The Effects of Europe's 2020 Short Selling Bans on Securities Markets

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Bogdan Stankovski (VGSF) and Christian Westheide (University of Vienna)

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Motivation

- In March 2020, 6 out of the 27 EU countries implemented a **total short selling ban** due to the Covid-19 pandemic

- **The Reason:** "...ESMA agrees that the outbreak of the COVID-19 pandemic is having serious adverse effects on the real economy and on the financial markets of the Union." [1]
- Raises the question of how a short selling ban can improve financial markets and minimize the adverse effects on the real economy

- **Why should we care?** Recent empirical research mostly argues against the ban, but we are lacking a deeper understanding of how the ban effects a broad range of market parameters

[1] Opinion of the European Securities and Markets Authority - March 17th 2020

Research Question and Contribution

What were the effects of the short selling ban on European equity markets, earnings announcements and firm financing through debt?

Research Goal

- Quantify the effects the short selling ban had on companies with respect to firms without short selling constraints

Contribution

- *Equity Markets:* Market liquidity and volume significantly decreased, while stock prices did not exhibit an upward trend
- *Earnings Announcements:* Negative surprises were followed by a larger decrease in prices for banned firms
- *Bond Markets:* Bond returns were unaffected, while bond spreads decreased

Previous Literature

- **Empirical Research:**
  - *Boehmer, Jones and Zhang (2013); Beber and Pagano (2013); Bessler and Vendrasco (2021); Della Corte et a. (2022); A.C. Saffi and Sigurdsson (2010)* - focus their research on the impact of short selling bans on equity markets - detrimental impact on market liquidity (spreads, Amihud ratio, volume) and no significant positive impact on stock prices
- **Theoretical Reseach:**
  - Diamond and Verrecchia (1986) - market participants are rational investors and short sale constraints do not lead to biased prices
  - Miller (1977) - Prices of securities will hold expectations from optimistic investors when short selling is banned

Overview of the Ban

- Austria, Belgium, France, Greece, Italy and Spain banned **covered** short selling for **two months** (18.03.2020-18.05.2020)
- Ban applied to all stocks admitted (primary market) in those countries, no matter the market traded - **Foreign** listed stocks were not affected by the ban

- Investors were *not allowed to increase* their short positions or enter new ones
- Creating or increasing synthetic short positions using **derivative** trading was also prohibited
- All EU member states have *uniform regulation on short selling* and are under the supervision of ESMA

- The Setup
  - **Treatment group**: Stocks/Corp. Bonds/EA from 6 EU countries experiencing a ban
  - **Control group**: Stocks/Corp. Bonds/EA from 21 EU countries without a ban

  - **Pre-Treatment period**: Beginning of January 2020, until 1 week before the ban
  - **Treatment period**: 1 week before the ban implementation, up until the last week of the ban
  - **Post-Treatment period**: 10 weeks after the end of the ban

Details

Methodology

- Difference-in-Difference by Callaway and Sant'Anna [2]
  - Standard Diff-in-Diff averages the explanatory variables over the **whole** pre-treatment period
  - This framework compares the values of predictors **one week before the ban** to periods before and after the treatment
  - Observe weekly and average effects of the short selling ban on the variable of interest

- Standard Difference-in-Difference regression setup for earnings announcements
  - Measure the impact of the short selling ban on **abnormal returns**
  - Look at the 7-day pre- and post-announcement period

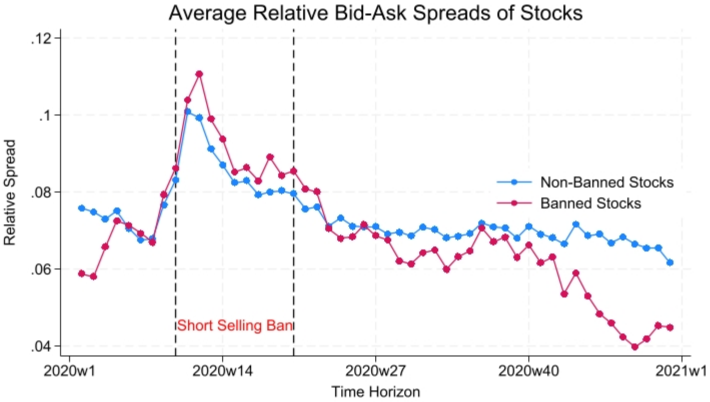
- **Variables of Interest** : Relative bid-ask spreads and returns for stocks and bonds, trading volume
- **Control Variables** : firm size, industry, stock and bond volatility, bond ratings, remaining time to maturity, number of outstanding bonds

[2] Callaway, B. and P. H. Sant'Anna (2021). Difference-in-differences with multiple time periods. Journal of Econometrics 225 (2), 200–230.

Results

Liquidity of the Equity Market

- We measure the liquidity of the market by **relative bid-ask spreads**
- During the short selling ban both the control and the treatment group exhibit an **increase in market illiquidity**



- Graph suggests companies experiencing short selling restrictions had **higher bid-ask spreads**
- Employ diff-in-diff[a] analysis to test this predictions

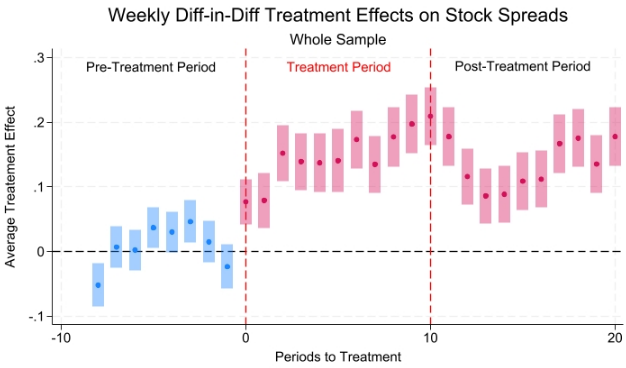
[a] Callaway, B. and P. H. Sant'Anna (2021)

Stock Spreads of the Equity Market - Regression Results

	Relative Bid-Ask Spreads		
	Pre-Treatment	Treatment Period	Post-Treatment
All Stocks	0.808***	14.671***	12.951***
	(2.66)	(8.94)	(7.08)
Financial Stocks	1.120	16.278***	15.323***
	(1.61)	(4.44)	(3.81)
Non Financial Stocks	1.061***	14.106***	13.432***
	(3.23)	(8.06)	(6.83)
Smallest Size Quartile	2.844***	10.551***	16.285***
	(3.04)	(2.68)	(3.49)
Quartile 2	2.212***	10.111***	13.600***
	(3.93)	(3.14)	(3.69)
Quartile 3	1.238**	13.707***	10.562***
	(2.33)	(4.25)	(3.05)
Largest Size Quartile	-1.693***	24.683***	13.040***
	(-3.67)	(8.65)	(4.44)
Controls	Yes	Yes	Yes

t statistics in parentheses. Clustered Standard Errors.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$



Trading Volume of the Equity Market - Regression Results

	Euro Trading Volume		
	Pre-Treatment	Treatment Period	Post-Treatment
All Stocks	-1.405***	-8.053***	-14.434***
	(-2.61)	(-3.01)	(-4.07)
Financial Stocks	2.271*	-23.131***	-29.839***
	(1.73)	(-3.88)	(-3.73)
Non Financial Stocks	-1.971***	-7.777***	-19.104***
	(-3.34)	(-2.66)	(-4.88)
Smallest Size Quartile	-2.322	-13.239	-61.093***
	(-1.14)	(-1.61)	(-5.69)
Quartile 2	-3.289***	-6.672	-30.460***
	(-2.65)	(-1.14)	(-3.76)
Quartile 3	0.478	-10.630**	-10.554*
	(0.54)	(-2.24)	(-1.74)
Largest Size Quartile	1.501***	-25.554***	-4.184
	(3.09)	(-9.44)	(-1.27)
Sec. Trading Platforms	1.770	-38.824***	-13.724**
	(1.54)	(-8.69)	(-2.57)
Primary Exchange	-0.905	-9.130***	-21.082***
	(-1.51)	(-3.20)	(-5.54)
Controls	Yes	Yes	Yes

t statistics in parentheses. Clustered Standard Errors.

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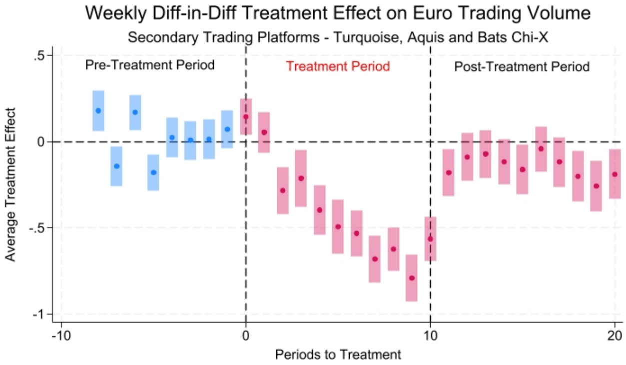


Short Selling Ban Impact on Equity Market

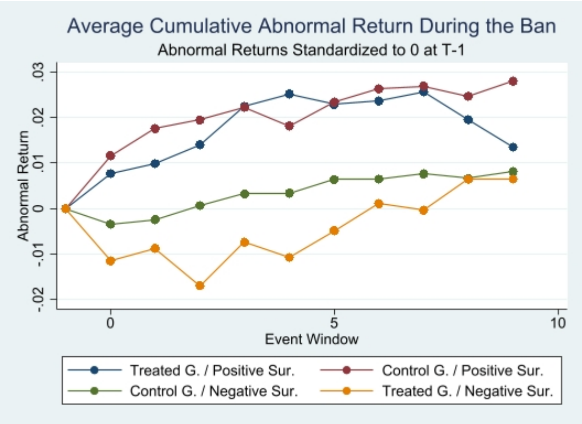
- **Spreads significantly increased** for stock experiencing a short selling ban compared to the unaffected companies (on average 14%)
- **Trading volume also suffered** during the short selling restrictions - especially on secondary trading platforms (on average 8%)
- These effects are **persistent** in weeks after the end of the short selling ban

- Additionally, we observe:
  - **No positive effect** on stock returns
  - *Slight decrease* in stock volatility during the ban
  - *Robust results* using different measures of illiquidity (Amihud Ratio) and standard diff-in-diff analysis

Earnings Announcement - Overview

- Use *abnormal returns (AR)* on earnings announcement day to measure **impact on stock prices**
- We conduct a **standard** difference-in-difference analysis
- Look at pre- and post-announcement trends

- We divide the sample into **positive** and **negative** earnings announcements (based on the median analyst estimate)
- Additionally, we split the sample based on the **agreement of analysts' prediction** (dispersion of estimates)



Earnings Announcements - Regression Results

Table 1: Difference in Difference of Earnings Announcements

	Abnormal Return	Pre Trend T-7	Post Trend T+7
Treat. Group	0.4619	-0.3626	1.4256**
	(1.56)	(-0.80)	(2.56)
Treat. Period	0.3396	0.6793	1.2705**
	(1.06)	(1.56)	(2.14)
T. Group x T. Period	-0.9842	4.0224	-1.7295
	(-1.40)	(1.40)	(-1.48)
Constant	0.1249	1.1295***	0.3492
	(0.73)	(6.47)	(1.27)
Observations	2607	2609	2609

Table 2: Diff-in-Diff of Earnings Announcements based on Surprises

	Negative Surprise		
	Abnormal Return	Pre Trend T-7	Post Trend T+7
Treat. Group	1.6684***	0.2664	1.6000
	(3.31)	(0.29)	(1.64)
Treat. Period	1.2779***	0.7519	1.2552
	(2.70)	(1.06)	(1.27)
T. Group x T. Period	-2.4792**	0.4229	-1.8560
	(-2.39)	(0.17)	(-1.11)
Constant	-1.6201***	0.7150**	-1.0381**
	(-6.13)	(2.32)	(-2.07)
Observations	959	961	961
	Positive Surprise		
Treat. Group	0.1858	-0.6726	1.9563***
	(0.48)	(-1.40)	(2.73)
Treat. Period	0.1143	0.8117	1.7727**
	(0.24)	(1.41)	(2.34)
T. Group x T. Period	-0.5821	7.2860	-2.0796
	(-0.55)	(1.39)	(-1.22)
Constant	1.0500***	1.3047***	0.9206***
	(4.78)	(5.98)	(2.79)
Observations	1421	1421	1421

Dispersion of Analysts' Estimates - Earnings Announcements

Table 3: Difference in Difference of Earnings Announcements based on Surprises and Estimate Dispersion

	Negative Surprise								
	Small Dispersion			Medium Dispersion			High Dispersion		
	(1) AR	(2) Pre T-7	(3) Post T+7	(4) AR	(5) Pre T-7	(6) Post T+7	(7) AR	(8) Pre T-7	(9) Post T+7
Treat. Group	3.1998	4.5061	6.4766**	1.1910	-0.7924	-2.0180	2.0981*	-2.1756	1.5330
	(1.31)	(0.69)	(2.02)	(1.12)	(-0.82)	(-0.90)	(1.73)	(-1.41)	(0.57)
Treat. Period	2.1683**	-0.1836	5.2378***	0.1967	0.2881	1.6981	1.6735	6.9951*	-0.7443
	(2.45)	(-0.21)	(3.77)	(0.14)	(0.20)	(0.68)	(0.81)	(1.80)	(-0.22)
T. Group x T. Period	-5.5332**	-10.2658	-12.0695***	-2.2957	0.9834	-1.7760	-3.4421	-2.1135	0.2925
	(-2.09)	(-1.44)	(-3.37)	(-1.10)	(0.21)	(-0.46)	(-1.42)	(-0.44)	(0.06)
Constant	-1.8920***	0.5628	-2.1623**	-1.0323	1.3097**	-0.6749	-2.5587***	1.1725	-0.8835
	(-3.34)	(1.07)	(-2.29)	(-1.21)	(2.04)	(-0.50)	(-3.05)	(1.01)	(-0.42)
Observations	149	149	149	139	139	139	142	142	142
	Positive Surprise								
Treat. Group	-0.0226	-0.9358	1.4689	-0.3954	-1.1299	1.1417	0.5158	-1.2589	4.7203***
	(-0.03)	(-1.19)	(1.15)	(-0.50)	(-1.47)	(0.76)	(0.63)	(-1.33)	(2.69)
Treat. Period	0.9021	1.7263*	4.4760**	1.1167	1.9627	1.4328	-1.7220	-1.2794	0.4706
	(0.63)	(1.96)	(2.25)	(0.78)	(1.64)	(0.80)	(-1.05)	(-0.63)	(0.15)
T. Group x T. Period	0.4604	-2.6162	-0.4620	-1.0987	2.2540	-1.1315	-0.1136	5.6760*	-3.3687
	(0.25)	(-0.86)	(-0.11)	(-0.55)	(0.72)	(-0.33)	(-0.04)	(1.97)	(-0.74)
Constant	0.9979**	1.0869***	0.1899	2.2104***	1.1423***	1.6473**	1.2564***	1.6558***	0.5622
	(2.31)	(2.92)	(0.30)	(3.96)	(2.74)	(2.01)	(2.95)	(3.05)	(0.57)
Observations	224	224	224	222	222	222	219	219	219

Bond Market Analysis - Bid-Ask Spreads

- We focus on **corporate bonds** from companies which issued common equity
- Observe bonds which were part of the *Pandemic Emergency Purchase Programme (PEPP)*
- On average bid-ask spreads decreased **8 percent** during the short selling ban for the treated firms
- *Positive* impact of short selling restrictions on the bond market

	Relative Bid-Ask Spreads of Corporate Bonds		
	Pre-Treatment	Treatment Period	Post-Treatment
All Corporate Bonds	-0.047	-8.851***	-5.974***
	(-0.22)	(-5.31)	(-3.08)
Financial Bonds	-0.211	-3.606**	-0.935
	(-0.88)	(-1.97)	(-0.45)
Non Financial Bonds	0.429	-13.433***	-11.664**
	(0.84)	(-3.55)	(-2.43)
Bonds Under PEPP	0.392	-7.378*	-15.995***
	(0.72)	(-1.90)	(-3.16)
Bonds w/0 PEPP	-0.452*	-6.320***	-2.744
	(-1.91)	(-3.48)	(-1.25)
Controls	Yes	Yes	Yes

t statistics in parentheses. Clustered Standard Errors.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Bond Market Analysis - Bond Returns

Table 4: Returns of Corporate Bonds

	Pre-Treatment	Treatment Period	Post-Treatment
All Corporate Bonds	-0.002**	-0.013**	0.006
	(-2.01)	(-2.24)	(0.88)
Financial Bonds	-0.001	-0.018***	-0.004
	(-1.29)	(-2.85)	(-0.52)
Non Financial Bonds	-0.006***	0.010	0.026*
	(-2.92)	(0.77)	(1.71)
Bonds Under PEPP	-0.007*	0.019	0.065***
	(-1.75)	(1.21)	(3.47)
Bonds w/0 PEPP	0.000	-0.024***	-0.015**
	(0.47)	(-3.84)	(-2.09)
Controls	Yes	Yes	Yes

t statistics in parentheses. Clustered Standard Errors.

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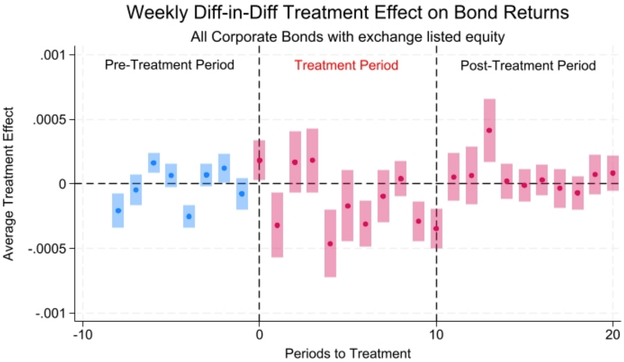

Conclusion

- Our study provides a **comprehensive analysis** of the effects of the short selling ban on equity, bond market and earnings announcements
- The paper **confirms earlier empirical findings** with respect to detrimental impact of short sale constraints on the equity markets

- We also **expand** the literature by showing the effects of the ban on earnings announcements
  - Negative earnings announcement were followed by a *significant negative reaction* during the ban for companies affected by the constraints
  - Agreement between analysts' estimates play an important role - smaller dispersion around negative announcement elicit a stronger reaction
  - These results are not observed for positive surprises - the market reflects the views of optimistic investors (Miller 1977)

- Additionally, we find some evidence that **bond market** benefited from the short selling ban - lower bid-ask spreads and stable returns

Thank you.

Short Selling Ban

Back

- ”The extended ban prohibits **shorting or increasing existing net short positions in any of the shares**. The ban applies to **all index-related instruments** for which the shares subject to the ban make up **more than 20(50) percent of the index**. However, the ban does not apply to shorting or increasing existing net short positions when the short position is aimed exclusively at covering the risk stemming from (i) the equity component of a previously purchased convertible bond, or (ii) previously purchased subscription rights.”

- Following decisions by ESMA and the EFTA Surveillance Authority requiring net short positions of 0.1 percent and above to be reported, managers may need to review how they calculate and report their short positions. As such, managers should remind themselves of the following:
  - Derivative and physical positions should be aggregated when reporting. **Both physical and derivative positions are considered “short positions” under the EU Short Selling Regulation**, and no distinction should be made in reporting those positions;
  - Care should be taken with **synthetic shorts**. If you have a net short position attributable to long cash and short swap (including long or short positions in American or Global Depository Receipts) on the same issuer in respect of which there is a ban, you **may not be allowed to sell the long position** (as this would increase your net short position)

  Regulation

Short Selling Regulation in the EU

- Covers all types of financial instruments, in particular **shares** listed in the EU, **derivatives** and **sovereign debt securities** (loans issued by governments);
- Lays down strict rules on short selling and c**ertain aspects of CDS in proportion to the risks** associated with them, including:
  - measures to **prevent 'naked' short selling** of shares and loans issued by governments,
  - a ban on **'naked' CDS transactions** (including on sovereign debt);
- Sets disclosure requirements — investment managers have to d**isclose certain short-selling transactions** to the competent authorities — whereas larger transactions, above a certain threshold, must be publicly disclosed to the markets;
- Gives, in periods of exceptional financial instability in an EU country or in the EU as a whole, the competent authorities temporary **powers to require greater transparency** or to impose restrictions on short-selling and CDS transactions;

Details