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When ESG meets AAA: the effect of ESG rating changes on stock returns.

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When ESG meets AAA:

The effect of ESG rating changes on stock returns

Abstract

This study is the first to employ calendar-time portfolio methodology to investigate the impact of 748 ESG rating changes on stock returns of US firms over 2016-2021. While ESG rating upgrades lead to positive yet inconsistently significant abnormal returns of 0.5% per month, downgrades are detrimental to stock performance, leading to statistically significant monthly risk-adjusted returns of -1.2% on average. These findings are more pronounced for ESG leaders than laggards and are robust to various asset-pricing model specifications. The effects of ESG rating levels are modest, with ESG laggards underperforming in risk-adjusted terms.

Keywords: ESG; ESG investing; ESG rating; socially responsible investment; calendar-time portfolio; event study

JEL codes: G12, G14, G24

Introduction and Literature Review

Environmental, social, and governance (ESG) factors have been successfully incorporated into the financial mainstream recently. Reflecting upon this, publicly traded firms are being increasingly ESG-rated, and a voluminous body of research has emerged seeking to investigate the implications of such ratings for investing and stock performance. Nevertheless, the findings of the recent studies remain mixed and contradictory (Cornell, 2021).

In the current state of the academic debate, some research finds material outperformance for portfolios and funds formed of high-ESG stocks (Khan, 2019; Alda, 2020; Consolandi et al., 2020), while others argue there is no statistically significant difference in their risk-adjusted returns (Halbritter and Dorfleitner, 2015; Naffa and Fain, 2021). Hubel and Scholtz (2020) document that, conversely, low-ESG stocks outperform high-ESG stocks and attribute that to the transition risks associated with investment in stocks with poor environmental, social, and governance performance. The risk content of ESG ratings in times of market stress is reinforced by Broadstock et al. (2021) who find that companies with high ESG ratings performed better during the COVID-19 pandemic in China and by Ferriani and Natoli (2020), who report strong investor preferences for low-ESG risk funds at the start of the pandemic globally. Conversely, Folger-Laronde et al. (2020) argue that socially responsible investments on the fund level do not perform better subject to market downturns. Highlighting the lack of consensus in the literature on ESG risk and firm performance, Cornell (2021, p. 18) concedes “the jury is still out on whether there is an ESG risk factor”.

The informational value of ESG ratings has also been actively debated, with Dimson et al. (2020) and Gyonyorova et al. (2021) arguing that the divergence of ESG ratings from competing agencies make their usability in investment strategies and stock screening limited at best. Gibson et al. (2019) suggest the relationship between ratings and performance can be more nuanced, with disagreement in ratings playing a key role in proxying risk- and mispricing-

related factors. Clementino and Perkins (2020) suggest that managers of ESG-rated companies might manipulate reporting practices to appear more ethical and attractive to socially responsible investors. Nevertheless, other studies highlight the fundamental benefits of ESG certifications, including lower cost of capital and higher Tobin's Q (Wong et al., 2021).

It is puzzling that, unlike the literature on conventional credit ratings (Holthausen and Leftwich, 1986; Choy et al., 2006; Avramov et al., 2009) that consistently finds robust effects of rating changes, the existing research on ESG ratings is primarily concerned with their levels, constituting a notable gap in the literature this study seeks to address. There has been some overlap between the credit ratings and ESG studies, with Kiesel and Lucke (2019) employing event study methodology to find positive abnormal returns and reductions in credit default swap rates responding to ESG-related disclosure provided by Moody's credit ratings. Furthermore, Jiraporn et al. (2014) and Attig et al. (2013) evidence that firms practising corporate social responsibility enjoy higher conventional credit ratings. Nevertheless, there has been no research to date investigating the effect of specialised ESG rating upgrades and downgrades on stock returns. Therefore, this study seeks to fill this gap in the literature.

The rest of the paper is organised as follows. The next section discusses the data utilised by this study and the calendar-time portfolio methodology applied to test for stock performance implications of ESG rating changes. The findings section presents the empirical results and robustness checks. The final section concludes.

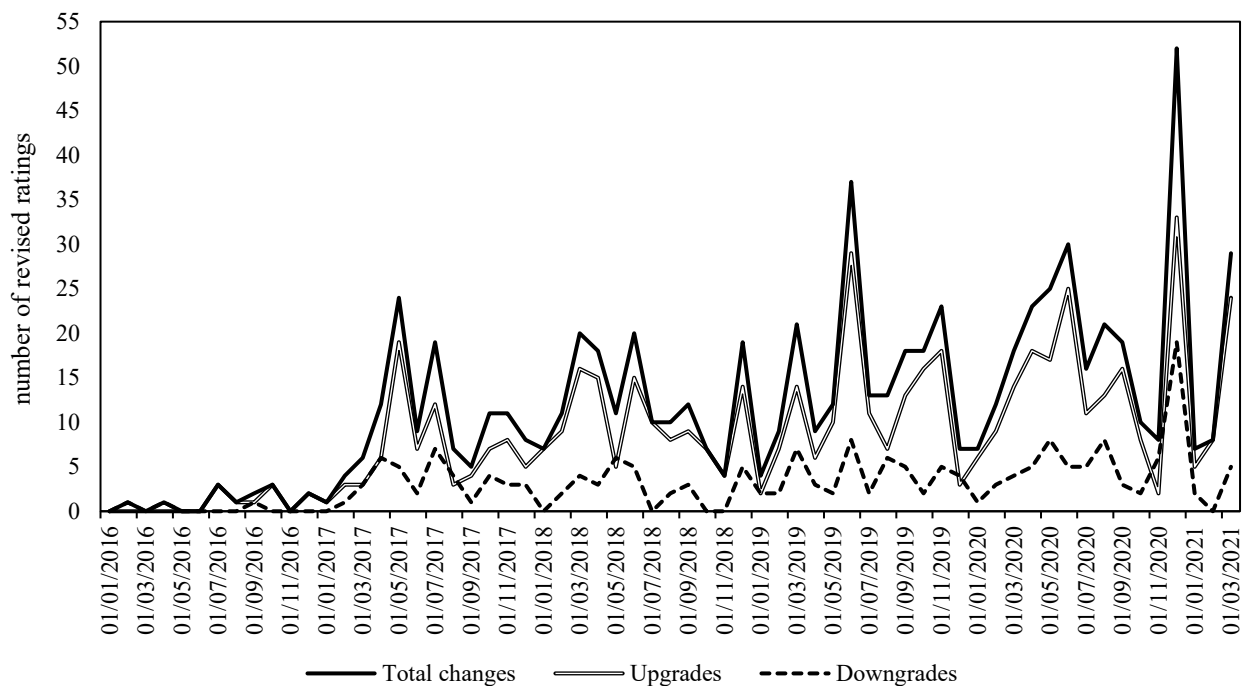
Data and Methodology

This study manually collects the data on ESG ratings of all 658 firms publicly traded on US exchanges and rated by Morgan Stanley Capital International (MSCI) from January 2016 until March 2021, reflecting data availability. MSCI ratings assess the social performance of companies and their resilience to ESG risks exclusively, assigning firms into one of seven

categories, from CCC up to AAA, analogous to conventional credit ratings. ESG leaders are defined as companies rated AAA or AA, while CCC- and B-rated firms are considered ESG laggards.

The sample contains 748 rating changes, including 552 upgrades and 196 downgrades. In 96.92% (93.37%) of documented cases, firms are upgraded (downgraded) by one category. Only 17 (13) company-month observations record more rapid upgrades (downgrades). The dynamics of rating changes across the sample period can be seen in Figure 1. Evidently, there were few rating changes in 2016, with more updates consistently documented since 2017. This property of the data is reflected when designing and conducting the robustness checks.

Figure 1. The dynamics of MSCI ESG rating changes.



Since the data on ESG rating updates is available on monthly frequency only, the use of conventional event study methodology is inappropriate to generate inferences on the implications of ESG ratings for stock performance. Instead, this study resorts to the calendar-time portfolio approach as in Jaffe (1974) and Mitchell and Stafford (2000). Previously, this

methodology has been successfully applied to CEO turnover (Demirtas and Simsir, 2016) and confidential short-sales disclosure (Galema and Gerritsen, 2019).

Each month, a value-weighted portfolio of stocks subject to ESG rating changes is formed for upgrades and downgrades separately and the significance of its risk-adjusted excess returns is tested using (1) CAPM, (2) a Carhart (1997) four-factor model, and (3) a Fama-French (2015) multi-factor model augmented with momentum:

$$ER_{it} = \alpha_i + \beta_{1i}EMR_t + \varepsilon_{it} \quad (1)$$

$$ER_{it} = \alpha_i + \beta_{1i}EMR_t + \beta_{2i}SMB_t + \beta_{3i}HML_t + \beta_{4i}MOM_t + \varepsilon_{it} \quad (2)$$

$$ER_{it} = \alpha_i + \beta_{1i}EMR_t + \beta_{2i}SMB_t + \beta_{3i}HML_t + \beta_{4i}MOM_t + \beta_{5i}RMW_t + \beta_{6i}CMA_t + \varepsilon_{it} \quad (3)$$

where ER_{it} is the excess total return of calendar-time portfolio i in month t , while EMR_t , SMB_t , HML_t , MOM_t , RMW_t , and CMA_t are monthly US-specific value-weighted market, size, value, momentum, profitability, and investment factors retrieved from the Kenneth French database, with β_{ji} representing the respective factor loadings. Excess returns have been calculated by subtracting the respective monthly risk-free rate obtained from the same source.

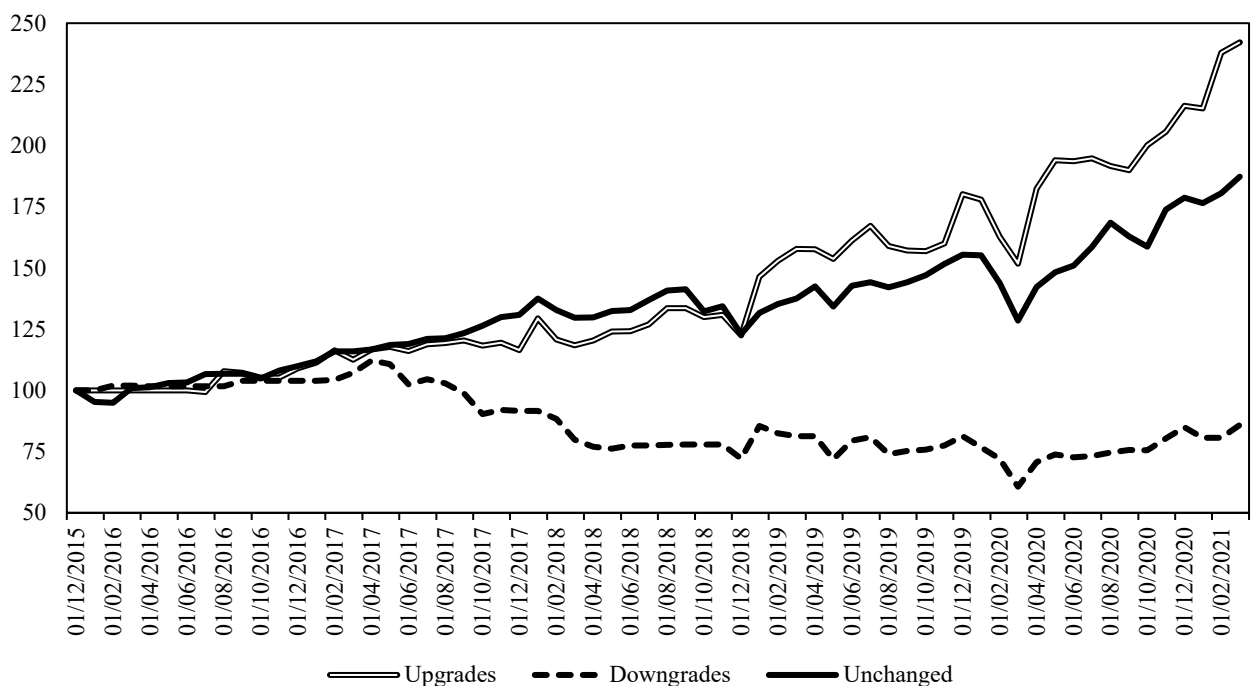
The estimations are executed for calendar-time portfolios of rating upgrades and downgrades as well as for a control group of rated companies whose ESG ratings remained unchanged at a particular month, and for zero-investment portfolios of upgrades minus downgrades (U-D), upgrades minus unchanged (U-C), and downgrades minus unchanged (D-C). The significance of intercepts α_i is used to generate inferences regarding the stock performance implications of ESG ratings. Interestingly, the alphas of control group portfolios and upgrades and downgrades portfolios can be interpreted as estimators of ESG risk premia and impact-shock premia, respectively, a distinction prominent in political risk literature (Shanaev and Ghimire, 2019) but not applied yet in research on ESG ratings.

As additional robustness checks, the same estimations are also performed for calendar-time portfolios formed on upgrades and downgrades in a [-1; 1] month window, i.e., for

overlapping three-month periods; for the subsample starting in January 2017 when rating updates became more often; for ESG leaders and laggards separately; as well as for double sorts on market capitalisation and book-to-market ratio. Finally, to study the differential impact of the COVID-19 pandemic, the equations (1-3) are also estimated with a differential intercept δ_i using a dummy variable equal to one starting from March 2020 and zero otherwise.

The excess returns of calendar-time portfolios of upgraded, downgraded, and unchanged (control group) stocks are calculated, and their performance is reported in Figure 2. While upgraded companies perform quite similarly to the control group, with outperformance slightly accumulating in 2019 and 2020, the divergence of performance in ESG-downgraded firms from the rest of the sample is immediately apparent. These early findings are also consistent with Broadstock et al. (2021) but contradict Folger-Laronde et al. (2020), as ESG upgrades and downgrades seem to aid and depress stock price recovery, respectively, after the stock market crash in March 2020. Such stylised facts are overwhelmingly supported by further estimation results discussed in the next section.

Figure 2. Calendar-time portfolio performance.



Findings and Discussion

Table 1 reports the intercepts of asset-pricing models, with standard errors outlined in parentheses and p-values presented in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. The presentation format is the same for all remaining tables. The findings are robust to covariance matrix definitions as well as in ARCH and GARCH specifications. Data and code for all estimations are available upon request.

Baseline estimation results highlight the notable underperformance of ESG-downgraded stocks, documenting statistically and economically significant negative abnormal risk-adjusted returns of -1.1% to -1.2% per month (see Table 1). The significance is maintained in regressions of zero-investment portfolios that compare downgraded companies to their upgraded and unchanged counterparts. ESG rating upgrades, in turn, are associated with positive albeit insignificant abnormal returns. In this regard, ESG ratings are similar to conventional credit ratings, where the asymmetry of responses to positive and negative rating changes is also widely documented (Choy et al., 2006; Avramov et al., 2009).

Table 1. Baseline estimation results: calendar-time portfolios for period [0;0].

Model	Portfolios			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.5721	-1.1963**	-0.0235	1.7684***	0.5956	-1.1728**
	(0.5226)	(0.5153)	(0.0603)	(0.5331)	(0.5272)	(0.5224)
	<i>0.2779</i>	<i>0.0236</i>	<i>0.6973</i>	<i>0.0015</i>	<i>0.2630</i>	<i>0.0284</i>
Carhart four-factor	0.6055	-1.1268**	-0.0402	1.7323***	0.6457	-1.0865**
	(0.5419)	(0.4782)	(0.0420)	(0.5252)	(0.5432)	(0.4870)
	<i>0.2685</i>	<i>0.0219</i>	<i>0.3416</i>	<i>0.0017</i>	<i>0.2394</i>	<i>0.0295</i>
Fama-French six-factor	0.6788	-1.1999**	-0.0421	1.8786***	0.7209	-1.1577**
	(0.5506)	(0.4788)	(0.0416)	(0.5080)	(0.5512)	(0.4899)
	<i>0.2228</i>	<i>0.0151</i>	<i>0.3153</i>	<i>0.0005</i>	<i>0.1962</i>	<i>0.0216</i>

Accounting for possible anticipation and adjustment effects for ESG rating changes to ensure the robustness of the results, the models are further estimated for the three-month overlapping period including the announcement month and one month before and after the rating changes

(see Table 2). The results persist in such specification, with a statistically and economically significant negative abnormal risk-adjusted return of -1.1% to -1.2% per month for downgraded stocks, consistent in all three asset-pricing models. For zero-investment calendar-time portfolios, the significant performance spreads between upgraded and downgraded companies and especially between downgraded companies and the control group reinforce the validity of the results.

Table 2. Robustness check: calendar-time portfolios in the overlapping period [-1;1].

Model	Portfolios			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.5293	-1.2179**	-0.0435	1.7472***	0.5728	-1.1744**
	(0.3637)	(0.5113)	(0.0611)	(0.6079)	(0.3670)	(0.5170)
	<i>0.1508</i>	<i>0.0203</i>	<i>0.4789</i>	<i>0.0056</i>	<i>0.1238</i>	<i>0.0267</i>
Carhart four-factor	0.5015	-1.1064**	-0.0612	1.6080**	0.5628	-1.0452**
	(0.3754)	(0.5211)	(0.0412)	(0.6192)	(0.3820)	(0.5184)
	<i>0.1867</i>	<i>0.0380</i>	<i>0.1424</i>	<i>0.0119</i>	<i>0.1461</i>	<i>0.0484</i>
Fama-French six-factor	0.4656	-1.1652**	-0.0610	1.6308**	0.5266	-1.1042**
	(0.3785)	(0.5275)	(0.0394)	(0.6225)	(0.3826)	(0.5264)
	<i>0.2238</i>	<i>0.0313</i>	<i>0.1268</i>	<i>0.0113</i>	<i>0.1742</i>	<i>0.0405</i>

Next, to address the low number of upgrades and downgrades in 2016 shortly after the start of the sample, this study also performs the estimation for a subsample starting in January 2017 and reports the estimation results in Table 3. The consistency of previously established results is largely reinforced in this specification, with their magnitude increasing as compared to Tables 1 and 2. The explanation for such an effect can be two-fold. First, as more ESG ratings started being revised from January 2017, and calendar-time portfolios naturally become more diversified, the corresponding estimators are less noisy. Second, as rating changes become more active, they arguably reveal more timely and relevant information onto the market.

Table 3. Robustness check: results for the sample starting January 2017.

Model	Portfolios			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.5399 (0.3352) <i>0.1137</i>	-1.4084*** (0.4941) <i>0.0064</i>	-0.0331 (0.0707) <i>0.6417</i>	1.9483*** (0.6156) <i>0.0027</i>	0.5730 (0.3512) <i>0.1092</i>	-1.3753*** (0.5084) <i>0.0094</i>
Carhart four-factor	0.5753 (0.3590) <i>0.1159</i>	-1.0532** (0.5087) <i>0.0441</i>	-0.0409 (0.0468) <i>0.3869</i>	1.6285** (0.6552) <i>0.0166</i>	0.6162 (0.3726) <i>0.1049</i>	-1.0123* (0.5137) <i>0.0548</i>
Fama-French six-factor	0.5828* (0.3421) <i>0.0955</i>	-1.0548** (0.5205) <i>0.0488</i>	-0.0438 (0.0448) <i>0.3332</i>	1.6377** (0.6457) <i>0.0148</i>	0.6266* (0.3498) <i>0.0801</i>	-1.0110* (0.5272) <i>0.0617</i>

Tables 4 and 5 present the results for ESG leaders and laggards. The stock price reaction to rating changes is much more pronounced for initially high-rated companies than for initially low-rated companies, contrary to the typical findings in the credit ratings literature where the impact is more material for lower-rated companies (Choy et al., 2006; Avramov et al., 2009). This augments the perspective of earlier research on ESG ratings and funds (Alda, 2020), suggesting that ESG considerations are especially important for institutional investors seeking to screen for the most socially responsible stocks, with increases (decreases) in ratings promptly causing such investors to increase (decrease) exposure to upgraded (downgraded) firms. Conversely, marginal changes in ratings for ESG laggards are not impactful, implying that ESG-conscious investors are using positive or best-in-class screening and not negative screening. For control group portfolios formed of leaders and laggards, some significant yet small abnormal returns are observed, mostly for low-rated firms. The monthly performance spread between leaders and laggards with unchanged ESG ratings equals 0.36% in the six-factor model. These findings support Khan (2019) and Broadstock et al. (2021) and contradict Hubel and Scholtz (2020) and Naffa and Fain (2021). From a risk-based explanation, they present a puzzle, as investors seem to pay a premium, albeit a modest one, for holding stocks

less resilient to ESG risks. Nevertheless, the performance effects of ESG rating levels are quite small, and rating upgrades and downgrades are shown to be more material for investors.

Table 4. Estimation results for ESG leaders.

Model	Portfolios			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.8489*	-1.1627**	0.2558*	2.0116***	0.5931	-1.4185***
	(0.4898)	(0.4654)	(0.1436)	(0.6236)	(0.5203)	(0.4997)
	<i>0.0881</i>	<i>0.0152</i>	<i>0.0798</i>	<i>0.0020</i>	<i>0.2588</i>	<i>0.0061</i>
Carhart four-factor	0.8578*	-1.0332**	0.1556	1.8910***	0.7023	-1.1887**
	(0.5115)	(0.4627)	(0.1103)	(0.6326)	(0.5358)	(0.4723)
	<i>0.0989</i>	<i>0.0294</i>	<i>0.1638</i>	<i>0.0041</i>	<i>0.1951</i>	<i>0.0146</i>
Fama-French six-factor	0.8494	-1.0654**	0.1569	1.9148***	0.6925	-1.2223**
	(0.5238)	(0.4569)	(0.1016)	(0.6291)	(0.5434)	(0.4776)
	<i>0.1105</i>	<i>0.0233</i>	<i>0.1282</i>	<i>0.0036</i>	<i>0.2078</i>	<i>0.0132</i>

Table 5. Estimation results for ESG laggards.

Model	Portfolios			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.2872	-0.4101	-0.3006***	0.6974	0.5878	-0.1096
	(0.4093)	(0.5543)	(0.1124)	(0.6908)	(0.4306)	(0.5473)
	<i>0.4855</i>	<i>0.4622</i>	<i>0.0096</i>	<i>0.3167</i>	<i>0.1772</i>	<i>0.8420</i>
Carhart four-factor	0.2582	-0.3802	-0.2284**	0.6383	0.4866	-0.1517
	(0.4126)	(0.5684)	(0.1015)	(0.7151)	(0.4323)	(0.5566)
	<i>0.5339</i>	<i>0.5062</i>	<i>0.0283</i>	<i>0.3758</i>	<i>0.2650</i>	<i>0.7862</i>
Fama-French six-factor	0.1936	-0.4074	-0.2060**	0.6010	0.3996	-0.2014
	(0.4086)	(0.5819)	(0.1015)	(0.7233)	(0.4243)	(0.5685)
	<i>0.6374</i>	<i>0.4868</i>	<i>0.0472</i>	<i>0.4095</i>	<i>0.3504</i>	<i>0.7244</i>

Table 6 outlines the differential impact of the COVID-19 pandemic on ESG rating implications for stock performance, reporting the differential intercept δ for the COVID-19 period alongside the full-sample intercept α . ESG downgrades remain detrimental to stock performance, with differential intercepts negative albeit insignificant. However, rating upgrades are shown to boost stock performance by more than 2% per month after March 2020, which is both statistically and economically significant. This overwhelmingly supports the findings of Broadstock et al. (2021) who argue ESG risk management is crucial during market turbulence,

and Ferriani and Natoli (2020), who highlight that investor preference for ESG increased at the start of the pandemic. Another rationale for such a strong effect could involve resilience signalling by listed firms, as investors might consider corporations who continue to engage in corporate social responsibility practices during crises more financially sound, which is especially important subject to increased uncertainty. Alternatively, this can be partially explained by increased activity of individual investors having more spare time during lockdowns to research stocks, including their ESG ratings, which coincidentally became publicly available free of charge at the end of 2019. If these speculations prove true, ESG ratings could become even more important for stock performance in the near future.

Table 6. Differential effects in the COVID-19 period.

Model		Portfolios			Differences		
		Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	α	0.1688 (0.3848) <i>0.6626</i>	-1.1056* (0.5632) <i>0.0543</i>	0.0316 (0.0630) <i>0.6180</i>	1.2743* (0.6540) <i>0.0560</i>	0.1372 (0.3808) <i>0.7200</i>	-1.1372* (0.5706) <i>0.0508</i>
	δ	1.9557** (0.8494) <i>0.0248</i>	-0.6095 (1.2431) <i>0.6257</i>	-0.4075*** (0.1391) <i>0.0048</i>	2.5652* (1.4434) <i>0.0806</i>	2.3631*** (0.8405) <i>0.0066</i>	-0.2020 (1.2594) <i>0.8731</i>
Carhart four- factor	α	0.0954 (0.3910) <i>0.8080</i>	-0.9706* (0.5721) <i>0.0952</i>	-0.0181 (0.0430) <i>0.6751</i>	1.0661 (0.6579) <i>0.1107</i>	0.1136 (0.3936) <i>0.7740</i>	-0.9525 (0.5701) <i>0.1002</i>
	δ	2.2628** (0.8739) <i>0.0122</i>	-0.7566 (1.2786) <i>0.5564</i>	-0.2400** (0.0962) <i>0.0155</i>	3.0194** (1.4705) <i>0.0446</i>	2.5028*** (0.8797) <i>0.0062</i>	-0.5166 (1.2741) <i>0.6867</i>
Fama- French six-factor	α	0.0859 (0.3916) <i>0.8273</i>	-0.9822* (0.5729) <i>0.0921</i>	-0.0172 (0.0402) <i>0.6709</i>	1.0681 (0.6510) <i>0.1066</i>	0.1030 (0.3909) <i>0.7931</i>	-0.9650* (0.5732) <i>0.0979</i>
	δ	2.2651** (0.8973) <i>0.0145</i>	-1.0913 (1.3127) <i>0.4094</i>	-0.2615*** (0.0920) <i>0.0063</i>	3.3564** (1.4917) <i>0.0285</i>	2.5266*** (0.8956) <i>0.0066</i>	-0.8298 (1.3133) <i>0.5301</i>

Finally, to contextualise the findings in relation to conventional asset-pricing factors, this study investigates the stock return implications of ESG rating upgrades and downgrades in double sorts on market capitalisation and book-to-market ratio (see Tables A1-A4 in the Appendix).

The effects are much more pronounced for large and growth stocks, reflecting the role of ESG ratings in asset allocation decisions for stocks on the short side of traditional small-minus-big and high-minus-low factor portfolios.

Conclusion

This study is the first to have documented the importance of ESG rating changes, rather than ESG rating levels, for stock performance on a representative sample of all US-traded firms rated by MSCI in 2016-2021 using the calendar-time portfolio methodology. While ESG rating upgrades are associated with relatively small and sometimes insignificant positive abnormal returns, downgrades are consistently detrimental for stock performance, leading to statistically and economically significant negative abnormal returns at -1.0% to -1.4% per month, robust in various model specifications. The effects are much more salient in ESG leaders than laggards, suggesting that performance differences are associated with institutional investors using best-in-class positive screening. However, ESG rating upgrades demonstrate a very pronounced positive effect during the COVID-19 period, which can potentially be explained by resilience signalling or increased use of ESG ratings by individual rather than institutional investors.

This study has contributed to the empirical finance literature on ESG ratings and, more broadly, socially responsible investing. ESG rating downgrades are shown to materially depress stock prices, highlighting the importance of ESG risk factors and the informational value of ESG ratings to institutional and individual investors alike. The magnitude of such effects might increase in the future as more agencies provide ESG ratings data free of charge for public use and wider investor communities start relying on these to guide their screening process and asset allocation decisions. Furthermore, this study partially resolves the long-standing puzzle of ESG and firm performance, showing that abnormal returns are associated not necessarily with ESG levels, but with their changes. For policymakers, the relevance of

ESG ratings suggests that such rating agencies might positively contribute to information dissemination and market efficiency.

Further research could address the environmental, social, and governance facets of specialised ESG ratings separately and augment the findings of this paper using conventional event studies when more high-quality and high-frequency data becomes publicly available. Additionally, as more agencies publish their ESG ratings, the calendar-time portfolio methodology can be applied to study the performance implications of disagreement and divergence in ratings postulated and conjectured in prior literature.

References

- Alda, M. (2020). ESG fund scores in UK SRI and conventional pension funds: Are the ESG concerns of the SRI niche affecting the conventional mainstream? *Finance Research Letters*, 36, 101313.
- Attig, N., El Ghouli, S., Guedhami, O., & Suh, J. (2013). Corporate social responsibility and credit ratings. *Journal of Business Ethics*, 117(4), 679-694.
- Avramov, D., Chordia, T., Jostova, G., & Philipov, A. (2009). Credit ratings and the cross-section of stock returns. *Journal of Financial Markets*, 12(3), 469-499.
- Broadstock, D., Chan, K., Cheng, L., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, 38, 101716.
- Carhart, M. (1997). On persistence in mutual fund performance. *Journal of Finance*, 52(1), 57-82.
- Choy, E., Gray, S., & Raganathan, V. (2006). Effect of credit rating changes on Australian stock returns. *Accounting & Finance*, 46(5), 755-769.

- Clementino, E., & Perkins, R. (2020). How do companies respond to environmental, social and governance (ESG) ratings? Evidence from Italy. *Journal of Business Ethics*.
- Consolandi, C., Eccles, R. G., & Gabbi, G. (2020). How material is a material issue? Stock returns and the financial relevance and financial intensity of ESG materiality. *Journal of Sustainable Finance & Investment*
- Cornell, B. (2021). ESG preferences, risk and return. *European Financial Management*, 27(1), 12-19.
- Demirtas, G., & Simsir, S. (2016). The effect of CEO departure on target firms' post-takeover performance: Evidence from not-delisting target firms. *Finance Research Letters*, 16(1), 55-65.
- Dimson, E., Marsh, P., & Staunton, M. (2020). Divergent ESG ratings. *Journal of Portfolio Management*, 47(1), 75-87.
- Fama, E., & French, K. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, 116(1), 1-22.
- Ferriani, F., & Natoli, F. (2020). ESG risks in times of COVID-19. *Applied Economics*.
- Folger-Laronde, Z., Pashang, S., Feor, L., & El-Alfy, A. (2020). ESG ratings and financial performance of exchange-traded funds during the COVID-19 pandemic. *Journal of Sustainable Finance & Investment*.
- Galema, R., & Gerritsen, D. (2019). The effect of the accidental disclosure of confidential short sales positions. *Finance Research Letters*, 28(1), 87-94.
- Gibson, R., Krueger, P., Riand, N., & Schmidt, P. S. (2019). *ESG rating disagreement and stock returns*. European Corporate Governance Institute – Finance Working Paper No. 651/2020

- Gyonyorova, L., Stachon, M., & Stasek, D. (2021). ESG ratings: relevant information or misleading clue? Evidence from the S&P Global 1200. *Journal of Sustainable Finance & Investment*.
- Halbritter, G., & Dorfleitner, G. (2015). The wages of social responsibility—where are they? A critical review of ESG investing. *Review of Financial Economics*, 26(1), 25-35.
- Holthausen, R., & Leftwich, R. (1986). The effect of bond rating changes on common stock prices. *Journal of Financial Economics*, 17(1), 57-89.
- Hubel, B., & Scholz, H. (2020). Integrating sustainability risks in asset management: the role of ESG exposures and ESG ratings. *Journal of Asset Management*, 21(1), 52-69.
- Jaffe, J. (1974). Special information and insider trading. *The Journal of Business*, 47(3), 410-428.
- Jiraporn, P., Jiraporn, N., Boeprasert, A., & Chang, K. (2014). Does corporate social responsibility (CSR) improve credit ratings? Evidence from geographic identification. *Financial Management*, 43(3), 505-531.
- Khan, M. (2019). Corporate governance, ESG, and stock returns around the world. *Financial Analysts Journal*, 75(4), 103-123.
- Kiesel, F., & Lucke, F. (2019). ESG in credit ratings and the impact on financial markets. *Financial Markets, Institutions & Instruments*, 28(3), 263-290.
- Mitchell, M., & Stafford, E. (2000). Managerial decisions and long-term stock price performance. *Journal of Business*, 73(3), 287-329.
- Naffa, H., & Fain, M. (2021). A factor approach to the performance of ESG leaders and laggards. *Finance Research Letters*, 102073.
- Shanaev, S., & Ghimire, B. (2019). Is all politics local? Regional political risk in Russia and the panel of stock returns. *Journal of Behavioral and Experimental Finance*, 21(1), 70-82.

Wong, W., Batten, J., Mohamed-Arshad, S., Nordin, S., & Adzis, A. (2021). Does ESG certification add firm value? *Finance Research Letters*, 39, 101593.

Appendix

Results in double sorted portfolios based on size and book-to-market ratio

Table A1. Estimation results for large stocks.

Model	Portfolios			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.5260	-1.4535***	-0.0553	1.9795***	0.5812	-1.3982**
	(0.3932)	(0.5390)	(0.0730)	(0.6764)	(0.3941)	(0.5547)
	<i>0.1860</i>	<i>0.0090</i>	<i>0.4519</i>	<i>0.0048</i>	<i>0.1454</i>	<i>0.0143</i>
Carhart four-factor	0.4697	-1.1909**	-0.0888**	1.6606**	0.5586	-1.1021**
	(0.4027)	(0.5315)	(0.0437)	(0.6680)	(0.4108)	(0.5370)
	<i>0.2482</i>	<i>0.0289</i>	<i>0.0466</i>	<i>0.0158</i>	<i>0.1792</i>	<i>0.0446</i>
Fama-French six-factor	0.4096	-1.1566**	-0.0897**	1.5661**	0.4992	-1.0669*
	(0.4028)	(0.5396)	(0.0424)	(0.6639)	(0.4087)	(0.5469)
	<i>0.3136</i>	<i>0.0364</i>	<i>0.0387</i>	<i>0.0218</i>	<i>0.2270</i>	<i>0.0561</i>

Table A2. Estimation results for small stocks.

Model	Portfolios			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.2141	-0.0446	0.0500	0.2587	0.1641	-0.0946
	(0.3562)	(0.5732)	(0.1205)	(0.6375)	(0.3430)	(0.5648)
	<i>0.5499</i>	<i>0.9383</i>	<i>0.6796</i>	<i>0.6863</i>	<i>0.6341</i>	<i>0.8676</i>
Carhart four-factor	0.2839	0.0766	0.1489	0.2073	0.1349	-0.0723
	(0.3569)	(0.5772)	(0.0932)	(0.6631)	(0.3553)	(0.5835)
	<i>0.4296</i>	<i>0.8949</i>	<i>0.1155</i>	<i>0.7557</i>	<i>0.7055</i>	<i>0.9018</i>
Fama-French six-factor	0.3269	0.1526	0.1601*	0.1743	0.1667	-0.0075
	(0.3636)	(0.5789)	(0.0929)	(0.6719)	(0.3625)	(0.5898)
	<i>0.3725</i>	<i>0.7930</i>	<i>0.0904</i>	<i>0.7963</i>	<i>0.6474</i>	<i>0.9898</i>

Table A3. Estimation results for value stocks.

Model	Portfolios			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.1254	-0.3798	-0.3829**	0.5052	0.5083	0.0031
	(0.4307)	(0.5130)	(0.1775)	(0.4863)	(0.3983)	(0.4667)
	<i>0.7720</i>	<i>0.4619</i>	<i>0.0350</i>	<i>0.3029</i>	<i>0.2068</i>	<i>0.9948</i>
Carhart four-factor	0.2548	-0.0942	-0.1651*	0.3490	0.4199	0.0709
	(0.4297)	(0.4691)	(0.0966)	(0.4900)	(0.4046)	(0.4687)
	<i>0.5556</i>	<i>0.8415</i>	<i>0.0926</i>	<i>0.4792</i>	<i>0.3037</i>	<i>0.8803</i>
Fama-French six-factor	0.3106	-0.1047	-0.1490	0.4153	0.4596	0.0443
	(0.4369)	(0.4735)	(0.0966)	(0.4872)	(0.4132)	(0.4694)
	<i>0.4802</i>	<i>0.8258</i>	<i>0.1285</i>	<i>0.3976</i>	<i>0.2708</i>	<i>0.9252</i>

Table A4. Estimation results for growth stocks.

Model	Portfolios			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.7460	-1.2670**	0.2032	2.0130**	0.5427	-1.4703**
	(0.5558)	(0.5728)	(0.1537)	(0.7919)	(0.5462)	(0.6012)
	<i>0.1845</i>	<i>0.0307</i>	<i>0.1910</i>	<i>0.0136</i>	<i>0.3243</i>	<i>0.0174</i>
Carhart four-factor	0.5966	-1.2056**	0.0306	1.8022**	0.5660	-1.2362**
	(0.5362)	(0.5963)	(0.0828)	(0.7833)	(0.5554)	(0.6003)
	<i>0.2705</i>	<i>0.0478</i>	<i>0.7131</i>	<i>0.0250</i>	<i>0.3124</i>	<i>0.0440</i>
Fama-French six-factor	0.5524	-1.2563**	0.0296	1.8088**	0.5229	-1.2859**
	(0.5467)	(0.6098)	(0.0740)	(0.8022)	(0.5617)	(0.6131)
	<i>0.3166</i>	<i>0.0440</i>	<i>0.6911</i>	<i>0.0281</i>	<i>0.3560</i>	<i>0.0405</i>