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Abstract:

This thesis aims to investigate the effect of corporate ESG performance on M&A announcement returns. The empirical analysis utilized three separate samples, i.e., acquirer, target and combined, which resulted in a total number of 1463 deals from all around the world. A firms' ESG performance is proxied by ASSET4's ESGC rating, where the effect on the returns is investigated by implementing the standard event study methodology. The results are estimated using Pooled OLS with Fixed Effects estimation, and indicate that corporate ESG performance is partially correlated with M&A announcement returns. This thesis finds evidence that this effect is the strongest for the target company's returns if the target exhibits weak ESG performance, and for the bidder when either the target shows weak ESG performance or when both the acquiring and target company exhibit strong ESG performance. Last-mentioned suggests that stock markets reward acquiring companies who make Socially Responsible Investments. The findings are robust for different event window models as well as Panel Data Fixed- and Random Effects.

Keywords: merger, acquisition, M&A, ESG, announcement returns, Pooled OLS, ASSET4, SDC M&A Joint Ventures and Alliances, Datastream

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Glossary

ESG	Environmental, Social, Governance
CSR	Corporate Social Responsibility
SRI	Socially Responsible Investments
M&A	Mergers and Acquisitions
OLS	Ordinary Least Squares
CAR	Cumulative Abnormal Return
PPT	Percentage Point
RE	Random Effects
FE	Fixed Effects

1. Introduction

The practice of 'Socially Responsible Investing' (SRI) started to become more and more a common investment strategy amongst investors in the 1990s. Those who favored environmental and societal benefits, next to financial returns, excluded stocks or industries that neglected Corporate Social Responsibility (CSR) efforts from their portfolios. Now, more than 30 years later, the total assets under management in the US following an SRI strategy has trespassed the $17 trillion in 2020, according to a report by the (US SIF Foundation, 2020). This is a twenty-eight-increase compared to the SRI assets under management of $0.6 trillion in 1995. Growing importance towards CSR efforts can therefore no longer be neglected. According to a report by (Blasco, 2017), 93 percent of the world's largest 250 companies by revenue already report CSR efforts in their annual financial reports. The corporate world as well as the investment community experience an increased interest in the relationship between corporate social responsibility and financial performance. It can however be hard to apprehend how to quantify 'CSR efforts'. It can therefore be beneficial to introduce a framework which quantifies these efforts, for the corporations themselves, the investor community but also academic research. Environmental, Social and Governance (ESG) metrics provide such a comprehensive framework. The metrics proxy and categorize CSR efforts into several pillars, which are weighted according to industry and transparency. A company can assess whether it leaves a positive corporate footprint across three dimensions:

I. *Environmental* impact measures the firms' influence on environmental categories, such as emissions, innovation, and the use of resources.
II. The *Social* element assesses a firms' stance towards social factors, such as communities, human rights, product responsibility and workforce.
III. The *Governance* pillar focuses on the firms' overall CSR efforts, their management team, and the relationship with shareholders.

Investors who engage in SRI employ the above-mentioned ESG filters to exclude companies from their portfolios who have controversial business models. This includes corporate transactions, such as a merger or acquisition. Last-mentioned corporate transaction has an effect on shareholders wealth, which is a topic vast body of literature discusses as the impact on returns after a M&A are dependent on many factors. This thesis aims to quantify the effect of a firms' performance across the three ESG dimensions and its effect on shareholders wealth, i.e., the returns, after a merger or acquisition.

Due to the rise of ESG awareness and importance in the corporate- and financial world, this thesis hypothesizes that performance across the ESG dimensions does affect M&A returns. Compliance with ESG practices can no longer be neglected, but whether strong or weak ESG performance affects the returns the most will become more evident in the empirical research section of this thesis. To understand this effect, the following main research question is formulated:

To what extent does corporate ESG performance affect announcement returns in M&A activities?

To answer the above-formulated main research question, this thesis will first aim to understand whether a correlation between ESG performance and returns for the acquiring- and target company exists. The second step is to incorporate the magnitude of ESG performance in the models, where a comparison will be made between weak and strong performance and their separate effects on the returns. In terms of variable- and sample selection for the empirical models, this thesis will follow previous literature, such as that from (Aktas, 2011) and (Deng, 2013). The remaining of the thesis is organized as follows: *Section 2 Current State of Literature and Hypotheses Development* will provide an overview of all current literature related to this topic, as well as formulation of the hypotheses which will be the basis for the empirical analysis. Secondly, *Section 3 Research Methodology and Empirical Models* describes how the research will be executed and formulates the empirical models used. Then, *Section 4 Data Sample and resources* will focus on compiling the dataset of deals, as well as describing the ESG metrics used and its composition. *Section 5 Results* presents the findings of the empirical analysis and *Section 6* will provide a final discussion and conclusion.

2. Current State of Literature and Hypotheses Development

Although there is an increased awareness towards social responsibility and sustainability amongst populations, there are not many studies that try to explain the direct effect of strong ESG performance and M&A-returns. Within these so-called ESG pillars corporations can be evaluated to what extent certain social goals can be accomplished, such as the reduction of carbon emissions. The following section will provide an overview of the state of the current literature that ties ESG accountability with earning positive returns in corporate Merger and Acquisitions.

2.1 The rise of corporate ESG performance in the past decades

Improving ESG performance is rooted in firms' operational strategy and long-term aspirations nowadays. This belief, however, has not always prevailed in corporate management teams and is something that has drastically increased in the last 20 or so years. The exact causes of this so-called trend vary across the globe, the purpose however is somewhat identical: companies embed ESG risks and opportunities in their business strategies, striving to leave a positive societal impact. The exact relation between these risks and opportunities with corporate performance has been investigated by (Peiro-Signes, 2013), who concluded that companies must have a deeper understanding of ESG information to identify opportunities and mitigate risks. The substantial increase in the reporting of ESG factors has led to the enhanced information availability of ESG performance, which has a direct effect on economic performance as well. The improvement of ESG performance however was caused by several key elements, and they might differ when you thoroughly examine different parts of the world. By developing a body-of-knowledge of all ESG-related literature to date, (Daugaard, 2022) explored the major drivers of ESG performance. The authors concluded that economic drivers, regulatory impact, and the influence of Socially Responsible Investments (SRI) are the most important drivers of ESG performance in developed economies. Socially Responsible Investments is an investment strategy where corporations seek to achieve, next to financial returns, positive social and environmental impact. For emerging and frontier markets this effect is limited due to the investing capacity available, as well as other challenges such as poverty and pollution. With governmental interference and augmented pressure from social groups such as employees, customers and institutional investors, businesses operating in developed economies have an increased responsibility for societal concerns. Positive ESG outcomes can therefore be achieved through political policies and society's demands, even more so when ESG supportive strategies become the standard response across industries or countries. Governments can create a high-moral code culture to impose influence, but also utilize enforcement tools such as fines. (Kadambe, 2010) showed that an increase in fines reduces the probability of an

environmental violation. Besides the government, the so-called societal pressure groups also initiate efforts to improve corporate ESG performance. Businesses with positive sustainable footprints tend to develop an increased interest amongst institutional investors who have growing preferences for sustainable investing, as concluded by (F. Mitali, 2020). These investors exert price pressure on stocks with good ESG ratings, which subsequently led to firms with better sustainability footprints outperforming the ones that do not.

2.2 Shareholder wealth effects in corporate M&A transactions

One predominant and returning discourse in corporate finance present-day revolves around the question how companies should allocate their resources to improve ESG performance. To enhance accountability for ESG performance companies could look internally, by for example improving ESG metrics in their KPIs, or externally by acquiring highly ESG-principled targets. The latter affects shareholders' wealth, both for the target and bidder. (Goergen, 2004) found that European domestic and cross-border takeover bids affect short-term shareholder wealth, much more significant for target- than for acquiring firms. The eventual magnitude of realized returns is dependent on many factors, such as geographical location, nature of the deal, industry, means of payment and ESG compliance. The paper by (Goergen, 2004) examined that hostile takeovers generate higher M&A-returns relative to friendly takeovers in Continental Europe. Similarly, according to (Deng, 2013), utilizing a sample of U.S. mergers, high CSR acquirers realize higher positive long-term stock returns compared to low CSR acquirers. The authors suggest that long-term merger performance, quantified as positive stock returns, as well as the stakeholder value maximization is dependent on the level of the acquirers' social performance. In a study focused on European M&As, (Campa, 2004) concluded that shareholder value creation is also heavily dependent on industry-specific characteristics. Cross-border M&As in regulated industries show significant lower value creation relative to similar deals in unregulated industries. Knowing that many factors can influence and determine shareholder value creation in M&A transactions, critically identifying which success factors are reliable predictors for long-term performance is crucial. In a study by (Renneboog V. , 2020), the most paramount drivers for sustained long-term M&A-returns have been investigated and in due course identified. In the aftermath of a deal, long-term underperformance results either from poor acquirer governance or poor merger execution and integration. The authors hypothesize that factors elucidating short-term M&A performance fail to relate to the long-term predictors, which are far more crucial in understanding value creation in M&As. As an acquirers' ESG performance has been identified as a salient explainer for long-term M&A performance, it is of importance to also understand whether financial markets support deals with a positive ESG-footprint. Supporting this theory, (Aktas, 2011) found that stock markets reward acquirers that embed M&As in their SRI strategy. Utilizing Innovest's Intangible Value Assessment (IVA) ratings,

which combines numerous performance factors as a proxy for firms' ability to cope-with ESG risks, the authors examined whether acquirers' benefit from participating in a M&A that can been classified as an SRI. The results suggest that acquirers' gain both from a financial- and ESG perspective, confirming that M&As can serve as an investment strategy for boosting ESG performance. Last-mentioned is supported by a study executed by (Tampakoudis E. A., 2020), who's results suggest that post-merger ESG performance increases for the bidder when an ESG-principled target has been acquired. On the other hand, one of M&A's known characteristic is that many of them fail and the actual transaction never occurs. This subsequently has effects for both bidder and target companies. These effects however do not necessarily have to be negative, (Liu, 2019) investigated the shareholder wealth effects of M&A withdrawals. The author concludes that target' shareholders experience a net gain as a result of a failed merger or transaction, caused by the revaluation of the firm after de deal fails.

2.3 Environmental, Social and Governance metrics as proxies for M&A target choice

Mergers and acquisitions are a widely-used international strategic investment vehicle, where a firms' conventional goals such as creating intrinsic value, improving operating performance or ameliorating ESG metrics can be realized. The rationale behind a deal can vary extensively, however. (R. Graham, 2015) surveyed that 48 percent of responding North American CEOs and CFOs value organizational culture that much they would walk away from a deal if there were any misalignments in corporate governance practices. And, if identified, they must be mitigated to minimize the consequences during the M&A process. To do so, top management from both the bidder and target must integrate organizational culture in the M&A process to understand cultural differences as fast as possible, according to (Remanda, 2016). Corporate governance however is accompanied with environmental and social factors in the ESG framework, which also play a significant role in the above-mentioned strategic process. One of the cornerstone elements during the M&A process that impedes the financial success of a deal is computing the acquisition premium, which requires the acquirer to go beyond and above the target' share price, usually around 30%-40%. In a study by (Ozdemir, 2021), the effect of CSR performance on acquisition premia has been examined. The authors show that the pre-deal Corporate Socially Responsible (CSR), which is the equivalent of ESG, performance of the target is positively related to the M&A premium. In other words, acquirers value CSR performance and reward target companies that noticeably exhibit strong results in any of the CSR areas by embedding this in the deals' offer. Supporting the hypothesis that exceptional CSR performance makes you more 'attractive' as a company, by employing propensity score matching and probability models, (Gomes, 2019) showed that a firm's CSR performance is positively associated with the

likelihood of becoming a M&A target. Once such a company is on the acquirers' radar, one of the purposes is to improve the metrics in one of the environmental, social or governance areas. In a study by (Barros, 2022), the role of active M&A activity accompanied with an improvement in ESG performance is investigated. The authors hypothesize that an M&A deal appears to be significant in ameliorating a firms' ESG score in the year following the transaction, and not imminent after the deal was agreed upon. ESG ratings therefore serve as an important proxy to assess a firms' ESG performance. (Swiatkowski, 2021) assessed CSR wealth by proxying these sustainability ratings, and subsequently analyzing short-term market reactions around the announcement of the takeover. The results suggest that in the case that the bidder and target have similar CSR performance, target shareholders' wealth is positively affected, where for acquirers' shareholders returns barely change. Knowing that sustainability ratings are an important proxy for the M&A decision-making process, it is salient for an acquirer to correctly time their takeover as well as CSR performance could fluctuate. In light of the recent pandemic, (Tampakoudis A. N., 2021) examined whether the economic turmoil during this period had an effect on ESG performance as a result of a merger or acquisition. The results suggest that the COVID-19 crisis had a negative value effect on ESG performance for acquiring firms. The costs of sustainability activities outweigh any possible gains, making the identification of a suitable target that support this strategy more salient.

2.4 M&A Returns

As previously stated, mergers and acquisitions can serve as a corporate strategic vehicle to improve operating- and ESG performance, but whether that goes hand in hand with positive returns is also of crucial importance. This effect can be identified by looking at price fluctuations for both the bidder and target around the announcement of the takeover, where, as frequently stated in current literature by e.g., (Renneboog M. G., 2002), target shareholders seem to be better off. By examining more than 100 studies on M&A profitability around the time that the world switched to a new millennium, (Bruner, 2004) concluded that M&A does pay. Target shareholders do significantly generate higher adjusted returns compared to their acquiring counterparts. When considering M&As, adjusted returns can be defined as the negative or positive return resulting from the takeover around the announcement date. For acquiring shareholders, frequency and the type of target is also predominant in the process of earning positive returns. By utilizing a sample of acquiring firms who completed more than five takeovers in a relatively short period of time, (Fuller, 2002) investigated what takeover-characteristics result to the highest gains for acquiring shareholders. The authors find that the returns resulting from purchasing private firms or subsidiaries of private firms clearly outperform the returns generated from acquiring public firms. If cash or a combination of cash and stock is offered, the takeover of a public firm may even result to negative returns for

acquiring shareholders. In this case, assuming that the market in which the deal occurs is efficient, the market value of the target, which is calculated by the present value of the company's future earnings and assets according to the Modigliani-Miller theorem, is greater than the acquisition price. However, next to the type of target that is acquired, there are more key elements in the takeover-process that determine whether the deal was profitable, or not. The geographical market in which the deal occurs also plays a role for bidder and target shareholders, as proposed by (Song, 2017) and (Mateev, 2017). The authors examined M&A returns in the Chinese and European market, respectively. The results show that in both markets bidder companies earn positive returns, where in the European market no evidence has been found to suggest that firms located in Continental Europe, or the UK generate different outcomes. Returns resulting from the deal are higher when the payment method is not in cash in China and the UK, but not for Continental Europe. Alongside this, optimizing the timing of doing a M&A can also greatly benefit bidder and target shareholders, and vice versa. (Beltratti, 2013) investigated the effect of the 2008 financial crisis on M&A-returns in the European banking sector. The authors concluded that around the announcement of the takeover, no positive returns for both the bidder and target were generated. This enhances the importance of the market timing of the takeover, as all previously discussed studies did conclude that M&A activity generally does pay. One could therefore argue that M&A's profitability is dependent on the quality of the analytical process pre-takeover. That is, does the bidder company account for the overall state of the economy and its correlation with the target, or not. In the German market, (Eisenbarth, 2014) analyzed M&A behavior and its subsequent financial success by looking at the German stock exchange market index in the period 1998 to 2009. The authors find that bidders who critically analyze their takeover transactions and pursue an anticyclical M&A strategy are more successful in the long-term compared to a procyclical one. This means that, when a firm adjusts its M&A activity to the state of the economy, meaning that it will be less active during economic recessions, it becomes a less profitable strategy. Economic uncertainty could therefore represent an opportunity, as proposed by (Andriuš, 2015). The author argues that, by employing a theoretical model that interlinks M&A successfulness with macroeconomic features, during times of global economic uncertainty M&A offers an interesting value creating strategic growth opportunity.

2.5 Hypotheses Development

This paper aims to provide more insight in the relationship between ESG performance and the returns generated resulting from being participant in a merger or acquisition. To understand and identify this effect, share price fluctuations for these participants around the announcement of the takeover must be investigated. In other words, to what extent do relative values of ESG scores' affect M&A returns. This paper will thoroughly investigate this effect

by separating deals into three sub-categories. That is, first emphasise on understanding the effect on M&A returns for the acquirer and target separately, and then combined. In line with this reasoning, the first hypothesis can be formulated:

H1: Acquiring firms' engagement in ESG activities has a positive influence on the acquirer's M&A announcement returns

The above-formulated hypothesis aims to understand whether positive ESG impact has influence on the returns for the acquiring company if the it is participant in a merger or transaction. That is, does high ESG performance, i.e., a relatively high ESG score, affect the returns for the acquiring company. A similar approach is required to understand the effect for target companies, which leads to formulating the second hypothesis:

H2: Target firms' engagement in ESG activities has a positive influence on the target's M&A announcement returns

Once the above-mentioned hypotheses have been analysed and the individual announcement effects for the acquirer and target are known, it is time to dive deeper in takeovers where both companies are analysed simultaneously. This enables to identify the effect on returns when different types of companies in terms of ESG performance have been taken over. However, first it is of importance to know whether returns resulting from a merger or transaction is correlated with a firms' ESG performance. This leads to formulating the following hypothesis:

H3: The value of a firms' ESG score is positively correlated with the returns resulting from a merger or acquisition

Since the above-mentioned hypothesis is relatively obscure, it is important to additionally test several sub-elements to fully understand the effect. Knowing that the acquirer could

strategically plan a takeover to increase its ESG performance, one could argue that synergies are created through the transfer of environmental knowledge and capabilities. This synergy effect is shared between the acquirer and target, where, as earlier cited in this paper, target shareholders often gain more. So, understanding the exact role of the acquirer in the takeover-process is of importance. This leads to formulating the following hypothesis:

H3.1: Low-ESG performing acquirers earn higher positive abnormal returns than high-ESG performing acquirers when a highly principled ESG target has been acquired

Moreover, since the execution and integration parts of the M&A process are significant, target ESG performance could influence acquirer announcement returns as well. Too smoothen this process, it is of importance to understand whether it is more optimal for the bidder to acquire a target with high-ESG performance or a target with compatible ESG performance. In line with this reasoning, the final hypothesis is composed:

H3.2: Compatible ESG-performance between acquirer and target yields a positive effect on acquirer abnormal returns

In the following section of this thesis all the above formulated hypotheses are transformed into regression analyses. These last-mentioned empirical models will aim to understand the relationship between ESG performance and M&A returns.

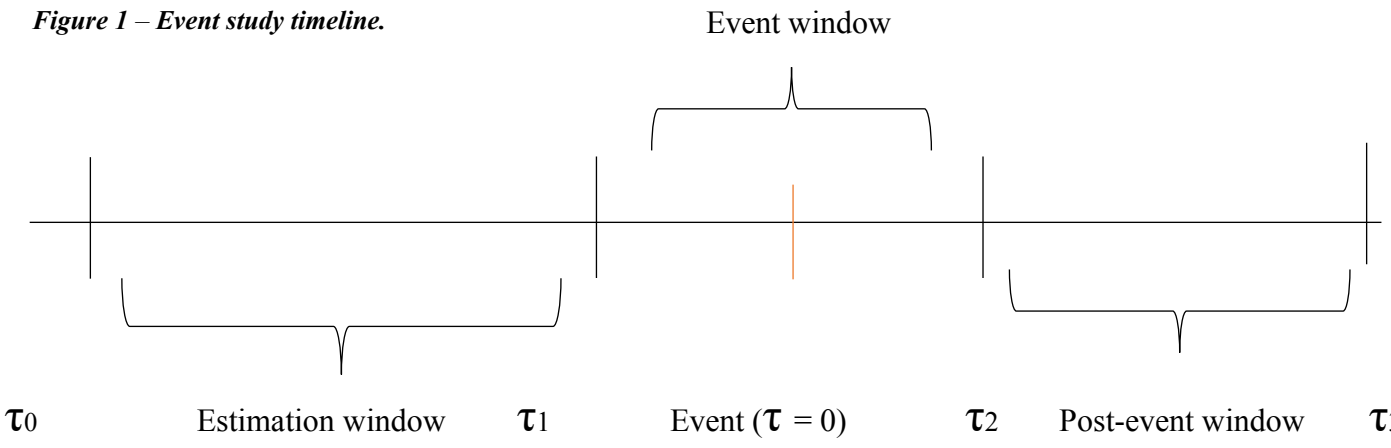
3. Research Methodology and Empirical Models

Before assembling all the deals in which the acquirer and target have an ESG rating at the time of the announcement, we must turn our focus first on the empirical analysis to understand the effect of acquiring an environmentally friendly- or unfriendly target. In this section the research methodology utilized as well as the empirical models resulting from this methodology will be thoroughly explained.

3.1 Event Study Methodology

To test the hypothesis if significant ESG performance has a positive effect on M&A deal performance, this thesis will utilize a standard event study approach as first introduced by (F. Fama, 1969). The output of the event study focuses on estimating cumulative abnormal returns (CARs) around the announcement of the transaction. Abnormal returns can be defined as the difference between actual returns and expected returns of a particular security. The event study methodology is a statistical method to measure market reactions to a particular event, such as the announcement of a merger or acquisition. One crucial assumption in this methodology, however, is that financial markets are efficient in the semi-strong form - that is, prices of securities reflect all publicly available information. This implies that around the announcement of the takeover the effect of the deal is directly incorporated in the stock price of the bidder and target company. Additionally, identification and eventual timing of the event, which is in this case the day of the announcement, must be correct as otherwise the measurement of stock price behavior of the relevant company does not provide meaningful results. The estimation of these abnormal returns using an event study requires the determination of some key parameters. *Figure 1* will provide an overview of the timeline around an event, whereas the explanation will follow afterwards.

Figure 1 – Event study timeline.



The estimation of the CARs is performed over an *event window* [τ_1, τ_2], which succeeds the *estimation window* [τ_0,τ_1] and precedes the *post-event window* [τ_2,τ_3]. The event itself is indicated by $\tau = 0$, where the time index τ counts the number of periods, in this case days. To account for potential information leakages and market inefficiencies post-M&A, the days surrounding the announcement date ($\tau = 0$) are included in the event window. This results in a three-day core window [t-1; t+1]. Ensuring an unbiased sample is of crucial importance as otherwise the results are not meaningful. Therefore, this thesis follows the methodology of (MacKinlay, 1997), who proposed to maintain a 50-day gap to account for potential price run-up effects. The estimation window starts 120 trading days prior to the announcement date, which is a typical period employed in event studies in Economics and Finance, and ends 50 days prior to the announcement [t_{-120}; t_{-50}]. As this thesis aims to estimate the cumulative abnormal returns resulting from a takeover, the research might be subject to event date uncertainty. That is – the event date ($\tau = 0$), might be spread out over multiple days. Therefore, this thesis will employ the practice of testing the significance of CARs in a period around the event date as proposed by (de Goeij, 2011). Additionally, it is interesting to test whether the data confirms pre-event leakage of the takeover. The base-model of a three-day event window [t-1; t+1] will therefore be accompanied by three more models, i.e., a seven-day [t-5; t+1], eleven-day [t-5; t+5] and sixteen-day event window [t-5; t+10]. The minus five gap will be maintained throughout the different windows to examine how the returns are subject to fluctuations as we move from plus one to plus ten. The pre-event leakage effect might relinquish after the second day of the announcement, but by employing multiple models this effect can be either confirmed or denied. Additionally, by making use of this approach, the research will capture all possible abnormal price fluctuations around the announcement date, which might be subject to a certain degree of uncertainty as previously stated. The different event windows will be used as robustness checks in the empirical analysis as well.

3.1.1 Cumulative Abnormal Returns (CARs)

As previously stated, this thesis aims to estimate the abnormal returns generated for the target and acquiring company resulting from a takeover. To do so, the event study must rely on a benchmark that proxies for normal market returns. (MacKinlay, 1997) provided the so-called market model, which estimates the normal market return and simultaneously removes variations in overall market returns, reducing the variance of the abnormal return. The following equation calculates these normal market returns:

$$R_{i,t} = \alpha_i + \beta_i R_{M,t} + \varepsilon_{i,t} \quad (1)$$

The $R_{i,t}$ represents the return, i.e., normal return, of a company i at time t. The alpha (α_i) and beta (β_i) are the ordinary least squared (OLS) estimates that measure the market mean return as well as the stock's volatility to that market. The final term ($\varepsilon_{i,t}$) is the zero-mean error term. With the OLS estimates of alpha and beta we can determine the normal returns for all companies in the event window. With the normal returns computed, we can focus on deriving the abnormal returns. Abnormal returns (AR) are defined as the observed return (R) minus the normal return (NR):

$$AR_{it} = R_{it} - NR_{it} \tag{2}$$

The equation calculates the abnormal return (AR_{it}) for a given company at a specific point in time by subtracting the estimated normal return from the observed return. The following step is to aggregate all the abnormal returns of the target and acquiring companies. This will be used to examine the takeover effect of an environmentally friendly- or unfriendly target, defined as the cumulative abnormal return (CAR_i):

$$CAR_i = \sum_{t=-1}^{+1} AR_{i,t} \tag{3}$$

The final step is to regress all the CARs that have been computed for the several event windows on just a constant term. This so-called univariate analysis focuses on statistically testing the cumulative abnormal returns, which will be explained more in-depth in section *3.2.1 Univariate Empirical Analysis*.

3.2 Empirical Models

The main aim of this thesis is to understand the effect of ESG performance on M&A announcement returns. This effect is investigated by employing the Ordinary Least Square (OLS) technique, which aims to identify the relationship between a set of independent variables and a dependent variable. The straight-forward interpretability of the OLS coefficients, as well as the suitability of the OLS technique on investigating the main question of this thesis were the main determinants of choosing this method. Additionally, the flexibility of OLS, i.e., allowing to add fixed effects restrictions in the regression and the intuitive interpretation of the regression output also warranted the usage of other empirical techniques. In this line of reasoning, Pooled OLS estimation will be employed as the base model technique in this thesis. However, takeovers could be exposed to unobserved deal

characteristics that can be correlated to the control variables that will be discussed in section *3.2.2 Overview of Variables.* Therefore, this thesis will additionally employ fixed effects estimation on year and country to address the above-mentioned potential correlation.

3.2.1 Univariate Empirical Analysis

A univariate empirical analysis is a statistical analysis which involves only one variable. The major reason this thesis employs this analysis is to better describe the CARs that have been computed for the different event windows. This allows to identify whether the CARs in the three sub-samples follow similar patterns as with previous research, i.e., that of (Aktas, 2011) and (Deng, 2013). These papers concluded zero-to-negative post-deal returns for the acquirer but positive returns for the target. To understand if a relationship between the CARs and a takeover exists, we must test the hypothesis that the CARs are statistically different from zero. That is – testing the null hypothesis (H_0) which assumes that the CAR = 0 (event, i.e., takeover, does not affect returns) and the alternative hypothesis (H_1), which states that CAR ≠ 0 (event, i.e., takeover, does affect returns). The above-stated hypothesis will be tested for the relevant companies in the full three sub-samples individually, as well as for strong and weak ESG performing companies. The companies that have an ESG rating which belongs to the highest quartile (75^{th} percentile and above) of their relevant sub-sample are indicated as strong performing, where firms with a rating in the lowest quartile (25^{th} percentile and below) as weak performing. The same approach will be employed when computing the dummy variables *High/Low performing company,* but this will be explained in the following section. The results of the univariate tests will be discussed in section *5.1 Univariate Analysis.*

3.2.2 Multivariate Empirical Analysis

The Multivariate Empirical Analysis, which is an empirical model with more than one control variable, aims to estimate which variables affect the CARs of the acquirers and targets that have been participant in a merger or acquisition the most. The cumulative abnormal returns are the dependent variables in the empirical models, which are constructed with the sole goal of testing the different hypotheses described in section *2.5 Hypotheses Development* of this thesis. The first hypothesis aims to understand the effect of the acquirer's ESG performance on the returns resulting from a merger or acquisition. This can be tested through regressing the CARs of all the acquirers on a set of variables:

$$\text{Acquirer CAR}_i = \alpha + \beta_1 \text{Acquirer ESG}_{i,t} + \beta_2 \text{Acquirer Firm Controls}_{i,t} + \beta_3 \text{Deal Controls}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t} \quad (4)$$

The equation above will clarify whether ESG performance influences M&A announcement returns. The second hypothesis aims to understand a similar effect, but for the target company. The following empirical model enables to identify this effect:

$$\text{Target CAR}_i = \alpha + \beta_1 \text{Target ESG}_t + \beta_2 \text{Target Firm Controls}_{i,t} + \beta_3 \text{Deal Controls}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t} \quad (5)$$

The third hypothesis aims to understand the effect of ESG scores on the returns for the acquiring company resulting from a takeover. This can be tested through regressing the CARs of these firms on a set of variables, as well as the target's ESG score:

$$\text{Acquirer CAR}_i = \alpha + \beta_1 \text{Target ESG}_t + \beta_2 \text{Target and Acquirer Firm Controls}_{i,t} + \beta_3 \text{Deal Controls}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t} \quad (6)$$

The fifth hypothesis aims to understand the effect of returns generated by the acquirer in a more thorough and enhanced manner. That is, what affects the returns for the acquirer when that given firm operates very environmentally unfriendly, or vice versa, but acquires a target that does have a high ESG score. To test this hypothesis, dummy variables will be added to the regression analysis:

$$\text{Acquirer CAR}_i = \alpha + \beta_1 \text{Target ESG High}_t + \beta_2 \text{Acquirer ESG Low}_t + \beta_2 \text{Target and Acquirer Firm Controls}_{i,t} + \beta_3 \text{Deal Controls}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t} \quad (7)$$

High or low ESG performance is defined as when a target or acquirer has a higher or lower ESG score than the sample of targets and acquires, respectively. If the target company has a ESG score that belongs to the top quartile of the relevant sample of target companies the

dummy variable *Target ESG High* will have a value of 1, and 0 otherwise. If the acquiring company has an ESG score that belongs to the bottom quartile of the sample of acquiring companies the dummy variable *Acquirer ESG Low* will have a value of 1, and 0 otherwise. In addition to the regression above, we would also like to understand the effect on returns when the acquiring company operates in an environmentally friendly manner. This can be tested by running the following model:

$$\text{Acquirer CAR}_i = \alpha + \beta_1 \text{Target ESG High}_t + \beta_2 \text{Acquirer ESG High}_t + \beta_2 \text{Target and Acquirer Firm Controls}_{i,t} + \beta_3 \text{Deal Controls}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t} \quad (8)$$

The only difference from regression (8) is that in regression (9) only high-ESG performing acquirers are considered. The dummy variable *Acquirer ESG High* is computed using the same approach as with previously-stated dummy variables. The third and final hypothesis aims to understand the effect on the returns when both the acquirer and target company have compatible ESG-performance. The *Compatible ESG* variable will be a dummy variable which takes the value of 1 when the ESG dummy variables of previous regression are the same, and 0 otherwise. That is, when both the target and acquirer have an ESGC rating in the top- or bottom quartile the dummy variable *Compatible ESG* will equal 1. The following model will test the final hypothesis:

$$\text{Acquirer CAR}_i = \alpha + \beta_1 \text{Compatible ESG}_t + \beta_2 \text{Target and Acquirer Firm Controls}_{i,t} + \beta_3 \text{Deal Controls}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t} \quad (9)$$

Now that the empirical models to test the different hypotheses have been defined, we turn our focus on getting all the necessary control variables that will complete the empirical models.

3.2.3 Overview Variables

The following section will provide an overview of the methodology and rationale behind the inclusion of all variables that are used in the empirical analysis. Consult *Table 14* in appendix I for an overview of all the variables, as well as how they are computed. The remaining of this section will briefly discuss the rationale behind why the variables are used.

3.2.3.1 ESGC Rating

In section *4.1 Measures of ESG Performance* the rationale behind the calculation, which measures a firms' ESG performance, will be explained in-depth. Prior studies have employed various alternatives in the usage of ESG measures in regression analyses. (Deng, 2013) included an adjusted CSR measure where (Aktas, 2011) additionally considered the magnitude of a firms' ESG performance, i.e., high or low, in the empirical models. This thesis will implement a combination of both, where a firms' numerical ESGC score will be included as well as their individual ESG performance. The ESG-related variables are expected to be correlated with the returns resulting from a merger or acquisition. If the results proof to be significant, ESG performance is becoming more and more concatenated with financial performance.

3.2.3.2 Tobin's Q

A popular ratio that measures a firms' under- or overvaluation, as first introduced by economist James Tobin, is the so-called Tobin's Q. The *q* is the ratio of a firms' market value relative to the replacement costs of its assets. A low Tobin's Q could indicate an interesting deal for the acquiring company as the target's assets would be relatively cheap compared to other new investments. (Servaes, 1991) investigated the relationship between a firms' *q* ratio and potential gains from a takeover. The author concluded that returns are significantly larger when targets have low *q* ratios. Given this finding, we expect a positive relationship between Tobin's Q and the cumulative abnormal returns resulting from a takeover.

3.2.3.3 Size

A control variable for a firms' size, which is calculated by the taking the natural logarithm of the market value of equity, is included in the regression analyses as (Moeller, 2004) found a positive relationship between the size of a firm and announcement returns. The authors discuss that the so-called size effect has a bigger negative influence on bigger acquirers due to the premiums paid and higher level of negative deal synergies.

3.2.3.4 Free Cash Flow

Free Cash Flow is the cash left over after a firm pays for its operating expenses and capital expenditures. A surplus of cash can be the number one type of agency conflicts arising between managers and shareholders. Managers could mis-allocate resources and not focus on maximizing shareholders value, and even invest in negative net present value projects. Firms with high Free Cash Flows are more likely to be subject to empire building, translated into being engaged in value-destroying takeovers, as concluded by (Jensen, 1986). This implies a

negative relationship between the level of FCF and announcement returns. In this line of reasoning, a control variable FCF is added to the regression analyses and is proxied by dividing the Net Cash Flow of Operating Activities by a firms' total assets.

3.2.3.5 Leverage

Investing in negative net present value projects is value-destroying for a firm. But, if a firm has a high leverage ratio it is considered to be financially constrained and is therefore not able to engage in value-destroying activities, as outlined by (Jensen, 1986). A firm's leverage ratio therefore has a positive relationship with announcement returns. The control variable LEV is added to the regression analyses and is calculated by dividing a firm's total debt with its total assets.

3.2.3.6 Liquidity

Holding vast excesses of liquidity within a firm could have many causes, but within M&A transactions it affects the merged entity as well. (Massa, 2013) concluded that when the target in a takeover has an above-average liquidity ratio, the stock of the acquirer becomes more liquid as well. This could affect the announcement returns for the acquiring company. Because of this positive relationship, the control variable LIQ is added to the regression analyses and is proxied by dividing a firms' current assets by its current liabilities.

3.2.3.7 Return on Equity

Value maximalization has always been one of the primary goals of managers in a company. One of the key means to quantify managerial performance is to measure the rate of return of a company, which from the managers' perspective is the return on equity. A corporate takeover can be employed as a tool for managers to increase this rate of return. Due to this relationship, it is appropriate to add at least one managerial performance control variable to the empirical models. The variable ROE is expressed as a ratio between the net income and common shareholders equity.

3.2.3.8 Industry Relatedness

A vast body of financial literature deals with the question whether it is value-destroying or not to acquire a firm that operates in the same industry as you. Proponents mainly argue the benefits that rise from operational synergies, such as industry consolidation and an attempt to increase market power. On the other hand, as enforced by (Morck, 1990) and (W. Masulis, 2007), opponents argue that diversifying M&As are value-destroying activities for shareholders. To account for this effect, an industry relatedness dummy variable will be

included in the regression analyses. A firm's SIC code is used to identify IR, and if the acquirer and target have the same SIC code the dummy variable will have a value of 1, and 0 otherwise.

3.2.3.9 Competing Offer

There is conflicting evidence towards whether third party involvement in a takeover affects announcement returns, or not. (H. Jennings, 2015) found that in the case of an increased likelihood of a competing offer a larger increase in target shareholder wealth is noted. On the contrary, however, (Fedenia, 1996) concluded that a competitive acquisition leads to competition among bidders resulting in a decrease of shareholder wealth. To understand the effect of a competing offer in this thesis, a dummy control variable will be added to the empirical models. If a competing offer was made, the dummy variable CO will have a value of 1, and 0 otherwise.

3.2.3.10 Initial Reception

A firm can be a vulnerable target when it has for example a liquid balance sheet or low q ratio. In such case, there is an increased likelihood of a hostile takeover, which could initiate takeover defense methods that subsequently result in a shift in shareholder wealth for both the acquiring and target company. (G. Baradwaj, 1990) modelled this distinction between acquirer and target announcement returns in the case of a hostile bid. Hostile targets experience greater abnormal returns where hostile bidders experience the exact opposite. To account for this effect, the dummy control variable IR1 will be included in the analysis, which takes a value of 1 in case of a hostile takeover, and 0 otherwise.

3.2.3.11 Cross-border or Domestic Transaction

Current literature is not unanimity agreed about whether cross-border- or domestic M&A transactions is the better alternative. (Moeller, 2004) concluded that domestic takeovers yield higher returns where (Doukas, 1988) came to the opposite conclusion. A relationship between announcement returns and deal location therefore exists, and must be controlled for. The dummy variable CBD is added to the empirical models and takes value of 1 when the headquarters of the acquiring and target company are located in the same country, and 0 otherwise.

3.2.3.1*2* Deal Size

There are conflicting findings about whether relative deal size influences announcement returns. (Alexandridis, 2013) found that acquiring large targets destroys shareholder value

due to the complexity of large deals, all the while the potential of overpayment is lower. (B. Moeller, 2004) however, did conclude that a positive relationship between deal size and announcement returns exists. The so-called size effect discusses the fact that small acquirers gain roughly 2 percent more compared to its larger counterparts. To control for this relationship, the variable Deal Size is included in the analysis and is proxied by dividing the transaction value by the acquirer market value.

3.2.4 Descriptive Statistics and Correlation of Variables

The following subsection will provide descriptive statistics and correlation matrices of all explanatory variables in the three sub-samples. Consult *Appendix III* for the numerical values of the correlation matrices, as well as their significance. To get better acquainted with the different sub-samples, some key descriptive statistics are computed. The descriptive statistics for the acquirer- and target sub-sample can be found in appendix III[1].

3.2.4.1 Descriptive Statistics: Combined Analysis

Table 2 displays the descriptive statistics for the combined sub-sample in the appropriate measurement. The mean CARs across the four event windows are now close-to-zero, with no extreme outliers as well. It is interesting to see that although the event window changes, returns resulting from the takeover remain somewhat stable. The ESGC ratings of both the acquirer and target have, on average, increased compared to the acquirer and target sub-samples. The ratings move closer to and even reach the 50-mark, which could imply that firms engaged in public deals evidently report stronger ESG performance. All financial ratios are comparable to those of the other sub-samples, with only notable difference the standard deviations of the ROE. The return on equity seems to be quite volatile in the combined sub-sample. To preserve the completeness of the data, as well as to show that M&A announcement returns can be very volatile, it is decided not to trim or winsorize the data for comparability purposes.

[1] The variable Deal Size is excluded from the target sub-sample due to data limitation

Table 1 – Descriptive Statistics for all Variables: combined sample.[2] *Descriptive statistics for all control variables in the combined sub-sample. Column 2 shows the mean of the variable, Column 3, the standard deviation, Column 4, the median and Column 5, the range (Min – Max). In all headers the number of observations is displayed, denoted by N = X.*

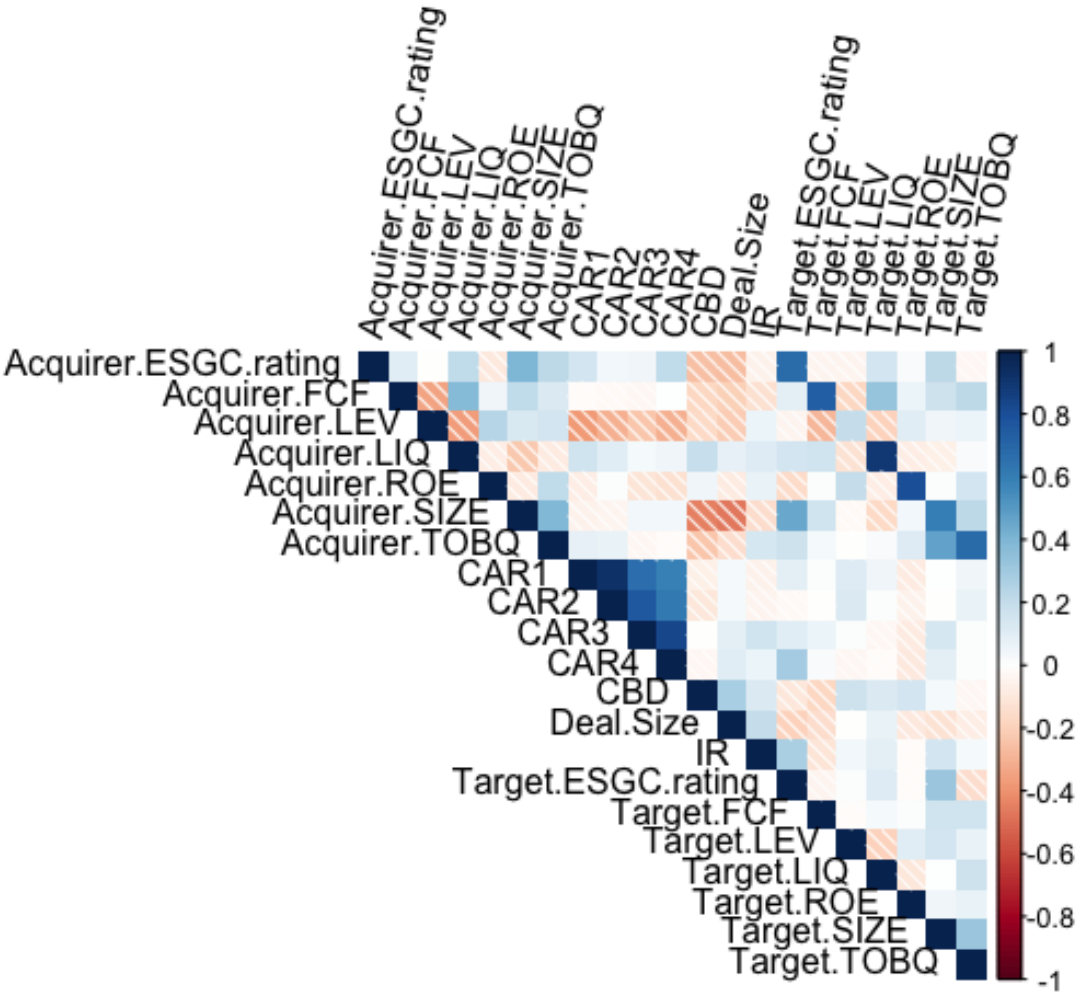
Variables	Mean (N = 49)	SD (N = 49)	Median (N = 49)	Min - Max (N = 49)
Target ESGC rating	47.634	21.790	52.990	5.600 - 83.870
Target TOBQ	0.979	1.054	0.706	-0.079 - 4.365
Target SIZE	6.866	0.682	6.857	5.251 - 8.232
Target FCF	9.7%	10.7%	8.1%	-10.8% - 55.8%
Target LEV	22.4%	14.5%	23.1%	0% - 59.3%
Target LIQ	1.449	1.462	0.979	0.246 - 8.211
Target ROE	39.5%	102.6%	11%	-12.5% – 561%
Acquirer ESGC rating	50.399	19.331	51.620	11.770 - 83.550
Acquirer TOBQ	1.078	0.845	1.064	0.003 - 4.365
Acquirer SIZE	7.475	0.626	7.474	5.742 - 8.520
Acquirer FCF	8.6%	6%	7.4%	-0.3% - 34.7%
Acquirer LEV	30.5%	15.4%	27.5%	2.3% - 64.3%
Acquirer LIQ	1.440	1.347	1.095	0.246 - 8.211
Acquirer ROE	33.2%	93.3%	11%	-18.5% - 561%
Deal Size	0.264	0.501	0.086	0.000 - 2.502
IR	0.633	0.487	1.000	0.000 - 1.000
CBD	0.633	0.487	1.000	0.000 - 1.000
CAR1	-0.06%	5.081%	0.65%	-17.16% - 11.19%
CAR2	-0.09%	4.720%	-0.07%	-13.03% - 11.81%
CAR3	0.46%	4.623%	0.6%	-14.5% - 11.08%
CAR4	0.01%	7.217%	-0.89%	-12.37% - 21.63%

Figure 2 below plots the correlation matrix of all dependent- and independent variables for the combined sub-sample. The results show that the ESGC ratings of both companies are not too highly correlated with all control variables. The highest correlation of the target's rating is 0.45 (Acquirer SIZE to Target ESGC Rating) and the of the acquirer's rating 0.40 (Acquirer SIZE to Acquirer ESGC Rating). The ratings and financial ratios are highly correlated with each other, which could cause interference with variable selection for the empirical models. The correlation of the ratings is of no concern as they are not used in one model in conjunction. However, the highly correlated firm-specific control variables could cause multicollinearity and should therefore be mitigated. The variables with the highest

[2] The deal-specific control variables *Competing Offer* and *Initial Reception* are excluded from the statistical overview as there was no observation where the dummy variable(s) had a value of 1

correlation, i.e., 0.74 (Target FCF to Acquirer FCF), 0.90 (Target LIQ to Acquirer LIQ) and 0.81 (Target ROE to Acquirer ROE), must be dropped to preserve the strength of the regression models.

Figure 2 – Correlation Matrix of all Variables. Pairwise Pearson correlation of all explanatory variables in the combined sub-sample.



4. Data sample and resources

In this section of the thesis the data sample required to support the empirical research and its corresponding institutional details will be thoroughly discussed. Descriptive statistics of the data will be provided, where the separate samples will eventually be merged to construct the final unbalanced panel used in the regression analysis. But first, the various data sources are briefly introduced which are used to build the sample. The data required can be exported from three different data sources, two of which are embedded in Refinitiv's Datastream. Data on corporate M&A transactions is drawn from SDC M&A Joint Ventures and Alliances (previously named SDC Platinum), which is a comprehensive financial securities database consisting of all sorts of corporate transactions involving at least 5 percent ownership of a company and where the transaction was valued at $1 million or more. The second data source is Refinitiv Datastream, which is used two-fold in this thesis: firstly, to download a dataset with all ESGC ratings provided by ASSET4 ESG and secondly, the data source Worldscope will be used to extract all financial information to compute the financial ratios needed for the empirical models.

4.1 Measures for ESG performance

Sustainability compliance is swiftly changing the (financial) world, including the M&A market. The continuously growing importance of ESG-research on this topic has caused the prodigious surge of tools available to measure a firms' ESG performance[3]. The database used to apprehend ESG-performance data is ASSET4 ESG via Datastream. The rating agency consults a 5-step strategy to compute ESG scores, which are updated on a weekly basis, of 9000+ companies, starting in 2002 up until 2021[4]. The ESG rating provided by ASSET4 consists of numerous components and is calculated to arrive at a single number to define a firms' ESG performance. Consult *Figure 3* for a methodologic overview of how a ESG rating is accumulated.

The ESG rating by ASSET4 is calculated by combining the overall pillar scores per sub-category, which also accounts for the corresponding industries. Additionally, the ESG Controversy rating is calculated based on 23 ESG controversy topics, defined and weighted by ASSET4. Combining these two ratings, which will be penalized downwards according to the controversy rating in case the company has been in the center of a major scandal in the last fiscal period, leaves you with the combined ESG rating (ESGC score).

[3] Sustainalytics, MSCI, Bloomberg, S&P Global and ASSET4 by Refinitiv all provide ESG-compliance metrics

[4] https://www.refinitiv.com/en/sustainable-finance/esg-scores

***Figure 3 - ESG Rating Methodologic Overview**. The following figure provides a description of the methodology used by ASSET4 to determine a firms' ESG performance. The ESG rating is determined according to the 3 pillar scores, i.e., Environmental, Social and Governance. The percentages in parenthesis represent the weight each sub-category contributes to the corresponding pillar. The ESG Controversy rating reflects recent controversies in the latest fiscal period. The combined ESG rating uses both ratings (ESG rating and ESG Controversy rating) and corrects the overall ESG rating downwards if any controversies were detected in the fiscal year preceding the publication of the rating.*

ASSET4 ESG Rating Methodologic Overview

ESG Pillar Scores			*ESG Controversies*
Environmental:	Social:	Governance:	- ESG controversies are measured across the 3 pillar scores, aggregated into one overall ESG controversy rating
- Emissions (15%)	- Human rights (5%)	- Management (17%)	
- Innovation (13%)	- Product	- Shareholders (5%)	
- Resource use (15%)	Responsibility (4%)	- CSR strategy (3%)	
	- Workforce (13%)		
	- Community (9%)		
ESG Rating ↓			***ESG Controversy Rating*** ↙

Combined ESG Rating (ESGC)

4.1.1 ESG Rating

To compute a firms' ESG rating, ASSET4 consults a comprehensive 5-step strategy. After continuously collecting 600+ numeric and Boolean datapoints, the rating agency starts the process by choosing the most representative and comparable parameters that would influence a firms' ESG performance. The data points are collected by research analysts across the globe, extracted from public sources such as annual reports, company websites, NGO websites, stock exchange filings, CSR reports and news sources. These are then grouped into a total of 10 categories related to either one of the pillar scores, Environmental, Social or Governance. The *Environmental* focus is on the use of resources, release of emissions, and level of innovation. The *social* pillar considers a firms' workforce, community, human rights and product responsibility. Lastly, *Governance* focuses on company's management, shareholders, and overall CSR strategy. By utilizing a materiality matrix, these 10 categories

are weighted according to the industry median and a certain degree of transparency. By aggregating the category scores, which can be found in parenthesis in *figure 3*, the three pillar scores are calculated and grouped per industry. The resulting ESG rating is normalized between 0 and 100 percent, where a score of 0 indicates the lowest possible ESG performance and 100 equaling perfect compliance with ESG practices.

4.1.2 ESG Controversy Rating

ASSET4's ESG controversy rating serves more as a corrective measure for the ESG rating rather than a stand-alone proxy for ESG performance. In case the rated company was involved in any controversy in the last fiscal year after the ratings have been published, the ESG rating is corrected accordingly. The controversy scores are calculated based on 23 controversy topics, divided across the 10 previously discussed pillar categories. These topics vary from employee's health and safety to the responsible employment of R&D. Aggregating the scores of these individual topics, a company's rating is calculated according to which industry group it is affiliated to. Then, the rating is measured against a firms' industry peers to identify the comparability in the individual industries. If the company was involved in fewer controversies, the rating is higher compared to its peers, and vice versa. Thus, a low controversy rating signals to the market that a company was involved in more controversies, and the combined ESG rating will be corrected accordingly. Controversies are measured depending on a company's market cap, global benchmark, and severity rate. Companies with no controversies will get a score of 100.

4.1.3 Combined ESG Rating (ESGC)

The combined ESG rating uses the original ESG rating as its groundwork, but is corrected by the controversy rating if any controversies have occurred. The combined ESG rating, which is also the rating used in the empirical analysis, is calculated as the average of the ESG- and controversy rating, if a controversy has occurred. In any other case, meaning the firm has not violated any ESG best practices, the combined ESG rating is the initially calculated ESG rating. The methodology provided by Refinitiv[5], which is illustrated in more detail with numerical examples in *figure 4,* is as follows: if the controversy rating is higher than or equal to a firms' ESG rating, then the combined ESG rating will be equal to the initially calculated ESG rating. If the controversy rating is lower than the firms' ESG rating, then the combined ESG rating will be the average of the ESG rating and the controversy rating. *Figure 4* summarizes the methodology and provides the logic behind the calculation.

[5] https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf

Figure 4 – ESG rating (combined) example. *Column 1 outlines the possible two scenarios in which a firms' ESGC rating can be determined, where column 2-4 provide numerical examples in case the firm is allocated to the first or second scenario.*

Scenario	***ESG Rating***	***ESG Controversy Rating***	***ESG Combined Rating***
If controversy rating is >=ESG rating, then ESG rating = ESGC rating	**89**	**100**	**89**
If controversy rating is <ESG rating, then ESGC rating = average of ESG- and controversy rating	**49**	**48**	**48.5***

** calculation in the scenario of a company receiving an inadequate controversy rating: 0.5*(49+48) = 48.5*

4.2 Data Samples

To start building the data sample M&A deals are taken from SDC Platinum, which is a comprehensive online database with access to all types of historical financial transactions, including corporate mergers and acquisitions. All public deals, both domestic and cross-border, occurring between 2002 and 2021 that are completed are selected. The complete data set of deals is merged with all combined ESG Ratings taken from Thomson Reuters Refinitiv (via Datastream), and the deals for which the target or acquirer does not have a rating in the year of occurrence of the deal are dropped. To preserve the robustness of the empirical results, financial- and utilities firms are withheld from the analysis as their financial ratios are likely to be unusually high, and are therefore not compatible with the remaining firms in the sample (Kalemli-Ozcan, 2021). This widely-spread accepted practice established by (Fama, 1992) ensures the validity of the results. To test the hypothesis formulated in section *2.5 Hypotheses Development*, the sample is sub-divided into three different sub-samples. That is, a sample focused solely on takeovers where acquirers have a recent ESG rating available at the announcement date of the deal, and a sample with the same criteria but with the emphasis

on targets. These two sub-samples are then merged so that takeovers where both the acquirer and target have a recent ESG score available, are left remaining. With this final sub-sample, the criteria that the acquirer must own 100 percent of the shares after completion of transaction is relaxed. By relaxing this specific criterion, the combined sample is ensured to be large enough to guarantee the robustness of a statistical analysis. Based on prior studies, (Aktas, 2011) and (Deng, 2013), the following deal-selection criteria are used to extract the transactions from SDC Platinum:

I. The deal value retrieved from SDC Platinum M&A for any company i is greater than USD$ 5 million;
II. Companies that operate in the financial or utilities industry are excluded from the sample – that is, industries with SIC codes 6000-6999 (financial industry) and 4900-4999 (utilities industry) are excluded;
III. The shares of the acquirer and target company are publicly traded so that financial statement data and stock price data is available;
IV. Before completion of the transaction the acquirer must own less than 40 percent of the publicly traded stocks of the target and after completion of the transaction the acquirer must be the full-owner – that is, owning 100 percent of the publicly traded stocks[6];
V. The target and acquiring company have a recent ESGC score available at the deal announcement date.

The SDC Platinum M&A database allows to impose criteria I-IV when extracting the deals, where the final criterion will be considered when SDC's dataset is merged with the complete dataset of ESGC ratings extracted from Thomson Reuters Refinitiv. Before imposing any sample-restricted criteria, the first criterion, i.e., deal value must be greater than USD$ 5 million, results in a total number of deals of 276,720. After applying the remaining SDC Platinum criteria, the acquirer and target sample are left with 35,740 and 7449 deals, respectively. The two sub-samples are separately merged with all ESG ratings available, which resulted in the final reduction of the two samples before the empirical analysis is initiated. Out of the 1284 (acquirer sample) and 153 (target sample) deals for which the relevant party had a recent ESG score available at the announcement date of the takeover, it was realizable to compute the abnormal returns that satisfied the event study methodology outlined in section *3.1 Research Methodology* for 1272 acquirers and 142 targets[7]. These two sub-samples are then merged, which resulted in the compilation of the combined sample of 49 deals.

[6] Criterion IV will be relaxed for the combined sample

[7] For the observations that were dropped in this stage, the relevant company did not have return data available 120 days prior to the announcement of the takeover

4.2.1 Distribution of Deals: Acquirer sample

Table 2 provides an overview of how the sample is yearly distributed across the different industries for the acquirer sample. *Appendix II* will provide a more thorough overview of how the three different sub-samples are distributed. The first observations are in 2002 as ASSET4 ESG started providing ESG ratings from this year onwards. The number of deals for which the acquirer possessed a recent ESG rating at the announcement date of the transaction, distributed across industries are shown in Column 2 to 6. The overview clearly shows that advancing through the years results in more observations. This can be explained by the fact that, over the years, ASSET4 ESG provided more and more companies with ESG ratings, and that increase is consistent with how the sample is distributed. *Table 2* shows that the Manufacturing industry represents the largest in industry in the acquirer sub-sample, followed by Mineral industries and Construction and Service industries, respectively.

Table 2 – Distribution of deals: acquirer sample. *Column 1 indicates the year in which the transaction was completed, and Column 2-6 indicates the number of deals that occurred in that industry. Industry classification is based on acquirer's 2 digit SIC code. Column 7 shows the total distribution.*

Year	Mineral industries and construction SIC - 10-17	Manufacturing SIC 20-39	Transportation and communications SIC 40-48	Wholesale and retail trade SIC 50-59	Service Industries SIC 70-89	Total
2002	2	13		2	7	24
2003	2	19	2		5	28
2004	2	22	1	3	6	34
2005	6	35	11	7	11	70
2006	9	39	6	3	9	66
2007	14	46	4	4	16	84
2008	14	31	5	2	10	62
2009	13	29		1	9	52
2010	15	32	15	4	9	75
2011	22	21	2	6	4	55
2012	20	26	7	6	5	64
2013	8	18	5	3	8	42
2014	16	33	8	6	8	71
2015	14	42	13	5	15	89
2016	9	50	8	5	19	91
2017	13	47	7	3	15	85
2018	24	56	6	5	15	106
2019	14	42	4	7	22	89
2020	25	28	3	2	8	66
2021	5	6	1	3	4	19
Total	247	635	108	77	205	1272

4.2.2 Distribution of Deals: Target Sample

Table 3 provides an overview of how the sample is yearly distributed across the different industries for the target sample. In comparison to the acquiring sample, the number of deals has greatly reduced to a total of 142. The main cause for this reduction is explained by the criterion that the target must be publicly traded. The data shows that very few publicly traded companies that possessed a recent ESG score at the time of the acquisition were taken over. (Draper, 2006) enforces that more than 80 percent of takeovers are centered around privately held companies, and these types of takeovers are a more attractive option for maximizing shareholder wealth. *Table 3* shows that the Manufacturing industry has been the most popular industry for takeovers again, but now followed by Transportation and Communications.

Table 3 – Distribution of deals: target sample. *Column 1 indicates the year in which the transaction was completed, and Column 2-6 indicates the number of deals that occurred in that industry. Industry classification is based on target's 2 digit SIC code. Column 7 shows the total distribution.*

Year	Mineral industries and construction SIC - 10-17	Manufacturing SIC 20-39	Transportation and communications SIC 40-48	Wholesale and retail trade SIC 50-59	Service Industries SIC 70-89	Total
2002			2			2
2003	1		2			3
2004		2				2
2005	1	4		1		6
2006		2	3			5
2007		2	1			3
2008	2	2			1	5
2009		1	1			2
2010	1			1		2
2011		1			1	2
2012	1	3	1			5
2013		4	2	4	1	11
2014	1	4	3	1	1	10
2015		3	4		1	8
2016	2	4	2	1	2	11
2017	4	3	3		4	14
2018	1	7	1	1	1	11
2019	2	11	1	3	1	18
2020	2	7	3		3	15
2021		4		1	2	7
Total	18	64	29	13	18	142

4.2.3 Distribution of Deals: Combined sample

After combining the acquirer and target dataset and relaxing the criterion that the acquirer must fully own the target after completion of the transaction, we are left with the combined sample. *Table 4* provides an overview of how the combined sample is distributed across the different industries. For the empirical analysis it is required that both firms must be publicly traded, which caused the reduction of the sample to a total number of deals of 49. The distribution of deals has slightly shifted compared to the previous two sub-samples. Transportation and Communication is now the largest represented industry, where the Manufacturing industry and Wholesale and Retail trade follow afterwards. The number of observations now starts in 2004 instead of 2002, as there were no deals in 2002 and 2003 in which both the acquirer and target had a recent ESG score available. The number of observations in the combined sample is relatively small, but for event studies N > 30 is sufficient for a robust statistical analysis (de Goeij, 2011).

Table 4 – Distribution of deals: combined sample. *Column 1 indicates the year in which the transaction was completed, and Column 2-6 indicates the number of deals that occurred in that industry. Industry classification is based on target's 2 digit SIC code. Column 7 shows the total distribution.*

Year	Mineral industries and construction SIC - 10-17	Manufacturing SIC 20-39	Transportation and communications SIC 40-48	Wholesale and retail trade SIC 50-59	Service Industries SIC 70-89	Total
2004		1	1			2
2005						0
2006		1				1
2007			1			1
2008	2				1	3
2009			1			1
2010				1		1
2011	1		1			2
2012		1				1
2013		3	1	3		7
2014		2				2
2015			4			4
2016			1	1		2
2017	1	1	3		1	6
2018		2	1			3
2019		2	3	1	1	7
2020			4			4
2021			1	1		2
Total	4	13	22	7	3	49

5. Results

Now that the research methodology and data samples are defined and compiled, we turn our focus to the regression analyses as outlined in section *3.2 Empirical Models*. But, as this thesis employs several event study models on different sub-samples, it is first of importance to understand whether the event, that is – the takeover, affect the returns. This section therefore will begin with a univariate analysis on the various cumulative abnormal returns. Then, Pooled OLS with Fixed Effects estimation will be employed using all the dependent- and independent variables discussed in section *3.2.3 Overview Variables*. The cumulative abnormal returns will be the main regressor in all models. For all regressions two robustness checks will be performed to examine how the most important regression coefficients, i.e., the ESGC measures, behave when the regression specification is modified. One of the robustness checks will include Panel Data Fixed Effects, which includes a Hausman test[8] to understand whether fixed effects or random effects estimation is suitable for the data. Additionally, the different event window CARs will be used as robustness checks as well.

5.1 Univariate Analysis

The Univariate Analysis will focus solely on understanding whether the CARs of the acquiring and target company are significantly different than zero due to the takeover. The analysis includes strong and weak ESG performance. This is an extension of the standard univariate analysis, but the results yield some interesting findings as the CARs and their statistical significance fluctuate depending on whether the relevant company had a low or high ESGC rating. The CARs for the different event windows are calculated based on the market-adjusted model, as outlined in section *3.1.1 Cumulative Abnormal Returns (CARs)*. The results of testing whether the CARs are statistically different from zero ($CAR \neq 0$) for all the sub-samples can be found in *table 5*. We can observe that the CARs for the acquiring companies are not statistically significant in the acquirer- and combined sub-sample, which holds for the majority of event window lengths and sub-samples. The event windows with CAR(-5,5) and CAR(-5,10) in the combined sub-sample for which the target had strong ESG performance (ESGC rating in top quartile) show significance at the 5- and 10 percent level, respectively. This indicates that the returns for the bidder, in case of acquiring a strong ESG performing target, are affected by the takeover approximately 5 to 10 days after the announcement. This finding implies that the semi-strong form of market efficiency does not hold, until 5 to 10 days after the announcement. The market has not fully incorporated the effect of the takeover in the share price of the relevant company immediately after the

[8] The Hausman test detects endogenous regressors in an econometric model and helps to identify whether fixed effects or random effects estimation is most suitable for the dataset

announcement, which should be the case if the semi-strong form of market efficiency does hold. This implies that the security of the relevant company might be under- or overvalued as a result of the takeover. However, the outcome for the acquirer returns in the combined sub-sample are in line with findings in previous research, as (Tampakoudis E. A., 2020) also concluded that a takeover does partially affect the returns of the acquiring company, as well as their post-merger ESG performance. Nonetheless, for the majority of the findings a direct negative relationship exists between an acquisition and announcement returns for the acquirer. This is also confirmed by (B. Moeller, 2004) and (Deng, 2013), who imply that the market does not react positively after the announcement of a takeover.

The CARs for the full sample of target companies are statistically significant in all event window models, at the highest level. Interesting to note is that for the target companies who do exhibit strong ESG performance, takeovers are not as beneficial as for their low ESG performing counterparts. The mean returns of the last-mentioned companies are remarkably higher, with statistical significance at the 5 percent level as well. This finding indicates that, for the target sub-sample, weak ESG performance is way more beneficial from the target's shareholders perspective. However, this implies that a takeover for a high ESG performing target does not affect their returns, which is an interesting observation as previous research, such as (Goergen, 2004) and (I. Sevilay Yilmaz, 2016), concluded that a takeover does affect target announcement returns. For most target companies researched in this thesis, however, a takeover does affect announcement returns. We observe an increase of the returns around the announcement by approximately 6-9 percent for the full sample, and for weak ESG performing targets approximately 12-14 percent, dependent on the event window. The findings show that a takeover does affect the returns for the target company for most observations, which holds for all event window lengths. Now that the CARs across all event windows lengths and sub-samples have been analyzed, we can turn our focus on what variables affected these CARs, or not.

Table 5 – Univariate analysis of all CARs in the three sub-samples. *This table reports the mean, median and t-stat of the CARs for the acquirer and target for the different event windows and sub-samples. The statistics are shown for the full sample (N = 1272, 142 & 49) and a sample for which the relevant company had an ESGC rating in the top- (N = 317, 36 & 11) and bottom quartile (N = 318, 36 & 12). The CARs are displayed in chronological order, that is – CAR(-1,1), CAR(-5,1), CAR(-5,5) and CAR(-5,10). *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.*

	Full sample			**Acquirer ESGC rating in top quartile**			**Acquirer ESGC rating in bottom quartile**		
	Mean	Median	T-statistic	Mean	Median	T-statistic	Mean	Median	T-statistic
Aquirer sub-sample									
CAR1	-0.18%	-0.13%	-1.01	-0.18%	0.00%	-0.64	0.63%	0.17%	1
CAR2	-0.25%	0.13%	-0.96	-0.30%	0.03%	-0.29	0.34%	0.12%	1.19
CAR3	-0.26%	0.17%	-1.11	0.16%	0.58%	0.55	0.42%	0.44%	0.55
CAR4	-0.23%	0.11%	-0.94	0.26%	0.12%	1.12	0.00%	0.34%	0.55
Observations	1272	1272	1272	317	317	317	318	318	318

	Full sample			**Target ESGC rating in top quartile**			**Target ESGC rating in bottom quartile**		
	Mean	Median	T-statistic	Mean	Median	T-statistic	Mean	Median	T-statistic
Target sub-sample									
CAR1	6.55%	2.71%	4.05***	2.23%	1.08%	1.43	11.98%	4.37%	2.43**
CAR2	6.85%	2.60%	3.96***	1.37%	1.96%	0.14	13.72%	5.23%	2.72**
CAR3	7.12%	5.33%	4.00***	0.70%	1.07%	0.28	11.78%	6.71%	2.33**
CAR4	8.35%	5.66%	4.41***	2.94%	3.40%	1.45	12.44%	6.09%	2.23**
Observations	142	142	142	36	36	36	36	36	36

	Full sample			**Target ESGC rating in top quartile**			**Target ESGC rating in bottom quartile**		
	Mean	Median	T-statistic	Mean	Median	T-statistic	Mean	Median	T-statistic
Combined sub-sample									
CAR1	-0.06%	0.65%	-0.08	0.02%	-0.14%	1.00	-0.96%	1.05%	-0.5
CAR2	-0.09%	-0.07%	-0.12	-0.72%	-0.51%	0.53	0.16%	2.71%	-0.04
CAR3	0.46%	0.60%	0.69	1.18%	0.71%	2.38**	1.47%	1.71%	0.4
CAR4	0.01%	-0.89%	0.01	2.43%	0.98%	2.00*	-1.04%	-1.01%	-0.86
Observations	49	49	49	11	11	11	12	12	12

5.2 Multivariate Analysis

To understand whether a certain level of ESG performance affects M&A announcement returns, this thesis will employ a multivariate analysis which focuses on multiple regression models. The models that will be implemented are based on the hypotheses stated in section *2.5 Hypotheses Development.* The core event window model, that is – CAR(-1,1), will be the constant dependent variable in all models. In *table 6* below, the regressions (1) – (3) differ in the ESGC measure used as primary independent variable, along with a set of explanatory variables. Regression (1) uses the combined ESGC rating, regression (2) uses the dummy variable ESGC rating high, and regression (3) uses the dummy variable ESGC rating low. Running a regression model with both dummy variables, i.e., low and high ESGC rating, has been considered but the results do not yield any significant differences. Such a model is therefore not included in the empirical analysis. The models (1) – (3) refer to hypothesis H1 in section *2.5 Hypotheses Development* and regression model (4) in section *3.2.2 Multivariate Empirical Analysis*. The results indicate that the various ESGC measures are not statistically significant in the acquirer sub-sample, which is comparative to the univariate analysis. This implies that the bidders' ESG performance does not affect the returns of the company if it participates in a merger or acquisition. Therefore, from a shareholders' perspective, strong ESG performance is not relevant. Hypothesis 1, which stated that engagement in ESG activities positively influences announcement returns, can therefore be rejected. There are, however, several financial ratios as well as one deal-related variable that do exhibit statistical significance. Taking regression (1) as an example, we can show for instance that a 1 ppt increase in a firm's leverage ratio, the return of that company after a takeover increases, on average, by approximately 4 ppt, holding other factors fixed. This result is accompanied with a 95% confidence interval of 1.512 to 6.4706 ppt. The main and only difference between the three models is that for regression model (3) Tobin's Q is statistically insignificant. This indicates that, in case of a low ESG performing acquirer, a firms' under- or overvaluation is unimportant in a merger or acquisition. Furthermore, taking regression model (2) as an example, the average returns for the bidder are 0.839 ppt lower if it acquires a company that operates in the same industry, holding all the other factors fixed. This result contradicts previous findings, such as the research of (Morck, 1990) and (W. Masulis, 2007), who stated that diversifying M&As are value-destroying. In addition, Fixed Effects for year and country were checked using an F test. The results indicate joint statistical significance, meaning Fixed Effects for year and country do improve the goodness of fit of the model[9]. The robust standard errors are clustered by industry, which is done to account for clustered sampling as a consequence of the ESGC rating already considering the relevant industries.

[9] Results of the F tests for joint significance of year and country Fixed Effects in the acquirer sub-sample are in Appendix III in table 16.

Table 6 – Regression Results Pooled OLS with Fixed Effects: acquirer sub-sample. *For all regressions (1) – (3) the dependent variable is the cumulative abnormal return for the base event window model, i.e., CAR(-1,1). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (1) uses the combined ESGC rating, regression (2) the dummy variable ESGC rating high and regression (3) the dummy variable ESGC rating low. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (1)	OLS (2)	OLS (3)
ESGC rating	-0.0006		
	(0.0122)		
High ESGC rating		0.3649	
		(0.4348)	
Low ESGC rating			0.3604
			(0.6157)
TOBQ	0.2883*	0.293*	0.2752
	(0.1662)	(0.1651)	(0.1705)
SIZE	-0.6017**	-0.6655**	-0.5387*
	(0.2897)	(0.2932)	(0.3034)
FCF	-2.4381	-2.5207	-2.296
	(4.5245)	(4.4816)	(4.5362)
LEV	4.0745***	4.0762***	4.0413***
	(1.2705)	(1.2662)	(1.284)
LIQ	0.1315*	0.1312*	0.1291*
	(0.0737)	(0.0732)	(0.0736)
ROE	0.1087*	0.1107*	0.11*
	(0.0631)	(0.0627)	(0.063)
DEALSIZE	1.0215*	1.0297*	1.0173*
	(0.5811)	(0.5757)	(0.5798)
IR	-0.8492**	-0.839**	-0.867**
	(0.3585)	(0.3571)	(0.3572)
CO	0.2186	0.2374	0.2097
	(0.6436)	(0.6458)	(0.6451)
IR1	0.6156	0.6748	0.6011
	(1.471)	(1.4788)	(1.4593)
CBD	0.1502	0.1764	0.1469
	(0.5162)	(0.5134)	(0.5128)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	1272	1272	1272
R^2	0.1066	0.1071	0.1071

In *table 7* below the same regression models have been employed as with *table 7*, but then for the target sample. The models refer to H2 in section *2.5 Hypotheses Development* and regression model (5) in section *3.2.2* Multivariate *Empirical Analysis*. Again, the models (4) – (6) only differ from one another in terms of ESGC measure.

Table 7 – Regression Results Pooled OLS with Fixed Effects: target sub-sample. For all regressions (4) – (6) the dependent variable is the cumulative abnormal return for the base event window model, i.e., CAR(-1,1). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (4) uses the combined ESGC rating, regression (5) the dummy variable ESGC rating high and regression (6) the dummy variable ESGC rating low. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.

	OLS (4)	OLS (5)	OLS (6)
ESGC rating	-0.3296***		
	(0.1228)		
High ESCG rating		-8.8*	
		(4.6076)	
Low ESGC rating			12.4490**
			(5.8463)
TOBQ	6.3101	6.3286	6.3605
	(4.7061)	(5.0391)	(4.6486)
SIZE	-0.5342	-0.4283	-0.8603
	(0.8505)	(0.9210)	(0.8922)
FCF	-12.7275	-15.3275	-11.9783
	(20.4012)	(21.0833)	(21.9946)
LEV	-16.6923***	-15.3275***	-14.4111***
	(4.6174)	(4.8901)	(4.5707)
LIQ	0.0082	-0.0251	0.0659
	(0.5031)	(0.5371)	(0.4638)
ROE	-0.0044	-0.0094	-0.1047
	(0.3615)	(0.3165)	(0.2692)
IR	-6.5036	-7.0009	-6.7276
	(5.3753)	(5.7579)	(5.2451)
CO	1.4255	-1.2618	-2.8814
	(6.7533)	(6.8942)	(7.2383)
IR1	-3.7553	-5.0628	-11.0853
	(11.1684)	(11.1346)	(13.4277)
CBD	-3.0595	-3.2284	-3.4732
	(5.2855)	(5.3084)	(5.3308)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	142	142	142
R^2	0.5850	0.5523	0.5662

The results for the target sub-sample show less significant financial ratios and deal-related variables, but the ESGC measures are all statistically significant. The coefficients of these ESGC measures in regression models (4) – (6) however are very dissimilar. Taking for

instance model (4), where the results for the ESGC rating show significance at the highest level. A 1 ppt increase in the targets' ESGC rating decreases the returns resulting from a merger or acquisition, on average, by 0.33 ppt, holding other factors fixed. This implies that the target's ESG performance should be in the bottom quartile, considering the shareholders wealth effects in the takeover process. These findings are enforced by the results in model (5) and (6), where the High and Low ESGC ratings have negative and positive coefficients, respectively. This indicates that having a Low ESGC rating is beneficial for the returns resulting from a takeover. Hypothesis 2, which stated that the target firms' engagement in ESG activities has a positive influence on announcement returns, can therefore be rejected. Additionally, the only control variable that shows statistical significance is a firms' leverage ratio, at the highest level. For example, in regression model (4), a 1 ppt increase in a firms' leverage ratio decreases, on average, the returns resulting from a takeover by approximately 16.7 ppt, holding other factors fixed. This implies that target companies who finance their assets and operations with primarily debt are worse off when they are taken over compared to companies who use more equity resources. For the target sub-sample Pooled OLS with year and country Fixed Effects were used as well. To examine whether the two improve the goodness of fit of the model, a joint significant F test was performed[10]. The robust standard errors are again clustered by industry. As we now understand what factors affect the CARs for the acquiring and target company independently, it is time we focus on the combined sample. Last-mentioned utilizes a set of variables for both companies, but focuses on the returns for the acquirer as dependent variable. In *table 8* below, the results of the regression models (7) – (9) are presented, where they only differ in ESGC measure for the target company. The models are formulated according to H3, which stated that a firms' ESG score is correlated with announcement returns. Considering the different results for the target's ESGC measures, we can observe that H3 cannot be rejected due to the significance of the dummy variable low ESGC rating. Acquirers' shareholders only benefit when the target has an ESGC rating in the bottom quartile, i.e., weak ESG performance. This is consistent with the findings in the target sub-sample, implying that target ESG performance is correlated with both the acquirer- and target announcement returns. This correlation, however, seems to only exist when the target exhibits weak ESG performance. The target's low ESGC rating in regression model (9) is statistically significant at the highest level, implying a strong relationship between target's weak ESG performance and acquirer announcement returns. To be more specific, the average cumulative abnormal return of the bidder for acquiring a weak ESG performing target is approximately 17.5 ppt higher compared to acquiring a strong ESG performing target, holding other factors fixed.

[10] Results of the F tests for joint significance of year and country Fixed Effects in the target sub-sample are in Appendix III in table 17.

Table 8 – Regression Results Pooled OLS with Fixed Effects: combined sub-sample. *For all regressions (7) – (9) the dependent variable is the cumulative abnormal return for the acquiring company for the base event window model, i.e., CAR(-1,1). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (7) uses the target's combined ESGC rating, regression (8) the dummy variable ESGC rating high and regression (9) the dummy variable ESGC rating low. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (7)	OLS (8)	OLS (9)
Target ESGC rating	-0.0683		
	(0.1798)		
Target High ESGC rating		4.8037	
		(3.1106)	
Target Low ESGC rating			17.5034***
			(3.5674)
Target TOBQ	-5.1677	-9.4049**	-5.3758***
	(4.4165)	(3.8274)	(1.6597)
Target SIZE	5.0782	4.5906	2.6714
	(8.8971)	(4.854)	(6.1149)
Target LEV	15.8776	22.156*	31.8843***
	(19.0441)	(10.8405)	(10.7351)
Acquirer TOBQ	3.3218	7.6714**	3.313
	(5.9971)	(3.3368)	(2.8627)
Acquirer SIZE	2.3031	3.0316	4.0253
	(9.6303)	(3.2561)	(5.7411)
Acquirer LEV	-25.5092	-56.9037***	-32.0064
	(46.0852)	(10.6309)	(21.0981)
DEALSIZE	0.0444	0.2228	-0.1202
	(0.1685)	(0.7868)	(0.46)
IR	-20.5689*	-21.215***	-5.2396
	(9.2903)	(5.0872)	(10.6001)
CBD	-5.1944	-6.7863	-2.3401
	(6.2728)	(7.6365)	(3.3191)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	46[11]	46	46
R^2	0.9772	0.9792	0.9937

[11] The reduction in observations compared to the univariate analysis is caused by three observations in the variable DEALSIZE had a value of zero, and are therefore dropped.

Furthermore, Tobin's Q and the leverage ratio of the target affect the announcement returns in regression model (8) and (9) the most. These two ratios show significance from the lowest to highest level, implying that the target's under- or overvaluation as well their usage of debt affect bidders' announcement returns. Additionally, in model (8), we can observe that acquiring a strong ESG performing target operating in the same industry is value-destroying from the bidders' shareholder perspective. The average cumulative abnormal returns of the bidder for acquiring a target operating in the same industry is approximately 21.2 ppt lower compared to executing a diversifying merger or acquisition, holding other factors fixed. Regression models (7) – (9) are estimated using Pooled OLS with year and target country fixed effects[12]. The robust standard errors are clustered by target industry. Compared to regression models (1) – (6), the models in *table 8* exhibit a very high R-squared. This means that the regression models (7) – (9) reveal that approximately 98 percent of the variability observed in the CARs is explained by these models. As we now understand the effect of the value of the target's ESG score on the acquirer's announcement returns, it is time we focus on what happens to the CARs when both ratings are included in one model. In other words, testing H3.1 and H3.2, which cope-with understanding the effect of weak and strong bidder ESG performance on announcement returns when a strong ESG performing target has been acquired. This includes a regression model where compatible ESG performance is considered as well. The dummy variable *Compatible ESGC rating* takes a value of 1 when both the acquirer and target have the same ESGC rating in the either the bottom or top quartile of the combined sub-sample, and 0 otherwise. In other words, both companies must have either weak or strong ESG performance. In *table 9* below the results of the regression models (10) – (12), which consider H3.1 and H3.2, are presented. We observe that regression model (11), which considers a high ESGC rating for both companies, yields the most statistically significant results. The two ESGC measures in this model are statistically significant, implying that a M&A in which both companies exhibit strong ESG performance influence the CARs the most. Contrary to previous findings, strong target ESG performance positively influences the bidder's CARs if the acquirer exhibits strong ESG performance as well. However, this effect is mitigated by the negative coefficient for the acquirer's low ESGC rating, implying that strong ESG performance from both sides is beneficial for the bidders' shareholders, but only to a certain degree. Additionally, most of the financial ratios in regression model (11) are statistically significant as well. For example, a 1 ppt increase in the acquirer's leverage ratio decreases, on average, the acquirer's CARs by 63 ppt, holding other factors fixed. This finding shows that is very unwise for a bidder company to hold vast majorities of debt in the firm if it decides to participate in a M&A.

[12] Results of the F tests for joint significance of year and country Fixed Effects in the combined sub-sample are in Appendix III in table 18.

Table 9 – Regression Results Pooled OLS with Fixed Effects: combined sub-sample second analysis. *For all regressions (7) – (9) the dependent variable is the cumulative abnormal return for the acquiring company for the base event window model, i.e., CAR(-1,1). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (10) uses the target's dummy variable ESGC rating high and the acquirer's dummy variable ESGC rating low, regression (11) the dummy variable target's ESGC rating high and acquirer's ESGC rating high and regression (12) the dummy variable compatible ESGC rating. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (10)	OLS (11)	OLS (12)
Target High ESGC rating	-4.0497	9.7793*	
	(6.6324)	(5.2896)	
Acquirer Low ESGC rating	8.0695		
	(7.9817)		
Acquirer High ESGC rating		-4.4011**	
		(1.9531)	
Compatitble ESGC rating			2.7121
			(4.3519)
Target TOBQ	-0.8379	-13.4262**	-6.9377*
	(5.0697)	(6.3517)	(3.7255)
Target SIZE	7.8404	6.4221	4.6268
	(8.1484)	(5.1952)	(9.5955)
Target LEV	12.9533	16.7609***	18.2919
	(11.5218)	(4.2911)	(18.2706)
Acquirer TOBQ	-2.1012	12.4877**	5.6204
	(6.8418)	(5.1712)	(6.1502)
Acquirer SIZE	-2.8822	1.7564	3.5209
	(7.6247)	(2.183)	(10.8635)
Acquirer LEV	5.5667	-63***	-40.2652
	(55.452)	(11.8503)	(44.0852)
DEALSIZE	0.0431	0.0113	-0.0152
	(0.2244)	(0.0601)	(0.1221)
IR	-16.765***	-10.2014***	-19.6112*
	(2.9251)	(3.4946)	(10.8781)
CBD	-3.7593	2.344	-6.2075
	(6.4571)	(6.2321)	(5.9276)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	46	46	46
R^2	0.9872	0.99	0.9782

5.2 Robustness Checks with Modified Regression Specification

As mentioned in the beginning of section *5 Results*, this thesis will employ two methods of robustness checks to understand how the most important independent variable, i.e., ESGC measures, behave. The first robustness check will emphasize on employing the same regression models as outlined in section *5.2 Multivariate Analysis*, but with different event windows. This approach is enforced by (Meckl, 2015), who also performed robustness checks with several event windows. Secondly, a Hausman test will be performed to allow for a robustness check with Panel Data Fixed- and Random Effects.

5.3.1 Robustness Checks with different CAR event windows

As a first robustness check, different CARs event windows are used on the different same sub-samples and regression models, similar with the core CARs event window. This approach is used to assess whether different control variables, or even the ESGC measures, affect these CARs. The core CARs event window model will be checked on robustness by employing three additional models, that is – a seven-day event window (-5,1), an eleven-day event window (-5,5) and sixteen-day event window (-5,10). An overview of the results for the acquirer-, target- and combined sub-sample are shown in *Appendix VI*. The respective independent variables, i.e., ESGC measures, financial ratios, and deal-specific variables, are the same as with regression models (1) – (12). The only factor that changes throughout the different models is the cumulative abnormal return, i.e., the dependent variable. Examining the acquirer sub-sample, we observe no significant changes in the outcomes. The independent variables that exhibit statistical significance have roughly the same sign and magnitude as with the core event window model. Interesting to note, however, is that, throughout all models, there is only one ESGC measure that becomes statistically significant once. For the event window CAR(-5,5) in model (21) the dummy variable *High ESGC rating* becomes statistically significant at the 5 percent level, with a coefficient of 1.3312. This result indicates that strong ESG performing acquirers experience higher announcement returns after approximately 5 days of the takeover, compared to weak ESG performing acquirers. Moving on to the target sub-sample, where we do observe some changes in the ESGC measures as we move further away from the announcement day. The numerical value of the ESGC rating as well as the high dummy variable remain roughly stable in sign, magnitude and statistical significance throughout the models. The dummy variable *Low ESGC rating* in model (28), (31) and (34), however, becomes more and more statistically insignificant as we move from CAR(-5,1) to CAR(-5,10). This finding implies that post-merger strong ESG performance does become more and more important as we move further away from the announcement date. This is enforced by (Deng, 2013), who concluded that the market does not fully value strong ESG performance immediately, but that it requires some time. Additionally, where for

the core event window model only the variable LEV was statistically significant, the event window CAR(-5,10), i.e., regression models (32) – (34), exhibits statistical significance for two more variables. The target's SIZE and whether the takeover was diversifying or not show a statistically significant effect on the announcement returns. This indicates that if we move further away from the announcement date more variables will affect the returns for target shareholders. The first analysis of the combined sub-sample, which considers only the ESGC measures of the target, shows similar findings as with the core event window. The dummy variable *Target Low ESGC rating* shows statistical significance at the highest level for CAR(-5,1) but statistical insignificance for CAR(-5,10) in model (37) and (43), respectively. For the combined sub-sample second analysis, which considers the ESGC measures of both companies, we do observe some significant differences compared to the core event window model. The event window CAR(-5,1), i.e., regression models (44) – (46), barely show any statistically significant variables. This could indicate that, compared to the core event window, there is some pre-takeover information leakage effect. The market already incorporated the takeover in the share price, implying that the semi-strong form of market efficiency holds. However, when considering the CAR(-5,5) event window, which is shown in model (47) – (49), we observe many statistically significant variables. Especially in model (47), which considers the effect of a weak ESG performing bidder acquiring a strong ESG performing target, most variables show statistical significance at the highest level. This implies that after approximately 5 days after the announcement of the takeover, the returns for the acquirer are affected the most. This finding is enforced by (Aktas, 2011), who stated that stock markets reward acquiring companies who make socially responsible investments, i.e., acquiring a strong ESG performing target.

5.3.2 Robustness Checks with Panel Data Industry Fixed- and Random Effects

The second and final robustness check focuses on Panel Data Fixed- and Random Effects regressions. Random Effects estimation assumes there is no correlation between industry clusters, but, however, as we know that the ESGC ratings are industry-dependent we must account for this. Fixed Effects estimation does allow for correlation between industry clusters. To test whether FE or RE is more efficient, a Hausman test is performed for the acquirer- and target sub-sample separately[13]. The results are shown in *table 10* and *table 11.* If the chi-squared test statistic is high enough (or a low enough p-value) we can reject the null hypothesis which means that Fixed Effects estimation is as consistent as Random Effects. But, due to the allowance for correlation explained above FE is preferred. The results of the Hausman test show the exact opposite, where RE is preferred in the acquirer sub-sample and FE in the targets'. Therefore, considering *table 12,* the focus for the acquirer will be on

[13] The combined sub-sample cannot be estimated by FE or RE due to the number of observations.

regression (14) and for the target regression (15). For comparability purposes, however, *table 12* presents all regressions.

Table 10 – Hausman Test for Fixed Effects vs. Random Effects: acquirer sub-sample. *H_0 tests whether the difference in coefficients is systematic, or not.*

Hausman Test	Chi^2	$Prob > Chi^2$
	30.73	0.9999

Table 11 – Hausman Test for Fixed Effects vs. Random Effects: target sub-sample. *H_0 tests whether the difference in coefficients is systematic, or not.*

Hausman Test	Chi^2	$Prob > Chi^2$
	153.26	0.0000

We observe that for regression (14) and (15) the most important variable, i.e., ESGC rating, is statistically insignificant. For the acquirer sub-sample this comes as no surprise as we observed similar findings in model (1) – (3). For the target sub-sample this is a different result, however. This can be explained by the nature of the ESGC ratings. ASSET4's Refinitiv categorical weighting, which is industry-dependent, does not vary that much year-after-year as it is conditional on industry-specific characteristics. For instance, the individual pillar Emissions, which has one of the highest categorical weighting values of 15%, will not change dramatically for an industry such as transportation. This particular industry cannot operate without releasing greenhouse gasses, meaning that the transportation industry's individual pillar score for Emissions will not fluctuate significantly year-after-year. Furthermore, for both model (14) and (15), several other independent variables do show statistical significance. This is consistent with previous findings, but since we are dealing with Panel Data Fixed- and Random Effects it requires careful interpretation. Considering the RE model for the acquirer sub-sample, we can observe that for the statistical significant variables the standard errors are lower compared to the FE model. This implies that the estimators are more efficient, but might be inconsistent due to the nature of RE estimation. Interesting to note, however, is that for the target sub-sample RE estimation yields more statistical significant results compared to FE specification. This could indicate that RE estimation is more suitable, but the Hausman test yields a different result. This means that

one of the assumptions of RE estimation, such as there is no random sampling across individual units, has not been met which leads to inconsistency in the estimators.

Table 12 – Regression Results Fixed Effects vs. Random Effects: acquirer- and target sub-sample. *For all regressions (13) – (16) the dependent variable is the cumulative abnormal return for the base model, i.e., CAR(-1,1). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (13) and (14) are estimated using Fixed Effects and Random Effects in the acquirer sub-sample, respectively. Regression (15) and (16) are estimated using Fixed Effects and Random Effects in the target sub-sample, respectively. For Fixed Effects estimation the variance was clustered at the industry level. Each regression model controls for Year and Country fixed effects. The regression coefficients with their standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS Fixed Effects	OLS Random Effects	OLS Fixed Effects	OLS Random Effects
	(13)	(14)	(15)	(16)
ESGC rating	0.0074	0.0065	-0.0097	-0.2134**
	(0.0139)	(0.0121)	(0.2847)	(0.0998)
TOBQ	0.2014	0.3159	25.9843*	7.5826***
	(0.1987)	(0.1771)	(11.342)	(2.0968)
SIZE	-0.7066	-0.7555**	3.3013	-0.744
	(0.3732)	(0.3274)	(3.5755)	(0.9629)
FCF	-1.0649	-1.5116	-158.7561*	-41.2962**
	(2.9112)	(2.6322)	(78.4407)	(16.3863)
LEV	4.1537**	4.1066***	-51.2298	-19.1541***
	(1.5432)	(1.2745)	(28.0462)	(5.7933)
LIQ	0.1017**	0.0969**	3.0208	-0.0724
	(0.0622)	(0.0602)	(5.1483)	(0.439)
ROE	-0.1185	-0.0544	-2.4028***	0.1109
	(0.1049)	(0.0966)	(0.6815)	(0.4196)
DEALSIZE	0.2653	0.5824		
	(0.4747)	(0.4132)		
IR	-0.0117	-0.1965	9.8384	-13.8309***
	(0.4848)	(0.4212)	(15.9401)	(4.8796)
CO	0.1467	0.6875	-32.9945	2.9158
	(0.8967)	(0.7981)	(35.4526)	(10.2302)
IR1	0.5594	0.4099		-19.4155
	(2.1705)	(1.9893)		(24.7498)
CBD	0.5085	0.3626	-53.8994**	-4.7218
	(0.5466)	(0.4844)	(18.7435)	(4.7545)
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
N	1272	1272	142	142

6. Conclusion, Discussion and Limitations

6.1 Conclusion

The analysis in this thesis aimed to investigate the effect of corporate ESG performance on M&A announcement returns. Current research extensively covers this topic, but this thesis employs a different method to assess a firm's ESG performance. The approach used focused on examining different levels of ESG performance, for both the acquiring and target company, and their separate effects on the returns. To proxy a company's ESG performance, this thesis utilized the combined ESG rating provided by ASSET4's Refinitiv. This so-called ESGC rating has been used, alongside firm- and deal-specific variables, in the empirical analysis to identify the effect of ESG performance on the returns. To account for potential information leakages pre-M&A and market inefficiencies post-M&A, the core event window model is three days [t-1; t+1]. Additionally, three supplementary event window models are used to fully incorporate and understand the effect of the above-mentioned takeover characteristics on the returns. The empirical analysis was done using Pooled OLS with Fixed Effects estimation for year and country, while clustering the robust standard errors by industry. The results have been checked on robustness by employing different event window models as well as Panel Data Industry Fixed- and Random Effects. The findings indicate that this thesis finds partial evidence of a relationship between ESG performance and M&A announcement returns, for the acquiring and target company. From the bidders' shareholders perspective, acquiring a weak ESG performing target is the most beneficial when considering just the target's ESGC measure, as the announcement returns are higher compared to acquiring a strong performing target. However, when only considering the acquirer's announcement returns and ESG performance, we find no direct relationship as the ESGC measures show no statistical significance. This is consistent with previous research, such as that of (Meckl, 2015), who even found evidence of a significantly negative relationship. But, when both the acquiring and target company exhibit strong ESG performance, the announcement returns for the bidder are positively affected. This finding is consistent with the research of (Deng, 2013), who also concluded that high CSR acquirers experience higher announcement returns and larger increases in post-M&A operating performance. This is compliant with the emergence of the stakeholder's perspective towards ESG and M&A, where we observe an increase in a company's willingness and voluntary efforts to actively comply with ESG best practices. Overall, this thesis shows that ESG performance does affect M&A announcement returns, meaning that companies participating in a merger or acquisition should carefully consider the opposing party's ESG practices.

6.2 Discussion and Limitations

The results of this thesis are subject to a certain degree of uncertainty, and must therefore be carefully interpreted. The ESG metric provided by ASSET4's Refinitiv proxies a company's ESG performance according to their methodology, but that might differ substantially from other rating providers. The ESGC rating used in this thesis therefore serves more as an indicator for a company's ESG performance, rather than a factuality. Previous research, such as (Deng, 2013) and (Aktas, 2011), have employed dissimilar ESG metrics when researching whether ESG performance affects M&A announcement returns. One paper uses the MSCI KLD ESG database, where the other consults Innovest's IVA score. The findings of both papers are to some degree opposed compared to this thesis, as (Aktas, 2011) concluded that acquiring a strong ESG performing target is more beneficial for the bidders' shareholders. This thesis however found partial evidence that a takeover of a weak ESG performing target positively affects the bidders' announcement returns. It is therefore provable to say that relying on a single ESG rating provider might affect the findings. Modelling ESG performance by utilizing several ESG rating providers is therefore an interesting approach for further research. Additionally, where this thesis assesses a firm's ESG performance by employing the overall ESG rating, further research could focus on the individual ESG pillars. This approach could refine an investors' investment strategy if the decision is mainly driven by either environmental, social, or governance performance, instead of a firm's overall ESG performance. The second limitation that cannot be neglected is the restricted data sample. The acquirer- and target sub-sample separately are relatively large, but when they are merged, we observe a great reduction in the number of observations. The requirement that both companies needed to be publicly traded, as well as having a recent ESGC rating available, greatly constrained the combined sub-sample. According to the event study methodology, however, the sample is large enough for a robust statistical analysis, but an increase in observations enlarges the reliability of your results. However, to ensure that effect of ESG performance on M&A announcement returns is scrupulously investigated, various regression specifications on multiple samples have been implemented. The results show that the coefficients and statistical significance of the ESGC measures are robust to the different approaches used, indicating that the observed correlation between ESG performance and M&A announcement returns is existent. But, important to consider is that ASSET4's Refinitiv is comprised of a vast universe of more than 9000 companies, where only the largest and publicly traded companies are provided with ESG ratings. The results of this thesis are therefore not conclusive for all companies globally, and this should be considered when interpreting the findings.

7. Bibliography

Aktas, E. d.-G. (2011). Do financial markets care about SRI? Evidence from mergers and acquisitions. *Journal of Banking and Finance*, 1753-1761.

Alexandridis, K. P. (2013). Deal size, acquisitions premia and shareholder gains. *Journal of Corporate Finance*, 1-13.

Andriuš, K. (2015). Opportunities and challenges of value creation through merger and acquisitions in cyclical economies. *Procedia - Social and Behavioral Sciences*, 764-769.

B. Moeller, F. P. (2004). Firm size and the gains from acquisitions. *Journal of Financial Economics*, 201-228.

Barros, P. V. (2022). M&A activity as a driver for better ESG performance. *Technological Forecasting and Social Change*.

Beltratti, G. P. (2013). Is M&A different during a crisis? Evidence from the European banking sector. *Journal of Banking & Finance*, 5394-5405.

Blasco, A. K. (2017). *The road ahead.* KPMG.

Bruner, R. F. (2004). Does M&A Pay? A Survey of Evidence for the Decision-maker.

Campa, I. H. (2004). Shareholder Value Creation in European M&As. *European Financial Management*, 47-81.

Daugaard, A. D. (2022). Global Drivers for ESG Performance: The Body of Knowledge. *Sustainability*.

de Goeij, F. d. (2011). Event Studies Methodology.

Deng, J.-K. K. (2013). Corporate Social Responsibility and Stakeholder Value Maximization: Evidence from Mergers. *Journal of Financial Economics*, 87-109.

Doukas, N. G. (1988). The Effect of Corporate Multinationalism on Shareholders' Wealth: Evidence from International Mergers. *The Journal of Finance*, 1161-1175.

Draper, K. P. (2006). Acquisitions: Private versus Public. *European Financial Management*, 57-80.

Eisenbarth, R. M. (2014). Optimizing the Timing of M&A Decisions— An Analysis of Pro- and Anticyclical M&A Behavior in Germany. *American Journal of Industrial and Business Management*, 545-566.

F. Fama, L. F. (1969). The Adjustment of Stock Prices to New Information. *International Economic Review*, 1-21.

F. Mitali, R. G. (2020). The Sustainability Footprint of Institutional Investors: ESG Driven Price Pressure and Performance.

Fama, F. (1992). The Cross-Section of Expected Stock Returns. *The Journal of Finance*, 427-465.

Fedenia, S. D. (1996). Effects of competition on bidder returns. *Journal of Coporate Finance*, 261-282.

Fuller, J. N. (2002). What Do Returns to Acquiring Firms Tell Us? Evidence from Firms That Make Many Acquisitions. *The Journal of Finance*, 1763-1793.

G. Baradwaj, D. R. (1990). Hostile bank takeover offers: Analysis and implications. *Journal of Banking & Finance*, 1229-1242.

Goergen, R. (2004). Shareholder Wealth Effects of European Domestic and Cross-border Takeover Bids. *European Financial Management*, 9-45.

Gomes, M. (2019). Does CSR influence M&A target choices? *Finance Research Letters*, 153-159.

H. Jennings, M. A. (2015). Competing Bids, Target Management Resistance, and the Structure of Takeover Bids. *The Review of Financial Studies*, 883-909.

I. Sevilay Yilmaz, B. T. (2016). Global Merger and Acquisition (M&A) activity: 1992-2011. *Finance Research Letters*, 110-117.

Jensen. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review*, 323-329.

Kadambe, K. S. (2010). On the Role of Fines as an Environmental Enforcement Tool. *Journal of Environmental Planning and Management*, 217-226.

Kalemli-Ozcan, B. S. (2021). Leverage across firms, banks, and countries. *Journal of International Economics*, 284-298.

L. Renneboog, C. V. (2019). Failure and success in mergers and acquisitions. *Journal of Corporate Finance*, 650-699.

Liu, Y. (2019). Shareholder wealth effects of M&A withdrawals. *Review of Quantitative Finance and Accounting*, 681-716.

M. Cornett, B. T. (2011). The effect of merger anticipation on bidder and target firm announcement period returns. *Journal of Corporate Finance*, 595-611.

MacKinlay. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature* , 13-39.

Massa, M. X. (2013). The Value of (Stock) Liquidity in the M&A Market. *The Journal of Financial and Quantitative Analysis*, 1463-1497.

Mateev, M. (2017). Is the M&A announcement effect different across Europe? More evidences from continental Europe and the UK. *Research in International Business and Finance*, 190-216.

Meckl, K. T. (2015). Corporate Social Responsibility as a success factor for M&A transactions. *European Journal of Business and Social Sciences*, 213-226.

Moeller, F. P. (2004). Firm size and the gains from acquisitions. *Journal of Financial Economics* , 201-228.

Morck, A. S. (1990). Do Managerial Objectives Drive Bad Acquisitions? *Journal of Finance*, 31-48.

Ozdemir, F. B. (2021). The effect of target's CSR performance on M&A deal premiums: a case for service firms. *Review of Managerial Science*.

Peiro-Signes, M.-d.-V. S.-O. (2013). Trends in ESG Practices: Differences and Similarities Across Major Developed Markets. *Sustainability Appraisal: Quantitative Methods and Mathematical Techniques for Environmental Performance Evaluation*, 125-140.

R. Graham, C. R. (2015). Corporate Culture: Evidence from the Field.

Remanda, L.-C. (2016). A REVIEW OF ORGANIZATIONAL CULTURE IN THE MERGERS & ACQUISITIONS PROCESS . *Journal of Media Critiques*, 99-110.

Renneboog, C. V. (2019). Failure and success in mergers and acquisitions. *Journal of Corporate Finance*, 650-699.

Renneboog, C. V. (2020). Mergers and acquisitions: Long-run performance and success factors. *Oxford Research Encyclopedia (ORE) of Economics and Finance*.

Renneboog, M. G. (2002). Shareholder Wealth Effects of Large European Takeover Bids.

Servaes. (1991). Tobin's Q and the Gains from Takeovers. *The Journal of Finance*, 409-419.

Song, M. T. (2017). Assessing abnormal returns: the case of Chinese M&A acquiring firms. *Research in International Business and Finance*, 191-2017.

Swiatkowski, F. F. (2021). Short-term Wealth Effects of Corporate Social Responsibility? - Empirical Evidence from ESG Ratings of Firms Involved in M&A Transactions.

Tampakoudis, A. N. (2021). The effect of ESG on value creation from mergers and acquisitions. What changed during the COVID-19 pandemic? *Corporate Governance*.

Tampakoudis, E. A. (2020). The effect of mergers and acquisitions on environmental, social and governance performance and market value: Evidence from EU acquirers. *Business Strategy and the Environment*, 1865-1875.

US SIF Foundation. (2020). *Report on US Sustainable and Impact Investing Trends 2020.* US SIF Foundation.

W. Masulis, C. W. (2007). Corporate Governance and Acquirer Returns. *Journal of Finance*, 1851-1889.

8. Appendices

Appendix I – Overview of Variables

Table 13 – Overview of Variables. *Column 1 gives the name of the variables as used in the regression analysis, divided into the categories Company Specifics (1), Deal Specifics (2) and Returns (3). Column 2 provides the definition and if relevant, the calculation for the variables. Column 3 specificizes the data sources used.*

Variable Name	*Definition*	*Data Source*
Firm-specific		
ESGC RATING	Consult section 4.1 *Measures for ESG Performance*	ASSET4 ESG via Datastream
TOBQ	(Maket Value + Market Value Total Liabilities) / (Book Value Equity + Book Value Total Liabilities)	Worldscope via Datastream
SIZE	Natural logarithm of total assets	Worldscope via Datastream
FCF	Net Cash Flow Operating Activities / Total Assets	Worldscope via Datastream
LEV	Total Debt / Total Assets	Worldscope via Datastream
ROE	Net Income / Common Shareholders Equity	Worldscope via Datastream
LIQ	Current Assets / Current Liabilities	Worldscope via Datastream
Deal-Specific		
Industry Relatedness (IR)	Dummy that takes the value of 1 if acquirer and target operate in the same industry, and 0 otherwise	SDC Platinum
Competing offer (CO)	Dummy that takes the value of 1 if a competing offer was made, and 0 otherwise	SDC Platinum
Initial Reception (IR1)	Dummy that takes the value of 1 if transaction was hostile, and 0 otherwise	SDC Platinum
Cross-border or domestic (CBD)	Dummy that takes the value of 1 if transaction was cross-border, and 0 otherwise	SDC Platinum
Deal Size	Deal Value / Acquirer Market Value	SDC Platinum & Worldscope via Datastream
Returns		
Market Return	MSCI World Index Daily Returns	Worldscope via Datastream
Company-specific Return	Daily closing prices of all companies that are part of the sample(s)	Worldscope via Datastream

Appendix II – Sample distribution

Panel A: Acquirer sub-sample distribution by country and year

Country	Freq.	Percentage (%)
Australia	69	5.42%
Austria	2	0.16%
Bahrain	1	0.08%
Belgium	7	0.55%
Bermuda	7	0.55%
Brazil	11	0.86%
Canada	156	12.26%
Chile	1	0.08%
China	6	0.47%
Denmark	10	0.79%
Finland	9	0.71%
France	49	3.85%
Germany	15	1.18%
Hong Kong	5	0.39%
India	7	0.55%
Ireland-Rep	9	0.71%
Israel	9	0.71%
Italy	6	0.47%
Japan	64	5.03%
Luxembourg	3	0.24%
Malta	1	0.08%
Mexico	6	0.47%
Netherlands	23	1.81%
Norway	7	0.55%
Poland	2	0.16%
Russian Fed	10	0.79%
Singapore	2	0.16%
South Africa	6	0.47%
South Korea	8	0.63%
Spain	5	0.39%
Sweden	26	2.04%
Switzerland	26	2.04%
Taiwan	7	0.55%
United Kingdom	64	5.03%
United States	632	49.69%
Utd Arab Em	1	0.08%
Total	1272	100%

Year	Freq.	Percentage (%)
2002	24	1,89%
2003	28	2,20%
2004	34	2,67%
2005	70	5,50%
2006	66	5,19%
2007	84	6,60%
2008	62	4,87%
2009	52	4,09%
2010	75	5,90%
2011	55	4,32%
2012	64	5,03%
2013	42	3,30%
2014	71	5,58%
2015	89	7,00%
2016	91	7,15%
2017	85	6,68%
2018	106	8,33%
2019	89	7,00%
2020	66	5,19%
2021	19	1,49%
Total	1272	100%

Panel B: Target sub-sample distribution by country and year

Country	Freq.	Percentage (%)	Year	Freq.	Percentage (%)
Argentina	2	1,41%	2002	2	1,41%
Australia	7	4,93%	2003	3	2,11%
Austria	1	0,70%	2004	2	1,41%
Belgium	1	0,70%	2005	6	4,23%
Brazil	5	3,52%	2006	5	3,52%
Canada	4	2,82%	2007	3	2,11%
China	5	3,52%	2008	5	3,52%
Colombia	1	0,70%	2009	2	1,41%
Egypt	1	0,70%	2010	2	1,41%
Finland	1	0,70%	2011	2	1,41%
France	5	3,52%	2012	5	3,52%
Germany	17	11,97%	2013	11	7,75%
Hong Kong	9	6,34%	2014	10	7,04%
India	5	3,52%	2015	8	5,63%
Italy	2	1,41%	2016	11	7,75%
Japan	13	9,15%	2017	14	9,86%
Kuwait	1	0,70%	2018	11	7,75%
Mexico	3	2,11%	2019	18	12,68%
Morocco	1	0,70%	2020	15	10,56%
Netherlands	1	0,70%	2021	7	4,93%
New Zealand	1	0,70%	Total	142	100%
Norway	3	2,11%			
Peru	1	0,70%			
Portugal	1	0,70%			
Russian Fed	1	0,70%			
Saudi Arabia	1	0,70%			
South Africa	3	2,11%			
South Korea	5	3,52%			
Spain	2	1,41%			
Sweden	1	0,70%			
Switzerland	2	1,41%			
Thailand	3	2,11%			
United Kingdom	7	4,93%			
United States	26	18,31%			
Total	142	100%			

Panel C: Combined sub-sample distribution by country and year

Country	Freq.	Percentage (%)	Year	Freq.	Percentage (%)
Argentina	2	4,08%	2004	2	4,08%
Australia	1	2,04%	2006	1	2,04%
Belgium	1	2,04%	2007	1	2,04%
Brazil	1	2,04%	2008	3	6,12%
Canada	2	4,08%	2009	1	2,04%
Chile	5	10,20%	2010	1	2,04%
Germany	4	8,16%	2011	2	4,08%
India	3	6,12%	2012	1	2,04%
Italy	1	2,04%	2013	7	14,29%
Japan	6	12,24%	2014	2	4,08%
Kuwait	1	2,04%	2015	4	8,16%
Morocco	1	2,04%	2016	2	4,08%
New Zealand	1	2,04%	2017	6	12,24%
Norway	1	2,04%	2018	3	6,12%
Poland	2	4,08%	2019	7	14,29%
South Africa	2	4,08%	2020	4	8,16%
Spain	2	4,08%	2021	2	4,08%
Thailand	2	4,08%	Total	49	100%
United Kingdom	3	6,12%			
United States	8	16,33%			
Total	49	100%			

Appendix III – Correlation Matrices

Panel A: Acquirer sub-sample

	ESGC Rating	TOBQ	SIZE	FCF	LEV	LIQ	ROE	Deal Size	IR	CO	IR1	CBD	CAR1	CAR2	CAR3	CAR4
ESGC Rating	1															
TOBQ	0.01	1														
SIZE	0.39***	2.09E+05***	1													
FCF	0.13***	2.68E+05***	0.27**	1												
LEV	0.05*	-1.34E+04	0.04	-0.12***	1											
LIQ	-0.10***	5.69E+04**	-0.12***	-0.05*	-0.13***	1										
ROE	0.06**	6.89E+04**	0.09***	0.12***	-0.11***	0.03	1									
Deal.Size	-0.16***	-8.07E+04***	-0.28***	-0.11***	0.16***	0.00	-0.32***	1								
IR	-0.08***	3.10E+04***	-0.12***	0.06**	-0.04	0.08***	0.01	0.09***	1							
CO	-0.02	1.47E+04	0.02	0.01	0.01	-0.02	0.01	0.04	-0.03	1						
IR1	0.03	-3.17E+04	0.03	-0.01	0.02	0.01	0.01	0.03	0.02	0.05*	1					
CBD	-0.20***	6.56E+04**	-0.08***	-0.01	0.03	0.05*	-0.02	0.08***	0.02	-0.05	-0.06**	1				
CAR1	-0.04	7.15E+01	-0.06**	-0.02	0.06**	0.03	-0.01	0.08***	-0.05	0.02	0.01	-0.03	1			
CAR2	-0.05	-2.94E+04	-0.07**	-0.05*	0.07**	0.00	-0.06**	0.10***	-0.06**	0.01	0.00	-0.06**	6.77E+05***	1		
CAR3	-0.02	1.04E+04	-0.04	-0.04	0.05*	-0.01	0.00	0.02	-0.07**	0.06**	-0.01	-0.05*	5.69E+05***	0.66***	1	
CAR4	0.01	4.10E+02	-0.02	-0.03	0.07**	-0.01	-0.01	0.03	-0.02	0.04	-0.01	-0.04	5.13E+05***	0.61***	0.64***	1

Panel B: Target sub-sample

	ESGC Rating	TOBQ	SIZE	FCF	LEV	LIQ	ROE	IR	CO	IR1	CBD	CAR1	CAR2	CAR3	CAR4
ESGC Rating	1														
TOBQ	-0.12	1													
SIZE	-0.06	0.04	1												
FCF	0.01	0.35***	0.01	1											
LEV	-0.01	0.07	0.06	-0.06	1										
LIQ	-0.04	-0.07	0.06	0.14*	-0.20**	1									
ROE	0.07	0.07	-0.01	0.09	-0.16*	0.02	1								
IR	-0.12	-0.05	0.02	0.06	-0.18**	0.13	0.13	1							
CO	-0.01	0.16*	-0.09	0.03	0.06	-0.05	0.03	-0.05	1						
IR1	0.12	0.01	0.01	0.00	-0.02**	0.03	0.02	-0.06	-0.02	1					
CBD	-0.08	-0.07	0.02	-0.22***	0.17**	0.06	-0.12	0.08	0.04	0.06	1				
CAR1	-0.20**	0.20	-0.02	-0.01	-0.14*	0.13	0.07	-0.07	-0.05	-0.01	-0.12	1			
CAR2	-0.23***	0.21**	0.01	0.03	-0.15*	0.13	0.07	-0.07	-0.03	0	-0.15*	0.93***	1		
CAR3	-0.21***	0.19**	-0.05	0.06	-0.13	0.10	0.03	-0.08	-0.04	-0.01	-0.13	0.88***	0.96***	1	
CAR4	-0.20	0.18	-0.06	0	-0.12	0.11	-0.15	-0.04*	-0.04	-0.01	-0.11	0.83***	0.86***	0.92***	1

Panel C: Combined sub- sample

	Target ESGC Rating	"TOBQ	"SIZE.	"FCF	"LEV	"LIQ	"ROE	Acquirer ESGC Rating	"TOBQ	"SIZE	"FCF	"LEV	"LIQ	"ROE	Deal Size	IR	CBD	CAR1	CAR2	CAR3	CAR4
Target ESGC Rating	1																				
Target TOBQ	-0.14	1																			
Target SIZE	0.33**	0.13**	1																		
Target FCF	-0.04	0.17	0.17	1																	
Target LEV	0.01	0.07	0.15	-0.02	1																
Target LIQ	0.12	0.17	0.00	0.03	-0.19	1															
Target ROE	-0.02	0.07	0.06	0.01	0.10	-0.11	1														
Acquirer ESGC Rating	0.68***	-0.03	0.23	-0.04	-0.05	0.16	0.03	1													
Acquirer TOBQ	0.18	0.68***	0.48***	0.04	-0.01	0.03	0.12	0.23	1												
Acquirer SIZE	0.45**	-0.05	0.61***	0.17	-0.02	-0.16	0.05	0.40**	0.39**	1											
Acquirer FCF	0.10	0.22	0.17	0.74***	-0.17	0.34**	0.06	0.11	0.13	0.21	1										
Acquirer LEV	-0.05	0.07	0.06	-0.29**	0.20	-0.20	0.11	0.00	0.16	0.13	-0.35	1									
Acquirer LIQ	0.16	0.02	-0.06	0.17	-0.12	0.90***	-0.08	0.21	-0.08	-0.22	0.38	-0.37**	1								
Acquirer ROE	-0.16	0.15	0.01	0.02	0.20	-0.08	0.81***	-0.10	0.21	-0.08	0.06	0.25**	-0.08**	1							
Deal Size	-0.19	-0.07	-0.12	-0.14	-0.01	0.08	-0.10	-0.27*	-0.14	-0.47	-0.20**	-0.22	0.09**	-0.08	1						
IR	0.27*	0.03	0.16	-0.11	0.05	0.09	-0.01	-0.05	0.15	-0.15	-0.14	0.07	0.11	0.07	0.20	1					
CBD	-0.10	-0.03	0.04	-0.17	0.17	0.13	0.16	-0.25*	-0.23	-0.44	-0.18**	-0.17	0.19	0.06	0.28	0.12**	1				
CAR1	0.10	0.05	0.00	0.02	0.12	0.06	-0.08	0.15	0.09	-0.06	-0.02	-0.38	0.16**	-0.07	0.04	-0.06	-0.06	1			
CAR2	-0.02	0.01	-0.01	-0.01	0.13	0.01	-0.06	0.04	0.08	-0.04	-0.03	-0.31	0.10**	0.01	0.03	-0.04	-0.11	0.93***	1		
CAR3	0.11	0.02	0.15	0.06	0.01	-0.04	-0.09	0.05	-0.03	0.04	-0.04	-0.24	0.03	-0.11	0.09	0.16	0.00	0.66***	0.91***	1	
CAR4	0.29**	0.13	0.10	0.03	-0.04	-0.01	-0.09	0.22	-0.01	0.04	0.00	-0.31	0.06**	-0.13	0.11	0.06	-0.04	0.60***	0.63***	0.84***	1

Appendix IV – Descriptive Statistics

Table 14 – Descriptive Statistics for all Variables: acquirer sample. *Descriptive statistics for all control variables in the acquirer sub-sample. Column 2 shows the mean of the variable, Column 3, the standard deviation, Column 4, the median and Column 5, the range (Min – Max). In all headers the number of observations is displayed, denoted by N = X.*

Variables	Mean (N = 1272)	SD (N = 1272)	Median (N = 1272)	Min - Max (N = 1272)
ESGC Rating	43.170	19.459	42.315	0.770 - 90.640
TOBQ	1.793	1.339	1.565	0.001 - 14.635
SIZE	9.915	0.800	9.907	0 – 11.720
FCF	9.9%	8.1%	9.7%	-5.17% - 4.90%
LEV	23.8%	16.8%	22.1%	0% - 113.9%
LIQ	2.108	3.042	1.618	0.171 - 85.707
ROE	8.4%	2.011%	11.6%	-60.077% - 30.835%
Deal Size	0.3071	0.5344	0.1115	0 – 7.0192
IR	0.434	0.496	0	0 - 1
CO	0.057	0.231	0	0 - 1
IR1	0.009	0.093	0	0 - 1
CBD	0.671	0.470	1	0 - 1
CAR(-1,1)	-0.181%	6.619%	-0.134%	-38.679% - 34.995%
CAR(-5,1)	-0.219%	6.619%	-0.092%	-37.818% - 46.902%
CAR(-5,5)	-0.263%	8.339%	0.173%	-40.849% - 47.792%
CAR(-5,10)	-0.269%	9.966%	0.173%	-75.259% - 57.103%

Table 15 – Descriptive Statistics for all Variables: target sample. *Descriptive statistics for all control variables in the target sub-sample. Column 2 shows the mean of the variable, Column 3, the standard deviation, Column 4, the median and Column 5, the range (Min – Max). In all headers the number of observations is displayed, denoted by N = X.*

Variables	Mean (N = 142)	SD (N = 142)	Median (N = 142)	Min - Max (N = 142)
ESGC Rating	40.705	20.010	39.405	5.600 - 85.880
TOBQ	1.178	1.163	1.015	-0.867 - 5.918
SIZE	6.579	0.678	6.559	4.151 - 8.232
FCF	8.8%	14.5%	7.4%	-33.4% - 66.6%
LEV	33.3%	34.2%	26.3%	0% - 260%
LIQ	2.308	5.207	1.177	0.034 - 41.809
ROE	-0.683%	4.36%	8.1%	-37.586% - 5.61%
IR	0.310	0.464	0.000	0.000 - 1.000
CO	0.035	0.185	0.000	0.000 - 1.000
IR1	0.007	0.084	0.000	0.000 - 1.000
CBD	0.697	0.461	1.000	0.000 - 1.000
CAR1	6.545%	19.273%	2.705%	-33.274% - 151.359%
CAR2	7.208%	20.165%	3.884%	-43.060% - 150.483%
CAR3	7.124%	21.245%	5.333%	-52.830% - 145.962%
CAR4	8.595%	24.521%	6.429%	-75.593% - 140.28%

Appendix V – F tests Joint Significance of Fixed Effects

Table 16 – F tests Joint Significance Fixed Effects: acquirer sub-sample

F Test Year FE	F Statistic	Prob > F
F (19, 243)	2.3	0.0020

F Test Country FE	F Statistic	Prob > F
F (35, 243)	6.17	0.0000

Table 17 – F tests Joint Significance Fixed Effects: target sub-sample

F Test Year FE	F Statistic	Prob > F
F (19, 86)	1.87	0.0271

F Test Country FE	F Statistic	Prob > F
F (33, 86)	23.12	0.0000

Table 18 – F tests Joint Significance Fixed Effects: combined sub-sample

F Test Year FE	F Statistic	Prob > F
F (14, 27)	481.42	0.00000

F Test Country FE	F Statistic	Prob > F
F (14, 27)	385.36	0.00000

Appendix VI – Robustness checks with different CARs event windows

Robustness Checks for acquirer sub-sample

Table 19 – Robustness check for CAR(-5,1) Pooled OLS with Fixed Effects: acquirer sub-sample. *For all regressions (17) – (19) the dependent variable is the cumulative abnormal return for the event window model, i.e., CAR(-5,1). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (17) uses the combined ESGC rating, regression (18) the dummy variable ESGC rating high and regression (19) the dummy variable ESGC rating low. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (17)	OLS (18)	OLS (19)
ESGC rating	-0.0012		
	(0.014)		
High ESGC rating		0.4402	
		(0.5184)	
Low ESGC rating			0.5192
			(0.6446)
TOBQ	0.4841***	0.4903***	0.4656***
	(0.175)	(0.1774)	(0.1737)
SIZE	-0.7051**	-0.7864**	-0.6172
	(0.3086)	(0.3146)	(0.3089)
FCF	-6.19	-6.2966	-5.9899
	(4.1701)	(4.1715)	(4.1489)
LEV	3.8757**	3.8783**	3.8282**
	(1.5085)	(1.5018)	(1.5222)
LIQ	0.0887	0.0884	0.0852
	(0.1066)	(0.1062)	(0.106)
ROE	0.044	0.04641	0.0459
	(0.1109)	(0.1097)	(0.1114)
DEALSIZE	0.764	0.7747	0.7584
	(0.4873)	(0.4794)	(0.4862)
IR	-0.894**	-0.8812**	-0.9193**
	(0.4438)	(0.4406)	(0.443)
CO	0.654	0.677	0.6415
	(0.686)	(0.6907)	(0.6887)
IR1	0.0535	0.1261	0.0334
	(1.414)	(1.4129)	(1.4141)
CBD	-0.0577	-0.0251	-0.06177
	(0.5861)	(0.5797)	(0.5807)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Observations	1272	1272	1272
R^2	0.098	0.0985	0.0986

Table 20 – Robustness Check for CAR(-5,5) Pooled OLS with Fixed Effects: acquirer sub-sample. *For all regressions (20) – (22) the dependent variable is the cumulative abnormal return for the event window model, i.e., CAR(-5,5). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (20) uses the combined ESGC rating, regression (21) the dummy variable ESGC rating high and regression (22) the dummy variable ESGC rating low. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (20)	OLS (21)	OLS (22)
ESGC rating	0.0136		
	(0.0174)		
High ESGC rating		1.3312**	
		(0.6088)	
Low ESGC rating			0.3001
			(0.6568)
TOBQ	0.5796**	0.5775**	0.5514**
	(0.2341)	(0.2347)	(0.2325)
SIZE	-1.0129***	-1.082***	-0.8146**
	(0.3594)	(0.3812)	(0.3838)
FCF	-3.6719	-3.7019	-3.3117
	(5.5216)	(5.4338)	(5.4903)
LEV	3.3356*	3.3269*	3.2945*
	(1.7344)	(1.7263)	(1.7317)
LIQ	-0.0454	-0.0492	-0.0497
	(0.047)	(0.044)	(0.0462)
ROE	-0.0617	-0.0563	-0.0621
	(0.1038)	(0.1023)	(0.1033)
DEALSIZE	0.0682	0.065	0.0353
	(0.5258)	(0.5222)	(0.5204)
IR	-1.029**	-1.0114**	-1.0614**
	(0.4779)	(0.4819)	(0.4779)
CO	1.2983	1.3529	1.2784
	(0.8808)	(0.8771)	(0.888)
IR1	0.8225	0.9922	0.7691
	(1.9129)	(1.9255)	(1.9103)
CBD	-0.0597	0.0009	-0.0937
	(0.7055)	(0.698)	(0.6894)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Observations	1272	1272	1272
R^2	0.0754	0.0785	0.0749

Table 21 – Robustness Check for CAR(-5,10) Pooled OLS with Fixed Effects: acquirer sub-sample. *For all regressions (23) – (25) the dependent variable is the cumulative abnormal return for the event window model, i.e., CAR(-5,10). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (23) uses the combined ESGC rating, regression (24) the dummy variable ESGC rating high and regression (25) the dummy variable ESGC rating low. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (23)	OLS (24)	OLS (25)
ESGC rating	-0.0066		
	(0.0174)		
High ESGC rating		0.2989	
		(0.6259)	
Low ESGC rating			0.6206
			(0.7679)
TOBQ	0.5183***	0.5296***	0.5026***
	(0.2356)	(0.235)	(0.2346)
SIZE	-0.7201**	-0.835**	-0.6685*
	(0.4306)	(0.4336)	(0.4262)
FCF	-2.8178	-2.9895	-2.6677
	(4.6147)	(4.6115)	(4.5002)
LEV	4.3574**	-0.0464***	4.3056***
	(2.1366)	(2.1321)	(2.1454)
LIQ	-0.0472	-0.0464*	-0.0504*
	(0.0902)	(0.0893)	(0.0889)
ROE	-0.036	-0.0338	-0.0332
	(0.1284)	(0.1278)	(0.1278)
DEALSIZE	-0.4111	-0.3918	-0.407
	(0.5254)	(0.6602)	(0.6648)
IR	1.7493	-0.5326	-0.5724
	(1.1545)	(0.5221)	(0.5292)
CO	1.7493	1.7701	1.739
	(1.1545)	(1.1467)	(1.1559)
IR1	1.0576	1.1239	1.0489
	(2.441)	(2.4233)	(2.4276)
CBD	0.5043	0.5393	0.5109
	(0.8173)	(0.8129)	(0.8187)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Observations	1272	1272	1272
R^2	0.0854	0.0854	0.0858

Robustness Checks for target sub-sample

Table 22 – Robustness Check for CAR(-5,1) Pooled OLS with Fixed Effects: target sub-sample. *For all regressions (26) – (28) the dependent variable is the cumulative abnormal return for the event window model, i.e., CAR(-5,1). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (26) uses the combined ESGC rating, regression (27) the dummy variable ESGC rating high and regression (28) the dummy variable ESGC rating low. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (26)	OLS (27)	OLS (28)
ESGC rating	-0.3266***		
	(0.1122)		
High ESCG rating		-9.9766**	
		(4.6376)	
Low ESGC rating			11.622*
			(6.4983)
TOBQ	4.7028	4.7887	4.7237
	(4.9676)	(5.2434)	(4.9431)
SIZE	(0.0256	0.1399	-0.2765
	(0.781)	(0.8412)	(0.8594)
FCF	-18.4606	-20.0349	-17.9311
	(22.7278)	(22.5538)	(23.7949)
LEV	-15.6097***	-14.3395***	-13.3686***
	(4.8367)	(5.2677)	(4.8438)
LIQ	0.1386	0.0987	0.1938
	(0.5184)	(0.5585)	(0.4762)
ROE	0.1358	0.1409	0.0378
	(0.4149)	(0.3793)	(0.3153)
IR	-7.4659	-7.8653	-7.7412
	(6.023)	(6.2998)	(6.049)
CO	2.1427	0.04692	-2.2604
	(8.4533)	(8.9005)	(9.242)
IR1	-0.5309	-1.0842	-7.7474
	(10.6626)	(10.0382)	(12.23)
CBD	-4.2569	-4.3487	-4.6833
	(6.3381)	(6.2745)	(6.4488)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Observations	142	142	142
R^2	0.5591	0.5366	0.5397

Table 23 – Robustness Check for CAR(-5,5) Pooled OLS with Fixed Effects: target sub-sample. *For all regressions (29) – (31) the dependent variable is the cumulative abnormal return for the event window model, i.e., CAR(-5,5). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (29) uses the combined ESGC rating, regression (30) the dummy variable ESGC rating high and regression (31) the dummy variable ESGC rating low. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (29)	OLS (30)	OLS (31)
ESGC rating	-0.3556***		
	(0.1123)		
High ESCG rating		-12.1861**	
		(4.6301)	
Low ESGC rating			8.5273
			(6.9238)
TOBQ	4.8179	4.9825	4.6733
	(4.6425)	(4.9451)	(4.8334)
SIZE	-1.0076	-0.8734	-1.215
	(0.6609)	(0.7049)	(0.7648)
FCF	-6.4732	-8.0067	-7.1265
	(24.4354)	(24.333)	(25.3546)
LEV	-14.2452***	-12.949**	-11.9178**
	(5.364)	(5.7635)	(5.6863)
LIQ	0.0968	0.0443	0.1446
	(0.4963)	(0.5392)	(0.4695)
ROE	-0.06	-0.0437	-0.1584
	(0.4706)	(0.4313)	(0.3511)
IR	-11.1573*	-11.4937*	-11.7646**
	(5.639)	(5.8564)	(5.6719)
CO	-0.2348	-1.9188	-5.8087
	(9.6486)	(9.6747)	(10.5123)
IR1	1.2298	1.4097	-6.3547
	(14.8104)	(13.9559)	(16.457)
CBD	-4.4273	-4.4475	-4.9859
	(6.6263)	(6.524)	(6.7149)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Observations	142	142	142
R^2	0.5389	0.5205	0.5012

Table 24 – Robustness Check for CAR(-5,10) Pooled OLS with Fixed Effects: target sub-sample. *For all regressions (32) – (34) the dependent variable is the cumulative abnormal return for the event window model, i.e., CAR(-5,10). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (32) uses the combined ESGC rating, regression (33) the dummy variable ESGC rating high and regression (34) the dummy variable ESGC rating low. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (32)	OLS (33)	OLS (34)
ESGC rating	-0.3339***		
	(0.1134)		
High ESCG rating		-9.3274*	
		(4.7032)	
Low ESGC rating			9.7636
			(7.9794)
TOBQ	4.3111	4.3519	4.2465
	(4.1648)	(4.4709)	(4.2437)
SIZE	-1.9444**	-1.8341**	-2.1909***
	(0.7975)	(0.8448)	(0.8166)
FCF	-14.22	-15.9486	-14.3102
	(27.7584)	(27.6422)	(28.6176)
LEV	-12.6291**	-11.2732**	-10.3955*
	(5.3508)	(5.6629)	(5.2837)
LIQ	0.2885	0.2522	0.3386
	(0.5173)	(0.5431)	(0.4971)
ROE	0.037	0.0353	-0.0589
	(0.4055)	(0.37)	(0.3276)
IR	-14.6389**	-15.1122**	-15.0783**
	(6.2625)	(6.3674)	(6.1414)
CO	-2.176	-4.7134	-7.079
	(9.5058)	(9.2325)	(9.8298)
IR1	-2.4647	-3.5464	-9.7032
	(16.5246)	(15.8515)	(17.6045)
CBD	-3.9413	-4.0877	-4.4257
	(7.3079)	(7.1487)	(7.4633)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Observations	142	142	142
R^2	0.5456	0.5225	0.5211

Robustness Checks for combined sub-sample

Table 25 – Robustness Check for CAR(-5,1) Pooled OLS with Fixed Effects: combined sub-sample. *For all regressions (35) – (37) the dependent variable is the cumulative abnormal return for the acquiring company for the event window model, i.e., CAR(-5,1). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (35) uses the target's combined ESGC rating, regression (36) the dummy variable ESGC rating high and regression (37) the dummy variable ESGC rating low. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (35)	OLS (36)	OLS (37)
Target ESGC rating	-0.3107		
	(0.2057)		
Target High ESGC rating		-1.9564	
		(4.742)	
Target Low ESGC rating			20.3895***
			(4.0056)
Target TOBQ	5.0519	1.0793	0.9093
	(4.4729)	(6.9944)	(5.8801)
Target SIZE	9.6113	11.0202	7.6338
	(12.3566)	(8.0612)	(4.7758)
Target LEV	2.4997	8.3401	26.8779***
	(17.6306)	(13.4615)	(5.1573)
Acquirer TOBQ	-8.5569**	-4.7701	-4.7734
	(4.1173)	(5.4094)	(4.6128)
Acquirer SIZE	-8.2754	-9.9268**	-7.194***
	(11.4248)	(4.477)	(2.4887)
Acquirer LEV	40.0459	13.1224	5.3704
	(36.2049)	(13.2947)	(8.2421)
DEALSIZE	-0.0121	0.2457	0.0218
	(0.2072)	(0.8664)	(0.1182)
IR	-19.5732	-28.3427***	-7.8823
	(16.14)	(7.2427)	(8.0374)
CBD	-10.3567	-13.0644	-9.3228
	(6.3138)	(10.0783)	(5.5248)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	46	46	46
R^2	0.9676	0.9575	0.9782

Table 26 – Robustness Check for CAR(-5,5) Pooled OLS with Fixed Effects: combined sub-sample. . *For all regressions (38) – (40) the dependent variable is the cumulative abnormal return for the acquiring company for the event window model, i.e., CAR(-5,5). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (38) uses the target's combined ESGC rating, regression (39) the dummy variable ESGC rating high and regression (40) the dummy variable ESGC rating low. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (38)	OLS (39)	OLS (40)
Target ESGC rating	-0.1626		
	(0.1835)		
Target High ESGC rating		3.6386**	
		(1.3735)	
Target Low ESGC rating			0.91575**
			(3.78)
Target TOBQ	3.3221	-0.5575	1.091
	(4.4475)	(6.301)	(4.4281)
Target SIZE	11.9177	10.6937***	11.1118**
	(8.9626)	(2.6273)	(5.0636)
Target LEV	-5.9668	-3.0175	6.1582
	(7.9403)	(3.3399)	(5.5532)
Acquirer TOBQ	-6.4192***	-2.3685	3.0674
	(1.9534)	(5.6584)	(3.0674)
Acquirer SIZE	-8.4636	-6.9566*	-8.07***
	(7.2468)	(3.5756)	(2.0926)
Acquirer LEV	30.3051**	-2.3685	12.0315**
	(11.9222)	(14.3738)	(5.8367)
DEALSIZE	-0.049	0.1111	-0.0113
	(0.2732)	(0.425)	(0.0774)
IR	-16.5956	-17.884***	-11.959
	(13.9266)	(1.5981)	(8.5044)
CBD	-6.4033	-6.2934	-6.1671
	(3.9093)	(7.0905)	(3.9821)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	46	46	46
R^2	0.9774	0.9775	0.9792

Table 27 – Robustness Check for CAR(-5,10) Pooled OLS with Fixed Effects: combined sub-sample. *For all regressions (41) – (43) the dependent variable is the cumulative abnormal return for the acquiring company for the event window model, i.e., CAR(-5,10). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (41) uses the target's combined ESGC rating, regression (42) the dummy variable ESGC rating high and regression (43) the dummy variable ESGC rating low. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (41)	OLS (42)	OLS (43)
Target ESGC rating	0.1176		
	(0.3306)		
Target High ESGC rating		11.3105	
		(7.249)	
Target Low ESGC rating			12.3294
			(11.0974)
Target TOBQ	5.6571	0.341	8.2837*
	(7.7267)	(10.1125)	(4.6756)
Target SIZE	7.1839	5.0402	4.8961
	(17.5215)	(9.6361)	(18.8253)
Target LEV	7.6407	15.5157*	14.8053
	(18.2906)	(8.1523)	(32.3647)
Acquirer TOBQ	-6.6746*	-1.0049	-9.4012
	(3.858)	(6.9955)	(7.8326)
Acquirer SIZE	-8.387	-5.5575	-6.5108
	(14.754)	(3.9965)	(16.8351)
Acquirer LEV	-1.5615	-42.8162**	13.2997
	(31.0182)	(19.1583)	(61.4981)
DEALSIZE	-0.0727	0.0755	-0.3504
	(0.4558)	(0.2861)	(1.3415)
IR	-18.7763	-12.8673	-3.5568
	(25.9052)	(9.0568)	(32.5284)
CBD	-13.8198*	-14.8073*	-10.1665
	(7.8612)	(8.0548)	(9.405)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	46	46	46
R^2	0.9494	0.9582	0.9542

Table 28 – Robustness Check for CAR(-5,1) Pooled OLS with Fixed Effects: combined sub-sample second analysis. *For all regressions (44) – (46) the dependent variable is the cumulative abnormal return for the acquiring company for the base event window model, i.e., CAR(-5,1). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (44) uses the target's dummy variable ESGC rating high and the acquirer's dummy variable ESGC rating low, regression (45) the dummy variable target's ESGC rating high and acquirer's ESGC rating high and regression (46) the dummy variable compatible ESGC rating. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (44)	OLS (45)	OLS (46)
Target High ESGC rating	-10.349	3.3898	
	(11.5937)	(9.7654)	
Acquirer Low ESGC rating	7.6815		
	(13.9523)		
Acquirer High ESGC rating		-4.6943	
		(3.6057)	
Compatitble ESGC rating			7.7662
			(4.6632)
Target TOBQ	9.1932	-3.2556	-2.03
	(8.8621)	(11.626)	(3.0836)
Target SIZE	14.1263	12.9878	8.7838
	(14.2437)	(9.5909)	(12.6827)
Target LEV	-0.3897	2.6196	12.2571
	(20.1405)	(7.922)	(19.37)
Acquirer TOBQ	-14.0383	0.4058	-0.0511
	(11.9596)	(9.5465)	(6.5978)
Acquirer SIZE	-15.5471	-11.2767***	-5.2428
	(13.3283)	(4.0301)	(12.956)
Acquirer LEV	72.3132	6.4245	-15.7133
	(96.9319)	(21.8773)	(52.4994)
DEALSIZE	0.0753	0.0209	-0.0709
	(0.3923)	(0.111)	(0.3592)
IR	-24.1228***	-16.6141**	-19.9752
	(5.1132)	(6.4514)	(16.7047)
CBD	-10.1821	-3.325	-14.3754**
	(11.2873)	(11.5053)	(5.3501)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	46	46	46
R^2	0.9644	0.9691	0.9644

Table 29 – Robustness Check for CAR(-5,5) Pooled OLS with Fixed Effects: combined sub-sample second analysis. *For all regressions (47) – (49) the dependent variable is the cumulative abnormal return for the acquiring company for the base event window model, i.e., CAR(-5,5). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (47) uses the target's dummy variable ESGC rating high and the acquirer's dummy variable ESGC rating low, regression (48) the dummy variable target's ESGC rating high and acquirer's ESGC rating high and regression (49) the dummy variable compatible ESGC rating. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (47)	OLS (48)	OLS (49)
Target High ESGC rating	26.3566***	3.2285**	
	(1.2275)	(1.565)	
Acquirer Low ESGC rating	-23.6267***		
	(0.6711)		
Acquirer High ESGC rating		-0.7139	
		(1.2439)	
Compatitble ESGC rating			4.0196
			(4.1587)
Target TOBQ	-16.1269***	-0.5626	-0.3554
	(1.4025)	(6.2298)	(1.7664)
Target SIZE	-6.1972***	11.3203**	11.4959
	(1.4467)	(4.8408)	(9.3294)
Target LEV	-7.5583***	-4.5411	-0.8735
	(1.8575)	(3.1438)	(12.1374)
Acquirer TOBQ	17.4192***	-2.2833	-1.9885
	(1.81)	(5.1462)	(4.2027)
Acquirer SIZE	18.4164***	-7.5747***	-6.9016
	(2.1173)	(1.7544)	(8.8642)
Acquirer LEV	-144.044***	2.1041	1.2427
	(10.2617)	(5.2779)	(36.053)
DEALSIZE	0.044	0.0579	-0.078
	(0.1841)	(0.3119)	(0.3684)
IR	-18.1529***	-16.6423***	-16.8514
	(1.9417)	(3.3427)	(13.7779)
CBD	0.5036	-4.8513	-8.5005**
	(1.6922)	(8.4912)	(3.1857)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	46	46	46
R^2	0.9997	0.9779	0.9787

Table 30 – Robustness Check for CAR(-5,10) Pooled OLS with Fixed Effects: combined sub-sample second analysis. *For all regressions (50) – (52) the dependent variable is the cumulative abnormal return for the acquiring company for the base event window model, i.e., CAR(-5,10). The main independent variables are the different ESGC measures, a set of financial ratios and deal-related variables. Regression (50) uses the target's dummy variable ESGC rating high and the acquirer's dummy variable ESGC rating low, regression (51) the dummy variable target's ESGC rating high and acquirer's ESGC rating high and regression (52) the dummy variable compatible ESGC rating. Each regression model controls for Year and Country fixed effects, which are validated by a joint significance F-test. The regression coefficients with their robust standard errors (in parenthesis) are presented in the table. *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	OLS (50)	OLS (51)	OLS (52)
Target High ESGC rating	12.1614	12.451	
	(14.2783)	(12.8238)	
Acquirer Low ESGC rating	-0.7788		
	(17.1832)		
Acquirer High ESGC rating		-1.0014	
		(4.7461)	
Compatitble ESGC rating			-1.1812
			7.5462)
Target TOBQ	-0.4817	-0.5838	7.906*
	(10.9142)	(15.4345)	(4.0416)
Target SIZE	4.7253	5.46)	7.0584
	(17.5421)	(12.6242)	(19.2557)
Target LEV	16.4001	14.2954	4.4124
	(24.8044)	(10.4274)	(27.2676)
Acquirer TOBQ	-0.0652	0.0995	-9.1227
	(14.729)	(12.5657)	(9.3498)
Acquirer SIZE	-4.9876	-5.8454	-8.5659
	(16.4147)	(5.3046)	(19.0119)
Acquirer LEV	-48.8278	-44.245	15.1674
	(119.378)	(28.7963)	(77.1262)
DEALSIZE	0.0927	0.0275	-0.1324
	(0.4831)	(0.1461)	(0.6462)
IR	-13.2951**	-10.3652	-16.8389
	(6.2972)	(8.4918)	(26.7576)
CBD	-15.0996	-12.7296	-12.5115*
	(13.901)	(15.144)	(7.2287)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
N	46	46	46
R^2	0.9583	0.9586	0.9485