The Impact of Climate Policies on Financial Markets: Evidence from the EU Carbon Border Adjustment Mechanism

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What is CBAM?

- **Carbon Border Adjustment Mechanism**
- The world's first carbon border tax
- Raised by the EU
- Part of the "Fit for 55 package"
- Goal:
  - reduce carbon leakage
  - complement EU Emissions Trading System (EU ETS applies to production inside EU only)
  - replace the system of free allowances in the EU ETS
- Officially adopted in 2023
- Importers have to report emissions as of October 2023
- Importers have to purchase emission certificates as of 2026

Broad research agenda emerging: ex-post policy evaluation

Specifically: Consequences of the CBAM for customers within the EU

Methodology

- Event study around important legislation date for CBAM
- Compare cumulative abnormal equity returns (CARs)
- EU customers with treated suppliers vs. EU customers without treated suppliers

Results

- CARs of EU customers with treated suppliers are on average 1.3 percentage points lower than CARs of their non-treated peers
- In the week around December 13, 2022
- Very robust finding
- Supplier firms: effects of similar size (but insignificant)
- Other event dates: similar size (but insignificant)
- Updating beliefs about future climate policy changes

Why is this a contribution?

1. No paper so far that evaluates the CBAM ex-post
2. Papers about the EU ETS often find no measurable effect on firm performance
   Colmer, Martin, Muuls, Wagner (RES 2023), Dechezlepretre, Nachtigall, Venmans (JEEM 2023)
   $\Rightarrow$ CBAM might be the first climate policy instrument that really "bites"
3. We are talking about customer firms within the EU
4. Result is very likely a lower bound for the true effect

Legislative Process

Timeline

Dec 11, 2019	Ursula v.d.Leyen announces EU Green Deal in a speech
Jul 14, 2021	European Commission adopts proposals for **"Fit for 55 package"** including CBAM
Sep 13, 2021	Committee referral announced in European Parliament
Mar 15, 2022	European Council adopts its position on the CBAM
May 23, 2022	Draft report of the Committee on the Environment, Public Health and Food Safety of the European Parliament
June 22, 2022	European Parliament adopts its position on the CBAM
July 11, 2022	Beginning of Trilogue meetings (Commission, Parliament, Council)
Dec 13, 2022	**Informal provisional agreement about CBAM reached**
Feb 09, 2023	Parliamentary Committee approves official text of the Trilogue agreement concerning CBAM (and other parts of "Fit for 55")
Apr 18, 2023	CBAM (and other parts of "Fit for 55") formally adopted by the European Parliament
Apr 25, 2023	CBAM (and other parts of "Fit for 55") formally adopted by the European Council
May 10, 2023	Final act officially signed
May 16, 2023	Publication in the Official Journal of the EU
Oct 01, 2023	CBAM goes into effect (transitional period, reporting obligations only)
Jan 01, 2026	Importers have to surrender CBAM certificates for imports of listed goods (certificates can be purchased throughout the year, official declaration for a given year is due by May of the next year)
Jan 01, 2030	Intention that CBAM will apply to all goods covered by EU ETS (proposal still to be worked out by EU legislative bodies)

Data and Methodology

Seven datasets

Factset revere supply chain data	– Customer-supplier linkages of firms – Start and end date of relationship – Information on suppliers' location
Worldscope	– Information on suppliers' industry – Primary 4-digit SIC + 8 other non-primary SICs
Compustat North America and Global	– Customers' location – Customers' and suppliers' stock returns – Customers' industry
Ken French's Website	– European FF3 and FF5 factors – European riskfree rate and market return
Official Journal of the EU (L 130)	– Goods subject to CBAM
Peter Schott (Yale)	– Linking table from goods (CN or HS code) to industry (SIC)
Datastream	– Country-specific riskfree rate and market return for suppliers

Constructing the sample

- Global sample: 729,223 active customer-supplier relationships from Jan 01, 2021 to Feb 23, 2024.
- Filter customer-supplier relationships which are active around the event date
  - $\Rightarrow$ 321,268 active customer-supplier relationships on December 13,2022
- Filter customer firms
  - located within the EU
  - covered by Compustat
  - with suppliers covered by Worldscope
  - $\Rightarrow$ 1,142 EU customers

Event study

- $R_{i,t-2,t+2}$: CARs of customer i over 5 days event window
  - "Abnormal" w.r.t. CAPM expected return (estimation window: 180 days)
- Define treatment/control groups of customers based on **location and industry of their suppliers**:
  - Location treatment
    - $loc\_treat\_ratio_i = \frac{\#\ non\text{-}EU\ suppliers\ of\ firm\ i}{\#\ suppliers\ of\ firm\ i}$
  - Industry treatment
    - define industry as affected if at least one type of goods in this industry is s.t. CBAM
    - define supplier firm as affected if it belongs to at least one affected industry
    - $ind\_treat\_ratio_i = \frac{\#suppliers\ of\ firm\ i\ in\ CBAM\text{-}affected\ industries}{\#\ suppliers\ of\ firm\ i}$
- Two-sided t-test whether CAR is different from zero for each group
- One-sided t-test whether CAR difference between groups is significantly different

Summary Statistics

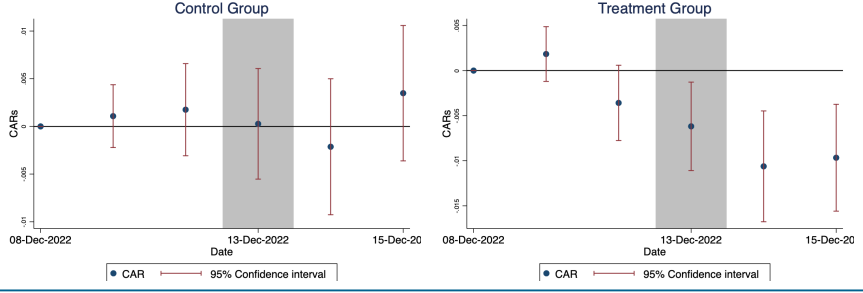
	(1) **Control group** $loc\_treat\_ratio_i = 0$ & $ind\_treat\_ratio_i = 0$	(2) **Generalized control group** $loc\_treat\_ratio_i <$ median & $ind\_treat\_ratio_i <$ median	(3) **Treatment group** $loc\_treat\_ratio_i >$ median & $ind\_treat\_ratio_i >$ median
ln(MktCap)	17.8934	18.3503	19.7996
Inverse Price	0.4287	0.6527	0.3017
Amihud Ratio	1.1233	1.0063	0.0771
Bid-ask Spread (%)	0.0274	0.0287	0.0274
ln(Assets)	20.6224	21.2722	22.6977
Debt/Assets	0.2959	0.2811	0.2705
PP&E/Assets	0.3103	0.2584	0.2268
EBIT/Assets	-0.0226	0.0051	0.0573
Capex/Assets	0.0567	0.0421	0.0394
# Observations	117	354	209

- Firms in treatment group is not surprisingly larger, more profitable and more liquid than those in control group
- Following standard practice in asset pricing, we control these differences in robustness checks

Results

Total treatment effect: cumulative abnormal returns

	Control group $loc\_treat\_ratio_i = 0$ & $ind\_treat\_ratio_i = 0$	Treatment group $loc\_treat\_ratio_i >$ median & $ind\_treat\_ratio_i >$ median	Difference
Mean CAR	0.0035	-0.0097***	-0.0131***
SE	(0.0036)	(0.0030)	
p-value			(0.0036)
# Obs	117	209	



Total treatment effect: generalized control group

	(1) **Control group** $loc\_treat\_ratio_i = 0$ & $ind\_treat\_ratio_i = 0$	(2) **Generalized control group** $loc\_treat\_ratio_i <$ median & $ind\_treat\_ratio_i <$ median	(3) **Treatment group** $loc\_treat\_ratio_i >$ median & $ind\_treat\_ratio_i >$ median	(4) **Difference (3) – (1)**	(5) **Difference (3) – (2)**
Mean CAR	0.0035	0.0000	-0.0097***	-0.0131***	-0.0096**
SE	(0.0036)	(0.0030)	(0.0030)		
p-value				(0.0036)	(0.0164)
# Obs	117	354	209		

Cumulative abnormal returns of suppliers

- Define treatment/control groups of suppliers
  - Location treatment
    - $EU\_customer\_ratio_j = \frac{\#\ EU\ customers\ of\ firm\ j}{\#\ customers\ of\ firm\ j}$
  - Industry treatment
    - define industry as affected if at least one type of goods in this industry is s.t. CBAM
    - $ind\_cbam = 0$ (control) if a supplier doesn't belong to any affected industry
    - $ind\_cbam = 1$ (treated) if a supplier belongs to at least one affected industry

Cumulative abnormal returns of suppliers: results

▸ Complete set of results

	(1) **Control group** $EU\_customer\_ratio_j > 0$ & $ind\_cbam_j = 0$	(2) **Treatment group** $EU\_customer\_ratio_j > 0$ & $ind\_cbam_j > 0$	(3) **Difference (2) – (1)**
Mean CAR	-0.0567***	-0.0802***	-0.0235
SE	(0.0117)	(0.0150)	
p-value			(0.2859)
# Obs	662	53	

Cumulative abnormal returns for other event dates

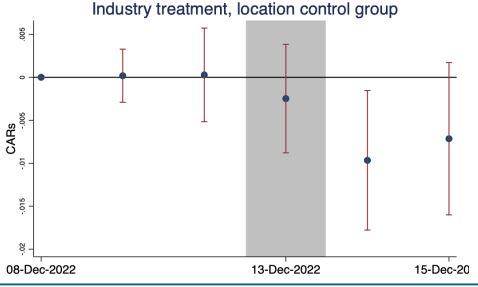
Event date		Control group $loc\_treat\_ratio_i = 0$ & $ind\_treat\_ratio_i = 0$	Treatment group $loc\_treat\_ratio_i >$ median & $ind\_treat\_ratio_i >$ median	Difference
July 14, 2021	Mean	0.0024	-0.0116	-0.0140
	SE	(0.0050)	(0.0091)	
	p-value			(0.1047)
	# Obs	151	191	
Feb 9, 2023	Mean	0.0011	-0.0035	-0.0046
	SE	(0.0040)	(0.0043)	
	p-value			(0.2429)
	# Obs	112	216	
April 18, 2023	Mean	0.0007	-0.0175	-0.0182
	SE	(0.0049)	(0.0186)	
	p-value			(0.2620)
	# Obs	118	247	

Updating beliefs about climate policy changes

Phasing out of free allowances

▸ Complete set of results

	(1) Control group	(2) Industry treatment, location control group	(3) Difference
	$loc\_treat\_ratio_i = 0$ & $ind\_treat\_ratio_i = 0$	$loc\_treat\_ratio_i <$ median & $ind\_treat\_ratio_i >$ median	
Mean	0.0035	-0.0069***	-0.0104*
SE	(0.0036)	(0.0025)	
p-value			(0.0088)
# Obs	117	217	



Extension of the CBAM

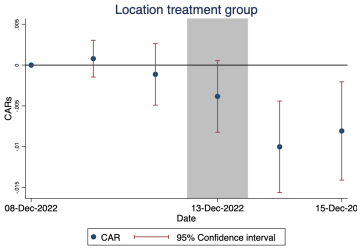
▸ Complete set of results

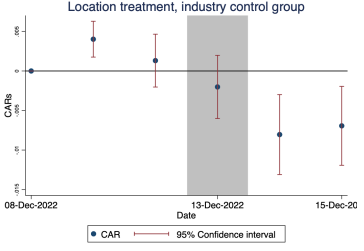
Panel A: Only location information

	(1) Location control group $loc\_treat\_ratio_i <$ median	(2) Location treatment group $loc\_treat\_ratio_i >$ median	(3) Difference
Mean CAR	-0.0027	-0.0081***	-0.0054*
SE	(0.0021)	(0.0031)	
p-value			(0.0724)
# Obs	571	571	

Panel B: Location and industry information

	(1) Control group $loc\_treat\_ratio_i = 0$ & $ind\_treat\_ratio_i = 0$	(2) Location treatment, industry control group $loc\_treat\_ratio_i >$ median & $ind\_treat\_ratio_i <$ median	(3) Difference
Mean CAR	0.0035	-0.0072	-0.0106*
SE	(0.0036)	(0.0045)	
p-value			(0.0982)
# Obs	117	362	





Robustness checks

- Longer event window ▸ Brief results ▸ Complete results
- Alternative specifications of treatment and control groups ▸ Brief results ▸ Complete results
- Customer-supplier relations ending prior to the event date ▸ Brief results ▸ Complete results
- Fama-French three-factor and five-factor model ▸ Brief results ▸ Complete results
- 70% split for supplier firms ▸ Brief results ▸ Complete results

Conclusion

Conclusion

Stock prices of EU customers with treated suppliers respond to CBAM

Policy implications

- EU climate policy targeting foreign suppliers spills over to EU customers
- Climate policy does have a measurable impact on firms
- Substitution elasticities within industries, product market competition, market power likely play an important role
- Stranded assets: equity response has two potential sources
  - Expected cash flows (reduction in earnings)
  - Discount rates (e.g. higher probability of default)
- Other countries will likely follow the EU example (e.g., G7 climate club)

All comments are welcome!
Thank you very much!

Appendix: Robustness Checks

10-day event window around December 13, 2022

Return

	(1) **Control group** $loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	(2) **Treatment group** $loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i >$ median	(3) **Difference (2) – (1)**
Mean	-0.0215	-0.0271***	-0.0056
SE	(0.0118)	(0.0054)	
p-value			(0.3119)
# Obs	117	209	

Alternative specifications of treatment and control groups

Return

		(1) **Control group** $loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	(2) **Treatment group** $loc\_treat\_ratio_i >$ x% quantile $ind\_treat\_ratio_i >$ x% quantile	(3) **Difference (2) – (1)**
70% quantile split	Mean	0.0035	-0.0055	-0.0090*
	SE	(0.0036)	(0.0061)	
	p-value			(0.0899)
	# Obs	117	80	
30% quantile split	Mean	0.0035	-0.0084**	-0.0119***
	SE	(0.0036)	(0.0023)	
	p-value			(0.0035)
	# Obs	117	306	

Customer-supplier relationships ending prior to the event date

Return

		(1) **Control group** $loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	(2) **Treatment group** $loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i >$ median	(3) **Difference (2) – (1)**
1 month	Mean	0.0034	-0.0099***	-0.0133***
	SE	(0.0036)	(0.0030)	
	p-value			(0.0031)
	# Obs	118	213	
2 months	Mean	0.0039	-0.0097***	-0.0135***
	SE	(0.0035)	(0.0021)	
	p-value			(0.0025)
	# Obs	117	220	
3 months	Mean	0.0053	-0.0091***	-0.0144***
	SE	(0.0035)	(0.0029)	
	p-value			(0.0012)
	# Obs	119	221	

Fama-French three-factor and five-factor model

Return

		(1) **Control group** $loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	(2) **Treatment group** $loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i >$ median	(3) **Difference (2) – (1)**
FF3	Mean	-0.0002	-0.0109***	-0.0108**
	SE	(0.0035)	(0.0037)	
	p-value			(0.0277)
	# Obs	117	209	
FF5	Mean	-0.0006	-0.0119***	-0.0113**
	SE	(0.0036)	(0.0033)	
	p-value			(0.0151)
	# Obs	117	209	

70% split for supplier firms

Return

	(1) **Control group** $EU\_customer\_ratio_j < 70\%$ quantile $ind\_cbam_j = 0$	(2) **Industry treatment, location control group** $EU\_customer\_ratio_j < 70\%$ quantile $ind\_cbam_j > 0$	(3) **Location treatment, industry control group** $EU\_customer\_ratio_j > 70\%$ quantile $ind\_cbam_j = 0$	(4) **Treatment group** $EU\_customer\_ratio_j > 70\%$ quantile $ind\_cbam_j > 0$	(5) **Difference (4) – (1)**	(6) **Difference (4) – (2)**
Mean	-0.0597***	-0.0518***	-0.0559***	-0.0968***	-0.0371	-0.0450**
SE	(0.0162)	(0.0133)	(0.0171)	(0.0183)		
p-value					(0.3348)	(0.0234)
# Obs	1,059	63	439	37		

Appendix: Complete set of results

CARs and CAR differences for baseline exercise

Return

Panel A: Average CARs for each group

	(1) Control	(2) Generalized Control	(3) Industry Treatment Location Control	(4) Location Treatment Industry Control	(5) Treatment	(6) Industry Control	(7) Industry Treatment	(8) Location Control	(9) Location Treatment
	$loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	$loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i <$ median	$loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i >$ median	$loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i <$ median	$loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i >$ median	$ind\_treat\_ratio_i <$ median	$ind\_treat\_ratio_i >$ median	$loc\_treat\_ratio_i <$ median	$loc\_treat\_ratio_i >$ median
Mean	0.0035	0.0000	-0.0069***	-0.0072	-0.0097***	-0.0036	-0.0083***	-0.0027	-0.0081***
SE	(0.0036)	(0.0030)	(0.0025)	(0.0045)	(0.0030)	(0.0027)	(0.0020)	(0.0021)	(0.0031)
# Obs	117	354	217	362	209	716	426	571	571

Panel B: Differences between groups

	(5)-(3)	(3)-(1)	(5)-(4)	(4)-(1)	(5)-(1)	(5)-(2)	(7)-(6)	(9)-(8)
Mean	-0.0027	-0.0104***	-0.0025	-0.0106*	-0.0131***	-0.0096**	-0.0046	-0.0054*
p-value	(0.2444)	(0.0088)	(0.3469)	(0.0982)	(0.0036)	(0.0164)	(0.1133)	(0.0724)

CARs and CAR differences for non-EU suppliers

Return to main part

Return to robustness check slide

Panel A: Average CARs for each group

		(1) **Control** $EU\_customer\_ratio_j = 0$ $ind\_cbam_j = 0$	(2) **Industry Treatment Location Control** $EU\_customer\_ratio_j = 0$ $ind\_cbam_j = 1$	(3) **Location Treatment Industry Control** $EU\_customer\_ratio_j = 1$ $ind\_cbam_j = 0$	(4) **Treatment** $EU\_customer\_ratio_j = 1$ $ind\_cbam_j = 1$	(5) **Industry Control** $ind\_cbam_j = 0$	(6) **Industry Treatment** $ind\_cbam_j = 0$	(7) **Location Control** $EU\_customer\_ratio_j = 0$	(8) **Location Treatment** $EU\_customer\_ratio_j = 1$
Zero split	Mean	-0.0602***	-0.0553***	-0.0567***	-0.0802***	-0.0586***	-0.0685***	-0.0599***	-0.0584***
	SE	(0.0204)	(0.0160)	(0.0117)	(0.0150)	(0.0125)	(0.0110)	(0.0194)	(0.0109)
	# Obs	836	47	662	53	1498	100	883	715
		Control $EU\_customer\_ratio_j < 70\%$ quantile $ind\_cbam_j = 0$	**Industry Treatment Location Control** $EU\_customer\_ratio_j < 70\%$ quantile $ind\_cbam_j = 1$	**Location Treatment Industry Control** $EU\_customer\_ratio_j > 70\%$ quantile $ind\_cbam_j = 0$	**Treatment** $EU\_customer\_ratio_j > 70\%$ quantile $ind\_cbam_j = 1$	**Industry Control** $ind\_cbam_j = 0$	**Industry Treatment** $ind\_cbam_j = 0$	**Location Control** $EU\_customer\_ratio_j < 70\%$ quantile	**Location Treatment** $EU\_customer\_ratio_j > 70\%$ quantile
70 % quantile split	Mean	-0.0597***	-0.0518***	-0.0559***	-0.0968***	-0.0586***	-0.0685***	-0.0593***	-0.0591***
	SE	(0.0162)	(0.0133)	(0.0171)	(0.0183)	(0.0125)	(0.0110)	(0.0153)	(0.0159)
	# Obs	1059	63	439	37	1498	100	1122	476

Panel B: Differences between groups

		(2)-(1)	(4)-(3)	(3)-(1)	(4)-(2)	(4)-(1)	(6)-(5)	(8)-(7)
Zero split	Mean	0.0049	-0.0235	0.0035	-0.0249	-0.0200	-0.0098	0.0015
	p-value	(0.4773)	(0.2859)	(0.4451)	(0.1291)	(0.4027)	(0.4196)	(0.4751)
70% quantile split	Mean	0.0079	-0.0409	0.0038	-0.0450**	-0.0371	-0.0098	0.0002
	p-value	(0.4527)	(0.2455)	(0.4447)	(0.0234)	(0.3348)	(0.4196)	(0.4968)

CARs and CAR differences on other event dates

Return

Panel A: Average CARs for each group

Event Dates		(1) Control $loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	(2) Generalized Control $loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i <$ median	(3) Industry Treatment Location Control $loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i >$ median	(4) Location Treatment Industry Control $loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i <$ median	(5) Treatment $loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i >$ median	(6) Industry Control $ind\_treat\_ratio_i <$ median	(7) Industry Treatment $ind\_treat\_ratio_i >$ median	(8) Location Control $loc\_treat\_ratio_i <$ median	(9) Location Treatment $loc\_treat\_ratio_i >$ median
July 14, 2021	Mean	0.0024	-0.0042	-0.0035	-0.0036	-0.0116	-0.0039	-0.0078	-0.0040	-0.0063*
	SE	(0.0050)	(0.0050)	(0.0030)	(0.0028)	(0.0091)	(0.0029)	(0.0050)	(0.0036)	(0.0036)
	# Obs	151	401	169	379	191	780	360	570	570
Feb 9, 2023	Mean	0.0011	0.0006	0.0008	-0.0019	-0.0035	-0.0006	-0.0014	0.0007	-0.0025
	SE	(0.0040)	(0.0032)	(0.0035)	(0.0041)	(0.0043)	(0.0026)	(0.0028)	(0.0024)	(0.0030)
	# Obs	112	343	212	359	216	702	428	555	575
April 18, 2023	Mean	0.0007	0.0018	0.0065	-0.0144	-0.0175	-0.0061	-0.0065	0.0034	-0.0156
	SE	(0.0049)	(0.0044)	(0.0042)	(0.0133)	(0.0186)	(0.0068)	(0.0103)	(0.0032)	(0.0109)
	# Obs	118	395	208	370	247	765	455	603	617

Panel B: Differences between groups

		(5)-(3)	(3)-(1)	(5)-(4)	(4)-(1)	(5)-(1)	(5)-(2)	(7)-(6)	(9)-(8)
July 14, 2021	Mean	-0.0082	-0.0061	-0.0080	-0.0059	-0.0140	-0.0074	-0.0039	-0.0023
	p-value	(0.2099)	(0.1315)	(0.1457)	(0.1510)	(0.1047)	(0.2207)	(0.2410)	0.3243
Feb 9, 2023	Mean	-0.0043	-0.0003	-0.0016	-0.0029	-0.0046	-0.0042	-0.0007	-0.0032
	p-value	(0.2177)	(0.4823)	(0.3961)	(0.3503)	(0.2429)	(0.2148)	(0.4274)	(0.2036)
April 18, 2023	Mean	-0.0240	0.0058	-0.0031	-0.0151	-0.0182	-0.0193	-0.0005	-0.0190**
	p-value	(0.1223)	(0.1941)	(0.4439)	(0.2620)	(0.2509)	(0.1098)	(0.4834)	(0.0484)

CARs and CAR differences for 10-day event window

Return

Panel A: Average CARs for each group

	(1) Control $loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	(2) Generalized Control $loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i <$ median	(3) Industry Treatment Location Control $loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i >$ median	(4) Location Treatment Industry Control $loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i <$ median	(5) Treatment $loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i >$ median	(6) Industry Control $ind\_treat\_ratio_i <$ median	(7) Industry Treatment $ind\_treat\_ratio_i >$ median	(8) Location Control $loc\_treat\_ratio_i <$ median	(9) Location Treatment $loc\_treat\_ratio_i >$ median
Mean	-0.0215*	-0.0145***	-0.0091*	-0.0242***	-0.0271***	-0.0194***	-0.0179***	-0.0124***	-0.0252***
SE	(0.0118)	(0.0052)	(0.0048)	(0.0061)	(0.0054)	(0.0040)	(0.0036)	(0.0037)	(0.0043)
# Obs	117	354	217	362	209	716	426	571	571

Panel B: Differences between groups

	(5)-(3)	(3)-(1)	(5)-(4)	(4)-(1)	(5)-(1)	(5)-(2)	(7)-(6)	(9)-(8)
Mean	-0.0180***	0.0125	-0.0029	-0.0027	-0.0056	-0.0125*	0.0015	-0.0128**
p-value	(0.0065)	(0.1263)	(0.3725)	(0.4168)	(0.3119)	(0.0577)	(0.5989)	(0.0127)

CARs and CAR differences for alternative specifications of treatment and control

Return

Panel A: Average CARs for each group

		(1) Control	(2) Generalized Control	(3) Industry Treatment Location Control	(4) Location Treatment Industry Control	(5) Treatment	(6) Industry Control	(7) Industry Treatment	(8) Location Control	(9) Location Treatment
		$loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	$loc\_treat\_ratio_i <$ x% quantile $ind\_treat\_ratio_i <$ x% quantile	$loc\_treat\_ratio_i <$ x% quantile $ind\_treat\_ratio_i >$ x% quantile	$loc\_treat\_ratio_i >$ x% quantile $ind\_treat\_ratio_i <$ x% quantile	$loc\_treat\_ratio_i >$ x% quantile $ind\_treat\_ratio_i >$ x% quantile	$ind\_treat\_ratio_i <$ x% quantile	$ind\_treat\_ratio_i >$ x% quantile	$loc\_treat\_ratio_i <$ x% quantile	$loc\_treat\_ratio_i >$ x% quantile
70% quantile	Mean	0.0035	-0.0039	-0.0077***	-0.0062	-0.0055	-0.0046*	-0.0072***	-0.0051***	-0.0060
split	SE	(0.0036)	(0.0027)	(0.0022)	(0.0050)	(0.0061)	(0.0025)	(0.0022)	(0.0020)	(0.0041)
	# Obs	117	546	254	262	80	808	334	800	342
30% quantile	Mean	0.0035	0.0027	-0.0080**	-0.0066***	-0.0084***	-0.0036	-0.0083***	-0.0010	-0.0073***
split	SE	(0.0036)	(0.0039)	(0.0037)	(0.0036)	(0.0023)	(0.0027)	(0.0020)	(0.0028)	(0.0024)
	# Obs	117	228	120	488	306	716	426	348	794

Panel B: Differences between groups

		(5)-(3)	(3)-(1)	(5)-(4)	(4)-(1)	(5)-(1)	(5)-(2)	(7)-(6)	(9)-(8)
70% quantile	Mean	0.0023	-0.0112***	0.0007	-0.0097	-0.0090*	-0.0016	-0.0026	-0.0009
split	p-value	(0.3325)	(0.0032)	(0.4713)	(0.1097)	(0.0899)	(0.4148)	(0.2630)	(0.4101)
30% quantile	Mean	-0.0004	-0.0115**	-0.0018	-0.0101*	-0.0119***	-0.0111***	-0.0046	-0.0063*
split	p-value	(0.4619)	(0.0141)	(0.3539)	(0.0892)	(0.0035)	(0.0050)	(0.1133)	(0.0599)

CARs and CAR differences allowing for customer-supplier relations ending prior to event date

Return

Panel A: Average CARs for each group

		(1) **Control** $loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	(2) **Generalized Control** $loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i <$ median	(3) **Industry Treatment Location Control** $loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i >$ median	(4) **Location Treatment Industry Control** $loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i <$ median	(5) **Treatment** $loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i >$ median	(6) **Industry Control** $ind\_treat\_ratio_i <$ median	(7) **Industry Treatment** $ind\_treat\_ratio_i >$ median	(8) **Location Control** $loc\_treat\_ratio_i <$ median	(9) **Location Treatment** $loc\_treat\_ratio_i >$ median
1 month	Mean	0.0034	-0.0002	-0.0069***	-0.0085*	-0.0099***	-0.0044	-0.0084***	-0.0027	-0.0091***
	SE	(0.0036)	(0.0029)	(0.0025)	(0.0047)	(0.0030)	(0.0028)	(0.0020)	0.0021	0.0031
	# Obs	118	358	216	361	213	719	429	574	574
2 month	Mean	0.0039	-0.0009	-0.0070***	-0.0075	-0.0097***	-0.0043	-0.0083***	-0.0032	-0.0083***
	SE	(0.0035)	(0.0029)	(0.0026)	(0.0046)	(0.0021)	0.0028	0.0019	0.0020	0.0031
	# Obs	117	348	214	375	220	723	434	562	595
3 month	Mean	0.0053	-0.0005	-0.0059	-0.0047	-0.0091***	-0.0027	-0.0076***	-0.0026	-0.0063*
	SE	(0.0035)	(0.0029)	(0.0029)	(0.0053)	(0.0029)	(0.0031)	(0.0021)	(0.0021)	(0.0035)
	# Obs	119	351	218	377	221	728	439	569	598

Panel B: Differences between groups

		(5)-(3)	(3)-(1)	(5)-(4)	(4)-(1)	(5)-(1)	(5)-(2)	(7)-(6)	(9)-(8)
1 month	Mean	-0.0030	-0.0103***	-0.0014	-0.0119*	-0.0133***	-0.0097**	-0.0041	-0.0063**
	p-value	(0.2233)	(0.0090)	(0.4144)	(0.0789)	(0.0031)	(0.0145)	(0.1487)	(0.0465)
2 month	Mean	-0.0027	-0.0108***	-0.0021	-0.0114*	-0.0135***	-0.0088*	-0.0040	-0.0051*
	p-value	(0.2458)	(0.0066)	(0.3699)	(0.0881)	(0.0025)	(0.0217)	(0.1503)	(0.0854)
3 month	Mean	-0.0032	-0.0112***	-0.0044	-0.0100	-0.0144***	-0.0087**	-0.0049	-0.0038
	p-value	(0.2192)	(0.0095)	(0.2715)	(0.1515)	(0.0012)	(0.0223)	(0.1271)	(0.1822)

CARs and CAR differences relative to Fama-French 3 and 5 factors

Return

Panel A: Average CARs for each group

		(1) Control	(2) Generalized Control	(3) Industry Treatment Location Control	(4) Location Treatment Industry Control	(5) Treatment	(6) Industry Control	(7) Industry Treatment	(8) Location Control	(9) Location Treatment
		$loc\_treat\_ratio_i = 0$ $ind\_treat\_ratio_i = 0$	$loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i <$ median	$loc\_treat\_ratio_i <$ median $ind\_treat\_ratio_i >$ median	$loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i <$ median	$loc\_treat\_ratio_i >$ median $ind\_treat\_ratio_i >$ median	$ind\_treat\_ratio_i <$ median	$ind\_treat\_ratio_i >$ median	$loc\_treat\_ratio_i <$ median	$loc\_treat\_ratio_i >$ median
FF3	Mean	-0.0002	-0.0033	-0.0092***	-0.0114***	-0.0109***	-0.0074***	-0.0101***	-0.0056***	-0.0112***
	SE	(0.0035)	(0.0029)	(0.0025)	(0.0045)	(0.0037)	(0.0027)	(0.0022)	(0.0020)	(0.0031)
	# Obs	117	354	217	362	209	716	426	571	571
FF5	Mean	-0.0006	-0.0041	-0.0094***	-0.0122***	-0.0119***	-0.0082***	-0.0106***	-0.0061***	-0.0121***
	SE	(0.0036)	(0.0028)	(0.0025)	(0.0045)	(0.0033)	(0.0027)	(0.0021)	(0.0020)	(0.0031)

Panel B: Differences between groups

		(5)-(3)	(3)-(1)	(5)-(4)	(4)-(1)	(5)-(1)	(5)-(2)	(7)-(6)	(9)-(8)	
FF3	Mean	-0.0017	-0.0090**	0.0005	-0.0113*	-0.0108**	-0.0076*	-0.0026	-0.0057*	
	p-value	(0.3467)	(0.0179)	(0.4711)	(0.0824)	(0.0277)	(0.0531)	(0.2477)	(0.0639)	
FF5	Mean	-0.0025	-0.0088**	0.0003	-0.0116*	-0.0113**	-0.0078**	-0.0025	-0.0060*	
	p-value	(0.2762)	(0.0212)	(0.4823)	(0.0773)	(0.0151)	(0.0403)	(0.2574)	(0.0518)	