

Pricing Protest: The Response of Financial Markets to Social Unrest

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Research question

What are the effects of social unrest on stock markets across the world?

- ▶ We identify start days of **156** episodes of social unrest using a new measure of social unrest – **daily Social Unrest Index**, based on media reports.
- ▶ We conduct a cross-country event study with daily data (72 countries in 2011-2020).

Measuring social unrest

First, we extract the month of social unrest event from monthly RSUI by Barrett et al. (2020). Then, we compute daily Social Unrest Index:

$$SU_{kt} = \frac{x_{kt}}{\frac{1}{60} \sum_{t=-60}^{-1} x_{kt}} \quad (1)$$

with

- ▶ k – country
- ▶ t – day, $t \in [-60, 90]$, $t = 0$ the first day of event month
- ▶ x_{kt} number of articles about social unrest in country k per day t
- ▶ $\frac{1}{60} \sum_{t=-60}^{-1} x_{kt}$ – pre-event average number of articles about social unrest

Finally, we use daily Social Unrest Index to identify the beginning and duration of social unrest events. The beginning of the event – day 0 – is the first day during the event month when SU index exceeds its country-specific mean by more than 15 times. Our daily media-based SU index dates social unrest events with high accuracy, which is confirmed by a series of validity checks against external sources.

Methodology

1. **Event study:** compute **cumulative abnormal returns** relative to normal pre-event returns using the **market model**.

For each event i for days $s \in [-50, -11]$:

$$R_{is} = \alpha_i + \beta_i R_{ms} + \varepsilon_{is} \quad (2)$$

R_{is} are the daily stock index returns, and R_{ms} are the daily returns of the market index (MSCI ACWI). Compute average abnormal returns:

$$AR_s = \frac{1}{N} \sum_i AR_{is} = \frac{1}{N} \sum_i (R_{is} - \hat{\alpha}_i - \hat{\beta}_i R_{ms}) \quad (3)$$

Sum up average abnormal returns over time to get cumulative abnormal returns (CAR).

2. **Regression approach:** FE panel regression with HAC standard errors.

$$R_{is} = \beta_0 + \beta_1 \times \mathbb{1}[Unrest_{is}] + S + S^2 + \gamma_c + \delta_s + \varepsilon_{is} \quad (4)$$

where:

- ▶ $\mathbb{1}[Unrest_{is}]$ – dummy equal to one if $s \in$ event window
- ▶ S, S^2 – number of business days since day 0
- ▶ γ_c and δ_s – country FE and day of the week FE
- ▶ event windows: $s \in [0, +3]$, $s \in [0, +7]$

- ▶ **Identification assumption:** event date is correctly identified and not anticipated

Main result

- ▶ Social unrest leads to a **significant reduction in stock market returns**. Mean CAR drop by 0.72 pp three days after the unrest event relative to day -1, and by **1.4 pp** two weeks after the event.
- ▶ **Statistically significant** effect over the whole event window.
- ▶ **Economically meaningful** effect: the unconditional probability of observing the decline of such a magnitude before the event is only 5 percent.
- ▶ Long-lived **level effect**: CAR remain significantly negative at least 25 business days after the unrest event.
- ▶ No anticipation: CAR on days before the event are not significantly different from zero.

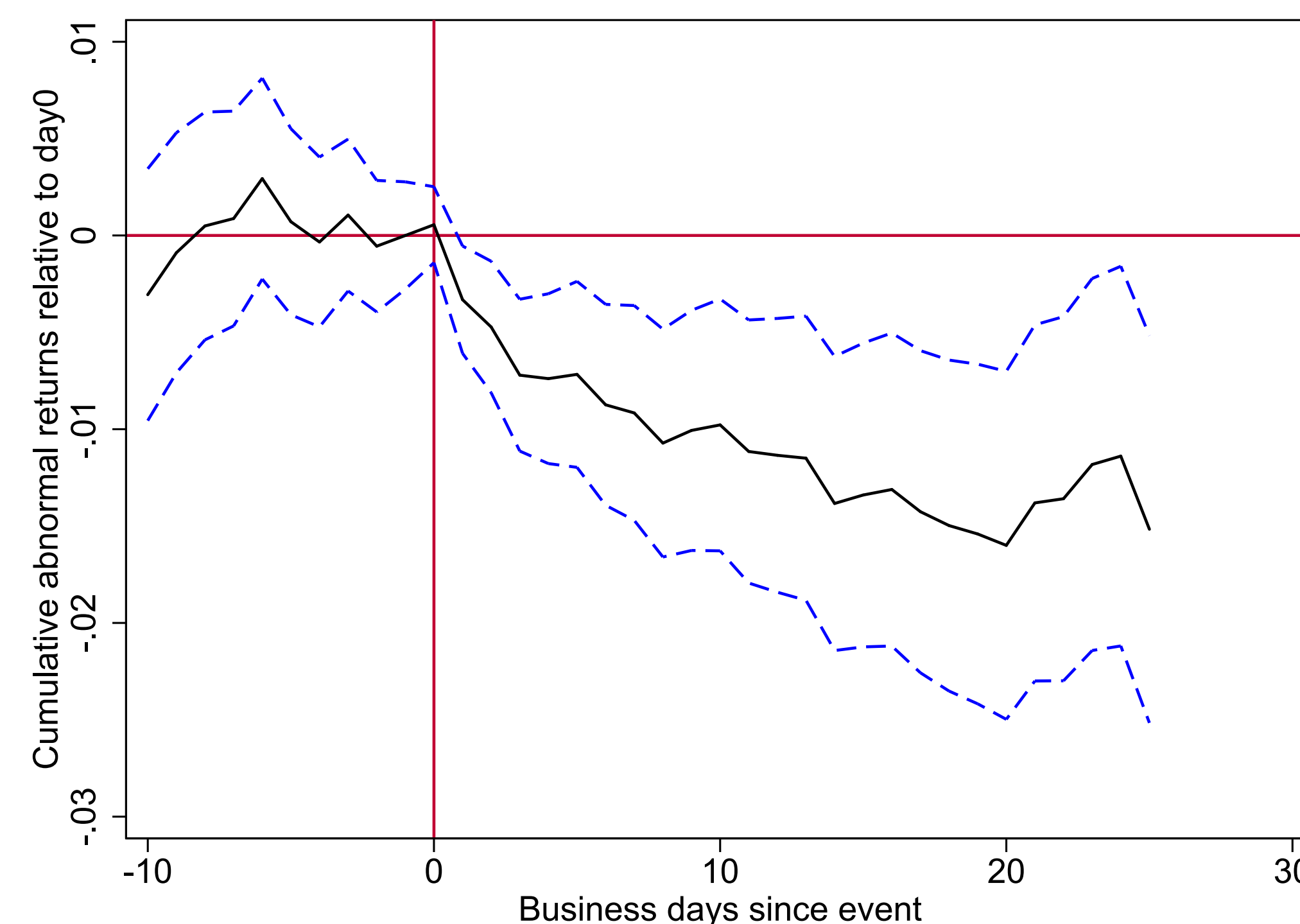


Figure 1. CAR between day s and day 0.

Heterogeneities

- ▶ **Duration** of social unrest events matters: the longer the event, the larger is the stock market reaction. CAR decrease by 8 pp following a long-term social unrest event.
- ▶ Decrease in CAR in a cross-country sample is driven by events in emerging economies and low-income developing countries. CAR do not react to social unrest in developed countries.
- ▶ Social unrest that happens around elections **increases** stock market returns by 10 basis points.
- ▶ Heterogeneity in the level of financial development **does not** predict the effect of social unrest on stock markets.

The role of institutions

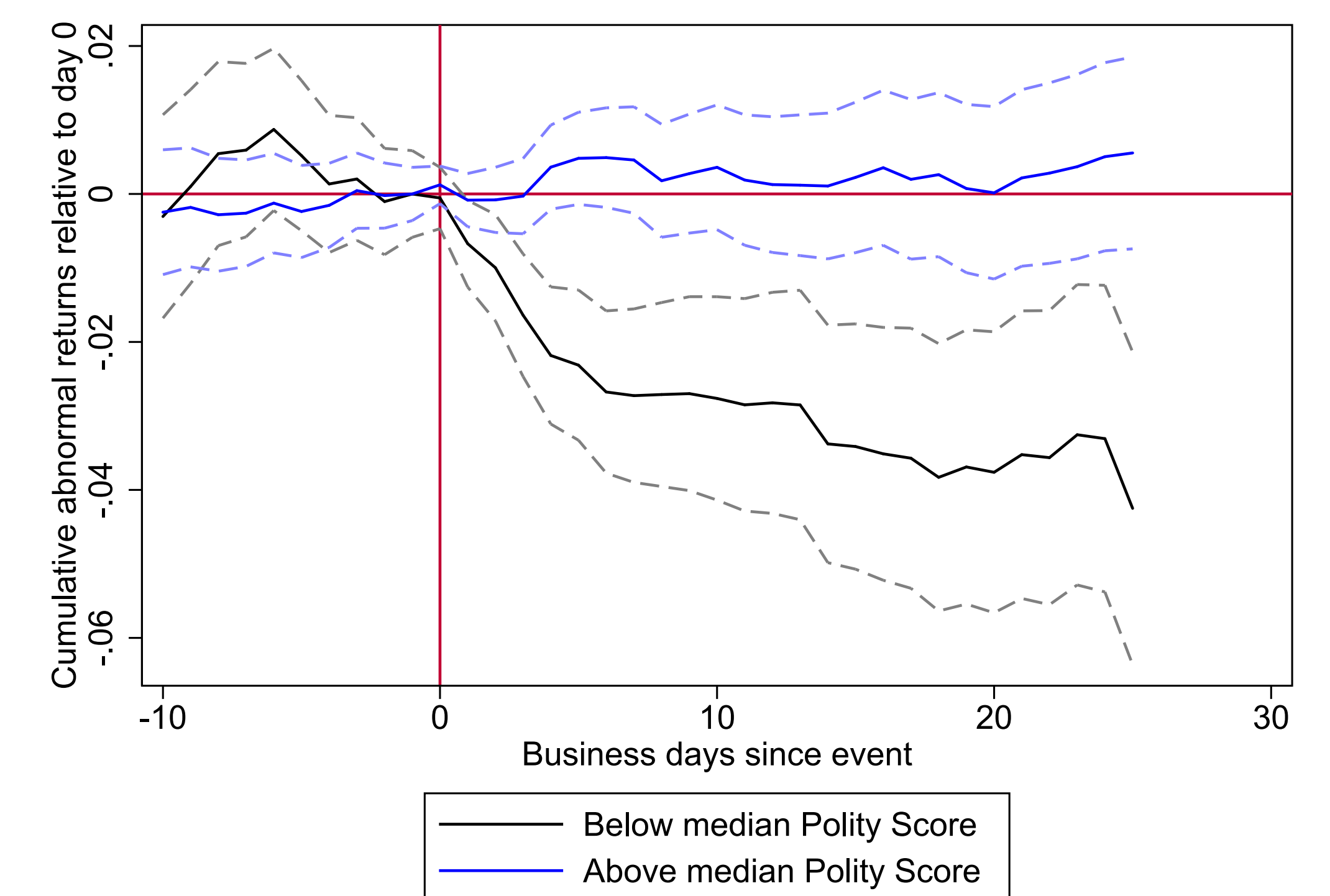


Figure 2. CAR by groups of countries split by Polity Score

- ▶ The negative effect of social unrest on CAR is predominantly driven by countries with below median Polity Score: CAR drop by 3 pp in less democratic countries.
- ▶ Regulatory quality also plays a role: countries with below median regulatory quality display stronger reaction to social unrest.
- ▶ Event duration, country income group and institutional quality are all independently important in shaping the stock market response to social unrest.

Conclusions

- ▶ Social unrest events decrease stock market returns:
 - daily returns ↓ by 16.5 bp in three days
 - CAR ↓ by **1.4pp** in two weeks
- ▶ This effect is **long-lasting** and robust.
- ▶ The effect is driven by events:
 - with **high duration**
 - that happen in **emerging and developing economies**
- ▶ Quality of institutions matters. More effective democratic institutions provide a mechanism to reconcile divergent views and address the underlying issues in an orderly fashion. Social unrest in a country with low voice and accountability is a challenge to the system of governance itself.
- ▶ Increased **uncertainty** in the financial markets is an important transmission channel of the effect.

References

Philip Barrett, Maximiliano Appendino, Kate Nguyen, and Jorge de Leon Miranda. Measuring social unrest using media reports. *IMF Working Paper No. 2020/129*, 2020.

Philip Barrett, Mariia Bondar, Sophia Chen, Mali Chivakul, and Deniz Igan. Pricing Protest: The Response of Financial Markets to Social Unrest. *IMF Working Paper No. 2021/079*, 2021.