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EXPLORATION OF ESG GROWTH AS A DRIVER BEHIND MERGERS AND
ACQUISITIONS

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Abstract

This thesis investigates the association between ESG scores and M&A activity. This is done by evaluating whether low-ESG acquirors target high-ESG firms to enhance their ESG ratings. A sample of 151 M&A deals between 2010 and 2018 is used for which ESG data for targets and acquirors, as well as post-acquisition scores, are available. Through utilizing quantitative analyses and ESG scores as key measures, the study concludes that the acquirors' ESG scores do not increase within one year post-deal-announcement but suggests that acquirors target firms with higher ESG scores than their own.

Keywords: Corporate Finance, Mergers and Acquisitions, ESG (Environment, Social and Governance), CSR (Corporate Social Responsibility), Corporate Governance

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1. Introduction

Corporate takeovers are one of the most remarkable events in the history of a company (Golubov, Petmezas, and Travlos 2013, 287-313). In recent decades, firms have increased M&A activity and implemented it progressively as a strategic tool for restructuring (Malik et al. 2014) and innovation purposes (Dezi et al. 2018, 716-752). Global Mergers and Acquisitions surpassed the pre-crisis level by a wide margin and were worth \$5.1 trillion in 2021, up from \$3.8 trillion in 2020 (KPMG 2021). Unsurprisingly, it is a prominent field of research in corporate finance. Traditionally, maximization of short-term profits was the primary concern. Today, research concludes that shareholder welfare maximization is distinct from market value maximization, suggesting that companies and asset managers adopt investor-friendly practices. Firms should optimize shareholder welfare by considering environmental, social, and governance factors (Hart and Zingales 2017). This is indeed confirmed by the \$649 billion which were invested in funds focused on environmental, social, and governance (ESG) in 2021 (Kerber and Simon 2021). Therefore, my paper looks at how ESG motives drive acquisitions by studying the following research question: *Do low-ESG acquirors purposely target high-ESG firms to increase their own scores?*

While many studies focus on the impact of ESG and CSR (Corporate Social Responsibility) on M&A, the research on the impact of M&A on ESG performance is scarce. M&A is a strategic instrument for restructuring or (financial) value generation, but no previous research evaluates if M&A transactions are purposely undertaken to raise the acquiror's ESG score.

This thesis studies the association between Mergers and Acquisitions, high-ESG targets, and enhanced ESG scores on the acquiror's side post-merger. The correlation between increased ESG scores among the acquiring firm after completion of the M&A transaction, and therefore the correlation between low-ESG firms targeting high-ESG firms with the intention of increasing their own scores due to the reported, high benefits of being a seriously sustainable

organization, are determined using a linear regression analysis. Specifically, the linear regression analysis is split into two steps. The first stage determines whether low-ESG acquirors purposely target firms with higher ESG scores than their own. This is done using one equation to examine whether the acquiring firms display a lower ESG scores than their targets at the time of deal announcement, and another to compare whether an ESG-score downgrade on the acquiring firm's side enhanced the likelihood of acquiring a high ESG target. The second stage looks at whether the acquiring firm sees an increase in their score one-year post-transaction. This one-year-period is chosen to grant enough time for the restructuring and best-practices implementation processes.

My findings show that acquiring firms with lower ESG scores do indeed target firms with higher ESG scores, which supports the hypothesis of (increased) ESG performance as a driver behind Mergers and Acquisitions. In addition, it is revealed that a decrease in ESG scores on the acquirors' side enhances the likelihood of acquiring higher-ESG targets. A one-standard-deviation-decrease in the acquirors' ESG score from $t-1$ to t leads to an increase in the likelihood of acquisition by 3%. Additionally, the findings show that the target firms are also classified among those with above-average ESG scores. In conjunction with the previously confirmed idea that lower-ESG acquirors deliberately target firms with higher ESG rankings, it is additionally possible to establish the correlation between an above-average ESG ranking and greater desirability as an M&A deal target and partner. And while it is possible to confirm this hypothesis, it could not be proven that the acquirors' ESG scores improve significantly within one year after the deal announcement of the M&A activity with their higher-ESG targets. Implications behind this finding are vast, as it could suggest an ineffective acquiror strategy, or that ESG score improvement was not the agenda behind the M&A transaction, as well as that ESG practices implementation requires more time than the observed period of one year post deal announcement.

Several recent research studies demonstrate a correlation between ESG-related initiatives such as corporate social responsibility and company performance (Porter and Kramer 2019, 323-346). The findings demonstrate that organizations which prioritize ESG practices have higher financial performance (Eccles, Ioannou, and Serafeim 2014, 2835-2857), which can be further verified within this study and its dataset, as significance is found between increased ESG scores and the control variables size at time of deal announcement t , as well as one year later, $t+1$, which measure the acquiring firms' total assets.

This paper further aims to specifically contribute to and continue the research of Barros et al.' (2022) paper "M&A activity as a driver for better ESG performance", by showing that it is a two-directional relationship and ESG performance also serves as a motivator for M&A activity, as well as of Tampakoudis and Anagnostopoulou (2020, 1865-1875). Their paper "The effect of mergers and acquisitions on environmental, social and governance performance and market value: Evidence from EU acquirers" establishes the connection between increased post-merger ESG scores of acquiring firms and a higher post-merger market value. My paper aims to contribute to their findings by showing that increased post-merger ESG scores are not a simple byproduct of M&A activity, but rather a strategic goal of the undertaken M&A transaction, and that ESG ratings are increasingly becoming a serious, value-enhancing tool for corporations.

2. Literature Review

Sustainability is receiving growing attention in recent years, particularly in public policy, consumer concerns, among investors and capital markets. It has become a priority for companies to improve their competitiveness, boost their reputation in the eyes of varied stakeholders, and comply with the legislation of the countries in which they operate (Nirino et al. 2016). Environmental, Social, and Governance (ESG) or Corporate Social Responsibility (CSR) are common terms used to describe corporate initiatives in this field (Gillan, Koch, and Starks 2021).

The Governance and Accountability Institute states that 86 percent of S&P 500 companies released sustainability or corporate responsibility reports in 2018, which is a strong increase from 20 percent in 2011. This highlights the interest in ESG from the corporate perspective (Governance & Accountability Institute 2018). In addition, empirical research demonstrates that stakeholders put a greater emphasis on a firm's ESG performance whenever the company discloses the data in the form of an ESG report (Mervelskemper and Streit 2017). Several of the world's largest institutional investors take sustainability into account when making investment decisions. For instance, BlackRock, the largest global asset manager, predicted that sustainability will become the new benchmark for trading, portfolio construction, and risk management by businesses (BlackRock 2020).

2.1 Definition of ESG

To accurately comprehend the meaning of ESG and its significance in the business sector, it is necessary to begin with its definition. Corporate sustainability refers to “meeting the needs of a firm’s direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities, etc), without compromising its ability to meet the needs of future stakeholders as well” (Dyllick and Hockerts 2002, 130-141).

In recent years, particularly in response to the interest of markets and investors, specific sustainability ratings have emerged: enterprises were evaluated on environmental, social, and governance criteria, resulting in a global sustainability rating (Porter, Serafeim, and Kramer 2019). ESG commitment is one of the most often used criteria of company sustainability. MSCI ESG Research describes ESG practices as “the consideration of environmental, social and governance factors alongside financial factors in the investment decision-making process” (MSCI 2018). ESG measures are essential because they can serve as proxies for gauging sustainability performance (Widyawati 2019) by quantifying organizations' sustainability

performance in the environmental, social, and governance aspects; hence, ESG reflects firms' engagement in CSR (Barros et al. 2022).

One may argue that ESG performance is the quantitative expression of corporate sustainability and corporate social responsibility, and that ESG disclosure originated as a response to the complexity of assessing CSR and corporate sustainability (Mervelskemper and Streit 2017). However, the distinctions between CSR, sustainability, and ESG performance are ambiguous, as these terms frequently entail information about issues that are difficult to evaluate in the investment decision-making process, such as corporate philanthropy, and they overlook information that investors may consider more relevant (BlackRock 2020).

Additionally, most of the research relies on ESG reporting data from different ESG rating agencies to assess either corporate sustainability or CSR (Tampakoudis and Anagnostopoulou 2020, 1865-1875). The agencies compute and publish their evaluations based on the given information in the four pillars, like Bloomberg ESG Disclosure Scores, Refinitiv Thomson Reuters ESG Scores, MSCI ESG Ratings and Sustainalytics' ESG Risk Rating (Barros et al. 2022). Utilizing ESG information, however, poses numerous limitations, like the absence of reporting standards and subsequently the inability of data comparison among the various rating agencies (Amel-Zadeh and Serafeim 2018). Nonetheless in academic empirical study, these ratings are the assessment standard and prevalent indicator of corporate sustainability (Duque-Grisales and Aguilera-Caracuel 2019 315-334).

2.2 ESG measures and relation to M&A performance

Corporate sustainability has also been investigated to play a role when organizations are involved in Mergers and Acquisitions, with recent research demonstrating the pertinent role ESG plays in M&A. Numerous authors, among them Boone and Uysal (2020) and Gomes and Marsat (2018, 71-80), show that investors regard sustainability and CSR to be relevant parameters when evaluating the motive and financial performance of Mergers and Acquisitions

(Barros et al. 2022). This paper aims to contribute to these findings by further proving that acquiring firms view ESG scores as a motive and key driver behind M&A activity when scouting potential target firms.

Lin and Wei (2006, 95-109) demonstrate a positive correlation between a target's persistent efforts in terms of justice, employee rights, and employee safety and its post-M&A-transaction performance. This may be explained by the theory that sustainable businesses may produce a sort of goodwill that allows them to mitigate the impact of unfavorable events, thereby reducing the firm's overall risk and sustaining shareholder value (Godfrey, Merrill, and Hansen 2009, 425-445), whereas Carroll and Brown (2018, 39-69) find the link between corporate sustainability and M&A in the reputational effect. Organizations with higher CSR and, consequently, ESG scores are anticipated to have improved reputations and financial performance, making them more appealing to potential buyers. While reputational effects are difficult to measure in a quantitative framework, this study considers the anticipated improved financial performance of increasing ESG scores by considering the acquiring firms' total assets at the deal announcement date t and one year after, $t+1$.

As a result of acquirors' desire to reduce the risk of negative spillovers from a transaction, low-reputation organizations are often excluded from the M&A market or have difficulty entering it (Boone and Uysal 2020). These findings are in line with evidence indicating bidders who are concerned about CSR prefer to seek companies that engage in similar CSR activities and avoid companies that have a poorer performance in terms of sustainability (Krishnamurti et al. 2019). This difficulty in accessing the M&A market may also be attributable to the fact that financial institutions tend to avoid connection with organizations that have a poor reputation and low ESG ratings (Chuang 2017, 677-699). These findings are reflected in this study's sample – out of the 150 observations, the minimum ESG score contained in the sample is 41.59, while the highest observed score is 86.35. Arguably, 41.59 is not a particularly high score, however,

all observed M&A transactions in the sample display ESG rankings in the upper two-thirds of the spectrum, which further contributes to the findings of Boone and Uysal, Krishnamurti et al. as well as Chuang that low-ESG firms are often outsiders of the M&A market.

Increased CSR levels in M&As appear to relate to better long-term profitability and higher success rates (Yen and André 2019). Therefore, the incorporation of ESG factors into the framework of Mergers and Acquisitions results in an increase in value for the buyer. In fact, by focusing on sustainably responsible organizations, the acquiror reduces risk and improves reputation, and bidders appear to evaluate the ESG data of the targets as much as the standard and codified components of due diligence (Pettinari 2020). Consequently, the market perceives Mergers and Acquisitions of firms with comparable CSR levels as less unpredictable, resulting in narrower spreads between bidding and market rates (Arouri, Gomes, and Pukthuanthong 2019, 176-198). This theory will be partially investigated further in this paper's context by analyzing whether low-ESG acquirors target firms with higher ESG scores than their own scores.

The body of research that links Mergers and Acquisitions with sustainability is expanding, but empirical studies that investigate the actual influence of environmental, social, and governance factors on M&A dynamics are scarce. Literature focuses mostly on the financial effects of bid announcements as measured by the total abnormal returns of targets and acquirors (Tampakoudis and Anagnostopoulou 2020, 1865-1875). Some of the preceding research looks at the impact that Mergers and Acquisitions have on CSR and ESG, like Barros et al. (2022), who provide evidence that Mergers and Acquisitions can positively influence ESG scores. However, rarely any studies look at the relevance and influence of ESG performance as the main driver behind Mergers and Acquisitions.

Tampakoudis and Anagnostopoulou (2020, 1865-1875) investigated the use of Mergers and Acquisitions as a strategic tool for increasing post-merger value through ESG factors. To do

this, an analysis of the post-merger market value of companies that had successfully acquired targets with higher ESG scores than the acquiring firm itself during the pre-merger phase was carried out. This paper aims to further contribute to their findings by elaborating on whether acquirors purposely target firms with higher ESG rankings than their own respective scores as part of the strategic plan and a first step of due diligence. Additionally, it aims to show that increased post-merger ESG scores are not a simple byproduct of M&A activity, but rather a strategic goal of the undertaken M&A transaction, and that ESG ratings are increasingly becoming a serious, value-enhancing tool for corporations

As noted previously, improved ESG performance is frequently associated with improved business success, a result which would turn ESG performance out to be a significant value creation component. Therefore, it is essential to analyze if M&As influence the ESG performance of acquirors and whether organizations purposely utilize M&As as a strategic tool to improve their own ESG performance. This is proposed by breaking down the research question into two hypotheses, with the first hypothesis investigating whether low ESG acquirors target firms with higher ESG scores and including a dummy variable for the target firms' ESG scores at deal announcement date t to examine whether they display above average ESG scores. The second hypothesis aims to investigate whether low-ESG acquirors see an increase in their subsequent ESG scores after acquiring a higher-ESG target. These hypotheses are examined within this thesis by looking at acquirors' and targets' ESG scores in the pre-merger state as well as the acquiring firms' ESG scores after the M&A transaction. Shall a correlation between these variables exist, it can be established through the proposed linear regression analyses in combination with prior academic literature.

Moreover, organizations can primarily create value through the long-term transmission of competencies, which demands the integration of organizational structures and cultures of both the acquiring as well as the target firm (Angwin and Meadows 2015, 235-251). As changes in

ESG performance are not anticipated to be evident immediately, and to examine whether targets with high pre-merger ESG scores will increase acquiring firms' ESG scores, the post-merger stage will be defined as one year after the deal closes to ensure sufficient time has passed to implement new ESG practices acquired from the targeted organization.

3. Methodology

The association between improved ESG scores among the acquiring firm following the completion of the M&A transaction, and consequently the correlation between low-ESG firms targeting high-ESG organizations with the purpose of boosting their own scores due to the reported, high benefits of being a seriously sustainable organization, will be determined by utilizing linear regression analysis in conjunction with existing academic research.

The paper contains two major hypotheses investigated to shed light on the main research question. The first hypothesis concerns the ESG scores of acquirors as well as targets to understand whether lower-ESG acquiring firms deliberately target firms with higher ESG scores and is defined as follows:

H0: The ESG scores of acquiring firms at time t-1 and the ESG scores of target firms at time t have no effect on the target choice in an M&A deal.

H1: The ESG scores of acquiring firms at time t-1 and the ESG scores of target firms at time t have an effect on the target choice in an M&A deal.

Using the following equation, it is determined whether acquiring firms with low ESG scores target firms with higher ESG rankings.

$$Equ1: ESG_{target\ t} = \beta * ESG_{acquiror\ t-1} + \gamma * control\ variables_t + v_i + \epsilon_t$$

with t being the time of deal announcement. The acquiror's ESG score is considered $t-1$, assuming the firm begins scouting for potential targets within one year before the deal is announced.

The following equation is used in addition to determine if an ESG downgrade on the acquiring firm's side enhanced the likelihood of acquiring a high ESG target.

$$\text{Equ2: } ESG_{target\ dummy\ t} = \beta * \Delta ESG_{acquiror\ t,t-1} + \gamma * control\ variables_t + v_i + \epsilon_t$$

The second hypothesis regards the acquirors' ESG scores one year post deal announcement to understand whether low-ESG firms which acquire higher-ESG targets see an increase in their subsequent ESG ratings.

H0: Acquiring a high-ESG target has no effect on the acquirors' subsequent ESG scores one year post deal announcement.

H1: Acquiring a high-ESG target has an effect on the acquirors' subsequent ESG scores one year post deal announcement.

This is determined through the following equation:

$$\text{Equ3: } \Delta ESG_{acquiror\ t,t+1} = \beta * ESG_{acquiror\ dummy\ t} + \gamma * control\ variables_t + v_i + \epsilon_t$$

The dependent variable in equation 1 is the ESG score of the target firms in the analyzed M&A deals at time t , the deal announcement date. The independent variable $ESG_{acquiror\ t-1}$ is the ESG score of the acquiring firm one year prior to deal announcement date t to examine whether firms with a lower ESG score purposely target firms with higher ESG scores. $T-1$ was chosen as timepoint to avoid biases from the deal announcement which could influence the acquirors' ESG scores.

Equation 2 contains the dependent variable $ESG\ target\ dummy\ t$, which is regressed on the change in $ESG_{acquiror}$ from $t-1$ to t to determine if an ESG downgrade on the acquiring firm's

side enhanced the likelihood of acquiring a high ESG target. $ESG_{\text{target dummy } t}$ equals one if the target's ESG score in period t is above the median and zero otherwise. Given that a score of less than 50 is considered low and over 70 is considered outstanding (Lev 2022), an ESG score over 50 is deemed above average for this study's purposes.

In equation 3, the dependent variable is the change in the ESG score of the acquiring company between the date deal announcement, t , and one year later, $t+1$. $ESG_{\text{acquiror dummy } t}$ is a binary variable that takes on the value one if the acquiror is a below-median ESG firm that acquired an above-median ESG target in period t , and zero otherwise.

There are three metrics that make up the control variables. The first is the size of the acquiring firms, measured as their total assets at the deal announcement date (t) and one year later ($t+1$) to account for corporate growth owing to M&A activity. It is important to consider size as a variable because larger companies are more likely to have higher ESG scores due to the reputational risks associated with greater visibility, the possibility of larger investments, and more efficient resource allocation because of economies of scope and scale, as well as efficiency effects. The debt-to-equity ratio is used as a measure of leverage because companies that have a better score in the Governance component of the ESG score are more likely to have lower levels of leverage. Because the literature on corporate governance places an emphasis on working capital and cash holdings, the current ratio of the acquiring firms at the time of deal announcement is used as a measure of liquidity. Cash on hand is considered as a proxy for agency costs due to the likelihood of overinvestment in capital expenditures and acquisitions as a result of hoarding surplus cash. This can occur when a company holds onto cash that it does not need immediately. (Barros et al 2022)

The industry fixed effects ν_i are incorporated into the model because it is possible that there are time-invariant elements operating at the industry level that could potentially have an impact on

the primary analysis. Including the fixed effects controls for these potential factors. The industry that the acquiring company operates in is used as the variable for the industry fixed effect in this regression.

4. Sample and Data

The M&A data is obtained from the Thomson Reuters Refinitiv Database (Refinitiv 2022). The initial sample consisted of 7254 publicized Merger and Acquisition deals between January 1, 2010, and December 31, 2020. Due to the highly regulated nature of these industries, acquiring and target firms from the financial sector and those involved in government activities were excluded from the sample. The remaining sample transactions meet the following criteria:

Both the acquiring and acquired organizations are publicly traded American corporations. This restriction was imposed due to the increased frequency and size of Merger and Acquisition deals in North America, and the better availability of data there compared to Europe or Asia. Additionally, the status of the transaction must be completed and designated as a transaction with a disclosed cash amount because transactions with a transaction value of less than \$1 million were excluded from the sample to avoid the potentially distorted effects of small transactions. Firms without data for the control variables are excluded from the sample. They are generated from Wharton WRDS Financial Ratios on Firm Level (WRDS 2022), the United States Securities and Exchange Commission (U.S. Securities and Exchange Commission 2022) as well as the stock screener sites Macrotrends (2022) and Barchart (2022). To match them with Wharton's Sustainalytics data, the stock tickers of the acquiring and target corporations must also be included in the Refinitiv dataset, resulting in a 6226-value reduction in the sample size. Both the target and acquiring firm's ESG scores must be accessible for at least one year before and after the completion of the transaction because the research of Barros et al. (2022) indicates that the improvement of ESG scores is rarely rapid and requires adaption and implementation

time. Sustainalytics provides ESG score data from 2009 to 2019, reducing the sample to transactions announced on or after January 1, 2010, and completed by December 31, 2018.

As previously described, the industry fixed effects are relevant to the model due to potential time-invariant elements at the industry level. Therefore, the acquiring firms' macro industry was obtained from the Thomson Reuters Refinitiv together with the M&A deals data.

Due to limitations regarding data availability for the target firms' stock ticker in Refinitiv and the necessity of stock tickers for data curation in WRDS Sustainalytics, a substantial portion of the data matching had to be done manually. As a first step, entries with missing stock tickers for the target firms were removed from the database as those involved 6226 M&A deal entries, resulting in a reduction from 7254 to 1028 entries. This dataset was then downloaded as an Excel spreadsheet. For the residual data, all the missing stock tickers of acquiring firms were looked up and added to the dataset manually, removing any datasets for which the stock tickers could not be found. The remaining stock tickers were exported into a .txt file to upload it to Wharton's WRDS Sustainalytics platform to retrieve the relevant ESG scores for the date of deal announcement t , one year before deal announcement $t-1$, and one-year post-deal announcement $t+1$ for the acquiring firms, as well as for the date of deal announcement t for the target firms (WRDS 2022). Upon command, Sustainalytics generated an Excel spreadsheet containing the ESG scores for all firms whose stock tickers it has data on, for all timepoints within the defined timespan. The Sustainalytics spreadsheet was then matched with the Refinitiv spreadsheet by using the `iferror`-function and manual matching. This resulted in a further reduction of the dataset, as only complete entries with data for acquiring firms' ESG scores at $t-1$, t , and $t+1$ as well as target firms' ESG scores at t remained in the sample. All matches for which both target and acquirer data are accessible are maintained, yielding a final sample size of 151 mergers and acquisitions that occurred between 2010 and 2018.

This method of data curation and small size of the data sample certainly comes with limitations that I am aware of, however given the scope of and time frame for this paper as well as the redacted access to more extensive databases, the present dataset represents the best option. With the limited databases available to me, the only other options would have been to manually search for the 6226 stock tickers of the firms whose stock tickers are not contained in the Refinitiv database, or manually look up the ESG score in Refinitiv for every firm contained in the initial sample retrieved from Refinitiv, as there is no option to look for a complete list or add ESG scores as a parameter within the M&A screening program of Thomson Reuters Refinitiv. Given the scope of this paper and the fact that I am working on it alone, this would have been impossible within the project's timeframe. Additionally, it is important to point out the potentially limited accuracy that comes with using stock tickers, as they can be reused shall a firm cease to exist and another organization with a similar name goes public on the stock market. Seeing how the sample is rather small and the matching has been done manually, the error probability is small, but cannot be fully ruled out.

Further limitation comes especially from the restriction of data availability in Sustainalytics until only the end of 2019, which potentially takes away from valuable insights given the rising importance of ESG scores in the recent past. However, it also poses incentives for more thorough research with access to recent data in a larger extent for further understanding of the growing importance of ESG within corporate finance and M&A activity.

5. Results

Summary Statistics

The statistical breakdown of the variables factored into the sample and regression equations is depicted in the Summary Statistics. When compared to both their ESG ratings at the time of deal announcement and their ESG scores one year earlier, acquiring companies, on average,

show a small improvement in their ESG scores one year after the date of the deal announcement. Interestingly, though, the average ESG score of target firms at date t is lower than the ESG score of their acquirors. This gives credence to the question whether ESG score improvement even is a driving motivator behind M&A transactions, which is further discussed in chapter 6.

Table 1: Summary Statistics

	<i>N</i>	<i>Mean</i>	<i>St. Deviation</i>	<i>Min</i>	<i>Max</i>
<i>Key Dependent Variables</i>					
ESG Target t	151	52.01	7.46	41.29	80.58
ESG Acquiror Dummy t	151	0.50	0.50	0.00	1.00
Δ ESG Acquiror $t, t+1$	151	0.51	3.83	-9.56	26.67
<i>Key Independent Variables</i>					
ESG Acquiror t	151	57.49	9.82	42.58	86.00
Δ ESG Acquiror $t, t-1$	151	0.14	3.49	23.61	12.00
ESG Acquiror Dummy t	151	0.07	0.26	0.00	1.00
<i>Control Variables</i>					
Current Ratio Acquiror t	151	3.72	18.02	0.02	221.96
Leverage Ratio Acquiror t	151	7.81	43.31	-18.08	434.09
Size Acquiror t	151	M 3400.00	M 52500.00	M 329.00	M 403000.00

Mean-balancing paired t-test

Additionally, a paired t-test is performed on the targets' ESG scores, ESG Target t . For that, the variable is split into two groups, $ESG > 50$, which includes all acquirors whose ESG scores are above 50, and $ESG < 50$, which holds all acquirors whose ESG scores are below 50 at the date of deal announcement. This way, the differences in means for these two groups is calculated to establish whether they differ. Mean Difference represents the difference in the means of the two groups, $ESG < 50$ and $ESG > 50$. Mean ESG < 50 represents the mean value for the group $ESG < 50$, while Mean ESG > 50 contains the mean value for the group $ESG > 50$.

Table 2: Mean-balancing paired t-test

<i>Variable</i>	<i>Mean Difference</i>	<i>Mean ESG < 50</i>	<i>Mean ESG > 50</i>	<i>t-stat</i>
ESG Acquiror t	0.39	0.3	0.69	5.28

Considering the t-statistic threshold approach to identify the statistical significance, the t-value is interpreted relative to the critical value, which is ± 1.96 for all equations within this work. Looking at the paired t-test's t-value of 5.28, it can be determined that there is statistical significance and yes, the two groups do differ, as can be further seen in their means, which show a difference of 0.39.

Stata Output for first regression model

The dependent variable ESG Target t, with t being the date of the M&A deal announcement, is represented twice, in the first column without the control variables, in the second column with consideration of the control variables in the regression. This is a measure to assess whether the control variables add value to the model. ESG Acquiror t-1 is the acquiring firms' ESG score one year prior to deal announcement. Control variables include the acquirors' liquidity (Current Ratio Acquiror t), acquirors' debt-to-equity ratio (Leverage Ratio Acquiror t), and acquirors' firm value (Size Acquiror t as well as t+1 to account for corporate growth owing to M&A

Table 3: Stata Output for first regression model

	ESG Target t	ESG Target t
β_0	38.48 (8.16)	36.03 (7.36)
ESG Acquiror t-1	0.24 (2.72)	0.29 (3.09)
Current Ratio Acquiror t		-0.05 (-2.95)
Leverage Ratio Acquiror t		-0.02 (-1.55)
Size Acquiror t		0.00 (-2.21)
Size Acquiror t+1		0.00 (1.68)
Controls	No	Yes
Industry Fixed Effects	Yes	Yes
N	150	150
Clusters	138	138
R ²	0.18	0.24
Adjusted R ²	0.11	0.16

activity) and remain the same throughout all three regressions. As the t-value of 3.09 exceeds the critical value of 1.96 (for a 95% confidence interval), the null hypothesis can be rejected - it is feasible to conclude that statistical significance exists and that acquiring firms with lower ESG ratings do indeed target organizations with higher ESG ratings.

The coefficient in the acquiring firm's ESG score at time t-1 equals 0.29, meaning if the acquiror's ESG score at t-1 increases by 1 point, the Target's ESG score at t increases by 0.29 points. The adjusted R² in the model with the control variables is higher than in the model

without the control variables (0.16 compared to 0.11), indicating that the control variables are adding value to the model. The control variables Size t and $t+1$ are statistically significant, showing that they have an effect on ESG ratings, as larger businesses present more reputational issues and more exposure. The current ratio is also a significant key control variable, demonstrating the importance of working capital and cash holdings in the context of corporate governance (Barros et al. 2022). On the other side, the leverage ratio has no substantial influence.

Stata Output for second regression model

The dependent variable ESG Target Dummy t is a binary variable which equals one if the target's ESG score in period t is above the median and zero otherwise. The independent variable Δ ESG Acquiror t , $t-1$ shows the change in the acquiring firms' ESG scores from one year before the deal to the date of deal announcement. The control variables are the acquirors' liquidity (Current Ratio Acquiror t), the acquirors' debt-to-equity ratio (Leverage Ratio Acquiror t) and acquirors' total assets (Size Acquiror t as well as $t+1$ to account for growth owing to the M&A activity). With this regression, it is determined whether a decrease in ESG

Table 4: Stata Output for second regression model

	ESG Target Dummy t
β_0	0.47 (8.64)
Δ ESG Acquiror t , $t-1$	0.03 (3.67)
Current Ratio Acquiror t	0.00 (-1.57)
Leverage Ratio Acquiror t	0.00 (-0.93)
Size Acquiror t	0.00 (-2.10)
Size Acquiror $t+1$	0.00 (2.35)
Controls	Yes
Industry Fixed Effects	Yes
N	150
Clusters	138
R ²	0.16
Adjusted R ²	0.07

score on the acquiror side enhance the likelihood of acquiring higher-ESG targets.

With a t-value of 3.67 this idea is verified, while additionally demonstrating that the target firms are also classified among those with above-average ESG scores at the time the acquisition was announced. A score over 50 is regarded above

average for this study's purposes, given that a score of less than 50 is considered low and over 70 is considered excellent (Lev 2022). In conjunction with the previously confirmed idea that lower-ESG firms deliberately target firms with higher ESG rankings, it is possible to establish the correlation between an above-average ESG ranking and greater desirability as an M&A deal target and partner. In accordance with the results obtained for the first equation, the current ratio, and total assets as a proxy for business size prove to be significant control variables with a detectable impact on ESG ratings, although the leverage ratio remains inconsequential.

Stata Output for third regression model

The dependent variable $\Delta \text{ESG Acquiror } t, t+1$ is the change in the ESG score of the acquiring company between the date deal announcement, t , and one year later, $t+1$, in order to assess the ESG score development within one year of deal announcement. The independent variable $\text{ESG Acquiror Dummy } t$ is a binary variable that takes on the value one if the acquiror is a below-median ESG firm that acquired an above-median ESG target in period t , and zero otherwise. The control variables are the acquirors' liquidity ($\text{Current Ratio Acquiror } t$), the acquirors' debt-to-equity ratio ($\text{Leverage Ratio Acquiror } t$) and acquirors' total assets ($\text{Size Acquiror } t$ as well as $t+1$ to account for growth owing to the M&A activity). This second section of the empirical

Table 5: Stata Output for third regression model

	$\Delta \text{ESG Acquiror } t, t+1$
β_0	0.68 (1.52)
ESG Acquiror Dummy t	1.35 (1.16)
Current Ratio Acquiror t	0.03 (6.59)
Leverage Ratio Acquiror t	0.01 (1.16)
Size Acquiror t	0.00 (1.21)
Size Acquiror $t+1$	0.00 (-1.90)
Controls	Yes
Industry Fixed Effects	Yes
N	150
Clusters	138
R ²	0.16
Adjusted R ²	0.07

study aims to evaluate if acquirors with lower ESG scores than their targets experience a rise in their scores following the acquisition. To account for implementation time and process adaptation, the acquiring company's ESG ratings are calculated at the time of the M&A deal announcement and one year thereafter.

This hypothesis lacks statistical significance and must be rejected, as its t-value is 1.16. Even after accounting for the one-year process and best practices implementation timeline, there is no statistically significant enough gain in ESG ratings of acquiring firms following M&A deals with higher ESG targets. The value of the coefficient is 1.15, which indicates that a change of one unit in the independent variable would result in a change of 1.35 units in the Change in Acquiror ESG Score from time t to time $t+1$.

Despite this finding being unable to demonstrate a connection between the two, the idea is not inherently flawed, nor is it unworthy of being investigated further in future research. The small size of the dataset and the temporal restriction to M&A deals and ESG scores from 2009 to 2019 may have created bias, but they also provide an incentive for further research. In recent years, ESG ratings have become increasingly relevant and accessible. Despite this, the work cannot provide evidence to support the notion. However, the general relevance and link between better ESG scores as a driving essential element behind M&A activity cannot be discounted, as demonstrated by this work and other research in the field.

6. Discussion and Conclusion

This study investigates the relationship between firms' ESG scores and their consequential M&A activities by determining whether low-ESG acquirors target firms with higher ESG scores and if they experience a rise in their ESG scores after the M&A transaction. Considered was a panel of 151 companies from twelve industries that successfully completed M&A transactions in the United States between 2010 and 2018.

The findings indicate that firms do, indeed, acquire targets with higher ESG scores than their own, and that a decline in the acquiror's ESG ranking prior to the M&A transaction enhances the likelihood of acquiring higher-ESG targets. This further highlights the significance of sustainability, corporate governance, and ESG scores in the corporate world and is consistent

with past academic research in this area. In their paper, Krishnamurti et al. (2019) argue that bidders who are concerned about CSR tend to seek out companies that engage in similar CSR activities and avoid companies with lower sustainability performance. According to the findings of this study, this also holds true in the context of Mergers and Acquisitions. In addition, it gives credence to the notion that bidders appear to assess the ESG data of targets in addition to the usual and codified components of due diligence, as Pettinari has noted (2020).

In addition, the findings indicate that the targeted organizations typically exhibit above-average ESG scores, which this research defines as an ESG ranking of over 50. These outcomes are consistent with the understanding that firms with low reputational standings are often excluded from the M&A market (Boone and Uysal 2020).

In 2018, Gomes and Marsat presented the theory that investors consider sustainability and CSR to be significant parameters when assessing the motive behind and financial success of Mergers and Acquisitions (Barros et al. 2022). While ESG scores can be considered as a driver behind M&A transactions within the scope of this work, additional insights, though not as immediately apparent, are gained regarding financial performance. Initially, firm size as a measure of total assets was included in the control variables because larger firms are more likely to have higher ESG scores due to reputational risks associated with greater visibility, the opportunity for larger investments, and more efficient resource allocation. Unsurprisingly, firm size as a control variable was found to be significant. However, the control is not restricted to the size of the acquiring company at the announcement date t but is also maintained for one year following announcement date, $t+1$. Since total assets can be used not only as a measure of firm size but also financial performance, comparing the data for these two time periods suggests that, on average, firm size did expand significantly from time t to time $t+1$. It is critical to note that no specific tests have been conducted to demonstrate statistical significance; rather, this understanding is acquired through analyzing the data and comparing the two variables'

means. The average firm size at the time of deal announcement t is \$34 billion and climbs to \$43.6 billion at time $t+1$. Unquestionably, these hypotheses must be studied further to be given credence to, but they are consistent with earlier findings indicating firms with better ESG scores are anticipated to have superior financial performance (Gomes and Marsat 2018, Carrol and Brown 2018). This allows for the association of ESG with improved business success on multivariate levels, which makes ESG performance a significant value creation component within the realms of corporate finance.

While there is substantial statistical evidence of low-ESG acquirors targeting higher-ESG firms and performance benefits of displaying higher ESG scores, there is no way to prove that this was the sole or primary motivation behind the M&A transactions examined in this study. These findings and their subsequent interpretation are established upon academic literature and statistical results of the regressions analyses. Even though there is statistical proof that lower-ESG acquirors target higher-ESG firms and that targets exhibit above-average ESG scores, there is no empirical way to prove that this is not just an accidental effect, nor is there any way to prove the actual motivation of decision-makers behind the M&A activity. Given the wide range of additional factors at play, the primary impetus for the observed Mergers and Acquisitions may have been something altogether else. The motivators behind M&A range from strategic synergies (Malik et al. 2019), financial synergies and regulatory stability to innovation purposes (Dezi et al. 2018). My research contributes to the list by analyzing ESG ratings within the context of the growing significance of sustainability and the duty of corporations to their communities. To be able to affirm definitively that an increase in ESG score is the primary impetus behind these Mergers and Acquisitions, it would be necessary to additionally conduct interviews with executives to ascertain the real rationale behind each transaction mentioned in this thesis. Within this work's scope, associations are established based

on the statistical evidence in combination with previous academic research showing improved ESG performance as frequently associated with improved business success.

My analysis did not uncover any substantial evidence that low-ESG acquirors who complete M&A transactions with higher-ESG targets see an increase in their subsequent ESG scores within a year after the deal announcement date. Despite no association being demonstrated in this article, this does not immediately invalidate this idea as significant. Several constraints may have contributed to the presented result and encourage further investigation:

Due to the need for complete data availability for the target and the acquirer, and the manual data matching within this study, the studied sample included in my analysis is small at 151 observations, as noted earlier. In addition, because WRDS Sustainalytics only provides ESG data from 2009-2019, the observed transaction dates range from 2010 to 2018, which may not be entirely consistent with what more current data may reveal, given the increasing significance of ESG rankings.

Observed timestamps may, ultimately, be the culprit of the greatest possibility for result manipulation. The data examines the ESG scores of acquirers at the announcement date t , one year previous, $t-1$, and one year after the announcement date, $t+1$. While one year of process implementation after an M&A deal is usually sufficient, I examine the ESG scores one year after the deal announcement so as not to influence potential changes in ESG scores upon deal announcement. The results may have been influenced by the fact that not all M&A transactions are completed in a brief period and that some take years to complete. Observed firms may not have completed the deal at $t+1$, much less established new processes and ESG procedures. Therefore, it may be necessary to conduct extra research evaluating ESG scores at the time of deal announcement and one year after deal completion, as the results may be substantially different.

Mergers and Acquisitions inevitably change a company's culture, structure, and processes, and the fact that every M&A transaction requires time to deliver any observable, long-term results, and benefits, be they operational, financial, or in this case ESG-related, should not preclude the consideration of M&A deals as a strategy for improved ESG performance.

Mergers and Acquisitions appear to be motivated by ESG performance, which should be incorporated in future study. Due to the multiple advantages of exhibiting high ESG scores, organizations seeking to acquire ESG-related resources, such as a certain type of technology or specific expertise of sustainability practices, may consider M&A as a viable expansion option (Tampakoudis and Anagnostopoulou, 2022). In addition, since higher ESG rankings appear to positively impact enterprises' market attractiveness, organizations should consider improving their ESG performance to be included in the M&A market and to position themselves as more desirable targets. Lastly, policymakers should support the adoption of ESG practices and not only urge organizations to report information about their ESG performance, but also establish specific requirement to motivate firms to actively strive towards improving their ESG ratings. The examination of M&A transactions should consider not just their effect on markets and competition, but also company performance, which should not be assessed exclusively by financial results. It is not only investors, but also shareholders and stakeholders like customers who increasingly demand transparency and active involvement into better environmental, social and governance causes.

This research intends to expand the limited current literature on the influence of ESG scores on mergers and acquisitions. By matching the acquirors' and targets' ESG scores, I ultimately limited the number of M&A transactions I was able to include in my evaluation, which limits the ability to generalize the research outcomes. Using ESG scores as a measure of sustainability and social as well as governance activities is hampered by the absence of reporting standards, which makes it impossible for data comparison between different rating agencies (Amel-Zadeh

and Serafeim 2018). This presents the possibility for other results if, for example, Bloomberg ESG Disclosure Scores or Thomson Reuters ESG Scores had been used instead of Wharton's WRDS Sustainalytics. However, ESG reporting is currently the best available choice and the prevalent measure of company sustainability in academic empirical research.

Future study on this topic and the linkages investigated in this paper is encouraged, with a much bigger panel of firms and even more recent data on a global scale. Specifically, the second hypothesis, which asks whether acquirers experience a rise in their ESG ratings following the completion of a transaction with higher ESG targets, should be investigated further. In addition, specific ESG practices and their impact on the performance of organizations can be analyzed.

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Appendix

Appendix A: Variable Definitions

Variable	Description
<i>Dependent Variables</i>	
ESG Target t	The ESG score of the target firms at the time of M&A deal announcement t are obtained from Wharton's WRDS Sustainalytics (WRDS 2022). Using the Sustainalytics database yields different ESG score results than had Thomson Reuters Refinitiv or Bloomberg been used, as all ESG rating agencies use different scales and measurements, making the different agencies' scores difficult to compare. Sustainalytics' ESG scores rank from 0-100 with 100 being the best obtainable score. Rankings above 70 are considered excellent, any score below 50 is deemed bad and was therefore chosen as the threshold for below-average scoring. The targets' ESG scores are compared to those of the acquirors to understand whether lower-ESG firms target higher-ESG firms, and if ESG score improvement is a driver behind M&A activity.
ESG Target Dummy t	This dummy variable is obtained from Wharton WRDS Sustainalytics (WRDS 2022) and is regressed on the change in the acquirors' ESG scores from one year before deal announcement, $t-1$, to the date of the deal announcement, t , to determine whether a firm's decrease in ESG rating increases the likelihood of acquiring a high ESG target. The dummy variable equals 1 if the target firm's ESG score in period t is above average (>50) and zero otherwise.
Δ ESG Acquiror $t, t+1$	This variable is the change in the ESG score of the acquiring company between the date that the deal was announced, t , and one year later, $t+1$ (WRDS 2022), to determine whether acquiring firms see a subsequent increase in their ESG scores after the transaction.

Independent Variables

ESG Acquiror t	The ESG score of the acquiring firm at the time of M&A deal announcement t (WRDS 2022). The acquiror's ESG scores are used as a measure to understand whether acquirors exhibit lower ESG scores than their targets, if those lower-ESG targets consequently target higher-ESG firms, and lastly when looking at Acquiror ESG score $t+1$, determine whether the acquirors' ESG scores improve post-merger.
Δ ESG Acquiror $t, t-1$	This variable measures the change in the acquirors' ESG scores from one year before deal announcement, $t-1$, to the date of the deal announcement, t (WRDS 2022), to determine whether the acquiring firms saw a decrease in ESG rating before the M&A activity. This is assessed to understand if this increases the likelihood of acquiring a high ESG target.
ESG Acquiror Dummy t	This variable is a binary variable that takes on the value 1 if the acquiror is a below-median ESG firm that acquired an above-median ESG target in period t , and zero otherwise.
<i>Controls</i>	<i>(WRDS 2022, U.S. Securities and Exchange Commission 2022, Macrotrends 2022, and Barchart 2022)</i>
Current Ratio Acquiror t	Because the literature on corporate governance places an emphasis on working capital and cash holdings, the current ratio of the acquiring firms at the time of deal announcement is used as a measure of liquidity. This ratio is calculated by dividing the current assets by the current liabilities amount. To be more specific, cash on hand is considered as a proxy for agency costs due to the likelihood of overinvestment in capital expenditures and acquisitions as a result of hoarding surplus cash. This can occur when a company holds onto cash that it does not need immediately (Barros et al 2022).

(WRDS 2022, Macrotrends 2022, and Barchart 2022)

Leverage Ratio Acquiror t The debt-to-equity ratio is used as a measure of leverage because companies that have a better score in the Governance component of the ESG score are more likely to have lower levels of leverage.

(WRDS 2022, Macrotrends 2022, and Barchart 2022)

Size Acquiror t It is important to consider size as a variable because larger companies are more likely to have higher ESG scores due to the reputational risks associated with greater visibility, the possibility of larger investments, and more efficient resource allocation because of economies of scope and scale, as well as efficiency effects.

(WRDS 2022, U.S. Securities and Exchange Commission 2022, Macrotrends 2022, and Barchart 2022)

Size Acquiror $t+1$ In addition to acquiror size at the time of deal announcement, it is also examined one year post-deal announcement to account for corporate growth owing to M&A activity.

(WRDS 2022, U.S. Securities and Exchange Commission 2022, Macrotrends 2022, and Barchart 2022)
