The irrelevance of environmental, social, and governance disclosure to retail investors

Austin Moss, James P. Naughton, Clare Wang
(MS,2024)

石宛青

（武汉大学金融系）

2024 年 5 月 7 日

Motivation

- importance: ESG disclosures attract ESG "taste" investors –influence firms' cost of capital and future operating decisions
- empirical evidence: support conjecture for mutual fund flows (Hartzmark and Sussman, 2019)
- but the evidence on retail investors limited to experimental studies -social desirability bias(Cheng et al., 2015; Martin and Moser, 2016)
- This paper use Robinhood data provide direct evidence on retail investor.

Motivation

- A unique feature of Robinhood: publishes the number of Robinhood investors who own each security in real time.

- other features: no commission fee; fractional Shares trading
- important: can't obtain from other brokerage; can represent retail investor.

Question

- Will retail investors response to ESG press releases?
  - result: no response to ESG press.
  - non-ESG press releases and earnings announcements adjust portfolio significant.
- Why retail investors appear unresponsive to ESG press releases?
  - ESG press not contain economically meaningful information
  - ESG press disseminated so narrowly that investors are unaware of them
  - Investors can't process and integrate information of ESG news into investment
  - All unlikely to explain Q1 findings.

Contribution

- contribute to literature that how ESG disclosures affect firm shareholder base.
  - Prior: ESG disclosure attract ESG-taste、dedicated inst investors, mutual fund (Friedman and Heinle,2016;Dhaliwal et al.,2011; Hartzmark and Sussman,2019)
  - extend: retail investors don't react to ESG disclosures by adjust stock holdings.
- contribute to literature that how investors respond to firms' ESG disclosures.
  - ESG disclosure are economically important, highly visible(Lys et al.,2015)
  - subject in experiments have been found to transact based on ESG disclosures (Hirst et al.,2021;Martin and Moser 2016).
  - extend: by narrowing the unit of analysis to real retail investors.
- contribute to development of ESG disclosure by regulatory entities
  - proposals assumed investors homogeneous, most feedback from inst-investor
  - extend: find retail investors may have different informational needs

Data

- Retail data:trading activities of retail investors use brokerage Robinhood
  - focus on retail
    - first brokerage with zero-commission trades
    - 10 million registered users
    - average age is 31, most are new investors, $4800 in account
  - retrieves the Robinhood popularity data hourly via API: Robintrack
  - sample: 2018.6-2019.12(2020.8 closed)

- ESG press release:
  - all 2203 CSRWire(ES) press releases from 2018.1.1 to 2019.12.31
  - match company name in CRSP/Compustat (477 remaining).
  - not be on the same day as an earnings announcement (460 remaining).
  - searched ESG-related keywordsin RavenPack(G)(460+370=830)

Data

Means by type	N
Environment PR Days	161
Social PR Days	298
Governance PR Days	350
All ESG PR Days	798
Non-ESG PR Days	2,593
EA Days	498
Nonevent Days	24,928

- Non-ESG PR:(source: RavenPack) firm release not ESG related news and not issue an ESG news or announce earnings

Design: Q1

- Will retail investors response to ESG press releases?

$$RI\_RESPONSE_{i,t} = \alpha + \beta_1 ESG\ PR\ Day_{i,t} + \beta_2 Non-ESG\ PR\ Day_{i,t} + \beta_3 EA\ Day_{i,t} + \sum \gamma_j Controls_{i,t} + Fixed\ Effects + \epsilon_{i,t}$$

- $RI\_RESPONSE_{i,t}$:
  - $\Delta RI_{t-1,t+1}$: aggregate change in the number of Robinhood investors in t-1 to t+1
  - $Abs.\Delta RI_{t-1,t+1}$: absolute value of $\Delta RI_{t-1,t+1}$
  - $Adj.\Delta RI_{t-1,t+1}$: actual-expect change(i's percent in t-1*all holding in 3d window)
  - $Abs.Adj.\Delta RI_{t-1,t+1}$: absolute value of $Adj.\Delta RI_{t-1,t+1}$
  - $\Delta RI\ Volatility_{t-1,t+1}$standard deviation of hourly changes in 3d window

result: Q1

Dependent variables	(1) $\Delta RI_{t-1,t+1}$	(2) *Adj.* $\Delta RI_{t-1,t+1}$	(3) ΔRI *Volatility* $_{t-1,t+1}$	(4) *Abs.* $\Delta RI_{t-1,t+1}$	(5) *Abs. Adj.* $\Delta RI_{t-1,t+1}$
Event variables					
(1) *ESG PR Day*	0.003	0.004	0.001	−0.164	−0.149
	(0.02)	(0.02)	(0.08)	(−1.12)	(−1.02)
(2) *Non-ESG PR Day*	0.843***	0.891***	0.051***	0.456***	0.269**
	(5.11)	(5.23)	(6.02)	(3.59)	(2.22)
p-value: (1) = (2)	[0.001]	[0.001]	[0.000]	[0.001]	[0.022]
(3) *EA Day*	6.388***	6.284***	0.495***	5.172***	3.661***
	(11.03)	(11.07)	(13.14)	(10.15)	(7.63)
Control variables					
$Return_{t-5,t-2}$	−0.150***	−0.153***	0.000	−0.007	0.057***
	(−10.09)	(−10.05)	(0.57)	(−0.53)	(4.57)
$Return_{t-25,t-6}$	−0.003	−0.003	−0.000	−0.008*	0.003
	(−0.48)	(−0.43)	(−0.85)	(−1.74)	(0.56)
Firm FE and date FE	Included	Included	Included	Included	Included
Adjusted R^2	0.100	0.206	0.618	0.441	0.541
N	28,817	28,817	28,817	28,817	28,817

- investors respond to non-ESG press release, especially earning announcemen, but no response to ESG press release.
- other retail measure:retail trade fractional pennies.(Boehmer,2021) -robust

Design: Q2.1-assessing the Economic Content

- Q2.1: ESG press not contain economically meaningful information
- examine overall stock price and volume response to each type of event day:

$$Abs.CAR_{t-1,t+1} = \alpha + \beta_1 ESG\ PR\ Day_{i,t} + \beta_2 Non-ESG\ PR\ Day_{i,t} + \beta_3 EA\ Day_{i,t} + \sum \gamma_j Controls_{i,t} + Fixed\ Effects + \epsilon_{i,t}$$

$$ShareTurnover_{t-1,t+1} = \alpha + \beta_1 ESG\ PR\ Day_{i,t} + \beta_2 Non-ESG\ PR\ Day_{i,t} + \beta_3 EA\ Day_{i,t} + \sum \gamma_j Controls_{i,t} + Fixed\ Effects + \epsilon_{i,t}$$

- explore how the economic content news influences-group by stock return on t
  - ESG PR Day variable into 3groups: Q4(1.73%),Q2 and Q3(0.13%),Q1(-1.74%)
  - Non-ESG PR Day Q4(2.10%),Q2 and Q3(0.13%),Q1(-2.01%)

Results：Q2.1-Economic Content

Dependent variables	(1) *Abs. CAR*$_{t-1,t+1}$	(2) *Share Turnover*$_{t-1,t+1}$
Event variables		
(1) *ESG PR Day*	0.100*	0.001***
	(1.93)	(3.30)
(2) *Non-ESG PR Day*	0.232***	0.002***
	(6.35)	(8.45)
p-value: (1) = (2)	[0.039]	[0.002]
(3) *EA Day*	2.111***	0.015***
	(17.08)	(21.46)
Control variables		
Size	−0.327***	−0.005***
	(−3.09)	(−9.23)
M/B	0.002***	−0.000
	(2.76)	(−0.23)
Return$_{t-251,t-26}$	−0.000	−0.000***
	(−0.52)	(−3.44)
Firm FE and date FE	Included	Included
Adjusted R^2	0.203	0.704
N	28,817	28,817

- both ESG and non-ESG press releases generate an overall market response.

Results：Q2.1-Economic Content

- Q4、Q1:higher |stk return|-higher economic content，expect stronger response

Dependent variables	(1) $\Delta RI_{t-1,t+1}$	(2) $Adj.\Delta RI_{t-1,t+1}$	(3) $\Delta RI\ Volatility_{\ t-1,t+1}$	(4) $Abs.\Delta RI_{t-1,t+1}$	(5) $Abs.\ Adj.\ \Delta RI_{t-1,t+1}$
Event variables					
ESG PR Day (Q4) expect:(***)	−0.625	−0.693*	0.024	0.384	0.369
	(−1.45)	(−1.78)	(1.31)	(1.25)	(1.30)
ESG PR Day (Q2 & Q3) expect:()	0.006	0.005	−0.018	−0.593***	−0.379*
	(0.02)	(0.02)	(−1.30)	(−2.91)	(−1.75)
ESG PR Day (Q1) expect:(***)	0.600	0.675	0.013	0.121	−0.222
	(1.49)	(1.62)	(0.64)	(0.43)	(−0.74)
Non-ESG PR Day (Q4)	0.642**	0.659**	0.094***	0.635**	0.325
	(2.01)	(2.09)	(5.37)	(2.53)	(1.34)
Non-ESG PR Day (Q2 & Q3)	0.157	0.235	−0.001	−0.103	−0.055
	(0.78)	(1.11)	(−0.10)	(−0.71)	(−0.36)
Non-ESG PR Day (Q1)	2.391***	2.409***	0.111***	1.375***	0.847***
	(6.70)	(6.64)	(6.32)	(4.69)	(3.14)
EA Day	6.396***	6.292***	0.495***	5.180***	3.665***
	(11.08)	(11.11)	(13.20)	(10.19)	(7.65)

- Q1 and Q4 on non-ESG day:Retail investors are adjusting their portfolios
- economic content can't explain why retail investors not response to ESG

Design: Q2.2-assessing the Role of Visibility

- Q2.2: ESG press disseminated so narrowly that investors are unaware of them
- TVL data:locates and analyzes ESG-relevant articles from external sources for each company to produce a daily Pulse score

	N	$\Delta TVL\ Score_t$	$Abs.\ \Delta TVL\ Score_t$
ESG PR Days	450	0.095	1.430
Non-ESG PR Days	1,664	−0.020	1.127
EA Days	343	0.070	0.937
Nonevent Days	16,357	0.010	0.751

- explore how the visibility influences-group by $\Delta\, TVL\ Score_t$
  - ESG PR Day variable into 3groups: Q4(2.48),Q2 and Q3(0.00),Q1(-2.24)

Results: Q2.2-Visibility

- Q4:higher TVL score-higher visibility, expect stronger response

Dependent variables	(1) $\Delta RI_{t-1,t+1}$	(2) *Adj.* $\Delta RI_{t-1,t+1}$	(3) ΔRI *Volatility* $_{t-1,t+1}$	(4) *Abs.* $\Delta RI_{t-1,t+1}$	(5) *Abs. Adj.* $\Delta RI_{t-1,t+1}$
Event variables					
ESG PR Day (Q4) expect:(***)	0.124	−0.001	−0.002	−0.515	−0.626
	(0.21)	(−0.00)	(−0.07)	(−1.38)	(−1.37)
ESG PR Day (Q3 & Q2) expect:()	0.236	0.203	0.011	0.019	−0.198
	(0.83)	(0.75)	(0.75)	(0.08)	(−0.91)
ESG PR Day (Q1) expect:()	0.220	0.357	−0.005	−0.703	−0.680
	(0.32)	(0.54)	(−0.14)	(−1.33)	(−1.23)
Non-ESG PR Day	0.838***	0.956***	0.060***	0.462***	0.299**
	(4.01)	(4.34)	(5.33)	(2.90)	(1.98)
EA Day	6.998***	6.983***	0.503***	5.219***	3.321***
	(10.05)	(10.10)	(11.03)	(8.53)	(5.91)

- Visibility is unlikely to explain why retail investors not response

Design: Q2.3-assessing the Role of Visibility

- Q2.3: Investors can't process and integrate information of ESG news into investment
- "100 Best Companies to Work for"
  - earned abnormal returns of 3.5% per year from 1984 to 2009(Edmans, 2011)
  - highly visible event,economic content that is relatively easy to process

$$RI\_RESPONSE_{i,t} = \alpha + \beta_1 BetterRank_{i,t} + \sum \gamma_j Controls_{i,t} + \epsilon_{i,t}$$

- $BetterRank_{i,t}$: rank improve or get on list this year

Results：Q2.3-investors process and integrate

Dependent variables	(1) $\Delta RI_{t-1,t+1}$	(2) *Adj.* $\Delta RI_{t-1,t+1}$	(3) ΔRI *Volatility* $_{t-1,t+1}$	(4) *Abs.* $\Delta RI_{t-1,t+1}$	(5) *Abs. Adj.* $\Delta RI_{t-1,t+1}$
Event variable					
Better Rank expect:+(***)	1.713	−3.965	0.408	4.493	4.716
	(0.44)	(−1.12)	(1.12)	(1.20)	(1.22)
Control variables					
$Return_{t-5,t-2}$	0.841***	0.804***	0.037	0.475	0.206
	(2.69)	(2.78)	(1.21)	(1.38)	(0.50)
$Return_{t-25,t-6}$	−0.115	0.160	−0.015*	−0.178**	−0.261**
	(−1.62)	(1.49)	(−1.91)	(−2.32)	(−2.33)
Size	2.757***	−6.051***	0.471***	4.502***	7.576***
	(3.55)	(−5.35)	(6.60)	(5.99)	(6.30)
M/B	0.017	0.007	0.002	0.010	0.004
	(0.97)	(0.34)	(1.00)	(0.58)	(0.18)
ROA	−0.074	0.676***	−0.030**	−0.147	−0.595***
	(−0.52)	(3.64)	(−2.05)	(−1.04)	(−2.93)
Adjusted R^2	0.048	0.078	0.087	0.078	0.086
N	941	941	941	941	941

- retail investors do not respond to the Best100 announcement, even it is a highly visible event with economic content that is relatively easy to process.

New ideas

- 中国的情况；新的解释如散户的绿色意识不够？机构与散户的反应为何不同？
- 拥有每小时散户数据的新应用：如头版新闻、事件反应、散户情绪投资策略……

Q&A

- P2: unique feature 为何重要?
  - 另类数据: 某只股票每小时的投资者人数（其他机构不会公布)。
  - 该机构吸引大量散户投资者，可作为散户代理变量。
- P12: Results：Q2.1 中为何 non-ESG days Q1 系数显著为正?
  - 文章根据当天股票收益率大小分组，Q4 和 Q1 组分别为 return 最大或最小组，表明当日新闻的经济内容最多，理论上散户的投资组合调整会更为强烈，会对散户投资者数量变化的影响更显著。
  - 而散户为何会购买引起股价下跌新闻当日的股票，文中没有解释，推测可能是散户无法分辨，仅因为文章受到关注盲目买进；本文只需证明投资者调整组合，对方向没有进一步研究。

Q&A

- P16: Q2.3 中控制变量的设计与之前不同?
  - Q1,Q2.1,Q2.2 控制了 $Return_{t-5,t-2}$,$Return_{t-25,t-6}$, 控制了 firm 和 date 固定效应。
  - Q2.3 控制了 $Return_{t-5,t-2}$,$Return_{t-25,t-6}$,Size,M/B,ROA, 没有控制固定效应。
  - 由于 Best 100 仅在 2019 和 2020 年分别公布一次，因此文章不再控制固定效应，故加入 ROA 等控制变量补充方程。
  - 我认为这里其实应该控制公司层面的固定效应会更规范。

- 你会如何设计解决研究问题?
  - Q2.3 中解决投资者难以处理信息问题时，使用 Best 100 感觉不是很可信，也不能完全代理 ESG 新闻，可以使用文本分析衡量文章可读性，或之前的 chatgpt 方法衡量冗余性。
  - 其他猜想：散户低估了 ESG 的价值。检查散户对 ESG 评级变动是否有反应；检查散户对 ESG 更高的公司是否关注更多；如果有反应则表明散户认可 ESG 价值，只是对新闻发布的不信任或其他原因等。

Thanks!