



FCLTGLOBAL
FOCUSING CAPITAL
ON THE LONG TERM



REPORT

Unpacking the Value of Corporate Net Zero Commitments

Focusing capital on the long term to support a sustainable and prosperous economy.

Millions of people around the world are saving money to meet personal goals – funding a comfortable retirement, saving for someone’s education, or buying a home, to name a few.

The funds to support these goals are safeguarded by institutional investors – pension funds, sovereign wealth funds, insurers, and asset managers – who invest in companies for the prospect of growth and security. These savers, their communities, and the institutions that support them make up the global investment value chain, and each benefit from long-term decisions in different ways:

Savers have long-term goals such as retirement or providing for the next generation

Asset Owners invest to match the long-term goals of their beneficiaries or constituents

Asset Managers align their horizons, incentives, and goals to those of asset owners, whose money they manage

Companies make multi-year investments in new markets, facilities, or products in order to create value for stakeholders

Communities and the other stakeholders benefit from companies’ long-term decisions, which create jobs, innovation, and wealth

Data shows that long-term-oriented investors deliver superior performance, and long-term-oriented companies outperform in terms of revenue, earnings, and job creation. But despite overwhelming evidence of the superiority of long-term investments, short-term pressures are hard to avoid. A majority of corporate executives agree that longer time horizons for business decisions would improve performance, and yet half say they would delay value-creating projects if it would mean missing quarterly earnings targets.

Today, the balance remains skewed toward short-term financial targets at the expense of long-term value creation.

FCLTGlobal’s mission is to focus capital on the long term to support a sustainable and prosperous economy. We are a non-profit organization whose members are leading companies and investors worldwide that develops actionable research and tools to drive long-term value creation for savers and communities.

MEMBERS



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Executive Summary

Since the Paris Agreement, many companies have committed to different levels of decarbonization in line with climate goals. From making net zero commitments to setting targets aligned with the Science Based Targets initiative, more and more companies are signaling their commitment to climate.

In this paper, we examine pre- and post-commitment equity and fixed income trends and find that climate pledges do not cost companies money in the short run. Over the medium to long run (past three to five years), companies with net zero pledges have significantly outperformed their peers, as evidenced in the equity and fixed income markets.

Using an original, hand-collected dataset of net zero committed companies and commitment dates, we found that: ¹

- **Capital markets do not penalize companies for climate pledges in the short term:**

- There is no significant abnormal stock price reaction (positive or negative) in the immediate days following a net zero commitment announcement.
- The findings are consistent controlling for individual year, geographic region, and sector, with segmented analysis revealing no significant

or material differences in performance (positive or negative). ²

- There is a significant increase in trading volume post-commitment, which may be due to a rotation in shareholder base – either way, its impact on near-term corporate valuation is immaterial.

- **Net zero companies have significantly outperformed in the past three-to-five-years:**

- An index of companies that have made net zero pledges outperformed the MSCI ACWI benchmark by over 10% (3% annually, adjusted for industry) from 2018-2021.

- **The fixed income markets reward companies with net zero commitments:**

- On average, green bonds issued by net zero committed companies trade at a 6-basis point (BP) premium compared to traditional bonds on the secondary market; there is no difference in premium between green and traditional bonds (with similar characteristics) at companies that have not made a net zero commitment.

Companies that have a clear climate strategy, maintain a consistent message on climate, and deliver on interim decarbonization goals can build buy-in among investors, ensuring their valuations are more reflective of a decarbonized business model over time.

Unpacking the Value of Corporate Net Zero Commitments

In recent years, some of the biggest companies across various industries have all made bold climate decarbonization plans and net zero commitments – including companies like Amazon, Unilever, and bp.^{3,4,5}

However, just as many, if not more firms have yet to make such a commitment, and evidence about the economic materiality of such commitments is mixed.

Some CEOs have argued that climate risk is investment risk, and that companies should immediately see the impact of net zero commitments in negative prices, P/E ratios, and valuations.⁶ Others wonder whether their commitment has a material

impact on their market value, or whether markets are entirely ignoring the future impact of such a commitment.

Regardless of perspective, the number of corporate net zero commitments has steadily risen each year, from under 2% of MSCI ACWI constituents in 2016 to just over 13% at the end of 2020 (Figure 1).⁷

Figure 1. Percentage of Companies In the MSCI ACWI Committed to Net zero Framwork⁸

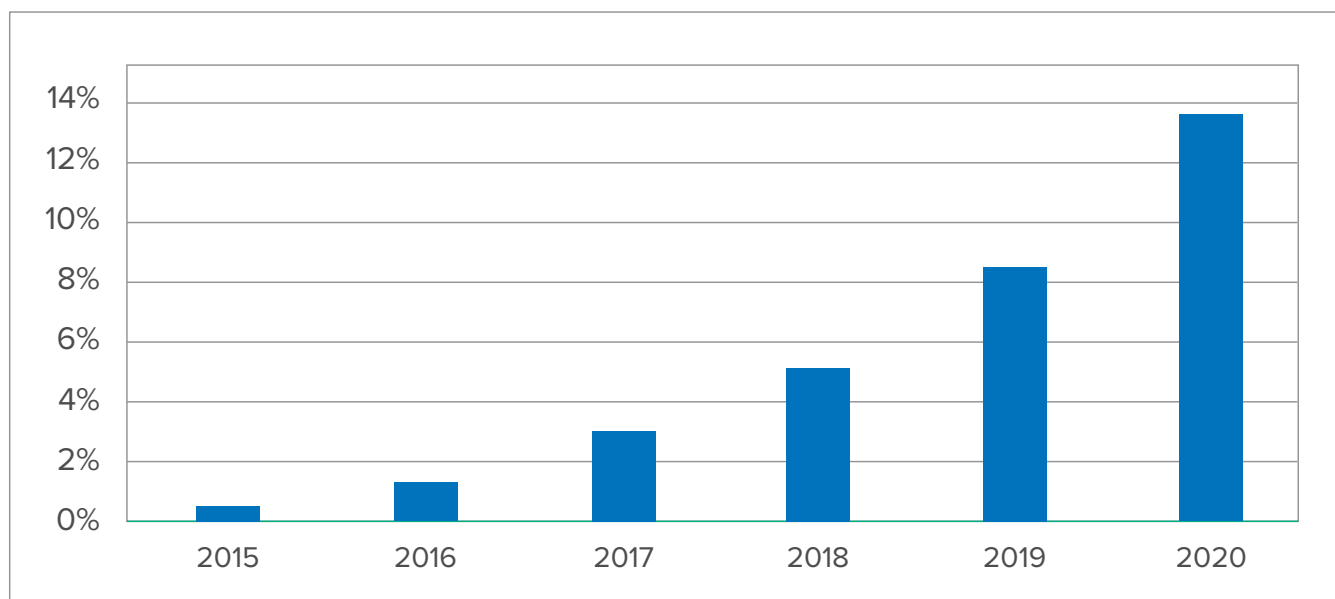
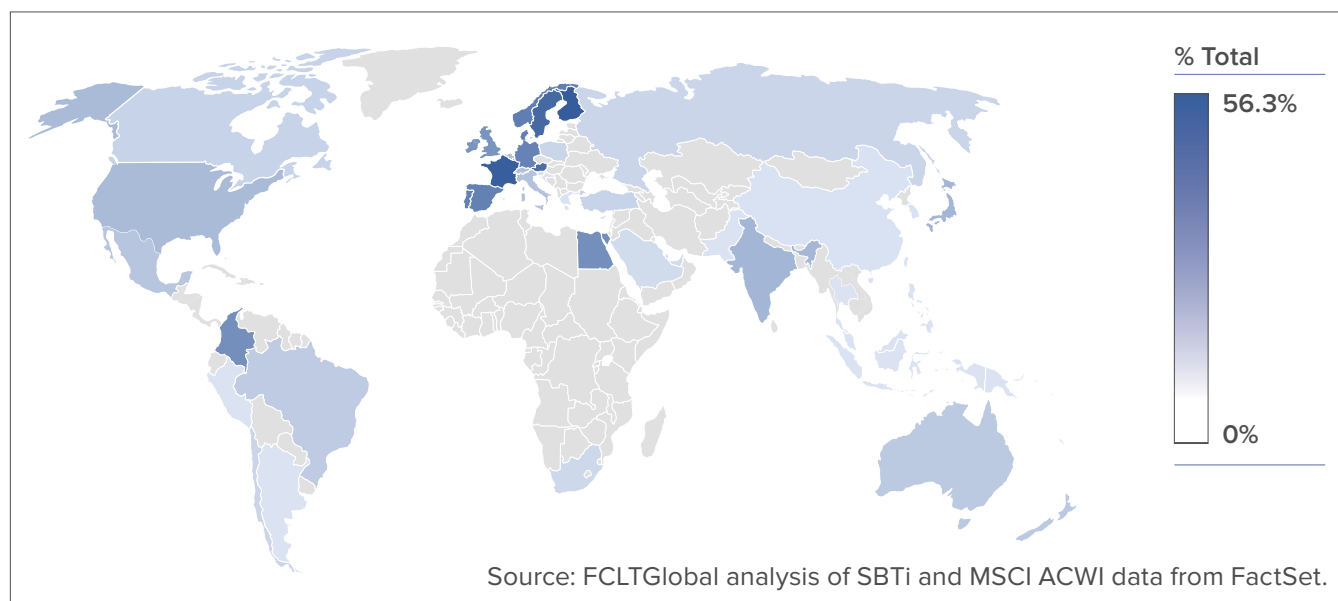


Figure 2. Net Zero Commitments by Percentage of Companies In Country ¹⁰



As seen in Figure 2, the current state-of-play when it comes to net zero commitments varies by country and sector:

- Companies in European countries lead the way, with many countries exceeding a commitment rate of 40%.
- Companies in larger economies (United States, Japan, and India) have begun making more commitments too, driven by a large increase in commitment rates recently, particularly in 2020.
- Companies in other large economies (China, Canada, Russia) have been much slower to adopt such commitments.⁹

LEVEL OF DECARBONIZATION

It is worth noting that when it comes to net zero commitments, size (of greenhouse gas emissions) matters. According to an industry study, it can take up to 10 decarbonization commitments from less emission-intense consumer goods companies to approximate the decarbonization impact of one large energy giant.¹¹ As such, it may be prudent to expect a small or negligible market reaction to a net zero commitment from a small consumer company since the impact of that commitment would be similarly small.

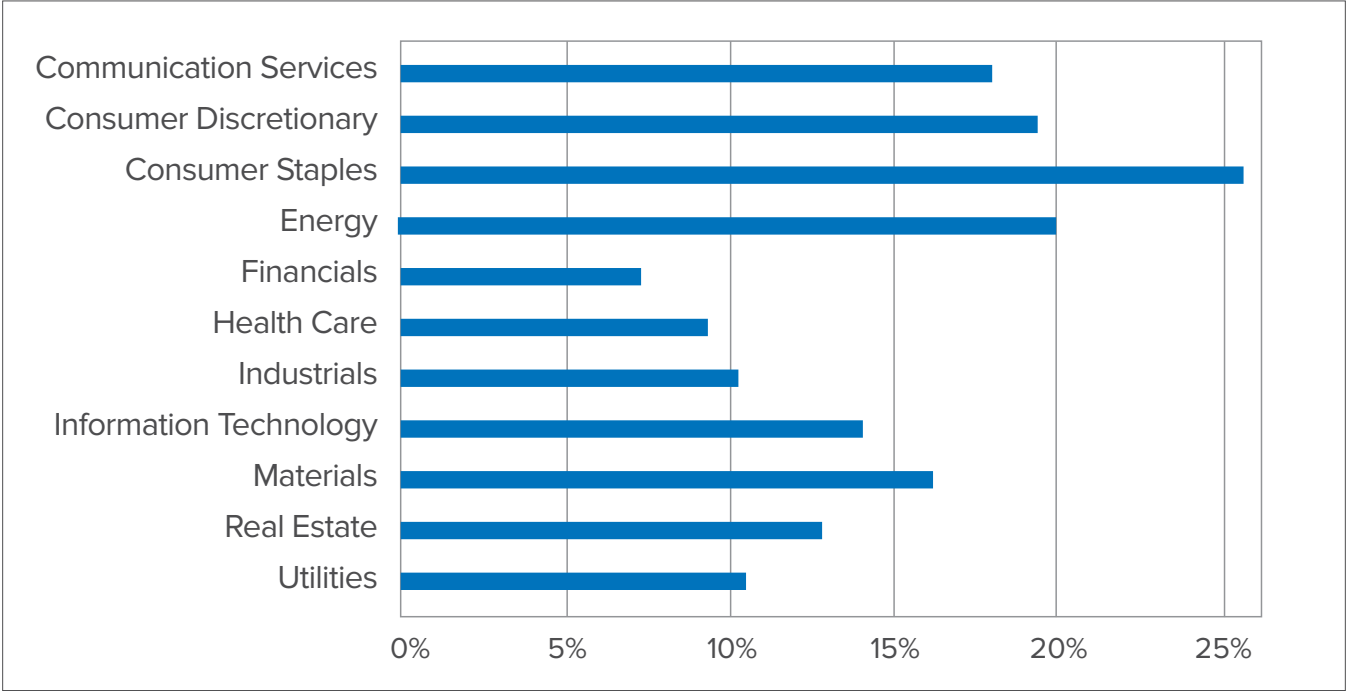
On a sector-by-sector basis, commitment rates are high in both carbon-intensive sectors like energy and in consumer-facing sectors like consumer staples, as seen in Figure 3.

In 2021, likely inspired by the lead up to COP26, more companies are making net zero pledges and other long-term climate commitments than ever before, but evidence seems to be mixed on the materiality of these commitments.

Existing literature in this area is rich, but suggests that overall, there is a mixed reaction to climate conscious signals in the post-Paris Agreement period (2015 onward).

- **Evidence on public equities** suggests that investors require higher stock returns for companies with higher carbon emissions. Bolton and Kacperczyk (2020)¹² found that there has been a rising carbon premium globally since the Paris Agreement, and Giese et. al (2021)¹³ found that markets have started to discount carbon-intensive firms.
- **For fixed income**, results vary on whether green bonds command a premium. Flammer (2021)¹⁴ and Larcker and Watts (2020)¹⁵ suggest that there is no “greenium” at issuance, while Baker et al. (2018)¹⁶ suggests there is a 5-7 BP green bond premium at issuance.

Figure 3. Net Zero Commitments by Sector



• **When it comes to ESG**, Seraphim and Yoon (2021)¹⁷ found that positive ESG news was associated with higher market returns and negative ESG news was associated with negative market returns.

Despite the many studies and varied results, however, there has been little attempt globally at quantifying how net zero pledges in particular impact market value (whether that’s, hypothetically, a 3% increase in price, a 2BP premium in green bonds).

To answer these questions, we manually collected our own datasets for this study, identifying the existence of a net zero commitment and date of first announcement of that commitment for each company in our sample universe. We then conducted an event study for our analysis of short-term performance, focusing on companies in the MSCI All-Country World Index (ACWI) for which we were able to identify a specific net zero

announcement date between December 12, 2015 (the adoption date of the Paris Agreement) and December 31, 2020.¹⁸

In the coming sections, we’ll provide a detailed account of our findings, examining where, how, and more importantly, *when* such commitments affect the bottom line, as well as what to make of these results and how to best extend our study in the future.

No Effect On Short-term Performance

METHOD

We used an event study to test our results in the equity space. Using a 60-day observation window, we first calculated predicted normal returns for a firm all-else equal, then looked for the size of the “abnormal” stock price reaction in the immediate days (0-15) following a net zero announcement.

RESULTS

Data from FCLTGlobal analysis suggest there is likely little (if any) short-term cost of or value to a net zero pledge, but there are pockets of value emerging in the medium to long run.

IN THE EVENT-STUDY, WE FOUND THAT:

- Overall, there was no significant abnormal stock price reaction, positive or negative, in the immediate 15 days following announcement of a net zero commitment (Table 1).
- The more carbon intense sectors (energy and utilities) had weakly positive abnormal returns in the 15 days following a net zero announcement, suggesting that investors may place more value on commitments from large greenhouse gas emitters (Table 1).
- There is a significant increase in trading volume

Table 1. Cumulative Abnormal Return of Companies Following a Net Zero Announcement ^{20,21}

| Day | Overall CAR | Utilities CAR | Energy CAR |
|-----|-------------|---------------|------------|
| 0 | -0.2% | 1.5% | 0.3% |
| 1 | -0.2% | 2.9%* | 0.0% |
| 5 | 0.1% | 0.5% | 0.2% |
| 10 | 0.2% | 1.6% | 2.5% |
| 15 | -0.1% | 1.7% | 4.2%* |

on the day-of and day-after companies’ net zero announcements, suggesting there may be a rotation in shareholder base from shorter-term to longer-term oriented investors (Table 2).¹⁹

Table 2. Trading Volume Difference of Companies Following a Net Zero Announcement ^{22,23}

| Day | Volume Difference |
|----------------|-------------------|
| 0 vs. prior 15 | 11.3%*** |
| 1 vs. prior 15 | 12.1%*** |
| 0 vs. prior 15 | 9.4%*** |
| 1 vs. prior 15 | 11.4%*** |

DISCUSSION OF RESULTS

At the highest level, there is no reaction in the capital markets immediately following a company’s net zero announcement. From days 0 to 15 post-announcement, the overall CAR for stock price hovered between -0.2% and +0.2%, implying that the noise outweighs the possibility of a significant reaction.

One hypothesis was that breakdowns of different GICS sector, geographic region, announcement year, and SASB greenhouse gas materiality subsamples may yield different results, as markets may react more strongly to announcements from Europe over Asia, 2020 over 2016 or for more heavily emitting sectors.^{24,25}

Of the subsample tests, we found weak significance in the utility and energy sectors (both had positive CARs significant at the 10% level during the study period), suggesting that investors may react more strongly to commitments from carbon-intensive industries. However, none of the other geography, year, and SASB materiality breakdowns exhibited share-price reactions that were statistically significant during the study period, suggesting that markets as a whole otherwise react relatively homogenously to long-term climate commitments.

An unexpected finding from our event study was that overall volume traded increased significantly on the day-of and day-after the commitment (T+0 and T+1), 11.3% and 12.1% higher on average respectively on announcement day compared to the prior-15 and post-15-day trading-periods.

Curiously, however, this significant increase in

volume traded was not accompanied by a material stock price reaction. One hypothesis is that this abnormal trading volume could be due to offsetting agendas from different investors: short-term investors react negatively to the news and sell, while long-term investors react positively to the news and buy, generating a shareholder base rotation that ultimately results in a statistical “wash.”

Whatever the case, our study finds that corporate net zero announcements do not generate material loss of value in the short term.

Longer-term Outperformance - Equities

METHOD

We tracked equity performance by comparing how an index of net zero committed companies fared as compared to the MSCI ACWI benchmark and analyzed ESG perform by looking at companies’ ESG “E” scores both pre- and post-commitment.

To construct the equity index, we included companies for which we could only identify their net zero commitment to a particular month or year (but not an exact day), yielding a larger, more

inclusive sample than our event study dataset.²⁶ We proceeded to use the same broader sample for our ESG tests.

RESULTS

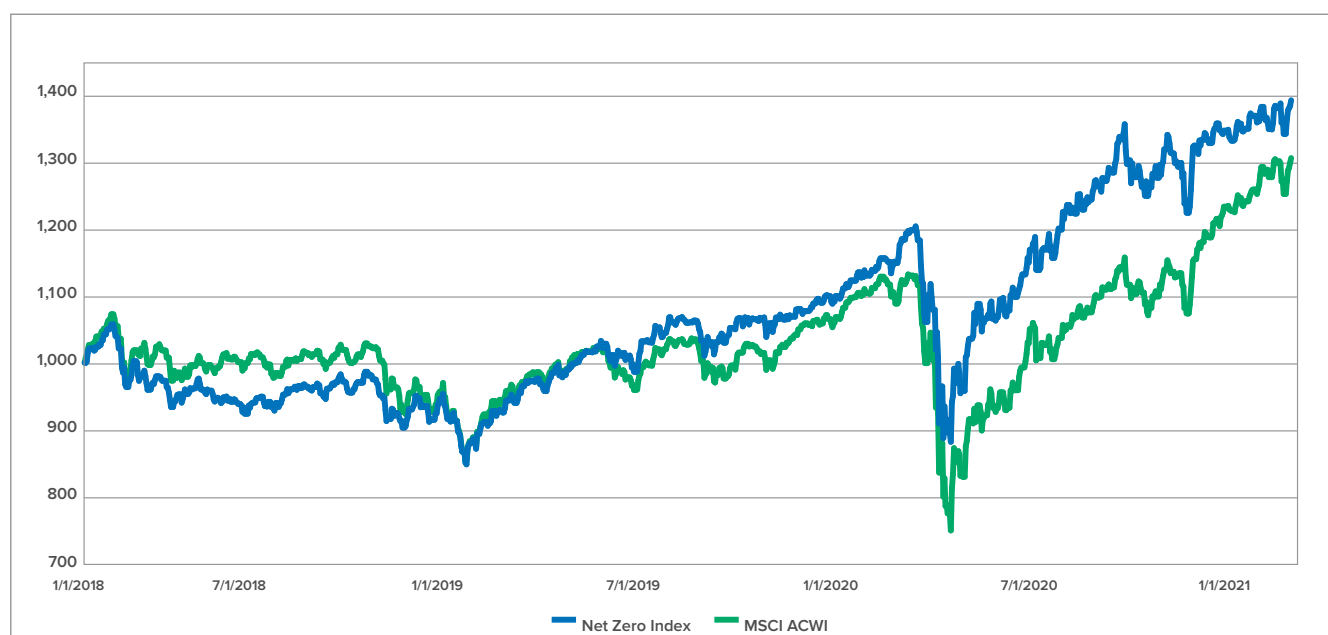
Throughout a longer, three-to-five-year timeframe, we found that:²⁷

- Over the medium-to-long term, an index of companies that have made net zero pledges outperformed the MSCI ACWI benchmark by over 10% (3% annually) from 2018-2021 (Figure 4).
- Companies making net zero commitments already had significantly higher ESG “E” scores pre-commitment than their counterparts (72/100 vs. 43/100). A higher “E” score might instead be correlated with a company’s likelihood to announce a net zero goal.

DISCUSSION OF RESULTS

On the equities side, all else equal, an index of companies with net zero pledges outperformed the MSCI ACWI by 3% annually on average from 2018-2021. That is, if we constructed and rebalanced a portfolio of companies who made net zero commitments to mimic the MSCI ACWI (market-cap weighted, rebalanced twice a year at the end of May

Figure 4. Portfolio of Net Zero Committed Companies vs. MSCI ACWI^{28,29}



and November), for every dollar invested in our net zero committed portfolio at the beginning of 2018, we would earn an additional 10% return compared to the MSCI ACWI by 2021.

Importantly, this outperformance was not just due to the sector biased composition of the portfolio: while the portfolio is overweight the consumer goods, industrials, and utilities sectors (a couple of which have done well in our sample period), it is also underweight financials and information technology sectors (both of which have had above-average returns over the last five years).

Compared to equity, on the ESG ratings side, our original hypothesis that companies making net zero commitments would enjoy a boost in ESG “E” score in the years after their commitment proved to be insignificant.

Table 3. ESG Environmental Scores by Companies with and without Net Zero Commitment^{30,31}

| Year | Committed Companies' ESG "E" Score | Non-committed Companies' ESG "E" Score | Commitments in Year |
|------|------------------------------------|--|---------------------|
| 2015 | 70.6 | 39.1 | 13 |
| 2016 | 73.1 | 41.9 | 21 |
| 2017 | 71.8 | 42.4 | 48 |
| 2018 | 72.8 | 45.1 | 71 |
| 2019 | 73.6 | 46.6 | 98 |
| 2020 | 71.6 | 48.9 | 152 |

Instead, we found that companies that make net zero commitments already had significantly higher “E” scores than their counterparts (an average “E” score of 72/100 vs. an average “E” score of 43/100 for non-net zero companies). It may also follow that companies that already have high ESG “E” scores may be more comfortable in making the leap to a net zero commitment, as opposed to others who either may not believe their “E” score is material to their business or are just struggling to get by.

Additionally, it is worth noting that the average ESG “E” score of non-committed companies has risen substantially over the past 5-6 years, from 39/100 in 2015 to 49/100 in 2020. While a considerable improvement, this increase may be the result of

improved ESG disclosures over the past five years rather than an improvement in actual environmental performance.

Longer term Rewards - Fixed Income

METHOD

Similar to our equity index construction above, our broader list of net zero firms was also used as the basis for our fixed income (green bond) sample to differentiate between net zero and non-net zero companies in the MSCI ACWI. Constituents of the ACWI were then divided into subgroupings based on net zero commitment year, green bond issuance, geography, sector, and SASB GHG emissions materiality in a series of tests evaluating performance by looking at how commitments affected the spread of bonds’ yield-to-maturity between green and traditional bonds.³²

RESULTS

Using the same broader sample and timeframe, for the fixed income market, we found that:

- On average, green bonds issued by net zero committed companies trade at a 6 BP premium compared to traditional bonds (on the secondary market); there is no difference between green and traditional bonds issued by non-net zero committed companies.

Table 4. Green vs. Traditional Bonds Yield-to-Maturity (BP)^{22,23}

| Net Zero Commitment Difference | Average Yield Green | Average Yield Traditional |
|---|---------------------|---------------------------|
| Overall | 94 | 97 |
| Companies with a net zero commitment | 27 | 33 |
| Companies without a net zero commitment | 118 | 118 |
| North America | 106 | 112 |
| EMEA | (7) | (4) |
| APAC | 147 | 147 |
| SASB Material GHG Emission Sectors | 58 | 66 |
| SASB Non-Material GHG Emission Sectors | 101 | 102 |

- The green bond market more broadly trades at a 3 BP premium vs traditional bonds: this difference can be seen through geography (green bonds in North America and EMEA trade at a premium compared to APAC) and SASB materiality subgroupings (GHG-material green bonds trade at a premium).

DISCUSSION OF RESULTS

At the highest level, we see that the fixed income markets reward firms that have made net zero commitments, and several conclusions follow from our matched sample analysis of green-to-traditional bond pairs.

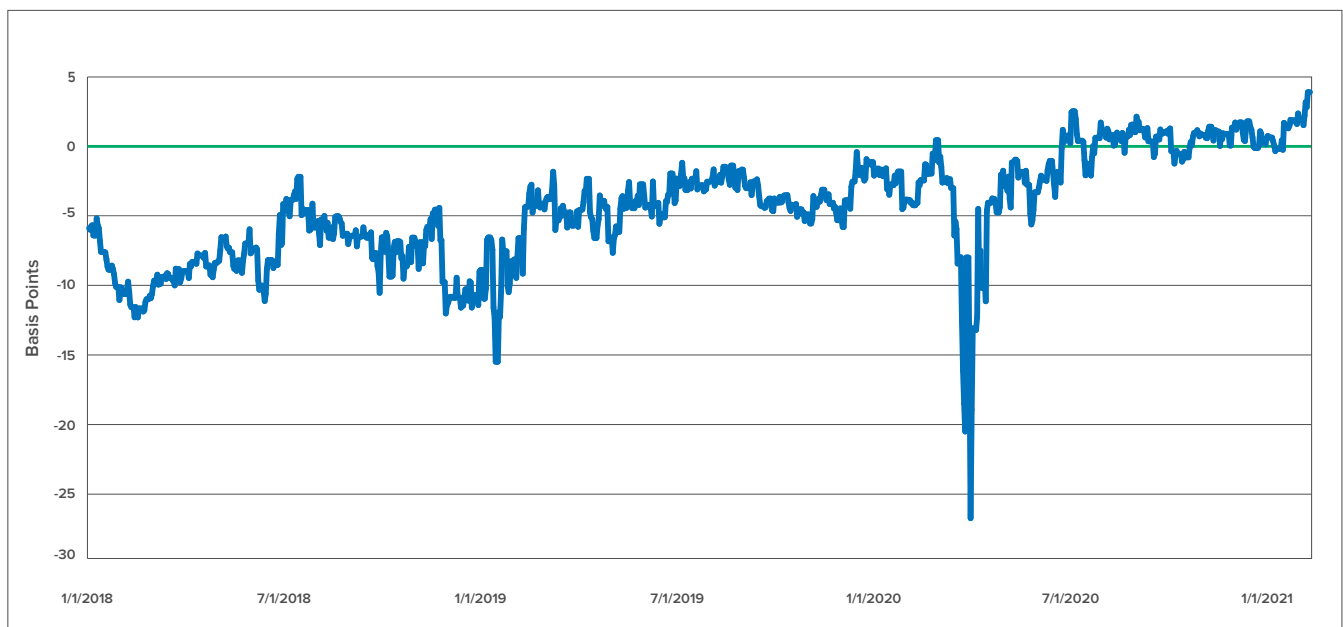
We first note that from our literature review, results were mixed on whether a green bond premium exists at issuance. Regardless, we find that a green bond premium *does* exist on the secondary market.

Specifically, at net zero committed companies, green bonds trade at a six BP premium as compared to traditional bonds. In contrast, at non-net zero firms, there is no difference (0 BP) between green and traditional bonds. We also find green bond premiums

in geographic regions (Europe and North America, 3 and 6 BP respectively, compared to 0 BP in APAC), as well as greenhouse gas material sectors as defined by SASB (8 BP difference between green and traditional bonds for SASB material sectors vs. 1 BP for SASB non-material sectors). These geographic and materiality premiums may suggest that investors are segmenting the market: putting a premium on being green where there is a material regulatory or business benefit to doing so.

More broadly, it's interesting that green bonds did not always trade at a premium compared to traditional bonds on the secondary market. Throughout most of our sample period (2018-2021), green bonds traded at a 3-7 BP discount on average (see figure 5). It wasn't until the second half of 2020 and early 2021 that green bonds began trading at a premium vis-à-vis traditional bonds, suggesting a shifting investor sentiment.

Figure 5. Green Bond Premium (BP)



Areas for further research

In addition to our high-level results above, we also looked at the following popular ideas and hypotheses from members. While many were unfeasible at this time or had either inconclusive or non-significant results, the landscape may change as more companies make net zero commitments

and investors adjust their views. These tests and hypothesis represent areas for potential further research by both FCLTGlobal and others.

Table 5. Inconclusive Results from Study - Short-term

| Area | Test | Hypothesis | Result |
|--|--|--|-----------------------------------|
| Equity | Bollinger bands (20-day, 2 standard deviations) | Traders picked up short-term signals and traded on net zero commitments | Not significant |
| Equity (sub-sample of stock price event study) | Geography | Europeans value the impact of a net zero commitment more than their American and Asian counterparts | Not significant |
| Equity (sub-sample of stock price event study) | SASB Materiality | Investors value commitments from SASB GHG material sectors more than non-GHG material sectors | Not significant |
| Fixed income | Yield curve event study | Markets would react strongly to the yield curves of a carbon-intensive company following a net zero commitment (there will be a twist/flattening in the longer end of the yield curve) | Not significant |
| Equity | NTM P/E ratios (event study) | Companies making net zero commitments should see an increase in NTM P/E ratios based on analyst estimates and subsequent revisions | Insufficient data |
| Equity | Change in shareholder base | The event study showed no overall stock price reaction, but high volume traded could signify a switch from short-term to long-term shareholders | Insufficient data ³⁶ |
| Equity (sub-sample of stock price event study) | Levels of SBTi commitments (1.5 degree, 2 degrees, well-below 2 degrees, etc.) | Companies making net zero commitments should see an increase in NTM P/E ratios based on analyst estimates and subsequent revisions | Insufficient data and sample size |

Table 6. Inconclusive Results from Study - Medium-to-long term

| Area | Test | Hypothesis | Result |
|--|---|---|-----------------|
| Equity (sub-sample of stock price event study) | Year | Commitments made in more recent years (2019 and 2020) are more material than in earlier years as investors begin to price climate risk into valuations | Not significant |
| Fixed Income | Yield curve differences of comparable companies in energy sector (by geography) | All else equal, an American, Canadian, and European energy firm's yield curve would look different on the long-term debt side (10+ years) due to differences in regulation and investor perspectives in those jurisdictions | Not significant |

Call to Action

Armed with these results, companies and investors can take action. Committing to a net zero pledge is “free” in the near term, and over time, if the company’s message is sound and consistent, markets seem likely to recognize and reward companies accordingly.

GREENWASHING

AN EXAMPLE

Oftentimes, there is a significant difference between making a net zero commitment and actually delivering on those plans. Many firms who have made a net zero pledge do not yet have a plan on how to hit their target – or have yet to share that plan in sufficient detail publicly. Moreover, different levels of science-based commitments exist – ranging from 1.5 degrees, to 2 degrees, to “preliminary commitment made”. Select companies have failed to show meaningful progress post-commitment, leading to academics and practitioners alike questioning the intent of their original net zero commitment.³⁷

FCLTGlobal’s past research has found that companies that have done well have followed through and delivered on a well-defined long-term roadmap, hitting or beating interim targets along the way. While there is no short-term cost to make a net zero commitment, companies that do not put it in their strategy will be accused of greenwashing.³⁸

For the already climate-conscious firms, a net zero commitment is just another step in their broader climate strategy. It’s possible that investors have already incorporated the broader plan into their valuation of the company. In these cases, a net zero commitment would be an affirmation of an already well-understood direction for a company, rather than “new” news.

Given the evidence above, it seems fair to conclude that to generate long-term value, taking advantage of climate opportunities while mitigating associated risks, a net zero declaration will at least do no harm. Companies can create long-term value by making a net zero pledge while also committing to a long-term climate plan, maintaining a sound and consistent message with investors, and demonstrating progress along the way.

Conclusion

Overall, our study finds that decarbonization pledges do not drive a stock drop in the short run. Companies committing to net zero goals and science-based targets (and following through on them) have outperformed in the equity and fixed income markets. Committing to a net zero goal is essentially “free”: there is no short-term cost to a company, and doing so helps build buy-in among investors, ensuring corporate valuations are more reflective of a decarbonized business model over time.

Appendix

DATA DESCRIPTION

Data was procured from a variety of different sources. For the main net zero dataset, we used a list of net zero committed firms from Science-Based Targets Initiative (SBTi), then hand collected our dataset by collecting and verifying initial net zero announcement dates for each company.

We combined the sample of all companies for which we were able to identify a specific net zero announcement date with the MSCI All-Country World Index (ACWI) constituents to arrive at a final sample of 276 unique companies across all 11 GICS sectors and 31 countries for our event study.

To construct our sample for the index of net zero committed companies, we added additional companies for which we could only narrow down their net zero commitment to a particular month or year, then compared this sample against the MSCI ACWI as a benchmark. This larger sample yielded a total of 445 companies. For both the event study and index analyses, additional financial and pricing data was then pulled from FactSet to conduct the analysis.

Similarly, this broader list (445 companies) was also used as the basis for our ESG and fixed income (green bond) samples to differentiate between net zero and non-net zero companies in the MSCI ACWI. Constituents of the ACWI were then divided into subgroupings based on net zero commitment year, green bond issuance, geography, sector, and SASB GHG emissions materiality³⁸ for both sample in a series of tests.

For the fixed income sample, using a list of ACWI constituents, we matched a list of currently outstanding green and traditional bonds from the same issuer with similar characteristics (e.g., size,

term, etc.) via Refinitiv. This resulted in a total of 55 green-traditional bond pairs across 10 of 11 GICS sectors and 13 countries. We then collected their daily yields-to-maturity (YTM) from FactSet and conducted subsequent analysis on these bonds based on the difference in YTM between companies' matching green-traditional bond pairs at a specific cutoff date (2/28/2021). Bonds pairs were matched based off their characteristics, namely rating, seniority, currency denomination, maturity year, and coupon – all data collected from Refinitiv. Lastly, we note that yields of green and traditional bonds are taken from how they trade on the secondary market, not at issuance.

Detailed methodology on procurement of each of the datasets is further explained in the methodology section.

METHODOLOGY

Equities event study: SBTi Dataset combined with manual net zero announcement date collection.

For the event study, a typical event study methodology (similar to that of Seraphim and Yoon, 2021) was used. Data was hand collected by manually verifying the commitment date from each company from the list of committers from the Science-Based Targets initiative (SBTi). This was typically done through manual text searches on keywords like “net zero commitment”, “carbon neutral”, and “SBTi”, then finding consensus dates of announcements from corporate websites, reputable third-party media outlets like Reuters, The Financial Times, and The Wall Street Journal.

This resulted in a total of 793 companies for which we were able to verify an announcement date. Confirmed companies were then merged with constituents of the MSCI ACWI as of 12/31/2019 by name and ISIN, resulting in a total of 284 companies.

After removing duplicates for dual-listings and multiple share classes (e.g. Chinese A and H class shares, companies with dual-class shares like Under Armour), our final sample contained 276 companies across all 11 GICS sectors and 36 countries. It is important to note here that the actual number of net zero committed companies on SBTI's list is over 1,000 companies, but many of these companies are small and medium-sized enterprises (SMEs), private companies, and not members of the MSCI ACWI, hence our much smaller list of 276.

The event study itself initially looked at three fields: stock price, volume traded, and forward-looking analyst P/E ratios. Upon the first cut of the data, coverage for updated analyst revisions of P/E was sparse, and that field was dropped from further research. We proceeded to procure stock price and volume data from FactSet, then normalized data points to day-over-day percentage change for comparability across firms. Using the announcement date as our "T-0" date, we backed out our 60-day observation window and 15-day testing window. An average of the previous 60 days' stock price movements was calculated (controlling for market movements) and applied as the average expected abnormal return for our testing period. We then calculated the cumulative average returns for the 15-day testing window, starting with day 0 through the day 15 after the announcement. A cumulative average abnormal return (CAR) was taken (again controlling for market movements), and results were measured against a null hypothesis of no cumulative excess abnormal return. Controls for geographic region, GICS sector, and year of commitment were used in the form of dummy variables, and subsamples were also examined for excess CAR.

Note 1: Because the concept of a net zero target is relatively new (only gaining momentum over the last 18 months) and we wanted to capture a broader sample of companies over a longer timeframe, we define "net zero" in this paper as any company who has either made a net zero commitment or has set a science-based target.

Note 2: we took the initial date of commitment to the SBTI where possible. There are several target classifications per the SBTI website (initial commitment made, 2 degrees, 1.5 degrees, well below 2 degrees, well below 1.5 degrees), and to make the event study as comparable as possible, we took the initial corporate commitment and announcements where possible for all companies. We had tried breaking down the different degrees of commitments by target classification, but due to the size of the sample, meaningful comparisons were not possible at the time of our research. We do suggest it as an area for further research, however.

Note 3: at the time of analysis, there are no science-based targets for certain sectors and industries, among them oil & gas, transportation, chemicals, to name a few. Manual checks were done with companies in those sectors in the MSCI ACWI to find initial net zero commitment dates separate from SBTI. As an example, BP, the large British O&G producer, announced its net zero strategy on February 12, 2020 and was thus included in our sample.

Note 4: in our initial dataset, outliers for both stock price returns and volume traded were winsorized at the 1st and 99th percentiles.

Index: A combination of the SBTI dataset, along with companies with a narrow enough commitment date range, but no specific commitment date.

For the equity index, we augmented our SBTI dataset with additional companies for which (for the purposes of the event study) we could not determine a specific commitment date, but were able to determine a particular year or quarter during which the commitment occurred (e.g. Linde Plc had a commitment date of Q1 2020). These companies were added to our base sample of 276, bringing the equity index sample to a total of 445 MSCI ACWI companies.

We then proceeded to construct a portfolio of these net-zero committed companies, comparing overall performance against the broader MSCI ACWI benchmark. Using the same weighting and rebalancing methodology as the MSCI ACWI, we market-weighted our index based off market-cap as of each rebalancing date, and added a company to the portfolio at each rebalancing date (5/31 and 11/30 each year) if the company had made a net-zero commitment during the previous half-year.

Note 1: to start with a large enough portfolio, we set our minimum viable number of companies to construct an index at 20, as such we began tracking the portfolios as of 1/1/2018, indexing both our net zero portfolio and the benchmark MSCI ACWI index to 100 as of that date.

Note 2: we acknowledge the shortcomings of the market-weighted methodology in the construction of our net zero companies portfolio, namely that the addition (and subsequent performance) of a mega-cap firm would greatly impact index performance overall. However, we believe this to be a more realistic and accurate comparison with our benchmark, the MSCI ACWI index, which follows a similar market-cap weighted construction methodology.

Fixed income bonds: Matching pairs dataset (traded on the secondary market) from Refinitiv.

For the green/traditional bonds dataset, using the list of MSCI ACWI constituents, we procured a list of companies who had a green bond outstanding as of 12/31/2020. To capture the post-Paris agreement, net zero commitment effect, we added additional filters in that these bonds had to be issued post-Paris agreement (2017 or later). Narrowing down the list and removing duplicates, we find a list of 303 green bonds issued at 154 companies.

We then procured a similar list of traditional bonds outstanding for our list of companies. To ensure comparability between green and traditional bonds, we further specified that closely-matched bonds must have the following basic characteristics:

- Same year/window of maturity date
- Fixed coupon
- Senior unsecured
- Same rating
- Similar issuance size
- Same currency denomination

We then proceeded to match the green/traditional bond pairs in a methodology similar to that of Flammer (2021).³⁹ Our final sample consisted of 55 green/traditional bond pairs across 10 sectors and 13 industries.

Note: our dataset here differs from that of previous studies of green bond premiums. Notably, we do not look at whether or not a green bond premium/discount exists at issuance, rather, we look to see if post-net zero announcement, and over the last few years in general, green bonds have been trading at a premium or discount on the secondary bond market.

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ALLEN HE
FCLTGlobal, [Author](#)

ANNE DUMOULIN
Kempen Capital Management

KARLY DYCK
Brookfield Asset Management Inc.

CHRISTOPHER FANNING
Oaktree Capital

ROBERT FERNANDEZ
Breckinridge Capital Advisors

CAROLINE FLAMMER
Boston University

LYSANNE GRAY
Unilever

HYUN-WOO LEE
GIC Private Limited

RAOUL MARTIN
Kempen Capital Management

EDWARD MASON
Generation Investment Management LLP

ROGER SEABROOK
Unilever

THONG CHIE SHANG
GIC Private Limited

ALEXIS WEGERICH
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TRICIA WINTON
Bain Capital Inc

Endnotes

- 1 For more on our convention on the use of the terms “climate pledge”, “net zero commitment”, “decarbonization goal”, see the Methodology section of the appendix.
- 2 Of note, we did find that the more carbon intensive sectors had positive abnormal returns at the 10% significance level, suggesting that investors may place more value on commitments from more carbon intensive firms. For more, see the results section.
- 3 “All in: Staying the Course on Our Commitment to Sustainability.” Amazon Sustainability, 2020. <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=sustainability-all-in-june-2020>.
- 4 “Unilever sets out new actions to fight climate change, and protect and regenerate nature, to preserve resources for future generations.” Unilever, 2020. <https://www.unilever.com/news/press-releases/2020/unilever-sets-out-new-actions-to-fight-climate-change-and-protect-and-regenerate-nature-to-preserve-resources-for-future-generations.html>
- 5 “BP sets ambition for net zero by 2050, fundamentally changing organisation to deliver.” BP, 2020. <https://www.bp.com/en/global/corporate/news-and-insights/press-releases/bernard-looney-announces-new-ambition-for-bp.html>.
- 6 “A Fundamental Reshaping of Finance – Larry Fink’s 2020 Letter to CEOs,” BlackRock, 2020. <https://www.blackrock.com/corporate/investor-relations/2020-larry-fink-ceo-letter>.
- 7 We note that since the end of our study (12/31/2020), a substantial amount of new companies have announced net zero plans. For more on our definitions of “climate decarbonization and net zero commitment”, see appendix.
- 8 Source: FCLTGlobal analysis of SBTi and MSCI ACWI data from FactSet.
- 9 As noted in footnote 7, there have been a lot of commitments in 2021, especially among Canadian companies, who have caught up to the level of other large world economies.
- 10 Source: FCLTGlobal analysis of SBTi and MSCI ACWI data from FactSet.
- 11 “G20 Zero-Carbon Policy Scoreboard.” Bloomberg NEF, 2021.
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- 15 Larcker David F., and Edward M. Watts. “Where’s the Greenium?.” Rock Center for Corporate Governance at Stanford University Working Paper, 239 (2019): 19-14.
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- 17 Seraphim, George, and Aaron Yoon. “Stock Price Reactions to ESG News: The Role of ESG Ratings and Disagreement.” Harvard Business School Accounting & Management Unit Working Paper, 21-079 (2021).
- 18 For more on methodology and dataset collection, see methodology section in the appendix.

- 19 Here the assumption is that green investors are more long-term oriented than the average investor, and as a result of companies' climate pledges, buy into the company while other investors who have different investment horizons or value different things sell.
- 20 Source: FCLTGlobal analysis of SBTi and MSCI ACWI data from FactSet.
- 21 Significance levels: * - 10%, ** - 5%, *** - 1%.
- 22 Source: FCLTGlobal analysis of SBTi and MSCI ACWI data from FactSet.
- 23 Significance levels: * - 10%, ** - 5%, *** - 1%.
- 24 Global industry classification standard. See <https://www.msci.com/gics>.
- 25 Companies were marked "material", or "non-material" based on SASB's materiality map. In looking at net zero commitments, we specifically focused on whether a company belonged to an industry for which "GHG emissions" was likely a material issue. For exact industry mappings, see: <https://materiality.sasb.org/>.
- 26 This new sample consists of 445 companies. See the data and methodology sections of the appendix for more details.
- 27 Here our timeframe varies depending on the dataset (three years for the portfolio index data, five for the ESG "E" score).
- 28 Source: FCLTGlobal analysis of SBTi and MSCI ACWI data from FactSet.
- 29 Value-weighted, rebalance semi-annually at the end of May and November.
- 30 Source: FCLTGlobal analysis of SBTi and MSCI ACWI data from FactSet and Refinitiv.
- 31 Note: scores are out of 100 based on a percentile grading system. For more, see Refinitiv's methodology at: https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf.
- 32 Detailed methodology on procurement of each of the datasets is further explained in the data and methodology section of the appendix.
- 33 See Flammer (2021), Larcker and Watts (2019), Baker et al. (2018).
- 34 Source: FCLTGlobal analysis of Refinitiv and MSCI ACWI data from FactSet.
- 35 Calculated as the YTM difference between traditional and green bonds, excluding outliers at the 5% level.
- 36 See, Flammer, Caroline. "Corporate green bonds." *Journal of Financial Economics*, 2021. <https://www.sciencedirect.com/science/article/abs/pii/S0304405X21000337>.
- 37 Babcock, Ariel, Allen He, and Victoria Tellez. "Driving the Conversation: Long-Term Roadmaps for Long-Term Success.", FCLTGlobal, 2019.
- 38 Companies were marked "material", or "non-material" based on SASB's materiality map. In looking at net zero commitments, we specifically focused on whether a company belonged to an industry for which "GHG emissions" was likely a material issue. For exact industry mappings, see: <https://materiality.sasb.org/>.
- 39 Flammer, Caroline. "Corporate green bonds." *Journal of Financial Economics*, 2021. <https://www.sciencedirect.com/science/article/abs/pii/S0304405X21000337>.

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