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THE IMPACT OF ENVIRONMENTAL, SOCIAL AND
GOVERNANCE FACTORS ON ACQUIRER RETURNS AND
LONG-TERM PERFORMANCE IN THE CONTEXT OF
AMERICAN MERGERS & ACQUISITIONS

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Abstract

This paper investigates the impact of Environmental, Social, and Governance (ESG) factors on Mergers and Acquisitions (M&A) in the American market. By analysing a dataset of 4,067 M&A transactions, it examines the correlation between ESG ratings and the acquirers' announcement returns and long-term performance. Through diverse econometric methodologies, the study reveals significant insights into how ESG considerations shape the financial outcomes of M&A activities, highlighting the growing importance of sustainability in corporate decision-making and performance in the contemporary financial landscape.

Keywords: Mergers & Acquisitions, ESG, CAR, Long-term performance, Paris Agreement, Event study

Foreword

I would like to express my gratitude to Dr. Rex Wang for his guidance and mentorship throughout the journey of my thesis. His feedback and constructive suggestions have been very instructive, for which I am immensely thankful. As this paper marks the end of my academic journey, I would like to take this opportunity to thank the entire Erasmus School of Economics. The learning and personal growth I have experienced over the past five years are beyond description.

I am equally grateful to my friends and family, whose support and companionship have been a cornerstone of my life, particularly during this thesis process.

In closing, a special acknowledgment to my parents and my brother, whose unconditional love and support have been essential in all my achievements. They helped me grow into the person I am today, and every decision I have made was met with their encouragement and belief in me.

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1. Introduction

With the rising popularity of sustainability in the media, politics, and the economy, understanding its integration into corporate strategies has become crucial. Indeed, more than one-eighth of today's U.S. capital market is invested in Socially Responsible Investments (US SIF Foundation, 2022) yet the sustainable investing landscape is still confusing for many investors and researchers. Every year, new regulatory proposals as well as papers with opposing views rearrange public opinion yet one trend stays constant, the increasing public's interest in sustainable investing.

Similar to the public's interest, the academic literature is also increasingly exploring the topic. Many researchers are trying to figure out the effects of including sustainability measures in investment strategies observing elements such as stock returns, R&D¹ investments, valuation, and volatility (Giese et al., 2019; Xu et al., 2021). However, the literature still suffers from contradictory views and scholars found evidence for opposing relationships. For example, articles were published defending the shareholder theory (Adler & Kritzman, 2008; Capelle-Blancard & Monjon, 2014; Palmer et al., 1995) and others supporting an opposing view, the stakeholder theory (Freeman, 2010; Kempf & Osthoff, 2007; Porter & Kramer, 2006).

The shareholder theory, focused on maximising shareholder wealth, prioritises financial returns and considers environmental, social, and governance (ESG) factors as damaging to shareholder value. In contrast, the stakeholder theory, advocating for a balance of interests among all stakeholders², integrates ESG considerations into core business strategies, defending that a firm cannot prosper without being responsible to all stakeholders. This debate is still ongoing in the literature and this paper will try to bring new evidence by analysing a new sample.

One sector where this increase in awareness also took place is the Mergers & Acquisitions (M&A) market. According to a report written by Deloitte (2022), sustainability matters are taken into consideration in 70% of corporate transactions when evaluating a potential target. Remarkably, this segment falls behind in terms of academic attention with a limited number of articles analysing the impact of sustainability practices on M&A performance and returns. This is quite surprising as M&A transactions offer a great framework to analyse market reaction using an already vastly documented underlying theory and great performance measurement tools. For more than 30 years, scholars have been analysing announcement returns, price premiums, post-acquisition performance and much more. The current understanding of M&A transactions is more than adequate to be used as underlying theory for an analysis of sustainability on financial performance.

¹ Research & Development, used to measure a company's investments in innovation.

² Stakeholders include both internal stakeholders (shareholders, employees, and management) and external stakeholders (consumers, contractors, government, and society)

Therefore, this research will investigate how ESG ratings, encompassing environmental, social, and governance aspects, influence the dynamics and outcomes of M&A transactions. Given the increasing pressure on corporate governance and the growing emphasis on Corporate Social Responsibility (CSR), this thesis aims to explore the impact of these factors on M&A performance. By doing so, this thesis will fill an existing gap in the literature between the existing theory covering M&A transactions and the growing topic of ESG ratings. As a result, it aims to answer the following research question:

“How do ESG factors impact acquirer’s announcement returns and long-term performance in the context of M&A transactions in the American market?”

This paper contributes to the existing literature by covering the growing field of sustainable finance, analysing the effect of ESG practices on M&A performance, a topic with little previous research. Furthermore, this thesis also contributes to the broader academic effort by empirically analysing a new sample, thereby extending the current understanding of the role of sustainability in the context of corporate transactions. Additionally, because of the developing aspect of sustainability measures (ESG ratings), the literature benefits from every extra study integrating improved ESG ratings.

Practically, understanding the relationship between ESG practices and M&A performance is highly valuable to anyone taking part in the financial market. Due to the increasing importance of sustainability factors in decision-making and the risks/benefits they can carry, the results of this thesis are relevant to every investor and regulator. Indeed, identifying how the market will react and how the acquirer will be impacted by the ESG practices in the context of an M&A transaction is valuable if we want to stimulate transactions that will have a positive ESG impact.

To thoroughly answer the research question, this paper will analyse a sample of 4,067 transactions, consisting of acquisitions larger than USD 5 million and performed by companies publicly traded on the American stock market. The transactions’ announcement dates range from January 2002 to December 2022. The acquirer’s returns following the announcement will be analysed to determine the immediate financial impact of both the acquirer’s and the target’s ESG factors during an acquisition. Also, the long-term progress in sustainability and profitability from the acquirer will be studied to draw conclusions on the longer-term effects. The effect of the Paris Agreement will also be investigated.

The findings of this thesis suggest that both the target’s and the acquirer’s ESG ratings have a negative impact on the acquirer’s returns, implying that investing in sustainability is costly for the acquirer, supporting the shareholder theory. This paper does not find any significant effect for the individual pillars of the ESG rating nor the ESG gap between acquirer and target. Robustness tests confirm those findings when controlling for different event windows or sample compositions. For the long-term

effects, the regressions suggest that “buying up”³ in ESG is associated with a progress in ESG rating but also with a profitability decrease.

This thesis interpretation is that acquiring targets with a higher ESG score is costly in terms of profitability and announcement returns for the acquirer but there is evidence that the relative ESG gap is integrated by the acquirer, improving sustainability. The sustainability result is robust to a longer observation period: when looking at the 3-year progress ESG, the positive effect is even stronger, yet the negative effect on profitability gets weaker implying that a company is likely to somewhat recover in the 3 years following a “buying up” in ESG acquisition.

The structure of this thesis is organised as follows. The following chapter, titled *Literature Review* lays the foundation for the research, presenting the main research question backed by a comprehensive review of relevant literature. Then, the *Data* chapter details the criteria for sample selection and the sources of data utilised, along with an examination of descriptive statistics and sample correlations. The *Methodology* section elaborates on the specific model specifications and the selection process for these models. Next, the *Results* section provides an in-depth analysis of the findings, including robustness checks and supplementary analyses. The thesis culminates in the *Conclusion*, which not only offers a summary of the research but also discusses its limitations and broader implications.

2. Literature review

In this chapter, the relevant literature is discussed. First, sustainability topics will be discussed. Accordingly, ESG ratings and their role in investment decision-making will be considered. Then, M&A transactions and their causes/returns will be contemplated. Lastly, the link between those two topics in the literature will be reviewed.

2.1. Sustainability and ESG rating

Next to the intensified public interest, the relevance of sustainability for politics and economics has ensured that it became a crucial element in the scientific literature. Many researchers are exploring the subject, trying to understand what the best ways are to achieve sustainability, what role big corporations need to play, and what actions they need to undertake to prevail in the long-term.

Behind the topic of sustainability is the question of who, what, and how a business should be run to be socially responsible (Elkington, 2006). In the literature, many authors have a different view on what running a company sustainably means (van Marrewijk, 2003) yet, many agree on this: corporate sustainability signifies creating long-term value while taking account of economic, social, and

³ Buying up (down) = an acquirer taking over a target with a higher (lower) ESG score

environmental aspects of the business. The shareholder preference for sustainability has been reported in academic papers (Kramer & Porter, 2011), and identified as a requirement for competition purposes. Economists also detected that in times of increasing pressure on the topic of sustainability, companies tend to embrace changes in favour of social/environmental/moral values (Aguilera et al., 2007).

Researchers began to notice a pattern of increasing pressure on corporate governance as early as the mid-1990s, and later on global organisations like the World Bank, WTO, and IMF. Since then, corporate social responsibility, or CSR, has gained significant attention from the public and shareholders alike. This effect is measured using a variety of metrics, the most popular of which is the ESG framework. With its three pillars—environment, social responsibility, and governance—it seeks to quantify corporate sustainability.

It (ESG framework) rates a company on three different pillars that together represent sustainability: Environment, Social, and Governance performance. The rating ranges from 0 to 100 with a score under 50 being poor and above 70 seen as good. In comparison to its industry/geographic peers, the final score represents an estimate of how sustainable a company is across all relevant sectors. Helping market participants (and consequently the general public) comprehend the company's ethics, social impact, and environmental implications is another goal of the final score and rating agencies.

Over the years, the ESG framework has come a long way, now encompassing broader aspects like climate change mitigation, diversity, and ethical governance in addition to the initial ethical and sustainable topics. This development is a reflection of how corporate responsibility is evolving, with investors increasingly using ESG scores to guide capital allocation decisions. Since then, it has been published by a number of companies, each with its own methodology, including MSCI, Refinitiv, Bloomberg, Sustainalytics, and ISS ESG. The ESG rating sector is still developing, with talks about transparency and standardisation. Moving forward from the mid-1990s, ESG scores are anticipated to become more and more important in promoting sustainability and ethical business practices globally.

2.2. ESG investing

In both the academic and corporate worlds, the ESG framework has emerged as the most widely used and accepted indicator of a company's sustainability performance and ethics. This rise is the result of both shifting global trends and a shift in the mindset of society. Roughly 95% of major corporations⁴ disclosed their ESG performance in 2021. The availability and quality of those reports keep on improving (IFAC, 2023). The environmental and social issues facing our modern society have made investing in sustainable projects both necessary and advantageous simultaneously. Socially responsible investments (SRIs) now account for more than 12% of the US capital market (US SIF Foundation,

⁴ The 50 largest companies were reviewed for the G20 countries, Spain, Hong Kong S.A.R., and Singapore

2022). These numbers demonstrate the importance of sustainable investments for professionals and why it has become a central topic in the literature.

Indeed, a lot of researchers have used the ESG rating as a measurement tool to examine the relationship between a company's sustainability and financial performance. The findings of Derwall et al. (2005), Eccles et al. (2014), Kempf and Osthoff (2007), and Statman and Glushkov (2009), using a variety of ESG databases, indicate that there is a positive correlation between firm returns and ESG score, suggesting that investors may profit from trading on the ESG.

Halbritter and Dorfleitner (2015), on the other hand, released a more critical paper on the subject, characterising ESG ratings as irregular and raising doubts about the reliability of using the correlation between ESG ratings and returns for investment strategies. Billio et al. (2020) further investigate this subject by linking the variations in ESG ratings to financial performance. They claim that because of these inconsistencies, the impact of the ESG rating on financial returns is non-existent.

Similar to Berg et al. (2022), who study divergences in ESG ratings and offer solutions to lessen their impact, the findings of Billio et al. (2020) strongly encourage the advancement of precise ESG ratings. They also suggest methods to reduce the effect of ESG rating divergences on empirical results. One of those solutions—which will be implemented in this paper—is to employ a single, carefully chosen ESG rating source, chosen in accordance with the study it will be used for, instead of merging different databases from various data providers to increase the sample size. Additionally, Gyönyörová et al. (2023) recommend that when using ESG ratings in academic work, researchers should account for industry and geographic sectors.

Nonetheless, researchers are already able to carefully use ESG ratings in their study and produce strong and significant results, and steps are being taken to improve ESG reporting (EU ESG taxonomy, Paris Agreement, etc.).

Ultimately, with improving ESG ratings transparency and trustworthiness, analysing the relationship between sustainability and financial performance gets more relevant and insightful. This paper essentially aims to find some evidence in a particular context (M&A transactions) using high-quality data that would add to the body of existing literature.

2.3. M&A transactions

The topic of M&A transactions has already been extensively reviewed by the existing literature, providing a great theoretical foundation to support the analysis that will be conducted in this paper. The analysis of the announcement returns (Jensen & Ruback, 1983) and post-acquisition performance (Datta, 1991) will be supported by confirmed theories. This thesis will also rely on the larger M&A literature as an underlying theory such as the analysis of the premiums by Simonyan (2014) or the effect

of R&D spending (Hitt et al., 1990) as well as the impact of transactions on performance, plant productivity, and worker efficiency (Siegel & Simons, 2010).

This thesis is also based on the theory that M&A activity is driven by potential strategic synergies (Rozen-Bakher, 2018), size growth (Owen & Yawson, 2010), political motivations (Lee, 2018), financial advantages (Leland, 2007) and many more aspects. Nevertheless, due to the newness of sustainability concerns and especially the ESG framework, not many papers have researched its link with M&A activity. The purpose of this research is to fill that gap in the literature by analysing acquirer announcement returns and long-term performance following a transaction. If a positive relationship between those performance measures and ESG rating is discovered, this would imply that sustainability could be a reason to pursue M&A transactions.

2.4. Announcement returns (reaction to news)

Since acquirer returns reflect the stock price's immediate response to the deal announcement, they are regarded in the literature as a measure of a transaction's profitability from the perspective of the acquiring shareholders (Masulis, 2007). They have been extensively analysed by scholars trying to understand the financial effects of a deal announcement, depending on deal and company characteristics such as deal type, geography, industry, and many more.

Using public companies as an example, Travlos (1987) investigated the impact of the payment method on the acquirer's announcement returns. Following the information asymmetry theory, companies offering stock as a payment method indirectly signal the market that their stock is overvalued. As a reaction, their stock price tends to decrease following the announcement, experiencing more losses than companies offering cash. Furthermore, Jensen and Ruback (1983) demonstrated that corporate takeovers resulted in gains for the target without necessarily causing losses for the company making the bid. More recent studies also displayed announcement returns close to zero for the acquirer (Schneider & Spalt, 2017). Faccio et al. (2006) also found some evidence for acquirer returns close to zero when targeting publicly listed companies. However, when looking at private targets, their study showed positive acquirer returns.

Consequently, evidence was discovered by Chang (1998) and Fuller et al. (2002) demonstrating that the mode of payment had no significant effect on the acquisition of private companies. Maloney et al. (1993) demonstrated how additional bidder characteristics, like leverage, may impact announcement returns. All of those articles emphasise the influence that deal and firm variables may have on the announcement return, and as a result, they all advise accounting for them when analysing CARs.

Over the years, many economists have tried to identify reasons that could explain those low or even negative returns for the acquirer and what is then the motivation for acquirers. One reasonable explanation is that acquirers are more likely to be very aggressive and offer significant premiums

because the M&A market is overly competitive (Mandelker, 1974). In a now-famous paper published in 1986, Roll identified this phenomenon as the Hubris hypothesis, which explained why managers would overpay for mergers. According to this theory, managers make decisions about whether to buy another company based on their own assessment of an asset that already has a defined market value. Since the target's intrinsic value is unknown to possible buyers, its valuation is based on data that is available to each bidder and is therefore prone to inaccuracy. This suggests that a manager will place a bid even if an estimate error causes his valuation to be higher than the market price. This theory is supported by Malmendier and Tate's (2008) findings, which show that managers frequently overestimate their worth when making acquisition bids for businesses and frequently make value-destroying purchases.

Some argue that the value-destroying nature of some mergers may account for the lack of acquirer returns (Moeller et al., 2005). Overpaying can always result in value destruction, but Harford et al. (2012) also found that poor target selection—which is often prompted by mistaken synergy identification—can also lead to negative returns.

Finally, because diversifying mergers require more elaborate integration procedures, they have also been linked to negative returns (Li et al., 2018). Hitt et al. (2012) also label cross-border acquisitions as challenging in terms of value and synergy creation in their study.

Another factor influencing acquirer returns that has been identified in the literature is the deal attitude. Servaes (1991) demonstrated that hostile offers tended to be associated with higher premiums which subsequently reduced acquirer returns.

In summary, acquirer returns are a great measure of the market sentiment after the announcement of a deal and incorporate the effect of many factors as described previously. Therefore, it is reasonable to believe that they will also encompass some information about the sustainability matter in a transaction and its effect on profitability as interpreted by the market.

2.5. Long-term performance in acquisitions

The impact of deal characteristics on operating performance and long-term stock returns is also discussed in the literature; many of those have similar effects on both short- and long-term performance. The vast majority of papers covering the subject found significantly negative acquirer returns such as Bessembinder and Zhang (2013) and Dutta and Jog (2009). Certain predictors have been repeatedly found to have an impact on stock returns and long-term performance throughout the literature. One characteristic of a deal that has been shown to have a negative impact on long-term performance is the CEO's overconfidence, which raises firm acquisitiveness. Published studies (Ahern, 2012; Antoniou et al., 2007) support the idea that firm returns typically decline from one transaction to the next, pointing to serial acquisitions as the main cause of unfavourable long-term outcomes. Second, because of the

integration difficulties they create, diversifying acquisitions were also found to produce lower revenues than related or focused transactions (Renneboog & Vansteenkiste, 2019). All things considered, acquirer governance, merger execution, and integration are the primary factors influencing long-term returns as reported by the literature.

2.6. ESG rating and value creation

Understanding whether sustainability (mostly using the ESG framework) can be value-creating is essential for the literature, yet the debate is still ongoing. Many scholars argue on the impact that incorporating ESG factors in investment decision-making can have on financial performance.

On one side, the theory is that companies should maximise profits and shareholder value as this is the only responsibility of the firm. Any other non-financial objective is described as value-destroying by Friedman (1970). He argues that, according to the shareholder theory, such actions decrease a firm's efficiency and are therefore undesirable. Furthermore, research by Capelle-Blancard and Monjon (2014) reveals evidence that a more rigorous screening procedure for socially conscious funds could have a negative impact on financial performance. Palmer et al. (1995) provide additional support for this theory, stating that investors frequently overpay for ESG investments because they overvalue the socially conscious project or company, which drives up costs. Additionally, Adler and Kritzman (2008) discovered that funding socially conscious projects was more expensive.

On the other side, scholars also showed that the stakeholder theory did not require financial profits and ESG performance to be mutually exclusive, but rather that they could coexist (Freeman, 2010; Porter & Kramer, 2006). Additionally, Kempf and Osthoff (2007) discovered evidence of high abnormal returns from socially conscious investing. Furthermore, implementing sound ESG practices tends to improve a company's reputation and satisfy stakeholders (Freeman, 2010). As a result, there may be an indirect benefit in terms of improved reputation attracting more capital and investors leading to more profits (Cheng et al., 2014).

Likewise, Ferrell et al. (2016) showed that firm value and ESG performance are positively correlated. Also, in their article, Eccles et al. (2014) demonstrated that firms with voluntarily implemented sustainability policies are more likely to be long-term focused, have better communications with their shareholders, and exhibit improved transparency in measuring and sharing nonfinancial data. They also found that these businesses tended to financially outperform the competition both on the stock market and accounting performance measures.

These opposing theories lie at the centre of this thesis and are the reason why we will analyse the relationship between ESG rating and announcement returns, as well as long-term performance, to better understand the relationship between ESG performance and financial returns.

2.7. ESG and value creation in the context of acquisitions

Combining the topics that were explained here above leads us to the specific area of this paper: the effect of ESG practices on financial performance in the context of acquisitions. The following papers already defined a path that this thesis will try to complete.

The first relevant article covering the relationship between an acquirer's sustainability and announcement returns was written by Deng et al. (2013) who analysed announcement returns. Their findings suggest that, when looking at acquirers after a transaction announcement, better sustainability practices are associated with higher returns. They also found a positive relationship between acquirer sustainability and long-term performance. Not long ago, Zhang et al. (2022) used the ASSET4ESG database to support these findings with additional evidence.

Although these studies support Freeman's stakeholder theory, others have been published proving an opposite relationship. That is the case of the article written by Meckl and Theuerkorn (2015) which displayed evidence for an opposite relationship. Indeed, they found some evidence that firms with better ESG practices are likely to experience lower or negative announcement returns, suggesting that they engage in value-destroying transactions. Their paper supports the shareholder theory that firms with better CSR practices may be more likely to overinvest in CSR expenditures at the expense of financial and managerial performance (Peng and Isa, 2020).

The relationship between an acquirer's returns and its target's CSR practices has also been a topic of interest in the literature. Aktas et al. (2011) explored the topic by using a proxy to measure targets' sustainability and found that acquiring targets that are more sustainable leads to higher announcement returns for the acquirer. Especially when the target has better CSR practices than the acquirer. Their interpretation confirms the idea that sustainable investments are rewarded by markets. Similarly, Guidi et al. (2020) showed that unsustainable investment is typically penalised by markets. Their paper, which focused on the gambling and smoking industries, found that acquirers suffered financial losses when they acquired targets involved in "bad industries." Additionally, Chen et al. (2022) found that greater value creation was linked to a positive gap between target and acquirer sustainability.

On the other hand, targets that are more sustainable are often more expensive as they require higher premiums which does hurt the acquirer's returns. Nonetheless, Tampakoudis and Anagnostopoulou (2020) show that the acquirer's post-deal market value is increased when acquiring a target with superior ESG performance. In summary, the literature highlights M&A as a clear context in which CSR practices impact shareholder value, usually in line with the stakeholder theory.

2.8. Paris Agreement

Because ESG disclosure requirements will only get stronger as society's need for responsible investments increases, it is essential to have a grasp of how this will impact M&A transactions. One great measurement tool for the growing importance of sustainable factors is the Paris Agreement (PA). Established in 2015, the PA reassembled 196 countries on a treaty to limit climate change and to limit the temperature increase at 2°C (Gao et al., 2017). Since then, the focus shifted to sustainability, and more regulations have been introduced to reduce climate change. Therefore, it is likely that investors' behaviour will have been impacted by the PA, this paper will also investigate how it impacted M&A transactions.

Some studies already found significant firm changes after the PA. That is the case of Ginglinger and Moreau (2019) who demonstrated that firms with greater climate risk were less leveraged after the PA. They identified both a demand and supply cause for this effect as firms with higher risks were demanding less leverage and the lenders' fees rose for risky firms. In a similar spirit, Jagannathan et al. (2019) argue that investors can reduce portfolio risk by incorporating climate criteria into their investment processes. Also, according to Jagannathan et al. (2019), investors have the potential to decrease portfolio risk by integrating climate-related criteria into their investment strategies.

Despite the growing literature supporting the integration of ESG factors to investment strategies and defending its benefits, there is still a lot to be discovered about the most efficient processes and investment tools to adopt, especially after the introduction of regulations such as the PA.

3. Data

The following chapter will be divided into sections describing the necessary data and sources for this empirical analysis. First, a detailed explanation of the data selection method and the various sources used. Then, the sample and variables employed for this thesis are described. Also, the summary statistics and possible correlations are analysed.

3.1. Data selection

To evaluate the effect of ESG ratings on the financial aspect of M&A transactions this paper gathers deals data (deal type, date, price, sector, parties, etc.), company data (financial profile, ESG score, industry, and ownership) as well as some general control variables (year data, ESG regulations, and industry data).

The deal variables were retrieved from Eikon Dealscreener. Next, the ESG ratings of the acquiring and (when available) target companies were downloaded from the Refinitiv ESG database via Datastream queries. The Refinitiv ESG database was selected among multiple options because of its high

trustworthiness and comprehensive coverage (Shakil, 2021). It is the most frequently used by economists and researchers as a source of ESG data as it provides more transparency and higher quality data than its competitors. The companies' financials were extracted from the Worldscope database in a similar fashion.

The study will focus on American acquirers for data availability and comparability reasons. Indeed, exclusively including companies from the US stock market makes the gathering and analysing of the returns much more straightforward than having to compare returns from different markets and databases. The sample will cover deals with an announcement date from January 2002 to December 2022.

A couple of additional constraints are required to select a relevant and exploitable sample. These criteria, derived from Deng et al. (2013) are described here below:

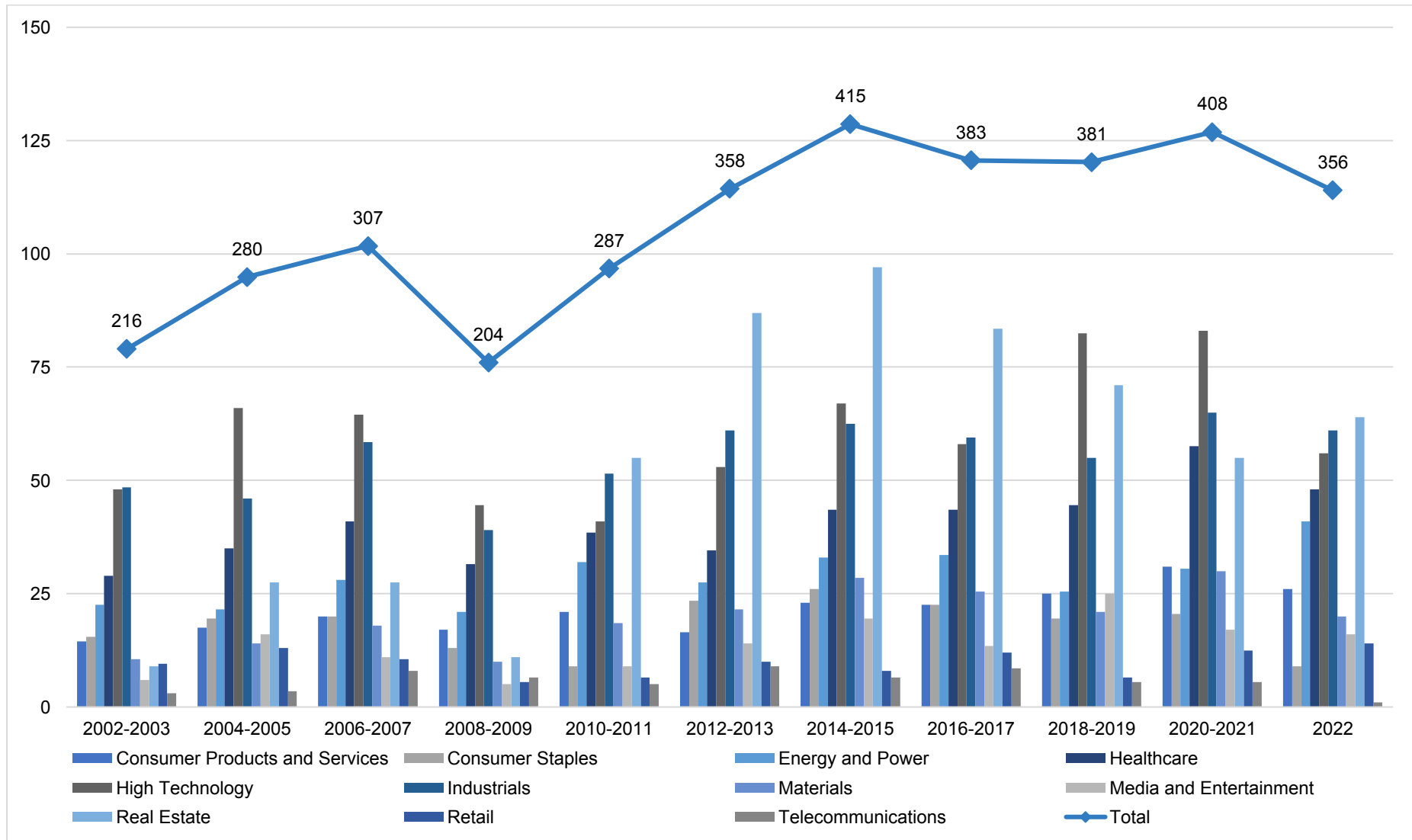
- The deal value is greater than USD 5 million.
- The acquirer purchases at least 50% of the shares of the target.
- The acquirer is publicly traded.
- The deal is not withdrawn.
- The acquirer owns 100% of the shares after the transaction.
- The acquirer has stock returns and financial data available from Eikon Refinitiv.
- The acquirer's industry does not fall under the financial or utilities sector.

Following this process, our sample retains 4,067 deals for which acquirers have obtainable ESG ratings. From those transactions, 175 targets are public companies with reported ESG ratings.

The financial observations are matched with companies and event periods, referring to the previous quarter for acquirers and the previous year for targets.

Figure 1 displays an overview of the yearly average of acquisitions ranked by industry (of the acquirer) and period. Since 2002, a relative increase in the number of acquisitions is noticeable not because of an intensified deal activity but due to the improving availability of acquirer ESG data. Also, Figure 1 clearly displays how the sample is divided across acquirer industries. The major sectors of activity are Real Estate, Industrials, and High Technology.

Figure 1: Yearly average of the number of Acquisitions per Industry



3.2. Sample description

The sample to analyse the effect of ESG practices on performance in the context of M&A transactions was defined and retrieved in last section. This section will analyse it more in-depth and describe and evaluate each variable independently.

The name, a small description, and the source of each variable/variable class are reported in Table 1.

Table 2 reports the number of observations, mean, standard deviation, minimum, and maximum of each variable. These statistics give an idea of the “average” included in the sample. Indeed, from the means we learn that an acquirer has an average ESG score of 41.22 and that the estimated score for a target is 57.45. The mean of only the observable targets is lower at 35.02. Further, Table 2 indicates that the average acquirer size (total assets) ranges between 3.52 and 11.87 (Ln).

As for deal characteristics, the average deal value varies between 1.71 and 9.38 (Ln), with 99% of friendly acquisitions, 21% of cross-border transactions, 34% of diversifying operations. In almost every transaction were 100% of the shares acquired. This was done mostly using cash (67%) or a combination of cash and stock (10%). Most of the targets were privately owned or a subsidiary of another company (48% and 37% respectively).

Table 1: Variables description

This table describes the (sets of) variables needed to perform the empirical analysis of this thesis.

Variables	Description	Source
CAR	Cumulative abnormal returns of the acquirer are calculated using a Market Model/Adjusted Market Model/ Fama & French 3 factors Model with a 100 trading days estimation window ending 11 trading days before the announcement day. Reported in %	Wharton Research Data Service Event Study Tool
ESG score	The overall company score is based on the reported information in the environmental, social, and corporate governance pillars (ESG Score). If the score was unavailable for a target company, a mid- or macro-industry average was used as a proxy.	Refinitiv
Environment Score	Refinitiv's Environment Pillar Score is the weighted average relative rating of a company based on the reported environmental information and the resulting three environmental category scores.	Refinitiv
Social Score	Refinitiv's Social Pillar Score is the weighted average relative rating of a company based on the reported social information and the resulting four social category scores.	Refinitiv
Governance Score	Refinitiv's Governance Pillar Score is the weighted average relative rating of a company based on the reported governance information and the resulting three governance category scores.	Refinitiv
Market-to-book ratio	Tobin's Q ratio of the acquirer/target measured the quarter/year preceding the announcement.	Worldscope
Leverage	Total Debt % Total Capital of the acquirer/target measured the quarter/year preceding the announcement.	Worldscope
Size	Natural logarithm of the total assets (in USD millions) of the acquirer measured the quarter preceding the announcement.	Worldscope
FCF	Free cash flow per share of the acquirer/target measured the quarter/year preceding the announcement.	Worldscope
ROA	Return on assets " $(Net\ Income - Bottom\ Line + ((Interest\ Expense\ on\ Debt - Interest\ Capitalized) * (1 - Tax\ Rate))) / Average\ of\ Last\ Year's\ and\ Current\ Year's\ Total\ Assets * 100$ " of the acquirer/target measured the quarter/year preceding the announcement.	Worldscope
Deal Value	Natural logarithm of the total value (in USD millions) of the transaction.	Eikon Deal Screener
Friendly (Dummy)	Dummy variable describing whether the acquisition was hostile (1) or friendly (0).	Eikon Deal Screener
Cross-border (Dummy)	Dummy variable describing whether the target was established outside (1) or in (0) the United States.	Eikon Deal Screener
Diversifying (Dummy)	Dummy variable describing whether the target operated in the same industry (0) as the acquirer or if it was a diversifying acquisition (1).	Eikon Deal Screener
% of Shares acquired	Percentage of shares acquired reported in %.	Eikon Deal Screener
Payment method	Set of dummies describing whether the acquisition was made using Cash only, Cash & Stock, Stock only, Unknown payment method, or Other (Base level).	Eikon Deal Screener
Target ownership	Set of dummies describing the target's ownership: Private, Public, Subsidiary, or Other (Base level).	Eikon Deal Screener

Table 2: Summary statistics of the variables

This table reports the summary statistics of all the employed independent variables in the analyses. All the continuous variables are winsorized at the 1% and 99% level.

Variable	Obs.	Mean	Std. Dev.	Min	Max
ESG Score (A)	4,067	41.222	18.284	2.29	82.78
ESG Score 1 year after (A)	3,590	43.352	18.226	1.81	83.94
Environment Score (A)	4,065	29.836	28.281	0	90.06
Social Score (A)	4,065	46.672	22.075	.63	94.25
Governance Score (A)	4,067	51.167	21.97	.61	92.24
ESG Score Proxied (T)	4,063	57.45	12.774	11.051	76.791
ESG Score (T)	152	35.023	16.751	2.28	69.91
MTB ratio (A)	4,042	1.925	1.289	0	7.5
Leverage (A)	4,062	39.498	24.417	0	116.75
Free Cash Flow (A)	4,051	1.156	4.814	-62.703	16.364
Return on Assets (A)	4,059	5.699	9.955	-56.83	27.91
Return on Assets 1 year after (A)	3,830	5.401	9.451	-55.2	24.87
Size (Ln) (A)	4,062	8.529	1.567	3.516	11.867
Deal value (Ln)	4,067	5.27	1.712	1.705	9.381
Friendly (Dummy)	4,067	.994	.078	0	1
Cross-border Deal (Dummy)	4,067	.209	.406	0	1
Diversifying Deal (Dummy)	4,067	.339	.473	0	1
% of Shares acquired	4,061	99.636	3.405	50.6	100
Payment method					
Cash Only	4,061	.666	.472	0	1
Cash & Stock	4,061	.104	.305	0	1
Other	4,061	.026	.159	0	1
Stock Only	4,061	.032	.175	0	1
Unknown	4,061	.173	.378	0	1
Target ownership					
Private	4,061	.476	.499	0	1
Public	4,061	.148	.355	0	1
Subsidiary	4,061	.371	.483	0	1
Other	4,061	.006	.075	0	1

Next, the correlation of all the variables used in this thesis is controlled. The values reported in Table 3 represent how strongly 2 variables are correlated. They fluctuate between -1 and +1 and values exceeding -0.7 or +0.7 should be taken seriously as this represents a multicollinearity issue, which endangers the reliability of the findings (Brooks, 2019). High-correlated variables are therefore highlighted in the matrix and require more attention. The first highlighted values are the CARs, which is neither surprising nor problematic as they represent the same results estimated differently and they are always used separately. Next are the 3 pillars E, S, and G scores that are strongly correlated with the combined ESG score. The ESG score is a combination of the three pillars, combining the measures would most likely cause a multicollinearity issue. However, nothing surprising nor problematic as the variables are not used together in this thesis. Finally, the Environment score is highly correlated with the Social score, which is something that can be expected. Companies that perform well in one of the 3 pillars are more likely to perform well in the others. However, this will probably negatively impact the predictive power of the 3 pillar coefficients therefore the 3 pillars will also be studied individually as a robustness test.

Additionally, the Variance Inflation Factor (VIF) values of the independent variables are examined to confirm this presumption. Indeed, according to Linn (2008), if the VIF values of the independent variables are all below 10, multicollinearity concerns can be safely rejected. In this paper, the continuous variables never exceed 10. The categorical variables such as fixed effects and payment methods that represent a small proportion of cases do sometimes reach higher values which is understandable because of the way VIF values are estimated however this has no impact on the rest of the regression. Nonetheless, the models are always considered with and without fixed effects to account for certainty reasons. All in all, there is no presence of multicollinearity issues in the sample.

Table 3: Correlation Matrix*This table reports the calculated correlations between all of the variables employed in the study.*

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) CAR MM (-1;1)	1.000													
(2) CAR FF3F (-1;1)	0.975	1.000												
(3) Δ ESG Score (A)	-0.081	-0.056	1.000											
(4) Δ ROA Score (A)	-0.043	-0.063	-0.105	1.000										
(5) ESG Score (A)	0.059	0.068	-0.370	0.131	1.000									
(6) ESG Score Proxied (T)	0.126	0.095	-0.099	0.103	0.160	1.000								
(7) ESG Score (T)	0.149	0.105	-0.152	-0.043	-0.064	-0.056	1.000							
(8) Environment Score (A)	0.054	0.068	-0.298	0.139	0.747	0.148	-0.067	1.000						
(9) Governance Score (A)	0.090	0.108	-0.288	0.164	0.740	0.044	-0.027	0.457	1.000					
(10) Social Score (A)	0.110	0.097	-0.284	0.150	0.778	0.232	-0.070	0.807	0.466	1.000				
(11) MTB Ratio (A)	0.066	0.061	-0.134	-0.106	0.190	-0.003	0.137	0.209	0.046	0.253	1.000			
(12) Leverage (A)	-0.028	-0.036	0.084	0.031	-0.045	-0.211	0.064	0.016	-0.090	-0.070	-0.033	1.000		
(13) FCF (A)	0.140	0.168	-0.046	-0.081	0.090	-0.004	0.002	0.031	-0.007	0.182	0.218	0.051	1.000	
(14) ROA (A)	0.120	0.140	-0.015	-0.695	0.052	0.006	0.058	0.152	0.070	0.066	0.166	0.059	0.294	1.000
(15) Deal Value (Ln)	-0.084	-0.090	-0.230	0.007	0.355	0.093	0.014	0.438	0.245	0.324	0.236	-0.030	-0.095	0.068
(16) Size (Ln) (A)	0.025	0.028	-0.238	0.136	0.377	0.126	-0.146	0.645	0.224	0.582	-0.066	0.036	0.020	0.150
(17) Payment Method	-0.145	-0.165	0.077	0.040	-0.104	-0.136	0.069	-0.111	-0.008	-0.211	-0.031	0.092	-0.285	-0.122
(18) Target Ownership	0.032	0.021	-0.059	0.014	0.046	0.014	-0.082	-0.079	0.117	-0.028	-0.019	-0.013	0.008	0.061
(19) Deal Attitude	0.088	0.085	-0.034	0.233	-0.089	-0.006	-0.101	-0.118	-0.158	0.024	0.255	-0.161	-0.125	-0.537
(20) Cross-border Deal	0.012	0.038	-0.146	-0.138	0.083	-0.026	0.027	0.034	-0.001	0.064	0.120	-0.014	0.076	0.172
(21) Diversifying	0.067	0.070	-0.139	-0.211	-0.049	0.030	0.062	-0.072	-0.094	-0.018	0.058	-0.138	0.176	0.125

Variables	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(15)	1.000						
(16)	0.511	1.000					
(17)	-0.009	-0.182	1.000				
(18)	-0.132	-0.182	0.072	1.000			
(19)	-0.070	-0.182	-0.063	-0.027	1.000		
(20)	-0.069	0.005	0.038	-0.139	-0.040	1.000	
(21)	-0.099	-0.120	0.023	0.076	-0.045	0.123	1.000

4. Methodology

This chapter presents the statistical methods used in this paper to answer the research questions. In order to identify and isolate the effect that the ESG factors have on the announcement returns of a transaction as well as the long-term effects on the acquirer, many specifications need to be established. Due to the volatile and sensitive aspect of announcement returns, as discussed in the literature review, control variables will be required. The approach to measure announcement returns and long-term performance also needs to be carefully selected. In this chapter, the measure and estimation methods of the variables of interest are presented first followed by the control variables. Then, the econometric models required for this paper and specifications are explained.

4.1. Measuring sustainability

Measuring the sustainability of companies will be done using the Refinitiv ESG rating and 3 pillars rating. This method combines the three (Environment, Social, and Governance) pillars into a simple numeric score ranging from 0 to 100, representing companies with poor ESG performance and reporting transparency around 0. The higher the ESG performance and reporting transparency, the higher the company will score. This grade is formed using 186 comparable measures and is based on the relative ESG performance with regard to the company's industry sector (for the Environment and Social pillar) and its country of origin (for the Governance score). The Refinitiv ESG database is, to this day, one of the most known and used sources of ESG data covering an extensive number of firms globally.

Doing this returns much more observations for the acquirers than for the targets (4,067 and 175 respectively) which is quite problematic as the sample of target firms with an observable ESG rating is very small and different from the full sample. To solve this, a proxy will be used to measure the ESG score of the target. Indeed, the CSR performance of the target will be measured by the mean ESG performance of the industry it performs in the quarter preceding the announcement.

There are advantages and disadvantages to using a proxy, the first disadvantage is that the precision of our data will drop by not including company-specific ratings. Yet, only using observable data would also flaw the results as only a small and specific sample could be analysed. A sample containing public and large companies only which is far from representative of all the firms acquired in our sample. On the other hand, when using the industry average as a proxy, the sample will grow and will offer the chance to study what "type of firms" makes for a good investment and yields higher returns and increases performance. Another advantage is that due to the difference in ESG scores across rating agencies, employing industry averages might be less susceptible to measurement errors.

Furthermore, employing the proxy as a variable on its own is delicate but when combining it with the acquirer ESG score to calculate the difference in rating prior to acquirement, the estimated variable fits the actual sample more precisely (see Appendix A.1).

All in all, this proxy is one of the best alternatives to study a large sample of acquisitions given the current ESG data availability. Of course, in the future, ESG providers will have progressed and, the use of a proxy will not be needed anymore.

4.2. Measuring performance

In this section, the measures of the acquirer's short- and long-term performance will be discussed.

4.2.1. Measuring announcement returns

In order to precisely measure the short-term profitability of the acquirer when taking over another company, the announcement return of this acquirer will be used. Those returns are the cumulative abnormal returns calculated, firstly, with a market model as a benchmark. The first step in computing those cumulative abnormal returns is to predict the expected returns, or in other words, the returns that the company would have experienced if the deal had not been announced (all else equal). Next, those expected returns are subtracted from the actual returns, the difference represents the abnormal returns that are caused by the event, in this case, the deal announcement. The crucial part in this method is the calculation of the expected returns, also called benchmarking. There are multiple approaches to this, the most common one is making use of a market model, that estimates abnormal returns following the CAPM model. The idea behind this model is that the expected returns are determined using the market risk premium, the risk-free rate, and the company's sensitivity to market movements.

$$R_{i,t} = \alpha_i + \beta_i * R_{m,t} + \varepsilon_{i,t}$$

Market model (1)

However, the market model in itself does not suffice when forecasting returns because of lower prediction accuracy compared to other models (Bello, 2008). For this reason, we will also analyse CARs computed using the Fama and French Three Factor Model.

The Fama and French Three Factor Model introduces additional factors to the forecasting of returns. Indeed, this model does not only use market movements to predict returns but also includes firm size and value in the equation. These factors capture the historical tendencies of smaller and value-oriented stocks to outperform the broader market. By incorporating these factors into the analysis, the Fama and French model aims to provide a more comprehensive understanding of abnormal returns, considering factors beyond market risk.

$$R_{i,t} = \alpha_i + \beta_{i,m} * R_{m,t} + \beta_{i,SMB}SMB + \beta_{i,HML}HML + \varepsilon_{i,t}$$

Fama and French three factor model (2)

In summary, while the CAPM-based market model remains a common benchmarking tool, the Fama and French Three Factor Model offers a nuanced perspective, accounting for market trends, size, and value factors in assessing the short-term profitability of an acquirer following a corporate takeover.

Using those methods, benchmark results are forecasted using a 200-day estimation period ending 10 days before the announcement. Those returns are used to form a benchmark to compare the actual results and compute the abnormal returns.

$$AR_{i,t} = R_{it} - (\alpha_i + \beta_i * R_{m,t})$$

Abnormal returns (3)

Then, the CARs are computed by adding up those abnormal results conforming with the appropriate observation period (-5;5/-3;3/-1;1).

$$CAR_{i,t} = \sum_{t=-1}^{+1} AR_{i,t}$$

CAR (4)

The tests conducted will start analysing the (-1;1) CARs but will be extended to (-3;3) and (-5;5) windows in the robustness tests to include the information possibly already spread across the market, following MacKinlay (1997). Besides the theory, the significance of each regression model will be considered to select the best-fitting one.

4.2.2. Long-term performance

Analysing the long-term effects of acquisitions is also a crucial part of this paper. This paper will investigate the effect of ESG rating at the time of the event on the ESG rating and profitability of the acquirer 1 year after the transaction. The measures that will be used to perform those tests are the ESG rating and the Returns on Assets of a company. This paper will analyse the difference between those measures one year after the transaction and the quarter preceding the event as a degree of the progress caused by the transaction.

4.3. Control variables

In both the short- and long-term analysis, control variables are needed to isolate the effect of ESG rating from external influences. This subsection will describe each of the control variables and why it has been included in the regression models.

First, it is important to control for aspects of the transaction that can influence the way a deal is perceived by the market and thus the announcement returns it will generate for the acquirer. The deal-specific aspects that will be controlled for are described here below:

- Payment method: Relevant literature demonstrated that the payment method can have an important impact on the announcement returns of a transaction. Dummies will be added to the regression model to account for whether the deal was paid using cash, stock, a combination of both, or an undisclosed method.
- Deal attitude: According to the literature, announcement returns tend to be lower for acquirers executing hostile deals. Therefore, a dummy is added to the models to control for this effect of the deal attitude on the announcement returns.
- Target ownership: Many papers have demonstrated lower announcement returns for acquirers of public targets rather than private ones. Consequently, it is essential to include a variable that will control for the effect that the ownership of the target can have on the announcement returns. This will be done using dummy variables that describe whether the target was a public company, private, subsidiary, or qualified as other.
- Cross-border deal: Many researchers have found evidence that the country of the target can impact the acquirer's announcement returns. For that reason, a dummy will be included to control whether a target is established in the United States or in a foreign country.
- Diversifying deal: The announcement returns for acquirers performing diversifying transactions have been proven to be lower due to the complex integration processes. So, it is crucial to include this effect in the regression models. This will be done using a dummy variable that will describe whether the acquirer and target operate in the same industry.
- Deal value: The literature also demonstrated that larger deals are likely to have a larger impact on the acquirer. Therefore, it is wise to control for deal value in order to better isolate the ESG effect. This will be done using the natural logarithm of the deal value for distribution reasons.
- Percentage of shares acquired: In the same way that the deal value can influence the announcement returns, the percentage of shares acquired also plays a role in the announcement returns. Indeed, the higher the % of shares acquired, the more a company will be impacted by the characteristics of the target. Consequently, this variable will be added as a control to the regression models.

Next, another area of focus when analysing the acquirer's returns is the own profile of the acquirer. It goes without saying that different types of acquirers can expect different returns based on their characteristics. In this thesis, the variables used to control for acquirers' characteristics are based on the control variables that are standard in many papers and that, put together, do a good job at isolating any

external effect from the effect of the acquirer itself. A description of those acquirer control variables can be found here below:

- **Size:** To begin with, the effect that the size of a company has on its own returns has been proved repeatedly in the literature. For distribution reasons, the natural logarithm of the total assets will be used as a control variable.
- **Market-to-book (MTB) ratio:** Next, many economists already demonstrated that overvalued companies tend to have lower announcement returns, especially when offering stock as a payment method. This is the reason why including an MTB ratio is necessary, being provided by a measure of the acquirer's TOBIN's Q.
- **Leverage:** A company's leverage is a crucial predictor of its returns. Indeed, it indicates the risk profile/capital structure of the acquirer which strongly influences financial performance. Consequently, it is an important aspect of the acquirer to control for when analysing announcement returns. This will be inserted into our model using the debt-to-capital ratio of the acquirer.
- **Profitability:** Additionally, a company's return is strongly influenced by its profitability. It is thus essential to control for this aspect if one wants to isolate an external influence. In this case, profitability will be controlled for by adding the acquirer's annual ROA as a variable to the regression models.
- **Free cash flow:** Controlling for free cash flow is essential yet ambiguous. Indeed, high free cash flow can be the result of great management and thus predict higher returns, but it can also be associated with lower announcement returns because of the availability of more resources to engage in serial acquisitions. Consequently, it is needed as a control variable and will be included in the regression models.

Additionally, a year fixed effect will also be taken into account when performing the regressions. Indeed, due to the length of our sample, the financial environment differs greatly across the periods meaning that markets could react differently to similar acquisitions. Therefore, including a year fixed effects variable in the models is important to control for those yearly inconsistencies.

Similarly, the industry a company operates in can also hold some information about the announcement returns as investor enthusiasm differs across industries. It is for this reason that an industry fixed effect variable will be added to the regression models, to control for possible irregularities across activity sectors.

4.4. Econometric methodology

After estimating all the components that will be included in our regressions, the econometric analysis can begin. In this section, the model specifications will be discussed.

4.4.1. Model specifications

To study the effect of sustainability on M&A performance, the following OLS regression is employed:

$$Y_i = \alpha + \beta_1 \text{ESG measure} + \beta_2 \text{Acquirer Control Variables}_i + \beta_3 \text{Deal Control Variables}_i + \text{Year} + \text{Industry} + \epsilon_i \quad (5)$$

This equation represents the main model employed in this paper, analysing the effect of an ESG measure on performance. Multiple settings will be used to test the effect of ESG performance from both the target and acquirer as well as the ESG gap between the two on different dependent variables (Y).

The first part of this thesis focuses on the effect of sustainability on announcement returns, therefore the acquirer's CARs will be used as the dependent variable in the entirety of Section 5.2. computed using different methods and event windows. All the measures of ESG performance cited here above will be included in our models to fully understand the effect of sustainability on announcement returns.

Following the short-term analysis, the effect of the relative ESG score on the acquirer's ESG progress will be investigated. The dependent variable will be the difference between the 1-year post-announcement ESG score and the pre-announcement ESG score. This will be done without the deal control variables.

Finally, the progress in profitability will also be studied in a similar fashion as the ESG progress. The dependent variable will in that case be the difference in Return on Assets a year after and before the announcement.

5. Results

In this chapter, the results of the empirical analyses are presented and interpreted. First, the OLS regressions of the relationship between ESG practices and announcement returns will be studied. Then, the effect of ESG performance on long-term ESG and profitability will be evaluated. Finally, some robustness tests will be run to confirm the findings.

5.1. Univariate analysis

In this section, the means of the sample and subsamples ranked on the ESG rating of either the acquirer or target will be analysed. This will bring a simplified first understanding of the relationship between the two variables of interest relevant to this chapter. Table 4 displays the CARs based on the different estimation techniques and observation windows for each sample as well as for the companies with both high and low ESG ratings (above the 75th percentile and below the 25th percentile respectively). The

difference between those means and their significance is also to be observed in the last column. The mean CARs of the sample including acquirers with an observable ESG score preceding announcement tend to be close to zero yet constantly positive ranging between 0.272% and 0.552% as displayed in the first column of Panel A.

Column 2 reports the mean CARs for acquirers with an ESG score in the bottom quartile, which is much higher, ranging between 0.737% and 1.045% while the mean CARs for high-ranking acquirers is much lower, between -0.249% and 0.044% varying on the estimation settings. The difference between those two subsamples is displayed in column (4) as well as the significance computed using a T-test. Those results provide a clear first view of the fact that acquirer ESG rating could have a negative impact on announcement returns.

Next, Panel B of Table 4 reports the same analysis except that the sample and subsamples are formed using the (proxied) ESG score of the target company. The results are less obvious than in Panel A yet column (4) does show a positive coefficient for nearly every CAR estimation method. This analysis suggests that the ESG ranking of the target could also have a significant negative impact on announcement returns.

In Panel C, only the target companies with observable ESG ratings were used to form the subsamples. Due to the specific characteristics of those companies (larger and publicly owned) as well as the low number of observations, the mean CARs are very different than Panel A & Panel B. Indeed, the mean CARs displayed are all negative and the possible relationship between target ESG rating and announcement returns seems to be positive, as opposed to the previous 2 samples.

These findings mainly support the shareholder theory (Friedman, 1970) which states that firms engaging in activities with no financial objective is value-destroying. Therefore, they are against the stakeholder theory that these activities increase the overall company performance and therefore also financial returns (Freeman, 2010). However, Table 4 also predicts that the results might differ depending on the sample and its characteristics. Consequently, this thesis will further analyse this relationship using more complete models to deepen our understanding of this effect.

Table 4: Univariate analysis

This table reports the means values of the CARs of the acquirer for the different setting an event windows ranked by ESG factors. Column (1) displays the mean for the full sample and columns (2) and (3) for the top and bottom 25% of the sample based on their ESG rating. In Column (4), the difference between the previous 2 columns can be observed as well as its significance computed using a T-test. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

CARs settings	(1) Mean Full sample	(2) Mean Low ESG ($< 25^{\text{th}}$ percentile) Mean	(3) Mean High ESG ($> 75^{\text{th}}$ percentile)	(4) Mean Low - High
<i>Panel A: Acquirer ESG</i>				
MM (-1;1)	0.552	1.045	0.044	1.000***
MM (-3;3)	0.429	0.932	-0.112	1.044***
MM (-5;5)	0.339	0.840	-0.244	1.084**
FF3F (-1;1)	0.549	0.984	0.033	0.952***
FF3F (-3;3)	0.381	0.865	-0.143	1.008***
FF3F (-5;5)	0.272	0.737	-0.249	0.985**
Observations	4,065	923	1,080	2,003
<i>Panel B: Target ESG (Proxied)</i>				
MM (-1;1)	0.552	0.721	0.586	0.135
MM (-3;3)	0.429	0.648	0.584	0.065
MM (-5;5)	0.339	0.681	0.294	0.386
FF3F (-1;1)	0.549	0.713	0.581	0.132
FF3F (-3;3)	0.381	0.616	0.503	0.113
FF3F (-5;5)	0.272	0.629	0.216	0.413
Observations	4,065	841	1,145	1,986
<i>Panel C: Target ESG</i>				
MM (-1;1)	-1.705	-0.441	-0.209	-1.360
MM (-3;3)	-1.976	-1.092	-0.804	-1.644
MM (-5;5)	-2.202	-2.225	-1.618	-0.687
FF3F (-1;1)	-1.677	-0.648	-0.438	-1.122
FF3F (-3;3)	-2.256	-1.634	-1.254	-1.184
FF3F (-5;5)	-2.431	-3.084	-2.426	-0.007
Observations	154	38	37	75

5.2. ESG rating and announcement returns

5.2.1. Acquirer ESG score and announcement returns.

In the previous section, a preliminary analysis of the relationship between announcement returns and the acquirer's CSR performance has been conducted. This analysis suggested that the ESG score of an acquirer could be negatively correlated with announcement returns when acquiring a company.

To further examine this effect, Table 5 reports OLS regressions using various settings analysing the effect of the acquirer ESG score on the announcement returns. Columns (1) and (2) report the effect of the acquirer ESG score preceding acquisition on the CARs (-1;1) estimated using the Market-Model, and the Fama & French 3 Factors Model respectively. Columns (3) and (4) are only different in their fixed effects settings, controlling for the announcement year and industry of the acquirer. Across every column, the effect of the acquirer's CSR performance is negative and significant at the 5% level for columns (1), (2), and (4) and at the 10% level for column (3). These negative coefficients indicate that, when controlling for acquirer characteristics and deal variables, acquirers with a higher ESG score are likely to earn lower announcement returns. As can be seen in Table 5, for each increase of 10 points on the ESG rating scale (0 – 100), the expected CARs drop by between 0.097% and 0.109%. When using different observation ranges (see Table A.3 in the Appendix), the coefficient stays negative and significant.

Furthermore, Table 5 also displays some noteworthy control variables' coefficients. In line with the literature, the models describe that, for the acquirer, taking over public companies is significantly less profitable than private targets. Also, the coefficients of Cash & Stock and Stock Only as a payment method are both negative and significant, confirming the theory that companies acquiring firms using Cash tend to earn higher announcement returns. Surprisingly, the deal value coefficient is positive above the 1% level however, it is ambiguous to interpret due to its correlation with Target Ownership and Acquirer's firm size.

An intriguing finding is the coefficient for subsidiary acquisitions, which contrasts with public company takeovers that exhibit a strong negative coefficient. This could indicate that the market may perceive acquisitions of subsidiary companies as less risky or potentially more synergistic than the acquisition of a standalone public company.

All in all, these results suggest that, when controlling for firm- and deal-specific variables, the ESG score of the acquirer is negatively correlated with announcement returns. This would confirm the theory that firms with a higher CSR rating engage more in investing activities without a financial objective and by doing so, generate lower CARs in the short term. To further understand this effect, this thesis will analyse the impact that ESG factors separately have on announcement returns. The objective in

doing this is to identify one principal aspect of ESG performance that is responsible for the effect displayed by Table 5.

Table 5: The effect of Acquirer ESG rating on CARs

This table shows the OLS regressions of the acquirer's CARs on the ESG score of the acquirer as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs.

	(1) CAR MM (-1;1)	(2) CAR FF3F (- 1;1)	(3) CAR MM (-1;1)	(4) CAR FF3F (- 1;1)
ESG Score (A)	-0.00966** (-2.00)	-0.0104** (-2.22)	-0.00974* (-1.76)	-0.0109** (-2.05)
MTB ratio (A)	-0.0684 (-0.84)	-0.0845 (-1.08)	-0.159* (-1.78)	-0.173** (-2.02)
Leverage (A)	0.00200 (0.53)	0.00121 (0.33)	0.00636 (1.53)	0.00530 (1.31)
Free Cash Flow (A)	0.0546*** (3.20)	0.0605*** (3.72)	0.0144 (0.70)	0.0224 (1.12)
Return on Assets (A)	-0.00479 (-0.36)	-0.00885 (-0.71)	-0.00161 (-0.12)	-0.00583 (-0.45)
Size (Ln) (A)	-0.422*** (-5.51)	-0.398*** (-5.33)	-0.425*** (-5.16)	-0.396*** (-4.92)
Deal value (Ln)	0.236*** (3.52)	0.233*** (3.56)	0.214*** (3.15)	0.209*** (3.15)
Cash Only	0.576 (0.96)	0.569 (0.98)	0.626 (1.04)	0.616 (1.05)
Cash & Stock	0.111 (0.16)	0.0705 (0.10)	0.153 (0.22)	0.105 (0.15)
Stock Only	-0.135 (-0.14)	-0.177 (-0.19)	-0.0738 (-0.08)	-0.124 (-0.13)
Unknown	0.537 (0.87)	0.532 (0.89)	0.511 (0.82)	0.503 (0.84)
Private	-1.920* (-1.71)	-1.503 (-1.30)	-1.964* (-1.77)	-1.536 (-1.33)
Public	-3.346*** (-2.92)	-2.954** (-2.50)	-3.426*** (-3.02)	-2.995** (-2.55)
Subsidiary	-1.720 (-1.52)	-1.288 (-1.11)	-1.784 (-1.60)	-1.335 (-1.15)
Friendly	0.799 (1.33)	0.923 (1.58)	0.930 (1.47)	1.117* (1.82)
Cross-border Deal	-0.394** (-2.03)	-0.366* (-1.91)	-0.473** (-2.40)	-0.437** (-2.26)
Diversifying	0.0427 (0.25)	0.000494 (0.00)	0.168 (0.93)	0.117 (0.66)
% of Shares Acquired	0.00705 (0.28)	-0.000886 (-0.03)	0.00883 (0.34)	0.000477 (0.02)
Constant	3.439 (1.27)	3.623 (1.30)	3.774 (1.34)	4.098 (1.42)
Industry effects	No	No	Yes	Yes
Year effects	No	No	Yes	Yes
Observations	4023	4023	4023	4023
Adjusted R ²	0.025	0.027	0.029	0.032

t statistics in parentheses

* p<0.10, ** p<0.05, *** p<0.01

5.2.2. *ESG factors and announcement returns.*

This subsection will develop the analysis started previously using additional ESG factors. These 3 pillars of ESG, namely Environment, Social, and Governance are included in the regression models reported in Table 6. There, it is noticeable that when used individually, the significance of those factors is much lower than when combined into the ESG measure. Therefore, not much can be said with certainty about the possible relationship between one of the pillars and announcement returns. Our results do however report constant negative coefficients for the Social and Governance pillars while the Environment pillar's coefficient is positive in every column. These results, although not significant, do suggest that the underlying factors of the ESG rating might have different relationships with announcement returns. From Table 6, the coefficients also reveal that the Governance pillar constantly has the highest predictive power out of the 3 ESG components.

Because of the multicollinearity risks due to the nature of the 3 pillar ratings, the effect of each pillar has also been tested individually. Table A.2 in the Appendix displays the results of these models. There, it is clear that the individual ESG pillars are not correlated with CARs.

Following these findings, this thesis will further investigate ESG factors in the M&A context by analysing the effect that the ESG score of the target company (if available) can have on acquirer announcement returns as it is a crucial part of understanding the relationship between ESG performance and short-term financial returns. Indeed, this will give more insight into the effect of what type of firm the company is acquiring, instead of analysing the results of a company based on its current ESG performance. Identifying how the market reacts to the sustainability of a target will strengthen our understanding of the relationship between ESG performance and announcement returns.

Table 6: The effect of Acquirer 3 Pillars rating on Acquirer's CARs

This table shows the OLS regressions of the acquirer's CARs on the ESG score or 3 pillars ratings of the acquirer as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs.

	(1) CAR MM (- 1;1)	(2) CAR MM (- 1;1)	(3) CAR FF3F (- 1;1)	(4) CAR FF3F (- 1;1)	(5) CAR MM (- 1;1)	(6) CAR MM (- 1;1)	(7) CAR FF3F (- 1;1)	(8) CAR FF3F (- 1;1)
ESG Score (A)	-0.00966** (-2.00)		-0.0104** (-2.22)		-0.00974* (-1.76)		-0.0109** (-2.05)	
Environment Score (A)		0.000562 (0.13)		-0.000158 (-0.04)		-0.00102 (-0.23)		-0.00205 (-0.46)
Social Score (A)		-0.00299 (-0.53)		-0.00127 (-0.23)		0.00158 (0.26)		0.00322 (0.55)
Governance Score (A)		-0.00174 (-0.42)		-0.00269 (-0.66)		0.000110 (0.03)		-0.00111 (-0.27)
MTB ratio (A)	-0.0684 (-0.84)	-0.0835 (-1.04)	-0.0845 (-1.08)	-0.101 (-1.32)	-0.159* (-1.78)	-0.176** (-2.05)	-0.173** (-2.02)	-0.188** (-2.28)
Leverage (A)	0.00200 (0.53)	0.00367 (0.96)	0.00121 (0.33)	0.00308 (0.83)	0.00636 (1.53)	0.00979** (2.33)	0.00530 (1.31)	0.00868** (2.11)
Free Cash Flow (A)	0.0546*** (3.20)	0.0588*** (3.43)	0.0605*** (3.72)	0.0640*** (3.89)	0.0144 (0.70)	0.0177 (0.87)	0.0224 (1.12)	0.0249 (1.26)
Return on Assets (A)	-0.00479 (-0.36)	-0.00586 (-0.45)	-0.00885 (-0.71)	-0.00913 (-0.74)	-0.00161 (-0.12)	-0.00445 (-0.33)	-0.00583 (-0.45)	-0.00793 (-0.63)
Size (Ln) (A)	-0.422*** (-5.51)	-0.502*** (-6.17)	-0.398*** (-5.33)	-0.475*** (-5.99)	-0.425*** (-5.16)	-0.543*** (-5.99)	-0.396*** (-4.92)	-0.507*** (-5.72)
Deal value (Ln)	0.236*** (3.52)	0.223*** (3.37)	0.233*** (3.56)	0.217*** (3.35)	0.214*** (3.15)	0.215*** (3.19)	0.209*** (3.15)	0.205*** (3.10)
Cash Only	0.576 (0.96)	0.403 (0.66)	0.569 (0.98)	0.414 (0.70)	0.626 (1.04)	0.501 (0.82)	0.616 (1.05)	0.506 (0.85)
Cash & Stock	0.111 (0.16)	-0.0996 (-0.14)	0.0705 (0.10)	-0.107 (-0.16)	0.153 (0.22)	0.00640 (0.01)	0.105 (0.15)	-0.0120 (-0.02)
Stock Only	-0.135 (-0.14)	0.0647 (0.07)	-0.177 (-0.19)	0.00818 (0.01)	-0.0738 (-0.08)	0.202 (0.21)	-0.124 (-0.13)	0.141 (0.15)
Unknown	0.537 (0.87)	0.424 (0.68)	0.532 (0.89)	0.456 (0.76)	0.511 (0.82)	0.354 (0.57)	0.503 (0.84)	0.381 (0.63)
Private	-1.920* (-1.71)	-1.104 (-1.21)	-1.503 (-1.30)	-0.867 (-0.94)	-1.964* (-1.77)	-1.158 (-1.27)	-1.536 (-1.33)	-0.915 (-0.99)
Public	-3.346*** (-2.92)	-2.510*** (-2.68)	-2.954** (-2.50)	-2.290** (-2.42)	-3.426*** (-3.02)	-2.689*** (-2.87)	-2.995** (-2.55)	-2.431** (-2.57)

Subsidiary	-1.720 (-1.52)	-0.862 (-0.95)	-1.288 (-1.11)	-0.619 (-0.67)	-1.784 (-1.60)	-0.965 (-1.06)	-1.335 (-1.15)	-0.710 (-0.77)
Friendly	0.799 (1.33)	-0.694 (-0.56)	0.923 (1.58)	-0.461 (-0.39)	0.930 (1.47)	-0.530 (-0.43)	1.117* (1.82)	-0.275 (-0.23)
Cross-border Deal	-0.394** (-2.03)	-0.310 (-1.60)	-0.366* (-1.91)	-0.290 (-1.52)	-0.473** (-2.40)	-0.387** (-1.98)	-0.437** (-2.26)	-0.363* (-1.89)
Diversifying	0.0427 (0.25)	0.0488 (0.28)	0.000494 (0.00)	0.00802 (0.05)	0.168 (0.93)	0.190 (1.06)	0.117 (0.66)	0.136 (0.77)
% of Shares Acquired	0.00705 (0.28)	0.0135 (0.58)	-0.000886 (-0.03)	0.00648 (0.27)	0.00883 (0.34)	0.0130 (0.56)	0.000477 (0.02)	0.00552 (0.23)
Constant	3.439 (1.27)	4.124 (1.50)	3.623 (1.30)	4.207 (1.52)	3.774 (1.34)	4.539 (1.56)	4.098 (1.42)	4.701 (1.61)
Industry effects	No	No	No	No	Yes	Yes	Yes	Yes
Year effects	No	No	No	No	Yes	Yes	Yes	Yes
Observations	4023	4020	4023	4020	4023	4020	4023	4020
Adjusted R^2	0.025	0.028	0.027	0.029	0.029	0.033	0.032	0.034

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.2.3. *Target ESG score and announcement returns.*

In this subsection, the effect of the target ESG score on announcement returns will be studied. This is a major segment in this thesis due to its scientific and social relevance yet, data scarcity issues also make it very complex to analyse the results precisely. Indeed, the number of targets for which an ESG score is observable preceding the announcement is quite limited at 175 observations therefore the variable is estimated using industry average. Analysing those coefficients thus needs to be done carefully as the regression does not measure company ESG score but estimates it by means of time and industry. This method will nevertheless provide insight into how the potential target's ESG rating will impact announcement returns.

Table 7 presents various regression models to estimate the CARs within a 3-day window (-1;1) around the announcement with and without year and industry fixed effects. CARs are estimated using the Market Model and Fama-French Three Factor Model in columns (1) and (2) respectively and columns (3) and (4) with fixed effects. Each model assesses the impact of the target's ESG score on CARs, with the ESG score proxied for the target firms (T) as described previously.

The results across the models show a consistent negative relationship between the proxied CSR of the targets and the CARs and significance in every column. This coefficient increases in significance when including fixed effects going from the 5% level in columns (1) and (2) to the 1% level in columns (3) and (4) suggesting that higher ESG scores are associated with lower CARs. This could imply that the American market may view higher target ESG scores as an indicator of potential overinvestment in CSR practices at the expense of financial performance.

Consequently, these results would support the shareholder theory that views investing activities with a non-financial objective as suboptimal and value-destroying. However, these findings should be interpreted carefully as the variable of interest is measured using a proxy.

Table 7: The effect of Target ESG rating on CARs

This table shows the OLS regressions of the acquirer's CARs on the estimated ESG score of the target as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs.

	(1) CAR MM (-1;1)	(2) CAR FF3F (- 1;1)	(3) CAR MM (-1;1)	(4) CAR FF3F (- 1;1)
ESG Score Proxied (T)	-0.0146** (-2.27)	-0.0148** (-2.36)	-0.0279*** (-2.98)	-0.0289*** (-3.14)
MTB ratio (A)	-0.0614 (-0.75)	-0.0780 (-0.99)	-0.150* (-1.69)	-0.164* (-1.94)
Leverage (A)	0.00253 (0.67)	0.00176 (0.48)	0.00654 (1.58)	0.00555 (1.38)
Free Cash Flow (A)	0.0544*** (3.19)	0.0602*** (3.70)	0.00983 (0.47)	0.0174 (0.87)
Return on Assets (A)	-0.00749 (-0.56)	-0.0116 (-0.93)	-0.00331 (-0.24)	-0.00772 (-0.61)
Size (Ln) (A)	-0.484*** (-6.60)	-0.463*** (-6.45)	-0.471*** (-6.09)	-0.448*** (-5.92)
Deal value (Ln)	0.239*** (3.60)	0.235*** (3.62)	0.204*** (3.02)	0.198*** (3.00)
Cash Only	0.594 (0.99)	0.586 (1.01)	0.641 (1.06)	0.631 (1.08)
Cash & Stock	0.145 (0.20)	0.104 (0.15)	0.182 (0.26)	0.135 (0.20)
Stock Only	-0.109 (-0.11)	-0.150 (-0.16)	-0.0563 (-0.06)	-0.105 (-0.11)
Unknown	0.500 (0.81)	0.495 (0.83)	0.501 (0.81)	0.491 (0.82)
Private	-1.924* (-1.70)	-1.510 (-1.30)	-1.925* (-1.73)	-1.497 (-1.29)
Public	-3.398*** (-2.95)	-3.007** (-2.54)	-3.414*** (-3.02)	-2.984** (-2.54)
Subsidiary	-1.760 (-1.55)	-1.331 (-1.14)	-1.778 (-1.59)	-1.330 (-1.15)
Friendly	0.785 (1.30)	0.905 (1.52)	0.849 (1.33)	1.031* (1.65)
Cross-border Deal	-0.393** (-2.02)	-0.365* (-1.91)	-0.482** (-2.45)	-0.447** (-2.32)
Diversifying	0.0453 (0.26)	0.00259 (0.02)	0.184 (1.01)	0.133 (0.75)
% of Shares Acquired	0.00962 (0.38)	0.00180 (0.07)	0.0122 (0.47)	0.00407 (0.15)
Constant	4.141 (1.52)	4.339 (1.55)	4.373 (1.54)	4.734 (1.63)
Industry effects	No	No	Yes	Yes
Year effects	No	No	Yes	Yes
Observations	4020	4020	4020	4020
Adjusted R ²	0.026	0.027	0.030	0.033

t statistics in parentheses

* p<0.10, ** p<0.05, *** p<0.01

5.2.4. *Relative ESG rating and announcement returns.*

In this subsection, the ESG rating of the target relative to the acquirer will be analysed to improve our understanding of the impact of ESG factors on financial results in the context of M&A transactions. The relative ESG gap is a great indicator of the acquirer's CSR practices as it represents the direction and extent to which acquiring another company might increase their own ESG performance. It is also insightful to investigate how the market might react to companies acquiring higher or lower ESG-rated targets depending on their own ESG practices. The previous findings suggested that high ESG rating from both acquirer and target separately was associated with lower announcement returns, combining the two will shed light on a new aspect of the relationship between ESG factors and announcement returns.

Table 8 reports the estimates of the effect that the above-mentioned relative ESG rating (ESG gap) has on 3-days CARs around deal announcement. The CARs are measured using the Market model and the Fama-French 3 Factor model and both the effect of actual and proxied ESG gap is measured. Industry and year fixed effects are also included in the regressions.

The results reveal a generally negative coefficient for the actual ESG gap across all columns, signifying that acquiring a company with a lower ESG score than the acquirer's own could potentially reduce announcement returns. However, none of the coefficients of interest show significance suggesting that the relative ESG does not have an effect on announcement returns.

The findings appear to be similar when it comes to the proxied ESG gap. Here, the coefficients are also negative but insignificant, also supporting the theory that relative ESG does not impact announcement returns. These findings are similar when longer event windows are used.

When focusing only on the sign of the relative ESG score (see Table A.7 in Appendix), the results are similar with mostly negative coefficients but lack significance, also suggesting no real effect of relative ESG score nor its sign on announcement returns.

Concluding this subsection, the results displayed in Table 7 do not suggest that there is any type of significant relationship between relative ESG score and announcement returns. The signs of the coefficients do suggest that a positive ESG gap could be associated with lower announcement returns. In practice, this would imply that companies investing in companies with a lower ESG score than them would experience lower returns. Yet, these results are not significant across estimation methods or model settings.

Table 8: The effect of relative ESG rating on CARs

This table shows the OLS regressions of the acquirer's CARs on the ESG gap between acquirer and target (both actual and estimated) as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs.

	(1) CAR MM (- 1;1)	(2) CAR MM (- 1;1)	(3) CAR MM (- 1;1)	(4) CAR MM (- 1;1)	(5) CAR FF3F (- 1;1)	(6) CAR FF3F (- 1;1)	(7) CAR FF3F (- 1;1)	(8) CAR FF3F (- 1;1)
ESG Gap Proxied (A-T)	-0.00108 (-0.23)		-0.000108 (-0.02)		-0.00157 (-0.35)		-0.000757 (-0.16)	
ESG Gap (A-T)		-0.0198 (-1.04)		-0.0150 (-0.65)		-0.0151 (-0.78)		-0.0124 (-0.52)
MTB ratio (A)	-0.0778 (-0.95)	0.0785 (0.17)	-0.165* (-1.85)	0.424 (0.79)	-0.0946 (-1.21)	0.00468 (0.01)	-0.180** (-2.11)	0.405 (0.71)
Leverage (A)	0.00218 (0.57)	-0.0101 (-0.46)	0.00699* (1.69)	-0.0165 (-0.58)	0.00139 (0.37)	-0.00886 (-0.40)	0.00599 (1.49)	-0.0160 (-0.57)
Free Cash Flow (A)	0.0509*** (3.00)	0.210** (2.56)	0.0122 (0.59)	0.0751 (0.85)	0.0567*** (3.50)	0.225*** (2.64)	0.0200 (1.00)	0.0949 (1.06)
Return on Assets (A)	-0.00481 (-0.36)	0.0708 (1.17)	-0.00289 (-0.21)	0.0946 (1.17)	-0.00879 (-0.70)	0.0616 (1.01)	-0.00719 (-0.56)	0.0817 (1.01)
Size (Ln) (A)	-0.463*** (-6.08)	0.824** (1.99)	-0.485*** (-6.04)	0.800* (1.79)	-0.440*** (-5.91)	0.842** (2.06)	-0.459*** (-5.85)	0.870* (1.97)
Deal value (Ln)	0.225*** (3.38)	-0.818*** (-2.71)	0.210*** (3.08)	-1.225*** (-3.50)	0.221*** (3.40)	-0.811*** (-2.65)	0.205*** (3.07)	-1.261*** (-3.43)
Cash Only	0.551 (0.92)	-2.307 (-0.94)	0.622 (1.03)	-1.601 (-0.68)	0.543 (0.93)	-2.700 (-1.04)	0.611 (1.04)	-1.916 (-0.79)
Cash & Stock	0.0879 (0.12)	-4.893* (-1.94)	0.149 (0.21)	-3.194 (-1.25)	0.0450 (0.07)	-4.906* (-1.83)	0.100 (0.15)	-3.156 (-1.19)
Stock Only	-0.130 (-0.13)	-3.079 (-1.01)	-0.0559 (-0.06)	-1.363 (-0.42)	-0.172 (-0.18)	-3.638 (-1.15)	-0.105 (-0.11)	-1.815 (-0.57)
Unknown	0.542 (0.88)	-6.490* (-1.83)	0.493 (0.79)	-6.004* (-1.70)	0.539 (0.90)	-6.327* (-1.71)	0.485 (0.80)	-5.772 (-1.59)
Private	-1.950* (-1.72)	7.022*** (2.84)	-1.977* (-1.76)	9.833** (2.55)	-1.535 (-1.31)	5.983** (2.44)	-1.551 (-1.33)	8.841** (2.30)
Public	-3.344*** (-2.90)	-2.443 (-0.98)	-3.442*** (-3.01)	-2.618 (-1.05)	-2.950** (-2.48)	-2.225 (-0.88)	-3.013** (-2.54)	-2.310 (-0.93)
Subsidiary	-1.753 (-1.54)	0 (.)	-1.813 (-1.61)	0 (.)	-1.322 (-1.13)	0 (.)	-1.366 (-1.17)	0 (.)
Friendly	0.736 (1.23)	-4.297 (-0.84)	0.909 (1.43)	0.0776 (0.01)	0.856 (1.47)	-3.968 (-0.74)	1.096* (1.78)	0.863 (0.13)

Cross-border Deal	-0.408**	-1.380	-0.481**	-2.111	-0.380**	-1.299	-0.446**	-2.216
	(-2.10)	(-1.21)	(-2.44)	(-1.56)	(-1.99)	(-1.10)	(-2.31)	(-1.59)
Diversifying	0.0449	0.138	0.168	-0.100	0.00222	0.0728	0.116	-0.112
	(0.26)	(0.12)	(0.93)	(-0.08)	(0.01)	(0.07)	(0.65)	(-0.09)
% of Shares Acquired	0.00808	0.107	0.0101	0.140*	0.000125	0.103	0.00182	0.142
	(0.32)	(1.59)	(0.39)	(1.72)	(0.00)	(1.33)	(0.07)	(1.63)
Constant	3.455	-4.823	3.947	-9.915	3.619	-4.893	4.270	-11.62
	(1.27)	(-0.59)	(1.39)	(-1.01)	(1.29)	(-0.55)	(1.47)	(-1.11)
Industry effects	No	No	Yes	Yes	No	No	Yes	Yes
Year effects	No	No	Yes	Yes	No	No	Yes	Yes
Observations	4020	152	4020	152	4020	152	4020	152
Adjusted R^2	0.025	0.115	0.028	0.167	0.026	0.101	0.031	0.154

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.2.5. *Robustness*

In the following subsection, some robustness tests will be performed to ensure that the findings of this paper are robust to different measures and sample settings.

First, additional event windows are included in the regression models. Instead of the (-1;1) window, (-3;3) and (-5;5) event windows will be used as independent variables to measure announcement returns. The negative relationships between both the acquirer's and target's ESG score with announcement returns are tested will longer event windows. In the Appendix, Tables A.3 and A.4 report similar results as in Tables 5 and 7, suggesting that the findings are robust to longer event windows.

The next robustness test investigates whether the results displayed in Table 7 are robust to using actual observations. Displayed in Table A.5 are the results of running the same OLS regression models without the estimated target's ESG rating. Here, the coefficients suggest a very different relationship, much stronger and inverted. However, the sample used in Table A.5 might be victim of the selection bias⁵. Indeed, even after controlling for target ownership and deal value, firms that publish ESG reports do not represent the whole sample. This robustness test encourages caution when interpreting the results as the data published by providers is still incomplete and developing.

Regarding the sample composition, one might worry that some of the targets with "Subsidiary" as ownership status represent internal transactions⁶ which are different than normal M&A transactions in many aspects. Table A.6 presents the same models as performed previously only the observations of "subsidiary" targets are excluded. The coefficients are constant with the results of Section 5.2. suggesting that the findings are robust to this sample's properties.

All in all, after concluding those robustness tests, the findings seem robust to longer event windows and sample composition. However, the interpretation of both the proxied and actual target's ESG rating must be carried out carefully as the sample might be victim of selection bias. Knowing this does provide more insight into the matter and increases the reliability of the conclusions drawn in this paper.

⁵ Selection bias is a distortion in research outcomes caused by non-random selection of participants or data, resulting in skewed results that do not accurately represent the broader population or phenomenon of interest.

⁶ For example: the merger of two subsidiaries under the same parent company

5.3. ESG rating and long-term performance

In this section, the effect of ESG rating on long-term ESG performance will be analysed. After looking into the effect that ESG factors have on short-term market reaction and observing some possible negative relationships for both acquirer and target ESG rating, this thesis will try to identify what might be the reason behind such a negative market reaction. First, the effect of ESG factors on long-term ESG performance will be analysed. Then, the long-term profitability of the acquirer will be studied.

5.3.1. *Relative ESG rating and long-term ESG performance*

This subsection has for objective to understand whether the acquirer is able to integrate the CSR performance of the target and subsequently increase his own ESG rating or whether the performance of the target does not get transmitted to the acquirer. To investigate this, the acquirer's ESG score is measured 1 year after the announcement and compared to its level before the acquisition. A positive Δ ESG score represents an improvement in the ESG practices of the acquirer.

Table 9 reports the results of the OLS regressions completed. The effect of both actual and proxied ESG gap is studied with and without industry and year fixed effects. The models also control for acquirer financial characteristics before announcement in columns (3), (4), (7), and (8). Across every column, the coefficient of interest is significantly negative at the 1% level, strongly demonstrating that companies acquiring targets with a higher ESG score experience an improvement in their ESG practices the year following the announcement.

These results are robust to control variables and fixed effects. The coefficients suggest that around 10% of the ESG rating difference will be integrated by the acquirer after one year. Indeed, according to Table 9, a 10-point ESG difference before announcement is associated with an increase in acquirer ESG rating ranging from 0.91 to 1.44 units.

Depending on the model and variables, the base level differs noticeably due to the variations in the sample used, nonetheless, the direction and magnitude of the coefficients are constant in Table 8.

To further understand this effect, additional models were estimated to measure the effect of “buying up” compared to “buying down” in terms of ESG rating. In other words, the models presented in Table 10 investigate the effect that the sign of the relative ESG has on the acquirer's ESG progress. The variables of interest are the dummies describing the sign of the ESG gap (1 for positive and 0 for negative). Their coefficient is negative across every column and significant everywhere except when analysing the sample with actual observations and acquirer control variables. This suggests that firms acquiring companies with a lower ESG score tend to experience a smaller ESG progress or even a decrease in their rating 1 year after the announcement date. The difference in ESG progress varies between 1.840 and 5.785 units of ESG rating lower for companies “buying down”. The results are significant across the table except for columns (3) and (7). There, the data only includes the sample with the observable

target's ESG score and controls for the acquirer's characteristics, suggesting that in that context, the sign of the relative ESG score has no significant effect on the acquirer's ESG progress.

Concluding this subsection, it is clear that companies' ESG practices improve from acquiring targets with a higher ESG scores when analysing relative ESG score. However, the results are less informative when modeling only the sign of the relative ESG rating. It is therefore important to stay careful when interpreting those coefficients. To further investigate the effects of ESG factors on long-term performance, the acquirer's profitability increase/decrease will be studied.

Table 9: The effect of the ESG rating gap on the acquirer's long-term ESG rating

This table shows the OLS regressions of the acquirer's 1-year ESG progress on the ESG gap between acquirer and target (both actual and estimated) as well as the deal control variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score
	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)
ESG Gap (A-T)	-0.112*** (-3.89)		-0.0911*** (-2.95)		-0.123*** (-3.49)		-0.102*** (-2.62)	
ESG Gap Proxied (A-T)		-0.110*** (-15.97)		-0.135*** (-17.79)		-0.118*** (-16.44)		-0.144*** (-18.34)
MTB ratio (A)			-0.660 (-1.04)	-0.0628 (-0.50)			-1.013 (-1.29)	-0.0221 (-0.17)
Leverage (A)			0.0108 (0.35)	-0.0108* (-1.80)			0.0359 (0.95)	-0.0120** (-1.97)
Free Cash Flow (A)			-0.0582 (-0.40)	0.0302** (2.24)			-0.133 (-0.84)	0.0716*** (4.84)
Return on Assets (A)			0.0822 (1.32)	0.0214* (1.71)			0.115 (1.52)	-0.00366 (-0.28)
Size (A)			-1.063** (-2.05)	0.572*** (4.94)			-1.030* (-1.71)	0.684*** (5.73)
Constant	4.277*** (5.18)	1.265*** (6.50)	14.32*** (2.89)	-3.599*** (-3.49)	16.97** (2.24)	0.847 (0.84)	25.33** (2.59)	-4.610*** (-3.08)
Industry effects	No	No	No	No	Yes	Yes	Yes	Yes
Year effects	No	No	No	No	Yes	Yes	Yes	Yes
Observations	186	3587	184	3563	186	3587	184	3563
Adjusted R ²	0.060	0.052	0.056	0.060	0.036	0.078	0.037	0.087

t statistics in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 10: The effect of the sign of the ESG rating gap on the acquirer's long-term ESG rating

This table shows the OLS regressions of the acquirer's 1-year ESG progress on the sign of the ESG gap between acquirer and target (both actual and estimated) as well as the deal control variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score	Δ ESG Score
	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)	(A) (1y)
Positive ESG Gap (A-T)	-3.463** (-2.08)		-2.090 (-1.16)		-3.168* (-1.75)		-1.839 (-0.92)	
Positive ESG Gap Proxied (A-T)		-5.380*** (-15.02)		-5.660*** (-15.26)		-5.443*** (-15.04)		-5.785*** (-15.39)
MTB ratio (A)			-0.729 (-1.19)	-0.00436 (-0.03)			-1.068 (-1.39)	-0.00284 (-0.02)
Leverage (A)			0.0107 (0.35)	-0.00797 (-1.33)			0.0381 (1.00)	-0.00899 (-1.47)
Free Cash Flow (A)			-0.0916 (-0.65)	0.0312** (2.24)			-0.193 (-1.23)	0.0647*** (4.24)
Return on Assets (A)			0.0838 (1.38)	-0.00126 (-0.10)			0.124* (1.70)	-0.0224* (-1.71)
Size (A)			-1.394** (-2.58)	0.231** (2.08)			-1.471** (-2.34)	0.313*** (2.71)
Constant	5.153*** (4.13)	4.246*** (27.88)	17.83*** (3.60)	2.666*** (2.87)	17.91** (2.44)	3.304*** (3.23)	29.49*** (3.06)	1.230 (0.84)
Industry effects	No	No	No	No	Yes	Yes	Yes	Yes
Year effects	No	No	No	No	Yes	Yes	Yes	Yes
Observations	186	3587	184	3563	186	3587	184	3563
Adjusted R^2	0.015	0.052	0.025	0.054	-0.022	0.076	-0.002	0.078

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.3.2. *Relative ESG rating and long-term profitability*

After looking into the relationship between relative ESG rating and acquirer ESG progress, this thesis will investigate the relationship between relative ESG rating and acquirer long-term profitability. In section 5.2., the results suggested that ESG rating was negatively related to short-term returns. The goal of this subsection is to understand whether acquirers also experience long-term losses (or lower returns). To analyse this, the evolution of the acquirer's profitability will be measured with the Return on Assets variable. In a similar fashion to the previous subsection, the pre-announcement measure will be subtracted from the 1-year post-announcement observation.

The regression results are reported in Table 11, with settings similar to the previous subsection. Both the actual and proxied relative ESG gaps are examined singlehandedly and with control variables, columns (5), (6), (7), and (8) also include year and industry fixed effects.

The ESG gap coefficients are positive across every column but only the proxied measure displays significance at the 5% and 1% levels. A positive coefficient suggests that an acquirer's ROA will increase if he acquires a target with a lower ESG rating than his. This implies that "buying up" in ESG practices might hurt the profitability of the firm the year following the announcement. The significance of the coefficients stands as proof of that but must be interpreted carefully. Indeed, the sample with actual observations, on the contrary, does not display significance, implying that relative ESG has no influence on profitability. Whatever the reason for low significance might be, this mitigates the findings and calls for extra caution when interpreting the coefficients as they are noticeably sensible to sample size and composition.

Additionally, the effect of the sign of the relative ESG score on the acquirer's profitability evolution is analysed. The results are shown in Table 12, where the same models as in Table 10 can be found except for the variable of interest that changed to a dummy that represents the sign of the ESG gap. The coefficients in Table 11 support the findings of Table 10. Indeed, according to the samples used, "buying down" in ESG practices is associated with a stronger increase in profitability for the acquirer as demonstrated by the positive coefficients. Then again, only the proxied ESG gap is significant to the 5% and 1% levels, the factors for the ESG gap with actual measures only show significance at the 10% level in column (3) and are insignificant when using other settings. This reveals a lack of explanatory power for the sample with actual observations.

Lastly, the regressions reported in Table 11 and Table 12 suggest that a positive ESG gap ("buying down") is associated with a higher profitability evolution according to the proxied sample. On the other hand, the effect does not show convincing significance in our reduced sample, so the findings are mitigated.

Table 11: The effect of the ESG rating gap on the acquirer's long-term ROA

This table shows the OLS regressions of the acquirer's 1-year profitability progress on the ESG gap between acquirer and target (both actual and estimated) as well as the deal control variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)
	(1y)	(1y)	(1y)	(1y)	(1y)	(1y)	(1y)	(1y)
ESG Gap (A-T)	0.0186 (1.12)		0.0239 (1.53)		0.0197 (0.99)		0.0217 (1.23)	
ESG Gap Proxied (A-T)		0.0154** (2.52)		0.0409*** (7.26)		0.0136** (2.25)		0.0327*** (5.63)
MTB ratio (A)			0.136 (0.38)	0.188 (1.62)			0.186 (0.52)	0.423*** (3.25)
Leverage (A)			0.0122 (0.60)	0.0151*** (3.20)			0.0179 (0.80)	0.0192*** (3.57)
Free Cash Flow (A)			0.179* (1.65)	0.0776*** (4.23)			0.261** (2.24)	0.103*** (4.85)
Return on Assets (A)			-0.486*** (-4.59)	-0.363*** (-14.62)			-0.478*** (-5.29)	-0.379*** (-15.05)
Size (A)			1.084*** (3.60)	0.543*** (6.76)			0.947*** (3.13)	0.542*** (5.99)
Constant	-0.00830 (-0.02)	-0.333*** (-2.70)	-8.810*** (-2.78)	-3.591*** (-4.29)	-3.308 (-1.53)	2.464** (2.31)	-8.129*** (-2.21)	-1.643 (-1.47)
Industry effects	No	No	No	No	Yes	Yes	Yes	Yes
Year effects	No	No	No	No	Yes	Yes	Yes	Yes
Observations	200	3824	198	3804	200	3824	198	3804
Adjusted R ²	-0.001	0.001	0.356	0.193	0.139	0.023	0.470	0.217

t statistics in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 12: The effect of the sign of the ESG rating gap on the acquirer's long-term ROA

This table shows the OLS regressions of the acquirer's 1-year profitability progress on the sign of the ESG gap between acquirer and target (both actual and estimated) as well as the deal control variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)	Δ Return on Assets (A)
	(1y)	(1y)	(1y)	(1y)	(1y)	(1y)	(1y)	(1y)
Positive ESG Gap (A-T)	1.223 (1.18)		1.824* (1.86)		0.621 (0.63)		1.262 (1.37)	
Positive ESG Gap Proxied (A-T)		0.656*** (2.71)		0.886*** (4.09)		0.574** (2.41)		0.663*** (3.06)
MTB ratio (A)			0.128 (0.37)	0.176 (1.51)			0.199 (0.56)	0.424*** (3.25)
Leverage (A)			0.0136 (0.67)	0.0141*** (2.99)			0.0187 (0.83)	0.0183*** (3.41)
Free Cash Flow (A)			0.197* (1.76)	0.0782*** (4.23)			0.277** (2.29)	0.106*** (4.97)
Return on Assets (A)			-0.491*** (-4.64)	-0.355*** (-14.32)			-0.482*** (-5.29)	-0.374*** (-14.86)
Size (A)			1.064*** (3.40)	0.712*** (8.85)			0.968*** (3.20)	0.680*** (7.88)
Constant	-0.582 (-0.84)	-0.727*** (-5.33)	-9.587*** (-2.93)	-5.873*** (-7.32)	-3.400 (-1.47)	2.205** (2.05)	-8.895** (-2.41)	-3.145*** (-2.89)
Industry effects	No	No	No	No	Yes	Yes	Yes	Yes
Year effects	No	No	No	No	Yes	Yes	Yes	Yes
Observations	200	3824	198	3804	200	3824	198	3804
Adjusted R ²	0.000	0.001	0.361	0.187	0.136	0.022	0.471	0.213

t statistics in parentheses

* p<0.10, ** p<0.05, *** p<0.01

5.3.3. 3-year effect

Following the 1-year post-announcement analysis in previous subsections, it might be insightful to investigate how those effects will evolve over a longer period. Therefore, this subsection will analyse the 3-year post-announcement ESG performance and profitability. The results are reported in Tables 13 and 14 respectively.

The findings presented in subsection 5.3.1. suggested that a negative relative ESG score (buying up) was associated with an increase in ESG performance from the acquirer when observed 1 year after the announcement. In Table 13, the same models are displayed only the dependent variables were measured using a 3-year window. Compared to Table 9, the coefficients are also negative yet to a greater extent. This suggests a stronger effect of the relative ESG score, implying that acquirers will benefit (suffer) more from “buying up” (buying down) in ESG over time.

The coefficients represent how much of the relative ESG will be integrated by the acquirer over time. In Table 13 those vary between -0.15 and -0.23, implying that up to 23% of the ESG gap can be integrated in a period of 3 years. For comparison, the models only predicted 14% for the 1-year period.

Subsequently, the effect of the ESG gap on the acquirer’s profitability after 3 years is illustrated in Table 14. Here, the effect is much more ambiguous and sensitive to the settings used, suggesting that the effect on profitability is less robust when the observation period extends. Compared to Table 11, where the findings supported a negative relationship between “buying up” in ESG and profitability, the results from Table 14 display a more ambiguous relationship. These findings can be interpreted as evidence for the fact that profitability is less (negatively) impacted by the ESG gap for longer periods, indicating that firms tend to recover from a loss in profitability after “buying up” in ESG.

Table 13: The effect of the ESG rating gap on the acquirer's long-term ESG rating (3 year)

This table shows the OLS regressions of the acquirer's 3-year ESG progress on the ESG gap between acquirer and target (both actual and estimated) as well as the deal control variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δ ESG Score (A) (3y)	Δ ESG Score (A) (3y)	Δ ESG Score (A) (3y)	Δ ESG Score (A) (3y)	Δ ESG Score (A) (3y)	Δ ESG Score (A) (3y)	Δ ESG Score (A) (3y)	Δ ESG Score (A) (3y)
ESG Gap (A-T)	-0.172*** (-3.55)		-0.153*** (-3.12)		-0.200*** (-3.73)		-0.205*** (-3.56)	
ESG Gap Proxied (A-T)		-0.199*** (-19.66)		-0.208*** (-19.14)		-0.214*** (-20.39)		-0.234*** (-20.79)
MTB ratio (A)			-1.046 (-0.86)	-0.471** (-2.22)			0.163 (0.11)	-0.254 (-1.08)
Leverage (A)			-0.0603 (-1.04)	-0.00504 (-0.58)			-0.0765 (-0.96)	-0.0192** (-1.99)
Free Cash Flow (A)			0.0511 (0.26)	-0.00803 (-0.34)			-0.176 (-0.64)	0.106*** (4.42)
Return on Assets (A)			-0.000985 (-0.01)	0.0174 (0.72)			0.0972 (0.65)	-0.000368 (-0.01)
Size (Ln) (A)			-0.536 (-0.62)	0.101 (0.65)			0.174 (0.18)	0.449*** (2.69)
Constant	10.02*** (7.54)	5.018*** (18.81)	23.08* (1.67)	4.316* (1.71)	27.11** (2.25)	6.729*** (4.43)	25.67 (1.23)	1.041 (0.35)
Industry effects	No	No	No	No	Yes	Yes	Yes	Yes
Year effects	No	No	No	No	Yes	Yes	Yes	Yes
Observations	137	2863	135	2840	137	2863	135	2840
Adjusted R ²	0.079	0.090	0.061	0.093	0.074	0.128	0.042	0.135

t statistics in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 14: The effect of the ESG rating gap on the acquirer's long-term profitability (3 year)

This table shows the OLS regressions of the acquirer's 3-year profitability progress on the ESG gap between acquirer and target (both actual and estimated) as well as the deal control variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δ Return on Assets (A) (3y)	Δ Return on Assets (A) (3y)	Δ Return on Assets (A) (3y)	Δ Return on Assets (A) (3y)	Δ Return on Assets (A) (3y)	Δ Return on Assets (A) (3y)	Δ Return on Assets (A) (3y)	Δ Return on Assets (A) (3y)
ESG Gap (A-T)	-0.00289 (-0.10)		0.0183 (0.77)		-0.0174 (-0.50)		0.00785 (0.25)	
ESG Gap Proxied (A-T)		0.0222*** (2.64)		0.0303*** (4.52)		0.0166** (2.00)		0.0231*** (3.45)
MTB ratio (A)			-0.333 (-0.48)	0.404* (1.89)			-0.447 (-0.60)	0.461** (2.01)
Leverage (A)			-0.0150 (-0.56)	0.0184*** (3.61)			0.0122 (0.32)	0.0229*** (4.07)
Free Cash Flow (A)			0.0593 (0.44)	0.0753*** (3.46)			0.0510 (0.28)	0.0732*** (2.85)
Return on Assets (A)			-0.611*** (-6.24)	-0.500*** (-11.00)			-0.591*** (-4.93)	-0.506*** (-11.10)
Size (Ln) (A)			1.280*** (3.56)	0.775*** (7.91)			1.112*** (2.73)	0.722*** (6.88)
Constant	-0.00873 (-0.01)	-0.692*** (-4.30)	-17.09*** (-3.00)	-10.85*** (-6.63)	-15.23*** (-2.95)	4.577*** (3.87)	-24.78*** (-3.14)	-6.136*** (-3.30)
Industry effects	No	No	No	No	Yes	Yes	Yes	Yes
Year effects	No	No	No	No	Yes	Yes	Yes	Yes
Observations	151	3046	149	3027	151	3046	149	3027
Adjusted R^2	-0.007	0.002	0.401	0.211	0.059	0.029	0.480	0.235

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.4. Paris Agreement

The past sections have analysed the effect of the ESG rating on both short- and long-term performance. In this section, those relationships will be studied with regard to the Paris Agreement (PA) to improve our understanding of those relationships. Indeed, it is for the literature valuable to identify if those effects are likely to get stronger over time.

The same OLS regressions were used as in Section 5.2. and 5.3. but the sample only covers 2016-2022. Because of the PA and how they raised sustainability awareness, one would expect an increase in the effect of ESG factors compared to the complete sample.

In Table 15, the OLS regressions of the effect of the acquirer's ESG score, target's ESG score⁷, and the ESG gap on the CARs are displayed. For readability, only the Fama-French 3 factor CARs are reported with deal and firm control variables as well as industry and year fixed effects.

When comparing those results with the coefficients from section 5.2. the effect of the PA is clearly observable. Indeed, with similar settings, the models deliver coefficients 50% to 100% for greater for the variables of interest in columns (1) and (2) compared to Table 5 and Table 7, suggesting that the effect of the acquirer's and (proxied) target's ESG strongly increased after the establishment of the Paris Agreement.

The factors in columns (3), (4), and (5) are more ambiguous to interpret as they lack significance. Nonetheless, it can be observed that the coefficients of the variables stayed relatively constant for columns (3) and (5) and grew in column (4).

Subsequently, similar to how it was done in Section 5.3., the long-term effects of the ESG gap were investigated. Table 16 reports the same regressions (including control variables and fixed effects) as in Tables 9 and 11 only focusing on the sample after the PA.

When analysing columns (1) and (2), the coefficient of interest is slightly stronger for the actual ESG and slightly weaker for the proxied ESG gap, not suggesting any big development since the introduction of the PA.

On the other hand, the coefficients reported in columns (3) and (4) do suggest a big increase in the negative effect that buying up in ESG can have on the acquirer's profitability.

This analysis suggests that, since the introduction of the Paris Agreement, the financial impact of ESG factors got stronger in both the short- and long-term but that there is no evidence of an increase in how well a company can integrate the relative ESG rating after an acquisition.

⁷ Measured and proxied.

Table 15: ESG factors and CARs after the Paris Agreement

This table reports the OLS regressions of the acquirer's CARs on various ESG factors as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs. This sample only encompasses transactions that took place after the Paris Agreement.

	(1) CAR FF3F (- 1;1)	(2) CAR FF3F (- 1;1)	(3) CAR FF3F (- 1;1)	(4) CAR FF3F (- 1;1)	(5) CAR FF3F (- 1;1)
ESG Score (A)	-0.0158** (-2.08)				
ESG Score Proxied (T)		-0.0546*** (-3.26)			
ESG Score (T)			0.0439 (1.32)		
ESG Gap Proxied (A-T)				-0.00157 (-0.22)	
ESG Gap (A-T)					-0.0105 (-0.41)
MTB ratio (A)	-0.193* (-1.75)	-0.166 (-1.53)	0.552 (0.87)	-0.201* (-1.81)	0.655 (1.10)
Leverage (A)	0.00571 (1.03)	0.00523 (0.96)	-0.0251 (-0.77)	0.00660 (1.20)	-0.0225 (-0.69)
Free Cash Flow (A)	0.0126 (0.53)	0.0116 (0.49)	0.0688 (0.67)	0.0106 (0.44)	0.0617 (0.59)
Return on Assets (A)	-0.000607 (-0.04)	-0.00858 (-0.54)	0.0412 (0.54)	-0.00232 (-0.14)	0.0421 (0.54)
Size (Ln) (A)	-0.453*** (-3.87)	-0.523*** (-4.75)	0.927* (1.73)	-0.541*** (-4.67)	0.937* (1.75)
Deal value (Ln)	0.331*** (3.15)	0.292*** (2.82)	-1.529*** (-3.57)	0.322*** (3.06)	-1.539*** (-3.52)
Cash Only	0.250 (0.27)	0.174 (0.19)	-2.785 (-0.96)	0.207 (0.22)	-2.718 (-0.93)
Cash & Stock	-0.113 (-0.11)	-0.188 (-0.19)	-3.504 (-1.18)	-0.148 (-0.15)	-3.400 (-1.13)
Stock Only	0.281 (0.22)	-0.0786 (-0.06)	-3.463 (-0.98)	0.302 (0.23)	-3.165 (-0.89)
Unknown	-0.00631 (-0.01)	-0.159 (-0.17)	-8.065* (-1.88)	-0.0971 (-0.10)	-8.483* (-1.97)
Private	0.241 (0.07)	0.348 (0.13)	10.49** (2.33)	0.206 (0.06)	11.26** (2.47)
Public	-2.228 (-0.67)	-2.167 (-0.83)	-2.973 (-1.08)	-2.274 (-0.67)	-3.007 (-1.10)
Subsidiary	0.489 (0.15)	0.528 (0.20)	0 (.)	0.428 (0.13)	0 (.)
Friendly	-0.782 (-0.53)	-0.795 (-0.53)	4.354 (0.68)	-0.789 (-0.53)	5.325 (0.82)
Cross-border Deal	-0.481 (-1.60)	-0.469 (-1.57)	-3.260** (-2.08)	-0.496* (-1.65)	-3.137** (-2.01)
Diversifying	0.354 (1.41)	0.346 (1.36)	-0.597 (-0.40)	0.364 (1.44)	-0.495 (-0.34)
% of Shares Acquired	0.0114 (0.23)	0.0130 (0.26)	0.0956 (0.96)	0.0147 (0.29)	0.143 (1.58)
Constant	5.335 (1.01)	9.020* (1.70)	-14.41 (-1.19)	5.786 (1.09)	-19.25 (-1.59)
Industry effects	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes
Observations	2391	2410	117	2388	117
Adjusted R ²	0.041	0.044	0.194	0.039	0.184

t statistics in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 16: ESG rating and long-term performance after the Paris Agreement

This table shows the OLS regressions of the acquirer's 1-year ESG and profitability progress on the ESG gap between acquirer and target (both actual and estimated) as well as the deal control variables. This sample only encompasses transactions that took place after the Paris Agreement.

	(1) Δ ESG Score (A)	(2) Δ ESG Score (A)	(3) Δ Return on Assets (A)	(4) Δ Return on Assets (A)
ESG Gap (A-T)	-0.121*** (-2.66)		0.0321 (1.48)	
ESG Gap Proxied (A-T)		-0.127*** (-12.62)		0.0486*** (5.17)
MTB ratio (A)	-1.029 (-1.38)	-0.220 (-1.49)	0.295 (0.76)	0.173 (1.04)
Leverage (A)	0.0206 (0.50)	-0.0122 (-1.60)	0.0286 (1.17)	0.0300*** (3.62)
Free Cash Flow (A)	-0.0544 (-0.26)	0.0552** (2.48)	0.295** (2.09)	0.136*** (3.62)
Return on Assets (A)	0.113 (1.39)	-0.0110 (-0.73)	-0.491*** (-5.41)	-0.341*** (-11.50)
Size (Ln) (A)	-0.998 (-1.43)	0.433*** (2.77)	0.897** (2.38)	0.365** (2.57)
Constant	26.78** (2.15)	-4.990** (-2.06)	-16.90** (-2.60)	-4.972** (-2.23)
Industry effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	133	2344	148	2630
Adjusted R ²	0.048	0.084	0.463	0.188

t statistics in parentheses

* p<0.10, ** p<0.05, *** p<0.01

6. Conclusion

This thesis explores the impact of ESG practices on M&A performance analysing the American market. It investigates how the ESG rating of acquirers and targets influence acquirers' announcement returns and long-term performance to fill a current gap in the literature. Indeed, even though both ESG and M&A are two topics that have been extensively studied by scholars, there are still theoretical differences in the financial impact of ESG factors.

M&A transactions offer a great framework to study its effect due to the clear market reaction and underlying theory to thoroughly analyse and interpret results. It contributes to the disputed literature by bringing new evidence supporting the shareholder theory and covering a new sample of transactions, deepening the current understanding of ESG rating and their financial impact. Next to the academic relevance, understanding this topic is also crucial for anyone taking part in the financial market as ESG restrictions and regulations will only grow with time.

To investigate this topic, a sample of around 4,000 acquisitions taking place between 2002 and 2022 in the American market was selected. The study employs a variety of econometric methodologies to analyse the effect of ESG factors in different settings.

The findings suggest that, in the context of M&A transactions, a higher ESG score from both the target and acquirer is associated with lower announcement returns, according to the shareholder theory. The sample does not show any significant effect of the 3-pillar ESG score nor for the ESG gap. These short-term returns are robust to various event windows and sample compositions. Nevertheless, these results were discovered using a proxied measure of the target's ESG rating. Therefore, caution is required when interpreting those results. Another solution would be to wait for the providers to improve their database or for new disclosure requirements to be introduced but until then, the methodology employed in this thesis is the best option to investigate this phenomenon.

This thesis also covers the effect of ESG factors on the long-term performance of the acquirer following an M&A transaction. The results presented in Section 5.3. recognise the ESG gap (Acquirer – Target) as positively related to profitability increase and negatively related to ESG progress. This suggests that a company “buying up” in ESG will see its profitability decrease but its ESG rating will increase after incorporating the target. This effect on profitability weakens when the observation window increases (3 vs 1 year) while the integration of target ESG practices improves.

Finally, the effect of the Paris Agreement on the sample used was tested to understand how the increasing number of sustainability regulations will impact our findings. Our results suggest that since the introduction of the PA, the financial impact of ESG factors got stronger in both the short- and long-term but that there is no evidence of a different relationship between relative ESG score and acquirer's ESG progress than shown in the complete sample.

All in all, the findings of this thesis are in line with the shareholder theory, suggesting that investing in ESG practices via acquisitions can be financially value-destroying for the acquirer. However, the analysis of the long-term effect of ESG factors on performance suggests that companies are able to improve their own ESG rating by the acquisition of high ESG targets and that the negative impact it has on their profitability declines with time.

6.1. Limitations & Future Research

This thesis has several limitations. The first one is the low number of actual targets' ESG scores observable. Due to this, only analysing actual ESG targets is very complex due to the small sample available and the selection bias that might characterise this sample. For this reason, this paper makes use of an estimated measure of target ESG score through an industry average. This weakens the results of this thesis as the sample misses "company-specific" data covering the targets but also allows us to use a greater sample by including more deals to the regressions. The recommendation for future research is to wait for improved databases/new disclosure regulations that will increase ESG data availability.

Additionally, this research only focuses on the American market, which is differently regulated than other markets. Therefore, other markets should be analysed before generalising the findings of this thesis.

Another limitation is that this thesis excluded all the acquirers with an ESG score of 0 as it was not published whether this represented a missing/non-disclosed ESG report, a score of 0, or a gap in the database. Further studies should benefit from more complete databases to avoid this sample exclusion.

Finally, this research is limited in terms of performance measures, looking solely at announcement returns, profitability, and ESG rating. The literature could improve from papers interpreting new financial measures such as net earnings but also non-financial measures such as customer satisfaction, market share, innovation, market image, etc. The academic literature would also benefit from a deeper analysis of which factors contributing to the ESG score have the most impact, identifying specific causes.

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Appendix

Figure A.1

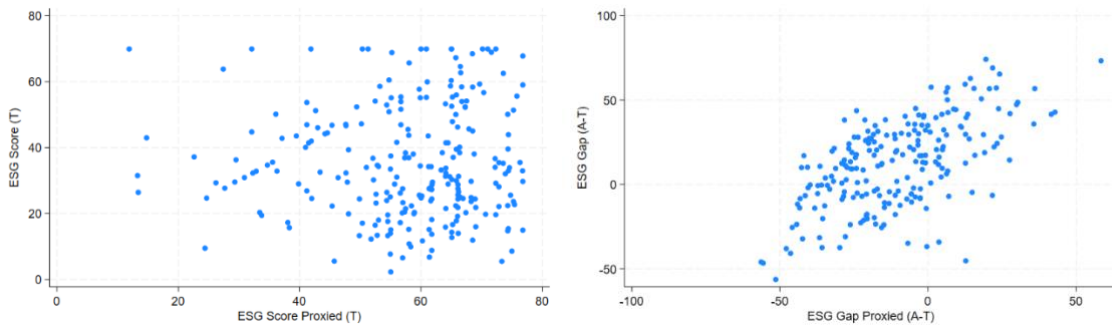


Table A.2: Individual effect of ESG pillars

This table shows the OLS regressions of the acquirer's CARs on the ESG 3 pillars ratings of the acquirer as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs.

	(1) CAR FF3F (-1;1)	(2) CAR FF3F (-1;1)	(3) CAR FF3F (-1;1)
Environment Score (A)	-0.000826 (-0.23)		
Social Score (A)		0.00127 (0.28)	
Governance Score (A)			-0.000562 (-0.15)
MTB ratio (A)	-0.183** (-2.24)	-0.186** (-2.26)	-0.183** (-2.25)
Leverage (A)	0.00861** (2.10)	0.00885** (2.15)	0.00875** (2.15)
Free Cash Flow (A)	0.0253 (1.28)	0.0249 (1.26)	0.0254 (1.28)
Return on Assets (A)	-0.00822 (-0.65)	-0.00845 (-0.67)	-0.00833 (-0.66)
Size (Ln) (A)	-0.499*** (-5.78)	-0.520*** (-6.19)	-0.500*** (-6.56)
Deal value (Ln)	0.205*** (3.11)	0.205*** (3.11)	0.200*** (3.03)
Cash Only	0.511 (0.86)	0.513 (0.87)	0.504 (0.85)
Cash & Stock	-0.00473 (-0.01)	-0.000962 (-0.00)	-0.00385 (-0.01)
Stock Only	0.139 (0.14)	0.151 (0.16)	0.138 (0.14)
Unknown	0.380 (0.63)	0.383 (0.63)	0.357 (0.59)
Private	-0.904 (-0.98)	-0.911 (-0.99)	-0.893 (-0.97)
Public	-2.424** (-2.57)	-2.432** (-2.57)	-2.408** (-2.54)
Subsidiary	-0.707 (-0.77)	-0.711 (-0.77)	-0.704 (-0.76)
Friendly	-0.276 (-0.23)	-0.280 (-0.24)	-0.285 (-0.24)
Cross-border Deal	-0.362* (-1.88)	-0.364* (-1.89)	-0.358* (-1.86)
Diversifying	0.135 (0.77)	0.134 (0.77)	0.136 (0.78)
% of Shares Acquired	0.00552 (0.23)	0.00565 (0.23)	0.00555 (0.23)
Constant	4.632 (1.59)	4.771* (1.65)	4.684 (1.63)
Firm effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Observations	4034	4034	4036
Adjusted R ²	0.034	0.034	0.034

t statistics in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table A.3: Robustness test 1

This table shows the OLS regressions of the acquirer's CARs on the ESG score of the acquirer as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs.

	(1) CAR MM (- 3;3)	(2) CAR FF3F (- 3;3)	(3) CAR MM (- 3;3)	(4) CAR FF3F (- 3;3)	(5) CAR MM (- 5;5)	(6) CAR FF3F (- 5;5)	(7) CAR MM (- 5;5)	(8) CAR FF3F (- 5;5)
ESG Score (A)	-0.0125** (-2.07)	-0.0133** (-2.29)	-0.0120* (-1.73)	-0.0127* (-1.90)	-0.0137* (-1.95)	-0.0134** (-1.99)	-0.00843 (-1.05)	-0.00842 (-1.10)
MTB ratio (A)	-0.0954 (-0.92)	-0.110 (-1.11)	-0.192* (-1.67)	-0.199* (-1.80)	-0.209* (-1.75)	-0.232** (-2.04)	-0.279** (-2.12)	-0.301** (-2.39)
Leverage (A)	0.00449 (0.94)	0.00226 (0.49)	0.00991* (1.87)	0.00714 (1.40)	0.00547 (0.99)	0.00392 (0.74)	0.0118* (1.92)	0.00925 (1.56)
Free Cash Flow (A)	0.0699*** (2.93)	0.0829*** (3.59)	0.0300 (1.06)	0.0461* (1.69)	0.0996*** (3.59)	0.119*** (4.35)	0.0672** (2.04)	0.0883*** (2.74)
Return on Assets (A)	-0.00619 (-0.36)	-0.0142 (-0.86)	-0.00519 (-0.29)	-0.0146 (-0.86)	-0.0175 (-0.81)	-0.0247 (-1.21)	-0.0202 (-0.91)	-0.0293 (-1.39)
Size (Ln) (A)	-0.460*** (-4.75)	-0.423*** (-4.50)	-0.469*** (-4.48)	-0.427*** (-4.23)	-0.477*** (-4.30)	-0.401*** (-3.76)	-0.543*** (-4.50)	-0.454*** (-3.94)
Deal value (Ln)	0.300*** (3.56)	0.300*** (3.63)	0.279*** (3.26)	0.272*** (3.25)	0.288*** (2.99)	0.256*** (2.75)	0.293*** (2.98)	0.253*** (2.67)
Cash Only	-1.092 (-1.29)	-1.033 (-1.31)	-1.045 (-1.23)	-0.990 (-1.25)	-0.999 (-1.10)	-0.850 (-0.94)	-0.879 (-0.96)	-0.767 (-0.84)
Cash & Stock	-1.910** (-2.00)	-1.946** (-2.17)	-1.840* (-1.92)	-1.870** (-2.08)	-2.240** (-2.13)	-2.023* (-1.95)	-2.102** (-1.99)	-1.877* (-1.80)
Stock Only	-2.564** (-2.18)	-2.579** (-2.27)	-2.470** (-2.11)	-2.459** (-2.17)	-3.015** (-2.29)	-2.859** (-2.22)	-2.918** (-2.22)	-2.733** (-2.12)
Unknown	-1.251 (-1.44)	-1.201 (-1.49)	-1.292 (-1.48)	-1.258 (-1.55)	-1.130 (-1.20)	-0.897 (-0.96)	-1.181 (-1.25)	-0.992 (-1.06)
Private	-1.594 (-1.47)	-0.754 (-0.63)	-1.666 (-1.56)	-0.807 (-0.68)	-2.368* (-1.74)	-1.031 (-0.79)	-2.451* (-1.81)	-1.100 (-0.84)
Public	-2.966*** (-2.65)	-2.251* (-1.84)	-3.082*** (-2.79)	-2.323* (-1.91)	-3.432** (-2.48)	-2.264* (-1.70)	-3.672*** (-2.65)	-2.451* (-1.84)
Subsidiary	-1.276 (-1.18)	-0.457 (-0.38)	-1.390 (-1.30)	-0.555 (-0.47)	-2.083 (-1.53)	-0.909 (-0.70)	-2.279* (-1.69)	-1.083 (-0.83)
Friendly	1.074 (1.24)	1.476* (1.82)	1.147 (1.33)	1.639** (2.07)	1.351 (1.13)	1.805 (1.59)	1.566 (1.33)	2.172** (1.97)
Cross-border Deal	-0.123	-0.0913	-0.203	-0.164	-0.343	-0.270	-0.397	-0.330

	(-0.49)	(-0.37)	(-0.79)	(-0.66)	(-1.15)	(-0.93)	(-1.32)	(-1.12)
Diversifying	0.261	0.208	0.434*	0.369*	0.307	0.277	0.482*	0.433*
	(1.18)	(0.97)	(1.88)	(1.65)	(1.19)	(1.12)	(1.79)	(1.68)
% of Shares Acquired	0.0268	0.00934	0.0251	0.00715	0.00670	-0.00635	0.00892	-0.00525
	(1.05)	(0.39)	(0.99)	(0.30)	(0.22)	(-0.22)	(0.29)	(-0.18)
Constant	2.315	2.627	3.219	3.564	5.152	4.144	6.027	4.924
	(0.78)	(0.92)	(1.05)	(1.22)	(1.46)	(1.25)	(1.62)	(1.40)
Industry effects	No	No	Yes	Yes	No	No	Yes	Yes
Year effects	No	No	Yes	Yes	No	No	Yes	Yes
Observations	4023	4023	4023	4023	4023	4023	4023	4023
Adjusted R^2	0.020	0.022	0.023	0.026	0.017	0.018	0.019	0.020

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.4: Robustness test 2

This table shows the OLS regressions of the acquirer's CARs on the estimated ESG score of the target as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs.

	(1) CAR MM (- 3;3)	(2) CAR FF3F (- 3;3)	(3) CAR MM (- 3;3)	(4) CAR FF3F (- 3;3)	(5) CAR MM (- 5;5)	(6) CAR FF3F (- 5;5)	(7) CAR MM (- 5;5)	(8) CAR FF3F (- 5;5)
ESG Score Proxied (T)	-0.0129 (-1.58)	-0.0149* (-1.88)	-0.0169 (-1.41)	-0.0177 (-1.49)	-0.0260*** (-2.71)	-0.0270*** (-2.95)	-0.0250* (-1.74)	-0.0247* (-1.80)
MTB ratio (A)	-0.0913 (-0.88)	-0.105 (-1.05)	-0.188 (-1.64)	-0.195* (-1.77)	-0.191 (-1.60)	-0.213* (-1.87)	-0.267** (-2.04)	-0.289** (-2.30)
Leverage (A)	0.00499 (1.04)	0.00283 (0.61)	0.0103* (1.96)	0.00761 (1.49)	0.00625 (1.13)	0.00470 (0.89)	0.0118* (1.93)	0.00924 (1.57)
Free Cash Flow (A)	0.0680*** (2.84)	0.0812*** (3.50)	0.0255 (0.90)	0.0414 (1.52)	0.100*** (3.59)	0.120*** (4.36)	0.0629* (1.90)	0.0839*** (2.60)
Return on Assets (A)	-0.00850 (-0.49)	-0.0169 (-1.02)	-0.00690 (-0.38)	-0.0165 (-0.97)	-0.0220 (-1.02)	-0.0293 (-1.43)	-0.0214 (-0.97)	-0.0305 (-1.46)
Size (Ln) (A)	-0.535*** (-5.83)	-0.503*** (-5.62)	-0.534*** (-5.50)	-0.497*** (-5.25)	-0.572*** (-5.41)	-0.495*** (-4.87)	-0.583*** (-5.17)	-0.494*** (-4.57)
Deal value (Ln)	0.299*** (3.57)	0.300*** (3.65)	0.272*** (3.19)	0.264*** (3.17)	0.300*** (3.14)	0.269*** (2.91)	0.288*** (2.94)	0.247*** (2.62)
Cash Only	-1.084 (-1.28)	-1.021 (-1.30)	-1.037 (-1.22)	-0.981 (-1.24)	-0.954 (-1.05)	-0.801 (-0.89)	-0.860 (-0.94)	-0.749 (-0.82)
Cash & Stock	-1.893** (-1.98)	-1.924** (-2.14)	-1.833* (-1.91)	-1.861** (-2.07)	-2.180** (-2.07)	-1.955* (-1.89)	-2.091** (-1.98)	-1.862* (-1.79)
Stock Only	-2.538** (-2.16)	-2.550** (-2.24)	-2.449** (-2.09)	-2.437** (-2.15)	-2.972** (-2.26)	-2.815** (-2.19)	-2.904** (-2.21)	-2.719** (-2.12)
Unknown	-1.281 (-1.47)	-1.236 (-1.53)	-1.307 (-1.50)	-1.274 (-1.57)	-1.194 (-1.27)	-0.964 (-1.04)	-1.186 (-1.26)	-0.998 (-1.07)
Private	-1.609 (-1.48)	-0.767 (-0.65)	-1.649 (-1.53)	-0.790 (-0.66)	-2.361* (-1.72)	-1.021 (-0.78)	-2.412* (-1.77)	-1.062 (-0.81)
Public	-3.015*** (-2.69)	-2.307* (-1.89)	-3.088*** (-2.79)	-2.328* (-1.91)	-3.527** (-2.51)	-2.363* (-1.76)	-3.664*** (-2.63)	-2.444* (-1.82)
Subsidiary	-1.328 (-1.22)	-0.513 (-0.43)	-1.407 (-1.31)	-0.573 (-0.48)	-2.144 (-1.56)	-0.969 (-0.74)	-2.279* (-1.68)	-1.082 (-0.83)
Friendly	1.036 (1.20)	1.440* (1.78)	1.087 (1.26)	1.576** (1.98)	1.353 (1.13)	1.813 (1.59)	1.498 (1.26)	2.106* (1.89)
Cross-border Deal	-0.129 (-0.51)	-0.0961 (-0.39)	-0.214 (-0.84)	-0.175 (-0.71)	-0.338 (-1.14)	-0.264 (-0.91)	-0.405 (-1.35)	-0.339 (-1.15)

Diversifying	0.266 (1.20)	0.213 (0.99)	0.445* (1.92)	0.380* (1.70)	0.314 (1.21)	0.286 (1.16)	0.499* (1.85)	0.452* (1.74)
% of Shares Acquired	0.0296 (1.16)	0.0124 (0.51)	0.0280 (1.10)	0.0102 (0.43)	0.0109 (0.35)	-0.00215 (-0.08)	0.0120 (0.39)	-0.00222 (-0.08)
Constant	2.957 (0.99)	3.363 (1.17)	3.687 (1.20)	4.057 (1.39)	6.370* (1.79)	5.408 (1.62)	6.545* (1.76)	5.449 (1.55)
Industry effects	No	No	Yes	Yes	No	No	Yes	Yes
Year effects	No	No	Yes	Yes	No	No	Yes	Yes
Observations	4020	4020	4020	4020	4020	4020	4020	4020
Adjusted R^2	0.019	0.022	0.022	0.025	0.018	0.019	0.019	0.020

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.5: Robustness test 3

This table shows the OLS regressions of the acquirer's CARs on the ESG score of the target as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs.

	(1) CAR MM (-1;1)	(2) CAR FF3F (-1;1)	(3) CAR MM (-1;1)	(4) CAR FF3F (-1;1)
ESG Score (T)	0.0571** (2.15)	0.0504* (1.90)	0.0517* (1.77)	0.0470 (1.57)
MTB ratio (A)	-0.0755 (-0.15)	-0.130 (-0.25)	0.284 (0.50)	0.278 (0.46)
Leverage (A)	-0.0117 (-0.54)	-0.0104 (-0.48)	-0.0194 (-0.69)	-0.0188 (-0.68)
Free Cash Flow (A)	0.205*** (2.66)	0.221*** (2.73)	0.0772 (0.90)	0.0970 (1.12)
Return on Assets (A)	0.0757 (1.23)	0.0649 (1.04)	0.0972 (1.24)	0.0830 (1.05)
Size (Ln) (A)	0.793* (1.93)	0.825** (2.04)	0.771* (1.72)	0.849* (1.92)
Deal value (Ln)	-0.851*** (-2.76)	-0.835*** (-2.69)	-1.205*** (-3.48)	-1.240*** (-3.42)
Cash Only	-2.289 (-0.93)	-2.660 (-1.03)	-1.661 (-0.72)	-1.964 (-0.82)
Cash & Stock	-4.819* (-1.91)	-4.831* (-1.81)	-3.406 (-1.37)	-3.360 (-1.30)
Stock Only	-3.217 (-1.07)	-3.763 (-1.20)	-1.764 (-0.57)	-2.195 (-0.72)
Unknown	-6.058* (-1.69)	-5.916 (-1.58)	-5.482 (-1.54)	-5.280 (-1.44)
Private	6.534** (2.61)	5.601** (2.24)	8.806** (2.30)	7.919** (2.07)
Public	-2.360 (-0.93)	-2.184 (-0.84)	-2.605 (-1.04)	-2.311 (-0.92)
Subsidiary	0 (.)	0 (.)	0 (.)	0 (.)
Friendly	-5.983 (-1.12)	-5.423 (-0.98)	-1.264 (-0.20)	-0.286 (-0.04)
Cross-border Deal	-1.674 (-1.46)	-1.550 (-1.31)	-2.374* (-1.71)	-2.461* (-1.72)
Diversifying	0.0422	-0.0215	-0.193	-0.197

% of Shares Acquired	(0.04) 0.0633	(-0.02) 0.0669	(-0.15) 0.101	(-0.15) 0.107
Constant	(0.97) -0.282	(0.90) -1.165	(1.20) -4.829	(1.21) -7.153
Industry effects	(-0.04) No	(-0.14) No	(-0.49) Yes	(-0.69) Yes
Year effects	No	No	Yes	Yes
Observations	152	152	152	152
Adjusted R^2	0.134	0.116	0.182	0.166

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.6: Robustness test 4

This table shows the OLS regressions of the acquirer's CARs on various ESG factors as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs. This sample only encompasses targets that do not classify as "Subsidiary".

	(1) CAR FF3F (-1;1)	(2) CAR FF3F (-1;1)	(3) CAR FF3F (-1;1)	(4) CAR FF3F (-1;1)	(5) CAR FF3F (-1;1)
ESG Score (A)	-0.00943 (-1.40)				
ESG Score Proxied (T)		-0.0430*** (-3.62)			
ESG Score (T)			0.0639** (2.05)		
ESG Gap Proxied (A-T)				0.00392 (0.67)	
ESG Gap (A-T)					-0.0189 (-0.80)
MTB ratio (A)	-0.179* (-1.80)	-0.122 (-1.25)	0.0674 (0.10)	-0.182* (-1.82)	0.253 (0.42)
Leverage (A)	0.00646 (1.24)	0.00780 (1.49)	-0.0274 (-0.97)	0.00711 (1.38)	-0.0228 (-0.79)
Free Cash Flow (A)	0.0538* (1.80)	0.0523* (1.74)	0.133 (1.53)	0.0494* (1.66)	0.144 (1.55)
Return on Assets (A)	-0.00656 (-0.44)	-0.0111 (-0.76)	0.0578 (0.74)	-0.00828 (-0.55)	0.0635 (0.79)
Size (Ln) (A)	-0.326*** (-3.22)	-0.336*** (-3.54)	0.611 (1.34)	-0.399*** (-4.04)	0.709 (1.54)
Deal value (Ln)	0.152* (1.74)	0.100 (1.16)	-0.871** (-2.32)	0.139 (1.59)	-0.946** (-2.49)
Cash Only	0.626 (0.91)	0.791 (1.17)	-1.700 (-0.71)	0.617 (0.89)	-1.590 (-0.69)
Cash & Stock	0.264 (0.34)	0.427 (0.55)	-5.503** (-2.16)	0.270 (0.34)	-4.864* (-1.94)
Stock Only	-0.133 (-0.13)	0.291 (0.29)	-3.737 (-1.23)	-0.120 (-0.12)	-2.430 (-0.75)
Unknown	0.690 (0.97)	0.760 (1.08)	-2.206 (-0.60)	0.661 (0.92)	-2.815 (-0.76)
Private	-1.839 (-1.57)	-1.047 (-1.15)	6.818* (1.96)	-1.861 (-1.58)	8.477** (2.19)

Public	-3.291*** (-2.77)	-2.528*** (-2.71)	0 (.)	-3.305*** (-2.76)	0 (.)
Friendly	2.036*** (3.50)	0.0943 (0.06)	0.996 (0.15)	1.973*** (3.22)	1.934 (0.28)
Cross-border Deal	-0.696** (-2.55)	-0.668** (-2.47)	-2.748** (-2.09)	-0.707*** (-2.60)	-2.609* (-1.96)
Diversifying	0.189 (0.80)	0.202 (0.85)	-0.787 (-0.56)	0.202 (0.85)	-0.492 (-0.35)
% of Shares Acquired	0.0211 (0.84)	0.0243 (1.01)	0.0920 (1.06)	0.0229 (0.91)	0.149* (1.67)
Constant	3.818 (1.24)	5.624* (1.66)	-12.46 (-1.03)	4.646 (1.49)	-20.28 (-1.65)
Industry effects	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes
Observations	2536	2585	139	2534	138
Adjusted R^2	0.036	0.039	0.214	0.035	0.194

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7: The effect of relative ESG rating on CARs

This table shows the OLS regressions of the acquirer's CARs on the sign of the ESG gap between acquirer and target (both actual and estimated) as well as the firm and deal control variables. The top row describes the specifications employed to compute the CARs.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CAR MM (- 1;1)	CAR MM (- 1;1)	CAR MM (- 1;1)	CAR MM (- 1;1)	CAR FF3F (- 1;1)	CAR FF3F (- 1;1)	CAR FF3F (- 1;1)	CAR FF3F (- 1;1)
Positive ESG Gap Proxied (A-T)	0.192 (1.14)		0.238 (1.39)		0.161 (0.99)		0.204 (1.23)	
Positive ESG Gap (A-T)		-0.0787 (-0.07)		-0.132 (-0.11)		0.0191 (0.02)		-0.119 (-0.10)
MTB ratio (A)	-0.0802 (-0.98)	0.0696 (0.14)	-0.169* (-1.89)	0.418 (0.77)	-0.0966 (-1.24)	-0.00185 (-0.00)	-0.183** (-2.15)	0.399 (0.70)
Leverage (A)	0.00229 (0.60)	-0.00942 (-0.42)	0.00710* (1.72)	-0.0149 (-0.51)	0.00151 (0.41)	-0.00820 (-0.37)	0.00611 (1.52)	-0.0148 (-0.51)
Free Cash Flow (A)	0.0506*** (2.98)	0.209** (2.56)	0.0113 (0.55)	0.0711 (0.81)	0.0563*** (3.48)	0.225*** (2.64)	0.0191 (0.96)	0.0915 (1.03)
Return on Assets (A)	-0.00531 (-0.40)	0.0784 (1.30)	-0.00313 (-0.23)	0.106 (1.37)	-0.00936 (-0.75)	0.0675 (1.11)	-0.00750 (-0.59)	0.0909 (1.17)
Size (Ln) (A)	-0.484*** (-6.50)	0.749* (1.82)	-0.503*** (-6.44)	0.745 (1.65)	-0.461*** (-6.33)	0.781* (1.92)	-0.478*** (-6.26)	0.825* (1.85)
Deal value (Ln)	0.224*** (3.37)	-0.857*** (-2.84)	0.207*** (3.06)	-1.259*** (-3.64)	0.220*** (3.39)	-0.843*** (-2.75)	0.202*** (3.04)	-1.289*** (-3.55)
Cash Only	0.552 (0.92)	-2.497 (-1.01)	0.625 (1.03)	-1.662 (-0.69)	0.544 (0.93)	-2.854 (-1.10)	0.613 (1.04)	-1.965 (-0.80)
Cash & Stock	0.0973 (0.14)	-4.955* (-1.95)	0.156 (0.22)	-3.052 (-1.18)	0.0545 (0.08)	-4.967* (-1.85)	0.107 (0.15)	-3.039 (-1.14)
Stock Only	-0.124 (-0.13)	-3.041 (-0.99)	-0.0507 (-0.05)	-1.192 (-0.37)	-0.166 (-0.17)	-3.617 (-1.14)	-0.0997 (-0.10)	-1.676 (-0.53)
Unknown	0.536 (0.87)	-6.724* (-1.88)	0.492 (0.79)	-6.190* (-1.74)	0.531 (0.89)	-6.514* (-1.75)	0.482 (0.80)	-5.923 (-1.62)
Private	-1.971* (-1.74)	6.626*** (2.70)	-1.990* (-1.78)	9.734** (2.57)	-1.554 (-1.33)	5.668** (2.32)	-1.562 (-1.34)	8.762** (2.32)
Public	-3.376*** (-2.93)	-2.190 (-0.87)	-3.464*** (-3.04)	-2.481 (-1.00)	-2.980** (-2.51)	-2.017 (-0.79)	-3.032** (-2.56)	-2.198 (-0.88)
Subsidiary	-1.779 (-1.57)	0 (.)	-1.829 (-1.63)	0 (.)	-1.346 (-1.15)	0 (.)	-1.381 (-1.18)	0 (.)
Friendly	0.714 (1.18)	-4.587 (-0.89)	0.882 (1.37)	-0.709 (-0.11)	0.835 (1.42)	-4.162 (-0.78)	1.069* (1.72)	0.218 (0.03)

Cross-border Deal	-0.409**	-1.436	-0.483**	-2.049	-0.381**	-1.351	-0.449**	-2.165
	(-2.10)	(-1.24)	(-2.46)	(-1.51)	(-1.99)	(-1.12)	(-2.32)	(-1.55)
Diversifying	0.0409	0.209	0.163	-0.101	-0.00115	0.135	0.112	-0.113
	(0.24)	(0.19)	(0.90)	(-0.08)	(-0.01)	(0.12)	(0.64)	(-0.09)
% of Shares Acquired	0.00884	0.0931	0.0107	0.133	0.000914	0.0921	0.00245	0.135
	(0.35)	(1.35)	(0.42)	(1.65)	(0.03)	(1.14)	(0.09)	(1.57)
Constant	6.936**	-7.769	7.474**	-13.32	6.951**	-8.523	7.640**	-15.89
	(2.43)	(-0.93)	(2.52)	(-1.31)	(2.38)	(-0.92)	(2.52)	(-1.45)
Firm effects	No	No	Yes	Yes	No	No	Yes	Yes
Year effects	No	No	Yes	Yes	No	No	Yes	Yes
Observations	4020	152	4020	152	4020	152	4020	152
Adjusted R^2	0.025	0.109	0.029	0.164	0.026	0.097	0.031	0.151

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$