COVID-19 and ESG preferences: Corporate bonds versus equities

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Abstract
I examine investors' within ESG investment preferences during the COVID-19 pandemic by investigating the return spillover effects across the three different corporate bonds and equities-based investment strategies. Investors prefer making investments in ESG leaders in the investment-grade corporate bond market over ESG leaders in the equity and high yield corporate bond markets during times of uncertainty. It suggests that capital flows away from high yield corporate bond and equity markets to the investment-grade corporate bond market. Investors find refuge in firms with relatively higher ESG ratings and creditworthiness in the fixed income market over the equity market during crisis periods.

KEYWORDS
corporate bonds, COVID-19, equity, ESG leaders

JEL CLASSIFICATION
G10; G11; G14

1 | INTRODUCTION

Investors pay additional attention to corporate fundamentals during an economic slowdown (Hirshleifer, 2008; Lins, Servaes, & Tamayo, 2017; Nofsinger & Varma, 2014). Firms with strong fundamentals and long-run sustainability are expected to be much more resilient to wither the financial disturbances in an efficient manner (Pastor & Vorsatz, 2020; Singh, 2020). Hence, investors become more conscious to safer investment strategies, like the environmental, social and governance-based investment strategies (ESG), to prevent their exposure from downside risk in the market (Coudert & Gex, 2008; Singh, 2020).
While investigating the relative performance of ESG-based investment strategies, Nofsinger and Varma (2014), Lins et al. (2017) and Singh (2020) argue that investors find refuge in the ESG approach during times of uncertainty. However, investors’ preferences within the ESG investment environment, that is, whether investors prefer corporate bonds over equities or versa-versa, are unclear, making it an open empirical question. Firms with relatively higher ESG ratings (ESG leaders) are considered to be a part of investors’ ESG investment environment, especially during crisis periods.

Unlike the previous studies, the present study examines investors’ ESG investment preferences between bonds and equities during the COVID-19 pandemic. The study examines the return spillover effects across the three different corporate bonds and equities investment strategies. The return spillover effects denote how returns generated by one investment strategy affect another investment strategy. Investment opportunities are examined in terms of ESG leaders in the corporate bond and equity markets. In particular, I consider investment strategies comprised of high ESG firms in (a) equities; (b) high yield (HY) corporate bonds; and (c) investment-grade (IG) corporate bonds.

Studies like Koutmos (2018), Aktas, Kryzanowski, and Zhang (2021), and Zhang, Wang, Xiong, and Zou (2020) also examine the return spillover effects between different asset classes. The underlying argument for such spillover effects is the movement of funds across different assets. The return spillover effects between the three undertaken ESG-based investment strategies would capture investors’ within ESG investment preferences, that is, whether investors prefer equities over bonds or vice-versa in the ESG investment space during an economic slowdown.

The COVID-19 pandemic is having an impact across all the sectors of the worldwide economies. In March 2020, international financial markets witnessed one of the severest falls after the declaration of COVID-19 as a pandemic by the World Health Organization (WHO). Fundamentally, strong firms are expected to perform better during uncertain times. Therefore, it is insightful to understand how different ESG-based investment strategies get affected by each other during times of extreme uncertainty, like the COVID-19 pandemic.

In the present study, the spillover effects are modeled by employing Diebold and Yilmaz’s (2012) pairwise spillovers framework followed by Markov regime-switching models. Overall, the findings state that investors prefer ESG investments in IG corporate bonds over the equity market during uncertain times. The returns generated by ESG leaders in IG corporate bond market started getting affected by the returns generated by ESG leaders in HY corporate bond and equity markets after the declaration of the COVID-19 pandemic. It suggests that the capital started flowing away from ESG leaders in HY corporate bond and equity markets to ESG leaders in IG corporate bond market. Within the ESG investment space, investors prefer making investments in IG corporate bonds (issued by ESG leaders) over ESG leaders in HY corporate bond and equity markets.

Dantas (2021) document that ESG fund managers are less myopic in terms of their investments as compared to other conventional fund counterparts. Therefore, longer horizon investors, like ESG fund managers, prefer investments in firms with high ESG ratings (Starks, Venkat, & Zhu, 2017). Since both ESG and conventional funds do not vary considerably in their investment styles, investors tilt their portfolios toward ESG leaders in IG corporate bond market, especially within the ESG investment space during crisis periods (given the long-term orientation of investors). These findings are consistent with the assertion that bond markets are expected to be relatively safer during times of economic uncertainty (Baele, Bekaert, & Inghelbrecht, 2010; Connolly, Stivers, & Sun, 2005). On these analogies, ESG leaders in IG corporate bond market are also considered to be relatively safer. It could be due to the creditworthiness and sound financial health of the underlying firms.

The COVID-19 pandemic triggered investors’ concerns related to downside risk in the market, making them reassess their investment strategies even within the ESG investment space. As a response to the COVID-19 pandemic, monetary and fiscal policy authorities introduced several economic measures while providing liquidity support to corporate bond market (Cortes, Gao, Silva, & Song, 2020). Hence, our findings suggest that investors tilted their portfolios toward ESG leaders in IG corporate bond market within the ESG investment space. In other words, investors find refuge in firms with relatively higher ESG ratings and creditworthiness in the fixed income market over the equity market during crisis periods.
The findings are relevant to the practitioners, and add to the growing literature on the role of ESG-based investment strategies during crisis periods (Lins et al., 2017; Nofsinger & Varma, 2014; Pastor & Vorsatz, 2020; Singh, 2020). Particularly, this study contributes to the capital market effects of the COVID-19 pandemic (e.g., Bae, El Ghoul, & Gong, 2021; Baker et al., 2020; Davis, Hansen, & Seminario-Amez, 2020). Within the ESG investment space, investors prefer to make investments in ESG leaders in IG corporate bond market over ESG leaders in the equity and HY corporate bond markets during times of uncertainty.

Section 2 discusses data and empirical methodology, Section 3 reports empirical findings and lastly, Section 4 concludes the article.

2 | DATA AND METHODOLOGY

The sample period ranges from 18th Dec 2017 to 18th Dec 2020, that is, 3 years. I gathered daily data relating to corporate bonds and equity-based investment strategies, that is, ESG leaders in the equity and corporate bond markets from the Morgan Stanley Capital International’s (MSCI) website. In particular, the present study considers MSCI ESG leaders index in the equity, HY corporate bond, and IG corporate bond markets. The continuously compounding gross index returns are computed for the respective indices, that is, \( R_t = \ln \left( \frac{P_t}{P_{t-1}} \right) \times 100 \). Here, \( R_t \) is the daily index return, \( \ln \) is the logarithmic term, \( P_t \) is the current day’s index price and \( P_{t-1} \) is the previous day’s index price.

The term “leaders” pertains to firms with high ESG ratings relative to sectoral peers. The idea is to comprehend investors' preferences within the ESG investment space during times of economic uncertainty. The MSCI ESG leaders’ indices for HY and IG corporate bond markets are rebalanced every month. The latter indices include some of the well-regarded issuers of corporate bonds. On the other hand, the MSCI ESG leaders index for the equity market is rebalanced in August, November and February every year, and contains firms with high ESG ratings from the US market. These index returns are further used in generating the net pairwise spillover effects.

2.1 | Net pairwise return spillover effects

The present study employs Diebold and Yilmaz’s (2012) spillovers framework to capture net pairwise return spillover effects between the undertaken indices. Cross-market shocks using the forecast error variance decompositions (FEVDs) are modeled in a generalized framework (Singh, 2020; Singh, 2021; Singh & Kaur, 2017; Singh & Singh, 2016). The generalized version of the model shows variance to variable \( i \) due to innovations to variable \( j \).

Consider a N-dimensional vector, \( X_t \), depicting the returns of the three different ESG leaders’ indices in a vector autoregression (VAR) framework. A VAR \( (p) \) model can be specified as, \( X_t = \sum_{i=1}^{p} \Phi_i X_{t-i} + \varepsilon_t \), where \( \varepsilon_t \) is a vector of IID innovations. \( X_t \) is a vector of \( N \) endogenous variables, that is, the three ESG leaders’ indices. The moving average representation is stated as \( X_t = \sum_{i=1}^{\infty} A_i \varepsilon_{t-i} \), where \( A_i \) is a \( N \times N \) coefficient matrix. The model considers the contribution of both own as well as cross-market variances. For \( H \)-step-ahead FEVDs, we have:

\[
\theta_g^H (H) = \frac{\sigma_{ii}^{-1} \sum_{h=0}^{H-1} (\varepsilon_i' A_h \sum \varepsilon_j)^2}{\sum_{h=0}^{H-1} (\varepsilon_i' A_h \sum A_h' A_h \varepsilon_i)}
\]

where \( \sigma_{ii} \) is the \( i^{th} \) element on the variance matrix, and \( \varepsilon_i \) is the selection vector. The normalization is done by the sum of the rows for each variance decomposition matrix.
\[
\phi^g_{ij}(H) = \frac{\phi^g_{ij}(H)}{\sum_{j=1}^{N} \phi^g_{ij}(H)}
\]

For the pairwise analysis, three different pairs are created, considering the respective indices:

\[
S^g_{ij}(H) = \left[ \frac{\phi^g_{ij}(H)}{\sum_{k=1}^{N} \phi^g_{ik}(H)} - \frac{\phi^g_{ji}(H)}{\sum_{k=1}^{N} \phi^g_{ij}(H)} \right] \times 100
\]

The first component \( \frac{\phi^g_{ij}(H)}{\sum_{k=1}^{N} \phi^g_{ik}(H)} \) captures the return spillover effects from index \( i \) to \( j \), and the second component \( \frac{\phi^g_{ji}(H)}{\sum_{k=1}^{N} \phi^g_{ij}(H)} \) denotes the return spillover effects from index \( j \) to \( i \). For the net pairwise return spillover effects, the receiving effects are deducted from the transmitting ones. I consider a rolling window estimation of 200 days with 10 days ahead variances.

2.2 | Markov regime-switching

Lastly, I also examine regime-switches, that is, two regimes with switching at the unconditional mean and standard deviation levels, for the respective net pairwise return spillover indices: gathered from Diebold and Yilmaz’s (2012) spillovers framework (Hamilton, 1989; Schaller & Norden, 1997; Singh, 2020; Singh, 2021):

\[
PS_t = a_0(1 - S_t) + a_1 S_t + \sigma_0(1 - S_t) + \sigma_1 S_t \varepsilon_t
\]

where \( PS_t \) is the net pairwise return spillover series at time \( t \), and \( a_0, a_1, \sigma_0 \) and \( \sigma_1 \) are the mean and standard deviation levels across the respective regimes. The model follows a first-order Markov chain, wherein the probability of a given state depends on the state last period (\( S_t \)). This model accounts for sudden structural shifts in the respective net pairwise spillover indices.

3 | FINDINGS

Table 1 reports the descriptive statistics for the undertaken indices from 18th December 2017 to 18th December 2020. The index returns are relatively higher for ESG leaders in the equity market (0.0190%) followed by IG corporate bond market (0.0110%) and HY corporate bond market (0.0078%). The equity market index returns are highly volatile as compared to other undertaken indices. The total number of observations are 784. For the application of the models, the respective index returns are required to be stationary, that is, mean-reverting. Therefore, the study also employs three different unit root tests for the undertaken indices.

All the unit root tests, including Augmented Dickey-Fuller (ADF), Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and Zivot-Andrews (with a structural break), support a stationary distribution for the respective index returns. The VAR model requires the inclusion of certain number of lags; therefore, the Schwarz Information Criterion (SC) supports the employment of 2 days’ lagged values for the application of Diebold and Yilmaz’s (2012) spillovers framework. Table 2 reports the total return spillover effects across all the index returns for the full sample period.
The total return spillover effects, generated from Diebold and Yilmaz’s (2012) spillovers framework, indicate that all the index returns are greatly affected by each other. It is because the total return spillover effects are equivalent to 34.80% across all the index returns. Diebold and Yilmaz's (2012) spillovers framework facilitates computation of

| Variables  | High yield | Investment-grade | Equity  | From |
|------------|------------|------------------|---------|------|
| Mean       | 0.0078     | 0.0110           | 0.0190  |      |
| Median     | 0.0133     | 0.0102           | 0.0261  |      |
| Maximum    | 1.1747     | 0.7242           | 4.1082  |      |
| Minimum    | −1.5210    | −1.4198          | −5.6132 |      |
| SD         | 0.1646     | 0.1396           | 0.6320  |      |
| ADF        | −7.5250    | −13.5845         | −7.9893 |      |
| (critical value) | (−3.9699) | (−3.9698)      | (−3.9699) |    |
| KPSS       | 0.0325     | 0.0466           | 0.0288  |      |
| (critical value) | (0.2160) | (0.2160)        | (0.2160) |    |
| Zivot-Andrews | −11.3681 | −10.8689          | −13.9709 |    |
| (critical value) | (−5.5700) | (−5.5700)      | (−5.5700) |    |
| Observations | 784       | 784              | 784     |      |

**FIGURE 1** Total spillover indices

The total return spillover effects, generated from Diebold and Yilmaz's (2012) spillovers framework, indicate that all the index returns are greatly affected by each other. It is because the total return spillover effects are equivalent to 34.80% across all the index returns. Diebold and Yilmaz's (2012) spillovers framework facilitates computation of
FIGURE 2 Net pairwise spillover effects

High Yield - Investment-Grade

High Yield - Equity

Investment-Grade - Equity

TABLE 3 Markov regime switching

| Variables     | High yield—Investment-grade | High yield—Equity | Investment-grade—Equity |
|---------------|-----------------------------|-------------------|-------------------------|
|               | Regime 1 | Regime 2        | Regime 1   | Regime 2        | Regime 1   | Regime 2    |
| Mean (z-statistics) | 8.71*** | 0.55*** | 3.67*** | −1.81*** | −1.24*** | −10.06*** |
|                | (32.38)  | (18.31)        | (61.80)    | (−9.05)         | (−36.66)  | (−24.74)   |
| Log (SD) (z-statistics) | 1.33*** | −0.56*** | −0.26*** | 1.37*** | −0.49*** | 1.84*** |
|                | (26.50)  | (−14.62)       | (−4.74)  | (38.72)         | (−12.18)  | (40.44)    |
| Observations  | 583      | 583            | 583        |                  |            |            |

***Significant at 1%.
net contributions for the respective undertaken variables. It highlights the extent to which one variable affects another variable [Contribution To], and similarly the extent to which it gets affected by another variable [Contribution From].

The net contributions from Table 2, that is, “Contribution To minus Contribution From”, state that ESG leaders in HY corporate bond and equity markets are found to be the net transmitters of the return spillover effects. On the other hand, ESG leaders in IG corporate bond market are found to be the net receivers of the return spillover effects.
It suggests that the capital flows away from ESG leaders in the equity and HY corporate bond markets to ESG leaders in IG corporate bond market in general.

Figure 1 displays the total return spillover indices for the full sample period. As a robustness check, I also compute two additional spillover indices after considering a rolling window estimation of 250 days, and 2 and 10 days ahead variances. All the total return spillover indices indicate a similar kind of a trend. It is pertinent to mention that all the indices started witnessing spikes well before the declaration of COVID-19 as a pandemic by the WHO on 11th March 2020. In the anticipation of disruptions, investors started reacting to the upcoming biological crisis and economic disruptions in February itself (Singh, 2020). However, the respective indices witnessed a permanent upward shift at the declaration of the COVID-19 pandemic, as the upcoming economic disruptions became more evident at that time. Interestingly, we also observe sudden spikes in the spillover indices after 11th March 2020, when the fiscal and monetary authorities started introducing stimulus packages in response to the pandemic.

Further, Figure 2 shows the net pairwise return spillover effects across the undertaken indices for the full sample period. The positive values show the transmitting effects from one variable to another, and the negative values indicate the receiving effects from another variable. The day COVID-19 was declared as a pandemic by the WHO, that is, 11th March 2020, the return spillover effects witnessed a significant shift for the respective index pairs (shaded region). For the HY—IG pair, ESG leaders in IG corporate bond market are found to be the net receivers of the return spillover effects after the declaration of the COVID-19 pandemic. Similarly, for the HY—Equity pair, ESG leaders in the equity market started getting affected by the return spillover effects from ESG leaders in HY corporate bond market.

This suggests that the capital started flowing away from ESG leaders in HY corporate bond market to the equity and IG corporate bond markets. On an interesting note, ESG leaders in IG corporate bond market turn out to be the net receivers of the return spillover effects (more strongly) from ESG leaders in the equity market after the COVID-19 market shock. ESG leaders in IG corporate bond market transitioned from a lower net receiver phase to a higher one after 11th March 2020. This further suggests that the capital started flowing away from ESG leaders in the equity market to ESG leaders in IG corporate bond market.

Lastly, I also employ Markov regime-switching models for the respective net pairwise spillover indices for the full sample period. For the HY—IG pair in Table 3, regime-1 denotes higher net transmission effects from ESG leaders in HY corporate bond market to IG corporate bond market as compared to regime-2. For the HY—Equity pair, regime-1 denotes the net transmission effects to ESG leaders in the equity market and regime-2 indicates the net receiving effects from ESG leaders in the equity market.

For the IG—Equity pair, regime-1 denotes lower net receiving effects from ESG leaders in the equity market as compared to regime-2. Further, Figure 3 also displays filtered probability of remaining in regime-1 for the respective net pairwise spillover indices. For the pairs, HY—IG and HY—Equity, the probability of remaining in regime-1 increased suddenly after the declaration of the COVID-19 pandemic. In other words, the capital started flowing away from ESG leaders in HY corporate bond market to the equity and IG corporate bond markets. The COVID-19 market shock also increased the likelihood of receiving the return spillover effects (from ESG leaders in the equity market) for ESG leaders in IG corporate bond market.

Overall, the findings suggest that within the ESG investment space, investors find refuge in firms with relatively higher ESG ratings and creditworthiness in IG corporate bond market over the equity and HY corporate bond markets during times of uncertainty.

4 Conclusion

The present study examines investors’ within ESG investment preferences during the COVID-19 pandemic by investigating the return spillover effects across the three different corporate bonds and equities-based investment strategies. The earlier studies support that investors become more attentive to the ESG approach during crisis periods (Hirshleifer, 2008; Lins et al., 2017; Nofsinger & Varma, 2014; Singh, 2020). However, the present study reports that, within the ESG
investment space, investors prefer making investments in ESG leaders in IG corporate bond market over ESG leaders in the equity and HY corporate bond markets during times of uncertainty. Investors find refuge in firms with relatively higher ESG ratings and creditworthiness in the fixed income market over the equity market during crisis periods.

It may be noted that a pandemic is a once-a-century event, thus, the documented spillover effects may not necessarily be generalizable, especially during normal times. However, these spillover effects provide a significant understanding of investor flows during times of extreme uncertainty, particularly within the ESG investment space.

Since Hong and Kostovetsky (2012) document that Democratic-leaning fund managers prefer investments in firms with high ESG ratings than Republican-leaning fund managers, therefore, it could be possible that the documented effects are driven by the political-leaning of fund managers during the COVID-19 pandemic (Painter & Qiu, 2020). Thus, it becomes an important research question to be handled in future research.

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REFERENCES

Aktas, O. U., Kryzanowski, L., & Zhang, J. (2021). Volatility spillover around price limits in an emerging market. Finance Research Letters, 39, 101610.

Bae, K. H., El Ghoul, S., Gong, Z., & Guedhami, O. (2021). Does CSR matter in times of crisis? Evidence from the COVID-19 pandemic. Journal of Corporate Finance, 67, 101876.

Baele, L., Bekaert, G., & Inghelbrecht, K. (2010). The determinants of stock and bond return comovements. The Review of Financial Studies, 23(6), 2374–2428.

Baker, S. R., Bloom, N., Davis, S. J., Hansen, S., & Seminario-Amez, C. (2020). The unprecedented stock market reaction to COVID-19. The Review of Asset Pricing Studies, 10(4), 742–758.

Connolly, R., Stivers, C., & Sun, L. (2005). Stock market uncertainty and the stock-bond return relation. Journal of Financial and Quantitative Analysis, 40, 161–194.

Cortes, G., Gao, G., Silva, F. B. G., & Song, Z. (2020). Unconventional monetary policy and disaster risk: Evidence from the sub-prime and COVID-19 crises. Available at SSRN 3642970. https://doi.org/10.2139/ssrn.3642970.

Coudert, V., & Gex, M. (2008). Does risk aversion drive financial crises? Testing the predictive power of empirical indicators. Journal of Empirical Finance, 15(2), 167–184.

Dantas, M. (2021). Are ESG funds more transparent? Available at SSRN 3269939. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3269939.

Davis, S. J., Hansen, S., & Seminario-Amez, C. (2020). Firm-level risk exposures and stock returns in the wake of COVID-19 (No. w27867). Cambridge, US: National Bureau of Economic Research.

Diebold, F. X., & Yilmaz, K. (2012). Better to give than to receive: Predictive directional measurement of volatility spillovers. International Journal of Forecasting, 28(1), 57–66.

Hamilton, J. D. (1989). A new approach to the economic analysis of nonstationary time series and the business cycle. Econometrica: Journal of the Econometric Society, 57, 357–384.

Hirshleifer, D. (2008). Psychological bias as a driver of financial regulation. European Financial Management, 14(5), 856–874.

Hong, H., & Kostovetsky, L. (2012). Red and blue investing: Values and finance. Journal of Financial Economics, 103(1), 1–19.

Koutmos, D. (2018). Return and volatility spillovers among cryptocurrencies. Economics Letters, 173, 122–127.

Lins, K. V., Servaes, H., & Tamayo, A. (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. The Journal of Finance, 72(4), 1785–1824.

Nofsinger, J., & Varma, A. (2014). Socially responsible funds and market crises. Journal of Banking & Finance, 48, 180–193.

Painter, M., & Qiu, T. (2020). Political beliefs affect compliance with COVID-19 social distancing orders. Available at SSRN 3569098. https://doi.org/10.2139/ssrn.3569098.

Pastor, L., & Vorsatz, M. B. (2020). Mutual fund performance and flows during the COVID-19 crisis. The Review of Asset Pricing Studies, 10(4), 791–833.

Schaller, H., & Norden, S. V. (1997). Regime switching in stock market returns. Applied Financial Economics, 7(2), 177–191.

Singh, A. (2020). COVID-19 and safer investment bets. Finance Research Letters, 36, 101729.

Singh, A. (2021). Investigating the dynamic relationship between litigation funding, gold, bitcoin and the stock market: The case of Australia. Economic Modelling, 97, 45–57.

Singh, A., & Kaur, P. (2017). A short note on information transmissions across US-BRIC equity markets: Evidence from volatility spillover index. Journal of Quantitative Economics, 15(1), 197–208.
Singh, A., & Singh, M. (2016). US financial conditions index and its empirical impact on information transmissions across US-BRIC equity markets. The Journal of Finance and Data Science, 2(2), 89–111.

Starks, L. T., Venkat, P., & Zhu, Q. (2017). Corporate ESG profiles and investor horizons. Available at SSRN 3049943. https://doi.org/10.2139/ssrn.3049943

Zhang, Y., Wang, M., Xiong, X., & Zou, G. (2020). Volatility spillovers between stock, bond, oil, and gold with portfolio implications: Evidence from China. Finance Research Letters, Forthcoming, 101786. https://www.msci.com/msci-esg-leaders-indexes

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