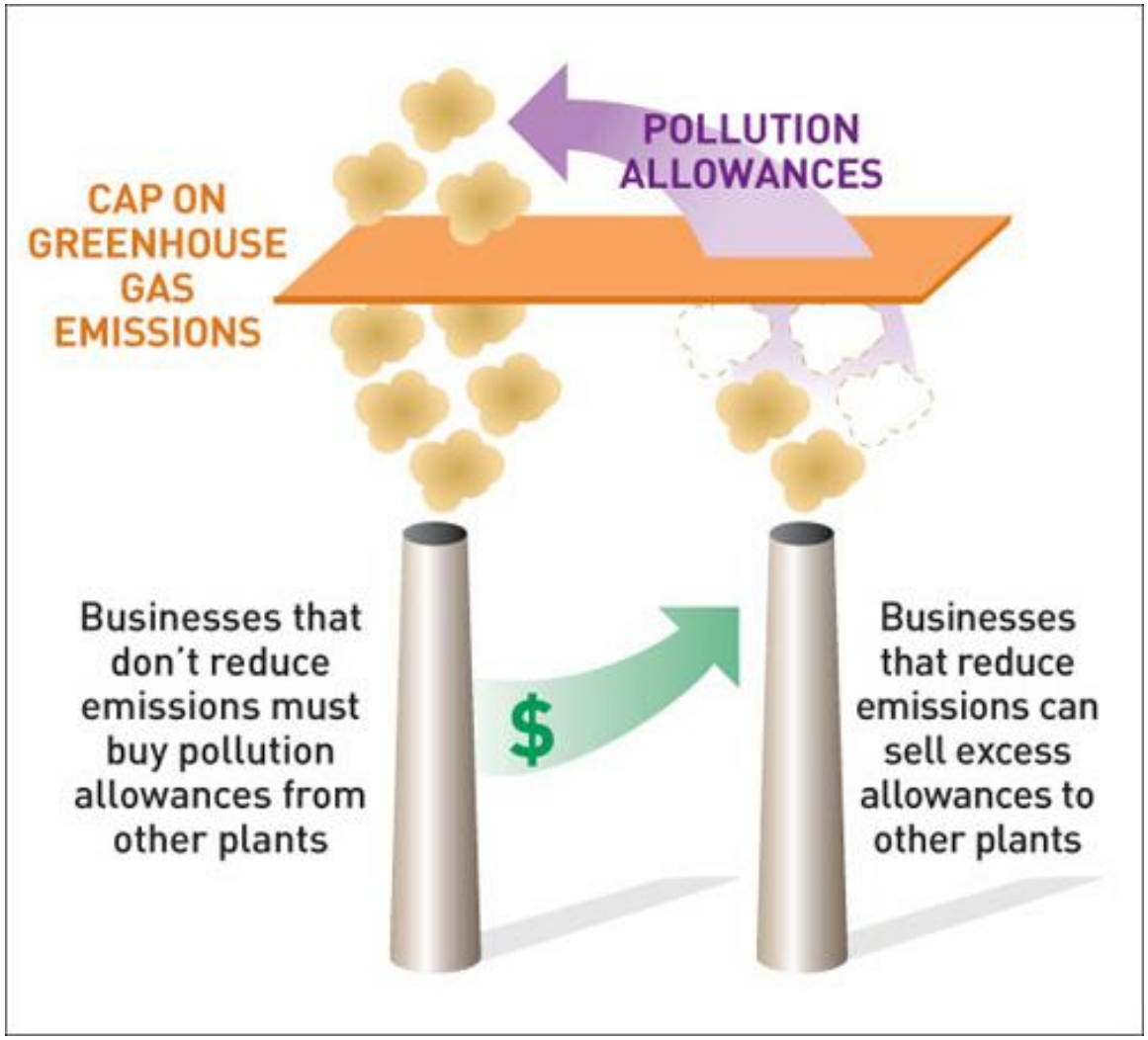
Motivation

- Motivation:
  - We need a better understanding of how these processes can influence environmental policy (e.g. what potential they have to undermine stated policy goals)
  - Especially since rent-seeking is rarely taken into account when deciding which environmental policy tool to use (e.g. cap-and-trade versus carbon tax for example)
  - New climate change regulations are increasingly becoming important: more countries and regions are putting price on carbon (the EU, Australia, California, Canada, South Korea, China)

Theory and literature

- Paper is embedded within several streams of literature in International Political Economy:
  - Traditional rent-seeking literature (e.g. Grossman and Helpman 1994, Mitchell & Munger 1991, Mueller 2003)
  - Prior research on the importance of political and institutional characteristics on economic and rent-seeking outcomes (e.g. Beghin and Kherallah 1994, Brooks et al. 1998, Davis 2004, La Porta et al. 1998, Li and Resnick 2003, Jensen 2003, McCormick and Tollison 1981, Thies & Porche 2007)

Cap-and-trade programs



Source: EDF

Emissions allowance allocation

- Allowance allocation is highly critical → advantage/disadvantage for certain industries/firms

- Allocation in the EU ETS was subject to strong rent-seeking efforts:
  - Allocation was delegated by EU Commission to national regulators: variation across countries in regulatory approaches
  - Ample opportunities for interest groups to affect allocation
  - “Industry adjustment factors” introduced during development of allocation plans

Hypotheses

- Hypotheses:
  - H1a: significant differences in size of rents among industries
  - H1b: number of plants negatively related to size of rents an industry can appropriate (collective action problem)
  - H2: legal tradition in home country of industry significantly affects size of rents industry can capture

Hypotheses and data

- Hypotheses cont'd:
  - H3a: Ideology of Executive Branch in home country of industry affects size of rents
  - H3b: Durability of political institutions in home country of industry: more stable institutions will facilitate lower rents
  - H3c: Electoral cycle in home country of industry: rents significantly different during election year

- Empirical approach:
  - Panel dataset on industrial sectors in the EU ETS in 24 member countries (2005 to 2009)
  - 835 country-industry pairs

Empirical approach

- Dependent Variable:
  - Construct standardized measure to capture rents that can be compared across different industry sizes:

$$AG_{it} = \frac{Allowances_{it} - Emissions_{it}}{Allowances_{it}}$$

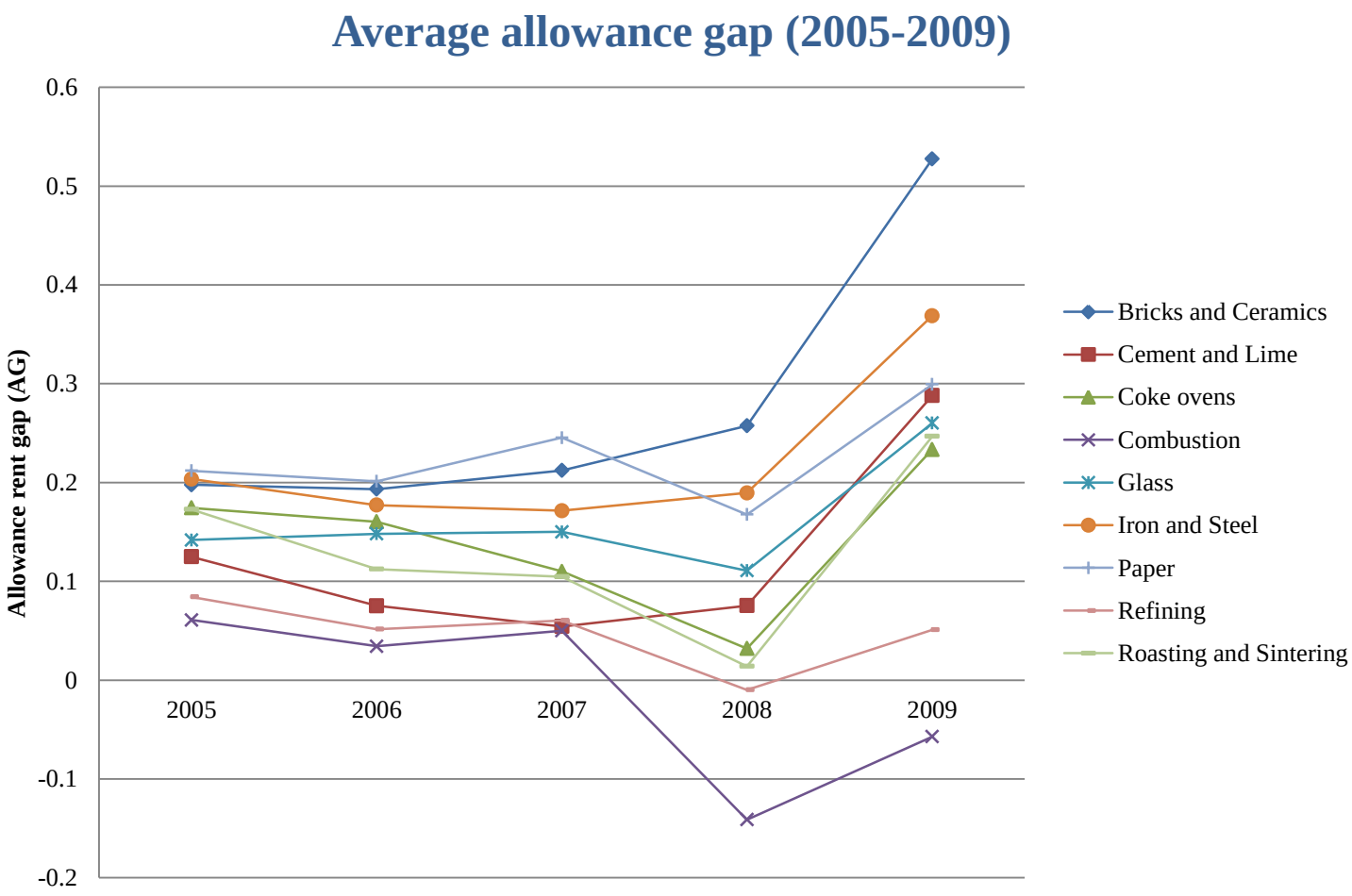
AG_{it} -> "Allowance Rent Gap" of industry i in year t:

- If AG > 0, "allowance surplus" (positive rent)
- If AG < 0 "allowance shortfall" (negative rent)

Empirical approach

- Independent variables:
  - Industry effects (H1a)
  - Number of plants (H1b)
  - Legal origin classification (H2)
  - Ideology of Executive Branch: 0 to 3 (H3a)
  - Durability score: year since major regime change (Polity IV) (H3b)
  - Election year indicator (H3c)
- Controls (e.g. new EU member indicator, GDP growth)
- GLS panel regressions

Results – average allowance gap



Source: EDF

Results – industry effects

	(1) Model 1	(2) Model 2
Bricks and Ceramics	0.2883*** (0.0523)	0.2883*** (0.0524)
Cement and Lime	0.1342*** (0.0472)	0.1342*** (0.0474)
Coke Ovens	0.1527** (0.0817)	0.1527** (0.0819)
Combustion	Omitted	Omitted
Glass	0.1728*** (0.0540)	0.1728*** (0.0541)
Iron and Steel	0.2327 *** (0.059)	0.2327*** (0.0593)
Paper	(0.2357)*** 0.0572	0.2357*** (0.0573)
Refining	0.0581 (0.0465)	0.0581 (0.0467)
Roasting and Sintering	0.1407** (0.0686)	0.1407** (0.0688)
Constant	-0.0106 (0.04350)	-0.0104 (0.0436)
Year effects	N	Y
p-Value	0.000	0.0000
Wald Chi^2	73.81	323.81
Observations	835	835

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
Common Law	0.1400*	0.1342*	0.1551*	0.1295
	(0.0797)	(0.0794)	(0.0877)	(0.0811)
French Civil Law	0.0937***	0.0903***	0.0943***	0.0747*
	(0.0334)	(0.0332)	(0.0358)	(0.0430)
Scandinavian Law	0.0969**	0.0990**	0.0813*	0.0882*
	(0.0421)	(0.0417)	(0.0450)	(0.0458)
German Law	Omitted	Omitted	Omitted	Omitted
Number of Plants	-0.0003***	-0.0003***	-0.0004***	-0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Ideology of Executive Branch	0.0280**	0.0294**	0.0258**	0.02882**
	(0.0125)	(0.0123)	(0.0124)	(0.0123)
Stability of Political Institutions	-0.0017*	-0.0016*	-0.0014	-0.0013
	(0.0009)	(0.0009)	(0.0010)	(0.0010)
Election Year	-0.0359	-0.0278	-0.0341	-0.0281
	(0.0230)	(0.0222)	(0.0227)	(0.0223)
GDP Growth	-0.0092***	-0.0014	-0.0010	-0.0017
	(0.0022)	(0.0039)	(0.0040)	(0.0039)
New EU Member	0.0621	0.05224	0.0543	0.0111
	(0.0418)	(0.0426)	(0.0463)	(0.0701)
Δ Emissions$_{t-1}$			-0.0262***	
			(0.0068)	
GDP per Capita				0.0000
				(0.0000)
Constant	-0.0106**	0.1005*	0.0830	0.1995
	(0.0435)	(0.0597)	(0.0663)	(0.1576)
Year effects	N	Y	Y	Y
p-Value	0.000	0.0000	0.0000	0.0000
Wald Chi^2	74.24	324	282.71	324.99
Observations	815	815	652	815

Robustness

	(1) Model 1	(2) Model 2
Ideology of Executive Branch	0.0503***	0.0473***
	(0.0148)	(0.0149)
Stability of Political Institutions	-0.0108	-0.0069
	(0.0095)	(0.0099)
Election Year	-0.0412*	-0.0482**
	(0.0238)	(0.0239)
GDP Growth	-0.0111***	-0.0107***
	(0.0028)	(0.0028)
Δ Emissions$_{t-1}$		-0.0352***
		(0.0071)
Constant	0.5261	0.3763
	(0.3827)	(0.3986)
p-Value	0.0000	0.0000
F	9.58	16.26
Observations	815	652

Summary of results

- Allowance rent measure differs significantly across industries (Combustion is worst off)
- Number of plants is negatively related to size of allowance rents (collective action problem)
- Legal tradition within country is correlated with size of allowance rents (Germanic countries award lower rents)
- Left-leaning governments seem to provide larger allowance rents than centrist and right-leaning governments
- More stable political institutions are related to lower allowance rents (weak support)
- Electoral cycle does not seem to influence allowance allocation

Contributions and implications

- Previous studies on rent-seeking have mostly focused on other contexts such as trade protection and agricultural support
- My study expands this line of research onto rent-seeking within environmental regulation: environmental policy vulnerable to rent-seeking efforts like other policy areas
- Improves our understanding of the influence of political and institutional factors during allowance allocation within cap-and-trade programs
- Empirically demonstrates the differential treatment of industries

Contributions and implications

- Rent-seeking efforts should be taken into account when deciding on emissions regulations (carbon tax vs. emissions trading):
  - General over-allocation of allowances can undermine policy goal (and require larger emissions cuts from other parts of the economy)
  - Over-allocation to certain industries is highly problematic from distributional/equity perspective
  - Decentralized allocation of allowances allows interest groups to use country-specific institutional and political characteristics to their advantage during rent-seeking efforts

Further research and extensions

- Collect more industry specific variables (e.g. vulnerability to imports)
- Additional robustness checks (e.g. alternative measures)
- Evaluate possible costs of rent-seeking
- Develop more general theoretical model of rent-seeking within environmental regulation

Thank you!

Questions?