Do short sellers respond to ESG ratings?

Adriana Mata* & Baptiste Pepin† & Diego Almau‡ & Pranav Phatak§

March 7, 2024

Abstract

This study explores the intricate relationship between Environmental, Social, and Governance (ESG) events and securities lending activities, aiming to unveil how these events influence the behavior of short sellers and the broader market. By investigating various ESG incidents, from environmental catastrophes to governance breakdowns, we analyze their impact on securities lending, a proxy for short-selling interest. Our research seeks to determine whether short sellers incorporate ESG considerations into their investment decisions, suggesting a nuanced interplay between ESG events and market dynamics.

*Student - admata@uchicago.edu
†Student - baptistepepin@uchicago.edu
‡Student - diegoalmau@uchicago.edu
§Student - pphatak@uchicago.edu

1 Introduction

This project aims to unravel the complex relationship between Environmental, Social, and Governance (ESG) events and securities lending activities. It aims to dissect the nuanced interplay between ESG considerations and market dynamics, particularly focusing on the strategies and decisions of short sellers in the wake of ESG events. The central thesis of this inquiry probes two critical questions: Is there a discernible relationship between ESG events and securities lending activity, and do short sellers factor ESG events into their investment decisions?

ESG events encompass a broad spectrum of incidents, ranging from environmental catastrophes, such as oil spills and deforestation, to social and governance issues, including labor disputes and corporate governance failures. These events not only have the potential to directly affect a company's financial performance but also impact its stock price indirectly through reputational damage and regulatory actions. Given the financial implications of ESG events, short sellers—investors who bet against the stock prices of companies—may be particularly attuned to these occurrences. Their investment decisions, driven by the anticipation of declining stock prices following ESG mishaps, could significantly influence securities lending activities by altering demand and affecting the terms of securities loans.

By delving into the environmental, social, and governance dimensions of ESG events, this study seeks to shed light on their impact on the securities lending market and the investment strategies of short sellers. The investigation not only contributes to the academic discourse on sustainable finance but also offers practical insights for

investors, policymakers, and corporate executives aiming to understand the interconnections between ESG factors and financial market dynamics. Through this lens, the project aspires to illuminate the broader implications of ESG events on market behavior and the strategic considerations of market participants in the context of securities lending.

2 Analysis

The following analysis aims to empirically examine whether there is a quantifiable relationship between ESG events and changes in securities lending activity, such as variations in short interest ratios, loan supply ratios, and loan fees. By analyzing data on ESG incidents and securities lending metrics, the study seeks to determine if and how short sellers incorporate ESG considerations into their investment decisions, potentially using ESG events as indicators to guide their short-selling strategies. In the realm of securities lending, several key metrics are pivotal for assessing market dynamics and investor sentiment. Below, we delve into the critical ratios and explore additional variables of interest within the Markit dataset.

To systematically unpack the influence of ESG events on securities lending, we will present an array of summary statistics for each specified ratio. These statistics encompass the 10th percentile (p10), 25th percentile (p25), median (p50), 75th percentile (p75), 90th percentile (p90), mean, standard deviation (SD), and the overall sample size (N), catering to a granular analysis of each ESG characteristic level. This structured approach allows for a detailed exploration of the nuances in how varying

ESG incidents might sway the decisions of short sellers and, by extension, impact the broader securities lending market. Through this lens, our investigation strives to offer a refined perspective on the intersection between ESG considerations and financial market dynamics, contributing valuable insights to both academic discourse and practical investment strategies.

2.1 Short Interest Ratio

This ratio, a critical indicator of market sentiment towards a company, provides insights into the proportion of shares borrowed for short selling relative to the total shares available in the market. A higher Short Interest Ratio is often interpreted as a bearish signal, suggesting a heightened interest in short selling possibly due to negative perceptions or expectations about the company's future performance.

$$\text{Short Interest Ratio} = \frac{\text{Shares on Loan}}{\text{Shares Outstanding}} \quad \text{or} \quad \frac{\text{QuantityOnLoan}}{\text{SHROUT}} \tag{1}$$

Each table delineated below serves as a comprehensive summary of statistical analyses, illustrating how different facets of ESG events correlate with changes in the Short Interest Ratio.

Table 1: Summary Stats for Short Interest Ratio for Environmental Level

environment	F	T
count	5618.0000	2362.0000
mean	0.0180	0.0151
std	0.0388	0.0270
min	0.0000	0.0000
10%	0.0009	0.0007
25%	0.0017	0.0019
50%	0.0045	0.0052
75%	0.0152	0.0166
90%	0.0462	0.0396
max	0.4657	0.3480

Table 2: Summary Stats for Short Interest Ratio for Social Level

social	F	T
count	3937.0000	4043.0000
mean	0.0176	0.0166
std	0.0387	0.0326
min	0.0000	0.0000
10%	0.0008	0.0009
25%	0.0017	0.0019
50%	0.0043	0.0050
75%	0.0155	0.0157
90%	0.0458	0.0434
max	0.4657	0.3897

Table 3: Summary Stats for Short Interest Ratio for Governance Level

governance	F	T
count	5375.0000	2605.0000
mean	0.0176	0.0163
std	0.0351	0.0370
min	0.0000	0.0000
10%	0.0009	0.0006
25%	0.0019	0.0015
50%	0.0051	0.0040
75%	0.0173	0.0126
90%	0.0458	0.0409
max	0.4657	0.4128

Table 4: Summary Stats for Short Interest Ratio for Novelty Level

novelty	1.000000	2.000000
count	5645.0000	2335.0000
mean	0.0150	0.0223
std	0.0333	0.0406
min	0.0000	0.0000
10%	0.0008	0.0009
25%	0.0017	0.0023
50%	0.0041	0.0074
75%	0.0124	0.0235
90%	0.0368	0.0585
max	0.4657	0.4128

Table 5: Summary Stats for Short Interest Ratio for Reach Level

reach	1.000000	2.000000	3.000000
count	2960.0000	2272.0000	2748.0000
mean	0.0175	0.0193	0.0149
std	0.0337	0.0404	0.0337
min	0.0000	0.0000	0.0000
10%	0.0008	0.0008	0.0009
25%	0.0018	0.0018	0.0017
50%	0.0052	0.0048	0.0042
75%	0.0177	0.0185	0.0121
90%	0.0463	0.0493	0.0344
max	0.4128	0.4657	0.3897

Table 6: Summary Stats for Short Interest Ratio for Severity Level

severity	1.000000	2.000000	3.000000
count	6099.0000	1576.0000	305.0000
mean	0.0173	0.0174	0.0113
std	0.0370	0.0333	0.0169
min	0.0000	0.0000	0.0000
10%	0.0008	0.0008	0.0007
25%	0.0018	0.0018	0.0017
50%	0.0045	0.0056	0.0055
75%	0.0154	0.0183	0.0128
90%	0.0451	0.0451	0.0296
max	0.4657	0.4032	0.1322

2.2 Loan Supply Ratio

This metric measures the availability of shares for lending against the total shares outstanding. It reflects the willingness of shareholders to lend their shares for short selling, indicating the liquidity and accessibility of shares for short sellers.

$$\text{Loan Supply Ratio} = \frac{\text{Shares Available to be Lent}}{\text{Shares Outstanding}} \quad \text{or} \quad \frac{\text{LendableQuantity}}{\text{SHROUT}} \tag{2}$$

By presenting these tables, we aim to shed light on the nuanced ways in which the Loan Supply Ratio is affected by different facets of ESG events.

Table 7: Summary Stats for Loan Supply Ratio for Environmental Level

environment	F	T
count	5291.0000	2237.0000
mean	0.3201	0.2933
std	0.1038	0.1382
min	0.0000	0.0000
10%	0.1746	0.0269
25%	0.2757	0.2540
50%	0.3347	0.3179
75%	0.3819	0.3900
90%	0.4402	0.4404
max	0.6926	0.5989

Table 8: Summary Stats for Loan Supply Ratio for Social Level

social	F	T
count	3671.0000	3857.0000
mean	0.3197	0.3049
std	0.1071	0.1230
min	0.0000	0.0000
10%	0.1602	0.1130
25%	0.2763	0.2692
50%	0.3333	0.3241
75%	0.3892	0.3804
90%	0.4407	0.4390
max	0.6926	0.6266

Table 9: Summary Stats for Loan Supply Ratio for Governance Level

governance	F	T
count	5104.0000	2424.0000
mean	0.3108	0.3149
std	0.1176	0.1117
min	0.0000	0.0000
10%	0.1494	0.1586
25%	0.2701	0.2762
50%	0.3270	0.3316
75%	0.3879	0.3790
90%	0.4411	0.4382
max	0.6385	0.6926

Table 10: Summary Stats for Loan Supply Ratio for Novelty Level

novelty	1.000000	2.000000
count	5293.0000	2235.0000
mean	0.3089	0.3197
std	0.1073	0.1334
min	0.0000	0.0000
10%	0.1591	0.0881
25%	0.2741	0.2747
50%	0.3234	0.3456
75%	0.3669	0.4111
90%	0.4317	0.4627
max	0.6926	0.6326

Table 11: Summary Stats for Loan Supply Ratio for Reach Level

reach	1.000000	2.000000	3.000000
count	2818.0000	2129.0000	2581.0000
mean	0.3097	0.3118	0.3150
std	0.1242	0.1188	0.1030
min	0.0000	0.0000	0.0000
10%	0.1162	0.1511	0.1995
25%	0.2704	0.2725	0.2756
50%	0.3300	0.3266	0.3292
75%	0.3942	0.3910	0.3661
90%	0.4427	0.4439	0.4329
max	0.6926	0.6266	0.6326

Table 12: Summary Stats for Loan Supply Ratio for Severity Level

severity	1.000000	2.000000	3.000000
count	5745.0000	1497.0000	286.0000
mean	0.3114	0.3113	0.3301
std	0.1138	0.1249	0.1030
min	0.0000	0.0000	0.0000
10%	0.1575	0.1150	0.2038
25%	0.2743	0.2691	0.2973
50%	0.3259	0.3371	0.3432
75%	0.3805	0.3921	0.4024
90%	0.4384	0.4464	0.4406
max	0.6926	0.6209	0.5108

2.3 Loan Utilisation Ratio

This ratio compares the demand to the supply of loanable shares. A higher utilization rate suggests a strong demand for borrowing shares, often associated with an increased short selling activity.

$$\text{Loan Utilization Ratio} = \text{Utilisation} \tag{3}$$

By presenting these tables, we aim to shed light on the nuanced ways in which the Loan Supply Ratio is affected by different facets of ESG events.

Table 13: Summary Stats for Loan Utilisation Ratio for Environmental Level

environment	F	T
count	5623.0000	2481.0000
mean	5.9440	6.9536
std	13.6638	14.3337
min	0.0000	0.0000
10%	0.1628	0.1554
25%	0.3695	0.4511
50%	0.9766	1.6054
75%	4.4796	5.9653
90%	15.0764	19.8906
max	100.0000	99.1108

Table 14: Summary Stats for Loan Utilisation Ratio for Social Level

social	F	T
count	3920.0000	4184.0000
mean	6.3066	6.2029
std	14.4498	13.3240
min	0.0000	0.0000
10%	0.1607	0.1599
25%	0.3637	0.4255
50%	0.9670	1.3069
75%	4.7431	5.3376
90%	16.9124	16.4824
max	100.0000	99.2065

Table 15: Summary Stats for Loan Utilisation Ratio for Governance Level

governance	F	T
count	5512.0000	2592.0000
mean	6.3304	6.0886
std	13.6286	14.3989
min	0.0000	0.0000
10%	0.1734	0.1361
25%	0.4285	0.3135
50%	1.3817	0.8243
75%	5.4082	4.1516
90%	16.5059	17.2358
max	100.0000	98.0392

Table 16: Summary Stats for Loan Utilisation Ratio for Novelty Level

novelty	1.000000	2.000000
count	5623.0000	2481.0000
mean	5.4724	8.0223
std	13.0153	15.5200
min	0.0000	0.0000
10%	0.1586	0.1676
25%	0.3647	0.4839
50%	0.8903	1.9969
75%	3.9707	7.4361
90%	12.9520	22.1191
max	100.0000	99.1108

Table 17: Summary Stats for Loan Utilisation Ratio for Reach Level

reach	1.000000	2.000000	3.000000
count	3082.0000	2315.0000	2707.0000
mean	6.5421	6.7907	5.4641
std	13.5651	14.3826	13.7644
min	0.0000	0.0000	0.0000
10%	0.1394	0.1792	0.1627
25%	0.3885	0.4330	0.3653
50%	1.3659	1.3762	0.8448
75%	6.0342	5.6788	3.6186
90%	18.8393	18.7661	11.8118
max	99.2065	100.0000	98.2209

Table 18: Summary Stats for Loan Utilisation Ratio for Severity Level

severity	1.000000	2.000000	3.000000
count	6192.0000	1622.0000	290.0000
mean	6.2532	6.7424	3.5142
std	14.0604	13.9806	7.7983
min	0.0000	0.0000	0.0000
10%	0.1580	0.1671	0.1724
25%	0.3786	0.4446	0.3742
50%	1.0601	1.4378	1.1384
75%	4.8679	6.2554	3.4328
90%	16.6486	18.8021	8.1231
max	100.0000	99.2065	90.5155

2.4 Loan Fee Ratio

The following sections are dedicated to analyzing the Loan Utilization Ratio, a critical measure that assesses the balance between the demand for and the supply of loanable shares within the securities lending market. This ratio serves as an essential indicator of market sentiment, where a higher utilization rate typically signals robust demand for borrowing shares, often a precursor to increased short selling activity.

$$\text{Loan Fee} = \text{IndicativeFee} \tag{4}$$

The introduction of these tables aims to elucidate the relationship between ESG events and the Loan Fee, providing a nuanced perspective on how environmental and social factors not only affect the demand for borrowing shares but also how they can lead to variations in the associated costs.

Table 19: Summary Stats for Loan Fee Ratio for Environmental Level

environment	F	T
count	5559.0000	2456.0000
mean	0.0093	0.0161
std	0.0535	0.0832
min	0.0010	0.0010
10%	0.0024	0.0025
25%	0.0027	0.0027
50%	0.0029	0.0030
75%	0.0032	0.0034
90%	0.0036	0.0087
max	1.3447	1.6635

Table 20: Summary Stats for Loan Fee Ratio for Social Level

social	F	T
count	3873.0000	4142.0000
mean	0.0099	0.0128
std	0.0584	0.0691
min	0.0010	0.0010
10%	0.0024	0.0024
25%	0.0027	0.0027
50%	0.0029	0.0029
75%	0.0032	0.0033
90%	0.0037	0.0053
max	1.1712	1.6635

Table 21: Summary Stats for Loan Fee Ratio for Governance Level

governance	F	T
count	5460.0000	2555.0000
mean	0.0125	0.0090
std	0.0710	0.0462
min	0.0010	0.0010
10%	0.0024	0.0024
25%	0.0027	0.0027
50%	0.0029	0.0029
75%	0.0033	0.0032
90%	0.0045	0.0038
max	1.6635	1.0712

Table 22: Summary Stats for Loan Fee Ratio for Novelty Level

novelty	1.000000	2.000000
count	5576.0000	2439.0000
mean	0.0103	0.0139
std	0.0611	0.0707
min	0.0010	0.0010
10%	0.0024	0.0025
25%	0.0027	0.0027
50%	0.0029	0.0029
75%	0.0032	0.0033
90%	0.0037	0.0067
max	1.6635	1.3447

Table 23: Summary Stats for Loan Fee Ratio for Reach Level

reach	1.000000	2.000000	3.000000
count	3036.0000	2283.0000	2696.0000
mean	0.0128	0.0116	0.0097
std	0.0709	0.0662	0.0535
min	0.0010	0.0010	0.0010
10%	0.0024	0.0025	0.0024
25%	0.0027	0.0027	0.0027
50%	0.0029	0.0029	0.0029
75%	0.0033	0.0033	0.0032
90%	0.0053	0.0044	0.0036
max	1.6635	1.1712	1.1238

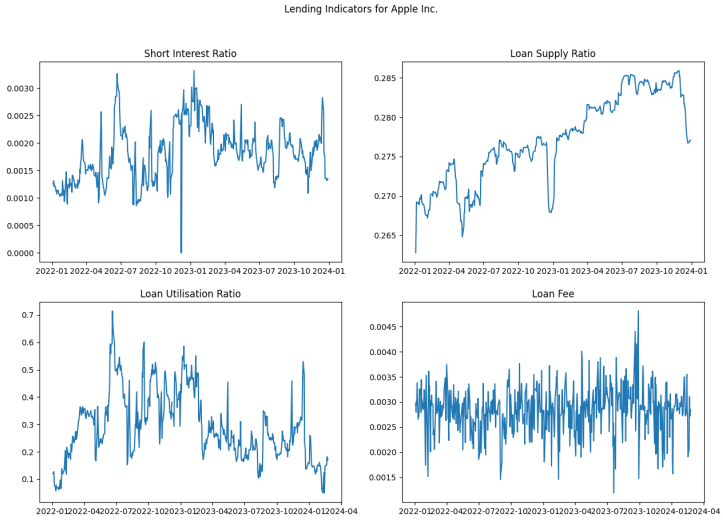
Table 24: Summary Stats for Loan Fee Ratio for Severity Level

severity	1.000000	2.000000	3.000000
count	6116.0000	1611.0000	288.0000
mean	0.0117	0.0109	0.0086
std	0.0672	0.0519	0.0604
min	0.0010	0.0010	0.0012
10%	0.0024	0.0024	0.0023
25%	0.0027	0.0027	0.0027
50%	0.0029	0.0029	0.0028
75%	0.0033	0.0033	0.0032
90%	0.0042	0.0047	0.0034
max	1.6635	1.1238	0.9296

2.5 Ratios Application

INTRODUCTION ON THE GRAPH

Figure 1: Lending Indicators for Apple Inc.



EXPLAIN THE GRAPH