The role of ESG in M&A takeover auctions

Christian Manthey

Dissertation written under the supervision of Yifan Zhu

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Abstract

This paper investigates the impact of ESG factors in takeover auctions. Utilizing a comprehensive dataset of bidding contests, it is revealed that ESG plays a crucial role in determining transaction value, can be associated with a higher success probability of bidding outcomes, and enhances the 12m post-merger M&A performance. Concretely, the results show that the presence of an ESG score has a significant impact on target company transaction value and increases the probability of successful acquisition bids by target companies. Additionally, the study discovers that in takeover auctions, an ESG score's magnitude is just as important as its simple existence. More specifically, higher ESG ratings are linked to higher target transaction prices, and bidders that have strong ESG ratings are more likely to win a takeover contest. It is apparent from the data that an acquiring company that is classified as a winner and takes over a target in possession of an ESG rating experiences a superior average financial performance of 38.53 basis points compared to the counterfactual peer group over 12 months following the merger. This scholarly investigation provides valuable insights for academia and practitioners alike, highlighting the significance of ESG considerations in the realm of M&A transactions.

Keywords: Mergers and Acquisitions, Takeover Auctions, Environmental, Social, Governance, Post-Merger Performance, Bidding Characteristics, ESG Score.

Resumo

Este artigo investiga o impacto dos fatores ESG nos leilões de aquisição. Utilizando um conjunto abrangente de dados de concursos de licitação, revela-se que os fatores ESG desempenham um papel crucial na determinação do valor da transação, podem estar associados a uma maior probabilidade de sucesso nas ofertas de licitação e melhoram o desempenho pós-fusão e aquisição. Especificamente, os resultados mostram que a presença de uma pontuação ESG tem um impacto significativo no valor da transação da empresa-alvo e aumenta a probabilidade de sucesso das ofertas de aquisição pelas empresas-alvo. Além disso, o estudo revela que, nos leilões de aquisição, a magnitude de uma classificação ESG é tão importante quanto a sua mera existência. Mais especificamente, classificações ESG mais altas estão associadas a preços de transação mais elevados, e os licitantes com classificações ESG fortes têm mais probabilidade de ganhar um concurso de aquisição. Os dados revelam que uma empresa adquirente classificada como vencedora e que adquire uma empresa-alvo com uma classificação ESG apresenta um desempenho financeiro médio superior de 38,53 pontos de base em comparação com o grupo correspondente nos 12 meses seguintes a fusão. Esta pesquisa académica fornece informações valiosas tanto para o meio académico quanto para os profissionais, destacando a importância das considerações ESG no domínio das transações de fusões e aquisições.

Palavras-chave: Fusões e aquisições, leilões de aquisição, ambiental, social, governação, desempenho pós-fusão, características de licitação, pontuação ESG.

Content

List of Abbreviations

BHAR	Buy & Hold Abnormal Return
CSR	Corporate Social Responsibility
ESG	Environmental, Social, and Governance
M&A	Mergers & Acquisitions
SDG	Sustainable Development Goals
UN	United Nations

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1. Introduction

Mergers and Acquisitions (M&A) activity has a very strong impact on the corporate universe. According to Netter et al. (2011) 91.4% of all publicly listed firms in the US engaged in at least one M&A transaction in the 1990s and 2000s. Undoubtedly the reason for this is that M&A deals represent the most important external growth corporate strategy (Bauer and Matzler, 2014). The motives can differ greatly and include expanding in new markets, gaining access to resources, increase efficiency but ultimately increasing corporate value (Haleblian et al., 2009). Recently, a new driver for M&A transactions emerged as a factor aiming to increase diversification into the sustainable sector. Due to the rising awareness that current and future sustainability challenges must be addressed on a global scale, the United Nations (UN) adopted a set of objectives called the Sustainable Development Goals (SDGs). The SDGs are a critical tool for guiding global social development and environmental sustainability. As countries embrace the UNs' SDGs, research on this topic has grown steadily over the years (Vila et al., 2021). As a direct consequence, the incorporation of environmental, social, and governance (ESG) factors into companies' business practices emerged as a top priority (Tampakoudis and Anagnostopoulou, 2020). A good example that illustrates the rising awareness and efforts of firms towards ESG is that in 2018 the Governance & Accountability Institute reported that 86% of S&P500 firms released sustainability or corporate responsibility reports, compared to less than 20% in 2011 (Gillan et al., 2021). The central question arises if the increasing activity in sustainable M&A deals is driven by a moral, respectively political incentive or if the involved firms are also seeking financial benefits for their shareholders.

Despite vast sums of money and resources spent on takeovers, as well as a great number of academic studies on pre- and post-merger firm performance, the factors determining a deal's ultimate success remain unknown (Renneboog and Vansteenkiste, 2019). There is a great need for further research in the field and to this point, there are no studies that investigate the influence of ESG factors in bidding contests. These contests allow to evaluate factors that directly influence the probability that an acquiring firm will successfully complete a tender offer. Focusing on such competitive contests provides a clearer understanding of how ESG factors affect M&A outcomes compared to scenarios with lower competition. A fundamental assumption is that significant distinctions exist between the winning and losing bidders, which ultimately influences the outcome of the bidding process. The key advantage of bidding contests is that winners are more comparable to losers than the typical firm in the market or previously utilized control groups. It can take into account strategic factors that prompt businesses to pursue a certain takeover at a particular moment but that is challenging to account for using the conventional set of financial variables. Therefore this thesis contributes to the existing literature by researching the impact of ESG on transaction value, bidding contest outcomes, and post-merger financial performance for firms that are successful in takeover auctions.

For this paper data on U.S. mergers with concurrent offers from at least two possible acquirors is collected from 2002 to 2018. The data indicates that, on average, acquiring companies have a greater likelihood of possessing an ESG score and also tend to have higher ESG ratings compared to the target firms.

The study divides itself into three parts: The first part investigates whether the possession of an ESG score is positively associated with a target's value and bidding outcomes. It is found that transaction sizes of targets with an ESG score are larger and that bidders with ESG ratings are more likely to prevail in bidding wars, although acquirors with ESG scores do not express obvious preferences for targets that also hold an ESG rating. The second section digs deeper into analysing firms that have an ESG score, which enables to draw a conclusion about the relevance of the magnitude of the ESG rating. The results confirm the previous findings by showing that an increasing ESG score leads to higher transaction size and a higher success probability. This is in line with the expectation that ESG enhances the value of a firm. The third section of this paper sets forth that the acquisition of a target firm with an ESG score translates into direct financial gains for shareholders during the 12-month post-merger M&A period, underscoring the significance of ESG factors in takeover auctions. In combination with previous findings, the conclusion is that ESG targets have a larger transaction size, and at the same time also enhance the value of the acquiring firm, leading to superior performance.

It is of high relevance to form an opinion about the effects of ESG in takeover auctions from the perspective of an acquiring company as well as of the target to create the right expectations, determine an appropriate bidding price, and finally carry out a business strategy that enhances financial shareholder value. The paper acknowledges that the shareholders of an acquiring company might not only pursue financial incentives and therefore might be willing to give up incremental benefits for the acquisition of an ESG-friendly firm. Nevertheless, an analysis of that trade-off is beyond the scope of this thesis and the emphasis is placed on objectively observable financial results.

The rest of the paper is structured as follows. Section 2 presents the related literature for ESG and firm performance, takeover auction characteristics as well as M&A performance measurement. Subsequently, section 3 describes the data collection in detail. Section 4 outlines the methodology and section 5 presents the final empirical results in combination with the main discussion and classification in the literature. To check the validity of the obtained results, relevant robustness checks are performed in section 6, followed by the limitations of the study in section 7. The conclusion and suggestions for further research are drawn in section 8.

2. Related Literature

2.1. ESG and Firm Performance

Sustainability has recently been given a higher relevance in governmental policy, consumer concerns, investor worries, and capital market affairs (Nirino et al., 2021). Investors are increasingly incorporating a sustainable selection of their assets and according to McKinsey (2017), some of the world's largest asset managers are already integrating relevant principles in their investment decision process. ESG score is an umbrella term that measures a firm's sustainability performance along three dimensions: (1) Environmental, (2) Social, and (3) Governance.

The strong connection between ESG and Corporate Social Responsibility (CSR) is well-researched already (Nirino et al., 2021). For this reason, this paper sets the focus solely on ESG and does not consider CSR separately. In a recent study by Pástor et al. (2022), the findings support that sustainability-related stocks typically outperform their counterparts and investors often cite an improved return as motivation for applying ESG considerations (BlackRock, 2021; BNP Paribas, 2021; Schroders, 2021).

Remarkably, empirical research shows that stakeholders place a higher value on a company's ESG performance when the firm publishes the information in an ESG report (Mervelskemper and Streit, 2017), and at the same time companies that publish ESG reports yield higher stock market returns than the counterparties that do not (Weber, 2014).

Several different rating agencies such as Refinitiv, MSCI, or Sustainalytics offer scores. In practice, it is well documented that there is a significant divergence between the ratings, due to the different generations of the scores (Berg et al., 2022; Amel-Zadeh and Serafeim, 2017).

2.2. Takeover Auction Characteristics

Prior studies have identified various attributes of companies that impact their inclination toward participating in M&A activities. According to Cording et al. (2010), the explanatory variables that are most commonly used are acquiror characteristics, shareholder characteristics, deal characteristics, and economy-wide factors. This research paper will focus on two different categories of control variables following the approach of Malmendier et al. (2018): the ones that are specific to the acquiring company (bidder-specific), and the ones that are specific to the deal itself (deal-specific). In the following, the most common control variables are presented.

Bidder characteristics

Bidder Size

A large number of studies analyse the impact of the size of the acquiror on the transaction and merger returns. Firm size is positively correlated with the probability of undertaking M&A activities (Gorton et al., 2009; Harford, 2002). A possible explanation for this phenomenon is that larger firms have an advantage in terms of conducting and financing M&A deals at a lower cost compared to smaller firms (Owen and Yawson, 2010).

Financial Leverage

The amount of leverage a firm carries affects its ability to raise debt for new investments. According to DeAngelo et al. (2010), a company's investment behaviour is linked to its capital structure, and a company may engage in M&A activities to achieve its optimal capital structure. The majority of previous empirical evidence documents a negative impact of leverage on M&A probability (Uysal, 2011; Owen and Yawson, 2010).

Profitability

The profitability of a company is a crucial factor that influences its decision to engage in M&A activities. Generally, more profitable companies are more inclined to participate in M&A deals. According to agency theory, companies with excess cash are also more likely to pursue M&A activities. The literature documents the finding in several studies (Hu and Yang, 2016; Uysal, 2011; Caprio et al., 2011).

Market to book

A company's growth opportunities play a crucial role in its decision-making process. Harford (2002) argues that companies with high market-to-book values are less likely to be targeted and experience fewer agency problems. These firms can maximize their benefits by acquiring undervalued companies, thereby enhancing their growth. According to the market valuation theory, these firms can reduce takeover costs by targeting undervalued companies due to their high stock valuation. On the other hand, companies with low market-to-book ratios may be less attractive for M&A activities. Previous studies have also demonstrated that the market-to-book ratio positively impacts the likelihood of M&A deals (Uysal, 2011; Owen and Yawson, 2010).

Tobin’s Q

Tobin’s Q of the acquiror reflects the market valuation of a firm and prior research indicates that there is an existing relationship between the variable and M&A transactions (Yermack, 1996; Servaes, 1991; Lang et al., 1989). More concretely the measure is calculated by dividing the market valuation of a company by its book value. Consequently, the measure can be used as a proxy for the bidder's growth opportunities. However, the effect of a high or low Tobin's Q on a takeover is still a topic of discussion. Rau and Vermaelen (1998) show that highly-valued acquirors tend to underperform in the long run in comparison to an adequate benchmark. On the other hand, Servaes (1991) shows that returns are superior for acquirors with high Q-ratios.

Takeover Bid Characteristics

Transaction Value

Completing large transactions is a complex process that requires access to a substantial amount of capital, and typically, only firms with a significant balance sheet can undertake such transactions. According to Hawawini and Swary (1990), the size of a transaction has a negative impact on the likelihood of a successful tender offer.

Deal Attitude

Literature has found that one of the most relevant attributes to determine long-term M&A performance is deal attitude (Martynova and Renneboog, 2011). The deal attitude in mergers can be friendly or hostile, while it is fair to state that most of the takeover bids have a friendly character (Renneboog and Vansteenkiste, 2019).

Method of Payment

The study of payment methods categorizes deals based on cash, equity, and mixed offers. According to theory, deals financed through equity should generate lower returns compared to those financed through cash. This is because choosing equity financing indicates to the market that the company's stock is overvalued, as suggested by previous studies conducted by Mitchell and Stafford (2000), Loughran and Vijh (1997), as well as Myers and Majluf (1984).

Industry Relatedness

Flanagan et al. (1996) assume that bidding firms in the same industry will reduce the probability of a successful offer. The anticipation stems from the fact that antitrust regulators are likely to be concerned about the impact of firm combinations on competition. Furthermore, the authors contend that managers of the targeted firms may resist a takeover by a competitor because the acquiring firm may already have the necessary management expertise to operate the targeted firm. This could render the targeted firm's managers redundant and put their positions in jeopardy (Walsh and Ellwood, 1991). Contrary to their expectations Flanagan et al. (1996) find that the performance of a successful tender offer is significantly enhanced by the acquiring firm being in the same industry as the target.

2.3. M&A Performance Measurement

2.3.1. General Considerations

Even though M&A became popular as a research topic in the 1970s, even half a decade later, the subject remains highly relevant in literature. It is one of the most important fields in corporate finance and strategic management and is of high interest to academics as well as practitioners (Bettinazzi and Zollo, 2017; Zollo and Meier, 2008).

There is a substantial body of literature devoted to the controversy of whether M&A creates or destroys value for their shareholders. Popular studies by Betton et al. (2008), Andrade et al. (2001), Roll (1986), as well as Jensen and Ruback (1983), review the empirical evidence. Before evaluating the performance of the firms, it is important to define how the actual performance is measured. In existing research, several different methodologies and techniques are used to evaluate the short-term as well as the long-term performance of M&A transactions. The most common approach is market-based and measures short-term and long-term abnormal returns of the acquiring companies. Other studies apply a different rationale that examines the operating performance instead of the stock market returns of the relevant companies. This approach is usually taken out by the comparison of accounting measures, such as return on assets, return on equity, or return on sales before and after a takeover (Bettinazzi and Zollo, 2017; Zollo and Meier, 2008). An important issue with this method is that the fundamental performance of the firms is not only influenced by the takeover effects but also by several other factors which complicate the isolation of the takeover. Another factor that differentiates literature is whether the performance of the acquiror, the target, or the overall welfare of the transactions is analysed. Generally speaking, research shows that M&A transactions add value for the shareholders of target firms. According to Jensen and Ruback (1983), this is mainly due to the control premium that is offered to the target shareholders. When evaluating the return of the acquiring firm the research forms an unequivocal opinion about the effects of a transaction (Papadakis et al., 2010; Zollo and Meier, 2008; King et al., 2004). Studies report that M&A activity creates value when considering not solely the acquiror's return but the overall welfare, even if the gains accrue largely to the shareholders of the target firm (Andrade et al., 2001).

In a very comprehensive literature review conducted by Renneboog and Vansteenkiste (2019), the authors analysed 151 studies of which 62 investigate short-run returns, 23 evaluate long-run returns, and 66 focus on both short- and long-run performance. In the following short-term as well as long-term performance is discussed to obtain a more comprehensive overview of the existing body of literature. The focus is laid on the long-run performance as this is the measure of interest for this research. Subsequently, the literature concerning ESG in the context of M&A deals is presented.

2.3.2. Short-run performance

Since Fama et al. (1969) introduced the event study methodology this approach is by far the most dominant method to evaluate shareholder short-term wealth since the 1970s (Martynova and Renneboog, 2008). Announcement returns are the most frequently used measure in performance evaluation according to King et al. (2004) and are researched by Mitchell et al. (2005), and Asquith et al. (1983).

In the empirical literature, certain takeover bid characteristics could be identified that partially explain return differences across M&A waves, for example, the deal attitude, bid type, public status, and the means of payment.

2.3.3. Long-run performance

Academic literature collected less evidence on the long-term performance of M&A than the short-term performance. There is an ongoing debate in research about the best approach to measure long-term performance. Dutta and Jog (2009) summarize the key studies in long-term post-merger performance since 1980. It can be observed that the majority of studies that focuses on an extended time window of several years find negative returns for acquiring shareholders. Popular studies in this field are Bessembinder and Zhang (2013), Dutta and Jog (2009), King et al. (2004), Andrade et al. (2001), Agrawal and Jaffe (2000), and Agrawal et al. (1992). Several methodologies emerged in research to evaluate if M&A transactions have a long-term impact on firms.

Similar to short-term performance an event study approach can be used to evaluate the long-term shareholder wealth effects of M&As (Barber and Lyon, 1997). Also, the approach of using a Buy & Hold abnormal return (BHAR) is commonly used (Dutta and Jog, 2009; Moeller et al., 2004; Lyon et al., 1999). This strategy involves acquiring the stock of the merged company upon the completion of the merger and holding it for a period of one to five years, or until it is delisted, whichever occurs first (Betton et al., 2008).

This methodology has several shortcomings which are the isolation of the takeover effect, the benchmark comparison suffering from measurement or statistical issues, and most methods relying on financial market efficiency (Martynova and Renneboog, 2008).

As already mentioned, a general problem with long-term performance evaluation of M&A transactions is that it is complicated to isolate the effect of the takeover from the other effects that happen after the deal is carried out. Setting a standard for what would have occurred to the acquiror absent the acquisition is challenging. One approach is to find a counterfactual peer group for the auction winner. Research by Randall and Lie (2002) follows this rationale. As this methodology still has shortcomings in isolation of the effect, another literature strand emerged that focuses on bidding contests and compares winners to losers to evaluate long-term performance. The incumbent assumption in this methodology is that it is more accurate to compare the performance of two or more bidders than to pick a peer group of firms that were not involved in the bidding process. A winner-loser approach has already been taken by, for example, Greenstone et al. (2010) and Gowrisankaran et al. (2015) but the applications were in different contexts and the studies focus more on overall consumer welfare. Research in the area is not conclusive when it comes to the acquiror's M&A performance. While Savor and Lu (2009) report that successful acquirors outperform by 25.2% over a three-year horizon a study by Malmendier et al. (2018) suggests that losers outperform winners by 24% over the same time horizon.

2.3.4. *Incorporation of ESG*

As the adoption of ESG is not a voluntary initiative anymore but depends on laws, institutional arrangements, and social preferences, the influence of sustainability concerns on critical financial activities becomes increasingly relevant and attractive in research (Liang and Renneboog, 2016). Several studies point out that ESG is an important criterion in the decision-making related to M&A processes. While more historic research argues that adopting ethical or higher social and environmental standards will translate into higher costs, which negatively affects the competitiveness and profitability of the firm (Walley and Whitehead, 1994), more recent literature proves the opposite. The definition of what defines a green M&A transaction varies in the papers while the overall consensus in the latest research remains unchanged. Researchers such as Boone and Uysal (2020), Qiao and Wu (2019), Gomes and Marsat (2018), Deng et al. (2013), and Aktas et al. (2011) find proof that there is a positive relationship between strong CSR engagement and benefits for share- and stakeholders.

For value-weighted portfolios of the acquiror and the target, there is a larger rise in long-term operating performance and stock returns, as well as a higher likelihood and shorter length of deal completion for acquiring firms with a high ESG rating (Deng et al., 2013). Regarding profitability, higher CSR levels in M&As seem to be associated with greater long-term financial performance (Yen and André, 2019; Salvi et al., 2018). An explanation for this is that firms can improve their reputation and reduce their corporate risk by taking over target companies with a high ESG engagement (Gillan et al., 2021). Additionally, an acquiror can increase the quality of the due diligence process if ESG topics are considered (Corino, 2000). A higher transparency of the takeover target can increase the post-M&A performance of the acquiring firm (Gillan et al., 2021). Salvi et al. (2018) also show that merging targets with good ESG practices can result in better financial outcomes for the acquiror than merging other firms. According to Barros et al. (2022), firms can increase their ESG score in the year following an M&A transaction. Additionally, Tampakoudis and Anagnostopoulou (2020) find that acquirors that incorporate firms with a higher ESG rating than their own are more likely to increase their post-merger rating. Only a very limited number of studies have examined the impact of M&A transactions on acquirors' ESG and financial performance (Barros et al., 2022; Tampakoudis and Anagnostopoulou, 2020).

3. Data

3.1. Sample Construction

For the data section, several databases need to be consulted. Mainly two different data providers are important and a relevant consideration is that the different datasets have to be merged to create the final data sample. The SDC Platinum database of Refinitiv Eikon contains data about public acquisition bids. This source allows to filter and extract data for various relevant criteria. The time horizon for this research is extended in comparison to prior studies and covers bidding data from January 2002 to December 2018. The start date is the earliest year for which ESG score data is available and has been used by previous literature (Cardillo and Harasheh, 2023). Additionally, the longest period possible for the intended analyses is chosen. For this paper, the variables *SDC Deal Number*, which is a unique identifier for each bid, *Date Announced*, *Deal Status*, the *Target*, and *Acquiror's 6-digit CUSIP* as well as *Full Name*, the *Percentage of Cash*, *Stock* or *Other* in which the transaction took place as well as the *Number of Bidders* are considered. As the focus is set on bidding contests the variable *Competing Offer Flag* is set to one to filter for takeover auctions. With this approach, the dataset only contains contests in which at least two acquirors were bidding for the same target which is crucial for the purposes of this research. Completed as well as incomplete bids are taken into account. The rationale is that incomplete bids can provide valuable information about the bidding process. Even if a bid is not completed, the fact that a firm submitted an offer can provide some information about their valuation of the target and their interest in acquiring it. Taking this into consideration can be useful in understanding the dynamics of the bidding process and identifying factors that influence the likelihood of a successful bid. Additionally, incomplete bids can help to identify potential strategic factors. There is the possibility that some withdrawn or rejected deals can provide insights into the strategic considerations that firms take into account when deciding on whether to bid for a target or whether the acquisition no longer fits the strategic objective. Moreover, white knight bids are excluded and only public deals are considered in the analyses. This data on merger contests is supplemented by financial, accounting, and ESG information obtained by monthly return data from CRSP, annual accounting data from Compustat as well as annual ESG data from Refinitiv Datastream. Note that the supplementary data must be gathered for the time from January 1999 to December 2021. This is necessary as the first bidding observation could have been made at the beginning of 2002 and respective return data for the prior three and subsequent three years to the announcement date of the bid are needed for the analysis. Moreover, Refinitiv Datastream offers granular data about ESG scores which are an important part of the analysis. Beyond the comprehensive ESG score, more detailed data for the relevant firms about the three ESG dimensions complements the dataset. For a more detailed breakdown of the ESG score please refer to Appendix 1.

CRSP holds information about monthly U.S. stock returns. Specifically, the monthly holding period stock return (RET), distribution event code (DISTCD), delisting code (DLSTCD), date of delisting payment (DLPDT), the amount after delisting (DLAMT), delisting return (DLRET), and CRSP value-weighted index returns (VWRETD) are retrieved from the platform. The different datasets are merged with the 6-digit CUSIP. This individual company number can be obtained as an attribute of the acquiror and target in Refinitiv for every bid. The CRSP tools permit the conversion of this identifier into the respective PERMNO code which allows merging the financial and accounting data with the merger contest information. As the PERMNO code changes over time it is important to state that for the purposes of this analysis the PERMNO code of a bidder which was relevant one month before the announcement date of the bid is used. This methodology is in line with previous research conducted by Malmendier et al. (2018).

Many bids are delisted following the merger, which causes them to vanish from CRSP. All available delisting information on CRSP is gathered to evaluate the return implications of the delisting occurrences for shareholders in an effort to avoid survivorship bias. From the final day the stock was traded to the earliest post-delisting date for which CRSP could track the stock's value, the delisting return shows shareholder returns. This delisting return is taken into account for calculating the BHARs. The Compustat Annual database provides the variables total assets (AT), net sales (SALE), total debt (LT), shareholders’ equity (SEQ), deferred taxes and investment tax credit (TXDITC), common shares outstanding (CSHO), fiscal year closing price (PRCC_F) and operating income (OIBDP). As for the return data, the CUSIP from Refinitiv is merged with the first six digits of the historical NCUSIP from Compustat that was linked to the company one month before the bid announcement.

Table 1 showcases the steps of the data preparation and the final dataset. The initial sample contains significantly more bids than the final sample. The main reason for this is that the sample is restricted to bidding contests with bidders for which a CRSP PERMNO can be obtained. Observations that comprise insufficient data on the relevant variables are dropped. The final dataset consists of complex panel data and holds the return data, accounting information, ESG values, and bid information for the acquisitions. To achieve optimal outcomes in the analyses, it is crucial for this work to utilize the most readily accessible data since subsequent analyses often necessitate distinct data sets.

Table 1: Sample Construction

Sample Criterion	Bids	Bidders	Winners	Losers
Initial Sample	483	419	210	273
less firms without CRSP PERMNO	402	341	183	219
less firms without accounting data	197	166	103	94
less firms without return data (-12,+12)	192	164	99	93
less firms without ESG data	129	105	74	55

3.2. Descriptive Statistics

Table 2 highlights that most deals in bidding contests were in the industry of Healthcare and High Technology. Both industries are characterised by high innovation and high growth potential, which explains why a high level of activity can be observed in these industries. Additionally, consolidation trends have been ongoing in the high-tech and healthcare sectors. Companies engage in deals to expand their product portfolios, get access to new markets, acquire a competitive advantage, or obtain economies of scale. These consolidation activities contribute to an increase in the number of transactions in the dataset. The Energy and Power industry has the highest mean ESG scores of acquirors which is related to rapidly expanding renewable energy producers (Eisenbach et al., 2011).

Table 2: Bid Characteristics by Macro Industry

Acquiror Macro Industry	Acquiror Firms	Target Firms	Acquirors with ESG score	Targets with ESG score	Acquiror mean ESG score	Target mean ESG score
Consumer Products and Services	12	12	6	2	42.60	18.65
Consumer Staples	11	10	4	3	54.49	62.62
Energy and Power	12	15	8	7	67.43	34.17
Financials	12	8	6	2	33.65	25.36
Healthcare	35	36	30	6	49.51	34.32
High Technology	35	32	20	8	43.46	40.37
Industrials	17	21	11	3	30.88	27.11
Materials	29	29	19	4	51.96	45.15
Media and Entertainment	11	9	9	7	41.63	58.43
Real Estate	1	1	1	1	65.69	n/a
Retail	12	9	7	3	42.80	31.29
Telecommunications	10	15	8	2	46.30	55.98
Total	197	197	129	48	46.57	41.62

Source: SDC Platinum

Acquiring firms are more likely to have an ESG score than the targets. Acquiring firms often tend to be larger than their target firms. As larger firms typically have more comprehensive ESG programs in place, including reporting mechanisms and ESG performance tracking, they are more likely to have an established ESG score. The ESG score total mean of the acquiror is 45.57, higher than that of the target, which stood at 41.62.

Table 3: Descriptive Statistics of Bidders' Sustainability Characteristics

	Winners				Losers				
	Mean	Median	Std	N	Mean	Median	Std	N	p-value of mean diff
ESG score	48.11	48.92	23.07	74	44.49	41.03	24.49	55	0.39
E score	30.74	25.51	30.30	60	32.88	26.92	30.97	42	0.73
S score	46.81	41.47	24.43	60	44.91	38.77	22.95	42	0.69
G score	50.42	51.68	25.40	60	53.55	56.14	28.89	42	0.56

Source: Refinitiv Datastream

Table 4 presents the descriptive statistics of the accounting data from Compustat, which reveals that winning bidders in a takeover are generally larger than losing bidders, as indicated by their higher total assets, book value, and revenue. Particularly, the median for the observations reveals significant differences. From an economic perspective, this makes sense as these firms have a larger capacity for M&A activity. This observation is in line with previous literature (Malmendier et al. 2018). However, the winners have a lower market value than the losers, as reflected by their higher Tobin's Q. Both winning and losing bidders have a similar capital structure, with the former having slightly higher leverage.

Table 4: Descriptive Statistics of Bidders

	Winners				Losers			
	Mean	Median	Std	N	Mean	Median	Std	N
Total assets [$m]	36,807	12,608	60,727	103	43,644	4,771	140,689	94
Market value [$m]	56,599	21,232	93,346	103	55,846	7,874	145,340	94
Sales [$m]	22,416	5,362	38,694	103	15,117	3,407	30,555	94
Tobin's Q	1.77	1.46	0.90	103	1.88	1.52	1.20	94
Book Leverage	0.26	0.24	0.17	103	0.27	0.23	0.23	94
Market Leverage	0.18	0.15	0.14	103	0.20	0.15	0.19	94
Profitability	0.10	0.11	0.14	103	0.11	0.11	0.11	94
BHAR (-12,+12)	0.10	0.00	0.38	93	0.10	0.07	0.45	79

Source: Compustat, CRSP

Note: Market value is total assets plus the market value of equity (common shares outstanding times fiscal-year closing price) minus the book value of equity. Tobin's Q is the ratio of market value to book value. Profitability is the operating income before depreciation divided by total assets. Book leverage and market leverage are debt in current liabilities plus long-term debt, divided by the book value and market value of total assets respectively. All the above variables are based on the balance sheet and income data from the end of the fiscal year preceding the contest. Only companies for which the BHAR returns in the interval of -12, +12 months are available are used and the trimmed sample is presented which excludes the top and bottom 5%.

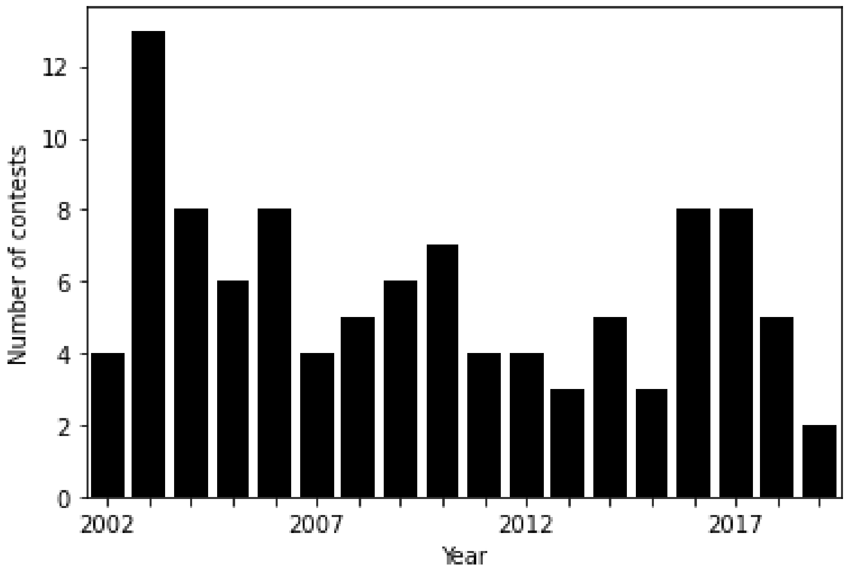
Table 5 summarizes the descriptive statistics for the bidding contest. The median deal value is USD 606.60m, and the median number of bidders is two. This suggests that bidding contests typically involve only two bidders, with multiple bidders being relatively uncommon. Cash payment is more frequent than stock payment in acquisition deals. Contest duration is defined as the time difference between the first bid and the date when the deal becomes effective. The average contest duration is 4.50 months, while the median is 3.10 months.

Table 5: Descriptive Statistics of Contests

	P25	Median	P75	Mean	Std	N
Deal value [$m]	116.62	606.60	2,639.75	2,731.27	5,760.05	103
Percentage paid in stock	0	0	14.88	16.2	30.98	103
Percentage paid in cash	39.78	100	100	69.97	39.9	103
Number of bidders	2.0	2.0	2.0	2.1	0.4	103
Contest Duration [months]	1.93	3.10	5.55	4.50	3.92	103

Source: SDC Platinum

Figure 1: Merger Contests over Time



Source: SDC Platinum
Note: Frequency distribution of merger contests over time. The illustrated years are the calendar years in which the transaction can be seen as effective.

From the correlation matrix of the sustainability score, it is evident that there is a high correlation between the chosen variables. The correlation between the ESG score and the other scores is easily explained by the fact that the overall ESG score is influenced by the E, S, and G score and represents a combination of all of the measures. More interesting is that the correlation is also high between the three different aspects of sustainability (all above 0.5), which indicates that firms that want to increase their sustainability tend to make an effort in all of the three ESG areas and are not focusing on solely one. Previous literature also disentangled the different dimensions and found the same relationship (Barros et al., 2022; Matos et al., 2020).

Table 6: Correlation Matrix for Sustainability Scores

	ESG score	E score	S score	G score
ESG score	1			
E score	0.7898	1		
S score	0.8226	0.8159	1	
G score	0.5728	0.5004	0.5348	1

Source: Refinitiv Datastream

The correlation matrix for the control variables shows that none of the control variables have a strong correlation with one another. This indicates that they are independent and have little in common in terms of their impact on the dependent variable. This is beneficial for the analysis since it allows for a more precise assessment of the relationship in the later regressions.

Table 7: Correlation Matrix for Control Variables

	Deal Value	Operating Income	Deal Participation	Market Leverage	Tobin's Q	Deal Attitude	Industry Relatedness
Deal Value	1						
Operating Income	0.2137	1					
Deal Participation	0.1300	-0.0100	1				
Market Leverage	0.1738	-0.1050	0.0048	1			
Tobin's Q	-0.0626	0.3571	0.0489	-0.4897	1		
Deal Attitude	-0.1462	-0.0194	0.1490	-0.1377	0.0113	1	
Industry Relatedness	0.1603	0.0918	0.0135	-0.0781	0.0846	-0.0126	1

Source: SDC Platinum, Compustat

4. Hypothesis Development and Research Methodology

The primary inquiry is to determine whether companies that prioritize ESG practices have a competitive edge in acquisition auctions. This advantage may arise from various potential benefits that come with emphasising the three aspects of ESG. One of these benefits might be reduced regulatory and reputational risks. Companies with robust ESG practices and reporting are likely to have lower regulatory and reputational risks, which may make them more attractive to potential acquirors (Maung et al., 2020). Additionally, ESG considerations are becoming increasingly important to stakeholders, such as investors and customers, who may prefer to deal with companies that prioritize sustainability and social responsibility. Acquirors with high ESG scores may therefore have a competitive edge by aligning with stakeholder preferences (Liang et al., 2020). As described in 2.1, research also shows that companies with strong ESG practices and policies tend to have better financial performance over the long term. This may make them more appealing to acquirors who are seeking to enhance their financial performance through M&A deals.

The research is divided into three parts. The first section (Hypotheses 1-3) strives to uncover evidence if it is beneficial for firms to have an ESG score. In addition, the second part (Hypotheses 4-6) investigates whether also the magnitude of the measure is of relevance. The third part (Hypothesis 7) aims to find evidence for the positive influence of ESG practices on M&A performance. The subsequent section elucidates the process of formulating specific hypotheses and outlines the methodology employed for conducting the investigation.

Previous literature already identifies that CSR impacts M&A premia (Gomes and Marsat, 2018; Malik, 2014). The initial inquiry for this paper is to examine whether it is crucial for companies to possess an ESG score and make the extra endeavour to establish it. As it takes significant efforts to report on ESG criteria and therefore obtain an ESG score, the first hypothesis examines the following:

(1) Firms with ESG scores participate in larger transactions and have larger deal sizes

In the next step, it is of interest to analyse how acquirors that have or do not have an ESG score bid for targets with or without an ESG score. Bidders in the U.S. are starting to assess the ESG-related risks and opportunities associated with a target company's business. They compare these factors against their own ESG policies to determine the level of alignment with their ESG strategy (Dentons, 2022). This means that potential target companies are also paying attention to their ESG practices and preparing ESG-related information early on since potential suitors are increasingly evaluating the target's ESG practices. The acquirors that already have an ESG score and therefore show that they care about their ESG practices are expected to be more likely to take over targets with similar ESG profiles. Therefore the second hypothesis is established:

(2) Acquirors with an ESG score are more likely to bid for firms with an ESG score

As no prior literature aims to investigate the likelihood of a successful acquisition with the acquirors' ESG score in a bidding contest framework, the following hypothesis is formed to overcome the existing gap in the literature:

(3) Bidders with an ESG score are more likely to win a contest

After investigating the impact of the presence or absence of an ESG score the study dives deeper into the topic to examine the magnitude of ESG scores. The second question, therefore, goes beyond the first part and investigates whether not only having an ESG score is important but having a high ESG score is a desirable characteristic for a firm.

The fourth, fifth, and sixth hypotheses are proposed based on the same rationale as hypotheses 1, 2, and 3, respectively:

(4) Firms with high ESG scores participate in larger transactions and have larger deal sizes

(5) Acquirors with a high ESG score are more likely to bid for firms with a high ESG score

(6) Bidders with a high ESG score are more likely to win a contest

The literature on the long-run performance of acquiring firms lacks consensus, as discussed in section 2.3. However, as previously noted in section 2.1, where the connection between ESG engagement and the long-term performance of firms is highlighted, it becomes crucial to explore the interplay between ESG factors and long-term M&A performance. Building on the logic of the previous hypothesis, acquirors that take over targets with an ESG score may pay a higher price due to the added value generated by their ESG efforts. Even though this does not directly take into account that some acquirors might have a stronger ESG performance than others, it is indirectly controlled for this aspect as the participants in bidding contests are highly comparable. Winning companies were deemed the most suitable acquirers by target companies, which helps to control for selection bias. Therefore, it is of interest to investigate whether the successful bidders of ESG-friendly companies can benefit from this phenomenon and whether the higher price is therefore justifiable:

(7) An acquiror that successfully takes over a target with an ESG score significantly outperforms an acquiror that takes over a target without an ESG score

The research methodology for hypothesis 1 aims to examine the relationship between the *ESG score Dummy Variable* and the *Deal Value*. The *ESG score Dummy* equals 1 in case the acquiror has an ESG rating and 0 if otherwise. The question is investigated with two OLS models in the following way:

$$Deal\ Value_j = Acquiror\ ESG\ Dummy_{i,j} + \eta_{i,j} + \varepsilon_{i,j}$$

$$Deal\ Value_j = Target\ ESG\ Dummy_{i,j} + \eta_{i,j} + \varepsilon_{i,j}$$

where *i* represents the bidder, *j* the bidding contest, $\eta_{i,j}$ a set of deal and firm-specific control variables, and $\varepsilon_{i,j}$ the error term. It is crucial to remember that a regression analysis using deal value alone might not give a complete picture of the deal's valuation. Valuation is a difficult procedure that takes into account more than just the size of the transaction. Nevertheless, the performed regression can help to understand the transaction size and have valuable implications. The second hypothesis examines if the *Acquiror ESG Dummy* of the target can be explained by the *Target ESG Dummy* of the acquiror with the following model:

$$Target\ ESG\ Dummy_{i,j} = Acquiror\ ESG\ Dummy_{i,j} + \eta_{i,j} + \varepsilon_{i,j}$$

The *Winner Dummy*, which equals 1 in case an acquiror is able to take over a target and 0 if otherwise, is introduced to estimate the influence of the *Acquiror ESG Dummy* on the success probability of a bid:

$$Winner\ Dummy_{i,j} = Acquiror\ ESG\ Dummy_{i,j} + \eta_{i,j} + \varepsilon_{i,j}$$

To test the fourth hypothesis OLS regressions are utilized with the specific *ESG score* as the independent variable of the model and the *Deal Value* as the dependent variable:

$$Deal\ Value_j = Acquiror\ ESG\ score_{i,j} + \eta_{i,j} + \varepsilon_{i,j}$$

$$Deal\ Value_j = Target\ ESG\ score_{i,j} + \eta_{i,j} + \varepsilon_{i,j}$$

The sixth hypothesis and therefore the relationship between the *Acquiror* and *Target ESG score* is investigated with another OLS regression:

$$Target\ ESG\ score\ _{i,j} = Acquiror\ ESG\ score_{i,j} + \eta_{i,j} + \varepsilon_{i,j}$$

The research methodology for hypothesis 6 aims to examine the probability of a winning firm having a high ESG score. To achieve this objective, a logit regression analysis is employed. The model can be expressed as follows:

$$Winner\ Dummy_{i,j} = Acquiror\ ESG\ score_{i,j} + \eta_{i,j} + \varepsilon_{i,j}$$

The research methodology for the seventh hypothesis relies on the comparison of the performance of acquiring firms that were participating in the bidding processes. A very common approach in the literature to measure performance is to calculate BHARs. Following the methodology of Malmendier et al. (2018), Ikenberry et al. (1995), and Lyon et al. (1999), this paper computes the BHAR as the difference between the accumulated bidder stock return and a cumulated benchmark return:

$$BHAR_{i,j,t} = \prod_{s=1}^{t}\left(1 + r_{i,j,s}\right) - \prod_{s=1}^{t}\left(1 + r_{i,j,s}^{b,m}\right)$$

For which *t* and *s* index event time, $r_{i,j,s}$ is the bidder's stock return earned in the event period *s*, and $r_{i,j,s}^{b,m}$ is the benchmark return in the event period *s*. The calculation starts with $t = 0$ and goes 12 months forward, starting from the date the deal is effective and 12 months backward from the time the deal is announced. Therefore, the interval for the periods is -12, 12.

The benchmark return in this model is estimated with the value-weighted market return from CRSP and consequently represents market-adjusted BHARs.

After the calculation of the BHARs, the return differences between the winning bidders who take over a target with and without an ESG score are measured. The approach allows to compare the firms who take over an ESG target with a counterfactual peer group of firms that were also successful in a bidding contest but did not take over an ESG target.

For this model, the following linear OLS regression equation is applied:

$$BHAR_{i,j} = Target\ ESG\ Dummy_{i,j} + \eta_{j,i} + \varepsilon_{i,j}$$

The dependent variable in this regression is the *BHAR* for the firm. The independent variables are the *Target ESG Dummy* as well as the control variables. Additionally, the model accounts for year-fixed effects to remove the influence of year-specific factors.

Takeover auction characteristics that may be employed as explanatory variables are discussed in section 2.2. In the above-mentioned regressions, seven control variables are used. These variables are bidder-specific characteristics such as *Market Leverage*, *Operating Income*, and *Tobin's Q*, as well as deal-specific characteristics such as *Deal Value*, *Deal Participation Time*, *Deal Attitude*, and *Industry Relatedness*. Although firm size may be a confounding variable, it is vital to remember that Tobin's Q is included in the explanatory variables. Tobin's Q acts as a stand-in for firm performance and growth prospects, covering the effects of company size in a roundabout way. Appendix 2 provides a detailed description of the variables and the underlying calculations.

5. Results

5.1. Why an ESG score matters

Firms with ESG scores participate in larger transactions and have larger deal sizes

In assessing the first hypothesis an OLS regression is utilized to evaluate the relationship between the transaction size and the ESG score of the acquiror and the target. The findings indicate that there is a significant positive coefficient for the ESG Dummy of the acquiror as well as the target at the 0.1% level. The analysis suggests that there is a positive relationship between firms having an ESG score and transaction size. This relationship is supported by an Adjusted R^2 of above 49% in the model with both ESG dummy variables, indicating that a considerable portion of the *Deal Value* can be accounted for by the model. The significant positive coefficient of the target's ESG dummy shows that companies with an ESG score are likely to have larger transaction sizes, all else equal. Acquirors might perceive target firms with good ESG practices as a safer investment due to their focus on sustainable and responsible practices and are therefore willing to pay more.

Combining the results from table 8, the conclusion can be drawn that both the target and the acquiror having an ESG score are positively associated with deal value in M&A bidding processes, controlling for other factors. This suggests that ESG considerations are an important factor in M&A decision-making and may influence the transaction size of target firms as well as the strategic decisions of the acquirors.

It may also be interesting to note that other controls such as *Operating Income* or *Deal Participation* are significant in all models with a positive coefficient. This implies that acquirors with a higher operating income are willing to pay more for their targets. This also leads to the conclusion that the time the bidding contests take increases with deal size. This relationship is already documented by Luypaert and De Maeseneire (2015).

Table 8: ESG Dummy of the Acquiror and Target on Deal Value

Dependent variable	ln(Deal Value)		
Independent variables	(1)	(2)	(3)
Constant	4.3686***	4.3877***	5.0752***
	(0.48)	-0.5513	-0.5053
Acquiror ESG Dummy	1.3545***	1.7593***	
	(0.24)	(0.27)	
Target ESG Dummy	2.0366***		2.3809***
	(0.27)		(0.29)
Operating Income	2.4367**	2.6093**	3.2710***
	(0.94)	(1.07)	(1.01)
Deal Participation	0.0033***	0.0048***	0.0030***
	(0.00)	(0.00)	(0.00)
Market Leverage	1.4024*	2.2763**	1.0429
	(0.78)	(0.88)	(0.84)
Tobin's Q	-0.1526	-0.108	-0.1498
	(0.13)	(0.15)	(0.14)
Deal Attitude	-0.6494**	-0.7996***	-0.5922**
	(0.27)	(0.30)	(0.29)
Industry Relatedness	0.7368***	0.5601*	0.8162***
	(0.26)	(0.30)	(0.28)
R-squared adj.	49.09%	34.18%	40.77%

Standard errors in parentheses.
*p<.1, **p<.05, ***p<.01

Bidders with an ESG Score are more likely to bid for targets with an ESG Score

When analyzing whether companies with an ESG score are more inclined to bid for target firms with a similar score, the results show no significant coefficient for the ESG Dummy of the acquiror. This means that hypothesis 2 is not supported by the empirical findings. As there is no clear evidence that bidders with an ESG score are more likely to bid for firms with an ESG score this gives rise to the conclusion that acquirors without an ESG score are also interested in taking over ESG targets and vice versa. This finding is noteworthy because it stands against the initial assumption that firms with an ESG score are more interested in acquiring targets with an ESG score. It indicates that companies lacking good ESG practices or reporting tend to seek out target firms that have strong ESG practices. A possible explanation for this phenomenon could be that these acquirors may be seeking to improve their own ESG practices by acquiring a firm with strong ESG practices as suggested by Tampakoudis and Anagnostopoulou (2020). The investigation will delve deeper into the specific ESG score to validate this discovery in the subsequent stages of the section.

Market Leverage, *Tobin's Q* of the bidder, *Deal Attitude,* and *Industry Relatedness* are variables that explain the ESG score of the target.

Table 9: Acquiror ESG Dummy on the Target ESG Dummy

	Target ESG Dummy
Acquiror ESG Dummy	-0.1018
	(0.44)
ln(Deal Value)	0.4017***
	(0.11)
Operating Income	0.0633
	(1.99)
Deal Participation	0.0013
	(0.00)
Market Leverage	-2.6706**
	(1.19)
Tobin's Q	-0.7817***
	(0.26)
Deal Attitude	-1.2229***
	(0.36)
Industry Relatedness	-1.4282***
	(0.41)
R-squared pseudo	14.31%

Standard errors in parentheses.
*p<.1, **p<.05, ***p<.01

Acquirors with an ESG score are more likely to win a bidding contest

To investigate the third hypothesis a logit regression that estimates the likelihood of winning a bidding contest is investigated. The analysis indicates that there is a strong probability of an acquiror with a high ESG score winning an M&A bidding contest. The coefficient of 1.00 with a statistical significance at the 0.1% level supports the validity of this finding.

This could lead to the conclusion that having strong ESG practices and policies may confer a competitive advantage in the M&A market. This competitive advantage might stem from several different factors. Companies with strong ESG practices and policies are likely to have a better reputation among stakeholders, including investors, customers, and employees (Gillan et al., 2021). This could lead to greater investor confidence, which may translate into a higher valuation for the company and a more attractive offer for the target. Second, companies with strong ESG practices may be better positioned to identify and manage potential risks and opportunities related to ESG factors in the target company. This could help the bidder to make more informed decisions about the potential value and risks associated with the target, and to structure a more competitive offer (Gillan et al., 2021). Finally, companies with strong ESG practices and policies may be better able to integrate the target company's operations and culture into their own, which could lead to greater synergies and a more successful acquisition overall. This could make the bidder a more attractive partner for the target company and increase the likelihood of a successful bid.

Control variables that also have a significant coefficient in the model and are therefore good predictors of winning a bid in the sample are *Deal Value* as well as the dummy for *Deal Attitude*. It makes sense and has previously been found in the literature that smaller deals (Hawawini and Swary, 1990) and friendly deals are more likely to be closed than hostile takeovers (Martynova and Renneboog, 2011).

Table 10: Acquiror ESG Dummy on Winner Dummy

	Winner Dummy
Acquiror ESG Dummy	1.0018***
	(0.38)
ln(Deal Value)	-0.1651**
	(0.08)
Operating Income	-0.3437
	(1.35)
Deal Participation	0.0018
	(0.00)
Market Leverage	-0.4295
	(1.00)
Tobin's Q	-0.1806
	(0.16)
Deal Attitude	1.3897***
	(0.35)
Industry Relatedness	-0.4786
	(0.37)
R-squared pseudo	10.44%

Standard errors in parentheses.
*p<.1, **p<.05, ***p<.01

5.2. Why a high ESG score matters

Firms with high ESG scores participate in larger transactions and have larger deal sizes

Additionally, to previous analyses, a sub-sample is formed, containing only the observations for which an ESG score for the target, as well as the bidder, is available. A significant positive relationship between the acquiror's ESG score and the deal value in the performed OLS regression suggests that acquirors with higher ESG scores tend to pay more and make higher-value acquisitions of target firms.

The regression model shows a significant and positive coefficient when regressing the Deal Value of the target as the dependent variable, and the ESG score with controls as the independent variable. This suggests that holding other factors constant, companies with higher ESG scores tend to have larger transaction sizes in M&A transactions. In other words, the results indicate that there is a positive relationship between ESG scores and the size of transactions, implying that companies with stronger ESG performance are more likely to engage in larger M&A deals. Combining these results, it can be concluded that both the target's and the acquiror's ESG scores are positively associated with deal value in M&A transactions, controlling for other factors. This analysis suggests that firms with higher ESG scores are more likely to command higher deal values in M&A takeover auctions. This means that investors or acquirors value firms with better ESG performance more highly, and are willing to pay more to acquire them. This finding goes hand in hand with the previous results which document that *Deal Value* can also be explained by the fact that a company has an ESG score.

The positive relationship between the target's ESG score and the deal value could be driven by factors beyond the ones presented in the first part. First, firms with better ESG performance may be seen as having better long-term sustainability prospects, which can translate into higher future profits. Second, investors may increasingly value ESG performance as a way to manage risks associated with environmental and social issues, and thus be willing to pay more for firms with better ESG practices.

Taken together, these findings suggest that ESG performance is an important factor for investors and acquirors to consider when evaluating potential M&A deals. Firms with strong ESG performance may be more attractive acquisition targets, and investors or acquirors with a strong ESG focus may be willing to pay more for these firms.

In summary, the joint conclusion from the three models in table 11 indicates that the acquiring firm's ESG score and the target firm's ESG score both have a substantial association with deal value. However, when the ESG scores of both the acquiring and target organizations are considered at the same time, the association with deal value is not statistically significant. This phenomenon can be observed as the sample size shrinks when considering the target ESG scores and the ESG score of the acquiror is not significant in the smaller sub-sample.

Table 11: Acquiror and Target ESG Score on Deal Value

Dependent variable	ln(Deal Value)		
Independent variables	(1)	(2)	(3)
constant	7.7699***	5.8135***	7.5484***
	-1.1166	-0.7421	-0.9684
Acquiror ESG score	0.0008	0.0239***	
	(0.01)	(0.01)	
Target ESG score	0.0267*		0.0212*
	(0.02)		(0.01)
Operating Income	11.7154*	2.9075**	13.0511**
	(6.57)	(1.29)	(5.28)
Deal Participation	0.001	0.0042***	0.0018
	(0.00)	(0.00)	(0.00)
Market Leverage	-0.8049	1.7947	-0.0724
	(2.12)	(1.16)	(1.57)
Tobin's Q	-0.8299*	-0.233	-0.8768**
	-0.4183	-0.1693	-0.3741
Deal Attitude	-0.9245**	-1.0695***	-0.7925*
	(0.44)	(0.37)	(0.40)
Industry Relatedness	0.5397	0.3086	0.4785
	(0.51)	(0.37)	(0.46)
R-squared adj.	37.46%	28.21%	36.06%

Standard errors in parentheses.
*p<.1, **p<.05, ***p<.01
Note: Models 1 and 3 are performed in a sub-sample of model 2 due to data limitations of the variable *Target ESG score*

Bidders with a high ESG score are more likely to bid for targets with a high ESG score

In a previous part of this section, it is laid out that there is no significant relationship in evaluating if bidders with an ESG score are more likely to bid for targets with an ESG score. A further investigation is conducted to analyse if these observations hold also true for the ESG scores. In the model that is shown in table 12, the ESG score of the acquiror is regressed to the ESG score of the target. The outcome confirms the previous findings and strengthens the assumption that there is no clear evidence that bidders with a high ESG score are more likely to bid for targets with a high ESG score. Berchicci et al. (2012) reinforce the insignificance of the findings in this paper with similar results in a CSR context. The authors discover that acquirors with bad CSR performance acquiring targets with high CSR performance can disperse these skills and benefits to themselves. In the other instance, if the acquiror has a high score and the target has a low score, the acquiror may deliberately choose targets that will benefit the most from the transfer of ESG skills. Therefore it can be stated that acquirors with good and bad ESG practices have incentives to take over targets with good and bad ESG practices.

Table 12: Acquiror ESG Score on Target ESG Score

	Target ESG score
constant	-3.3785
	(19.89)
Acquiror ESG score	0.0445
	(0.11)
ln(Deal Value)	3.3078*
	(1.91)
Operating Income	200.8344***
	(67.79)
Deal Participation	0.021
	(0.02)
Market Leverage	46.5231**
	(22.18)
Tobin's Q	-9.0730*
	(4.67)
Deal Attitude	3.1933
	(5.16)
Industry Relatedness	-14.1810***
	(5.14)
R-squared adj.	46.30%

Standard errors in parentheses.
*p<.1, **p<.05, ***p<.01

Acquirors with a higher ESG score are more likely to win a bidding contest

In this section, the findings that firms with higher ESG scores are more likely to win takeover auctions are presented. For the analysis, logistic regressions are utilized where the dependent variable is the *Winner Dummy*, and the independent variable is the ESG score of the acquiring firm along with other control variables. The logistic regression model shows a significant positive coefficient for the ESG score of the acquiring firm. This coefficient suggests that companies with higher ESG scores are more likely to win M&A takeover auctions, all else equal. Possible explanations for this phenomenon have been laid out previously.

By analysing the models that solely take the Environmental, Social, or Goveranance component into consideration in an isolated way, it is evident that these factors do not seem to predict deal success.

Next to the ESG score the *Deal Attitude* seems to be a very strong predictor for deal success. This is in line with previous research of Martynova and Renneboog (2011) as well as Muehlfeld (2006), who also confirm that the criterion is a relevant characteristic. It is also interesting to note that there is a negative relationship between the *Industry Relatedness* and the probability of winning a bid. This is in line with the first expectation of Flanagan et al. (1996) but contrary to their actual findings as noted in section 2.2.

Table 13: Sustainability Scores on Winner Dummy

Dependent variable	Winner Dummy			
Independent variables	(1)	(2)	(3)	(4)
ESG score	0.0162*			
	(0.01)			
E score		-0.001		
		(0.01)		
S score			0.0139	
			-0.0097	
G score				0.003
				(0.01)
ln(Deal Value)	-0.1031	-0.0476	-0.1296	-0.0686
	(0.10)	(0.11)	(0.12)	(0.11)
Operating Income	-2.5857	-1.7312	-1.5694	-1.806
	(2.18)	(2.15)	(2.16)	(2.15)
Deal Participation	0.0024	0.0008	0.0011	0.0009
	(0.00)	(0.00)	(0.00)	(0.00)
Market Leverage	-0.549	-0.0841	0.1337	0.0134
	(1.41)	(1.64)	(1.62)	(1.62)
Tobin's Q	-0.0588	-0.0871	-0.102	-0.078
	(0.20)	(0.27)	(0.26)	(0.26)
Deal Attitude	1.7669***	1.9620***	1.9581***	1.9444***
	(0.46)	(0.50)	(0.50)	(0.50)
Industry Relatedness	-1.1172**	-0.6434	-0.7669	-0.6964
	(0.52)	(0.59)	(0.61)	(0.60)
R-squared pseudo	0.1408	0.1369	0.1521	0.1377

Standard errors in parentheses.
*p<.1, **p<.05, ***p<.01

5.3. ESG Targets and Post-M&A Performance

In the following the relationship between the long-term post-merger performance and if the target has an ESG score is analysed. Hypothesis 7 puts forward the expectation that when a target company has an ESG score, the post-merger M&A performance is better than for the counterfactual group. From the model in table 14, it is evident that the ESG score of the target can be a good predictor for the BHAR as the coefficient is significant at a 5% level. On average, it can be observed that acquirors that take over a firm with an ESG score perform 38.53 basis points better than acquirors who take over a target without an ESG score. Figure 1 graphically illustrates the finding by showing that the average bidders' BHAR that takes over an ESG target is above the average BHAR of their counterparts. This finding makes sense in combination with previous results of the study as it is documented that ESG goes hand in hand with larger transaction sizes. Acquiring companies are willing to pay a higher price for the target because they can expect their post-M&A performance to be better. This is in line with previous research in a similar context by Salvi et al. (2018) that focuses on operating performance and found a positive long-term relationship between ROA and sustainability.

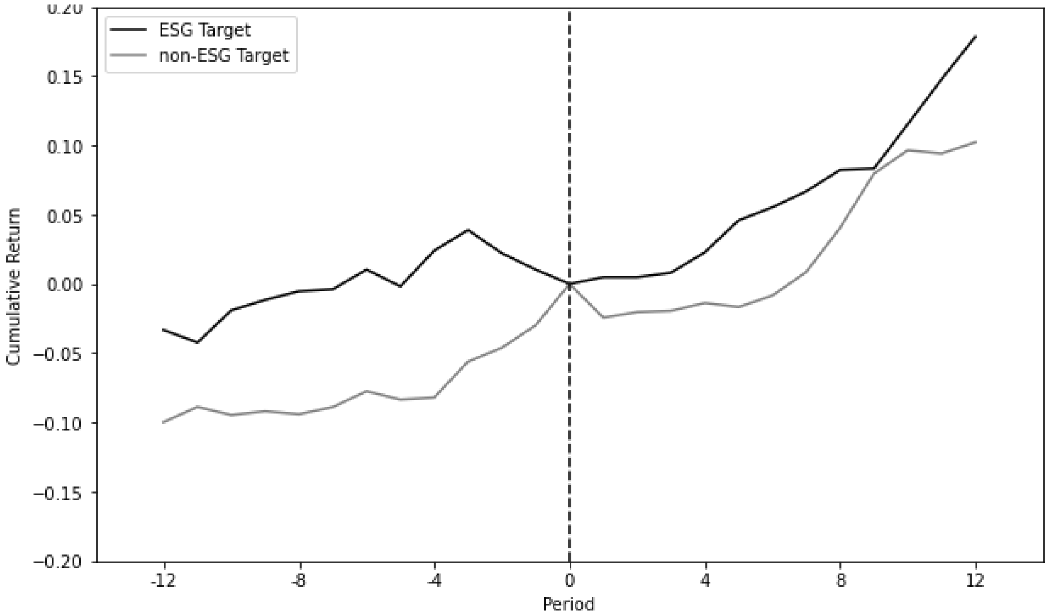
Additionally, it is also evident that *Tobin's Q* is a good measure to forecast the 12m performance. The positive significant relationship leads to the conclusion that acquirors that have a high market valuation before the merger tend to also continue on the same path and perform better than less profitable firms. *Tobin's Q* as a good predictor for M&A performance has also been found by Servaes (1991).

Table 14: Target ESG Dummy on BHAR

	BHAR
constant	-0.5559*
	(0.29)
ESG Target Dummy	0.3853***
	(0.14)
ln(Deal Value)	0.0038
	(0.02)
Operating Income	0.391
	(0.39)
Deal Participation	0.0002
	(0.00)
Market Leverage	0.4749
	(0.37)
Tobin's Q	0.1569**
	(0.06)
Deal Attitude	0.1238
	(0.13)
Industry Relatedness	-0.0223
	(0.09)
Year Fixed-Effects	Yes
R-squared adj.	9.37%

Standard errors in parentheses.
*p<.1, **p<.05, ***p<.01

Figure 2: Average Cumulative Return Path for Winning Acquirors



Source: CRSP

6. Robustness Tests

In the regressions, it is partially adjusted for the potential impact of firm size on the observed association between ESG and takeover auction results by using *Tobin's Q* as a control variable. By separating the effects of firm size from the particular impact of ESG factors, this inclusion improves the validity and robustness of the analysis. The fact that Tobin's Q displays a negative coefficient in tables 8 to 13 is notable because it suggests that higher-valued and larger firms are less competitive in the auction processes. ESG elements, on the other hand, exhibit a positive coefficient, emphasizing their unique contribution to the outcomes of takeover auctions.

The results of why an ESG score is important and why a high ESG score is of relevance confirm each other. Therefore, these findings are very strong and the focus of the robustness tests is laid on the performance measurement.

To test the robustness of the post-M&A performance, the analysis considers multiple time intervals to identify potential time-dependent impacts. In section 5.3, a time horizon of 12 months is used. To test the robustness, complementary to the main finding, the post-merger BHAR for a time of 24 months and 36 months are examined. As in 5.3 year-fixed effects are included in the model. The 24m and 36m BHAR cannot be explained by the model. The Adjusted R^2 are very low and the models do not seem to explain any variation in the data. Therefore it can be concluded that the positive effect that is attributed to ESG only shows statistical significance for the return one year after the M&A transaction. This might be the case as the more time after the deal passes by, the more other external factors come into play, which makes it increasingly more difficult to isolate the effect that is attributable to the takeover (Renneboog and Vansteenkiste, 2019).

Table 15: Robustness Check for Target ESG Dummy on BHAR

Dependent variable	BHAR		
Independent variables	12 months	24 months	36 months
Constant	-0.5559*	-0.5248	-0.4566
	(0.29)	(0.61)	(0.60)
Target ESG Dummy	0.3853***	0.1925	-0.0783
	(0.14)	(0.29)	(0.27)
ln(Deal Value)	0.0038	-0.0214	0.0144
	(0.02)	(0.05)	(0.05)
Operating Income	0.391	0.6959	-0.0265
	(0.39)	(0.92)	(0.89)
Deal Participation	0.0002	0.0008	0.0014*
	(0.00)	(0.00)	(0.00)
Market Leverage	0.4749	1.3795*	1.4307*
	(0.37)	(0.75)	(0.73)
Tobin's Q	0.1569**	0.1103	0.1995
	(0.06)	(0.13)	(0.12)
Deal Attitude	0.1238	0.2492	0.3283
	(0.13)	(0.29)	(0.28)
Industry Relatedness	-0.0223	-0.0963	-0.3504*
	(0.09)	(0.19)	(0.19)
Year Fixed-Effects	Yes	Yes	Yes
R-squared adj.	9.37%	-0.65%	-2.33%

Standard errors in parentheses.
*p<.1, **p<.05, ***p<.01

Additionally, the regression to determine the BHAR is performed in a sample where only the top and bottom 3% are cut off and the full sample without excluding outliers. The results show less significance for the ESG score of the target in the 3% percentile sample and no significance in the full sample. While the distribution for the BHAR is extremely skewed, especially through outliers (maximum loss for a firm is 100% while the upside is unlimited), it seems important to cut off these outliers to represent the normal patterns in the data, to make the regression results more representative. The increase in the Adjusted R^2 is due to the outliers and obscures the real result of the regression.

Table 16: Robustness Check in Full Sample

Dependent variable		BHAR	
Independent variables	5% trimmed sample	3% trimmed sample	Full Sample
Constant	-0.5559*	-0.5191	-0.1017
	(0.29)	(0.31)	(0.38)
Target ESG Dummy	0.3853***	0.2583*	0.1174
	(0.14)	(0.15)	(0.17)
ln(Deal Value)	0.0038	0.002	-0.0421
	(0.02)	(0.03)	(0.03)
Operating Income	0.391	0.5151	0.5505
	(0.39)	(0.44)	(0.40)
Deal Participation	0.0002	0.0003	0.0006
	(0.00)	(0.00)	(0.00)
Market Leverage	0.4749	0.7753**	1.2050**
	(0.37)	(0.39)	(0.47)
Tobin's Q	0.1569**	0.1574**	0.3314***
	(0.06)	(0.07)	(0.07)
Deal Attitude	0.1238	0.0143	0.002
	(0.13)	(0.14)	(0.17)
Industry Relatedness	-0.0223	0.0239	-0.0553
	(0.09)	(0.10)	(0.12)
Year Fixed-Effects	Yes	Yes	Yes
R-squared adj.	9.37%	2.70%	23.81%

Standard errors in parentheses.
*p<.1, **p<.05, ***p<.01

7. Limitations

It is important to note that the interpretation of the obtained results depends on the quality of the ESG score data and the control variables included in the model. If the ESG score is not an accurate measure of a company's environmental, social, and governance practices or the control variables are not properly specified, the results may not be reliable. Considering that ESG scores themselves vary greatly among providers as discussed in section 2.1, this limitation gains even stronger importance.

Additionally, there might be the possibility that there are other unobservable factors that influence the outcome of M&A takeover auctions that are not captured in the model. Therefore, the results should be interpreted with caution, and additional analyses and sensitivity tests may be necessary to confirm the findings.

The sample size of firms participating in bidding contests that have an ESG score is rather small. As bidding contest data is already a very limiting factor in studying M&A transactions, the sample shrinks even more as ESG scores are only available from 2002 and a significant proportion of the firms does not obtain such a score. In future research, a larger sample could potentially add value to confirm the findings laid out in this paper.

The assumption that all shareholders of an acquiring business favour financial incentives over other non-financial considerations, including ESG factors, is one potential drawback of this study. In actuality, shareholder preferences might vary, and some shareholders may place a high value on ESG issues, potentially deliberately foregoing incremental financial gains to acquire an ESG-friendly corporation. Future research could look at the variety of shareholder preferences and their impact on the acquisition decision-making process, taking into account the different weights given to financial and non-financial elements.

8. Conclusion

This research paper examines the impact of ESG factors in takeover auctions. The study begins by analysing various pre-takeover characteristics of the acquiror, target company, and the overall deal to identify predictors that affect transaction value and the success of the deal. Three different sets of analyses are conducted: the first investigates the presence or absence of ESG scores in M&A takeover auctions, while the second focuses on a subset of the previous analysis to determine whether the level of the ESG score has an influence. Thirdly, the study assesses the post-merger performance of winning bidders and compares the outcome for those who acquired a target with an ESG score versus those who acquired a target without an ESG score. Firstly, it is found that having an ESG score significantly positively impacts the transaction value of targets. This indicates that the market perceives this characteristic favourably as it might influence business performance. Subsequently, it is analysed if acquirors with an ESG score are more likely to engage in bidding auctions for targets with an ESG score. The results of this regression indicate that there is no clear evidence for this phenomenon. One potential cause for this could be that all market participants are equally interested in taking over targets with an ESG score. Furthermore, there might even be ESG acquirors that specifically want to add value to targets by enhancing their ESG practices. By evaluating the third hypothesis evidence is brought forward which shows that firms with an ESG score are more likely to win in a bidding contest.

The second set of analyses strongly corroborates the initial findings, providing robust support for the notion that ESG factors hold significant relevance in M&A takeover auctions. Hand in hand with the results that having an ESG score positively affects the transaction value of a target also the level of the ESG score is relevant in determining the transaction price. The higher the ESG score, the higher the value of the bid. Testing if acquirors with high ESG scores are more inclined to bid for firms with high ESG scores yields inconsistent results. The reasons for such inconsistencies or discrepancies are laid out earlier in this part. In addition to these findings, it is also evident that acquirors with a high ESG score are more likely to win a bidding contest.

The presence of an ESG score of the target firm is identified as a statistically significant predictor for the 12-month post-merger BHAR of the winning bidders. An acquiror's performance who takes over a target with an ESG rating is on average 38.53 basis points better than for an acquiror who takes over a target without an ESG score. Therefore it can be stated that the target firm's ESG performance or attributes are linked to the acquiring firm's financial performance in the year following the merger. This leads to the inference that incorporating

ESG considerations throughout the purchase process may have a favorable impact on the acquiring firm's financial outcomes in the post-merger period.

Concluding, this research thoroughly investigates the role of ESG issues in takeover auctions. The findings consistently show that ESG scores have an impact on transaction value, bidding contest outcomes, and post-merger financial performance. According to the study, having an ESG score has a favourable effect on transaction value and increases the likelihood of winning a bidding contest. Furthermore, the magnitude of the ESG score determines the transaction price, with higher ESG ratings corresponding to higher bid values. While the relationship between acquirors' ESG scores and their preference for targets with ESG scores remains unresolved, the overall findings strongly support the view that ESG concerns are important in M&A takeover auctions. Furthermore, the study finds that the target firm's ESG score is a strong predictor of the acquiring firm's financial performance in the post-merger era. These findings highlight the need of including ESG concerns in the acquisition process in order to improve financial outcomes and encourage sustainable business practices.

The research outcome has significant managerial implications. Managers involved in takeover auctions should recognize the importance of ESG factors in influencing transaction outcomes. They should prioritize evaluating the ESG performance and attributes of target firms as part of their due diligence process. Incorporating and highlighting strong ESG characteristics in their firms can enhance competitiveness and attract sustainable investors. By aligning with sustainable business practices, managers can contribute to long-term value creation and promote business sustainability. Understanding and integrating ESG considerations provide managers with a strategic advantage in the competitive landscape of takeover auctions.

Future research could investigate the effects of ESG integration on non-financial outcomes such as corporate reputation, employee satisfaction, customer loyalty, and overall stakeholder perceptions. Moreover assessing investor activism and ESG integration in takeover auctions by analysing the impact of shareholder activism, proxy voting, and engagement strategies on the valuation, bidding process, and post-merger performance would be a topic of relevance. These research directions can help investors, managers, policymakers, and other stakeholders involved in M&A transactions to gain a better understanding of the relevance and implications of ESG issues in takeover auctions.

Appendix

Appendix 1: Breakdown of Refinitiv DataStream ESG score

Pillar	Category	Indicators in Scoring	Weights
Environmental	Resource Use	20	11.0%
	Emissions	22	12.0%
	Innovation	19	11.0%
Social	Workforce	29	16.0%
	Human Rights	8	4.5%
	Community	14	8.0%
	Product Responsibility	12	7.0%
Governance	Management	34	19.0%
	Shareholders	12	7.0%
	CSR Strategy	8	4.5%
Total		**178**	**100.0%**

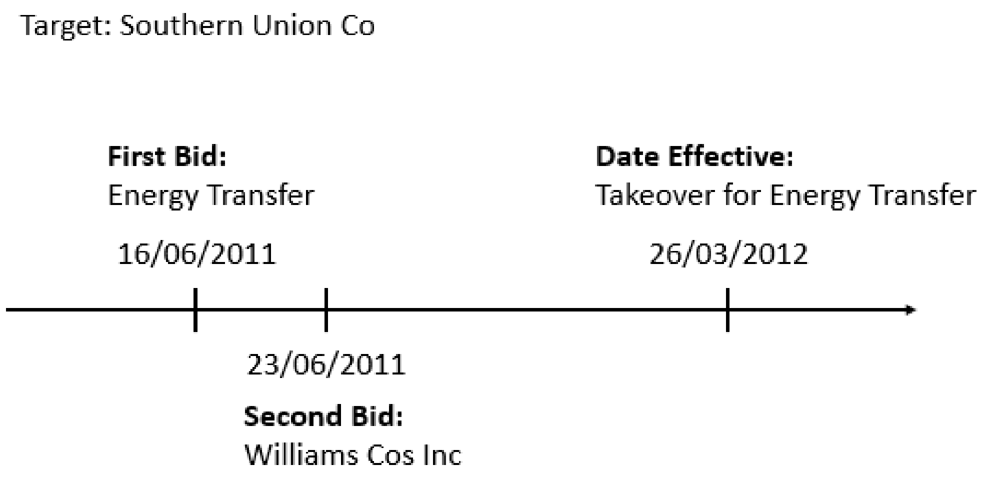
Source: Refinitiv DataStream

Appendix 2: Control Variables

Variable	Description	Calculation	Source
Acquiror Market Leverage	Acquiror's market leverage in the year before the announcement of the bid	Debt in current liabilities plus long-term debt, divided by market value	Compustat
Acquiror Profitability	Acquiror's profitability in the year before the announcement of the bid	Operating income before depreciation divided by total assets	Compustat
Acquiror Tobin's Q	Tobin's Q of the acquiror in the year before the announcement date of the bid	Ratio of market value to book value of assets	Compustat
Transaction Value	The log of the Transaction Value	log(Transaction Value)	SDC Platinum
Deal Participation Time	Time the bidder is involved in the contest	Date Announced – Date Effective or Date Withdrawn	SDC Platinum
Deal Attitude	Indicator if the deal attitude is friendly or hostile	Dummy equals 1 if friendly takeover, otherwise 0	SDC Platinum
Industry Relatedness	Considers if the acquiror's and target's industries are related	Dummy equals 1 if the acquiror and the target are from the same macro-industry	SDC Platinum

Appendix 3: Example of a bidding contest

On 16/06/2011 Energy Transfer filed the first bid for Southern Union. Subsequently, Williams also identified the firm as a suitable acquisition target and offered a takeover bid on 23/06/2011. The shareholders of Energy Transfer decided to accept the offer of Energy Transfer and the acquisition could be successfully completed on 26/03/2012 with Energy Transfer as the winner and Williams as the loser in this contest.



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