

Surfing the Green Wave: What's in a "green" name change?

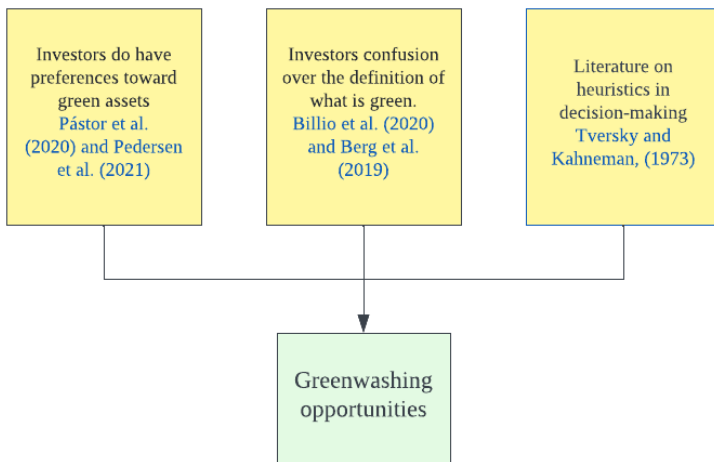
6th JRC Summer School on Sustainable Finance

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Goethe University and SAFE

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Intuition



Research Questions

This provides a challenging research environment for the questions at hand:

- 1 Do green-related name changes generate positive abnormal returns around the announcement day?
- 2 Is this effect the same for companies not involved in green activities?
- 3 Is the market efficient in detecting cases of greenwashing?

Aim of the paper

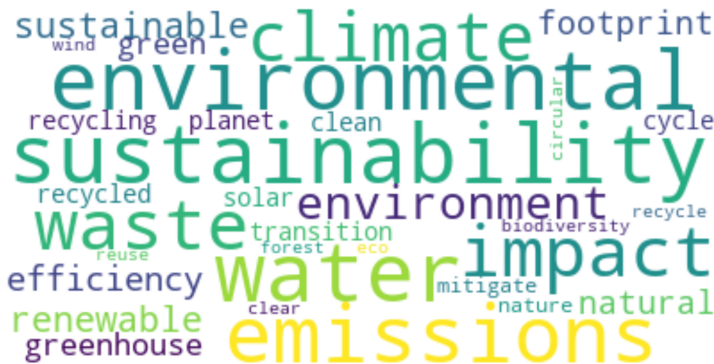
The dual temporal dimension of Greenwashing:

- ① When it is implemented by the company
 - ② When it is detected by the public
- Provide the first evidence of the effect of greenwashing on stock returns in its dual temporal dimensions.

Literature Review

- The effect of the announcement of a name change on stock prices - [Karpoff and Rankine \(1994\)](#), [Bosh and Hirschey \(1989\)](#). - Companies changing their names earn a statistically insignificant excess return around the announcement date.
- Significant and high CARs in cases where a new name incorporates a trending topic or captures market mania (e.g., “.com” - [Lee \(2001\)](#), [Cooper et al. \(2001\)](#) and “blockchain” effect ([Akyildirim et al., 2020](#)))
- Literature on market signaling - [Nelson \(1974\)](#), [Asquith and Mullins \(1986\)](#) - Link between corporate actions and shareholders response
- Literature on Greenwashing - [Gräuler et al. \(2014\)](#), [Delmas and Burbano \(2011\)](#), [Gregory \(2021\)](#), [Du \(2015\)](#), [Testa et al. \(2018\)](#), [De Jong et al. \(2018\)](#) - Greenwashing is hard to detect with reasonable effort

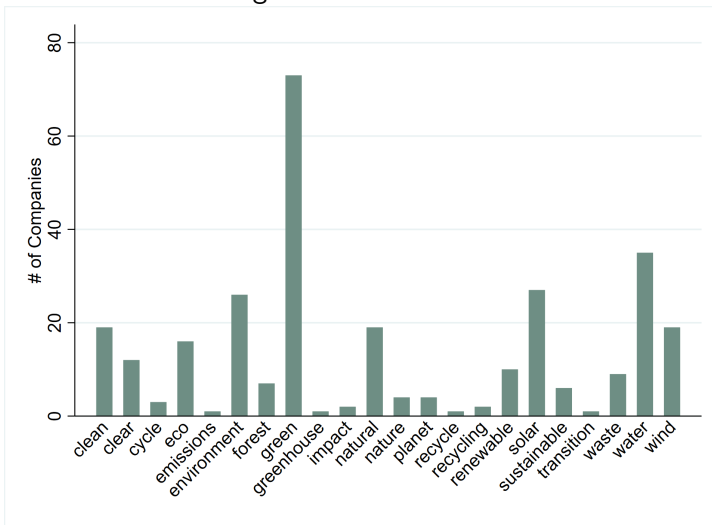
How to define a green-related name?



The final dictionary counts 22 words. I define a green-related name change as any instance where a company adopts a name that incorporates one of these words.

Number of green-related name changes

During the 2000-2022 period, 287 companies changed their names to include one of these "green" words in the US.



Example of green name change

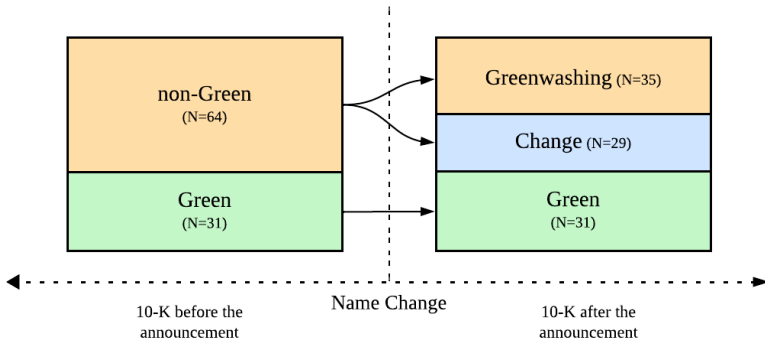
Effective Date	Old Name	New Name	Word
31/05/2002	Whitewing Labs	whitewing environmental	environmental
10/03/2006	Triton Technologies	solar night industries	solar
02/06/2010	C&G DEC Capital	energiz renewable	renewable
06/07/2015	Baoshinn	green standard technologies	green
06/06/2018	Hip Cuisine	nature's best brands	nature
21/07/2020	National Storm Recovery	sustainable green team	sustainable

Sample

Initial Number of Firms	287
Recent M&A	58
Contaminating news	85
Without trading data or delisted after the name change	49
Final sample	95
Green	31
non-Green	64

How to identify green companies?

I inspected the “Business” section (Part I, Item 1) of 10-K forms to check if the buzzword to be included in the new name is consistent with the business activities and product offerings before and after the name change.



Event Study

- I use three models to estimate Abnormal Returns:

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

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

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

- The estimation window is defined as the period that goes from -280 to -30 days prior to the announcement day.
- Statistical significance of CAAR is tested using parametric and non-parametric tests.

Do companies that change their names to green names experience abnormal returns around announcement day?

Event Study Methodology

$$AR_{i,t} = R_{i,t} - E(R_{i,t}); \quad CAAR(T_1, T_2) = \sum_{t=T_1}^{T_2} \sum_{i=1}^N AR_{i,t}$$

$$T = \frac{CAR(T_1, T_2)}{\left[\frac{1}{N^2} \sum \sigma^2(CAR_i(T_1, T_2)) \right]^{\frac{1}{2}}}$$

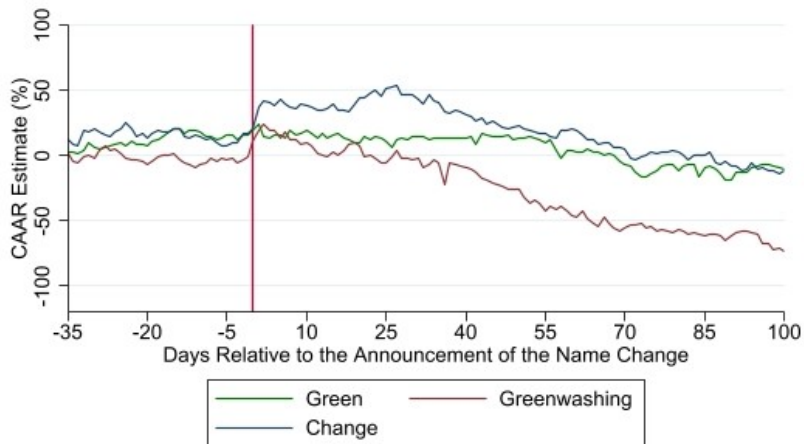
Greenwashing and short-term reaction

- Green = companies primarily involved in green activities before the announcement (N=31)
- Change = includes the non-Green companies that have changed their business after the name change (N=29)
- Greenwashing = includes the non-Green companies that did not change their activities after the name change (N=35)

		[-10;10]	[-3;-3]	[-2;2]	[-1;1]	[0;2]	[0;10]	[-5;30]
Carhart								
	Green	5,11	-4,97**	-2,17	3,86	-5,27	-0,6	15,22
	Change	18,47	-0,56	30,08***	18,5***	23,75***	18,92*	33,3
	Greenwashing	18,26	-3,57	29,01***	22,18***	24,18***	9,92	-0,64
3-Factors								
	Green	6,8	-4,7*	-1,84	3,97	-5,09	-0,13	16,06
	Change	20,69	-0,82	31,01***	18,89***	23,99***	19,89*	32,07
	Greenwashing	17,6	-2,89	29,17***	22,69***	24,3***	9,57	-0,26*
Const. Mean								
	Green	5,7	-3,91*	-0,38	4,02	-3,96	-1,94	14,39
	Change	23,89	0,29	30,49***	19,53***	22,83***	21,69**	35,56
	Greenwashing	15,39	0,04	25,48***	21,91***	23,66***	9,36	-0,93

***, ** and * denote significance at the 1%, 5% and 10% level, respectively. Bolded CAAR values are statistically significant at a level of significance of at least 10%, as determined by the generalized sign test (Cowan, 1992).

Greenwashing and long-term reaction

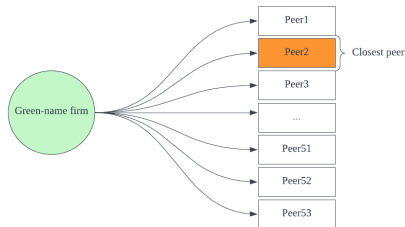


Greenwashing and long-term reaction: Control Group

For each company with a green-related name, I identify all other companies traded in the US within the same economic sector that do not have a green-related name.

Therefore, for each company I select the closest peer using the Nearest Neighbor Matching approach ([Szekér and Vathy-Fogarassy, 2020](#)) using:

- Market Cap
- Leverage
- Age of the company
- Total Revenue



Greenwashing in the long-run - sub samples

I use monthly observation from 10 months before to 10 months after the announcement date for each sample group.

Stacked regression as proposed by [Baker et al. \(2022\)](#)

$$AR_{i,t} = \alpha_{ic} + \alpha_{tc} + \gamma_1 NC_{ic} \cdot Post_{itc} + \gamma_2 X_{itc} + \epsilon_{i,t}$$

Where:

- AR_{it} is the stock i 's four-factor abnormal return in month t computed using the estimates of the loadings on the Carhart model risk factors using 24-month rolling-window regressions
- NC is a dummy equal to one for companies that changed their names (treated) throughout the event window of cohort c and zero otherwise.
- $Post$ 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
- α_{ic} and α_{tc} are firm-cohort and month-cohort fixed effects, respectively.

Results 1/2

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

	Abnormal Returns		
	Greenwashing	Green	Change
<i>NC · Post</i>	-10.09*** (2.99)	1.24 (2.59)	-2.60 (4.96)
Controls	Yes	Yes	Yes
Observations	1,200	1,134	794
R-squared	0.56	0.71	0.58
F-Stat	6.841	0.293	1.436

Results 2/2

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

	Abnormal Returns			
	Greenwashing	Green	Change	All
<i>NC · Post</i>	-10.09*** (2.99)	1.24 (2.59)	-2.60 (4.96)	-1.03 (2.51)
<i>NC · Greenwashing · Post</i>	– –	– –	– –	-7.80** (3.89)
Controls	Yes	Yes	Yes	Yes
Observations	1,200	1,134	794	3,128
R-squared	0.56	0.71	0.58	0.61
F-Stat	6.841	0.293	1.436	4.647

Conclusions

- Companies adopt “green” names for three primary reasons: to align their name with their activities (green), to demonstrate a commitment to future efforts (change), or to persuade the public about their green practices (greenwashing).
- Cumulative abnormal returns earned around the announcement of a green-related name change are associated with the signal conveyed by the name change (signaling theory).
- The first temporal dimension of greenwashing is associated with positive cumulative abnormal returns. Shareholders are unable to spot greenwashing in the short run.
- In the long run, companies that adopted a green-related name without changing their core business earned a negative monthly abnormal return of the order of 10% after the name change (as compared to the control group).

Thanks

Thank you!
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Robustness - Outlier-adjusted sample firms 1/2

The outlier-adjusted sample comprises all sample firms except those that fall in the top 10% or bottom 10% in terms of the cumulative abnormal returns generated over the period from Day 1 to Day 1.

		[-10;10]	[-3;-3]	[-2;2]	[-1;1]	[0;2]	[0;10]	[-5;30]
Carhart								
	All	9,06	-1,86	16,29***	9,76***	11,04***	4,61	7,1
	Green	-0,13	-3,69*	2,46	4,77	-0,84	2,92	15,17
	non-Geen	13,33	-1,14	23,92***	12,91***	18,48***	7,32	6,69
3-Factors								
	All	10,43	-1,55	16,7***	9,97***	11,18***	5,11	6,75
	Green	1,97	-3,45*	2,81	4,79	-0,54	3,98	15,23
	non-Geen	14,25	-0,86	24,27***	13,09***	18,53***	7,69	5,56
Const. Mean								
	All	10,25	0,6	14,87***	9,81***	10,7***	5,05	8,91
	Green	0,04	-1,93	2,9	4,87	0,12	1,93	14,41
	non-Geen	14,53	1,58	21,25***	12,69***	17,35***	8,39	8,41

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 (Cowan, 1992), respectively.

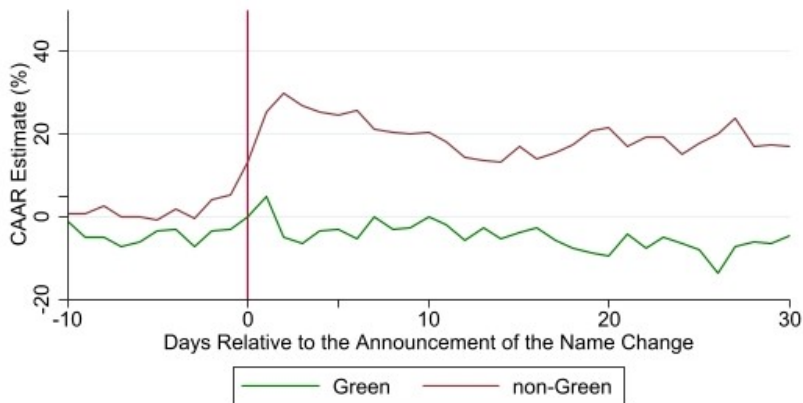
Overreaction of non-Green Companies

$$CAR_i[-2, 2] = \beta_0 + \beta_1 D_{\text{nonGreen}_i} + \beta_n X_{n,i} + \epsilon$$

	CAR[-2, 2]	CAR[-2, 2] outlier-adjusted
nonGreen	25.80** (12.08)	19.72* (11.40)
Age	0.749 (6.870)	-3.581 (7.057)
Market Value	-3.495 (3.008)	-0.970 (2.498)
Constant	1.431 (52.77)	28.80 (53.32)
Observations	95	81
R-squared	0.041	0.026

Where: *nonGreen* is a dummy being equal to 1 if company *i* belongs to the non-Green sample, $LN(MktValue)$ is the logarithm of the average daily market capitalization (dollar-denominated). $LN(Age)$ 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

Graph CAAR



Robustness - Outlier-adjusted sample firms 2/2

The outlier-adjusted sample comprises all sample firms except those that fall in the top 10% or bottom 10% in terms of the cumulative abnormal returns generated over the period from Day 1 to Day 1.

		[-10;10]	[-3;-3]	[-2;2]	[-1;1]	[0;2]	[0;10]	[-5;30]
Carhart								
	Change	11,65	0,85	25,65***	9,08	17,48***	7,55	29,79
	Greenwashing	27,56	-2,94	29,25***	21,02***	24,14***	18,97	6,72
3-Factors								
	Change	16,35	0,6	26,73***	9,35	18,02***	9,59	30,11
	Greenwashing	24,15	-2,47	28,68***	20,8***	23,63***	16,31	3,81
Const. Mean								
	Change	19,63	0,47	25,36***	9,93	16,02**	11,28	33,25
	Greenwashing	21,85	1,65	23,1***	19,36***	22,47***	15,03	5,34

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 ([Cowan, 1992](#)), respectively.

Robustness - Greenwashing in the long-run 1/2

Panel A: Greenwashing									
	[-6,6]	[-7,7]	[-8,8]	[-9,9]	[-11,11]	[-12,12]	[-13,13]	[-14,14]	[-15,15]
<i>NC · Post</i>	-11.84** (4.34)	-11.91*** (3.95)	-10.34*** (3.32)	-11.31*** (3.35)	-9.52*** (3.06)	-8.52*** (2.83)	-7.78*** (2.63)	-7.59*** (2.59)	-8.31*** (2.51)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	744	860	974	1,088	1,316	1,430	1,542	1,654	1,766
R-squared	0.55	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56

Panel B: Green									
	[-6,6]	[-7,7]	[-8,8]	[-9,9]	[-11,11]	[-12,12]	[-13,13]	[-14,14]	[-15,15]
<i>NC · Post</i>	-0.40 (3.16)	0.05 (3.16)	0.80 (3.06)	1.42 (2.57)	0.30 (2.31)	0.47 (1.94)	0.89 (1.45)	0.02 (1.55)	-0.14 (1.63)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	706	812	918	1,026	1,242	1,350	1,456	1,562	1,668
R-squared	0.69	0.72	0.71	0.71	0.71	0.72	0.72	0.72	0.70

Panel C: Change									
	[-6,6]	[-7,7]	[-8,8]	[-9,9]	[-11,11]	[-12,12]	[-13,13]	[-14,14]	[-15,15]
<i>NC · Post</i>	-4.60 (5.56)	-5.28 (5.00)	-3.81 (5.21)	-2.16 (4.96)	-3.03 (4.88)	-0.00 (4.43)	-0.79 (4.36)	-0.75 (4.31)	-1.08 (4.18)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	488	564	642	718	870	946	1,020	1,094	1,168
R-squared	0.58	0.59	0.59	0.59	0.57	0.58	0.57	0.57	0.57

Robustness - Greenwashing in the long-run 2/2

Each firm involved in a green-related name change for greenwashing purposes is matched with a firm that was involved in a green-related name change in the same time period but for legitimate reasons.

	Abnormal Returns	
	(i)	(ii)
<i>Greenwashing · NC · Post</i>	-5.65** (2.45)	-5.26* (2.95)
<i>MarketValue</i>		-0.63 (0.67)
<i>Volume</i>		0.55* (0.30)
<i>Leverage</i>		0.01 (0.34)
Observations	1,476	1,444
R-squared	0.36	0.36
F-Stat	5.325	5.096

Define a green name

A green-related name refers to a name that incorporates words associated with sustainability.

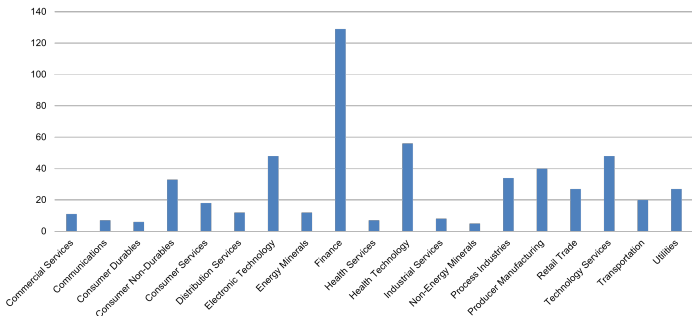
To identify green names I created a green word dictionary

[Loughran et al. \(2009\)](#) search for ethics-related terms applying only some key words. [Wilmshurst and Frost \(2000\)](#) count words on environmental issues without providing a word list. [Verbeeten et al. \(2016\)](#) develop a list of 32 key words based on Global Reporting Initiative (GRI) framework. [Baier et al. \(2020\)](#) create a word list by actively judging the words of a sample.

Apart from the latter, a useful list of words that can be applied to name changes cannot be found in literature so far

Green name dictionary set-up

- Download all the Sustainability reports published by the constituents of the S&P500 from 2014 to 2022 (548 Sustainability reports from 366 companies)
 - Words included in my green dictionary are taken from the 1000 most used words cited at least by 2 companies belonging to different industries.
- The final step was to select only those words relevant to my study.



How to identify greenwashing?

Example: Z Holding Group changed name in 2015 to Ariel Clean Energy (ISIN: US74739E1029)

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

[X] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2014

or

[] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from [] to []

Commission file number: 000-54159

Z HOLDINGS GROUP, INC.
(Exact name of registrant as specified in its charter)

10-K form before the name change

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For the transition period from [] to []

Commission file number: 000-54159

ARIEL CLEAN ENERGY, INC.
(Exact name of registrant as specified in its charter)

10-K form after the name change

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Z HOLDINGS GROUP, INC.

(Exact name of registrant as specified in its charter)

Current Business

We are currently seeking new business opportunities with established business entities for merger with or acquisition of a target business. In certain instances, a target business may wish to become our subsidiary or may wish to contribute assets to us rather than merge. We have not yet begun negotiations or entered into any definitive agreements for potential new business opportunities, and there can be no assurance that we will be able to enter into any definitive agreements.

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10-K form after the name change