Do stock prices react to ESG sentiment?

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Abstract

We study the links between corporate ESG (Environmental, Social and Governance) issues and stock prices. We create ESG-related sentiment proxies using internet search and social media data (Google and Twitter). Using these innovations in ESG measures adds to current literature relying on ESG rankings, which are prone to misclassification. We find that companies with high ESG scores deliver low returns on average, but high short-term returns in times of heightened ESG concerns, measured both using heightened social media interest in ESG (at the company or economy-wide level), or positive ESG sentiment (from Twitter). While our results cannot be explained by investor sentiment (Baker and Wurgler, 2006) alone, they are consistent with the equilibrium models of Pastor et al. (2021) and Pedersen et al. (2021)

Research question

Are (time varying) interest in ESG issues (measured from social media) linked to stock prices (returns).
(Here ESG are Environmental, Social and Governance aspects of corporate decisions (**?**).)

Literature

Modeling why ESG may affect firms cost of capital (returns)?

Asset Pricing Theory

- The pecuniary view.
  - Stock prices do not fully reflect future ESG consequences (e.g. climate).
  - Short-termism (**?**)

  → Higher long term returns for better ESG.
- The non-pecuniary view.
  Investors assumed to put extra utility on "good ESG" (e.g. sustainable) firms.
  - Equilibrium models – trade-off ESG/Cost of Capital
    – **? ?**

  → "Good" ESG can sustain lower returns.

Empirical research

- Favor the non-pecuniary view
  (negative green return premium)

With this perspective: Changes in ESG information (innovations) lead to changes in cost of capital, with consequences for returns.

Investor sentiment

Alternative theoretical framing:
Investor Sentiment: Stock prices can deviate from fully rational prices due to limits to arbitrage (**?**).
Our application: Is ESG a separate source of investor sentiment (*ESG Sentiment*?

With this perspective: Optimism/Pessimism about ESG leads to changes in returns.

This investigation

- Construct measures of *ESG sentiment*.
  - Social media
    - Keywords identify attention in Twitter and Google search to interest in
      ESG aggregated
      E, S and G separately.

Details of Social Media Measures

- Company level
  - Search volume in Google
  - Twitter volume
- Economy level
  - Search volume in Google
- Sentiment analysis to characterize posts as positive/negative
- Detrended

Regressions

Summarized as

$$r_{it} = f(ESG\ news_{it}, ESG\ level_{it}, \mathbf{X}_{it}),$$

where

- r_{it} is the stock returns for stock i in period t,
- $ESG\ news_{it}$ the measure using Internet data,
- $ESG\ level_{it}$ a measure of the ESG ranking of the firm
- $\mathbf{X}_{it}$ a vector of alternative factors relevant for short-term stock returns.
  - Firm size
  - Trading volume
  - Liquidity
- VIX – measure of stock market volatility

Example Regression – Weekly returns

	Dependent variable: Weekly return, R_{it}				
	(1)	(2)	(3)	(4)	(5)
$AbSVI_{i,t-1}$	-0.073^{**}	-0.182^{**}	-0.105^{**}	-0.140^{**}	-0.160^{**}
	(0.015)	(0.051)	(0.023)	(0.043)	(0.053)
$AbSVI_{i,t-1} \times ESG_{i,t-1}$		0.304^{**}			
		(0.110)			
$AbSVI_{i,t-1} \times E_{i,t-1}$			0.172^{**}		
			(0.054)		
$AbSVI_{i,t-1} \times S_{i,t-1}$				0.179^{*}	
				(0.083)	
$AbSVI_{i,t-1} \times G_{it-1}$					0.185^{*}
					(0.092)
$AbVolume_{i,t-1}$	-0.419^{*}	-0.420^{*}	-0.420^{*}	-0.419^{*}	-0.420^{*}
	(0.172)	(0.173)	(0.172)	(0.172)	(0.173)
$BidAsk_{i,t-1}$	40.266^{*}	40.267^{*}	40.263^{*}	40.269^{*}	40.264^{*}
	(17.086)	(17.086)	(17.085)	(17.087)	(17.086)
$MCAP_{i,t-1}$	-1.067^{**}	-1.067^{**}	-1.067^{**}	-1.067^{**}	-1.066^{**}
	(0.119)	(0.119)	(0.119)	(0.119)	(0.118)
R^2	0.003	0.003	0.003	0.003	0.003
No obs	581,600	581,600	581,600	581,600	581,600

Key Results

Times of heightened ESG interest (either at the company level or economy-wide) is associated with increased in stock prices.

- Consistent with an asset pricing model of negative greenium: ESG positive news induce higher demand, increasing short term returns (lowering long term returns)
- Not consistent with Investor ESG Sentiment model. Results imply optimism increasing in ESG, not consistent with negative relation between ESG *level* and returns.