Pricing Pollution:
Asset-Pricing Implications of the EU Emissions Trading System

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Background on EU ETS

- EU Emission Trading System (EU ETS) is world's largest carbon market
- Objective: *Reduce net emissions by 55% by 2030 compared to 1990*
- How? By limiting total emissions and letting operators trade emission allowances ("*cap-and-trade*")
- System forms the backbone of European Commission's decarbonization strategy
- 1.2 billion tonnes of CO_2-e emissions covered in 2022 – 40% of EU-wide emissions

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- Stock market reaction to EU ETS non-compliance
- Effects of carbon pricing on stock prices over *all* operational phases of the EU ETS and for *both European and non-European* stocks
- Methodological: *historically representative* installation→ownership link

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   - This relationship varies considerably over the operational phases of the EU ETS, and already appears in Phase II
   - Interestingly, both European and non-European stocks respond to carbon prices

Related literature

- Impact and effectiveness of the EU ETS
  - Relatively low effectiveness of EU ETS in first phases, e.g. Anderson and DiMaria (2011)
  - EU ETS led to about 10% additional reduction in emissions (Dechezleprêtre, Nachtigall and Venmans (2023); Bayer and Aklin (2020))

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- Carbon prices and the stock market
  - Positive association between carbon prices and stock prices in earlier phases (Oberndorfer (2009); Veith, Werner, and Zimmermann (2009); Oestreich and Tsiakas (2015)).
  - Sensitivity depends on allocation: Bolton, Lam, and Mûûls (2023); Hengge, Panizza, and Varghese (2023); Millischer, Evdokimova and Fernandez (2023)

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- Carbon pricing and (macro-)economic effects, e.g. Känzig (2023)

Data

1. Emissions and allowances of stationary installations from the European Union Transaction Log (EUTL) Example
   - Obtain data on over 15,000 installations from 2005 to 2023
   - Also download compliance codes that indicate compliance with the EU ETS' regulations
2. Subsidiary firm records from Bureau van Dijk's Orbis Global
   - Combine our own approach with that of Letout (2022) to merge installations in EUTL to subsidiary firms
   - Results in matching subsidiary for 96.1% of installations, representing 98.7% of verified emissions
3. International stock returns and corporate financial data from Refinitiv Eikon
4. Prices of futures on EUAs from FactSet Plot
   - ICE's front future contract as main proxy (FactSetID 'ECF-FDS')
   - Several others considered in robustness tests Correlations

Linking subsidiaries to parent companies

Follows procedure by Jaraitė and DiMaria (2016)

1. Start with a list of BvD IDs for all subsidiary firms linked to the sample of EU ETS installations;
2. For each BvD ID in this list, extract the BvD ID(s) of its shareholder(s) as of December for each year from 2005 to 2022;
3. For the shareholder's or shareholders' BvD ID(s), extract the BvD ID(s) of its shareholder(s) as of December for each year from 2005 to 2022;
4. Continue to query for shareholders of shareholders until no shareholders can be found;

Variable construction

- **Firm-level verified emissions**

$$\text{Verified Emissions}_{i,t} = \sum_{j=1}^{N_{i,t}} \text{Ownership}_{i,j,t} \times \text{Verified Emissions}_{i,j,t}$$

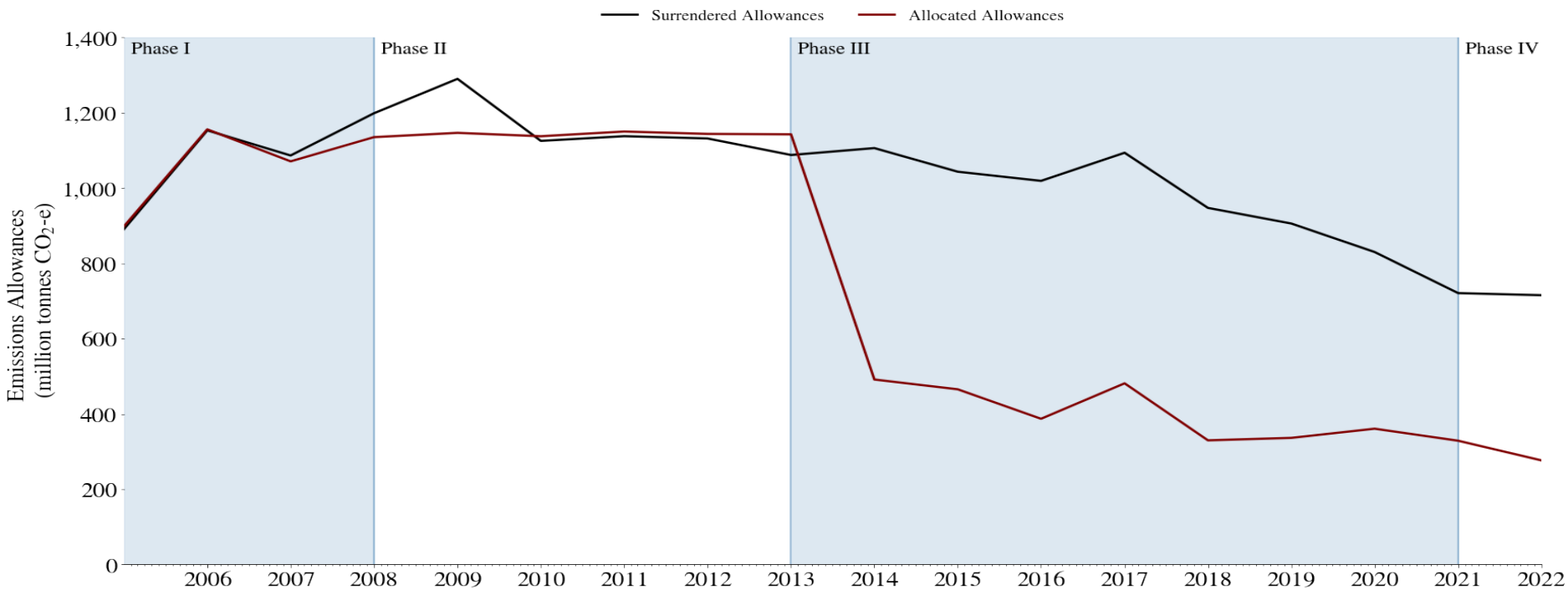
- **Firm-level allocated allowances**

$$\text{Allocated Allowances}_{i,t} = \sum_{j=1}^{N_{i,t}} \text{Ownership}_{i,j,t} \times \text{Allocated Allowances}_{i,j,t}$$

- **Allocation shortfall**

$$\text{Allocation Shortfall}_{i,t} = 1 - \frac{\text{Allocated Allowances}_{i,t}}{\text{Verified Emissions}_{i,t}}$$

Allocated vs. verified emissions aggregated over all firms in sample



Allocated vs. verified emissions by industry

		All Phases		Phase I		Phase II		Phase III		Phase IV	
Industry	Firms	Emissions	Allocations	Emissions	Allocations	Emissions	Allocations	Emissions	Allocations	Emissions	Allocations
Energy	44	1,906.58	1,607.84	105.14	110.33	578.32	598.43	936.45	733.46	286.68	165.63
Materials	197	3,839.74	4,089.93	177.16	205.69	950.12	1,173.46	1,974.29	2,034.80	738.17	675.97
Industrials	126	353.91	347.23	27.49	27.98	125.17	138.82	154.61	155.32	46.65	25.11
Cons. Discr.	56	79.17	66.83	3.65	4.26	19.26	24.19	37.93	30.72	18.33	7.65
Cons. Staples	66	62.00	55.10	2.25	2.63	17.39	20.78	32.11	25.80	10.26	5.89
Health Care	33	40.01	38.11	2.73	3.18	15.66	16.72	18.25	16.03	3.38	2.19
Financials	48	106.17	109.57	43.32	53.05	15.83	18.33	36.63	30.45	10.40	7.75
Utilities	56	10,100.07	5,224.14	614.43	568.72	3,491.80	2,995.00	4,912.31	1,615.98	1,081.52	44.44
Other	33	6.58	8.15	0.57	0.88	2.10	3.30	3.01	3.37	0.89	0.60

Top 20 firms by verified emissions in 2022

Company	Country	Verified Emissions (10^6 tonnes CO_2-e)	Allocated Allowances (10^6 tonnes CO_2-e)	Allocation Shortfall (%)	Allocation Shortfall (€ millions)
PGE POLSKA GRUPA ENERGETYCZNA SA	POLAND	70.18	0.62	99.12%	5,573
RWE AG	GERMANY	64.78	0.85	98.69%	5,122
ARCELORMITTAL SA	LUXEMBOURG	61.31	55.03	10.24%	503
THYSSENKRUPP AG	GERMANY	25.40	22.20	12.60%	256
ENEA SA	POLAND	22.29	0.15	99.33%	1,774
ENGIE SA	FRANCE	22.15	0.55	97.50%	1,730
CEZ AS	CZECH REPUBLIC	21.62	0.35	98.40%	1,704
ENI SPA	ITALY	21.49	7.88	63.31%	1,090
HEIDELBERG MATERIALS AG	GERMANY	21.36	18.42	13.75%	235
ENEL SPA	ITALY	20.48	0.02	99.92%	1,639
FORTUM OYJ	FINLAND	18.38	0.75	95.92%	1,412
TOTALENERGIES SE	FRANCE	17.02	11.21	34.12%	465
ORLEN SA	POLAND	16.57	7.56	54.37%	722
ELECTRICITE DE FRANCE SA	FRANCE	15.31	0.28	98.14%	1,203
PUBLIC POWER CORPORATION SA	GREECE	13.83	0.02	99.83%	1,106
CRH PLC	IRELAND	13.48	10.46	22.37%	242
VOESTALPINE AG	AUSTRIA	12.96	9.10	29.82%	310
TAURON POLSKA ENERGIA SA	POLAND	12.45	0.16	98.71%	984
BASF SE	GERMANY	12.00	9.19	23.37%	225
ENBW ENERGIE BADEN WUERTTEMBERG AG	GERMANY	11.45	0.19	98.33%	902

Descriptive statistics

				Percentiles						
	N. Obs.	Mean	SD	1%	5%	25%	Median	75%	95%	99%
Panel A: Market variables										
Excess Return* (%)	2,791,950	0.041	2.445	-6.717	-3.447	-0.993	0.000	1.027	3.593	7.288
Return Volatility (%)	2,791,950	2.187	1.037	0.807	1.045	1.494	1.951	2.602	4.154	5.842
Market Capitalization (millions €)	2,031,680	17,489	52,923	11	81	991	4,039	15,536	72,976	190,521
β_{Market}	2,584,865	0.599	0.382	-0.166	0.045	0.335	0.565	0.833	1.275	1.615
β_{Size}	2,584,865	-0.023	0.719	-1.603	-1.134	-0.492	-0.055	0.406	1.203	1.907
β_{Value}	2,584,865	0.138	0.703	-1.524	-0.927	-0.263	0.095	0.500	1.328	2.215
$\beta_{Momentum}$	2,584,865	0.018	0.575	-1.497	-0.883	-0.278	0.009	0.302	0.938	1.645
Panel B: EU ETS & Emission variables										
Verified Emissions (in millions of tonnes CO2-e)	2,509,211	1.827	8.284	0.000	0.000	0.011	0.050	0.364	8.071	39.441
Allocated Allowances (in millions of tonnes CO2-e)	2,509,211	1.293	6.304	0.000	0.000	0.010	0.047	0.298	5.389	25.573
Total Emissions (in millions of tonnes CO2-e)	1,837,567	7.349	17.140	0.007	0.043	0.316	1.179	5.127	39.785	87.440
Allocation Shortfall (%)	2,429,350	19.553	29.301	0.000	0.000	0.000	0.000	30.412	93.234	100.000
Carbon Tax Rate (% of Mkt. Cap.)	1,850,303	0.205	1.275	-1.733	-0.297	-0.006	0.000	0.011	1.004	10.143
Panel C: Firm characteristics										
Return on Equity* (%)	1,851,839	14.686	18.777	-54.025	-5.230	6.889	12.390	19.914	43.390	105.923
Return on Assets* (%)	2,070,137	4.051	5.880	-18.053	-5.132	1.373	3.828	6.750	13.623	23.117
Book to Market*	2,066,612	0.881	0.888	-0.094	0.138	0.371	0.637	1.060	2.477	5.511
Leverage* (%)	2,069,979	27.889	15.001	0.071	4.187	17.143	26.605	37.083	56.141	68.921
PP&E to Assets* (%)	1,973,871	0.711	0.412	0.016	0.127	0.369	0.687	0.993	1.437	1.876
Investment to Assets*	1,906,343	0.078	0.132	0.000	0.001	0.011	0.034	0.087	0.282	0.809

Firms in sample by year and country

Evidence from event studies around non-compliance

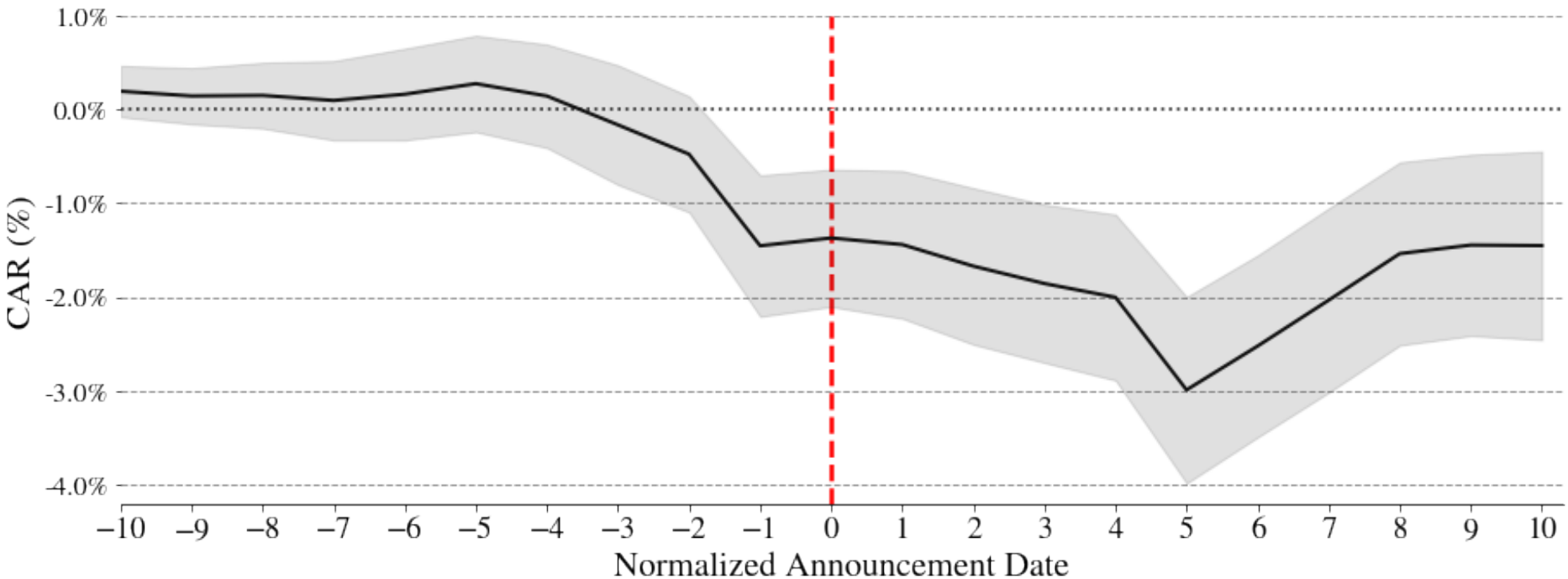
Event study regression specification

$$\text{CAR}_{i,\tau,y} = \sum_{\tau=-10}^{10} \beta_\tau 1_{\tau,y}^{\text{EventDay}=\tau} \times 1_{i,y}^{\text{Non-Compliant}} + \sum_{\tau=-10}^{10} \gamma_\tau 1_{\tau,y}^{\text{EventDay}=\tau} + \sigma_{i,y} + \varepsilon_{i,\tau,y}$$

- $\text{CAR}_{i,\tau,y}$ represents the cumulative abnormal return for firm i accumulated over the event days from -10 to τ
- τ denotes a normalized event date and represents the number of days relative to the announcement date
- $1_{i,y}^{\text{Non-Compliant}}$ equals 1 if firm i owns at least one installation that fails to surrender allowances equal to verified emissions in compliance year y and otherwise zero
- $\sigma_{i,t}$ denotes an industry-by-year fixed effect

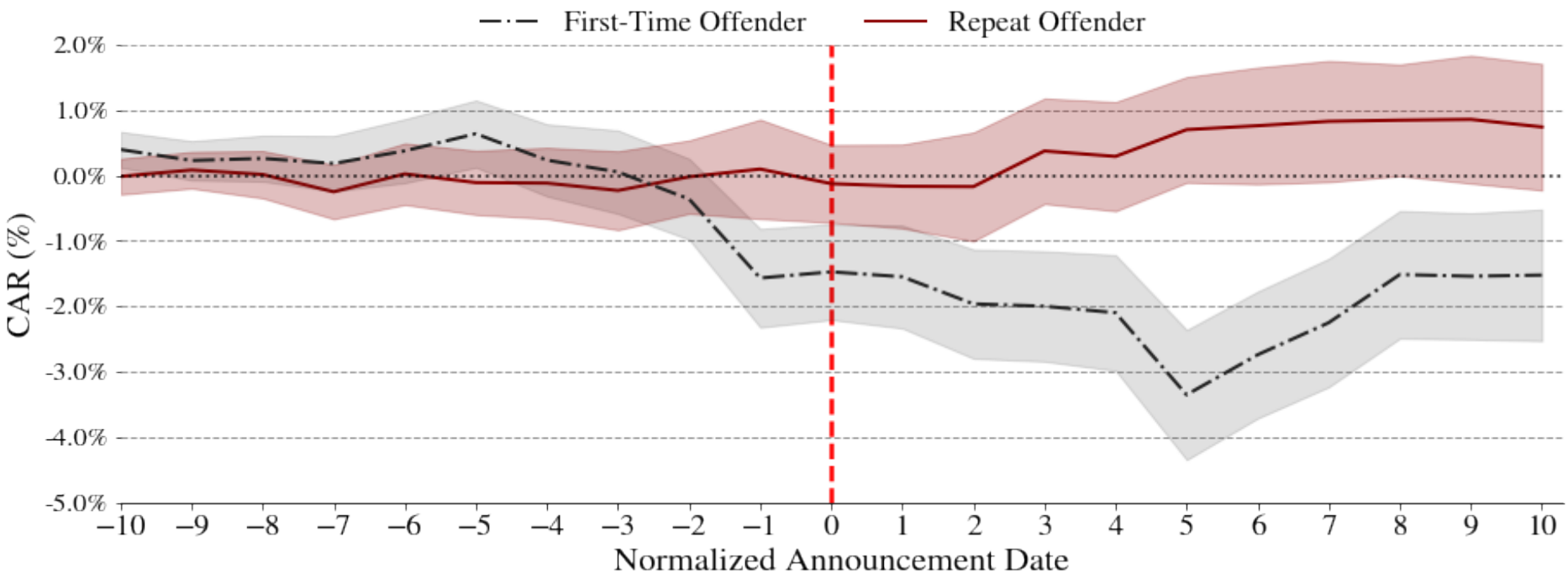
EU ETS compliance cycle

Stock market response to EU ETS non-compliance

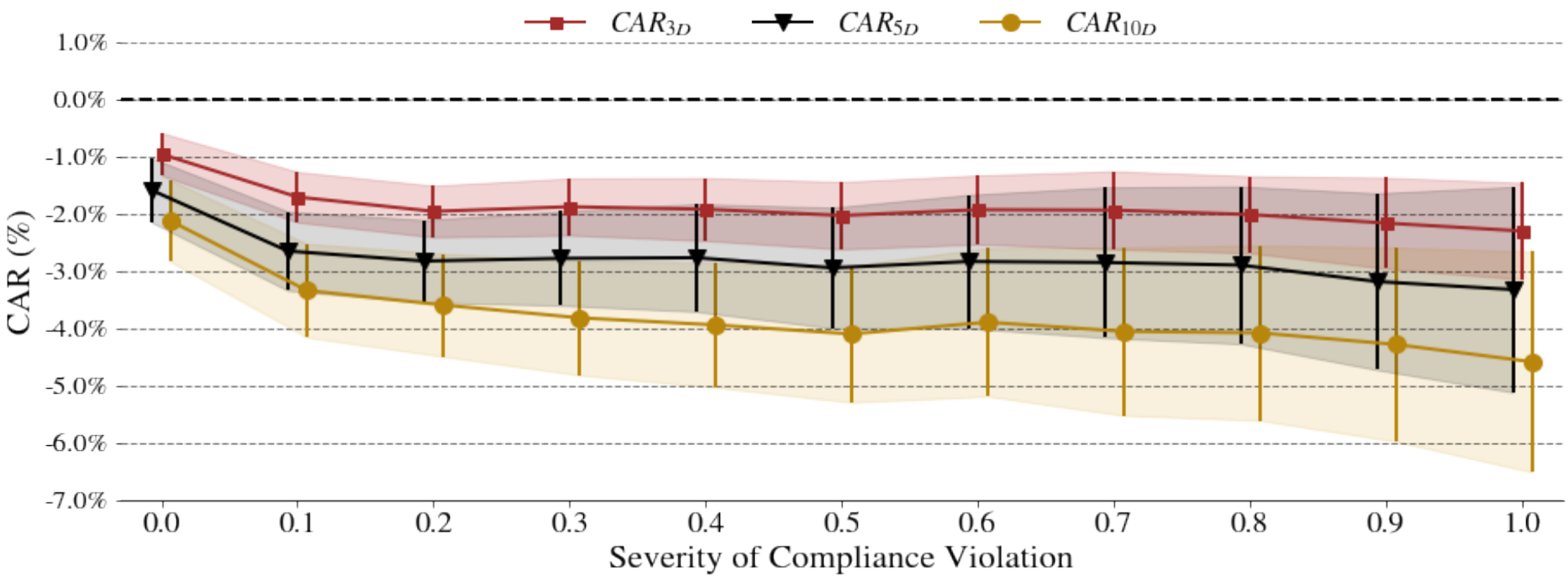


Robustness to alternative factor models

Subsampling: First-time vs. repeat offenders



Subsampling: Severity of compliance violation



Heterogeneity in carbon price exposure

Regression specification

$$r^{e}_{i,t} = \beta_0 AS_{i,t} \times r^{EUA}_{t} + \beta_1 AS_{i,t} + \lambda X'_{i,t\text{-}1} + \sigma_{i,t} + \mu_t + \varepsilon_{i,t}$$

- $r^{e}_{i,t}$ denotes firm i's return in excess of the risk-free rate at day t
- r^{EUA}_{t} refers to the daily change in the settlement price of the EUA front futures contract traded on ICE
- $AS_{i,t}$ is the Allocation Shortfall defined as firm i's the proportion of non-allocated allowances to verified emissions in compliance year t and captures the extent to which firm i is reliant upon purchased allowances rather than allocated allowances to cover its emissions
- $X_{i,t-1}$ is a vector of (lagged) control variables
- $\sigma_{i,t}$ denotes an industry-by-year fixed effect
- μ_t denotes a date fixed effect.

Allocation shortfall and carbon price sensitivity

Dependent variable:	*Excess Returns*					
	(1)	(2)	(3)	(4)	(5)	(6)
Allocation Shortfall $\times$ r^{EUA}	-1.4251***	-1.4280***	-1.8956***	-1.9051***	-1.8687***	-1.8620***
	(-3.336)	(-3.342)	(-3.966)	(-3.984)	(-3.824)	(-3.810)
Allocation Shortfall	0.0130	0.0131	0.0107	0.0111	0.0236*	0.0239*
	(1.337)	(1.337)	(0.890)	(0.925)	(1.771)	(1.802)
ln(Market Cap.)	-	-0.0004	-	0.0006	-	-0.0060**
	-	(-0.230)	-	(0.259)	-	(-2.242)
Return on Equity	-	0.0003**	-	0.0004**	-	0.0001
	-	(2.144)	-	(2.117)	-	(0.700)
PP&E to Assets	-	0.0152**	-	0.0213***	-	0.0008
	-	(2.254)	-	(2.877)	-	(0.068)
Investment to Assets	-	-0.0303	-	-0.0417	-	-0.0107
	-	(-1.336)	-	(-1.602)	-	(-0.271)
Book to Market	-	0.0132***	-	0.0173***	-	0.0041
	-	(2.646)	-	(3.152)	-	(0.456)
Leverage	-	0.0072	-	-0.0016	-	0.0040
	-	(0.428)	-	(-0.074)	-	(0.174)
Market Beta	-	0.0231	-	0.0189	-	0.0501
	-	(1.029)	-	(0.830)	-	(1.525)
Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Domicile	All	All	EU	EU	Non-EU	Non-EU
N. Obs.	1,387,475	1,387,475	878,033	878,033	509,442	509,442
R^2-Adj.	0.213	0.213	0.258	0.258	0.198	0.199

Non-linearities in carbon price sensitivity

$$r^{e}_{i,t} = \beta_0 1^{\text{Short Allocation}}_{i,t} \times r^{\text{EUA}}_{t} + \beta_1 1^{\text{Long Allocation}}_{i,t} \times r^{\text{EUA}}_{t} + \beta_2 1^{\text{Short Allocation}}_{i,t} + \beta_3 1^{\text{Short Allocation}}_{i,t} + \lambda X'_{i,t\text{-}1} + \sigma_{i,t} + \mu_t + \varepsilon_{i,t}$$

- $1^{\text{Short Allocation}}_{i,t}$ is an indicator variables that indicates whether a firm's allocated emissions relative to verified emissions are below the 25^{th} percentile of the distribution
- $1^{\text{Long Allocation}}_{i,t}$ is an indicator variables that indicates whether a firm's allocated emissions relative to verified emissions are above the 75^{th} percentile of the distribution

Non-linearities in carbon price sensitivity

Dependent variable:	*Excess Returns*					
	(1)	(2)	(3)	(4)	(5)	(6)
$1_{\text{Short Allocation}} \times r^{\text{EUA}}$	-0.3382*	-0.3389*	-0.5859**	-0.5875**	-0.2730	-0.2699
	(-1.939)	(-1.942)	(-2.542)	(-2.546)	(-1.022)	(-1.010)
$1_{\text{Short Allocation}}$	0.0035	0.0039	0.0042	0.0051	0.0027	0.0012
	(0.710)	(0.790)	(0.688)	(0.821)	(0.341)	(0.154)
$1_{\text{Long Allocation}} \times r^{\text{EUA}}$	0.4190***	0.4199***	0.5081***	0.5096***	0.3702*	0.3682*
	(2.748)	(2.752)	(2.710)	(2.715)	(1.675)	(1.665)
$1_{\text{Long Allocation}}$	-0.0000	-0.0006	0.0045	0.0032	-0.0077	-0.0080
	(-0.008)	(-0.144)	(0.858)	(0.622)	(-1.150)	(-1.205)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
Regions	All	All	EU	EU	Non-EU	Non-EU
N. Obs.	1,480,101	1,480,101	925,068	925,068	555,033	555,033
R^2-Adj.	0.208	0.208	0.254	0.254	0.193	0.193

Inference from a high-frequency event study

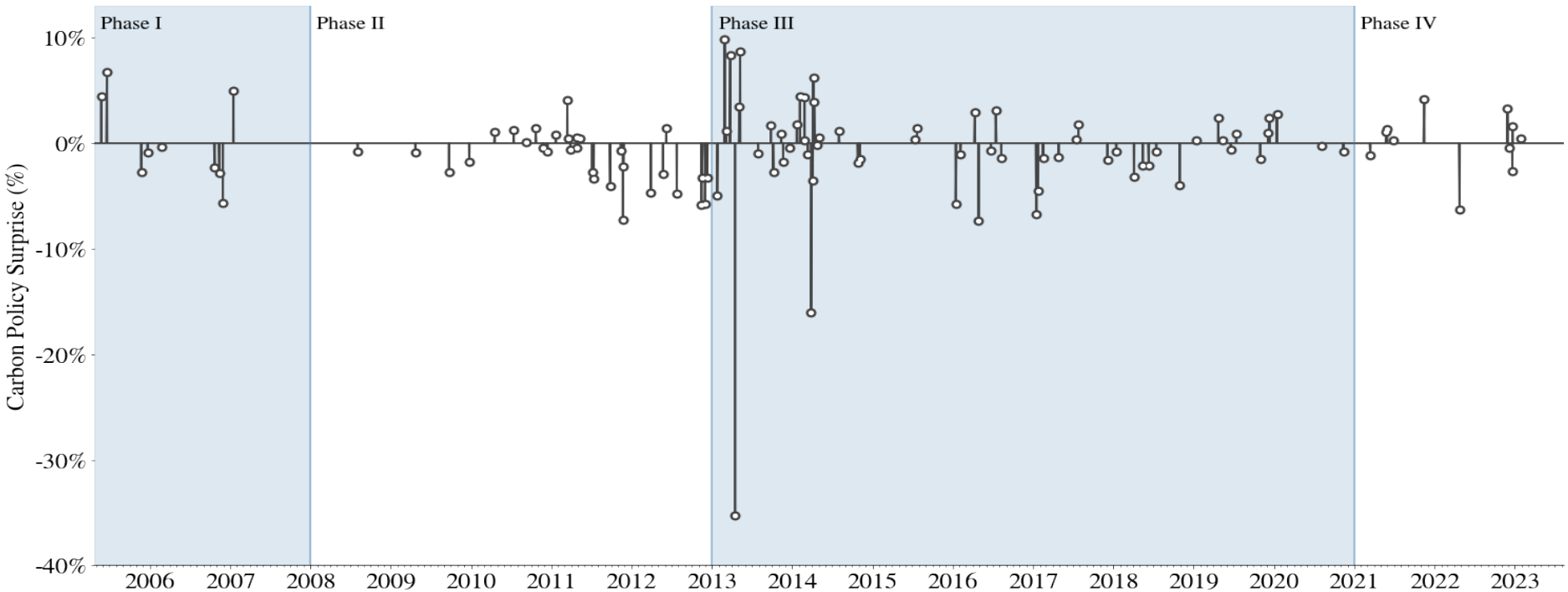
Regression specification

$$r^{e}_{i,t} = \alpha + \beta_0 \, \text{AS}_{i,t} \times r^{\text{EUA}}_{t} \times 1^{\text{Regulatory Event Day}}_{t} + \beta_1 \, \text{AS}_{i,t} \times r^{\text{EUA}}_{t} + \sigma_i + \phi_{i,t} + \varepsilon_{i,t},$$

Where:

- $r^{e}_{i,t}$ denotes firm i's return in excess of the risk-free rate on day t
- $\text{AS}_{i,t}$ is the firm's Allocation Shortfall, $1^{\text{Regulatory Event Day}}_{t}$ is an indicator variable equal to one if day t is a Känzig (2023) regulatory event day and equal to zero otherwise
- r^{EUA}_{t} is the daily return on the EUA futures' price
- σ_i is a firm fixed effect
- $\phi_{i,t}$ is an industry-by-year fixed effect

Känzig (2023) Carbon Policy Surprise Index



Examples of EU ETS regulatory events

Identification using a high-frequency event study around climate policy events

Dependent variable:	*Excess Returns*			
	(1)	(2)	(3)	(4)
Allocation Shortfall	-0.1811	-0.0561	-0.1174	-0.2019
	(-1.037)	(-0.314)	(-0.358)	(-1.147)
Allocation Shortfall $\times$ r^{EUA}	1.1556***	-	-	1.1836***
	(8.589)	-	-	(8.597)
Allocation Shortfall $\times$ Climate Policy Event	-	-0.0190	-	0.2585
	-	(-0.017)	-	(0.244)
Allocation Shortfall $\times$ r^{EUA} $\times$ Climate Policy Event	-	-	0.2220	-0.9878***
	-	-	(0.721)	(-3.046)
Firm FE	Yes	Yes	Yes	Yes
Country $\times$ Sector $\times$ Year FE	Yes	Yes	Yes	Yes
N. Obs.	2,392,451	2,392,451	2,392,451	2,392,451
R^2-Adj.	0.198	0.196	0.191	0.198

Conclusion

1. Non-compliance events in the EU ETS have strong negative effects on stock prices
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   - Announcement returns are more negative for violations that are more severe
2. Stock prices of regulated firms quickly respond to changes in the carbon price
   - Direction of response depends on whether firm is "long" or "short" allowances
   - This relationship varies considerably over the operational phases of the EU ETS, and already appears in Phase II
   - Interestingly, both European and non-European stocks respond to carbon prices

Appendix

Appendix: Example of EUTL data

Installation Information

General Information

Installation ID	Installation Name	Permit ID	Permit Entry Date	Permit Expiry/Revocation Date	Name of Subsidiary undertaking	Name of Parent undertaking	E-PRTR identification	First Year of Emissions	Last Year of Emissions
206	Stichting VU-VUmc FCO / CCE	NL-200400272	2005-01-01					2005	0

Address Information

Main Address Line	Secondary Address Line	Postal Code	City	Country	Latitude	Longitude	Main Activity
Van der Boechorststraat 5		1081 BT	Amsterdam	NL			20-Combustion of fuels

EU Compliance Information

EU ETS Phase	Year	Allowances in Allocation	Verified Emissions	Units Surrendered	Cumulative Surrendered Units**	Cumulative Verified Emissions***	Compliance Code	Options	
2005-2007	2005	33671	45334	45334	45334	45334	A	History	Details on Surrendered Units
2005-2007	2006	33670	43138	43138	88472	88472	A	History	
2005-2007	2007	33670	47122	47122	135594	135594	A	History	
2008-2012	2008	39750	48423	48423	48423	48423	A	History	Details on Surrendered Units
2008-2012	2009	39750	49516	49516	97939	97939	A	History	
2008-2012	2010	39750	50337	50337	148276	148276	A	History	
2008-2012	2011	39750	47901	47901	196177	196177	A	History	
2008-2012	2012	39749	45742	45742	241919	241919	A	History	
2013-2020	2013	15626	39200	39200	39200	39200	A	History	Details on Surrendered Units
2013-2020	2014	13983	35175	35175	74375	74375	A	History	
2013-2020	2015	12387	33462	33462	107837	107837	A	History	
2013-2020	2016	10843	35209	35209	143046	143046	A	History	
2013-2020	2017	9346	37543	37543	180589	180589	A	History	
2013-2020	2018	7898	36032	36032	216621	216621	A	History	
2013-2020	2019	6497	38001	38001	254622	254622	A	History	
2013-2020	2020	5146	30677	30677	285299	285299	A	History	
2021-2030	2021	4533	23317	23317	23317	23317	A	History	Details on Surrendered Units
2021-2030	2022	4533	22497	22497	45814	45814	A	History	
2021-2030	2023	4533						History	
2021-2030	2024	4533						History	
2021-2030	2025	4533						History	
2021-2030	2026							History	
2021-2030	2027							History	
2021-2030	2028							History	
2021-2030	2029							History	
2021-2030	2030							History	

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Appendix: Number of firms in sample by country

Country	N.o. Firms in Sample	Country	N.o. Firms in Sample
AUSTRALIA	6	LUXEMBOURG	5
AUSTRIA	15	MALAYSIA	8
BELGIUM	20	MEXICO	4
BERMUDA	2	MONACO	1
BRAZIL	5	NETHERLANDS	19
BULGARIA	7	NORWAY	11
CANADA	14	POLAND	26
CHINA	9	PORTUGAL	5
CROATIA	4	ROMANIA	2
CZECH REPUBLIC	1	RUSSIA	7
DENMARK	7	SAUDI ARABIA	3
FINLAND	13	SINGAPORE	2
FRANCE	51	SLOVAK REPUBLIC	1
GERMANY	50	SLOVENIA	4
GREECE	5	SOUTH AFRICA	4
HONG KONG	3	SPAIN	26
HUNGARY	4	SWEDEN	24
INDIA	17	SWITZERLAND	15
IRELAND	10	TAIWAN	1
ISRAEL	4	THAILAND	3
ITALY	30	TURKEY	3
JAPAN	53	UNITED ARAB EMIRATES	1
KOREA	9	UNITED KINGDOM	67
LATVIA	1	UNITED STATES OF AMERICA	123
LITHUANIA	4		

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Appendix: Number of firms in sample by year

Year	N.o. Firms in Sample	Year	N.o. Firms in Sample
2005	533	2015	709
2006	568	2016	668
2007	612	2017	667
2008	657	2018	657
2009	668	2019	656
2010	664	2020	670
2011	645	2021	604
2012	646	2022	581
2013	692	2023	557
2014	695		

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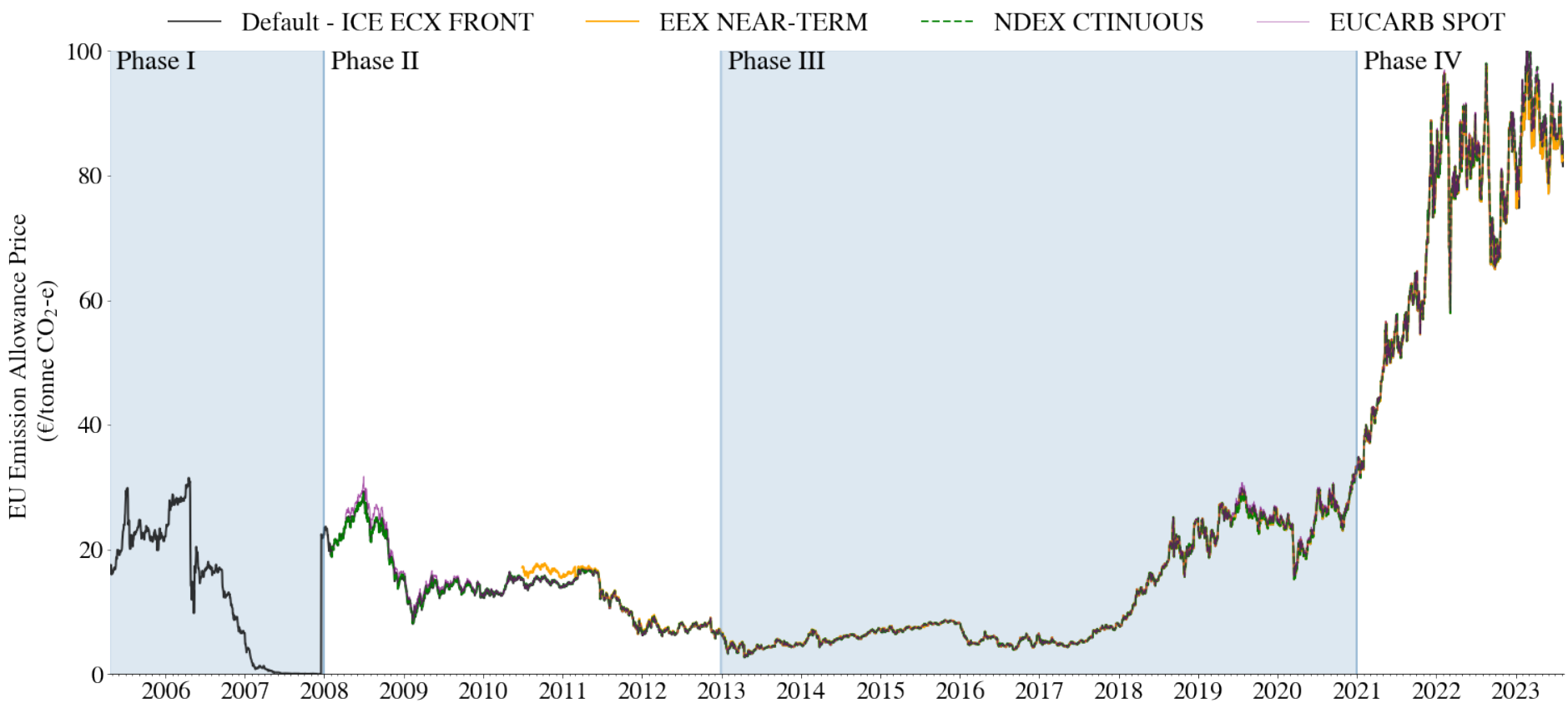
Appendix: Other EUA futures prices



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Appendix: Correlation in EUA futures prices

	ICE ECX FRONT	EEX NEAR-TERM	NDEX CONTINUOUS	EUCARB SPOT
ICE ECX FRONT	1.00	-	-	-
EEX NEAR-TERM	0.96	1.00	-	-
NDEX CTINUOUS	1.00	0.96	1.00	-
EUCARB SPOT	0.99	0.96	0.99	1.00

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Appendix: EU ETS compliance cycle

Year	Phase	Verification Date	Compliance Date
2005	Phase I	2006-05-15	2006-05-15
2006	Phase I	2007-04-02	2007-05-15
2007	Phase I	2008-04-02	2008-05-15
2008	Phase II	2009-04-01	2009-05-15
2009	Phase II	2010-04-01	2010-05-17
2010	Phase II	2011-04-01	2011-05-16
2011	Phase II	2012-04-02	2012-05-15
2012	Phase II	2013-04-02	2013-05-15
2013	Phase III	2014-04-01	2014-05-15
2014	Phase III	2015-04-01	2015-05-04
2015	Phase III	2016-04-01	2016-05-02
2016	Phase III	2017-04-03	2017-05-02
2017	Phase III	2018-04-03	2018-05-02
2018	Phase III	2019-04-01	2019-05-02
2019	Phase III	2020-04-01	2020-05-04
2020	Phase III	2021-04-01	2021-05-04
2021	Phase IV	2022-04-01	2022-05-03
2022	Phase IV	2023-04-03	2023-05-04

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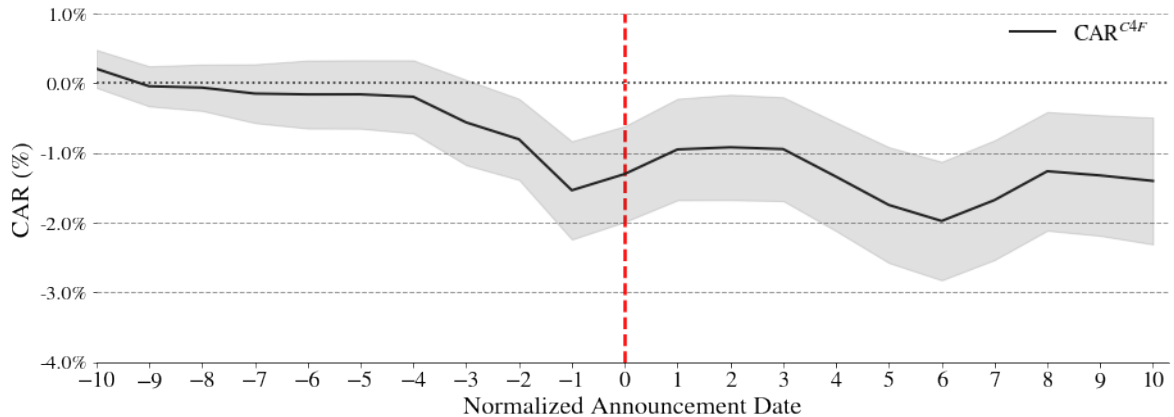
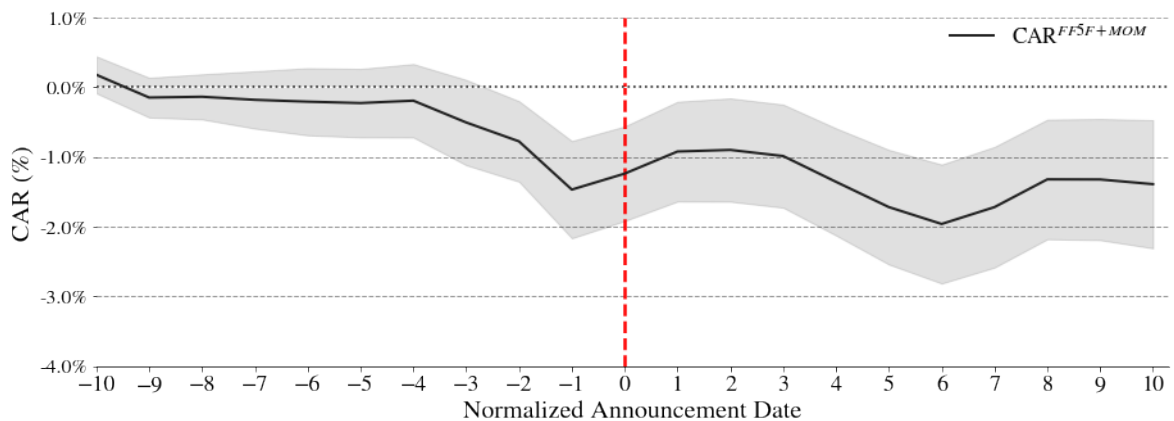
Appendix: Robustness to alternative factor models

(a) Fama-French 3-Factor + Carhart momentum



(b) Fama-French 5-Factor + Carhart momentum



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Appendix: Example of EU ETS regulatory events

Date	Regulatory Event
2005-05-25	Italian phase I NAP approved
2005-06-20	Greek phase I NAP approved
2005-11-23	Court judgment on a proposed amendment to NAP, UK vs Commission
2005-12-22	Further guidance on allocation plans for the 2008–2012 trading period
2006-02-22	Final UK Phase I NAP approved
2006-10-23	Stavros Dimas delivered the signal to tighten the cap of phase II
2006-11-13	Decision avoiding double counting of emission reductions for projects under the Kyoto Protocol
2006-11-29	Commission decision on the NAP of several member states

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