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ESG: MYTHS and REALITIES

ESG Investing and Financial Returns in Canada

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Date of Issue
June 2024

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Steven Globerman

Executive Summary

- ESG investing incorporates environmental (E), social (S), and governance (G) considerations into investment decisions. Until recently, ESG-themed investing comprised an increasing share of investments made by professional money managers and retail investors.

- Financial industry executives and regulators who have promoted ESG-themed investing argue that it will enhance investment performance either by increasing asset returns and/or by reducing investment risk.[1]

- However, empirical studies, on balance, find no consistent and statistically significant evidence of a positive relationship between the ESG rankings of individual companies or portfolios of companies and the financial performances of those companies or investment portfolios.

- Most empirical studies have focused on US-based publicly traded companies. To our knowledge, this study is the first to focus on returns to ESG-themed investing for Canadian-based public companies.

- Using data from MSCI, a leading ESG ratings provider, we estimate the statistical relationship between changes in ESG rankings of companies and changes in equity returns for those companies using a sample of 310 companies listed on the Toronto Stock Exchange between 2013 and 2022.

- Our study finds that neither upgrades nor downgrades in ESG ratings significantly affect stock market returns.

1. Introduction

In Canada, sustainable investing[2] has experienced remarkable growth, increasing from CAN$1 trillion in 2014 to CAN$3 trillion in 2022. As per the *Global Sustainable Investment Review* (GSIR) 2022, Canada has distinguished itself with the highest proportion of sustainable investing assets compared to its total managed assets, at 47 percent. This figure exceeds those of other jurisdictions, including Europe at 38 percent and the United States at 13 percent.

Theoretical models suggest that investor demand for ESG-themed equity and bond portfolios could profoundly affect financial markets, corporate behaviour, and potentially social welfare. In theory, investors who prefer "green" companies with high ESG ratings will allocate their investments toward these companies and away from "brown" companies with low ESG ratings. In the limiting case, this preference can lead to an investor boycott of brown firms. If a significant number of investors reallocate savings towards green companies and away from brown companies, the increased demand for green assets could substantially increase their stock market value. Consequently, green firms might benefit from lower financing costs, as a higher market value allows those firms to raise given amounts of capital while issuing fewer shares. The resulting reallocation of savings might also allow green firms to secure loans at lower interest rates. This reduced cost of equity and debt financing makes it more economical for green firms to invest in growth and expansion, thereby encouraging them to invest and grow faster than their brown company counterparts, other things being constant. If this approach works, it potentially leads to an economy with ostensibly desirable social outcomes, as the economy increasingly will be dominated by green firms that follow ESG practices.[3]

The empirical impact of ESG investing in Canada is still a subject of debate.[4] Advocates for ESG investing maintain that it can lead to higher returns for investors. The *2023 Canadian Responsible Investment Trends Report* (RiA, 2023) reveals that institutional investors in Canada consider improved expected returns as the second highest[5] rated motivation for ESG investing, with 85 percent of them expecting returns at least as high as the market average. This indicates a significant expectation among Canadian investors that ESG strategies can be financially beneficial, or at least not financially harmful, while also contributing positively to environmental and social outcomes.

Despite the uncertain empirical impact of ESG investing on financial markets and social outcomes, Canada has seen an increase in the regulatory focus on ESG investing. Since 2020, corporations under the Canada Business Corporations Act (CBCA) have been required to disclose diversity information regarding their board and senior management, including specific personal characteristics beyond gender. This has made Canada the first jurisdiction in the world to mandate such comprehensive diversity disclosures. In 2021, the Canadian Securities Administrators (CSA) proposed climate-related disclosure requirements for issuers, with further consultations planned in 2023 to align with International Sustainability

Standards Board (ISSB) standards, adapted for Canada. The federal government established the Net-Zero Advisory Body and the Sustainable Finance Action Council (SFAC) in the same year, and Canada's finance minister received the country's first sustainable finance mandate. The Investment Industry Regulatory Organization of Canada (IIROC) revised its Know Your Client (KYC) rules in November 2021 to incorporate clients' ESG preferences into investment objectives. Finally, in January 2022, the CSA provided guidance for ESG disclosures by investment funds.[6]

> " Since ESG ratings are crucial information for ESG investing, they can be expected to significantly affect investment decisions to the extent that ESG considerations significantly drive such decisions."

In our study, we use data from MSCI, a leading provider of ESG ratings, to empirically examine the impact of ESG investing on equity returns for Canadian publicly traded companies. Our specific focus is how MSCI ESG rating changes influence stock returns.[7] Since ESG ratings are crucial information for ESG investing, they can be expected to significantly affect investment decisions to the extent that ESG considerations significantly drive such decisions. Our goal is to measure the effect of MSCI rating changes on company stock returns. The study encompasses 310 companies listed on the Toronto Stock Exchange from 2013 to 2022, during which 414 ESG rating changes occurred.

We follow Berg, Heeb, and Kölbel (2023) by applying a panel event study methodology to estimate the effect of ESG rating changes on stock returns. We look separately at the effects of rating upgrades and downgrades, as they might not have the same impact. In addition to assessing immediate returns, we also evaluate the effect of ESG rating changes on buy-and-hold returns over periods of up to 12 months. This approach acknowledges that investors might need time to adjust their portfolios in response to rating changes, either by selling stocks that have been downgraded or by purchasing those that have been upgraded.

Our main finding is that changes in a company's ESG rating, be they upgrades or downgrades, do not significantly affect its stock market returns, even up to 12 months following the change. This suggests that an ESG rating upgrade does not provide a noticeable financial advantage for an upgraded company in the form of a lower cost of equity capital. This finding casts doubt on the notion that public equity markets reward companies for ostensibly improved ESG performance, thereby encouraging more ESG-consistent corporate behaviour. Our study concludes that arguments touting the financial benefits of ESG investing in Canada require robust supporting empirical evidence to be credible.

2. Framework for the Analysis

The primary theoretical framework for an analysis of financial returns to ESG-themed investing rests on considerations of investors' preferences for ESG factors. For instance, investors favouring "environmentally friendly" companies might reduce their equity holdings in what they consider to be polluting firms, or even completely stop investing in those firms. Other things constant, this would lower the stock prices of "brown" companies, while "green" companies would presumably see higher stock prices. In the short term, when green companies' stock prices rise, green investors will enjoy increased returns on their investments. However, in the long term, after market prices have adjusted to new information about corporate ESG ratings, investors in green companies should realize below average financial returns. This is because the stocks of green companies they invest in will be priced higher as a reflection of their improved ESG rankings, which should result in lower yields over time.[8] In effect, new information about the ESG intensity of a company's activities should contribute to a new "equilibrium" share price for that company if the information is financially material. The length of time between the release of new information and the adjustment of the relevant company's stock price to a new equilibrium depends upon the efficiency of capital markets and is ultimately an empirical issue.

Globerman (2022) examines the empirical literature on the impact of ESG investing on financial returns and finds conflicting outcomes. Some studies identify either positive or negative correlations between ESG investing and equity returns, while many report no significant relationship. Most studies on the impact of ESG investing use US data, but our research shifts the focus to Canada. With 47 percent of its total managed publicly traded assets dedicated to sustainable investing in 2022, Canada provides an important contrast to the US, where only 13 percent of similar assets are in sustainable investing.[9]

Berk and van Binsbergen (2021) suggest that a greater presence of green investors might lead to more noticeable effects on stock market prices. This arguably makes Canada a more relevant context for studying the financial effects of ESG investing. Additionally, Canada's proactive approach to ESG investing regulation underscores the need for reliable empirical evidence concerning the impact of ESG-themed investing on financial markets.

In their meta-study, Whelan et al. (2021) note that most research linking ESG investing to financial performance concentrates on assessing risk-adjusted returns, frequently using metrics like alpha or the Sharpe Ratio.[10] These measures evaluate whether ESG-focused portfolios differ significantly in risk-adjusted returns from non-ESG focused portfolios. The methodology depends on precise alpha estimation to determine risk-adjusted returns. If not measured correctly, an observed premium (or discount) for "good" or "bad" ESG behaviour could well be attributable to an incorrect adjustment for risk (Blitz and Fabozzi, 2017). Berk and van Binsbergen (2021) critique this approach, pointing out the difficulties in reliably measuring risk-adjusted returns. Globerman (2022) suggests that the mixed results seen in

the literature regarding the relationship between ESG ratings and asset returns may be partly due to the challenges in measuring risk-adjusted returns.

This study diverges from explicitly estimating risk-adjusted returns, opting instead for a panel event study methodology as outlined in Berg, Heeb, and Kölbel (2022), Schmidheiny and Siegloch (2019), Clarke and Tapia-Schythe (2021), and Freyaldenhoven, Hansen, Pérez, and Shapiro (2021), which allows us to assess returns following ESG rating changes without needing to estimate risk-adjusted returns.

Globerman (2022) also notes that the observed variability in results linking ESG ratings to equity returns could be due to price changes during transition periods after an ESG rating change. For instance, an ESG rating upgrade could lead investors to buy more of the stock of the upgraded company, thereby boosting its price and conferring an increased return to investors until the market adjusts. Given higher prices, green stocks might subsequently yield lower returns than brown stocks in the absence of new ESG-related information. Our study addresses this by using a panel event study method to track buy-and-hold returns for up to 12 months after rating changes, enabling us to monitor return transitions over a holding period of up to one year.

In section 3 of this study, we outline the data we use for our analysis. Section 4 presents and discusses the findings from our empirical research. Concluding comments are offered in section 5. For those interested in more in-depth information about the empirical work, the appendix includes descriptions of the data, detailed information on our methodology, and a robustness analysis of the results. We have consciously kept the main body of the study straightforward and accessible, avoiding technical details to ensure it is comprehensible even for readers not well versed in statistical analysis. In contrast, the appendix delves into the more intricate aspects of the statistical framework for those seeking a deeper understanding.

3. Data

Our dataset includes MSCI ESG ratings for Canadian firms from June 2013 to December 2022. MSCI is a prominent ESG ratings provider that is recognized for its comprehensive coverage and extensive historical data. Before assembling our dataset, we considered data from various other recognized ESG providers, including Sustainalytics, Moody's, Refinitiv, and S&P Global. After thorough evaluation, we found that MSCI not only offers wide-ranging coverage of Canadian companies but also provides the most substantial historical data, a key feature for our study. This led us to select MSCI rating data for our research. Our dataset focuses on the period after June 2013, selected due to a significant increase in MSCI's coverage of Canadian companies from this date forward. This selection ensures that our analysis is based on more comprehensive and reliable data. For additional information about the extent of data coverage, please see figure A2 in the appendix.

MSCI ESG Research LLC provides ESG ratings that many investment managers use to assess and analyze the risks and opportunities associated with publicly listed companies. These ratings consider 35 key issues,[11] including factors such as carbon emissions, product safety and quality, ownership and control, and others. These factors are aggregated to create three primary "pillar scores": Environmental (E), Social (S), and Governance (G). To determine the final ESG rating for a company, the weighted average of these three pillar scores is calculated. This weighted score is then adjusted to align with industry peers. This industry-adjusted score corresponds to a rating that falls on a scale from best (AAA) to worst (CCC). It is important to note that these assessments are not absolute, but rather are designed to be interpreted in comparison to other companies within the same industry.[12]

We combined MSCI rating data with stock price data from Yahoo Finance, focusing on "adjusted close" prices, which incorporate adjustments for stock splits and dividend distributions. By incorporating that adjusted close data, we created a comprehensive dataset of 310 Canadian companies listed on the Toronto Stock Exchange, facilitating a thorough analysis of the relationship between ESG ratings and stock performance.

Figure 1 displays the distribution of MSCI ESG ratings across Canadian companies. This graph is derived from our monthly dataset spanning the period from June 2013 to December 2022, which includes the ESG ratings of 310 Canadian corporations tracked on a monthly basis. The rating most commonly assigned is "BBB." The distribution of ratings around this central point appears almost symmetric: the frequency of companies with higher ESG ratings decreases as we move to the right, and similarly, the frequency of companies with lower ESG ratings declines as we move to the left.

Figure 1: MSCI ESG Rating Frequency for Canadian Corporations
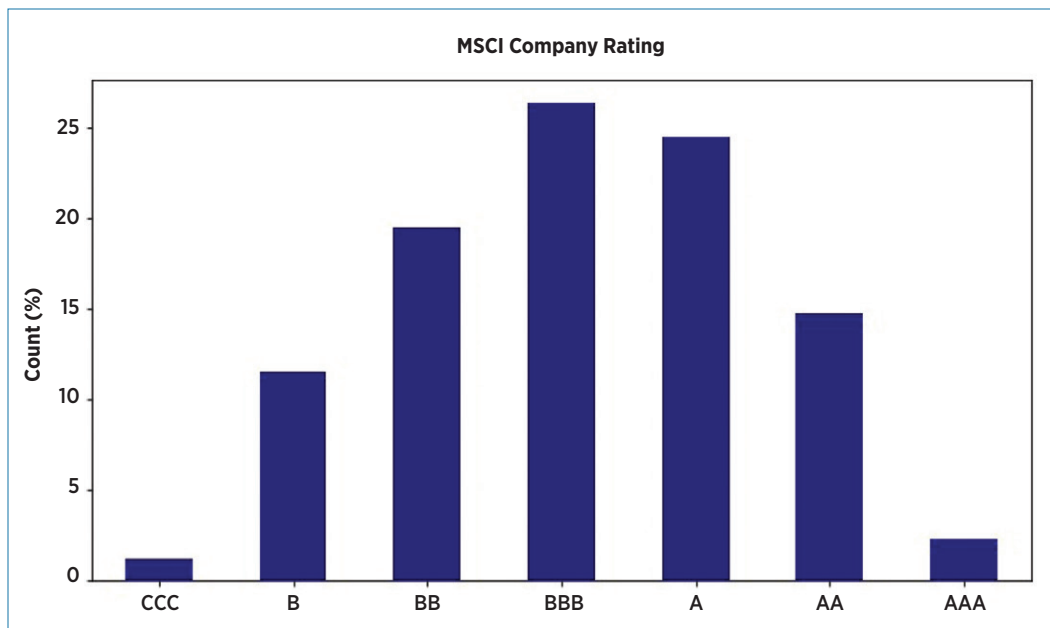
Source: Author's calculations from MSCI's proprietary database.

Figure 2: MSCI Rating Change Frequency for Canadian Corporations
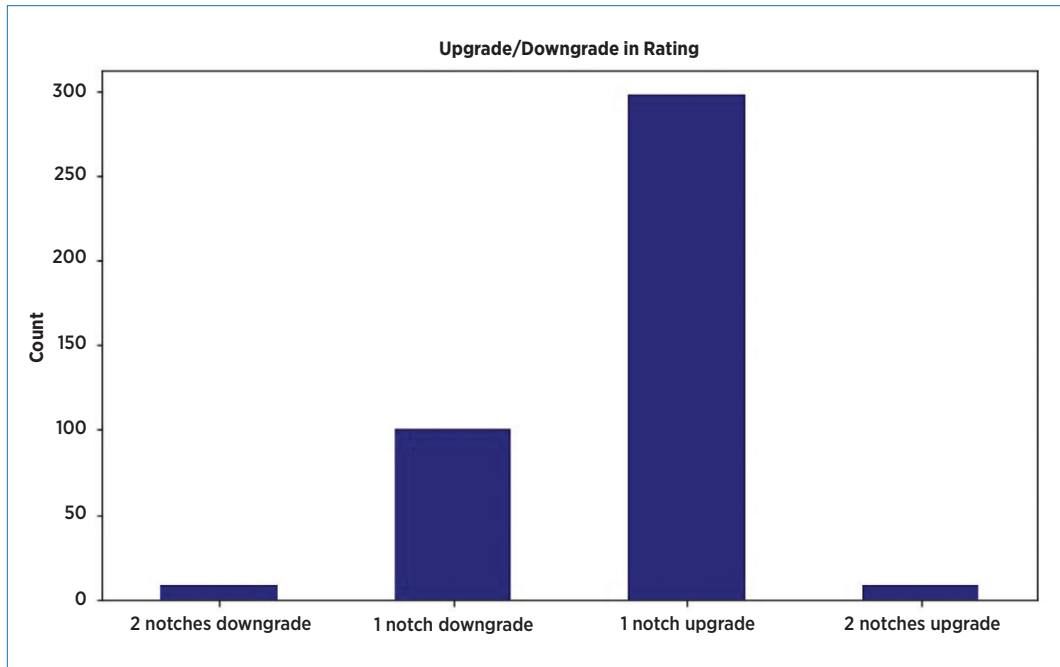
Source: Author's calculations from MSCI's proprietary database.

MSCI conducts continuous and systematic monitoring of companies, including daily assessments of monitoring and quality-related controversies and governance events. Updates based on new information are incorporated into weekly reports, and any significant alterations in scores prompt an analyst review followed by potential re-rating.

Additionally, each company undergoes a thorough review at least once a year.

For our panel event study, we use the monthly updates in MSCI's seven ESG ratings to identify and define events that trigger upgrades and downgrades. An upgrade is defined as a change from a lower to a higher rating, for example, moving from BB to BBB, A, AA, or AAA. Conversely, a downgrade occurs when the rating shifts from a higher to a lower tier, such as from BBB to BB, B, or CCC. Figure 2 displays the distribution of these rating changes. It reveals that in our data, no rating change exceeds a two-notch shift, either upward or downward. Furthermore, the majority of the rating changes consist of one-notch upgrades or downgrades, with upgrades being the more prevalent of the two.

Our study focuses on two key variables: monthly changes in MSCI ESG ratings and buy-and-hold stock returns. Table 1 summarizes the total number of ESG rating change events, including both upgrades and downgrades. From 2013 to 2022, such changes in ESG ratings were relatively rare, accounting for about 2 percent of our dataset. This low frequency of rating changes aligns with findings from other studies, such as Berg, Heeb, and Kölbel (2023), who observed a similar incidence rate of 2 to 3 percent rating changes in their research on 3,665 US-listed companies.

Table 1: MSCI ESG Ratings Change Frequency of MSCI ESG Ratings Upgrades and Downgrades

	Number of Events
Upgrades	306
Downgrades	108

Source: Author's calculations from MSCI's proprietary database.

In our study, a crucial variable is the buy-and-hold returns over periods ranging from one to 12 months. The variable is used to assess how these returns respond to changes in MSCI ESG ratings. We derive these returns from the monthly adjusted closing prices sourced from Yahoo Finance for each of the 310 Canadian companies in our dataset. The buy-and-hold returns gauge a stock's performance across various holding periods. For instance, a one-month buy-and-hold return reflects a stock's performance if purchased in January 2017 and held until the end of February 2017. A two-month return would measure the stock's performance from January to the end of March 2017, with this trend continuing for holding periods of up to 12 months.

Table 2 presents the descriptive statistics of buy-and-hold returns for periods ranging from one to 12 months. We calculate these returns to assess how, on average, returns following a rating change differ from those of stocks that didn't experience any rating change. This range allows us to track returns over a transitional period, ensuring we capture any delayed effects of rating changes on stock prices and corresponding returns. In our sample data, which covers 313 Canadian corporations listed on the Toronto Stock Exchange between June 2013 and December 2022, the average return for a one-month holding period is 0.7 percent. This figure increases for longer holding periods, reaching 8.7 percent for a 12-month duration.

Figure 3 illustrates the distribution of one-month buy-and-hold returns within our dataset. This graph displays a near-symmetric pattern, mirroring trends seen across various holding periods. It shows a wide range of returns, with the lowest 5 percent of returns at -15.4 percent and the highest 5 percent of returns at 17.7 percent. Such a wide spread of returns is not unique to our dataset. Berg, Heeb, and Kölbel (2023) reported a comparable range in their study of monthly returns for US publicly traded companies.

In the following section, we explain how we apply a panel event study methodology to ascertain if the average buy-and-hold returns for companies undergoing a downgrade or upgrade are significantly different from those that did not experience any rating change.

Table 2: Descriptive Statistics for Buy-and-Hold Returns

Buy-and-hold returns (%) for holding periods of	count	5%	25%	mean	50%	75%	95%	std
1 month	19950	-15.4	-4.7	0.7	0.5	5.7	17.7	9.7
2 months	19927	-21.2	-6.2	1.5	1.1	8.8	25.2	13.7
3 months	19904	-25.5	-7.4	2.3	1.9	11.3	31.5	17
4 months	19883	-29.5	-8.6	2.9	2.3	13.3	37.5	19.9
5 months	19861	-32.4	-9.9	3.6	2.6	15.1	43.4	22.6
6 months	19841	-35.1	-10.9	4.3	2.9	17.1	48.8	25.1
7 months	19822	-37.6	-11.7	5	3.4	18.7	54.2	27.6
8 months	19803	-39.6	-12.6	5.8	3.7	20.5	59.8	30.1
9 months	19789	-41.7	-13.5	6.6	3.9	22.1	64.8	32.4
10 months	19773	-43.6	-14.2	7.3	4.3	23.5	69.6	34.7
11 months	19758	-45.4	-14.9	7.9	4.4	24.7	74.2	37
12 months	19526	-47.7	-15.5	8.7	4.7	26.5	78.6	39.3

Source: Author's estimates of returns using data collected from Yahoo Finance.

Figure 3: One Month Return Distribution for Canadian Corporations
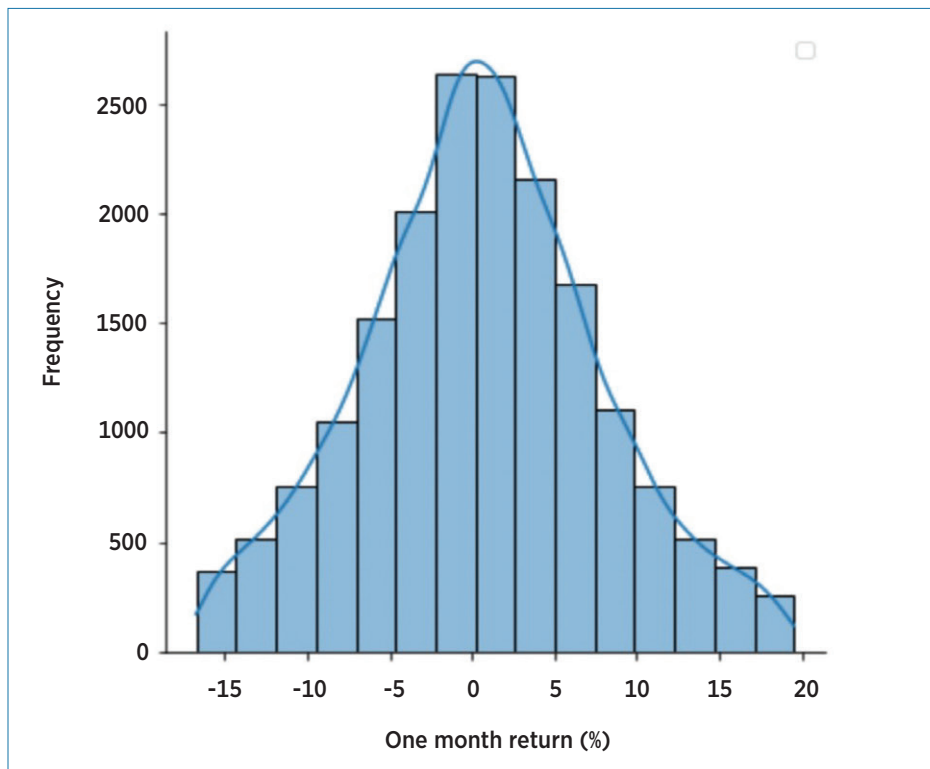
Source: Author's estimates of returns using data collected from Yahoo Finance.

4. Results

In this section, we investigate the impact of ESG rating changes on company stock returns. Our analysis reveals that companies' stock returns do not significantly respond to ESG rating changes, whether they are downgrades or upgrades.

In the appendix, we outline our method for assessing how ESG rating upgrades and downgrades affect buy-and-hold returns over 12 months. Broadly speaking, we identify the average buy-and-hold returns of stocks following a rating change. This means we are comparing how the returns change on average for companies that underwent a rating change versus those that did not experience any change.

Figure 4 presents the results from a series of panel event studies analyzing the impact of MSCI ESG rating changes on companies' buy-and-hold returns, distinguishing between companies that undergo rating changes and those that do not. This comparison extends across all observed periods: for months equal to or greater than zero, the graph details the difference in buy-and-hold returns for holding periods up to 12 months, specifically comparing companies that experience a rating change to those that remain unchanged. Similarly, for months less than zero, the graph applies the same comparative analysis, demonstrating the difference in buy-and-hold returns between companies that will have a rating change and those that will not, effectively treating the period as if it included placebo events occurring 6 months before the actual rating changes, for holding periods concluding one month prior to these events.

Figure 4 categorizes the estimation for buy-and-hold returns by downgrades and upgrades. Buy-and-hold returns reflect the performance of a stock assuming it was purchased one month prior to the event date (month -1) and held for up to 12 months. For instance, if a downgrade occurs in February 2017, we consider an investor buying the stock in January 2017, marked by a vertical red line in the figure. This date represents the month before the rating change. The buy-and-hold return at month 0 illustrates the stock's one-month return from this purchase date to the event month, effectively showing the immediate return during the rating change. At month 1, the returns represent the stock's performance if held from January 2017 to the end of March 2017, continuing similarly up to 12 months.

For the months following an ESG rating change, the dotted line in each graph represents our estimation of the differential in stock returns—termed as the point-estimated buy-and-hold returns—between companies that have experienced an ESG rating change and those that have not. This estimation reflects how stock returns for companies with a rating change are likely to diverge from those without any such change, thereby capturing the anticipated impact of ESG rating adjustments on stock performance. However, since we can't be certain about this estimate's accuracy, we also calculate a range over which these returns might actually fall each month—this is what the shaded area on the graph represents. The shaded area means we're 95 percent certain the real returns will be within this range. For instance, one month after a company is upgraded (month 0), we think its stock return is about 0.17

Figure 4: The Reaction of Stock Returns to ESG Rating Changes in Canada
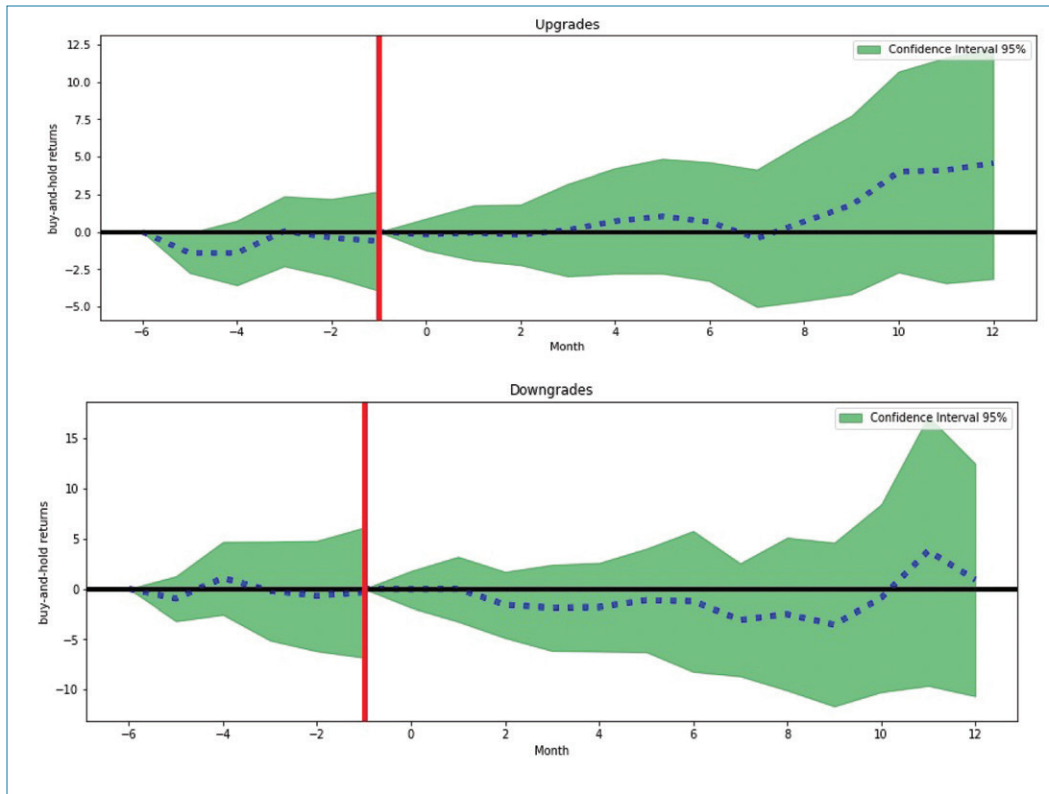
Notes: The vertical red line identifies when the sample stock's ESG rating changed lagged by one month. The dotted line represents the estimated differential in stock returns between companies that experienced an ESG ratings change and those that did not. The shaded area is the estimated range of stock returns using a 95 percent confidence interval. Returns are expressed in percentage terms.
Source: Author's statistical estimations as detailed in the appendix.

percent lower than stocks that weren't upgraded. And we are 95 percent confident that the real return is somewhere between a decrease of 1.2 percent and an increase of 0.9 percent compared to stocks without an upgrade.

If rating changes have a significant impact on stock returns, we expect that the estimated range of possible returns (the interval estimation) would not include a zero return. However, as figure 4 clearly demonstrates, the solid black line representing a zero return is always within the interval estimation of buy-and-hold returns for every month up to 12 months, regardless of whether the change is an upgrade or downgrade. This implies that, based on our data, there is no compelling evidence suggesting that ESG rating changes have a significant effect on stock returns.

Figure 4 includes buy-and-hold returns calculated before the rating change event. This helps us assess if any trends observed after the event are actually caused by the rating change and how they compare to the trend of the stock's performance prior to the event. Specifically, figure 4 displays the buy-and-hold returns for a stock purchased 6 months, 5 months, and

up to one month before the rating change, effectively setting a placebo event timeline from 6 months to one month prior to the actual event.

Even though our estimation results indicate that ESG rating changes don't significantly affect overall stock returns, we observe distinct patterns following both downgrades and upgrades. Specifically, after a downgrade, the differential in buy-and-hold returns between companies that have experienced a downgrade and those that have not tends to show a decrease, reaching as low as -3.5 percent within 9 months. Conversely, after an upgrade, the differential analysis reveals an increase in returns for companies receiving an upgrade compared to those without such changes, with returns going up to 4.5 percent within 12 months. This matches the theory that investors may sell off downgraded stocks and move their funds to stocks with better ESG ratings. A notable aspect of these findings is the lack of similar trends before the rating changes. This suggests that the observed shifts in return trends are directly associated with the downgrade and upgrade events. Therefore, the influence of ESG ratings on stock returns aligns with theoretical predictions. However, it is not substantial enough to conclude that ESG ratings have a statistically significant impact on stock returns.

5. Conclusion

This study explores how changes in a company's ESG (Environmental, Social, and Governance) rating affect its stock market returns. ESG ratings are key indicators that investors use to gauge a company's ESG-related performance. The theory is straightforward: when a company's ESG rating changes, investors who prioritize ESG issues are likely to sell stocks of companies with downgraded ratings and buy stocks of those with upgraded ratings. This investor behaviour could result in significant changes in stock prices and returns. Furthermore, if ESG investing has a discernible impact on stock prices, it could offer a financial edge to companies that are environmentally and socially responsible, encouraging them to enhance their ESG practices further.

In fact, our study finds no statistically significant evidence that changes in ESG ratings, whether upgrades or downgrades, affect stock returns. This leads us to conclude that ESG investing may not have the transformative effect on social outcomes through the financial markets that many suggest. In short, any benefits from being an ESG-focused company do not seem to translate into significant financial advantages in the stock market.

At least two questions arise from our conclusion. One is why investment managers pay for ESG ratings if using that information to make investment decisions does not improve investment performance. Since the costs of ESG ratings services will be passed on by investment managers to their customers, the more relevant version of the question is why customers are willing to pay higher administrative fees for ESG-themed investments when they would earn similar gross returns, and therefore higher net returns, if they invested in non-ESG themed alternatives.[13] A second and separate question is why the seeming increase in the relative

demand for more highly-rated ESG investment options in recent years has not translated into higher relative returns to those investment options.

A careful consideration of these two issues is beyond the scope of this essay. With respect to why investors are willing to pay higher fees for ESG-themed investments that are seemingly not matched by higher returns, one can appeal to the plausible argument that the investors in question enjoy non-financial (or so-called psychic) benefits from financially supporting what they believe are sustainable businesses.[14]

With respect to why returns are not related to changes in ESG ratings, we again offer only a speculative explanation. Specifically, it may be the case that investors' valuations of both green and brown companies are primarily based on fundamental information found in financial reports and other public statements, so that additional information provided by ESG ranking services

" ESG rankings may provide little reliable information about future profitability and therefore are primarily useful as a marketing tool rather than for making portfolio decisions."

by itself must be very substantive to cause shifts in demand for alternative securities. Put differently, ESG rankings may provide little reliable information about future profitability and therefore are primarily useful as a marketing tool rather than for making portfolio decisions.[15]

APPENDIX

Data

In this section, we offer additional details about the data we used in our study, specifically focusing on the ESG rating data sourced from MSCI and the returns data we obtained from Yahoo Finance.

MSCI ESG Ratings Key Issue Framework

MSCI evaluates numerous data points across 35 ESG (Environmental, Social, and Governance) key issues, concentrating on the nexus between a company's primary operations and the industry-specific challenges that could pose significant risks or present opportunities. Figure A1 categorizes these 35 key issues into three pillars: Environmental, Social, and Governance.

Figure A1: MSCI ESG Ratings Key Issue Framework

Source: MSCI, 2024.

MSCI ESG Ratings

Our data consists of MSCI ESG ratings for Canadian companies between June 2013 and December 2022. Figure A2 illustrates the MSCI coverage of Canadian companies during this period. Notably, MSCI coverage of Canadian companies significantly increased after June 2013, going from an average of 102 companies to 367 companies. To ensure the reliability of our results, we specifically focus on data from June 2013 onwards, as this approach mitigates potential biases stemming from the substantial changes in the pool of companies for which data are available.[16]

Figure A2: MSCI ESG Data Coverage for Canadian Companies
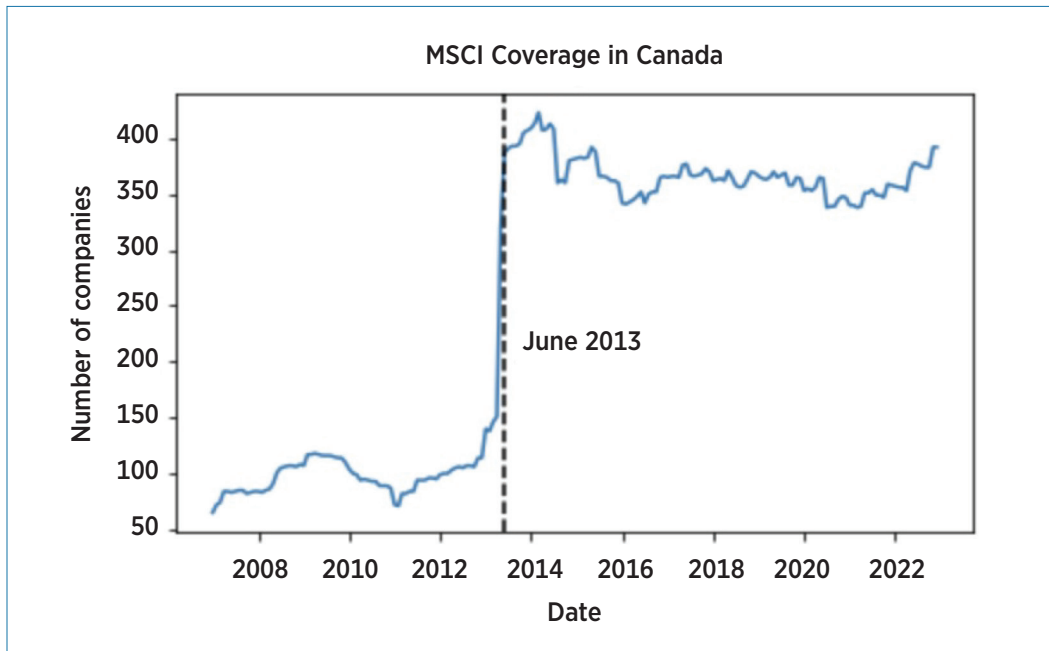
Source: MSCI, proprietary database.

Stock Returns

We obtained stock returns data from Yahoo Finance, focusing on the adjusted close prices for companies featured in our MSCI ESG rating historical data. A potential concern is whether Yahoo Finance provides adequate company coverage. While we do not have access to historical market capitalization data within our sample for a direct comparison with the Toronto Stock Exchange's market capitalization, we do have recent data on company market capitalization. As of December 29, 2023, the market capitalization of companies in our dataset was approximately CAN$3 trillion, while the market capitalization of the S&P/TSX Composite index was around CAN$3.3 trillion. This indicates that our dataset covers nearly 90 percent of the market capitalization of the S&P/TSX Composite index, which we consider to be quite comprehensive.

Furthermore, to verify the reliability of Yahoo Finance data, we replicated the study by Berg, Heeb, and Kölbel (2023). Their research used MSCI ESG rating changes for US corporations, with return data sourced from Compustat North America. In our replication, we used MSCI ESG rating data for US companies but obtained the return data from Yahoo Finance instead. We were able to closely replicate their findings regarding the impact of ESG rating changes on stock returns. This successful replication leads us to believe that Yahoo Finance data is indeed reliable for our analysis.

Methodology

In this section, we discuss our methodology for estimating the impact of changes in ESG ratings on stock returns. To analyze stock returns, we calculate the buy-and-hold returns for all stocks included in our sample as follows:

$$BHR_{\tau,it} = \left(\frac{P_{i,t+\tau}}{P_{i,t-1}} - 1\right) \times 100 \qquad (1)$$

$BHR_{\tau,it}$ refers to the percentage change in a stock's price when purchased at the end of date t-1 and held τ months from that purchase date. $P_{i,t}$ represents adjusted close, which is the closing price after adjustments for all applicable splits and dividend distributions.

We estimate the joint effect of MSCI ESG rating upgrades and downgrades on buy-and-hold returns. We follow Berg, Heeb, and Kölbel (2023) to estimate the following specification:

$$BHR_{\tau,it} = \sum_{j=-\tau}^{j=\tau} \beta_{j\tau} u_{it}^j + \sum_{j=-\tau}^{j=\tau} \gamma_{j\tau} d_{it}^j + \mu_{i\tau} + \theta_{t\tau} + \varepsilon_{it\tau} \qquad (2)$$

We perform 13 separate regressions for the timeframes $\tau \, \varepsilon \, \{0,1,...,12\}$ months to assess the immediate and subsequent effects of ESG rating changes for up to 12 months following the change. μ_i and θ_t are firm and month fixed effects, respectively. The unobserved error term is denoted by $\varepsilon_{it\tau}$. μ_{it}^j is a dummy variable indicating the occurrence of a ESG rating upgrade at a specific company i at a specific month $t-j$, while d_{it}^j indicates a rating downgrade.

The key variables in our study are $\mu_{it}^{j=0}$ and $d_{it}^{j=0}$, which indicate the occurrence of either an upgrade or a downgrade for a firm i in month t. To account for the influence of events occurring before and after the event of interest, we incorporate pre- and post-event lags, $\mu_{it}^{j \neq 0}$ and $d_{it}^{j \neq 0}$. Failing to include these controls could lead to an underestimation of our results. The coefficients of interests are $\beta_{0\tau}$ and $\gamma_{0\tau}$ that measure the estimated "abnormal" buy-and-hold returns during a τ-month holding period following a rating upgrade or downgrade. These are assessed relative to all other τ-month buy-and-hold returns for observations that occur at least months away from any rating change.

To assess potential pre-event trends in the buy-and-hold returns, we estimate the same panel regression as above. In this model, we shift all ESG rating upgrade and downgrade event dates forward by six months. This adjustment is made for holding periods ranging from $\tau=0$ to $\tau=6$. This modified approach yields estimates for $\beta_{j\tau}$ and $\gamma_{j\tau}$ corresponding to "placebo" events, which are essentially the hypothetical events occurring six months before the actual events. By analyzing holding periods extending up to one month before the actual events, we can effectively identify any abnormal buy-and-hold returns that might have occurred six months leading up to the real event.

Table A1 presents results from a series of panel event studies that use buy-and-hold returns for varying holding periods as the dependent variables, with MSCI ESG rating up- and

Table A1: Panel Event Study Results

	Buy-and-hold returns in months												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Upgrade	-0.1691	-0.0641	-0.1961	0.1224	0.7228	1.0344	0.6729	-0.4438	0.6913	1.7894	3.9939	4.0903	4.5545
	(0.5424)	(0.9372)	(1.0333)	(1.5786)	(1.7894)	(1.9489)	(2.0172)	(2.3331)	(2.7078)	(3.0327)	(3.4166)	(3.8387)	(3.9247)
Downgrade	-0.0375	-0.0103	-1.575	-1.8659	-1.8021	-1.1261	-1.2244	-3.0590	-2.4876	-3.5297	-0.9071	3.7907	0.9133
	(0.9301)	(1.6404)	(1.6721)	(2.1790)	(2.2406)	(2.6165)	(3.5703)	(2.8622)	(3.8763)	(4.1509)	(4.7658)	(6.8422)	(5.9010)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pre- and post-event lags	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

downgrades serving as the event triggers. We estimate these panel regressions for holding periods of up to 12 months, as indicated by $\beta_{0\tau}$ and $\gamma_{0\tau}$ in Equation 2. The studies take into account treatment leads and lags covering the period before and after ESG rating changes, in line with the specifications of Equation 2. For each regression, we trim the buy-and-hold returns data at the 1st and 99th percentiles. The data range from July 2014 to December 2021, with a one-year trim to ensure consistency across all regressions. Each regression incorporates 13,440 monthly observations, including 196 upgrades and 71 downgrades. Firm and month fixed effects are also included in all panel regressions. The confidence intervals are based on standard errors clustered at both the firm and month levels. In the parentheses, we include the standard deviations of the estimated parameters. None of the estimated coefficients reach significance at even the 10 percent level.

Robustness analysis

In this section we briefly discuss the robustness analysis we did for this study.

In our panel event study, we do not account for firm-specific characteristics such as leverage, market capitalization, and profitability, which were included in Berg, Heeb, and Kölbel's 2023 study. The exclusion of these factors was due to our lack of access to this information. Nevertheless, we replicated Berg, Heeb, and Kölbel's 2023 results using Yahoo Finance return data, albeit without the additional controls they incorporated in their panel event study. We were able to closely match their findings. Our panel event study includes firm and month fixed effects, and we believe that incorporating further controls would not alter the study's results.

In our panel event study, we introduced dummy variables for industry and found that our results remained unaffected by this specification. Additionally, we tested for specifications that included dummies for the COVID period and the post-2016 era, similar to Berg, Heeb, and Kölbel's 2023 study. Our results were also not sensitive to these alternative specifications.

A potential concern with our panel event study is the relative rarity of rating changes. In our dataset, only 2 percent of the observations includes a rating change, which raises a concern

about whether we have sufficient historical data to accurately estimate ESG upgrades and downgrades separately. To address this, we combined upgrades and downgrades into a single "rating change" variable for use in our regression analysis. However, even with this adjustment, we found that the coefficient estimated for the rating change remains statistically insignificant.

Endnotes

1   See *Global Sustainable Investment Review* (GSIR, 2022) for a summary of policies and regulations encouraging ESG investing in Canada.

2   This document uses the terms "sustainable investing" and "ESG investing" interchangeably. ESG investing, where ESG represents Environmental (E), Social (S), and Governance (G) considerations, is a strategy that incorporates these elements into the investment decision-making process.

3   Whether greater ESG-themed investing actually results in improved environmental conditions is a matter of debate that is beyond the focus of this essay. For a discussion of that issue, see Jones (2024, February 5).

4   Globerman (2022) identifies conflicting findings for studies of US-listed public companies.

5   Institutional investors in Canada identified three primary motivations for ESG investing: minimizing risk, improving returns over time, and fulfilling fiduciary duty, in that order.

6   See *The Global Sustainable Investment Review* (GSIR) 2022 for a summary of policies and regulations related to ESG investing in Canada.

7   If stock prices at any time reflect available information about corporate ESG reputations, only new information, i.e., changes in ESG reputations, will cause stock prices to change, assuming other determinants of stock price movements are held constant.

8   For more details on the effect of ESG investing on returns in both the short term and long term, refer to "Does ESG Investing Generate Higher Returns?" published in *Kenan Insight* 2022. Please note that this source is relatively accessible and designed to provide an intuitive understanding of the topic rather than give a deep dive into the academic theory.

9   It should be explicitly acknowledged that our study, as do most empirical studies of returns to ESG investing, focuses on publicly traded companies since relevant data are more readily available for public companies. However, there is no a priori reason to believe that the return relationship would be systematically different in samples of privately held companies.

10 *Alpha* measures how an investment's return compares to a benchmark for that investment, indicating if the investment has over- or underperformed the benchmark adjusting for expected risk. A positive alpha indicates that the investment outperformed its benchmark after adjusting for risk, while a negative alpha indicates underperformance. The Sharpe Ratio calculates the return earned per unit of risk, with higher values representing superior risk-adjusted returns.

11 Figure A1 in the appendix lists the 35 key issues that MSCI uses.

12 For a discussion of the challenges to creating aggregated and standardized measures of ESG performance, see Aliakbari and Globerman (2023).

13 Pucker and King (2022, August 1) assert that ESG funds typically charge fees that are 40 percent higher than traditional funds.

14 The possibility that investors who favour sustainable companies are simply misinformed about their relative expected returns cannot be dismissed, although this explanation is at odds with the efficient market hypothesis which holds that investors use available information to maximize investment returns. The fact that ESG investing has seemingly become less popular in recent years might be supportive of the claim that initial enthusiasm for ESG-themed investing was "excessive" (see Jones, 2024, February 5).

15 Viana (2023, January 31), among others, makes this argument.

16 A larger sample is more likely to be representative of the TSX Composite Index.

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