

# Surfing the Green Wave: What’s in a “green” name change? \*

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## Abstract

This study delves into the financial intricacies of greenwashing by analyzing the impact of adopting a green-related name (i.e., a name that evokes green and sustainable sentiments) on investor behavior. The findings reveal that companies earn significant positive abnormal returns when they change their name to a green-related one only if they were not involved in green activities at the time of the announcement. However, over an extended period of time, companies unrelated to green activities experience substantial negative abnormal returns if they fail to align their operational focus with the new name after the change. These results cannot be explained by firm characteristics, standard pricing factors, or outliers.

**Keywords:** Corporate Social Responsibility, Sustainable Investments, Greenwashing, Corporate Name Change.

**JEL Classification:** M14, G24, G11

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# 1 Introduction

During the past few years, the wave of popularity of environmental, social, and governance (ESG) investments has been growing dramatically. As a consequence, many companies have begun to market themselves and their products as more environmentally friendly or more ecological. Some of these companies are indeed changing their core business to embrace a more sustainable way of production, while others are just surfing this green wave.

The intersection of two firm behaviors: poor environmental performance and positive communication about environmental performance is known as *greenwashing* (Delmas and Burbano, 2011). As sales shares of ecological products continue to increase, green marketing is now a widespread phenomenon supported by evidence on the positive and significant impact of customer's perception of eco-brand and their actual purchase behavior (see e.g., Rahbar and Wahid (2011) and Kim and Cha (2021)).

In this paper, I investigate a new channel whereby the adoption of a green-related name (i.e. a name that evokes green and sustainability feelings) could influence investor behavior. There exist multiple valid reasons for the enthusiasm of companies and investors alike to be associated with green and sustainable activities. According to a study by dentsu international and Microsoft Advertising<sup>1</sup>, 88% of consumers globally say they will make sustainable purchases whenever possible and, as early as 2009, more than 75 percent of S&P 500 companies had website sections dedicated to disclosing their environmental and social policies and performance (Alves, 2009). However, the primary issue lies in the fact that many companies have minimal or nonexistent plans to incorporate sustainability, instead harnessing its influence to attract investors for their own benefit. The objective of this study is to understand the impact of a green-related name change and the potential effect of greenwashing through the corporate name change on stock prices. More specifically, I ask three questions: Do green-related name changes generate positive abnormal returns around the announcement day? Is this effect the same for companies not involved in green activities? Do non-green companies engaging

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<sup>1</sup>See: <https://about.ads.microsoft.com/en-us/insights/g/the-rise-of-sustainable-mediag>

in green-related name changes experience negative abnormal returns in the absence of a corresponding adjustment in their operational activities?

I address these questions by first developing a list of terms that are associated with sustainable sentiments to identify green-related name changes. Conducting textual analysis on a dataset of 548 sustainability reports, I create a green dictionary comprising 22 words. Consequently, I study a set of 102 companies that, from January 2000 to December 2022, have announced the incorporation of a green-related term to be included in their corporate name. Leveraging the text extracted from the business description section of the SEC documentation present in the 10-K forms, I demonstrate that name-changing announcements generate diverse effects depending on the involvement of these companies in green activities. Specifically, I contrast the effect of name changes in two groups: companies that were related to green activities prior to the announcement (Green sample), and companies that were not related to green activities after the announcement (non-Green sample). Within the non-Green sample, two subgroups were identified for further analysis. The first subgroup, designated as the "Real Change" group, encompassed companies that after the name change implemented substantial adjustments to their business practices to align with their newly adopted green image. The second subgroup, referred to as the "Greenwashing" group, consists of companies that underwent a name change but whose involvement in sustainable activities remains blurred or minimal, thereby raising the potential concern of merely employing the name change as a superficial marketing tactic without a genuine commitment to environmental sustainability. At the first stage of the analysis, I test the effect of the name change in a short period of time using traditional event study methodology and a set of robustness tests. At the second stage, I study the effect of the rebranding over an extended period of time. The findings reveal significant internal differentials between companies that adopt corporate name changes.

The paper contributes to the existing literature in two main ways. First, to the best of my knowledge, this is the first study that compares the valuation gains observed around green-related name changes. Some earlier studies document abnormal stock price increase

around cryptocurrency-related name changes ([Sharma and Paul \(2021\)](#), [Akyildirim et al. \(2020\)](#), [Jain and Jain \(2019\)](#)) and Internet-related name changes ([Lee \(2001\)](#) and [Cooper et al. \(2001\)](#)). The results of the present paper show that the effect of the announcement of green-related name changes alone produced substantial cumulative abnormal returns only for companies not associated with green activities prior to the announcement. These results are explained through the lens of signaling theory. As emphasized by [Kot \(2011\)](#), if a corporate name change does not signal any meaningful alterations in a company's future cash flows, investors will not react to such news.

While secondly, this paper contributes to the growing literature of green preferences and green indicators ([Pástor et al. \(2021\)](#), [Berg et al. \(2019\)](#), [Cornell \(2021\)](#)), greenwashing ([Santos et al. \(2023\)](#), [Mateo-Márquez et al. \(2022\)](#)) as well as the ongoing debates surrounding information asymmetry ([Bajo and Raimondo \(2017\)](#), [Boulton and Campbell \(2016\)](#)). The results show that investors interpret the name change of companies not primarily involved in green activities as a signal that they are about to enter a preferable market. However, upon a company's name change without concurrent changes in behavior or practices, the market initially exhibits a fleeting enthusiasm, but it promptly and efficiently responds with negative reactions. It is worth noting that only the primary decision-makers within the organization possess accurate insights regarding the degree of the potential future integration of green activities or whether they will be integrated at all. The adoption of such behavior has given rise to significant information asymmetry and obscured the transparency of these corporations. Consequently, it becomes essential to conduct timely investigations into the genuine motives behind the decision to employ such behaviors.

This paper presents several novel findings that are of significant interest to both investors and financial regulators. The results indicate that investors should approach with caution when considering investments in companies that announce a green-related name change, especially in the case of companies that are not related to green activities. There is a compelling rationale for equity market regulators to establish a formal policy aimed at curbing the use of deceptive or misleading corporate names. Such a policy

would help protect investors from potential misrepresentation and ensure transparency and integrity in the marketplace.

The paper is organized as follows. Section 2 reviews the past academic literature. Section 3 describes the data and the methodological approaches used for the empirical study. Section 4 presents a complete overview of the results. Finally, Section 5 concludes.

## 2 Literature review and hypotheses development

Previous studies have already examined the impact of a name change on stock returns. For instance, [Karpoff and Rankine \(1994\)](#) and [Kashmiri and Mahajan \(2009\)](#) analyze the effect of the announcement of a name change on stock prices and find that companies changing their names earn a statistically insignificant excess return around the announcement date. [Josev et al. \(2004\)](#), using a dataset of corporate name changes from 1995 to 1999 in Australia, find evidence of negative abnormal returns around the date of the announcement. On the other side, [Kot \(2011\)](#), using a sample of Hong Kong listed firms, spanning from 1999 to 2008, finds evidence of price reactions around the announcement date associated with changes motivated by a merger or acquisition, a restructuring, or a change in business type. The existing literature seems to be mixed. However, prior research suggests a consensus in cases where a new name incorporates a trending topic or captures market mania. The “.com” ([Cooper et al., 2001](#)) and the “blockchain” ([Akyildirim et al., 2020](#)) effect provides the best example for this study. In particular, [Cooper et al. \(2001\)](#) found that companies that changed their names to “.com” names over the period from 1999 and 2001 earned a significant cumulative abnormal return of the order of 74 percent for the 10 days surrounding the announcement day. [Lee \(2001\)](#) uses a market signaling perspective to link name changes to shareholder reactions and show that when name changes are accompanied by other strategies, the signaling value is greater, and corresponds to greater increases in stock price and trading volume. Accordingly, firms that change their names to proactively communicate a change in their scope of business (i.e., a future change in their product portfolio or geographical markets),

are also rewarded more than firms that change their names to retroactively align their names with a new scope (Kashmiri and Mahajan, 2015). The present paper contributes to this strand of literature by finding evidence that a green-related name is not associated with a market mania. Companies engaging in a green-related name earn positive and significant cumulative abnormal returns only if they were not involved in green activities prior to the announcement date.

While the literature on name changes is mature, literature on the effect of greenwashing on corporate's value is instead in its infancy. This is because greenwashing is not easy to spot and most of the time it goes unnoticed. Delmas and Burbano (2011) examines the drivers of greenwashing and identify the limited and imperfect information about firm environmental performance, as well as the uncertainty about regulatory punishment, as the main contributors to greenwashing. Previous studies focus mainly on the particularities of greenwashing without deepening the financial implications and effects on stock returns (see e.g., Gregory (2021), Chen (2008), and Lyon and Maxwell (2011)). An interesting empirical result is provided by Du (2015). By using the list of firms with greenwashing provided by a famous Chinese newspaper, the author documents market reactions to the exposure of greenwashing. In particular, the author find that greenwashing is significantly negatively associated with cumulative abnormal returns (CAR) around the exposure of greenwashing. Testa et al. (2018) use a large sample of publicly traded companies from 58 countries and 19 industries and show that it does not pay to be a greenwasher. Similarly, De Jong et al. (2018) support the understanding that greenwashing offers limited benefits in terms of perceived environmental performance while posing a significant threat in terms of perceived integrity. Scholarly work in greenwashing has usually highlighted the dual temporal dimension of this phenomenon. The initial phase involves the implementation of greenwashing practices, while the subsequent phase focuses on the detection and recognition of such practices as greenwashing. To solve the problem of data, the present paper adds to the literature around greenwashing by using a unique experiment where companies adopt green names to deceptively persuade the public that their main activities

are environmentally friendly. I am not aware of any studies relating corporate name changes and greenwashing activities whereby the first dimension is tested through the market response to a corporate name change (greenwashing implementation) and the second one on a longer-term market response (greenwashing detection).

### 3 Data & Methodology

**Green-related names** To develop the database to test the research propositions, I began by searching for all possible words that can be associated with sustainability feelings. Previous research has already studied and developed green dictionaries. For instance, [Loughran et al. \(2009\)](#) search for ethics-related terms applying only some keywords. [Verbeeten et al. \(2016\)](#) develop a list of 32 keywords based on Global Reporting Initiative (GRI) framework. More recently, [Baier et al. \(2020\)](#) create a word list by actively judging the words of a sample. However, existing dictionaries are not appropriate for this study due to bigrams and complex words. Hence, to identify an appropriate list of green words, I first obtained all sustainability reports published by the constituents of the S&P500 index from 2014 through 2022. This resulted in a sample of 548 Sustainability reports from 366 companies. Words included in my green dictionary were chosen by actively judging the 1000 most used words cited at least by 2 companies belonging to different industries<sup>2</sup>. The full list of words included in the final dictionary is illustrated in [Figure 1](#). As the figure depicts, the dictionary includes a total of 22 words. In [Figure 1](#), the size of each word depends on the frequency of times it appears in sustainability reports. Examples of green-related names encompass terms such as “sustainability,” “water,” “green,” “climate,” and “environmental”. These terms are used to denote associations with ecological consciousness, environmental stewardship, and the promotion of sustainable practices.

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<sup>2</sup>A more detailed illustration of the procedure used to identify the green words dictionary is available in the [Appendix A](#)

**Corporate name changes** My sample consists of all publicly traded companies that changed their names between January 2000 and June 2022 in the US. I first use Bloomberg to obtain the list of all corporate name changes that occurred during the time frame under analysis. Therefore, I searched for all the company name changes that used any words in the green dictionary.

Table 1 shows some examples of green-related name changes. The change can occur by either altering a company’s name entirely, as in the case of *Nanosensors* which became *Green Zebra International* in 2019, or by adding a green word to the previous name, as in the case of *Whitewing Labs* which, in 2002, changed its name in *Whitewing Environmental*. To avoid confusion and misinterpretations, companies that changed their name from green to another green name, as in the case of *Modern Renewable Technologies*, which changed its name to *Eco Ventures Group* in 2011, were excluded from the final sample. Finally, I also excluded all those cases when the new name incorporates a green word but it is not related to sustainability<sup>3</sup>. This resulted in an initial sample of 296 companies. Figure 2a illustrates the number of companies that changed their names divided by green-related words. As the figure shows, from 2000 to 2022, 73 US companies changed their name to incorporate the word "green". Other popular green-related words for name change are "water", "solar", "environment" and "clean". Only a few companies adopted words like "recycle", "emissions", "impact" and "transition" in the new name. In Figure 2b , the number of firms engaging in a green-related name change is divided by the year of the announcement. Interestingly, the majority of green-related name changes happened in 2010, while only 4 green-related name changes happened in 2022. Except for the period from 2008 to 2010, the number of green-related name changes exhibits a uniform distribution across the years.

I use Refinitiv and Factset<sup>4</sup> to identify contaminating events that may have occurred near the event window period. The screening of the initial sample is illustrated in Table 2. As illustrated in the table, from an initial sample of 296 companies, 60 companies were

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<sup>3</sup>For example in 2017, Discount Coupons included the word "eco" into its name changing it to Ecom Products Group. However, the term "eco" is used to denote "e-commerce" rather than "ecology."

<sup>4</sup>The FactSet News application features real-time news headlines from all news sources with options to customize the results and search historical news.



first eliminated because underwent a recent merger and acquisition. Furthermore, 85 companies were deleted from the final sample because experienced other contaminating news such as earning announcements, new stock issuance, stock splits, and so forth. Finally, I excluded 49 companies because of scarce or no market data available. The final sample includes 102 companies.

**The Green and non-Green Samples** US companies are required to describe the activities they are involved in their SEC (U.S. Securities and Exchange Commission) documentation, specifically in their annual reports (Form 10-K) and quarterly reports (Form 10-Q). These reports provide detailed information about the company's business operations, including its products or services, markets, competition, and strategic initiatives. In the "Business" section (Part I, Item 1) of Form 10-K, companies provide a comprehensive description of their activities. This includes information about the nature of their business, their industry, key markets, customers, and suppliers. Companies may also discuss their research and development activities, intellectual property, regulatory environment, and any significant risks or uncertainties they face ([SEC, Office of Investor Education & Advocacy, 2011](#)).

The SEC Edgar Downloader was employed to obtain the 10-K filings of all companies during the year preceding their name change. This tool is a Python package designed to retrieve various types of company filings from the SEC Edgar database. By specifying the timeframe surrounding the name change and utilizing a list of ISINs of companies in the final sample, the tool enables the retrieval of the desired filings<sup>5</sup>. Through this process, I downloaded 10-K statements to subfolders based on the originating company. Hence, I executed a Python script to loop through each 10-K file to extract sentences from Part I, Item 1 of the selected documents.

Hence, I inspected these sentences of the documents to check if the buzzword to be included in the new name is consistent with the business activities and product offerings before the name change. Surprisingly, I found that only 25 companies changed their name

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<sup>5</sup>Sec-Edgar-Downloader, <https://sec-edgar-downloader.readthedocs.io/>

to really reflect their business activities while the remaining 77 companies had nothing to do with green activities before the name change. Subsequently, as reported in Table 2, companies in the final sample are categorized into two distinct samples: “Green” and “non-Green”. This division was made to differentiate between the 25 companies that genuinely reflected environmentally friendly practices and the 77 companies that lacked such alignment before the announcement.

Finally, 10-k reports up to two years following the name change are also downloaded to examine whether any significant structural changes occurred subsequent to the aforementioned name changes<sup>6</sup>.

For the vast majority of companies included in the Green sample, the name change was almost always accompanied by a statement from the CEO declaring that the name change is due to “aligning the name with the mission of the company”. For companies in the non-Green sample, I could rarely find any information of this kind. As a matter of fact, for most of them, the reason for the name change remains blurred. For instance, in 2008, the firm Tiger Ethanol International changed its name to Tiger Renewable Energy. Despite the company had never completed its ethanol manufacturing plant and commenced production, the name change had nothing to do with its activities, as it ceased operations shortly after the name change took place<sup>7</sup>. In 2006, Radiant Technology, a company specializing in the development, manufacturing, and servicing of precise thermal processing systems primarily used by electronic component manufacturers, allegedly changed its name to Greenbridge Technology. This name change occurred despite the fact that environmental initiatives were not their main focus or primary business area.

To test whether these non-Green companies, changed their core business after the name change, I use the 10-K forms issued by companies in the non-Green sample the first and second year after the name change and carefully examine the business description part. Therefore, I further divide the sample into two subgroups. If the documentation released after the name change reports any amendment in the business activities or

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<sup>6</sup>In cases where the 10-K documents were not accessible for companies following the name change, publicly available information obtained from the Internet was utilized instead.

<sup>7</sup><https://www.sec.gov/Archives/edgar/data/1307701/000114420409028128/v15002210k.htm>

product offering that reflects the name adopted, it will be included in the "Real Change" sample. Consequently, out of a total of 77 companies, only 15 companies were found to have changed their name to better align with the new business area they entered into. A remaining set of 62 firms were identified as lacking any new information in the form pertaining to their business activities or how their operations had been altered following the name change. These companies are therefore classified as engaging in *greenwashing* practices and constitute the "Greenwashing" sample. This process is illustrated in Figure 3. As the figure shows, firms are categorized as either Green or non-Green companies using information obtained from the 10-K forms released prior to the name change announcement. Subsequently, in the second step, the focus shifts to the 10-K forms released after the name change. These subsequent forms are analyzed to uncover any discernible differences in the level of involvement of the firms in environmentally sustainable activities following the name change.

Finally, stock prices adjusted for dividends and stock splits are collected by DATASTREAM. The announcement date is retrieved from Bloomberg. For 15 companies, I have found news about the name change on the Internet that is dated before the announcement date in Bloomberg. In these cases, I have used the first available information that has been made available to the market.

**Event-study Methodology** In order to examine the reaction of investors to the name change, I use the event-study methodology. The assumption behind this methodology is that capital markets are sufficiently efficient to evaluate the impact of the name changes. Abnormal returns are an unbiased estimate of firm value change as they provide a measure of the abnormal or unexpected movement in the stock price that can be attributed to the name change, after accounting for the normal market factors that affect the stock price. Abnormal returns are equal to the difference between the stock's actual return and its expected return ( $AR_{it} = R_{it} - \mathbf{E}(R_{it})$ ). I estimate  $\mathbf{E}(R_{it})$  using three prominent methodologies: the Fama–French three-factor model (Fama and French, 1992), the Carhart model (Carhart, 1997) and the constant mean model. The use of multiple expected returns models provides some assurance that the averaged cumulative abnormal

return (CAAR) estimates are not the result of standard asset pricing anomalies.

The Fama and French model assumes a linear relationship between three risk factors: the excess return on the market, the size of firms, and the book-to-market values, while the Carhart model adds a fourth factor to take into account the momentum effect described in [Jegadeesh and Titman \(1993\)](#). All factors have been downloaded from Ken French's website<sup>8</sup>. The constant mean model assumes that historical patterns repeat themselves and therefore the expected return for a stock could be calculated as the average return over a previous period of time (examples of studies that have used the constant mean model include [Mann and Downen \(1997\)](#), and [Thomsen and McKenzie \(2001\)](#)).

Abnormal returns for firm  $i$  at time  $t$  are therefore calculated as follows:

$$AR_{3FF_{it}} = R_{it} - \hat{\beta}_0 - \hat{\beta}_1 R_{Mt} - \hat{\beta}_2 SMB_t - \hat{\beta}_3 HML_t \quad (1)$$

$$AR_{CARHART_{it}} = R_{it} - \hat{\beta}_0 - \hat{\beta}_1 R_{Mt} - \hat{\beta}_2 SMB_t - \hat{\beta}_3 HML_t - \hat{\beta}_4 MoM_t \quad (2)$$

$$AR_{HMM_{it}} = R_{it} - \overline{R_{i(-280,-30)}} \quad (3)$$

where  $R_{Mt}$  is the market risk,  $SMB$  is the outperformance of small versus big companies,  $HML$  is the outperformance of high book/market versus small book/market companies, and  $MoM$  is the momentum factor.

The estimation window goes from 280 to 30 days prior to the announcement date of the name change. The same period is used to calculate the average returns for the constant mean model ( $\overline{R_{i(-280,-30)}}$ ).

For  $N$  being the number of companies in each sample, the average abnormal returns ( $AAR_t$ ) at each instant  $t$  within the event window is computed as:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it}$$

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<sup>8</sup>[https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)

Finally, I calculate cumulated abnormal returns ( $CAR$ ) and averaged cumulated abnormal returns ( $CAAR$ ) for different time windows  $j$ .  $CAR$  and  $CAAR$  are therefore calculated as follows:

$$CAR_i(T_1, T_2) = \sum_{j=T_1}^{T_2} AR_{it} \quad CAAR(T_1, T_2) = \sum_{j=T_1}^{T_2} AAR_t$$

**Parametric and non-parametric event study methodology** Unlike parametric event study methodology which assumes a normal distribution of the data, a non-parametric event study methodology does not require any specific distribution assumptions. As noted by Lee (2001), companies changing their names are often thinly traded and, therefore, characterized by numerous zero and large non-zero returns. Hence, the normal distribution assumption is violated and traditional test statistics are not well specified (Cowan and Sergeant, 1996). Therefore, as a robustness test, I challenge the results obtained from the parametric T-test by utilizing a non-parametric test. This approach aims to assess the consistency and reliability of the findings using alternative statistical methods that do not rely on specific distributional assumptions. The non-parametric test implemented is the rank test (Cowan and Sergeant, 1996). This test fits the analysis perfectly as it is robust to infrequent trading (Corrado, 1989). The Corrado test ranks the returns of both the estimation window and the event window. For each stock and each day, the abnormal returns are therefore transformed into ranks.

## 4 Results

### 4.1 Green-relate name changes and market reaction

In this section, I analyze the effect of green-related name changes, investigating whether they generate positive abnormal returns around the announcement day. The

analysis aims to compare and contrast the results based on the level of environmental involvement exhibited by companies prior to the announcement.

The main results are presented in Table 3. CAARs are reported for the three methodologies implemented and for 8 different event windows. The event windows considered are  $[-10;10]$ ,  $[-2;2]$ ,  $[-1;1]$ ,  $[0;2]$ ,  $[0;10]$ ,  $[0;15]$ ,  $[-5;30]$  and  $[-5;50]$ , where 0 represents the day of the announcement of the name change. Furthermore, the results are divided into Green and non-Green samples. For illustrative purposes, the results considering the entire sample are also reported. First, the results are consistent across the three different methodologies involved. The green name effect is positive and significant for five of the eight event windows studied. However, the results for the green and non-Green companies, reveal that the effect of the green-related name change strongly varies across firms depending on their involvement in green activities on the day of the announcement.

Over the three-day period from day -1 to day +1 the announcement day, companies having green activities as core business earned an insignificant CAAR during the event window  $[-1,+1]$ , while the non-Green companies earned a significant CAAR of 15%, which is significant both to a parametric and non-parametric test.

INSERT TABLE 3 HERE

Compared to previous event studies, the magnitude of the returns earned from companies not related to green activities during the announcement is higher and is similar to the one observed by Lee (2001) during the dot-com bubble. These results, however, signal that there might be high variability in the data. Indeed, the sensitivity of the rank test to outliers might explain the insignificance of the results in the event window  $[0,10]$ . These outliers can have a disproportionate impact on the results of statistical tests and may obscure the different reactions of the market to the name change of the two firms' categories. To address this issue, I create an outlier-adjusted sample, as a robustness test, including all sample firms except those that fall in the top 10% or bottom 10% in terms of the cumulative abnormal return generated over the period of 1 day surrounding the announcement date, similarly to Sharma and Paul (2021). Results are reported in Table

4 and confirm that overall the market reacted positively to the announcement of the green name change only for non-Green companies. Over the three-day period from day -1 to day +1 the announcement day, non-Green companies earn a strongly statistically significant cumulative abnormal return of 8% percent. Again, the significance of the results is confirmed by conducting both a t-test and a Corrado rank test. The analysis clearly emphasizes how companies in the green sample did not exhibit any significant reaction to the announcement.

Crucially, the results obtained from both the entire sample and the outlier-adjusted one consistently demonstrate that the impact of the name change is transitory, with the effect reverting to zero after approximately 15 days.

INSERT TABLE 4 HERE

Because differences in market response could be driven by other firms' characteristics, it is important to test if these results hold when controlling for other firms' characteristics. For instance, when comparing the valuation effects of name change announcements, the presence of a substantial disparity in market capitalization between the two samples could potentially complicate the analysis. That is, new information can have a significant positive impact on the stock prices of tiny firms with thinly traded stocks and limited investor interest (Cooper et al., 2001). To test if the overreaction of non-Green companies is not driven by other motives, the following regression is implemented:

$$CAR_i[-10, 10] = \beta_0 + \beta_1 D_{nonGreen_i} + \beta_n X_{n,i} + \epsilon \quad (4)$$

The dependent variable is the cumulative abnormal return of both the entire and the outlier-adjusted sample calculated using the Carhart model over the 10 days period encompassing the announcement date. The variable of interest is the dummy  $D_{nonGreen_{it}}$ , equal to 1 if the company  $i$  belongs to the non-Green sample and zero otherwise. The control variables used in the analysis include the natural logarithm of the average company market value, stock price, and trading volume observed throughout the estimation period.

Apart from the above-mentioned controls, the natural logarithm of the age of the company on the day of the announcement day is also included. This may be an important factor as older companies may have established reputations and customer bases that could influence their performance.

The findings presented in Table 5 demonstrate that non-Green companies exhibited statistically significant cumulative abnormal returns, with a notable difference of about 33% compared to the green companies. Moreover, it seems that volume and stock prices are negatively associated with cumulative abnormal returns, suggesting that the market reaction to the announcement of the name change is stronger for low-traded stocks.

INSERT TABLE 5 HERE

To assess the evolution of the cumulative abnormal returns for green and non-green companies over time, in Figure 4 I report the estimated CAARs of the Green sample (green line) and non-Green sample (in red). Abnormal returns are calculated using the Carhart model and are outlier-adjusted.

INSERT FIGURE 4 HERE

Notably, the green name change effect is prominent among firms in the non-Green sample (indicated by the red line), while remains zero for green companies (green line). Furthermore, the chart indicates that the corporate name change had a positive impact on stock prices, but this effect was non-permanent, as it reverted to zero after approximately 35 days. This pattern aligns with the principles of market efficiency. In an efficient market, the price of a company's stock should adjust rapidly and accurately to reflect all available information, including a corporate name change. This means that once the name change is announced, investors and market participants should quickly process the information, reassess the company's value, and adjust their expectations accordingly. Overall, the market overreaction for non-Green companies aligns with the principles of signaling theory, offering an explanation for the observed patterns. In fact, name changes are a costly signaling mechanism that entails tangible costs, such as expenses related to advertising and publicity, along with intangible costs associated with relinquishing an



established name that has already garnered reputation and goodwill among customers' perceptions (Kashmiri and Mahajan, 2015). Investors interpreted the name change of companies unrelated to green activities as a signal that these firms were poised to enter a new, desirable market.

## 4.2 Greenwashing and short-term reaction

In this section, I delve into the examination of the stock price response following the name change of non-Green companies. The objective is to investigate whether these companies genuinely alter their activities or product offerings subsequent to the name change. In doing so, I study the effect of greenwashing in the short-term, which is the initial phase when greenwashing is implemented. Hence, after dividing the non-Green sample into the two subsamples “Real Change” and “Greenwashing”, as described in Section 3 and illustrated in Figure 3, I proceed with conducting the analysis specifically for these aforementioned subsamples. I focus on the same event windows used in Section 4.1 and apply the same methodology. The results of this analysis are shown in Table 6. As the table depicts, the cumulative abnormal returns earned by companies in the real change sample are higher than those earned by companies that deceptively try to persuade the public that their main activities are environmentally friendly for all the time windows considered, regardless of the model used. Specifically, during the three-day period surrounding the name change ( $CAAR[-1, 1]$ ), companies undertaking genuine name changes experience average cumulative abnormal returns that are nearly three times higher.

INSERT TABLE 6 HERE

This suggests that market participants may have grasped the significance of the signal communicated by these companies actions. Although the robustness test reported in Table 7 and performed using the outlier-adjusting sample (built by excluding those companies of both samples that fall in the top 90% or bottom 10% ) suggests that the observed difference in the average effect may be attenuated, results remain persistently lower for companies belonging to the greenwashing sample.

INSERT TABLE 7 HERE

In addition, it seems that the effect of the name change on abnormal returns is less persistent for greenwashing companies. For event windows ranging from -5 to +30 and -5 to +50, the cumulative abnormal returns of the real change sample exhibit positive and remarkably high values, although never significant using the outlier-adjusted sample. In contrast, the greenwashing sample demonstrates negative cumulative abnormal returns, albeit not statistically significant. Figure 5a plots the cumulative average abnormal returns of the outlier-adjusted sample calculated using the Carhart model for the -20 to +50 days period. Companies engaging in a green-related name change to signal a real change in their business activities earn significantly high cumulative abnormal returns starting from a few days before the announcement date.

These results suggest that green-related name changes are associated with positive abnormal returns only for companies not involved in green activities on the day of the announcement. However, this effect is dramatically higher if the announced green-related name change signals a real change in the underlying business activities.

INSERT FIGURE 5 HERE

To further investigate the evolution of cumulative abnormal returns of the three categories (green, real change, and greenwashing) over time, in Figure 5b I plot the estimated CAARs over an extended event window spanning from 50 trading days preceding the name change announcement to 120 days following it.

The figure clearly depicts that after the announcement, companies in the greenwashing sample observe positive CARs during the initial days. However, over time, they persistently encounter negative CARs values. This indicates that the initial enthusiastic and positive market response to their announcement gradually diminishes, leading to negative cumulative abnormal returns in the subsequent period. On the other hand, on average, CARs of green companies and non-Green companies signaling a real change converge towards zero after the 120-day period.

### 4.3 Greenwashing and long-term reaction

In this section, I switch the focus to the effect of the name change over an extended period of time. The underlying purpose of this research is to examine the notion that investors, interpreting a company's announcement of a name change as a signal that the company is about to enter into a more desirable business, would subsequently divest their investments upon realizing that the company's actions did not align with the expected changes. In doing so, I examine the second time dimension of greenwashing, which refers to the period when it is discovered.

To investigate more on this pattern, a control group is used for a more comprehensive assessment of the sustained effects of the green-related name change beyond immediate or short-term outcomes. Unlike [Sharma and Paul \(2021\)](#) and [Akyildirim et al. \(2020\)](#), who measured the treatment effect by comparing the impact of the name change on a sample of companies that also changed their names, I use a different approach to find a proper control sample. First, using a sample of companies that changed their names limits the matching power. This is due to the difficulty of finding a properly matched firm for any company in the sample that changed the name in the same period to a non-green-related name. Indeed, two companies may have a similar market value but operate in different sectors, making the comparison inappropriate. Second, I focus on the implications of the name change, and therefore the corporate decision of being associated with green activities. Hence, I match each of the 102 firms that change their name with a control group of companies that share similar characteristics. In doing so, I obtain the full list of companies trading in the US from Refinitiv and for each company with a green-related name, I identify all other companies in the same industry that do not have a green-related name. The closest peer is found using the Nearest Neighbour algorithm (NN) ([Szekér and Vathy-Fogarassy, 2020](#)) based on revenue, age, market value, and financial leverage (calculated as the ratio between total debt and total equity). By using these variables in the NN algorithm, the control group is selected based on how closely their characteristics match those of the treatment group, thus reducing the potential for confounding variables that could affect the results of the study and assuring that the matched firm is involved

in the same business activity of the treated.

Hence, I proceed the analysis by estimating the following difference-in-differences specification using monthly observation from the year before to a year after the announcement date for each sample group:

$$AR_{i,t} = \gamma_0 + \gamma_1 Post_t \cdot Treat_i + \gamma_2 Post_t + \gamma_3 Treat_i + Controls_{i,t} + \mu_i + \theta_t + \epsilon_{i,t} \quad (5)$$

where  $AR_{i,t}$  is stock  $i$ 's four-factor abnormal return in month  $t$  computed using the estimates of the loadings on the Carhart model risk factors using 18-month rolling-window regressions.  $AR_{i,t}$ .  $Treat$  is a dummy equal to 1 if stock  $i$  belongs to the treatment group and  $Post$  is a dummy that denotes the period after the name change. To control for thinly traded stocks, the natural logarithms of the volume of trades and market value are included in the regression as control variables.  $\mu_i$  e  $\theta_t$  denote stock and month fixed effects, and standard errors are clustered by firm and year-month. To reduce the effect of outliers, each month I winsor the dependent and independent variables (except for the dummies) at the 10th and 90th percentiles. The results are reported in Table 8. In Column (i), the findings for the greenwashing sample indicate that companies that adopt a green name without altering their activities experience a monthly highly significant negative abnormal return of approximately 6%. Conversely, in Column (ii), companies already engaged in green activities and, in Column (iii), companies that modify their business activities following the name change do not exhibit abnormal returns statistically different from zero in the year after the announcement date.

Finally, building on Equation 5, the following generalized difference-in-differences is implemented to compare the changes in abnormal returns following the announcement of

the name change for the three different categories:

$$\begin{aligned}
AR_{i,t} = & \gamma_0 + \gamma_1 Treat \cdot Post_t \cdot Greenwashing_i + \gamma_2 Treat \cdot Post_t \cdot Green_i \\
& + \gamma_3 Treat \cdot Post_t \cdot RealChange_i + \gamma_4 Post_t + \gamma_5 Post_t \cdot Greenwashing_i \\
& + \gamma_6 Post_t \cdot RealChange_i + \gamma_7 Post_t \cdot Green_i + \gamma_8 Greenwashing_i + \\
& + \gamma_9 RealChange_i + \gamma_{10} Green_i + Controls_{i,t} + \mu_i + \theta_t + \epsilon_{i,t}
\end{aligned} \tag{6}$$

Where *Greenwashing*, *RealChange* and *Green* are dummies used to identify which subsample the company  $i$  belongs to. Results are reported in Column (iv) of Table 8<sup>9</sup>. Results confirm a significant negative treatment effect of the order of 6% associated with greenwashing. Conversely, the variable  $Post_t \cdot Green_i$  and  $Post_t \cdot RealChange_i$ , representing the treatment effects without greenwashing, does not exhibit significant effects, suggesting that the observed treatment effect is specific to firms involved in greenwashing. In summary, the adoption of a green name by a company can lead to negative abnormal returns if the new name does not accurately reflect the company's genuine green credentials. This suggests that investors and the market perceive inconsistencies or greenwashing practices when there is a discrepancy between the company's name and its actual environmentally-friendly practices. Upon a company's name change without concurrent changes in behavior or practices, the market initially exhibits a fleeting enthusiasm, but it promptly and efficiently responds with negative reactions.

## 5 Conclusion

This paper examines a novel avenue through which the adoption of a green name can impact investor behavior, offering empirical evidence on the financial implications of greenwashing practices manifested through corporate name changes. The findings indicate that companies including a green word in their names earn statistically significant cumulative abnormal returns of approximately 15% during the one-day period

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<sup>9</sup>Categorical variables are omitted from the table because of collinearity.

surrounding the announcement. However, this holds true only for companies that were not previously engaged in any green activities prior to the announcement. Indeed, the announcement of the corporate name change does not affect the prices of companies already engaged in green activities. The results demonstrate robustness against the presence of outliers, cross-sectional characteristics, and standard asset pricing factors. These findings can be interpreted through the lens of signaling theory. For companies not involved in green activities, the inclusion of sustainability-related words can signal a new commitment toward the environment while for green companies the name change does not add further information. In fact, I show that non-green companies that went through a real change in their business activities and product offerings following the announcement of the name change experienced higher cumulative abnormal returns during the announcement of the name change than companies engaging in greenwashing.

Finally, using a difference-in-difference approach, it is demonstrated that over an extended period of time, companies that adopted a green name without changing their core business earn monthly abnormal returns that are around 6% lower after the name change. This effect could be driven by the loss of trust of shareholders in the true "greenness" of the firm. Results imply that greenwashing provides a non-permanent positive effect on stock prices which vanishes as soon as greenwashing is spotted, highlighting its high-risk, low-return nature, as it may generate short-term gains but ultimately erodes trust and credibility. The findings of this study have practical implications for market participants and regulators. The results indicate that investors should approach with caution when considering investments in companies that announce a green-related name change, especially in the case of companies that are not related to green activities. There is a compelling rationale for equity market regulators to establish a formal policy aimed at curbing the use of deceptive or misleading corporate names. Such a policy would help protect investors from potential misrepresentation and ensure transparency and integrity in the marketplace.

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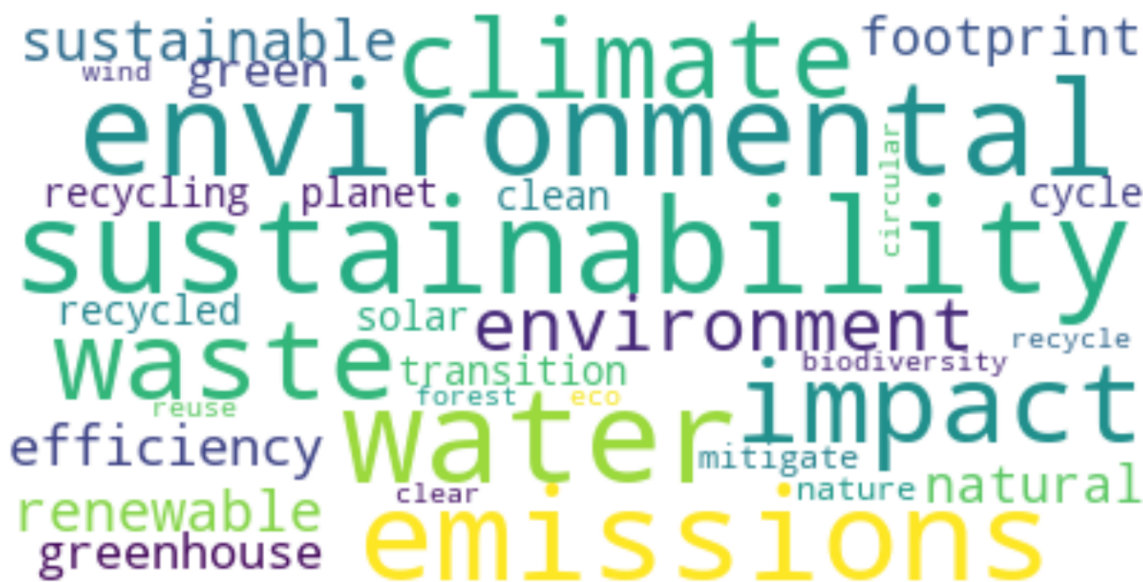
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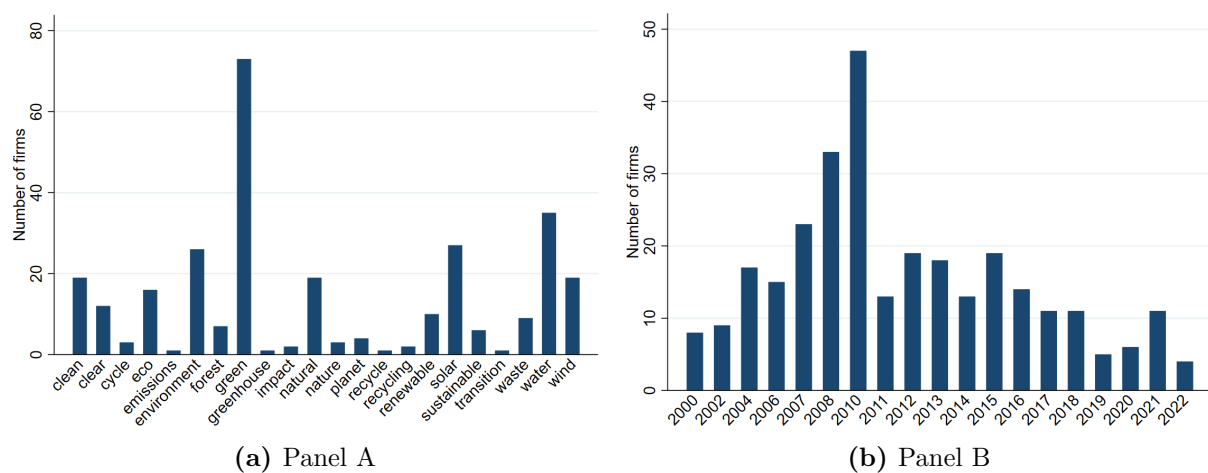
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# List of Figures

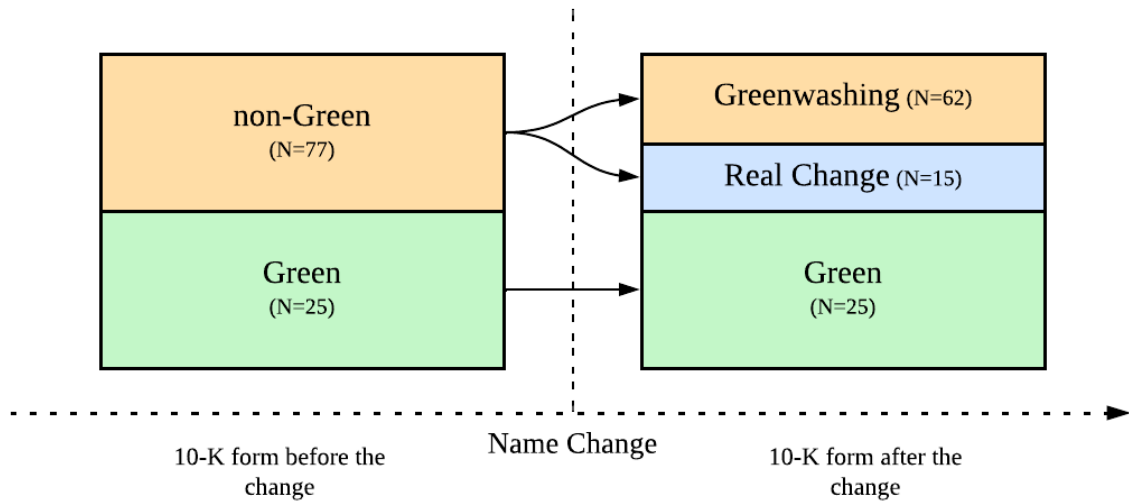
**Figure 1:** Green dictionary. This dictionary contains words that, included in a corporate name, are likely to evoke sustainable feelings in investors. The list has been obtained by actively judging the most cited words of sustainability reports issued by the constituents of the S&P500 from 2014 to 2022. The size of each word depends on the frequency of times it appears in sustainability reports.



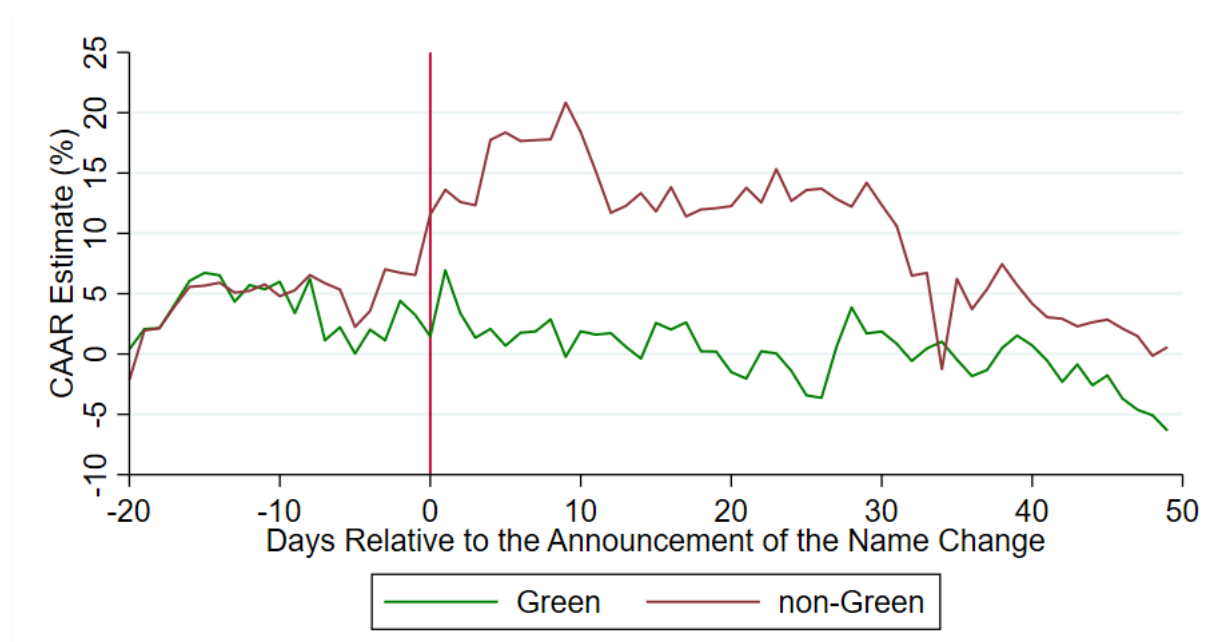
**Figure 2:** Adoption of a green name. Panel A illustrates the number of firms that changed their name to a green-related name from 2000 to 2022 in the US divided by the green word used. Panel B illustrates the number of firms that changed their name to a green-related name from 2000 to 2022 in the US divided by the year of the announcement date.



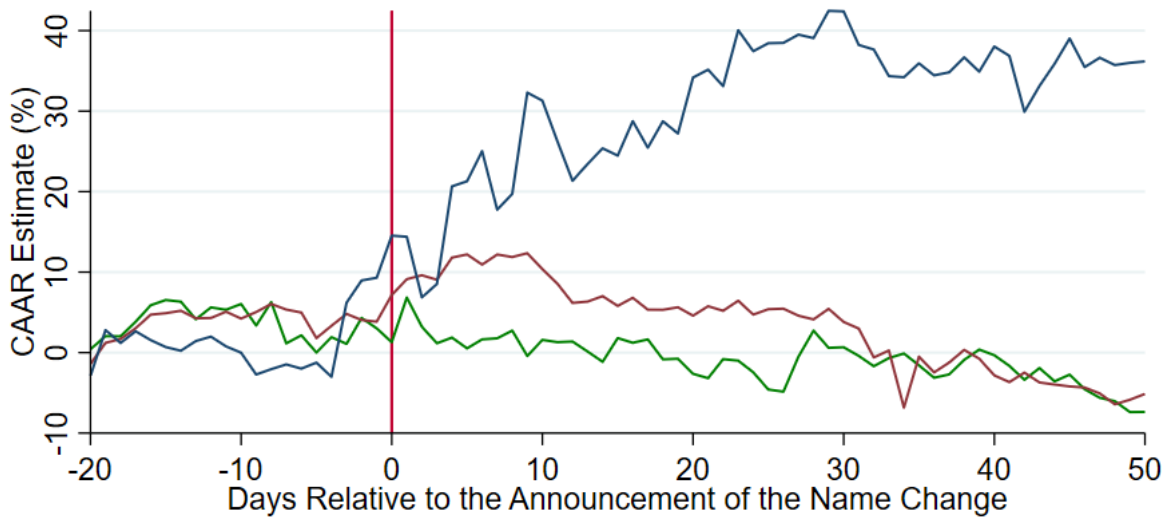
**Figure 3:** Categorization of firms pre- and post-name change announcement. The table presents the classification of firms within the sample, depicting their categorization before and after the announcement of name changes. In the initial step, the firms are classified into Green and non-Green companies based on the information obtained from the 10-K forms released prior to the name change announcement. Subsequently, in the second step, the 10-K forms released after the name change are scrutinized to identify variations in the level of involvement of these firms in environmentally sustainable activities.



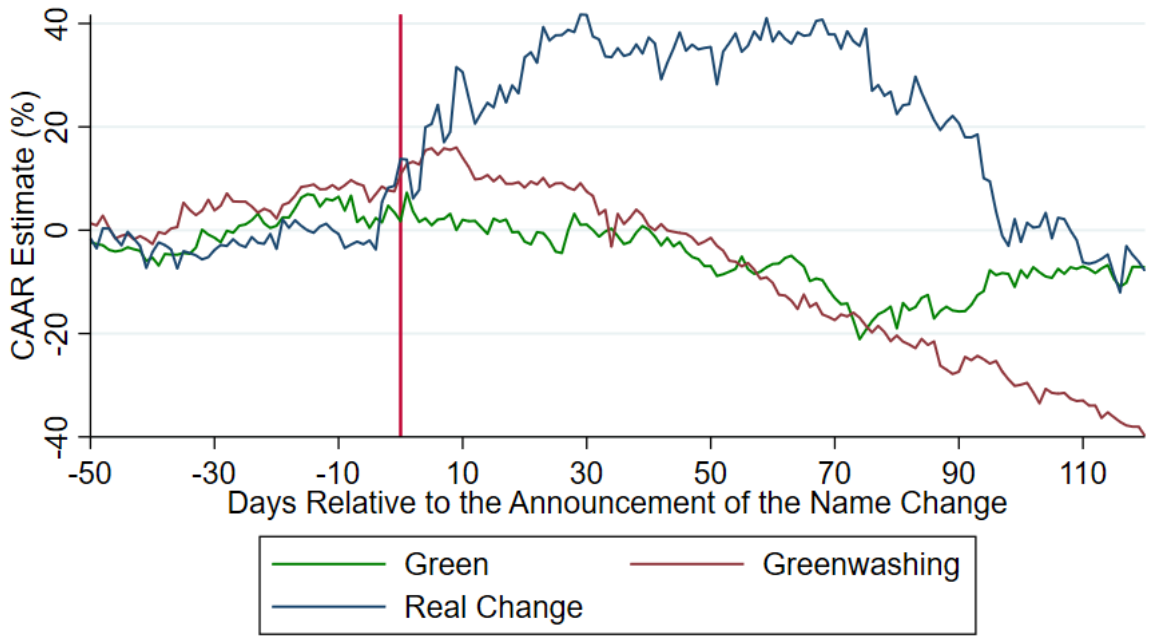
**Figure 4:** Cumulative Averaged Abnormal Returns (CAAR). This figure plots the averaged cumulative abnormal returns of the outlier-adjusted sample earned around the announcement date by firms involved in a green-related name change, dividing green companies (green line), and non-Green companies (red). The event window is defined as the period which goes from -20 to +50 days after the name change announcement. Abnormal Returns are calculated using the Carhart model.



**Figure 5:** Cumulative Averaged Abnormal Returns (CAAR). The two figures plot the estimated CAARs of the outlier-adjusted sample earned around the announcement date by firms involved in a green-related name change, dividing green companies (green line), companies underwent a real change in their business activities after the name change (blue line) and greenwashing companies (red line). Panel A shows the results for the event window of -20 to +50 days from the name change announcement, while Panel B illustrates the results for the event window of -50 to +120 days. The Abnormal Returns are calculated using the Carhart model.



(a) Panel A



(b) Panel B

## List of Tables

**Table 1:** Example of name changes. The new name has to contain words that evoke sustainable feelings.

ISIN	Announce Date	Old Company Name	New Company Name	Word
US41754V2025	13/05/2002	Benton Oil And Gas	Harvest Natural Resources	Natural
US74163K1034	09/05/2002	American Career Centers	American Water Star	Water
US0341972026	30/05/2002	Whitewing Labs	Whitewing Environmental	Environment
US36258T1097	29/01/2019	Nanosensors	Green Zebra International	Green
US42278J1051	11/04/2008	360 Interchange	Ecosolutions International	Eco

**Table 2:** Screening of the initial sample. This Table shows the screening performed in order to obtain an uncontaminated sample of companies. The final sample consists of 102 companies of which 25 are pure green companies, i.e. merely involved in green activities, and 77 are not.

Initial Number of Firms	296
Recent M&A	60
Contaminating news	85
Without trading data or delisted after the name change	49
Final sample	102
Green	25
non-Green	77

**Table 3:** Green-relate name changes and market reaction. This table reports the average cumulative abnormal returns (CAAR) expressed in percentages obtained using the Carhart model, the Fama-French 3 factors, and the constant mean model. For each model, the table reports the results divided by categories. The categories are: *All*: contains all the 102 companies that changed their name to a green-related name, *Green*: is a subsample of the previous and includes the 25 companies purely involved in green activities, and *non-Green* includes the 77 companies that have changed their name to a green-related name but do not have a green activity as core business. Statistical significance at a level of at least 10% is denoted by [a] and [b] when determined by the T-test and Corrado rank test (Corrado, 1989), respectively.

		[-10;10]	[-2;2]	[-1;1]	[0;2]	[0;10]	[0;15]	[-5;30]	[-5;50]
Carhart Model									
	All	16,86 <sup>[a]</sup>	13,79 <sup>[a]</sup>	17,72 <sup>[a,b]</sup>	16,71 <sup>[a,b]</sup>	17,35 <sup>[a]</sup>	12,24	13,33	-3,26
	Green	-4,66	-0,64	1,25	-2,11	-5,43	-8,4	12,6	10,53
	nonGreen	15,32	14,72 <sup>[a]</sup>	15,44 <sup>[a,b]</sup>	15,5 <sup>[a,b]</sup>	17,04 <sup>[a,b]</sup>	13,18	8,95	-7,99
Fama-French 3 Factors									
	All	17,56 <sup>[a]</sup>	13,91 <sup>[a,b]</sup>	18,03 <sup>[a,b]</sup>	16,75 <sup>[a,b]</sup>	17,06 <sup>[a]</sup>	11,59	12,87	-3,32
	Green	-1,94	-0,27	1,41	-1,88	-4,38	-8,26	13,98	12,27
	nonGreen	15,78	15,15 <sup>[a,b]</sup>	15,7 <sup>[a,b]</sup>	15,78 <sup>[a,b]</sup>	16,83 <sup>[a]</sup>	12,79	8,35	-7,62
Constant Mean									
	All	19,69 <sup>[a]</sup>	14,25 <sup>[a]</sup>	18,06 <sup>[a]</sup>	16,6 <sup>[a,b]</sup>	17,26 <sup>[a]</sup>	11,6 <sup>[a]</sup>	12,62	-3,68 <sup>[b]</sup>
	Green	-3,96	0,44	1,78	-1,05	-7,08 <sup>[b]</sup>	-12,3	13,33	12,09
	nonGreen	17,23 <sup>[a]</sup>	15,96 <sup>[a,b]</sup>	15,9 <sup>[a]</sup>	15,46 <sup>[a,b]</sup>	16,88 <sup>[a]</sup>	11,46	7,39	-9,59 <sup>[b]</sup>

**Table 4:** Outlier adjusted sample. The outlier-adjusted sample comprises all sample firms except those that fall in the top 90% or bottom 10% in terms of the cumulative abnormal returns generated over the period from Day 1 to Day 1. The categories are: *All*: contains the 79 companies that changed their name to a green-related name, *Green*: is a subsample of the previous and includes the 18 companies purely involved in green activities, and *non-Green* includes the 55 companies that have changed their name to a green-related name but do not have a green activity as core business. Statistical significance at a level of at least 10% is denoted by [a] and [b] when determined by the T-test and Corrado rank test (Corrado, 1989), respectively.

		[-10;10]	[-2;2]	[-1;1]	[0;2]	[0;10]	[0;15]	[-5;30]	[-5;50]
Carhart Model									
	All	6,55	7,49 <sup>[a,b]</sup>	7,81 <sup>[a,b]</sup>	6,61 <sup>[a,b]</sup>	8,9	4,46	2,81	-9,25
	Green	-9,99	1,4	2,87	-2,1	-3,92	-6,17	-7,39	-13,24
	nonGreen	8,53	7,48 <sup>[b]</sup>	8,4 <sup>[a,b]</sup>	6,98 <sup>[b]</sup>	13,16 <sup>[b]</sup>	10,41	4,57	-6,52
Fama-French 3 Factors									
	All	6,81	7,39 <sup>[b]</sup>	7,84 <sup>[a,b]</sup>	6,64 <sup>[a,b]</sup>	8,66	3,73	2,22	-9,08
	Green	-7,06	1,9	2,91	-1,65	-2,24	-5,55	-6,63	-10,72
	nonGreen	7,52	7,41 <sup>[b]</sup>	8,21 <sup>[a,b]</sup>	6,99 <sup>[b]</sup>	12,43 <sup>[b]</sup>	9,41	3,46	-5,88
Constant Mean									
	All	8,97	8,25 <sup>[a,b]</sup>	7,86 <sup>[a,b]</sup>	6,78 <sup>[a,b]</sup>	8,87	2,26	2,37	-10,4
	Green	-10,63	2,14	2,9	-0,87	-5,21 <sup>[b]</sup>	-11,21	-7,08	-12,82
	nonGreen	8,84	8,14 <sup>[b]</sup>	7,59 <sup>[a,b]</sup>	6,77 <sup>[b]</sup>	12,02	7,02	3,86	-6,79

**Table 5:** The overreaction of non-Green companies. This table reports estimate coefficients of the regression specified in equation 4.1 using both the entire sample and the outlier-adjusted cumulative abnormal returns over ten days day around the announcement of the name change. The variable of interest is *non – Green* which captures the name change market overreaction for the non-Green sample over the green sample. *LN\_MktValue* is the logarithm of the average daily market capitalization (dollar-denominated). *LN\_Price* is the logarithm of the average daily closing price (adjusted, dollar-denominated). *LN\_Volume* is the logarithm of the average daily number of shares traded. *LN\_Age* is the logarithm of the days a company has been traded. Robust standard errors are in parentheses. \*\*\*, \*\* and \* denote significance at the 1%, 5% and 10% level, respectively

	CAR[-10,10]	CAR[-10,10] outlier-adjusted
non-Green	0.34* (0.18)	0.33* (0.16)
LN_Age	0.20** (0.10)	0.16* (0.09)
LN_MktValue	0.15** (0.07)	0.11 (0.08)
LN_Price	-0.11** (0.04)	-0.06* (0.03)
LN_Volume	-0.13*** (0.05)	-0.07* (0.04)
Constant	-1.90** (0.82)	-1.56* (0.85)
R-squared	0.19	0.16
Observations	101	79

**Table 6:** Short-term effect of Greenwashing. This table reports the average cumulative abnormal returns (CAAR) expressed in percentages obtained using the Carhart model, the Fama-French 3 factors, and the constant mean model. For each model, the table reports the results divided by categories. The categories are *Greenwashing* which includes the non-Green 62 companies that did not change their activities after the name change, and *Real Change* includes the 15 non-Green companies that have changed their business after the name change. Statistical significance at a level of at least 10% is denoted by [a] and [b] when determined by the T-test and Corrado rank test (Corrado, 1989), respectively.

	[-10;10]	[-2;2]	[-1;1]	[0;2]	[0;10]	[0;15]	[-5;30]	[-5;50]
Carhart Model								
Real Change	49,5 <sup>[a]</sup>	52,07 <sup>[a]</sup>	30,38 <sup>[a]</sup>	39,1 <sup>[a]</sup>	34,04 <sup>[a]</sup>	32,83	54,36	19,09 <sup>[b]</sup>
Greenwashing	7,05	5,69	11,83 <sup>[a,b]</sup>	9,79 <sup>[a,b]</sup>	12,93 <sup>[b]</sup>	8,43	-2,04	-14,1
Fama-French 3 Factors								
Real Change	56,55 <sup>[a]</sup>	54,71 <sup>[a]</sup>	31,39 <sup>[a]</sup>	40,29 <sup>[a]</sup>	37,77 <sup>[a]</sup>	36,2 <sup>[a]</sup>	57,71	27,53 <sup>[b]</sup>
Greenwashing	5,92	5,57 <sup>[b]</sup>	11,9 <sup>[a,b]</sup>	9,85 <sup>[a,b]</sup>	11,76	7,13	-3,59	-15,55
Constant Mean								
Real Change	65,24 <sup>[a]</sup>	54,11 <sup>[a]</sup>	32,09 <sup>[a]</sup>	38,58 <sup>[a]</sup>	41,6 <sup>[a]</sup>	34,53 <sup>[a]</sup>	56,6 <sup>[a]</sup>	36,7
Greenwashing	5,62	6,73	11,98 <sup>[a]</sup>	9,87 <sup>[a,b]</sup>	10,91	5,88	-4,52	-20,04 <sup>[b]</sup>

**Table 7:** Outlier adjusted sample. The outlier-adjusted sample comprises all sample firms except those that fall in the top 90% or bottom 10% in terms of the cumulative abnormal returns generated over the period from Day 1 to Day 1. The categories are *Greenwashing* which is a subsample of the previous and includes the 48 companies purely involved in green activities, and *Real Change* includes the 11 companies that have changed their name to a green-related name but do not have a green activity as core business. Statistical significance at a level of at least 10% is denoted by [a] and [b] when determined by the T-test and Corrado rank test (Corrado, 1989), respectively.

		[-10;10]	[-2;2]	[-1;1]	[0;2]	[0;10]	[0;15]	[-5;30]	[-5;50]
Carhart Model									
	Real Change	22,38	41,28 <sup>[a]</sup>	9,58 <sup>[b]</sup>	19,61 <sup>[a]</sup>	15,23	24,1	37,94	13,77
	Greenwashing	8,55	4,49 <sup>[b]</sup>	6,49 <sup>[b]</sup>	5,31 <sup>[b]</sup>	12,26 <sup>[b]</sup>	8,03	-6,76	-8,49
Fama-French 3 Factors									
	Real Change	29,38	43,44 <sup>[a]</sup>	10,21	20,85 <sup>[a]</sup>	19,23	27,45	40,28	25,05
	Greenwashing	5,56	3,7 <sup>[b]</sup>	5,89 <sup>[b]</sup>	4,85 <sup>[b]</sup>	10,38 <sup>[b]</sup>	5,82	-10,32	-12,84
Constant Mean									
	Real Change	38,11	45,04 <sup>[a]</sup>	11,07	21,43 <sup>[a]</sup>	21,33	17,5	42,86	32,59
	Greenwashing	4,78	3,65	4,87	4,07 <sup>[b]</sup>	8,78	3,23	-9,43	-14,37 <sup>[b]</sup>



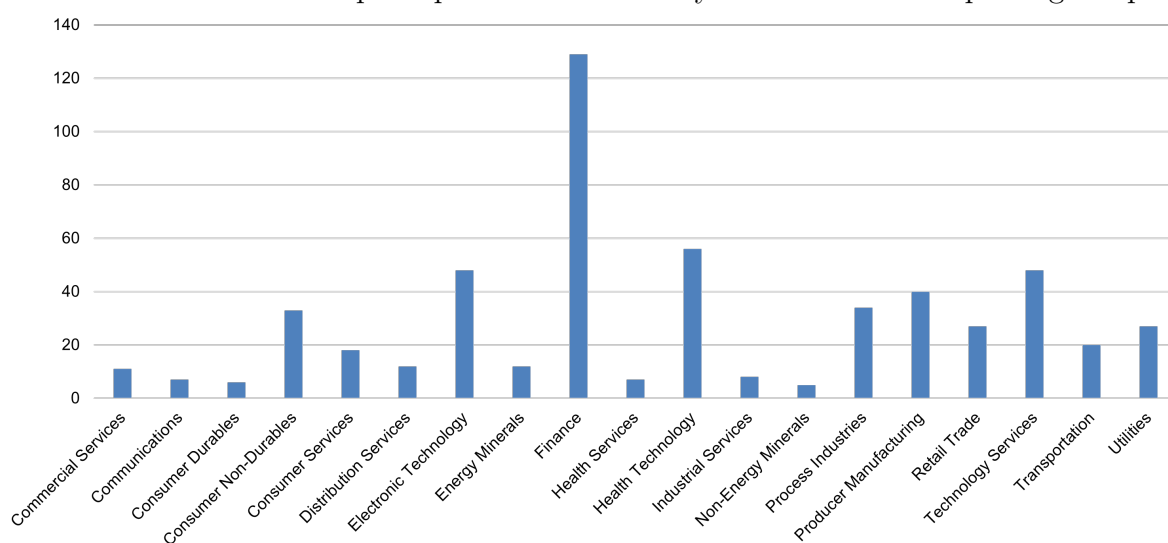
**Table 8:** Greenwashing in the long run. This table reports the results of the difference-in-difference regressions of the adoption of a green-related name on abnormal returns as formalized in Equation 5 (columns (i), (ii) and (iii)) and 6 (column (v)). The dependent variable ( $AR_{i,t}$ ) is the monthly four-factor abnormal return computed using 18-month rolling-window regressions. The variable  $Post$  captures the time effect after the name change. The variables of interest  $Post \cdot Greenwashing$ ,  $Post \cdot Green$  and  $Post \cdot RealChange$  are the interaction between the  $Post$  variable and the treatment groups. Control variables such as logarithms of trade volume and market value are included. Both dependent and independent variables (except for the dummies) undergo winsorization at the 10% level. Standard errors are clustered by firm and year-month. \*\*\*, \*\* and \* denote significance at the 1%, 5% and 10% level, respectively

	$AR_{i,t}(\%)$			
	(i)	(ii)	(iii)	(iv)
$Treat \cdot Post \cdot Greenwashing$	-6.47*** (1.93)			-6.24*** (1.83)
$Treat \cdot Post \cdot Green$		-2.38 (3.25)		-1.58 (2.97)
$Treat \cdot Post \cdot RealChange$			-0.48 (7.52)	4.13 (3.79)
$POST$	1.69 (3.35)	-11.85 (8.46)	-11.95 (8.15)	-3.42 (3.71)
$Post \cdot Greenwashing$				3.84 (2.88)
$Post \cdot RealChange$				-6.39 (3.92)
$Post \cdot Green$				0.00 (0.00)
$\ln(MktValue)$	0.59 (0.69)	2.22 (1.89)	1.83 (3.13)	0.89 (0.65)
$\ln(Volume)$	0.58 (0.52)	0.42 (0.96)	1.30 (1.02)	0.50 (0.42)
Stock FE	Yes	Yes	Yes	Yes
Year-Month FE	Yes	Yes	Yes	Yes
Observations	2,224	901	381	3,569
R-squared	0.19	0.34	0.40	0.14
F-Stat	2.866	1.265	0.912	2.707
Prob >F	0.0266	0.298	0.474	0.00774

# Appendices

## A Green Word Dictionary

To build a green words dictionary, I first downloaded all the Sustainability reports published by the constituents of the S&P500 index from 2014 to 2022. This search resulted in a database of 548 reports published by 366 different companies. Figure A illustrates the number of reports published divided by the sector of the reporting company.



As the figure suggests, the vast majority of sustainability reports obtained are published by financial companies. The second step includes collecting all the words cited by the 548 reports and ranking them based on their frequency. After excluding stop words and words with less than 3 letters, I focus on the 1,000 most common words which are cited at least by 2 companies belonging to different industries. The latter is to make sure that the green word selected is not specific to a particular industry. Finally, I actively judged and selected only those words that are relevant to my study. An example of the final screening is available at the following table.

Words	Green Dictionary
work	NOT included
environmental	included
risk	NOT included
board	NOT included
employee	NOT included

Table A.1 reports the final green dictionary. It includes 22 words. The most cited words are “sustainability”, “emissions”, “environmental” and “water”. Python scripts for the development of the dictionary are available upon request.

**Table A.1:** The final green dictionary. This dictionary contains words that, included in a corporate name, are likely to evoke sustainable feelings in investors. The list has been obtained by actively judging the most cited words of sustainability reports issued by the constituents of the S&P500 from 2014 to 2022.

Clean  
Clear  
Cycle  
Eco-  
Emissions  
Environment  
Forest  
Green  
Greenhouse  
Impact  
Natural  
Nature  
Planet  
Recycle  
Recycling  
Renewable  
Solar  
Sustainable  
Transition  
Waste  
Water  
Wind