

European Stock Price Reactions to Climate Change Protests

Summary of MSc Finance dissertation on Fridays for Future

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Approximately five-minute read. Editorial revision: 26 October 2026.

This document is a condensed version of my MSc Finance dissertation. Key findings are presented below, followed by the data, methodology and original results.

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Page 1: Summary of document and findings

Page 2: Data, literature, methodology and concluding remarks

Pages 3 and 4: References and appendix, including Figures 1 to 8

Summary of Document and Findings

This paper finds evidence of negative abnormal stock returns around several Fridays for Future (FFF) climate change protests in 2019. Some daily returns are statistically significant under the parametric tests, although the Corrado rank test provides more limited support. The findings suggest an association; they do not establish that the protests caused the observed returns.

The findings have potential implications for the relationship between climate activism and financial markets:

- 1) Investors may regard climate change protests as a signal of future regulatory or commercial risks, which could influence company valuations.
- 2) Uncertainty about the financial effects of climate change may be reflected in stock price reactions around these protests.

Although these protests primarily seek long-term changes in government policy, the results suggest that they may also be associated with short-term changes in stock valuations. Further research is needed to test this relationship.

The data also suggest that some protests with larger attendance coincided with more negative abnormal returns. This is a descriptive observation, rather than a formally established relationship. Figure 1 shows reported protester turnout.

The cumulative abnormal returns (CARs) reported in Figures 2 to 8 show how average abnormal returns accumulated over each period. The lowest reported CAR was -2.45%, nine days after Event 3. All seven reported CARs were negative at day +4, but only three were negative at day +15. Results therefore vary by event and by the period examined.

Summary of Data

Event studies were carried out across seven protest dates in 2019 to assess whether there were stock price reactions to FFF climate change protests. Four tests were used: a t-test, the Patell test, the standardised cross-sectional test (BMP) and the Corrado rank test. The daily average abnormal returns, cumulative abnormal returns and test statistics are included in the appendix (Figures 2 to 8).



The original summary reports a sample of 387 companies across 15 European countries. The companies were drawn from constituents of the MSCI European index during the study period. Companies without sufficient returns data or continuous index membership across the event periods were excluded. MSCI provided historical constituent and index data.

Data collection, processing and statistical tests were carried out in R.

Literature Review Summary

At the time this research was undertaken, academic work on stock price reactions to climate protests was limited. Key papers included Pricing Protest: The Response of Financial Markets to Social Unrest (Barrett et al., 2021) and The Power of the Street: Evidence from Egypt's Arab Spring (Acemoglu et al., 2018), alongside studies of stock market reactions to other events, including the COVID-19 pandemic.

Within the specific context of FFF protests, limited prior research created difficulties in designing the study. Nevertheless, I believe this paper provides a foundation for further analysis and research.

Methodology Summary

An event study used a simple market model to estimate expected returns. Abnormal returns were calculated as the difference between actual and expected returns, using the MSCI European index as the market benchmark.



The appendix tables cover days -3 to +15 relative to each reported event date. The original summary identifies days -3 to +4 as the shorter event window. Parametric and nonparametric tests were used to assess daily average abnormal returns.

Conclusion and Critical Evaluation

Further research could formally test the relationship between protest size and abnormal returns, and examine individual countries rather than combining all 15. It should also account for other news and market developments occurring around each protest.

These protests were planned, and some received substantial media coverage beforehand. Investors may therefore have anticipated them, reducing any immediate surprise. Overlapping event periods and differences in test results also limit the strength of the conclusions.



Data note: The original documents give conflicting sample sizes and estimation-window definitions. The appendix also contains date and arithmetic issues. These need checking against the original data and R output before the numerical findings can be treated as fully verified.

References

Acemoglu, D., Hassan, T.A. and Tahoun, A. (2018). The Power of the Street: Evidence from Egypt's Arab Spring. *The Review of Financial Studies*, 31(1), pp. 1-42. doi:10.1093/rfs/hhx086.

Barrett, P., Bondar, M., Chen, S., Chivakul, M. and Igan, D. (2021). Pricing Protest: The Response of Financial Markets to Social Unrest. IMF Working Paper No. 2021/079. doi:10.5089/9781513572765.001.

Fridays for Future (2020). Strike statistics. <https://map.fridaysforfuture.org/lists> (source used in the original dissertation).

Appendix

Figures 1 to 8 reproduce the historical chart and reported table values. Captions and explanatory notes have been clarified; the calculations have not been re-estimated.

Protester turnout at Fridays for Future protests

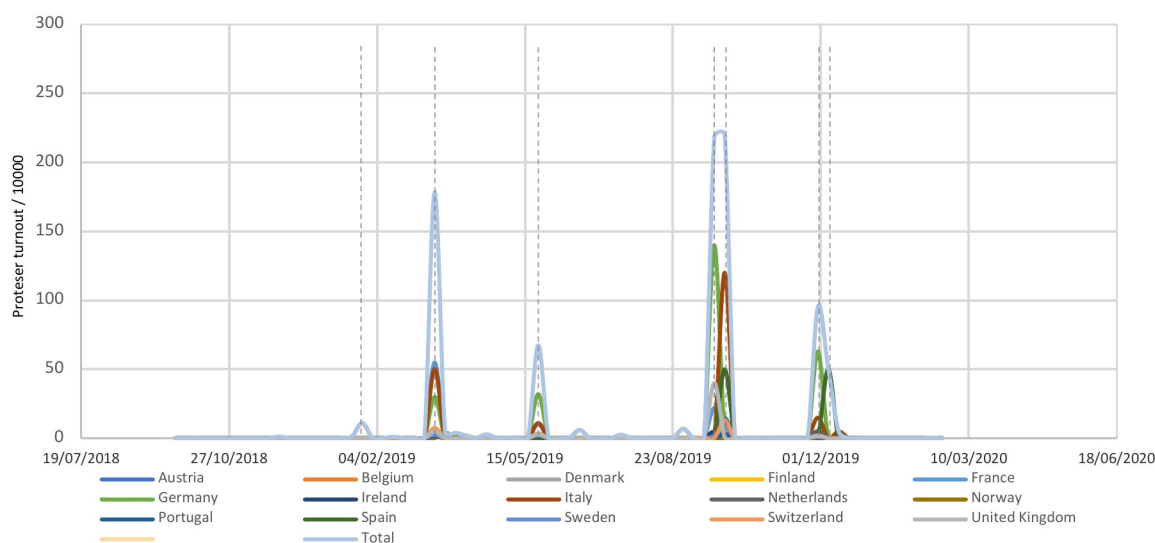


Figure 1. Reported protester turnout across 15 countries. The vertical axis is turnout divided by 10,000; a value of 220 represents 2.2 million people. Dotted lines indicate the event dates used in the original analysis. Source: Fridays for Future (2020).

Event Day	AAR	CAR	Corrado Rank Test	Patell Test	BMP Test	T Test
-3	0.21%	0.21%	0.508	2.189 **	2.619 ***	3.353 ***
-2	-0.56%	-0.36%	-1.226	-7.369 ***	-8.062 ***	-7.872 ***
-1	0.42%	0.06%	0.747	4.740 ***	4.875 ***	5.181 ***
0	0.01%	0.07%	-0.112	-0.753	-0.672	0.164
1	-0.45%	-0.38%	-1.076	-5.823 ***	-7.427 ***	-7.666 ***
2	0.40%	0.01%	0.800	5.916 ***	5.171 ***	4.053 ***
3	-0.04%	-0.03%	-0.262	-0.356	-0.371	-0.515
4	-0.37%	-0.40%	-0.747	-5.645 ***	-4.707 ***	-4.292 ***
5	0.40%	0.00%	0.957	5.714 ***	5.968 ***	4.367 ***
6	-0.08%	-0.08%	-0.284	-1.501	-1.818 *	-1.201
7	1.05%	0.97%	1.824 *	14.257 ***	15.098 ***	12.890 ***
8	0.33%	1.29%	0.329	3.985 ***	3.882 ***	4.032 ***
9	-0.92%	0.37%	-1.435	-11.149 ***	-8.091 ***	-7.907 ***
10	-0.80%	-0.43%	-1.398	-10.140 ***	-11.243 ***	-9.700 ***
11	1.14%	0.71%	2.205 **	15.026 ***	20.442 ***	18.563 ***
12	-0.15%	0.56%	-0.576	-2.311 **	-2.513 **	-1.959 *
13	0.73%	1.29%	1.413	9.162 ***	8.519 ***	8.773 ***
14	-0.17%	1.11%	-0.546	-2.419 **	-2.004 **	-2.035 **
15	0.19%	1.31%	0.237	3.382 ***	3.292 ***	2.340 **

Figure 2. Event 1: 25 January 2019.

Event Day	AAR	CAR	Corrado Rank Test	Patell Test	BMP Test	T Test
-3	0.12%	0.12%	0.383	1.859 *	2.918 ***	2.179 **
-2	-0.17%	-0.05%	-0.355	-1.731 **	-2.445 **	-2.924 ***
-1	0.35%	0.30%	0.608	5.429 ***	6.079 ***	4.390 ***
0	-0.09%	0.21%	-0.191	-0.441	-0.561	-1.273
1	0.05%	0.27%	-0.055	1.086	1.476	0.878
2	0.34%	0.61%	0.629	3.743 ***	5.336 ***	5.835 ***
3	-0.91%	-0.31%	-1.592	-12.051 ***	-12.814 ***	-12.537 ***
4	0.22%	-0.09%	0.615	3.012 ***	3.205 ***	2.952 ***
5	0.00%	-0.09%	-0.089	-0.476	-0.648	0.073
6	-0.47%	-0.56%	-1.292	-5.942 ***	-9.924 ***	-9.479 ***
7	0.18%	-0.38%	0.294	1.953 *	2.334 **	2.104 **
8	-0.12%	-0.51%	-0.185	-1.253	-1.160	-1.530
9	0.10%	-0.40%	0.424	1.005	0.926	1.321
10	0.34%	-0.07%	0.984	3.789 ***	3.427 ***	4.029 ***
11	0.37%	0.30%	0.615	3.861 ***	4.514 ***	4.881 ***
12	0.35%	0.65%	0.581	4.844 ***	5.759 ***	5.722 ***
13	0.46%	1.11%	0.929	5.941 ***	6.987 ***	6.427 ***
14	-0.07%	1.04%	-0.130	-0.925	-1.075	-1.045
15	0.13%	1.17%	0.130	0.886	1.179	2.253 **

Figure 3. Event 2: 15 March 2019.

AAR = average abnormal return. CAR = cumulative abnormal return as labelled in the original output; across the sample this represents a cumulative average abnormal return. Test columns show daily test statistics. Asterisks are retained as reported.

Appendix continued

Event Date: 25/05/2019

Event Day	AAR	CAR	Corrado Rank Test	Patell Test	BMP Test	T Test
-3	0.06%	0.06%	0.226	0.771	0.816	0.802
-2	-1.11%	-1.04%	-1.720 *	-14.221 ***	-17.856 ***	-17.007 ***
-1	-0.36%	-1.41%	-0.737	-3.490 ***	-4.449 ***	-5.903 ***
0	-	-1.41%	-	-	-	-
1	0.65%	-0.75%	1.089	7.368 ***	9.856 ***	9.942 ***
2	-0.83%	-1.58%	-1.414	-10.821 ***	-12.345 ***	-11.748 ***
3	0.02%	-1.56%	0.031	0.450	0.530	0.286
4	-0.17%	-1.73%	-0.240	-2.214 **	-2.503 **	-2.230 **
5	-0.28%	-2.01%	-0.496	-3.004 ***	-3.632 ***	-4.092 ***
6	-0.13%	-2.14%	-0.179	-2.078 **	-1.963 *	-1.562
7	0.32%	-1.82%	0.648	4.771 ***	5.900 ***	5.078 ***
8	-0.62%	-2.44%	-1.118	-7.185 ***	-6.662 ***	-7.621 ***
9	-0.02%	-2.45%	0.153	0.431	0.487	-0.251
10	0.27%	-2.19%	0.611	2.856 ***	3.374 ***	3.848 ***
11	0.32%	-1.86%	0.279	3.477 ***	4.770 ***	5.398 ***
12	0.03%	-1.83%	0.232	0.714	0.866	0.508
13	0.04%	-1.79%	-0.046	0.315	0.428	0.597
14	0.01%	-1.78%	0.206	0.247	0.379	0.200
15	1.95%	0.17%	2.242 **	24.373 ***	23.352 ***	19.085 ***

Figure 4. Event 3: May 2019. See date note below.

Event Date: 20/09/2019

Event Day	AAR	CAR	Corrado Rank Test	Patell Test	BMP Test	T Test
-3	-0.65%	-0.65%	-0.859	-7.107 ***	-6.158 ***	-7.187 ***
-2	-0.05%	-0.70%	0.403	0.106	0.112	-0.687
-1	0.35%	-0.35%	0.806	5.270 ***	6.617 ***	5.943 ***
0	0.21%	-0.35%	0.304	3.394 ***	3.515 ***	3.150 ***
1	-0.70%	-1.04%	-1.315	-9.425 ***	-11.332 ***	-10.885 ***
2	0.20%	-0.84%	0.494	2.748 ***	3.371 ***	3.240 ***
3	-0.14%	-0.98%	-0.380	-2.623 ***	-3.333 ***	-2.425 **
4	0.17%	-0.81%	0.874	3.952 ***	3.222 ***	1.919 *
5	0.72%	-0.09%	1.323	9.511 ***	11.279 ***	11.427 ***
6	-0.16%	-0.24%	-0.411	-1.613	-2.316 **	-3.069 ***
7	0.05%	-0.20%	0.198	-0.180	-0.220	0.791
8	-0.92%	-1.12%	-1.513	-14.354 ***	-14.406 ***	-12.955 ***
9	-0.73%	-1.85%	-1.643	-10.221 ***	-10.399 ***	-10.477 ***
10	0.13%	-1.72%	0.471	2.790 ***	3.121 ***	1.967 **
11	0.55%	-1.17%	1.384	8.117 ***	11.315 ***	9.960 ***
12	-0.23%	-1.41%	-0.388	-3.691 ***	-2.754 ***	-2.557 **
13	-0.14%	-1.55%	-0.471	-2.199 **	-3.445 ***	-3.003 ***
14	0.12%	-1.42%	0.046	1.039	0.916	1.529
15	0.50%	-0.92%	0.266	6.279 ***	3.666 ***	3.902 ***

Figure 5. Event 4: 20 September 2019.

Event Date: 27/09/2019

Event Day	AAR	CAR	Corrado Rank Test	Patell Test	BMP Test	T Test
-3	0.21%	0.21%	0.569	2.738 ***	3.348 ***	3.285 ***
-2	-0.14%	0.07%	-0.402	-2.554 **	-3.215 ***	-2.374 **
-1	0.18%	0.24%	0.881	3.981 ***	3.205 ***	1.953 *
0	0.72%	0.24%	1.336	9.556 ***	11.289 ***	11.412 ***
1	-0.15%	0.09%	-0.395	-1.570	-2.258 **	-3.030 ***
2	0.05%	0.14%	0.213	-0.179	0.842	0.842
3	-0.92%	-0.78%	-1.549	-14.514 ***	-14.493 ***	-12.964 ***
4	-0.73%	-1.51%	-1.621	-10.288 ***	-10.485 ***	-10.511 ***
5	0.13%	-1.38%	0.607	2.795 ***	3.202 ***	2.034 **
6	0.55%	-0.83%	1.442	8.159 ***	11.353 ***	10.015 ***
7	-0.23%	-1.06%	-0.387	-3.679 ***	-2.769 ***	-2.536 **
8	-0.14%	-1.20%	-0.433	-2.146 **	-3.357 ***	-2.959 ***
9	0.13%	-1.07%	0.030	1.093	0.956	1.555
10	0.50%	-0.57%	0.250	6.341 ***	3.686 ***	3.923 ***
11	-0.03%	-0.60%	-0.076	-1.178	-1.552	-0.539
12	0.19%	-0.40%	0.152	2.652 ***	2.436 **	2.218 **
13	-0.21%	-0.61%	-0.501	-3.594 ***	-3.980 ***	-2.928 ***
14	-0.29%	-0.90%	-0.531	-4.032 ***	-3.367 ***	-3.425 ***
15	-0.44%	-1.34%	-0.827	-6.477 ***	-5.412 ***	-5.981 ***

Figure 6. Event 5: 27 September 2019.

Event Date: 29/11/2019

Event Day	AAR	CAR	Corrado Rank Test	Patell Test	BMP Test	T Test
-3	0.39%	0.39%	0.973	5.313 ***	6.223 ***	6.657 ***
-2	-0.06%	0.33%	-0.397	-0.835	-1.075	-1.013
-1	-	0.33%	-	-	-	-
0	-0.01%	0.32%	-0.073	0.064	0.093	-0.284
1	-0.84%	-0.52%	-1.914 *	-13.050 ***	-14.615 ***	-13.893 ***
2	-0.52%	-1.04%	-1.152	-7.407 ***	-8.592 ***	-8.744 ***
3	0.25%	-0.78%	0.641	3.192 ***	4.544 ***	5.048 ***
4	0.18%	-0.60%	0.600	2.136 **	2.872 ***	3.193 ***
5	0.32%	-0.28%	0.986	4.590 ***	5.941 ***	4.880 ***
6	0.20%	-0.09%	0.308	2.392 **	3.638 ***	3.878 ***
7	-0.29%	-0.37%	-0.908	-3.989 ***	-5.463 ***	-5.223 ***
8	-0.35%	-0.72%	-0.827	-4.633 ***	-6.362 ***	-6.206 ***
9	-0.02%	-0.74%	-0.227	-1.407	-1.492	-0.345
10	0.13%	-0.61%	-0.730	-0.266	-0.170	1.022
11	0.86%	0.25%	1.849 *	12.165 ***	12.368 ***	12.228 ***
12	0.45%	0.70%	1.152	6.924 ***	6.950 ***	6.393 ***
13	-0.07%	0.63%	0.032	-1.133	-1.542	-1.352
14	-0.02%	0.61%	0.049	-0.291	-0.388	-0.376
15	0.30%	0.91%	0.819	5.165 ***	6.281 ***	5.399 ***

Figure 7. Event 6: 29 November 2019.

Event Date: 06/12/2019

Event Day	AAR	CAR	Corrado Rank Test	Patell Test	BMP Test	T Test
-3	-0.53%	-0.53%	-0.975	-7.581 ***	-8.819 ***	-8.910 ***
-2	0.24%	-0.29%	0.562	2.899 ***	4.149 ***	4.681 ***
-1	0.17%	-0.29%	0.498	1.882 *	2.562 **	2.949 ***
0	0.30%	0.01%	0.903	4.283 ***	5.453 ***	4.629 ***
1	0.18%	0.19%	0.278	2.218 **	3.379 ***	3.617 ***
2	-0.30%	-0.11%	-0.854	-4.162 ***	-5.710 ***	-5.485 ***
3	-0.36%	-0.47%	-0.691	-4.802 ***	-6.645 ***	-6.482 ***
4	-0.04%	-0.52%	-0.228	-1.660 *	-1.793 *	-0.592
5	0.11%	-0.40%	-0.648	-0.343	-0.216	0.881
6	0.85%	0.44%	1.602	11.852 ***	12.061 ***	11.954 ***
7	0.44%	0.88%	0.954	6.664 ***	6.736 ***	6.244 ***
8	-0.09%	0.80%	0.064	-1.343	-1.834 *	-1.616
9	-0.04%	0.76%	-0.021	-0.524	-0.706	-0.656
10	0.29%	1.05%	0.712	4.873 ***	5.922 ***	5.090 ***
11	0.16%	1.21%	0.506	2.070 **	3.180 ***	3.355 ***
12	0.14%	1.35%	0.664	1.613	2.453 **	2.991 ***
13	-	1.35%	-	-	-	-
14	-3.20%	-1.85%	-4.772 ***	-28.088 ***	-1.137	-1.109
15	-0.28%	-2.13%	-0.897	-4.088 ***	-7.501 ***	-7.337 ***

Figure 8. Event 7: 6 December 2019.

Date note: Figure 4 is labelled 25 May in the original output; the global strike took place on 24 May 2019. Event alignment needs checking. Arithmetic note: CAR changes in Figures 5, 6 and 8 do not reconcile with the displayed AARs at day 0, day 0 and day -1 respectively. Original values are retained pending verification.