Announcement Effects of Support for Climate-related Disclosure on Stock Returns

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Introduction

- Climate-related risks matter for firms
  - E.g., carbon-intensive firms will face difficulties if carbon tax is introduced
- Firms and standard setters have made great efforts to improve disclosure of such risks
- Do investors evaluate firms' efforts to reduce and disclose the risks?
  - If so, firms have incentives to make such efforts
- The causal effect is hard to identify
  - If a firm has information that raises its stock price, the firm has more incentive to disclose it
  - The announcement of mandatory disclosure may be a useful natural experiment

Background

- The Task Force on Climate-related Financial Disclosure (TCFD) published its final report in June 2017
  - The report sets out basic disclosure items on the impact of climate change on financial conditions, including governance, strategy, and risk management
- Many firms have declared their support for the TCFD
  - On December 22, 2022, the number of firms and other organizations declaring their support was 4,075, and Japan has the largest number, at 1,158
- On April 4, 2022, the TSE reorganized the market segments, reducing the number of firms listed on the top segment (i.e., the Prime Market)
- On June 11, 2021, the TSE published the new governance code that effectively requires firms listed on the Prime Market to disclose under the TCFD or equivalent international framework

What I do and find

- I conduct an event study to examine abnormal stock returns around the date on which firms declared their support for the TCFD in Japan
- I find:
  - After the TSE's announcement of mandatory disclosure, firms that supported the TCFD were relatively small, and the event returns were negative on average
  - Negative returns were more prevailing for more carbon intensive sectors and for firms that previously had been proactive in their disclosure
  - The results suggest that the stock market received the disclosure favorably, but was concerned about the rising costs associated with an aggressive stance on climate change

Literature

- Goldstein and Yang (2017), Christensen et al. (2021), among others
  - Disclosure may have benefits (e.g., reducing the cost of capital)
  - It may also impose a cost (e.g., revealing proprietary information about a firm's strategy to its competitors)
- Matsumura et al. (2014, 2022), Griffin et al. (2017), Flammer et al. (2021), Ilhan et al. (2023), among others
  - Voluntary disclosure is associated with higher firm valuation
  - Investors demand for climate-related disclosure
- Bolton and Kacperczyk (2021) and Jouvenot and Krueger (2021)
  - Stock price responses to mandatory disclosure in the UK in 2013
  - Newly disclosed firms generally saw their cost of capital decrease, but the worst carbon performers were penalized

Event dates

- This study mainly covers 253 non-financial firms that declared their support for the TCFD by November 2022.
  - Press releases and news paper articles are used to identify event dates
  - The supporting day is identified for 89 firms.
  - “Konotabi (this time)” or so, not “Honjitsu (today),” for 164 firms
  - A robustness check also covers 54 financial firms

Baseline analysis

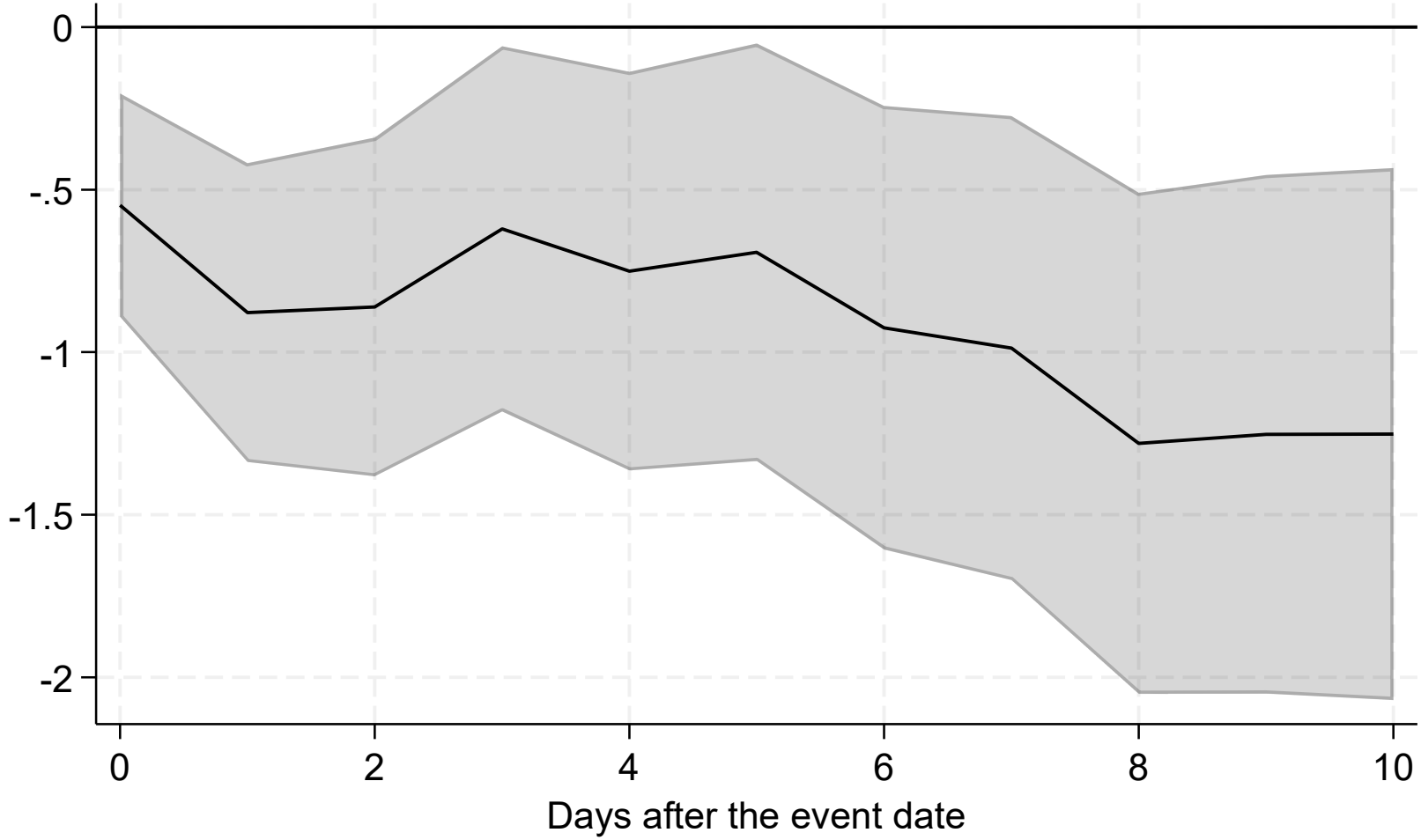
- Abnormal returns are computed based on the market model, using total returns (from Financial Data Solution Inc.) and the TOPIX (including dividend)
- Event windows: from -5/-3/-2/-1 to 0/1/2/3/5/10
  - Investors may need time to digest information on individual stocks
  - Some information may have been known to the public prior to the announcement
- Estimation window: [-220,-21]
- Winsorized at the 5 and 95% levels

Selected results of average CARs (%) with *t*-stats

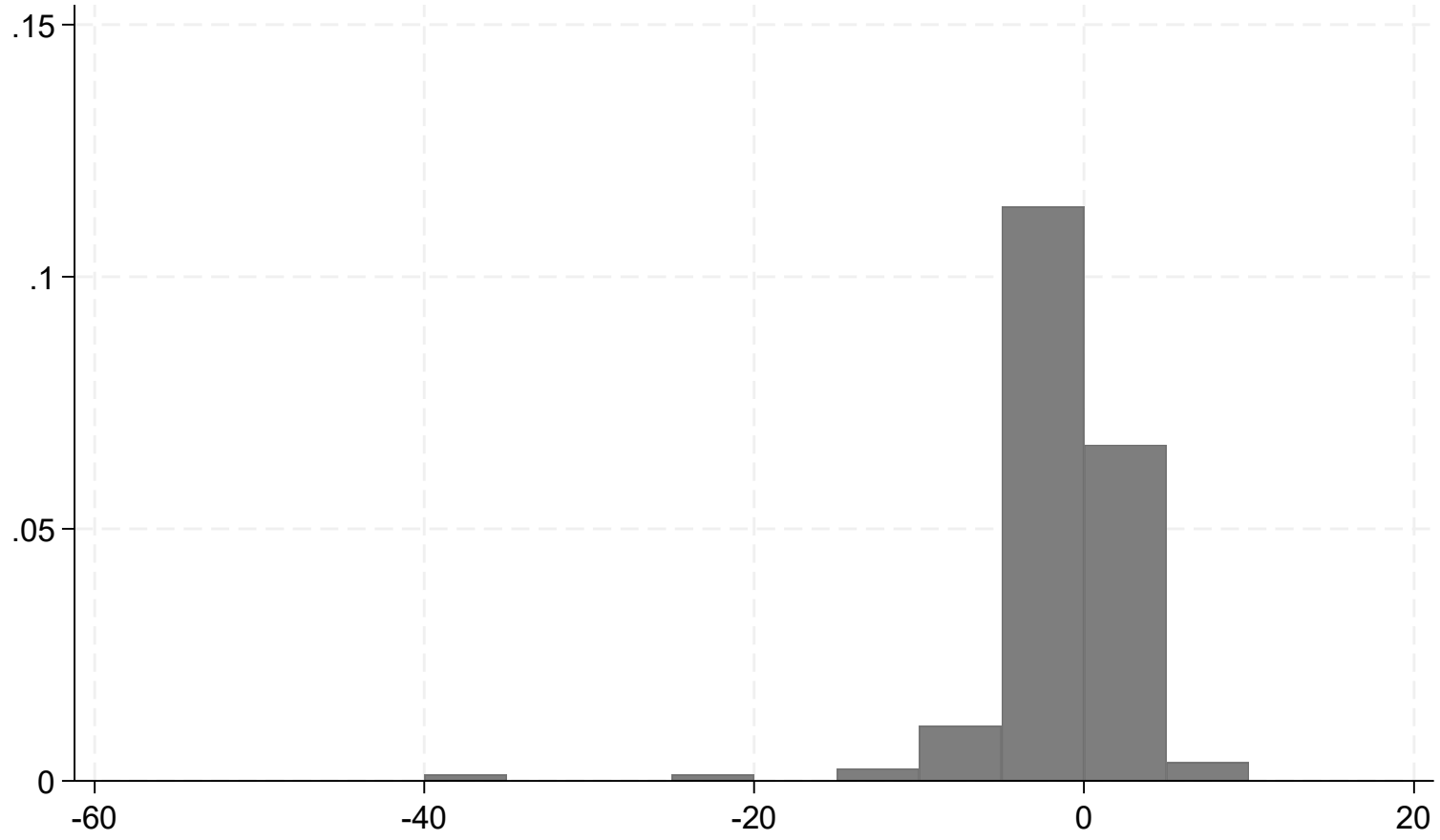
	(1) [-5, 1]	(2) [-3, 1]	(3) [-2, 1]	(4) [-1, 3]	# of obs.
Pre-annoucement (Before June 11, 2021)	-0.34 [-0.81]	-0.25 [-0.77]	0.042 [0.16]	0.76** [2.56]	88
Inter-event (June 11, 2021, to April 3, 2022)	-1.27*** [-3.58]	-0.79*** [-3.04]	-0.59** [-2.60]	-0.14 [-0.52]	90
Post-reorganization (From April 4. 2022)	-0.53 [-1.17]	-0.95** [-2.34]	-0.95*** [-2.69]	-0.50 [-1.11]	75
Post-annoucement (From June 11, 2021)	-0.95*** [-3.48]	-0.88*** [-3.77]	-0.70*** [-3.68]	-0.22 [-0.99]	165
Full sample	-0.77*** [-3.38]	-0.68*** [-3.66]	-0.46*** [-2.97]	0.12 [0.66]	253

*** p<0.01, ** p<0.05, * p<0.1

Average CARs (%) for [-3, *t*] (post-announcement sample)



Histogram of CARs (%) for [-3,1] (post-announcement sample)



Robustness

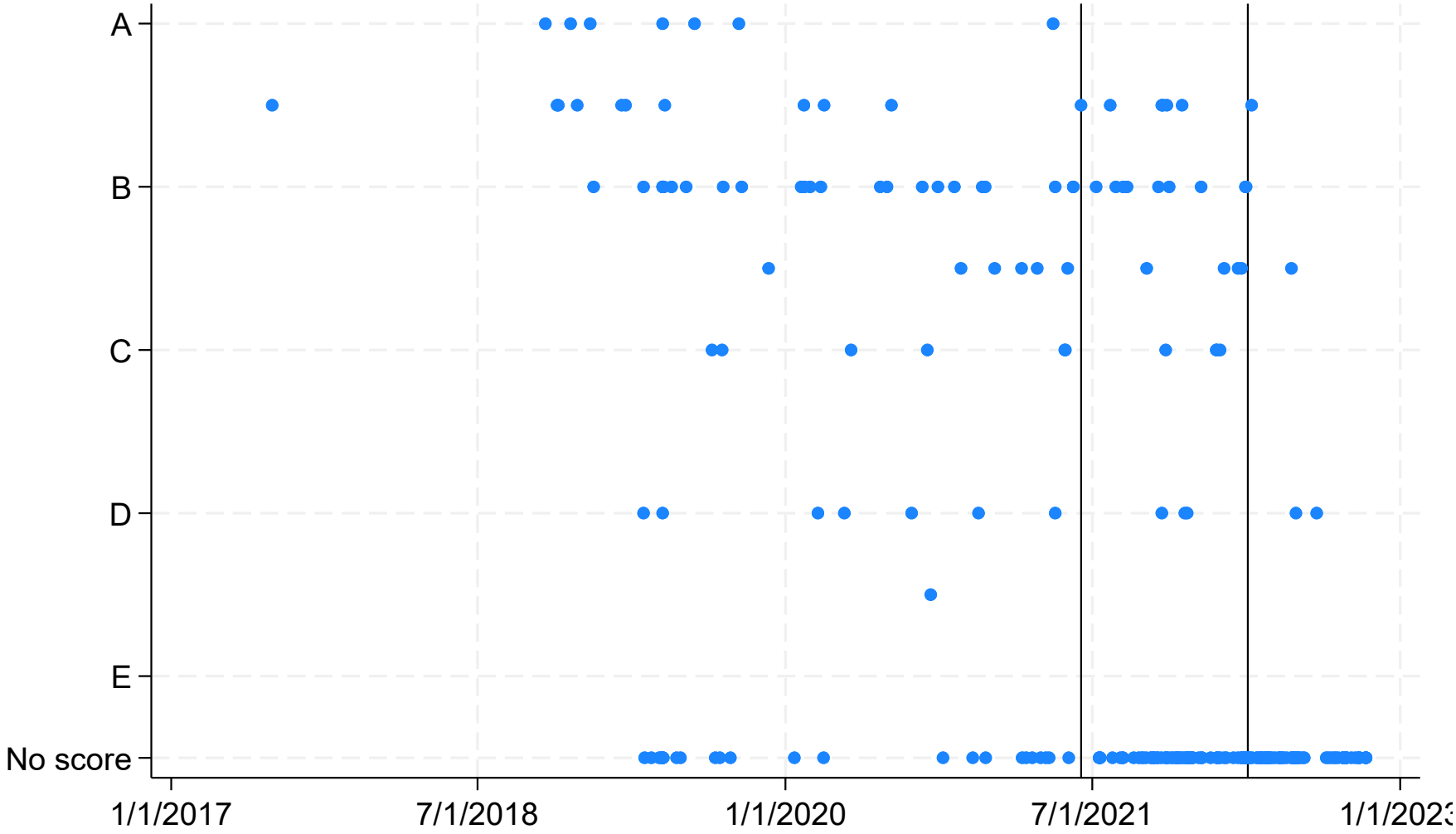
	CAR (%)	# of obs.
Baseline	-0.88***	165
	[-3.77]	
Adding finantials	-0.69***	205
	[-3.59]	
Only identified	-0.65*	58
	[-1.68]	
PR dates	-0.87***	165
	[-3.67]	
3-factor model	-0.84***	165
	[-3.90]	
6-factor model	-0.67***	165
	[-3.14]	
Estimation window [-120,-21]	-0.86***	165
	[-3.83]	
Winzarized at 1 and 99%	-1.04***	165
	[-3.50]	

*** p<0.01, ** p<0.05, * p<0.1

CDP data

- Firms are asked to disclose through CDP questionnaires by their customers and investors
- The CDP score on disclosure and environmental performance (A, A-, B, B-, C, C-, D, D-, or E)
- Carbon intensity (defined as emissions per sales only)

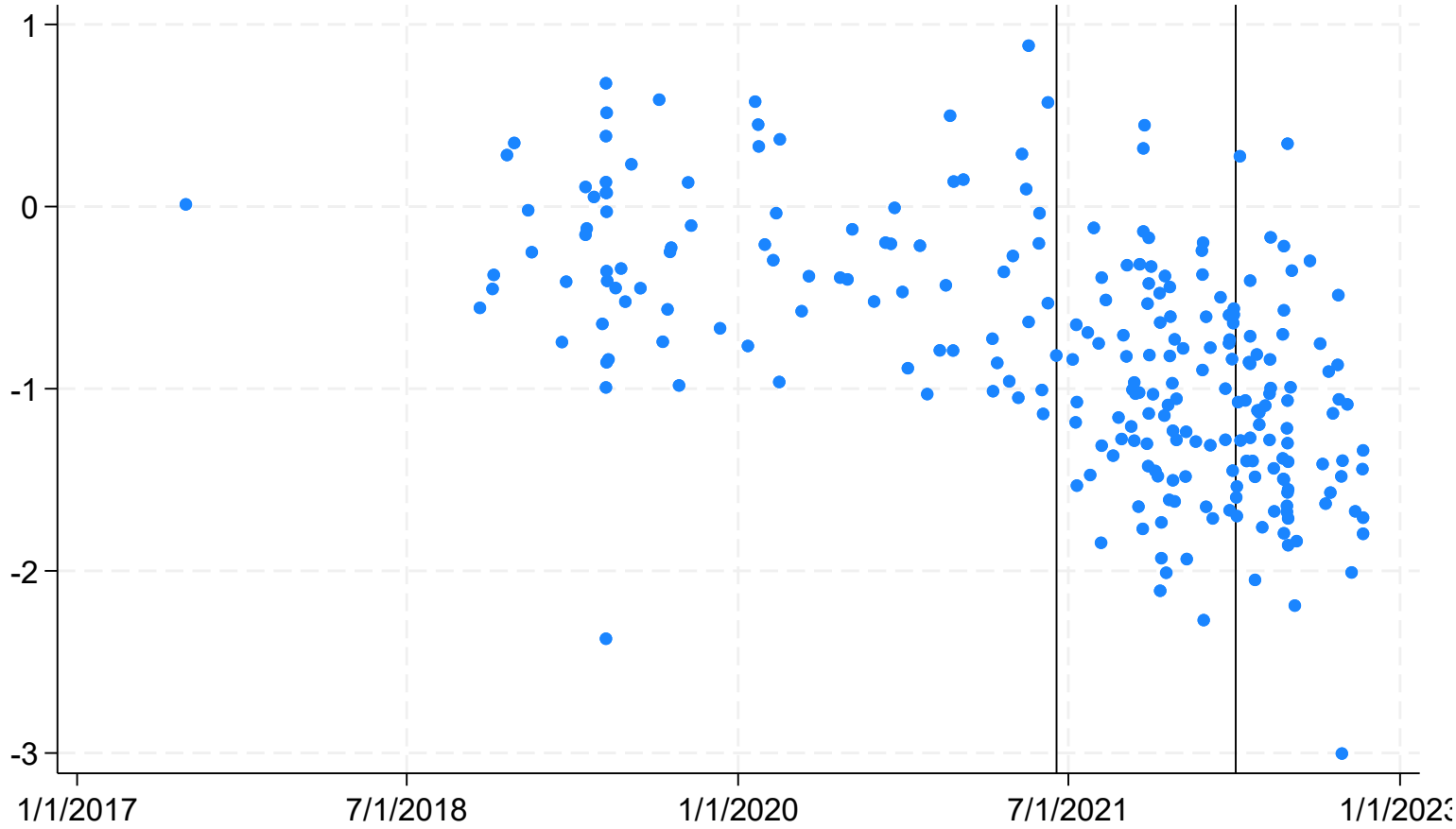
CDP score (1Y lagged)



Average post-announcement CARs by CDP score

	CAR (%)	# of obs.
B-	-2.14	8
A-	-2.02	7
B	-1.81	6
C	-1.55	4
No score	-0.67	138
D	0.68	5

Log10 of market cap of common equity at the end of March, 2017 (¥ trillion)



Average post-announcement CARs by sector

	CAR (%)	# of obs.	Intensity
Utilities	-4.00	1	2,634
Energy	-3.22	4	571
Transportation	-2.40	10	194
Materials	-2.06	31	918
Consumer Discretionary	-1.89	9	33
Health Care	-1.33	7	7
Real Estate	-1.15	8	31
Other	-0.98	15	0
Consumer Staples	-0.53	7	90
Industrials	-0.51	50	194
Information Technology	-0.12	17	24
Communication Services	0.20	6	9

Note: “Intensity” is a measure of carbon intensity, which is scope 1 CO2 emissions per $1M of revenue. The intensity of “Transportation” and “Industries” are the same since “Industries” include transportation for the measure of intensity. The data source is as follows: Ranked: The Most Carbon-Intensive Sectors in the World (visualcapitalist.com)

Determinants of CARs

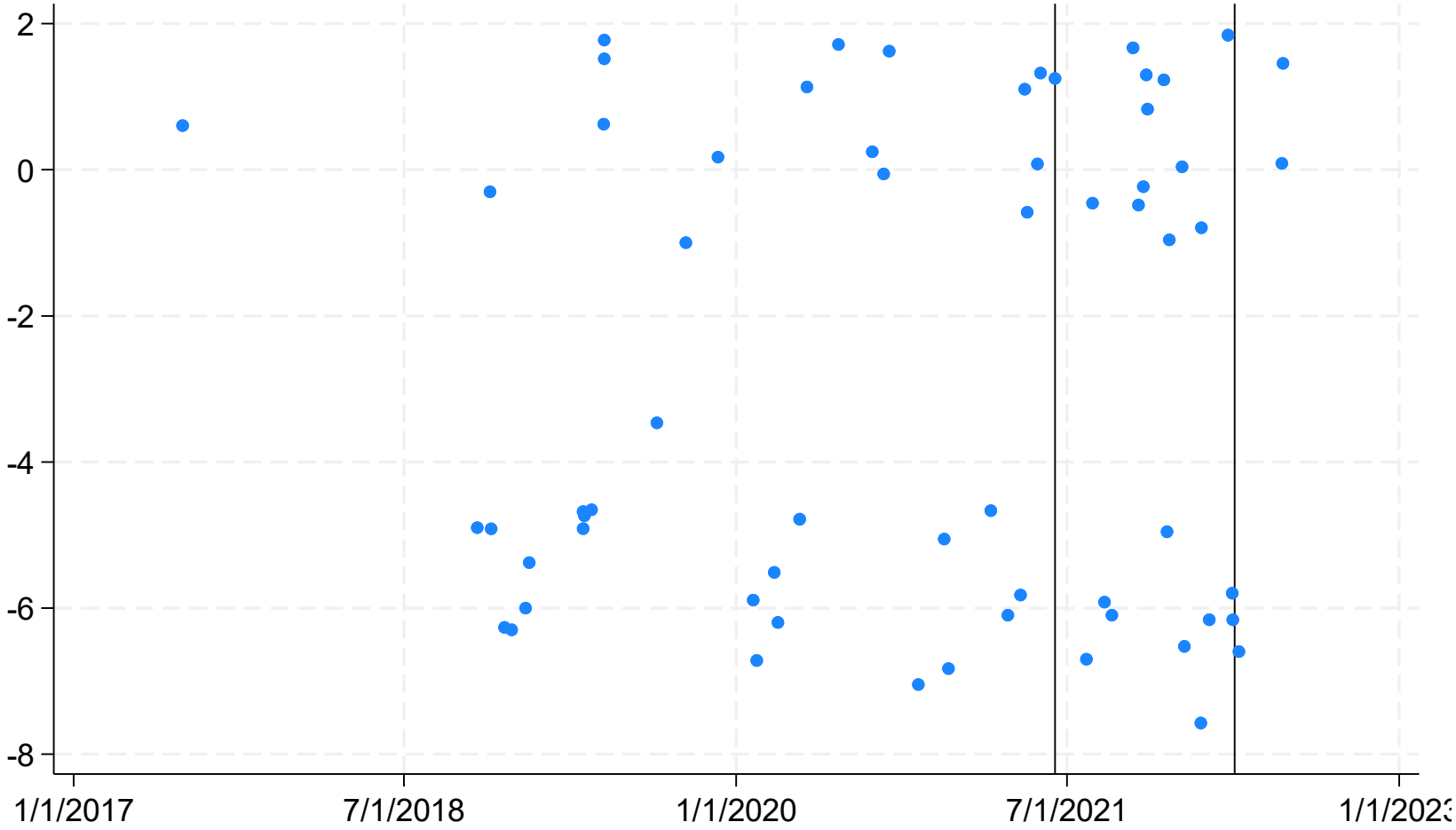
	(1) Pre-annoucement	(2) Inter-event	(3) Post-reorganization	(4) Post-annoucement	(5) full sample
Log10 of market cap	-0.61	0.54	0.58	0.80*	0.45
	[-0.86]	[0.93]	[0.72]	[1.67]	[1.22]
No CDP score	-0.064	1.74**	-1.73	1.35**	0.56
	[-0.078]	[2.49]	[-0.89]	[1.98]	[1.11]
Brown sectors	0.16	-1.48**	0.011	-1.00**	-0.51
	[0.23]	[-2.57]	[0.013]	[-2.00]	[-1.25]
Observations	87	90	72	162	249
Adj. R-squared	-0.024	0.121	-0.005	0.033	0.001

*** p<0.01, ** p<0.05, * p<0.1

Conclusion

- After the TSE's announcement of mandatory disclosure, firms that supported the TCFD were relatively small, and the event returns were negative on average
- Negative returns were more prevailing for more carbon intensive sectors and for firms that previously had been proactive in their disclosure
- The results suggest that the stock market received the disclosure favorably, but was concerned about the rising costs associated with an aggressive stance on climate change
- Potential future work:
  - Determinants of the TCFD support (e.g. peer effects)
  - Did firms reduce emissions after the TCFD support?
  - Impact on profitability?

Log10 of carbon intensity (1Y lagged)



Average post-announcement CARs by carbon intensity

	CAR (%)	# of obs.
High	-1.15	12
No data	-1.13	141
Low	-1.01	12