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ESG Performance and the Covid- 19 Pandemic, Importance for Acquirers

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Abstract

This research aims to study the impact of ESG performance of acquirers on short-term M&A performance by regressing acquirers' announcement CARs against acquirers' ESG scores, as well as ESG pillar scores and a set of control variables for 5718 deals announced between 2015 and 2022. Furthermore, this study evinces the influence of the Covid-19 pandemic on this relationship. The results indicate that acquirers' ESG performance negatively influence short-term M&A performance and that the Covid-19 pandemic did not influence this relationship. This effect is attributable to the Social score, while Environmental and Governance scores did not have a significant impact. On the other hand, the Covid-19 pandemic had significant positive influence on the impact of acquirers' Social scores and a significant negative influence on the impact of acquirers' Environmental scores. This indicates that during the covid-19 pandemic, investors assessed Environmental and Social scores differently regarding their investment behaviour in acquiring companies around the announcement of the deal compared to before the Covid-19 pandemic.

Keywords: Mergers & Acquisitions (M&A), ESG performance, Environmental, Social, Governance, Covid-19 pandemic, short-term M&A performance

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1 Introduction

Environmental, Social and Governance (hereinafter: 'ESG') criteria have become a hot topic and interest in ESG is increasing rapidly (*Google Trends*, 2023). For instance, investors use ESG data to partake in impact investing and to try to enhance portfolio profitability, as a number of studies have empirically linked high ESG portfolios to higher portfolio returns (Cesarone et al., 2022; Zhang et al., 2021). However, the benefits of ESG performance are not only limited to investors. Acquiring firms willing to engage in mergers and acquisitions might also want to increase their ESG performance, as ESG performance of acquiring firms has been linked to superior short-term as well as long-term M&A performance (Piperni, 2021; Zheng et al., 2023). To aid investors in evaluating the ESG performance of a firm, the Corporate Sustainability Reporting Directive (hereinafter: 'CSRD') entered into force on the fifth of January 2023, obligating a vast number of large companies residing in the EU to report on sustainability. In line with the European Sustainability Reporting Standards (ESRS) these listed companies, banks and insurance companies have to report on environmental, social and governance matters. Thereby providing investors and other stakeholders with the tools to assess investment risks and other sustainability issues. The implementation of the CSRD shows that the topic of ESG will only become more prevalent and important. Hence, it becomes more interesting for businesses to consider ESG activities and partake in non-financial reporting.

An interesting take is to include ESG into decision making regarding mergers and acquisitions. A large number of studies find that ESG performance significantly positively enhances corporate financial performance (Huang, 2021). Therefore, acquiring targets with a superior ESG performance to increase the overall ESG performance of a company might result in enhanced firm performance. Especially as it is found that acquiring targets with high ESG scores positively affects acquirers' abnormal returns (Aktas et al., 2011; Tampakoudis & Anagnostopoulou, 2020). This positive effect on M&A performance might be attributable to the perception of investors that believe the acquirers' ability to cope with social and environmental risks increases through the acquisition (Aktas et al., 2011), and that the acquisition increases post-acquisition ESG performance (Tampakoudis & Anagnostopoulou, 2020).

On the other hand, the ESG performance of acquirers is also of importance, as prior research indicated that ESG scores of acquirers positively enhance M&A performance, both short- (Piperni, 2021) and long-term (Zheng et al., 2023). This effect might be attributable to the perception of investors that high ESG acquirers are more socially responsible, less driven by managerial self-interest (Piperni, 2021), and that stakeholders have more trust in high ESG acquirers (Zheng et al., 2023). However, not all studies find positive effects of acquirers' ESG ratings on M&A performance (Fatemi et al., 2017; Tampakoudis et al., 2021).

The influence of ESG performance on M&A performance can be explained through stakeholder theory. Stakeholder theory suggests that managers have to make decisions that take the interests of all stakeholders in a firm into consideration (Freeman, 2010; Jensen, 2001). On the contrary, shareholder theory suggests that the central goal of a firm and its managers is to maximize shareholder wealth (Danielson et al., 2008) and not to take into account the preferences of all stakeholders. In line with stakeholder theory, engagement in ESG activities decreases information asymmetry and reputational risk (Cui et al., 2018) and higher ESG performance leads to better operating performance and firm value (Awaysheh et al., 2020). M&As of high ESG acquirers might thus perform better than low ESG acquirers based on lower information asymmetry and related agency costs, while acquisitions of targets with high ESG ratings might receive these benefits through an increase of the acquirers ESG rating, and are on the short term perceived as favourable by shareholders.

Prior research found that the prevalence of stakeholder theory increases during crises (Albuquerque et al., 2020; Broadstock et al., 2021; Lins et al., 2017), therefore enhancing its effect. Building on that thought, the Covid-19 pandemic might also have enhanced the influence of ESG performance of acquiring firms on M&A performance. Especially as prior research indicated that high ESG rated firms outperformed low ESG rated firms during the Covid-19 crisis (Albuquerque et al., 2020; Broadstock et al., 2021). Moreover, Li et al. (2022) showed that ESG performance was positively associated with cumulative abnormal returns during the Covid-19 pandemic. They attribute these findings to the view that investors perceive ESG performance as a signal of risk mitigation, especially during crises. Yet, contrary to expectations, Tampakoudis et al. (2021) found a negative relationship between ESG performance of acquirers and M&A

performance before and during the Covid-19 pandemic, while the Covid-19 pandemic negatively affected the relationship. This contradicts findings from outside the field of M&A and is the opposite of most of the findings regarding the effect of ESG ratings on M&A performance before the pandemic. The authors attribute their results to prevailing economic and financial conditions and the need of acquirers to respond to Covid-19 pandemic (Tampakoudis et al., 2021). ESG investments might have been postponed and cancelled in an act to increase liquidity and preserve financial flexibility. Therefore, acquirers which were heavily invested in sustainability projects experienced negative announcement CARs during the Covid-19 pandemic. Potentially, their sample selection of only US acquirers and time frame influenced their findings, as prior research did not find this negative relationship.

In an attempt to find out the effect of ESG performance of acquirers on M&A performance and to settle previous contradicting findings, this research will focus on the effect of ESG ratings of acquirers on M&A performance of acquirers before and during the Covid-19 pandemic. Moreover, the effect of the different components of ESG, namely Environmental, Social, and Governance will be analyzed to provide practical insights and to point out which factors of ESG lead to the effect. Due to data availability, no ESG scores of targets can be taken into account. In short, this research will try to answer the following research question:

‘How does ESG performance of acquirers influence short-term M&A performance and how did the Covid-19 pandemic influence this relationship?’

In order to answer the stated research question a sample of 5718 deals announced by acquirers from Europe, the United States and China, between 01-01-2015 and 31-12-2022 will be analyzed using cross-sectional regressions. M&A performance will be measured as Cumulative Abnormal Returns around the announcement date of the deal, while for ESG performance the Refinitiv ESG scores will be used. The Covid-effect will be captured using an interaction term between the ESG scores and a Covid-period dummy variable.

This study tries to extend current literature regarding the influence of ESG performance of acquirers on M&A performance, and evinces the influence of the Covid-19 pandemic on this relationship. It is important to describe the relationship between ESG performance of acquirers and M&A performance, as acquirers looking to pursue an M&A deal might want to improve their

ESG score prior to the deal. Moreover, it could have important implications for future crises if high ESG ratings have a negative or positive effect on M&A performance. Firms might decrease or increase their ESG activities during possible future crises to enhance M&A performance. Therefore this study is relevant for firms considering M&As in future crises. Furthermore, in contrast to prior research, this study gives insight into the effect of the components of ESG on M&A performance, and therewith gives practical recommendations on which of these components might be preferred to be improved in order to increase M&A performance.

In short, this study finds that ESG ratings of acquirers small and negatively influence M&A performance, while the Covid-19 pandemic did not significantly influence this relationship. Moreover, acquirers' Social scores also negatively influence M&A performance, while Environmental and Governance scores do not lead to a significant effect. Furthermore, contrary to the findings for the total ESG rating, the Covid-19 pandemic positively influenced the effect of Social scores of acquirers on M&A performance, while it negatively influenced the effect of Environmental scores. Therewith, the Covid-19 pandemic had different influences on the components of the ESG score and corresponding investment behavior. Hence, these results indicate that it is in the best interest of acquiring firms willing to increase short-term M&A performance to not focus too much on their ESG performance, especially Social performance. In case of a future crisis, it may then be advisable for acquiring firms willing to increase short-term M&A performance to focus on improving their Social scores, and not focus on their Environmental scores.

This thesis continues as follows. Firstly, the literature review in chapter two provides the most relevant literature regarding the subject of this study and constitutes the hypotheses. Chapter three discusses the data collection procedure as well as the methodological approach and the relevant variables. Thereafter, chapter four states the conducted data analysis and its results. Lastly, chapter five discusses and explains the results related to prior research. Moreover, it concludes the thesis and outlines the most important contributions, limitations and recommendations for future research.

2 Literature Review

2.1 CSR and ESG

The social and sustainability impact of companies has become increasingly important. Investors, consumers, regulators and many more stakeholders demand information regarding the social and sustainability impact from companies. Companies thus provide both mandatory and non-mandatory non-financial information to their stakeholders to address these needs. They practice Corporate Social Responsibility (hereinafter: 'CSR'), which can be defined as *"the responsibility of enterprises for their impacts on society and outlines what an enterprise should do to meet that responsibility"* (European Commission, 2011). Different sets of accounting standards have been set to provide companies with guidelines and rules to report their non-financial information, like by the Global Reporting initiative (GRI), by the Sustainability Accounting Standards Board (SASB), and through the CSRD. One important framework regarding the sustainability and social impact of companies is the ESG-framework. In economics literature, the terms CSR and ESG are oftentimes used interchangeably (Gillan et al., 2021). However, it is argued that CSR is more of an internal framework to assess sustainability, while ESG is more external and quantifiable (O'Neill, n.d.). ESG stands for Environmental, Social and Governance and is a framework used by different types of stakeholders to evaluate the sustainability and social impact of a company. The three pillars of the framework divide the ESG concerns into different key issues. Environmental factors consist of the impact of a company on the environment, such as its impact on the climate, energy use and pollution (Sundaram, 2022). Social factors refer to the impact of a company on society, such as workplace health and safety, human rights and consumer health (Sundaram, 2022). Governance factors relate to the internal management and governance structures of a company, such as board independence, board diversity and executive compensation (Sundaram, 2022). The ESG impact of a company can be converted into an ESG rating or score. Different kinds of providers of these ratings exist, like Refinitiv and MSCI. They construct ESG scores based on their own assessment criteria. These ESG ratings can be used by investors to, for example, conduct positive screening to set up a high ESG portfolio, but can also be used in the context of mergers and acquisitions (hereinafter: 'M&A') to, for example, increase the social and sustainability image

of a company. While this study focuses on the ESG performance of companies, literature regarding CSR performance will also be described as this covers the sustainability and social impact of companies too and in the literature these terms are often used interchangeably.

2.2 Stakeholder theory

Building on the concept of CSR/ESG, stakeholder theory suggests that managers have to make decisions that take the interests of all stakeholders in a firm into consideration (Freeman, 2010; Jensen, 2001). Stakeholders are defined as all individuals or groups that can be substantially affected by, or affect the welfare of a firm (Jensen, 2001). The welfare of a firm is not only shareholder wealth, but also other factors and actors, like employees or communities. It is argued that firms can ensure their persistent existence and success by providing for the needs of its stakeholders. To do this, firms can execute a *strategic CSR/ESG* to balance both shareholder value maximization and CSR/ESG goals (Dhaliwal et al., 2014; Skarmas & Leonidou, 2013). Focussing on the interests of stakeholders increases the willingness of stakeholders to support the firm, which in turn can increase shareholder wealth (Deng et al., 2013). In support of stakeholder theory, Klassen & McLaughlin (1996) detected significant positive abnormal stock returns for strong environmental management and significant negative abnormal stock returns for weak environmental management. CSR engagement also decreases information asymmetry and reputational risk (Cui et al., 2018) and higher CSR performance leads to better operating performance and firm value (Awaysheh et al., 2020). With regard to the measure of ESG, there have been a number of studies that find that a firm's ESG score is positively associated with firm value, profitability, and economic performance (Alareeni & Hamdan, 2020; Aydoğmuş et al., 2022; Tarmuji et al., 2016). High ESG performance has also been linked to higher portfolio returns (Cesarone et al., 2022; Verheyden et al., 2016; Zhang et al., 2021). Therefore, these studies provide support for stakeholder theory. Moreover, high ESG performance can result in a reputation effect and an insurance effect (Z. Li et al., 2022). Through the reputation effect supply chain partnerships are optimized, consumer product satisfaction is enhanced, and employee productivity is improved (Demers et al., 2021). The insurance effect suggests that risk exposure

of firms is linked to ESG profiles. ESG practices therefore reduce downside risk of firms (Hoepner et al., 2016). Hence, engaging in ESG practices is advantageous for firms in a number of ways.

It is argued that in times of a (pandemic) crisis CSR and ESG activities become more important, as it acts as an insurance that pays off when there is an urgent need for sustainability and trustworthiness (Tampakoudis et al., 2021). By engaging in ESG practices, firms can obtain reputation and risk protection that reduces price volatility in times of crises, therewith adding to their long-term operations and sustainability (Z. Li et al., 2022). There are a number of studies that provide evidence for stakeholder theory during crises. For instance, firms with high CSR ratings outperformed firms with low CSR rating during the 2008-2009 financial crisis (Lins et al., 2017). Moreover, high ESG rated firms, not including governance rating, had significantly higher returns, lower return volatility, and higher operating profit margins, during the first quarter of 2020 (Albuquerque et al., 2020). Broadstock et al. (2021) found that Chinese firms with high ESG ratings outperformed low ESG rated firms and that ESG performance lowers financial risk during the Covid-19 pandemic. They found that the importance of ESG performance is strengthened during the Covid-19 pandemic compared to before the crisis, after deploying an empirical asset pricing model. Also, Engelhardt et al. (2021) demonstrated that high ESG-rated European firms were associated with higher abnormal returns and lower stock volatility during the Covid-19 pandemic. Adding to that, Li et al. (2022) found that during the Covid-19 pandemic ESG performance was positively associated with cumulative abnormal returns of stock prices of Chinese firms and had an asymmetric impact. Their study indicated that the importance of ESG performance is reinforced in times of crisis, and that investors use ESG performance as a signal of future returns and risk mitigation. Therefore, in line with stakeholder theory, it is expected that the Covid-19 pandemic enhances the effect of ESG practices.

2.3 Shareholder theory

Unlike stakeholder theory, shareholder theory suggests that the central goal of a firm and its managers is to maximize shareholder wealth (Danielson et al., 2008). However, this theory is criticized by academics for encouraging short-term decision making in an attempt to increase the share price (Danielson et al., 2008; Smith, 2003). If a firm acts in the interest of all its stakeholders,

this will come at an expense of the shareholders (Deng et al., 2013). Building on that thought, some studies cannot find a premium resulting from ESG investing (Auer & Schuhmacher, 2016; Zhang et al., 2022). Apart from that, Alareeni & Hamdan (2020) showed that environmental and CSR disclosure is negatively related to ROA and ROE. One possible explanation for these conflicting results regarding the impact of ESG/CSR with those that support stakeholder theory is the fact that the information on which the ESG scores are based is mostly self-reported (Sundaram, 2022). Therefore, the data on which the scores are based cannot be 100% verified. It is possible that firms report differently regarding certain topics to increase their ESG or CSR score. On the other hand, ESG scores are at the moment the best way to assess a company's performance regarding ESG topics as reasonable assurance is not yet mandatory. Scoring agencies attempt to provide scores that match reality as much as possible, even for companies with limited reporting or companies that are untransparent (Refinitiv, n.d.).

Related to the Covid-19 pandemic, it has been argued that a reduction in social and environmental projects is necessary to lower costs and improve financial performance (Tampakoudis et al., 2021), as during crises stocks of firms with higher financial flexibility outperform those of firms with low financial flexibility (Fahlenbrach et al., 2020). Financial flexibility is enhanced through increased cash balances, cuts of costs, and less investments (Gamba & Triantis, 2008). In line with shareholder theory, it would thus be in the best interest of managers to not invest in ESG projects, or partake in ESG activities to keep a higher financial flexibility during the Covid-19 pandemic.

2.4 Mergers and Acquisitions

Mergers and acquisitions are seen as an important business strategy for growth and improved combined firm performance (DePamphilis, 2022). Different studies have shown that M&As create shareholder value (Campa & Hernando, 2004; DePamphilis, 2021; Tampakoudis et al., 2018; Teti & Tului, 2020), however, a number of studies detect a reduction in shareholder value resulting from M&As (Bruner, 2004). M&A performance is measured in different ways, for example through the use of Cumulative Abnormal Returns (hereinafter: 'CARs') surrounding different event dates, like the announcement date or closing date, or through accounting measures

(Bruner, 2004). There have been a large number of empirical studies conducted on the drivers M&A performance (Bruner, 2004; King et al., 2021). Multiple variables have shown to have a significant influence on M&A performance, like acquirers size (Bruner, 2004; Zhao et al., 2019), the method of payment (Boateng & Bi, 2014; Zhao et al., 2019), and previous experience with M&As (Barkema & Schijven, 2008; Gomes et al., 2013). However, a guidebook to successful M&As does not exist.

2.5 ESG ratings and M&A performance

Given prior research about the importance of ESG performance and the numerous positive effects of ESG performance on firm performance, resilience during crisis, and financial performance, the effect of ESG performance of acquiring firms on M&A performance of those acquiring firms, is also important to observe. Acquirers' ESG performance could influence acquirers' announcement CARs through a number of different factors. Firstly, it is argued that investors have the perception that high ESG acquirers are more socially responsible and less driven by managerial self-interest (Piperni, 2021). Adding to that, stakeholders have more trust in high ESG acquirers (Zheng et al., 2023). Choices to engage in M&As can thus be observed by shareholders as carefully considered, and in favor of stakeholders, which in turn could lead to favorable market responses to M&A announcements for acquirers. Especially as stakeholder theory suggests that higher ESG ratings positively affect shareholder wealth due to the willingness of stakeholders to support the merger or acquisition and therefore be more likely to contribute resources and efforts to the acquirer (Deng et al., 2013). It is also argued that the interests of shareholders and other stakeholders in high ESG rated companies are better aligned than those of shareholders and other stakeholders in low ESG rated companies, therefore contributing to a firm's long-term profitability and efficiency (Jensen, 2001). Deals announced by high ESG acquirers are less likely to be contested by stakeholders and receive negative attention, therefore reducing M&A uncertainty and associated costs (Arouri et al., 2019). Moreover, it is argued that high ESG firms are less likely to lose key employees and customers in the M&A process, resulting from more trust and loyalty from those stakeholders (Zheng et al., 2023) and that higher CSR/ESG performance of acquirers

makes acquirers more likely to achieve effective deal negotiation (Deng et al., 2013). Therefore, ESG performance of acquirers influences M&A performance through different channels.

Some prior research has been conducted on the influence of ESG ratings on acquirers' CARs. With respect to the ESG rating of acquirers, Piperni (2021) examined a sample of 3,142 M&A deals announced between 1998 and 2017 and found a significant positive effect of high ESG rated acquirers on CAARs around the announcement date and a non-significant effect for low ESG rated acquirers. For the full sample he also found an insignificant effect. Adding to that, Zheng et al. (2023), using a sample of 1489 completed domestic M&A deals of 847 Chinese firms between 2011 and 2019, found that acquirers' ESG performance has a significant positive impact on post-M&A performance measured as buy and hold abnormal returns, return on equity and return on assets. Moreover, they found that acquirers with high ESG scores that received an upgrade of their score prior to the completion of the deal did not have better performance, but acquirers with high ESG scores that received a downgrade had worse performance. Adding to that, acquirers with low ESG scores that received an upgrade to their ESG score had better post-M&A performance. Therefore, results differed between low- and high- ESG acquirers. They also found acquirers with high ESG ratings to be more likely to complete the deal. On the contrary, Fatemi et al. (2017) examined 243 M&A deals of Japanese firms from 2000-2014 and found that ESG performance of acquirers did not have a significant influence on announcement abnormal returns. However, they argued that the market for corporate control in Japan can behave differently from western countries and the United States, although it has become more alike. For instance, pre-merger earnings management is different (Higgins, 2013), anti-takeover measures differ (Yeh, 2014), and corporate governance is more creditor focussed (Mehrotra et al., 2011), which could possibly explain the differing results from other studies.

With respect to CSR performance of acquirers, Krishnamurti et al. (2021) found a positive relationship between CSR and M&A performance, measured in the form of long-run stock returns and post-acquisition market valuation for high CSR rated firms. Furthermore they found high CSR rated firms to pay a lower bid premium which created acquirer shareholder value. Their sample included 8564 M&A announcements from the US from 1999-2016 and they combined multiple CSR ratings. Adding to that, after analysing 1556 completed US mergers from 1992 to 2007, Deng

et al. (2013) found evidence that acquirers' CSR performance ratings had a significant positive effect on announcement stock returns, and long-term stock returns. Furthermore, they found mergers initiated by high CSR rated acquirers taking less time to complete and being less likely to fail than mergers initiated by low CSR acquirers. They measured CSR performance using the MSCI KLD CSR score, which is a score based on five ESG factors. Furthermore, Yen & André (2019) did a cross-country study, examining a sample of 1986 M&As in emerging market countries between 2008 and 2014, using a different kind of CSR score than the studies stated before. They found a significant positive relationship between CSR ratings of acquirers and abnormal returns for acquirers residing in countries with strong governance. Therefore, prior research suggests that CSR performance, measured by different scores in all of the studies, positively affects abnormal announcement returns of acquirers.

Looking at both the target's as well as the acquirer's ESG score, Tampakoudis & Anagnostopoulou (2020) found that the acquisition of a target with higher ESG-performance than the acquirer results in an increase in market value following from an increase in post-merger ESG-performance of the acquirer. Also Aktas et al. (2011) found a positive relationship between the target's social and environmental performance and acquirer abnormal returns. They examined 106 M&A deals using the IVA scores to evaluate social and environmental performance. Moreover, Teti et al. (2022) have shown that acquiring targets with high ESG scores leads to positive announcement abnormal returns for acquirers. However, Feng (2021) found no significant influence of acquirers' nor targets' ESG scores on stock price changes or ROA for 124 important M&A deals, completed between 2000 and 2020.

2.6 ESG ratings and M&A performance during the Covid-19 pandemic

As explained before, it is expected that during the Covid-19 pandemic ESG ratings of acquirers have an even stronger effect on M&A performance, resulting from increased reputation and risk protection that reduces price volatility (Li et al., 2022), and results from studies regarding the effect of ESG ratings during the Covid-19 pandemic. On that note, Tampakoudis et al. (2021) investigated the relationship between ESG performance and cumulative abnormal announcement returns of acquirers in 889 completed M&As in the United States before and

during the COVID-19 pandemic. Their results indicated a negative relationship between ESG performance of acquirers and M&A performance for both the period before, as well as during the crisis. More concretely, they found negative results for acquirers with high ESG performance and positive results for low ESG performance. They attribute their results to the prevailing economic and financial conditions for both periods. The negative effects of ESG performance were larger during the Covid-19 pandemic than before the crisis. They conclude that the negative relationship is therefore mainly due to the COVID-19 pandemic, and the market expectation that ESG activities are costly investments. Their findings contradict stakeholder theory and findings outside of the field of M&A. Possibly, their results can be explained by the fact that the study only took deals conducted in the United States into account, as other studies were not conducted solely in the United States. Also, they find a negative relationship between ESG ratings of acquirers and M&A performance before the Covid-19 pandemic, while this relationship has not been found in other studies. Possibly the sample period which was used, which included deals announced between 1 January 2018 and 31 July 2020, influenced these results. The shock effects of the Covid-19 pandemic were the largest during the first months, as can also be seen in the 2020 stock market crash. Moreover, the time frame before the pandemic was not that long and concerns about the virus already existed before the pandemic declaration of the WHO.

2.7 Decomposition of ESG score

While the influence of the ESG score of acquiring firms is important and could give recommendations and indications to acquiring firms, it is harder to implement these recommendations or to concretize what factors of ESG an acquiring firm could improve. Because the ESG score is composed of three pillars, which in turn have a large number of firm indicators, it is hard to specifically pinpoint what the main driver of the effect is. It would thus be of added value to decompose the ESG score into the three pillars, Environmental, Social, and Governance and analyze the effect of a specific pillar on acquirers' CARs. Especially since Zheng et al. (2023) found that the S, and G components of the ESG score were significantly positively related to buy and hold abnormal returns, ROA, and ROE 1 year after the deal, while the E component was insignificantly negatively related. They conclude that social and governance performance are the

main drivers for a positive impact of ESG performance on M&A performance. On the other hand, Huang et al. (2023) found all pillar scores to significantly positively influence long-term M&A performance, while the Social pillar had the strongest impact. They attribute the positive impact of the Social pillar to the capability of acquirers with high social scores to effectively solve cultural integration and brain drain problems. Apart from that, firms with high Environmental scores are, according to Huang et al. (2023), better able to reduce operating costs, improve the effectiveness of resource use, and maintain a good relationship with suppliers, while firms with high Governance scores have reduced agency problems. Therefore all the pillar scores positively affect long-term M&A performance, while their effectiveness differs and results from different causes. Their study measured M&A performance with a number of financial firm performance indicators up to three years after deal completion. Their results were supported by Caiazza et al. (2021), who also focused on long-term M&A performance. On the other hand, Teti et al. (2022) focused on the impact of the pillar scores of targets on short-term M&A performance. They only found the Governance score of targets to be significant and positive, while E and S scores were positive, but insignificant. They contribute this effect to the longer history of assessment and lower volatility of the Governance score, while Environmental and Social scores still had measurement and reporting issues. Their study did not take into account acquirers' ESG scores. No studies focused on the effect of pillar scores on short-term M&A performance, as to why only long-term performance, and short-term performance related to targets' scores is covered in this paragraph.

Relating to the Covid-19 pandemic, Albuquerque et al. (2020) argued that the resilience of ESG stocks during the Covid-19 pandemic was attributable to the Environmental and Social part, but not to the Governance part, due to customer and investor loyalty. This finding was supported by Engelhardt et al. (2021), who found that S and E scores significantly positively influenced abnormal stock returns during the Covid-19 pandemic, while G scores were insignificant. On the contrary, Broadstock et al. (2021) found that CARs of Chinese stocks during the Covid-19 pandemic were significantly positively related to Environmental and Governance performance, but insignificantly negatively related to Social performance. The authors contributed this to the reasoning that E and G scores are more tangible metrics of firm resilience during crises, while S

scores are less so. These studies did not focus on M&A performance, but due to absence of prior research are stated here.

2.8 Formulation of hypotheses

Based on prior research a number of hypotheses can be formulated. A positive effect of acquirers' ESG ratings on announcement CARs of acquirers is expected. This effect is based on a number of arguments. Firstly, stakeholder theory suggests that focussing on the interests of stakeholders increases the willingness of stakeholders to support the merger or acquisition, due to stakeholder trust (Zheng et al., 2023), and to contribute resources and efforts to the acquirer, which in turn can lead to positive abnormal announcement returns (Deng et al., 2013). Secondly, building on the perception of investors that high ESG acquirers are more socially responsible, and less driven by managerial self-interest, investors might perceive M&A announcements as carefully considered and beneficial for the firm, therefore resulting in positive abnormal announcement returns (Piperni, 2021). Thirdly, deals announced by high ESG acquirers are less likely to be contested by stakeholders and receive negative attention, therefore reducing M&A uncertainty and associated costs (Arouri et al., 2019), which could positively influence announcement CARs. Fourthly, high ESG firms are less likely to lose key employees and customers in the M&A process, resulting from more trust and loyalty from those stakeholders (Zheng et al., 2023). Fifthly, higher CSR/ESG performance of acquirers makes acquirers more likely to achieve effective deal negotiation, therefore reducing the chance that the deal does not go through (Deng et al., 2013), which could lead to positive announcement returns. Based on these arguments the following hypothesis is formulated:

H1: Acquirers' ESG ratings are positively related to announcement CARs of acquirers with a three day event window for M&A deals announced between 01-01-2015 and 31-12-2022.

Moreover, based on prior findings on the presence of stakeholder theory during crises, the effect of ESG ratings on M&A performance is expected to be more pronounced during the Covid-19 pandemic. There are a number of studies that detected the (increased) presence of stakeholder theory during the Covid-19 pandemic (Albuquerque et al., 2020; Broadstock et al., 2021; Engelhardt et al., 2021; Z. Li et al., 2022). This is mainly attributable to the view that

investors use ESG performance as a signal of future returns and risk mitigation. Therefore conflicting outcomes to the study of Tampakoudis et al. (2021) are expected. Their results contradict stakeholder theory and findings outside of the field of M&A. Based on these arguments, the following hypothesis is formulated:

H2: The Covid-19 pandemic has a positive influence on the effect of ESG ratings on announcement CARs of acquirers with a three day event window.

Apart from that, as no prior research has investigated the effect of the three pillar scores, E, S, and G on short-term M&A performance, this is analysed in this study. As most prior research observed a positive effect of all of the pillar scores on long-term M&A performance, it is expected that investors therefore also favour deals announced by acquirers with higher pillar scores at the time of the deal announcement. Therefore, the following hypotheses are formulated:

H3a: Acquirers' E scores are positively related to announcement CARs of acquirers with a three day event window for M&A deals announced between 01-01-2015 and 31-12-2022.

H3b: Acquirers' S scores are positively related to announcement CARs of acquirers with a three day event window for M&A deals announced between 01-01-2015 and 31-12-2022.

H3c: Acquirers' G scores are positively related to announcement CARs of acquirers with a three day event window for M&A deals announced between 01-01-2015 and 31-12-2022.

Finally, the effect of the Covid-19 pandemic on the effect of the pillar scores is investigated. Regarding Environmental scores it is expected that the Covid-19 pandemic positively influences the relationship, as investors during a crisis can become more aware of the importance of Environmental issues to prevent future crises arising from climate change and biodiversity loss. It is therefore of increased importance that firms use resources responsibly and decrease emissions, which are factors on which E scores are based. Regarding Social scores, it is also expected that the Covid-19 pandemic positively influences the relationship. During the pandemic many offices closed their doors and employees had to work from home. Some firms accommodated employees with the proper tools to work at home, while some did not. Moreover, some workspaces were adjusted quickly to remain safely operational. Therefore, factors like health, safety and working conditions, on which S scores are based, and the adaptability of firms became of increased importance. Complementary to both these expectations are the findings of Albuquerque et al.

(2020) and Engelhardt et al. (2021) and the reasoning that E and S scores are of increased importance during crises due to investor loyalty (Li et al., 2022). Lastly, it is expected that the Covid-19 pandemic positively influences the effect of Governance scores, based on the finding of Broadstock et al. (2021) and the reasoning that G scores are more tangible metrics of firm resilience during crises. Acquiring firms with strong corporate governance and shareholder protection rights, which are factors on which G scores are based, might receive more trust of shareholders during the Covid-19 pandemic as times are unstable and the future of the firm is unclear. Investors therefore know that their interests are more aligned and are better protected during that volatile time. This is however not in line with the findings of Albuquerque et al. (2020) and Engelhardt et al. (2021). This indicates that there are no strong indications that this effect might exist. Based on the aforementioned arguments, the final hypotheses are formulated as follows:

H4a: The Covid-19 pandemic has a positive influence on the effect of E scores of acquirers on announcement CARs of acquirers with a three day event window.

H4b: The Covid-19 pandemic has a positive influence on the effect of S scores of acquirers on announcement CARs of acquirers with a three day event window.

H4c: The Covid-19 pandemic has a positive influence on the effect of G scores of acquirers on announcement CARs of acquirers with a three day event window.

3 Research Method

This chapter describes the methodology of the study. Firstly, paragraph 3.1. outlines the data collection procedure, the data sample, and its criteria. Then, paragraph 3.2. describes the dependent variable and its calculations. Following that, paragraph 3.3. describes the independent variables. Thereafter, paragraph 3.4. explains the different control variables used. Lastly, paragraph 3.5. specifies the used analyses.

3.1 Data sample description

To empirically answer the stated research question, a quantitative research method will be used. Data regarding M&A deals and deal specifics are gathered from the Orbis M&A database. The Orbis M&A database is owned by Bureau van Dijk and has data on 2.2 million M&A deals from over 200 countries, with a twenty year or longer history for each location. Therefore, it has very comprehensive data, and, as availability of ESG data is restricted to larger companies, is fully able to provide the required deals for this research. As stated, ESG data is only available for a limited number of (large) companies, and most data is from recent years. Therefore, only ESG ratings for acquirers are used in this study, as hardly no targeted companies have ESG ratings available. ESG ratings, as well as company's financials and stock and index data will be obtained through the Refinitiv database. Refinitiv is one of the world's largest providers of financial markets data and creates its own ESG score, the Refinitiv ESG score.

The initial sample was constructed as follows. First, ESG ratings and decomposed scores for companies located in Europe, the United States, and China were downloaded for 2015-2022. This gave an initial set of potential acquirers to look up in the Orbis M&A database. The locations were chosen based on the availability of ESG ratings. While also ESG ratings for some Australian, and other Asian companies were available, these ratings were only for very recent years and the pool of companies was small. Therefore, these companies were excluded from the sample. The time period 2015-2022 was chosen as ESG ratings were only available for a relatively small pool of companies before 2015, and ratings for 2023 were not yet available. Second, all mergers and acquisitions for the obtained companies announced between 01-01-2015 and 31-12-2022 were

searched. This sample was screened based on the following conditions: (1) The acquiring company is a publicly traded firm, (2) the deal was ultimately completed, (3) the deal value is above 1 million USD, (4) the deal value is available, (5) the acquiring company is not a company that operates in the financial industry (SIC codes 6000-6999).

- (1) The acquiring firm has to be publicly traded, as the dependent variable in the relationship is abnormal stock returns of the acquiring firm. If the company is not publicly traded there are no company stocks.
- (2) The deal had to be ultimately completed to avoid deals that potentially looked bad from the start, as this could bias the results (Tampakoudis et al., 2021).
- (3) The deal value has to be above 1 million US dollars to avoid the effects of very small deals (Alexandridis et al., 2013; Tampakoudis et al., 2021). Very small deals might not influence announcement returns, or influence the deals in another way.
- (4) For some deals the deal value is not available, however, deal value is incorporated into the analysis as an important control variable. Therefore, the deal value has to be known.
- (5) The financial industry is highly regulated, and firms within the financial industry have different capital structures and operating activities (Deng et al., 2013; Tampakoudis et al., 2021). Therefore, including financial firms into the research could bias the results.

Third, these deals were screened on availability of an ESG score for the acquiring firm in the year of the announcement of the deal, as the effect of ESG ratings of those firms on announcement abnormal returns was investigated. For the constructed deal sample stock data, as well as index data for the corresponding indices, and firm financials included as control variables was downloaded from Refinitiv. Based on the stock and index data, the CARs of the acquirers were calculated. The abovementioned search criteria resulted in an initial sample of 6154 deals. After removing deals for which no stock data or control variables were available, a sample of 5718 observations was left. According to the WHO the starting date of the Covid-19 pandemic was on 11-03-2020. The total sample consists of deals conducted in both the period before and during the Covid-19 pandemic. However, when split into two samples, the pre-Covid-19 pandemic sample, for deals announced between 01-01-2015 and 10-03-2020, consists

of 3655 deals. The Covid-19 sample, for deals announced between 11-03-2020 and 31-12-2022, consists of 2063 deals.

3.2 Dependent variable

To measure M&A performance the cumulative abnormal returns of the shares of the acquirers around the announcement date of the deal will be calculated by applying an event study methodology. An event study entails a statistical technique that estimates the stock market reaction to a certain event, in this case a merger or an acquisition (Mitchell & Netter, 1994). This approach assumes an efficient market and after controlling for general market movements assumes that the changes in share price of acquiring firms represent the value of the economic impact of an acquisition (Das & Kapil, 2012). Announcement CARs are a commonly used method to measure M&A performance (Das & Kapil, 2012). The focus will be on CARs around the announcement date instead of the closing date of the deal, as it is assumed that the stock prices already reflect the market expectations about the deal at the closing date (Mitchell & Netter, 1994). Therefore an event window around the deal announcement captures the market reaction for stock prices. To measure the impact of the announcement of the deal an event window around the announcement date is constructed. Firstly, the expected returns are estimated using the market model. The regression intercept and coefficient are estimated using historical market data for a 250 trading day period, which is a year of daily trading data, up to 20 trading days preceding the announcement date. Thus, the estimation window is (-270, -20). The estimation window ends 20 days before the merger announcement to not be affected by the event, as there might be some information leakage about the event, and is in line with previous research (Mitchell & Netter, 1994; Piperni, 2021; Tampakoudis et al., 2021). The expected returns are calculated by using the following equation:

$$\hat{R}_{it} = a_i + \beta_i RM_t + \varepsilon_{it} \quad (1)$$

Where

\hat{R}_{it} = the expected return of firm i at day t ;

a_i = the intercept which reflects the average return on stock i when there is no market return;

β_i = the regression coefficient, which reflects the co-movement stock i with the corresponding market;

RM_t = the return of the market portfolio;

ε_{it} = the error term, which is expected to be 0.

Secondly, the daily abnormal returns in the event windows are calculated. Determining the length of an event window is influenced by the efficient markets hypothesis (Mitchell & Netter, 1994). Based on the efficient market hypothesis, stock prices react quickly to the release of new information. Therefore, the event window will be relatively short. However, a trade-off exists in choosing the length of an event window. The longer the window is, the higher the chance that the window includes the period in which all new information is released and reflected in the stock prices (Mitchell & Netter, 1994). On the other hand, the longer the event window, the higher the chance that the event window is not able to isolate the influence of the event, due to noise and information from other events. It is statistically shown that too long event windows decrease the likelihood to capture a significant effect of the event (Mitchell & Netter, 1994). For M&As it is assumed that on the announcement date most information is released. Therefore, the information is quickly reflected in the stock prices. The academic standard is to extend the event period to one trading day after the release of the information (Mitchell & Netter, 1994). The starting date for the event is harder to choose, as information about the event can already be leaked beforehand. Sometimes the merger or acquisition is already rumoured before it is announced (Mitchell & Netter, 1994). However, it is advised to restrict the event window to a short period (Mitchell & Netter, 1994). Given these arguments and in line with prior research a three day event window (-1,1) will be used (Piperni, 2021; Tampakoudis et al., 2021). The calculation of the abnormal returns for the different event windows is done by subtracting the estimated expected returns from the actual stock returns, which is shown in the following formula:

$$AR_{it} = R_{it} - \hat{R}_{it} \quad (2)$$

Where

AR_{it} = the abnormal return of firm i at day t ;

R_{it} = the actual realised return of firm i at day t ;

\hat{R}_{it} = the expected return of firm i at day t .

Finally, the CARs are calculated by summing the daily abnormal returns over the selected event window (t_1, t_2) . CARs are better able to capture the market reaction to the event, as daily abnormal returns could differ per day due to investor behaviour (Mitchell & Netter, 1994). The calculation for the CARs is shown in the following equation:

$$CAR_{i(t_1, t_2)} = \sum_{t=t_1}^{t_2} AR_{it} \quad (3)$$

Where

$CAR_{i(t_1, t_2)}$ = the cumulative abnormal returns for firm i over the event window;

t_1 = the starting date of the event window;

t_2 = the ending date of the event window;

$\sum_{t=t_1}^{t_2} AR_{it}$ = the sum of the daily abnormal returns of firm i over the event window.

The acquirer CARs (CAR) around the announcement date will be the dependent variable in the regression. Positive CARs are seen as positive M&A performance, as investors perceive the merger or acquisition to be beneficial for the acquiring firm and leading to higher company returns in the future (Mitchell & Netter, 1994).

3.3 Independent variables

The independent variables used in the analysis are the Refinitiv ESG score (ESG), and the decomposed pillars scores, namely: E (E_Score), S (S_Score), and G (G_Score). The composition of the Refinitiv ESG score consists of a company's relative ESG performance, commitment and effectiveness across 10 categories based on verifiable publicly reported data (Refinitiv, n.d.). Data sources include, among other things, annual company reports, company websites, stock exchange filings, and CSR reports. The 10 categories are divided over three pillars; Environmental, Social, and Governance. The Environmental pillar comprises the categories Resource use, Emissions, and Innovation. The Social pillar comprises the categories Workforce, Human rights,

Community, and Product responsibility. The Governance pillar comprises Management, Shareholder, and CSR strategy. The ESG scoring is based on 186 company-level ESG measures, which are manually processed for each company. In total there are 630 company-level ESG measures, of which the 186 measures are chosen. These measures are divided over the 10 different categories. The ESG measures in a category lead to a certain score. Based on this score a percentile ranking score is calculated. The percentile ranking score is based on three factors (Refinitiv, n.d.):

- How many companies are worse than the current one?
- How many companies have the same value?
- How many companies have a value at all?

The percentile ranking score is then calculated as follows:

$$\text{score} = \frac{\text{no. of companies with a worse value} + \frac{\text{no. of companies with the same value included in the current one}}{2}}{\text{no. of companies with a value}} \quad (4)$$

To be able to make an objective, impartial and trusted assessment of the importance of each ESG category to different industries, and to be able to compare scores among different industries, the Refinitiv ESG magnitude matrix is used. This is a proprietary model and is applied per category level. The materiality is applied in the form of category weights. These weights are calculated based on an objective and data-driven approach to assess the relative importance of each theme to each industry group. Every category has a number of important themes. For instance, an important theme in the category Emission is Waste. For each theme one data point with sufficient disclosure is used as a proxy for the industry magnitude. The category weight of an industry group is calculated using the following formula:

$$\text{Category weight of an industry group} = \frac{\text{Magnitude weight of a category}}{\text{Sum of magnitudes of all categories}} \quad (5)$$

The decomposed ESG pillar scores are the relative sum of the category weights for the categories in that pillar. To be more exact: the category scores multiplied by the relative category weights. The ESG score is the sum of all the category weights multiplied by the category scores. It is a percentile score that can be divided into four quartiles, which ranges from the worst 25% relative performance to the best 25% relative performance. The Refinitiv ESG score is made to be

able to compare companies among different industries. Therefore it is possible to use firms operating in different industries in the analysis.

3.4 Covid-19 effect

To measure the effect of the Covid-19 pandemic on the effect of ESG ratings on M&A performance, an interaction term will be added. An interaction effect happens when the effect of a variable depends on the value of another variable. It is expected that during the Covid-19 pandemic ESG practices became more important. Therefore the Covid-19 period enhances the effect of ESG ratings on M&A performance. To capture the effect of the Covid-19 period, an interaction term with a dummy variable is added which has a value of 1 when the announcement was made during the Covid-19 pandemic, and a value of zero when the announcement was made before the Covid-19 pandemic. A deal classifies as announced during the Covid-19 pandemic, if the deal is announced between 11-03-2020 and 31-12-2022. The interaction term consists of the Covid dummy variable and the ESG score. The interaction term is added both for the combined ESG score, as well as for the individual decomposed ESG scores. For the model with decomposed pillar scores the interaction terms consist of the Covid dummy and the pillar score.

3.5 Control variables

In accordance with prior research within the field of M&A several control variables are incorporated in the analysis to account for the potential effects of these variables on M&A performance. These control variables can be roughly split into three categories: (1) firm specific control variables, which measure characteristics for the acquirers and targets, (2) deal specific control variables, which account for features specific to the deal, and (3) country, industry and Covid specific control variables, which account for influences specific to the countries and the industry in which the acquirer resides, as well as for the Covid-19 pandemic. The following part of this section will explain the different control variables used in the analysis and their expected effect on acquirers' CARs.

3.5.1. Firm specific control variables

Prior research has indicated that acquirers with higher profitability have better M&A performance than acquirers with lower profitability, as profitability is verified as a significant explanatory variable for stock returns (Beitel et al., 2004; Yen & André, 2019). To account for profitability of the acquirer, the Return On Assets (*ROA_AQ*) will be added (Beitel et al., 2004; Tampakoudis et al., 2021; Yen & André, 2019). It is expected that Return on Assets of the acquirer significantly positively affects acquirers' announcement CARs. Moreover, firm size is also expected to influence M&A performance, as prior research has found evidence of a so-called size effect (Moeller et al., 2004). This size effect suggests that acquisitions made by smaller firms lead to higher CARs than those of larger firms, irrespective of the form of payment and the financial form of the target (Moeller et al., 2004). More concretely, M&As conducted by smaller firms lead to positive CARs, while M&As conducted by larger firms lead to lower or negative CARs. One possible explanation for this size effect could be that larger firms have more complex organisational structures and processes, therefore making it harder to integrate smaller firms. Moreover, managerial hubris can play a negative role. Also, M&A deals conducted by larger firms can take longer to complete and have higher transaction costs (Moeller et al., 2004). To account for the size of the acquirer, the acquirer's firm size will be added, proxied by the natural log of its total assets (*SIZE_AQ*) (Deng et al., 2013; Fatemi et al., 2017). It is expected that the acquirers' firm size significantly negatively affects acquirers' announcement CARs. Furthermore, the acquirer's leverage will be added, measured as book value of debt divided by book value of total assets (*LEV_AQ*) (Deng et al., 2013; Tampakoudis et al., 2021; Zheng et al., 2023). Prior research has shown that acquirers' leverage positively affects acquirers' CARs (Harrison et al., 2014). This influence can be attributed to the argument that high leverage limits managers' ability to unproductively allocate resources (Harrison et al., 2014). Therefore it is expected that the acquirers' leverage significantly positively affects acquirers' announcement CARs. Apart from that, the percentage of females in the board of the acquirers (*GENBOARD_AQ*) will be added, as it is shown that gender-diverse boards positively influence abnormal returns in M&As (Defrancq et al., 2021). Investors who favour high ESG rated firms, may also care about more gender-diverse boards, therefore leading to positive market reactions to an announced merger or acquisition.

Thus, it is expected that the percentage of females in the board significantly positively influences acquirers' announcement CARs. Lastly, the acquiring firm's Tobin's Q (*TOBQ_AQ*) will be added to control for growth opportunities (Fatemi et al., 2017; Feng, 2021; Tampakoudis et al., 2021). Tobin's Q is calculated as the total market value of the firm divided by the total book value of the assets of the firm. Prior research has shown that acquirers' Tobin's Q positively affect acquirers' CARs (Servaes, 1991). More concretely, it is found that acquirers with low Q ratios have negative abnormal returns, while acquirers with high Q ratios have positive abnormal returns. A high Tobin's Q is seen as high firm performance (Servaes, 1991). Therefore, better performing firms also have more successful mergers and acquisitions. It is expected that the acquirer's Tobin's Q significantly positively affects announcement CARs.

3.5.2. Deal specific control variables

Also, several deal specific control variables which have shown to influence M&A performance will be added.

Prior research has indicated that the merger's relative size positively affects M&A performance (Jarrell & Poulsen, 1989; Li & Singal, 2021). If a target increases in size relative to the acquirer, the acquirer experiences higher CARs. This might be attributable to the argument that acquisitions of larger target have higher potential to achieve synergies through economies of scale and scope and increased market power (Li & Singal, 2021). Therefore, the merger's relative size will be added, proxied by the deal value divided by acquirers size (*RELSIZE*) (Deng et al., 2013; Fatemi et al., 2017; Piperni, 2021; Tampakoudis et al., 2021; Zheng et al., 2023). It is expected that the merger's relative size significantly positively affects acquirers' announcement CARs. Moreover, the deal size, measured as the natural logarithm of the deal value, will be added (*DEALSIZE*) (Tampakoudis et al., 2021; Zheng et al., 2023). It is found that large deals as a result of their heightened complexity negatively affect acquirers' CARs (Alexandridis et al., 2013). Therefore, it is expected that the deal size significantly negatively affects acquirers' announcement CARs. Apart from that, a number of dummy variables will be added to account for the method of payment: a dummy for cash only deals (*CASH*) (Deng et al., 2013; Fatemi et al., 2017; Piperni, 2021; Tampakoudis et al., 2021), and stock deal (*STOCK*), if the merger/acquisition is at least partly

financed by stocks (Deng et al., 2013; Piperni, 2021). The inclusion of the combination of these two dummies to account for the method of payment is in line with previous research (Deng et al., 2013; Piperni, 2021). The method of payment has shown to significantly affect acquirers' abnormal returns, while these effects differ between the method of payment (Wansley et al., 1983). Cash deals have the advantage of a so-called tax effect, which offers tax advantages for cash deals over stock deals. Building on that argument, prior research has found that cash deals generate higher abnormal returns than stock deals (Wansley et al., 1983). However, other studies find that stock deals result in higher acquirer CARs (Fuller et al., 2002). Therefore it is not clear which effect will be larger, but it is expected that both methods of payment significantly positively influence acquirers' announcement CARs.

3.5.3. Country, industry, and time specific control variables

Finally, a number of country and industry specific control variables as well as a dummy variable which accounts for the Covid-19 pandemic will be added.

Firstly, a dummy variable will be added to indicate if the deal is cross-border (*CBA*) (Piperni, 2021). Cross-border deals are shown to positively influence acquirers' CARs (Barbopoulos et al., 2012; Tao et al., 2017). It is argued that the announcement of a cross-border deal brings forth a strong signal to the market of a firm acquiring strategic resources and capabilities abroad and therefore enhances competitive advantages in the international market (Tao et al., 2017). Hence, it is expected that cross-border acquisitions significantly positively affect acquirers' announcement CARs. Apart from that, country dummy variables (*COUNTRY*) will be added to indicate the country the acquirer resides in. Due to different legal systems, cultural differences, and more, adding country dummies can account for these differences and different effects. Moreover, to account for the effect of the Covid-19 pandemic on abnormal returns, a dummy variable for the Covid-19 pandemic will be added (*COVID*). As the Covid dummy captures the effect of the Covid-19 pandemic on CARs, there is no need to also use a dummy that accounts for the year the deal was announced in. This is in line with previous research (Tampakoudis et al., 2021). Lastly a dummy variable will be added to account for the industry in which the acquirer operates (*INDUSTRY*), to prevent differing influences from different industries. The divisions

applied in the Standard Industrial Classification (SIC) will be used as a proxy for the acquirer's industry.

3.6 Model

To examine the relationship between ESG ratings of acquirers and acquirers' announcement CARs an Ordinary Least Squares regression (hereinafter: 'OLS') will be used. To be able to run the OLS the data sample is first tested to see if it satisfies the OLS assumptions. Firstly, the data sample is checked for outliers and influential cases. Outliers are cases for which the model has a large residual and thus fits badly (Chatterjee & Hadi, 1986). Outliers are not necessarily bad, only if they influence the regression too much. Influential cases are cases that have a (too) strong influence on the regression coefficients. The data sample is tested for outliers and influential cases with the use of Cook's Distance and a DFFIT diagnosis, which indicates the difference between predictions with and without observation i . A number of observations are indicated to be outliers by Cook's Distance, as well as the DFFIT diagnosis. To prevent these outliers from influencing the data substantially, the variables CAR , ROA_AQ , $TOBQ_AQ$, and $RELSIZE$ are all winsorized at the 1st and 99th percentiles. This is in line with previous research (Tampakoudis et al. 2021). Winsorizing limits extreme values to reduce the effect of possible outliers. Winsorizing these variables is in line with previous research (Tampakoudis et al. 2021). Winsorizing at the 1st and 99th percentiles does not change too many observations, so that the data still greatly matches the original data.

Second, it is analysed if the variables are normally distributed, as non-normally distributed data could bias the results. First the variables are graphically visualized using both a histogram, as well as a density plot. Moreover, using a numerical test it is analysed if the data deviates from a normal distribution. To prevent the variables $SIZE_AQ$, and $DEAL_SIZE$ from exhibiting skewness and kurtosis, the natural logarithm of these variables are used in the analysis. Furthermore, it is tested if the error terms are homoscedastic. This entails that the variance should be the constant (Berry & Feldman, 1985). To detect possible heteroskedasticity the plots of the residuals are inspected. Moreover, a Breusch-Pagan test is conducted. If the Breusch-Pagan test shows a significant p-value, heteroskedasticity is present. As the Breusch-Pagan test showed a significant p-value for

all of the models, heteroskedasticity is present. Therefore robust standard errors are used in the analysis. The results of the Breusch-Pagan tests are included in table 4 and 5 in appendix B.

As the data covers a single point in time, namely the ESG rating in the year of the announcement and the according control variables in that year, as well as the announcement CARs, a cross-sectional regression will be adopted. To prevent overfitting the model resulting from including too many variables, as well as a potential bias due to strong correlation between the ESG score and the pillar scores, the analysis will be split in two. The first analysis will be to test the first two hypotheses. The regression specification is formulated as follows:

$$CAR_{t-1,t+1}^i = \beta_0 + \beta_1 ESG_i + \beta_2 ROA_AQ_i + \beta_3 SIZE_AQ_i + \beta_4 LEV_AQ_i + \beta_5 TOBQ_AQ_i + \beta_6 RELSIZE_i + \beta_7 DEALSIZE_i + \beta_8 CASH_i + \beta_9 STOCK_i + \beta_{10} CBA_i + \beta_{11} GENBOARD_AQ_i + \beta_{12} COUNTRY_i + \beta_{13} INDUSTRY_i + \beta_{14} COVID_i + \beta_{15} ESG_i * COVID_i + \varepsilon_{it} \quad (6)$$

Where

$CAR_{t-1,t+1}^i$ represents the cumulative abnormal announcement returns for a three day event window around the announcement date.

β_0 represents the regression constant.

β_1 represents the independent variable ESG.

β_2 - β_{14} represent the control variables.

β_{15} represents the interaction term between the Covid-19 pandemic and the ESG scores. The definition and measurement of each of the independent and control variables as well as the interaction term are outlined in table 3 in Appendix A.

ε_{it} represents the error term.

The second analysis will be to test the remaining hypotheses. The difference with the first regression is that instead of the ESG scores, the decomposed pillar scores will be used. The regression specification is formulated as follows:

$$CAR_{t-1,t+1}^i = \beta_0 + \beta_1 E_Score_i + \beta_2 S_Score_i + \beta_3 G_Score_i + \beta_4 ROA_AQ_i + \beta_5 SIZE_AQ_i + \beta_6 LEV_AQ_i + \beta_7 TOBQ_AQ_i + \beta_8 RELSIZE_i + \beta_9 DEALSIZE_i + \beta_{10} CASH_i + \beta_{11} STOCK_i + \beta_{12} CBA_i + \beta_{13} GENBOARD_AQ_i + \beta_{14} COUNTRY_i + \beta_{15} INDUSTRY_i +$$

$$\beta_{16}COVID_i + \beta_{17}E_SCORE_i * COVID_i * + \beta_{18}S_Score_i * COVID_i * + \beta_{19}G_Score_i * COVID_i + \varepsilon_{it} \quad (7)$$

Where

$CAR_{t-1,t+1}^i$ represents the cumulative abnormal announcement returns for a three day event window around the announcement date.

β_0 represents the regression constant.

β_1 - β_3 represent the independent variables E, S, and G.

β_4 - β_{16} represent the control variables.

β_{17} - β_{19} represent the interaction terms between the Covid-19 pandemic and the decomposed pillar scores. The definition and measurement of each of the independent and control variables as well as the interaction term are outlined in table 3 in Appendix A.

ε_{it} represents the error term.

4 Results

This chapter covers the results from the regressions. Section 4.1. gives the descriptive statistics of all of the variables. Following that, section 4.2 provides the correlation matrix between the variables. Thereafter, section 4.3 specifies the results from the analyses and tests the hypotheses. Lastly, section 4.4 covers the executed robustness tests to see whether the results are robust to changes.

4.1 Descriptive statistics

Table 6 in appendix C provides the descriptive statistics for the dependent variable, independent variables, and the control variables for the full sample. Table 7 in appendix C provides the descriptive statistics for the dependent variable, independent variables, and the control variables for the full sample with the winsorized variables. The CARs (*CAR*) have a mean of 0.75 (0.7 after being winsorized), which indicates that the average cumulative abnormal announcement returns for a three-day event window are positive for the deals in the sample. So on average the observed deals had a positive impact on short-term shareholder value. The average ESG score (*ESG*) is 47, with scores ranging from 1.1 to 96, and the 25 and 75 percentile scores are close to 25 and 75. As the ESG score is a relative score, these descriptive statistics indicate that no high- or low-ESG rated companies are overrepresented in the data sample. The same applies to the Social score (*S_Score*), with a mean of 48, and the Governance score (*G_Score*), with a mean of 53. The Environmental score (*E_Score*), however, has a mean of 38, which indicates that the companies on average have a relatively low Environmental score. The scores range from 0 to 99, but for the 25th percentile the score is 13, and for the 75th percentile the score is 63. Therefore, relatively low Environmental scores are a bit overrepresented in the sample. The average ROA (*ROA_AQ*) is 6.3 (6.6 after being winsorized), while the ROA ranges from -153 to 235 (6.6 to 21 after being winsorized). Therefore the acquiring companies are on average profitable, but there are some acquirers that have a negative net income. The average size of the acquirers (*SIZE_AQ*) is 22, which is the natural logarithm of the acquirers' total assets. The acquirers' leverage (*LEV_AQ*) ranges from 0 to 2 with a mean of 0.29. Therefore, on average, the acquirers have approximately

three times more assets than debt. The average Tobin's Q (*TOBQ_AQ*) of the acquirers is 1.7 (1.6 after being winsorized). The Tobin's Q was calculated as the firms' market value divided by the firms' total assets. On average, the firms' market value is thus 1.7 times the firms' total assets, which indicates the growth opportunities for the acquirers. The average relative deal size (*RELSIZE*) is 0.12 (0.082 after being winsorized) which indicates that on average the acquirers are about eight times larger than the targets they acquire. However, as the target sizes were not available, the deal value was taken as a proxy for the target's size. The average deal-size (*DEALSIZE*) is 18, which is the natural logarithm of the deal value. The average firm has a gender board diversity (*GENBOARD_AQ*) of 22%, meaning that 22% of the board members are female. Therefore, the acquirers have a relatively low gender diversity in their boards. Moreover, about 35% of the deals were fully financed by cash (*CASH*), while about 17% of the deals were at least partially financed by shares (*STOCK*). Also, about 47% of the deals were cross border acquisitions (*CBA*). Lastly, about 36% of the deals were announced during the Covid-19 pandemic (*COVID*).

Furthermore, table 8 in appendix D provides the number of deals announced in the different countries. Approximately 44% of the deals in the sample were announced by acquirers from the USA, while about 36% of the deals were announced by European acquirers. Therefore, Chinese acquirers are underrepresented in the data sample compared to US, or European acquirers. Moreover, deals announced by European acquirers differ heavily per country, as, for instance, acquirers from the United Kingdom have announced considerably more deals than acquirers from other European countries. To account for these differences dummy variables for the different countries are used in the analysis.

Apart from that, table 9 in appendix E shows how many deals are announced per year. Approximately 36% of the deals were announced during the Covid-19 pandemic. The small sample of deals announced in 2022 could be due to the search argument that the deal had to be ultimately completed, as many deals announced in 2022 have not yet been completed. Lastly, table 10 in appendix F provides the number of deals that were announced for each of the industries in which the acquirers operate. As can be observed, the majority of the deals were announced by acquirers operating in the manufacturing and services industry. To account for the different industries, industry dummies are used in the analysis.

4.2 Correlation matrix

Table 11 in appendix G represents the correlation matrix for all the variables in the data sample. Pretty much all of the variables fall within the acceptable range of -0.5 to 0.5. If the correlation of two variables exceeds this range, it could be an indication of moderate multicollinearity (Berry & Feldman, 1985). Correlations exceeding a range of -0.7 to 0.7 could indicate strong multicollinearity. Both *E_Score* (0.87), and *S_Score* (0.92), as well as *G_Score* (0.72) correlate strongly with the independent variable *ESG*. However, this is justified as the pillar scores are the three components of the total ESG score. Moreover, the effects of the scores are analyzed in two separate models. *S_Score* (0.75) also correlates strongly with *E_Score*, but again this relationship can be explained, as it is likely that firms that care about the concerns of ESG, score high on more than one pillar score. On the other hand, the variable *SIZE_AQ* seems to correlate moderately with *ESG* (0.54) and with *E_Score* (0.58). This could indicate that larger firms tend to care more about their ESG score, and particularly the Environmental pillar score.

High correlations could be an indication for multicollinearity. Multicollinearity could be a problem, as it implies that one of the explanatory variables can be linearly predicted from one of the other variables (Berry & Feldman, 1985). This could result in biased predictions of the coefficients of the variables. To rule out multicollinearity, the generalized variance inflation factors (GVIF) of the explanatory variables are calculated. The results of the GVIF calculations for the first regression are presented in table 12 in appendix H. The GVIF is used instead of VIF as the model contains an interaction term. The VGIF can be interpreted the same as VIF (Fox & Monette, 1992). As none of the variables exceed the critical range of 5 to 10, multicollinearity is no issue.

The results of the GVIF calculations for the second regression can be found in table 13 in appendix H. One can observe that the GVIF of *E_Score*, *S_Score*, and *G_Score* exceeds the critical value of 10. Moreover, the GVIF of *COVID* exceeds the value of 5. However, as the pillar scores are also used in interaction terms with *COVID*, the Df of the pillar scores is 3, and 7 for *COVID*. Fox & Monette (1992) suggest using the $GVIF^{(\frac{1}{2*Df})}$ to make the score of variables that have multiple coefficients in a model comparable. The ordinary rules of thumb can be applied when assessing whether multicollinearity exists after squaring the $GVIF^{(\frac{1}{2*Df})}$. After observing and squaring the

$GVI\hat{F}^{(\frac{1}{2 \cdot Df})}$ of E_Score , S_Score , G_Score , and $COVID$, one can observe that the values do not exceed the critical value of 5. Therefore multicollinearity is also no issue for the second model.

4.3 Regression results

4.3.1. Analysis 1, ESG ratings

In this paragraph the results of the first regression are outlined and the first two hypotheses are tested. Firstly, the model was run using a normal OLS regression. However, after conducting a Breusch-Pagan test on the residuals, which showed a significant p-value, robust standard errors were used to deal with the presence of heteroskedasticity. Table 1 represents the results of the OLS-regression of the announcement CARs of the acquiring firm with a three-day event window (-1,+1). The industry and country dummies have been excluded from this table. Table 14 in appendix I represents the full regression table including country and industry dummies.

The first hypothesis states that acquirers' ESG ratings are positively related to announcement CARs of acquirers over the entire sample period. The independent variable ESG in model 1 shows a small significant negative coefficient α ($\beta = -0.012$, $p < 0.01$). This implies that ESG ratings of acquirers negatively affect three day announcement CARs of acquirers. Therefore, the first hypothesis has to be rejected. This finding is in line with earlier research (Tampakoudis et al., 2021) that finds acquirers ESG ratings to have a negative influence on acquirers' CARs, but not in line with other studies that finds acquirers' ESG ratings to have a positive influence on M&A performance of acquirers (Piperni, 2021; Zheng et al., 2023).

The second hypothesis states that the Covid-19 pandemic positively influences the relationship between ESG scores of acquirers and announcement CARs. This was tested in the model with an interaction effect between $COVID$ and the independent variable ESG . As can be seen in table 1, $ESG:COVID$ has a small positive and insignificant coefficient ($\beta = 0.009$, $p < 0.1$). Due to the insignificance of this coefficient, the second hypothesis cannot be accepted.

Table 1: OLS regression results of Cumulative Abnormal Returns (-1, +1) on ESG

<i>Dependent variable:</i>	
----- CAR	
ESG	-0.012*** (0.004)
ROA_AQ	0.010 (0.012)
SIZE_AQ	-0.422*** (0.061)
LEV_AQ	0.418 (0.368)
TOBQ_AQ	-0.242*** (0.065)
RELSIZE	1.424 (0.985)
DEALSIZE	0.210*** (0.048)
CASH	-0.334*** (0.125)
STOCK	-0.627*** (0.219)
CBA	-0.081 (0.126)
GENBOARD_AQ	0.001 (0.006)
COVID	-0.392 (0.319)
ESG:COVID	0.009* (0.005)
<hr/>	
Observations	5,718
R2	0.072
Adjusted R2	0.065
Residual Std. Error	4.219 (df = 5672)
F Statistic	9.792*** (df = 45; 5672)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 1 represents the OLS regression with robust standard errors of CAR (-1, +1) on ESG. Industry and country dummy variables are not included in this table.

Regarding the control variables, in line with expectations the variable SIZE_AQ significantly negatively affects acquirers' announcement CARs ($\beta = -0.422$, $p < 0.01$). However, contrary to expectations the variable TOBQ_AQ ($\beta = -0.242$, $p < 0.01$), the variable CASH ($\beta = -0.334$, $p < 0.01$),

and *STOCK* ($\beta = -0.627$, $p < 0.01$) significantly negatively affect acquirers' announcement CARs. The opposing result of *TOBQ_AQ* could be due to the data sample, which includes larger companies that have less growth opportunities. The differing signs of the methods of payment can be explained through the definition of *CASH* and *DEAL*, as the *CASH*-dummy was assigned if the deal was fully financed by cash, and the *STOCK*-dummy was assigned if the deal was at least partially financed by shares. The aforementioned results are in line with the findings of Deng et al. (2013), who used the same dummy variables for the method of payment. Moreover, a negative effect of all-cash deals was also found in other prior research (Deng et al., 2013; Tampakoudis et al., 2021). Furthermore, contrary to expectations, *DEALSIZE* significantly positively affects *CAR* ($\beta = 0.210$, $p < 0.01$). This indicates that larger deals lead to higher announcement CARs. This effect was also found by Tampakoudis et al. (2021), but contradicts other research (Alexandridis et al., 2013). Apart from that, the variables *ROA_AQ*, *LEV_AQ*, *GENBOARD_AQ*, and *RELSIZE* show their expected signs, but are insignificant. The variable *CBA* shows a different sign compared to expectations, but is also insignificant. The coefficient of *COVID* is negative but insignificant ($\beta = -0.392$). Regarding the industry dummies, Agriculture, Forestry and Fishing significantly negatively affected *CAR* ($\beta = -1.935$, $p < 0.01$), while Retail Trade significantly positively affected *CAR* ($\beta = 1.023$, $p < 0.05$). The other country and industry dummies did not show a significant effect.

The explanatory power of the model is very low ((Adj. $R^2 = 0.065$). This is however in line with prior research (Feng, 2021; Piperni, 2021; Tampakoudis et al., 2021). Also, due to the inclusion of robust standard errors, the adjusted R-squared cannot be interpreted as normal.

4.3.2. Analysis 2, ESG pillar scores

In this paragraph the results of the second regression are outlined and the remaining hypotheses are tested. Firstly, the model was run using a normal OLS regression. However, after conducting a Breusch-Pagan test on the residuals, which showed a significant p-value, robust standard errors were used to deal with the presence of heteroskedasticity. Table 2 represents the results of the OLS-regression of the announcement CARs of the acquiring firm with a three date event window (-1,+1). The industry and country dummies have been excluded from this table. Table 15 in appendix J includes the full regression table with country and industry dummies.

Table 2: OLS regression results of Cumulative Abnormal Returns (-1, +1) on ESG Pillar Scores

<i>Dependent variable:</i>	
CAR	
<i>E_Score</i>	0.004 (0.004)
<i>S_Score</i>	-0.016*** (0.005)
<i>G_Score</i>	-0.001 (0.003)
<i>ROA_AQ</i>	0.013 (0.012)
<i>SIZE_AQ</i>	-0.400*** (0.061)
<i>LEV_AQ</i>	0.419 (0.368)
<i>TOBQ_AQ</i>	-0.237*** (0.066)
<i>RELSIZE</i>	1.486 (0.983)
<i>DEALSIZE</i>	0.206*** (0.048)
<i>CASH</i>	-0.346*** (0.125)
<i>STOCK</i>	-0.667*** (0.220)
<i>CBA</i>	-0.095 (0.126)
<i>GENBOARD_AQ</i>	-0.001 (0.006)
<i>COVID</i>	-0.683* (0.359)
<i>E_Score:COVID</i>	-0.021*** (0.007)
<i>S_Score:COVID</i>	0.026*** (0.007)
<i>G_Score:COVID</i>	0.006 (0.007)
<i>Observations</i>	5,718
<i>R2</i>	0.075
<i>Adjusted R2</i>	0.067
<i>Residual Std. Error</i>	4.215 (df = 5668)
<i>F Statistic</i>	9.364*** (df = 49; 5668)
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

Table 2 represents the OLS regressions with robust standard errors of CAR (-1, +1) on the ESG pillar scores. Industry and country dummy variables are not included in this table.

Hypothesis 3a states that acquirers' E scores are positively related to acquirers' announcement CARs for the entire sample. The independent variable E_SCORE shows a small insignificant positive coefficient ($\beta = 0.004$). Due to the insignificance of this variable, hypothesis 3a cannot be accepted.

Hypothesis 3b states that acquirers' S scores are positively related to announcement CARs of acquirers for the full sample. The independent variable S_Score shows a small significant negative coefficient ($\beta = -0.016$, $p < 0.01$). This is contrary to expectations. The coefficient indicates that Social scores of acquirers negatively affect announcement CARs. Therefore hypothesis 3b has to be rejected.

Hypothesis 3c states that acquirers' G scores are positively related to announcement CARs of acquirers for the full sample. The independent variable G_Score shows a small insignificant negative coefficient ($\beta = -0.001$). Due to the insignificance of this variable, hypothesis 3c has to be rejected.

Hypothesis 4a states that the Covid-19 pandemic positively influences the effect of acquirers' E scores on acquirers' announcement CARs. To account for the effect of the Covid-19 pandemic an interaction term was added to the model. The interaction term $E_Score:COVID$ shows a small significant negative coefficient ($\beta = -0.021$, $p < 0.01$). This indicates the Covid-19 pandemic negatively affected the influence of Environmental scores on acquirers' announcement CARs. This is contrary to expectations. Therefore, hypothesis 4a has to be rejected.

Hypothesis 4b states that the Covid-19 pandemic positively influences the effect of acquirers' S scores on announcement CARs. The interaction term $S_Score:COVID$ shows a small significant positive coefficient ($\beta = 0.026$, $p < 0.01$). This indicates that the Covid-19 pandemic positively affected the influence of acquirers' Social scores on acquirers' announcement CARs. Therefore, hypothesis 4b can be accepted.

Hypothesis 4c states that the Covid-19 pandemic positively affects the influence of acquirers' G scores on announcement CARs of acquirers. The interaction term $G_Score:COVID$ shows a small insignificant positive coefficient ($\beta = 0.006$). Due to the insignificance of this coefficient hypothesis 4c cannot be accepted.

Since the control variables have not changed in sign nor significance compared to the first analysis, these will not be covered in this paragraph. Apart from that, the explanatory power of the model is also very low (Adj. $R^2 = 0.067$). This is however in line with prior research (Feng, 2021; Piperni, 2021; Tampakoudis et al., 2021; Zheng et al., 2023). Also, due to the inclusion of robust standard errors, the adjusted R-squared cannot be interpreted as normal.

4.4 Robustness checks

Some additional tests are executed to verify the validity of the main findings. Firstly, the analysis is executed for CARs with different event windows than the main analysis. Secondly, the data sample is split into two samples, one pre-Covid and one Covid sample. Thirdly, the analysis is executed with different control variables. Lastly, a section is added that provides some exploratory tests.

4.4.1. Check 1: wider event windows

To ensure the results are not specifically related to the chosen event window of three days, the analysis is also executed on CARs with a five-day event window (-2 , +2), and CARs with an eleven-day event window (-5 , +5). These event windows are in line with previous literature (Piperni, 2021; Tampakoudis et al., 2021). Widening the event windows could ensure that all of the information about the event is captured in the event window. However, by doing so unrelated noise might be captured in the CARs. To prevent outliers from influencing the results, the five-day and eleven-day CARs are both winsorized on the 1st and 99th percentile. Table 16 in Appendix K reports the findings of these models. As can be observed for *ESG* the coefficients are negative and insignificant for both CARs with a five-day ($\beta = -0.008$), as well as an eleven-day window ($\beta = -0.012$). This is not in line with the results for *ESG* in the main regression. The signs of the coefficients remained the same but both have become insignificant. Previous research also showed loss of significance due to wider event windows (Piperni, 2021; Tampakoudis et al., 2021). The loss of significance can be due to inclusion of too much unrelated noise in the widened event windows. Since the coefficient showed no significant changes, hypothesis 1 remains accepted.

The interaction term *ESG:COVID* is positive and insignificant for both CARs with a five-day ($\beta = 0.009$), as well as an eleven-day event window ($\beta = 0.008$). This matches the results from the main analysis. Still, due to insignificance of the coefficients, the second hypothesis cannot be accepted.

The sign and significance of *E_Score* and *G_Score* did not change compared to the main regressions, except for *E_Score* for the five-day CARs analysis ($\beta = -0.025$, $p < 0.1$). Yet, the coefficient remains insignificant. Therefore hypothesis 3a and 3c cannot be accepted. The sign of *S_Score* also did not change for a five-day event window ($\beta = -0.018$, $p < 0.01$), nor for an eleven-day event window ($\beta = -0.025$, $p < 0.05$), but is a bit less significant for an eleven-day event window. Therefore, hypothesis 3b still has to be rejected.

With respect to the Covid effect, the interaction term *E_Score:COVID* shows a negative and insignificant coefficient for a five-day event window ($\beta = -0.018$, $p < 0.1$), as well as a significant negative coefficient for an eleven-day event window ($\beta = -0.029$, $p < 0.05$). This is in line with the coefficients in the main regression, however insignificant for a five-day event window and less significant for an eleven-day event window. Therefore hypothesis 4a still has to be rejected. The interaction term *S_Score:COVID* has a significant positive coefficient for both a five day ($\beta = 0.023$, $p < 0.05$), as well as an eleven day event window ($\beta = 0.043$, $p < 0.01$). This confirms the findings from the main regression. Therefore hypothesis 4b can remain accepted. The interaction term *G_Score:COVID* shows an insignificant positive coefficient for a five day event window ($\beta = 0.006$) and an insignificant negative coefficient for an eleven day event window ($\beta = -0.006$). Therefore hypothesis 4c still has to be rejected.

With respect to the control variables, *ROA_AQ* now shows a significant positive coefficient for the second ($\beta = 0.041$, $p < 0.05$), and fourth model ($\beta = 0.045$, $p < 0.05$) for the eleven-day event windows. This is in line with previous expectations, but compared to the main analyses is now significant. Moreover, Industry Public Administration now shows a significant negative coefficient for the second ($\beta = -3.952$, $p < 0.05$), and fourth model ($\beta = -4.080$, $p < 0.05$) for the eleven-day event windows, and the Industry Transportation, Communications, Electric, Gas and Sanitary shows a significant negative coefficient for the first model with a five-day event window ($\beta = -1.038$, $p < 0.05$). Lastly, the adjusted R-squared is lower for all models when compared to the main

analyses. However, due to the inclusion of robust standard errors, the adjusted R-squared cannot be interpreted as normal.

4.4.2. Check 2: split data sample

The main regressions showed a negative coefficient for the Covid dummy. However, this effect was insignificant. To prevent the Covid period from influencing the sample too much and to verify the findings regarding the influence of the Covid-19 pandemic on the influence of ESG scores, the data sample is split into two. The first sample includes all of the deals announced from 01-01-2015 until 11-03-2020 (the Pre-Covid sample). The second sample includes all of the deals announced from 11-03-2020 until 31-12-2022 (the Covid sample). Splitting the sample into two is in line with previous research to capture the effect of the Covid-19 pandemic (Tampakoudis et al., 2021). Table 17 in Appendix L reports the findings of the Pre-covid period sample. Table 18 in Appendix M reports the findings of the Covid-period sample

The pre-Covid sample shows an insignificant negative coefficient for *ESG* ($\beta = -0.010$), and *G_Score* ($\beta = -0.001$), as well as a positive insignificant coefficient for *E_Score* ($\beta = 0.007$). On the other hand, the coefficient of *S_Score* is significant and negatively affects *CAR* ($\beta = -0.017$, $p < 0.05$). Therefore, the only conclusion that can be drawn regarding the pre-Covid period, is that Acquirers' Social scores negatively affect acquirers' announcement CARs. While *ESG* showed a significant coefficient for the entire sample period, this coefficient is not significant for the Pre-Covid sample.

The Covid-sample also shows a negative and insignificant coefficient for *ESG* ($\beta = -0.019$ $p < 0.1$). Although the significance of the coefficient has increased, it is still insignificant. Since the pre-Covid coefficient of *ESG*, as well as the Covid coefficient is insignificant, no conclusions can be drawn regarding the influence of the Covid-19 pandemic on the influence of *ESG* on *CAR*. Therefore, hypothesis 2 still cannot be accepted. Moreover, since the coefficients of *E_Score* ($\beta = -0.017$, $p < 0.1$), *S_Score* ($\beta = 0.002$), and *G_Score* ($\beta = -0.003$) are all insignificant, no conclusions can be drawn regarding these variables. Therefore, no changes have to be made regarding the acceptance or rejection of hypothesis 3a to 4c. What stands out in the Covid sample is that nearly all of the country dummies significantly positively affect announcement CARs. This is completely

different when compared to the pre-Covid sample, in which all of the coefficients are insignificant. This indicates that during the Covid-19 pandemic nearly all countries had higher announcement CARs than the reference country Turkey.

4.4.3. Check 3, different control variables

Due to insignificance of some control variables and to test whether the results still hold when the model contains different control variables, the regression is run with some alternative control variables. Firstly, to account for the liquidity of the acquirer, the acquirer's current ratio will be added to the model (*CURRENT_AQ*). In line with previous research it is expected that the acquirer's current ratio negatively influences acquirers' CARs (Tampakoudis et al., 2021). Moreover, the ratio of cash to total assets of the acquirer will be added (*CASHRATIO_AQ*). In line with previous research it is expected that the cash ratio of the acquirer positively influences acquirer's CARs (Zheng et al., 2023). Apart from that, as the acquirer's leverage (*LEV_AQ*) did not significantly affect acquirers' CARs, the leverage will now be measured as total debt to total equity (D/E ratio) (*DE_AQ*) instead of total debt to total assets. It is expected that the D/E ratio of the acquirer positively influences CARs. Furthermore, as the profitability measured as ROA (*ROA_AQ*) did not significantly influence CARs, profitability will now be measured as Return on Equity (*ROE_AQ*). It is expected that the ROE of the acquirer positively influences acquirers' CARs. Lastly, due to its insignificance and small coefficient, *GENBOARD_AQ* will be excluded from the model. To prevent outliers from the newly added control variables to substantially influence the results, the variables *ROE_AQ*, *DE_AQ* and *CURRENT_AQ* are winsorized at the 1st and 99th percentile.

The newly added control variables do not correlate strongly with other variables. Therefore multicollinearity is also no issue for these models. The correlation table for the model with the newly added control variables is included in Appendix N in table 19. The models were also run with robust standard errors. The regression output for both of the models is included in table 20 in Appendix O. As can be observed, *ESG* has become a bit less significant in this model ($\beta = -0.013$, $p < 0.05$), but is still significant. Apart from that, there are no changes in signs, nor significance of the independent variables, as well as the interaction terms. Therefore, the previously made conclusions regarding these variables still hold. The same holds for the previously included control

variables. With regard to the newly added control variables, none seem to indicate a significant effect. Moreover, the adjusted R-squared of model 1 (Adj. $R^2 = 0.054$), as well as model 2 (Adj. $R^2 = 0.056$) has decreased compared to the main analyses. However, as robust standard errors are included, the adjusted R-squared cannot be interpreted as usual. The main regression models remain preferred over the models with different control variables.

4.4.4. Additional exploratory tests

Previous research found differing results and significance between high and low ESG rated acquirers (Piperni, 2021; Tampakoudis et al., 2021). Therefore, the previously drawn conclusions could be different for high ESG rated acquirers compared to low ESG rated acquirers. Moreover, it could be the case that dividing the sample could lead to significant results for coefficients that were insignificant beforehand. Investors might care more about relatively good or bad ESG rated acquirers, than acquirers with 'average' ratings, as the influence of these firms on ESG rated topics might be bigger. To test whether results would vary between high and low ESG rated acquirers, a sample was created which included the quartile with the highest ESG scoring acquirers, and another sample which included the quartile with the lowest ESG scoring acquirers. Both ESG ratings and pillar scores were analysed in the regressions. However, results for all of the independent variables, as well as the interaction terms turned out to be insignificant. Therefore, the regression outputs of these analyses are not included in this thesis. It can be concluded that ESG performance of high- or low ESG rated acquirers did not significantly influence announcement CARs, nor did the Covid-19 pandemic influence this relationship.

Apart from that, a sample was constructed which only included acquirers from the Mining industry (SIC code 1000-1499). This industry includes, among others, oil, gas and mining companies. In general, these companies are large polluters and the public has biased opinions about these companies. Based on that fact, it is expected that investors care more or differently about those companies' ESG scores, which could result in different relationships with announcement CARs. Both ESG ratings and pillar scores were analysed in the regressions for this sample. However, again for this exploratory test, results for all of the independent variables, as well as the interaction terms turned out to be insignificant. Therefore, the regression outputs of

these analyses are not included in this thesis. It can be concluded that ESG performance of acquirers from the mining industry did not significantly influence announcement CARs, nor did the Covid-19 pandemic influence this relationship.

5 Discussion & Conclusion

Due to the increasing interest in and importance of the concept of ESG, as well as linked operating performance and firm value, it becomes a significant subject for firms to take into account. A growing body of literature examines the link between ESG performance of acquirers and M&A performance. However, research regarding the influence of the components of the ESG score, namely the Environmental, Social, and Governance pillar score, is very limited. Adding to that, research regarding the influence of the Covid-19 pandemic on the link between ESG performance of acquirers and M&A performance is limited to one study, which finds results that contradict literature, findings on previous crises, and findings outside the field of M&A. Hence, this study focusses on the influence of ESG scores of acquirers, as well as the influence of the pillar scores, on M&A performance, and tests how the Covid-19 pandemic affects this influence. Eight hypotheses were developed to test the relationship. This chapter discusses the findings of the previous chapter related to the hypotheses, and compares these findings to results from previous research. Moreover, it will provide a short conclusion as well as an elaboration on the contributions and limitations of this study, and provides recommendations for further research.

5.1 Discussion and interpretation of results

The first model was run to test the first two hypotheses. The general influence of ESG ratings of acquirers on CARs for a three day event window around the announcement date was analysed. Moreover, the effect of the Covid-19 pandemic on the influence of ESG ratings on M&A performance was measured with an interaction term. Regarding the relationship between ESG performance of acquirers and M&A performance it can be concluded that ESG scores of acquirers negatively affect M&A performance measured as CARs with a three day event window around the announcement date. This finding opposes the expected relationship. It is therefore in line with shareholder theory and opposes stakeholder theory. As shareholder theory suggests that the central goal of a firm is to act in favour of its shareholders, this result implies that investors think of ESG related topics as costly investments that do not belong to the primary goal of a firm.

Moreover, firms that have higher ESG scores might have more difficulties in acquiring another company, as the target company will have to adhere to the different rules and policies etc. the acquiring company has regarding, for example, environmental impact, gender and board diversity or corporate governance mechanisms. Therefore investors might expect the deal to be harder and more expensive to execute. Although, it must be noted that the observed effect is very small, and does not hold significance for different event windows or when split into a pre-Covid and Covid sample.

One possible explanation for the finding of this result that opposes expectations is that the ESG scores are based on self-reported data of firms. There is no reasonable assurance of the data. At most data is assured under limited assurance. Therefore, the data cannot be 100% verified. The scores may thus not be a perfect representation of reality. Investors might have opinions regarding the ESG performance of firms that do not match their ESG scores. For instance, firms might report in their own interest regarding ESG topics in an attempt to increase their ESG score, or mislead stakeholders about their ESG performance, while their ESG scores are in fact lower. The term *greenwashing* has been around for a while, and many companies partake in greenwashing in an attempt to mislead stakeholders (de Freitas Netto et al., 2020). Therefore the actual ESG scores of a company might not match the expectation of investors regarding a firm's ESG performance on which they base their investment behaviour.

Regarding the effect of the Covid-19 pandemic, it can be concluded that the Covid-19 pandemic did not significantly influence the relationship between ESG ratings of acquirers and M&A performance. Moreover, splitting the data sample indicated that during the Covid-19 pandemic there was no association between ESG ratings of acquirers and M&A performance. This result indicates that investors did not assess ESG scores of acquirers differently with respect to their investment behaviour in the firm as a result of the deal announcement. A possible explanation for this finding might be the time frame that was chosen for the Covid-19 pandemic. While Covid-19 was classified as a pandemic by the WHO during the entire time frame, the influence of the pandemic on businesses and investors was the largest during the first part of the pandemic, which caused an initial shock, as can also be seen in the 2020 stock markets crash, which thereafter

quickly recovered. Therefore, the actual effect of the Covid-19 pandemic might be stronger during the first few months. The results could thus have been influenced by the longer time frame.

The second model was run to test the remaining hypotheses. The influence of the ESG pillar scores, namely Environmental, Social, and Governance, of acquirers on CARs with a three-day event window around the announcement date was analysed. Moreover, the effect of the Covid-19 pandemic on the influence of the pillar scores on M&A performance was measured with interaction terms between the pillar scores and the acquirers' CARs. Regarding the influence of the pillar scores on M&A performance the following can be concluded. There is no association between the Environmental, and Governance scores of acquirers and M&A performance. These results indicate that investors around the date of the deal announcement do not take into account the Environmental and Governance scores of acquirers in their investment behaviour. The same explanation as before might account for these findings that oppose expectations. As the information on which the scores are based is mostly self-reported data, the data cannot be 100% verified. Therefore, the scores may not be a perfect representation of reality and thus do not reflect the perception of investors about the ESG performance of an acquirer. On the other hand, acquirers' Social score leads to a small significant decrease in M&A performance. This result indicates that investors have less trust in deals announced by acquirers with higher Social scores. A possible explanation for this result is that investors might perceive the determinants of the Social pillar as costly investments, which do not belong to the core business of the company. Moreover, it might be that acquisitions announced by acquirers with higher Social scores are harder and more costly to execute, as target companies have to be altered to the norms of the acquirer, for instance regarding working conditions, diversity and inclusion or data privacy. Investors might therefore perceive these acquisitions as more costly, harder to execute and easier to fail, which results in lower investments as a result of the deal announcement.

Regarding the effect of the Covid-19 pandemic, it can be concluded that the Covid-19 pandemic had a small significant negative effect on the influence of Environmental scores of acquirers on M&A performance. Therefore, compared to before the Covid-19 pandemic, the Covid-19 pandemic negatively affected the influence of Environmental scores on M&A performance. This indicates that investors cared differently about Environmental scores regarding their investment

behaviour in acquiring firms that announced an M&A deal compared to before the Covid-19 pandemic. A possible explanation for this result is that investors might perceive the determinants of Environmental scores as costly investments, which should not be focussed on during a time of crisis. They might favour firms that stick to their core business, instead of investing in Environmental concerns, as that might not be a priority during a time of crisis. On the other hand, it can be concluded that the Covid-19 pandemic had a small significant positive effect on the influence of Social scores of acquirers on M&A performance. Therefore, compared to before the Covid-19 pandemic, the Covid-19 pandemic positively affected the influence of Social scores on M&A performance. This indicates that investors cared differently about Social scores regarding their investment behaviour in acquirers that announced an M&A deal compared to before the Covid-19 pandemic. A possible explanation for this result might be that firms with higher Social scores have more customer and investor loyalty (Albuquerque et al., 2020), which is of increased importance during times of crises. Moreover, it might be that because firms with higher Social scores score higher on factors like health, safety and working conditions, investors have more trust in these firms during a time in which the future is unclear and volatile. Lastly, it can be concluded that the Covid-19 pandemic did not affect the influence of Governance scores of acquirers on M&A performance. As there was also no general association between Governance scores and M&A performance, this result is not peculiar. The Covid-19 pandemic did not change investors' perception of Governance scores with respect to their investment behaviour regarding acquirers that announced an M&A deal.

Interpreting these results, it is in the best interest of acquiring firms willing to increase short-term M&A performance to not focus too much on their ESG performance, especially Social performance, as increasing their ESG performance results in lower announcement CARs. Although, the influence will be very small. Furthermore, in case of a future crisis, it may then be advisable for acquiring firms willing to increase short-term M&A performance during the crisis to focus on improving their Social scores, and not focus on their Environmental scores. Again, the effect on announcement CARs will be very small.

5.2 Findings in comparison with prior research

This study finds a negative relationship between the ESG score of an acquirer and M&A performance measured as announcement CARs. Moreover, this study finds no significant effect for the highest quartile of ESG acquirers. Contrary to this finding, Piperni (2021) found a significant positive effect for high-ESG acquirers on announcement CAARs, but no association between the ESG scores of acquirers and CAARs for the full set of acquirers. Multiple reasons exist to possibly account for this difference. Firstly, this study focuses on CARs instead of CAARs. The CAAR is aggregated across all securities and therefore differs from the CAR. Moreover, Piperni (2021) made use of the MSCI KLD database for ESG ratings. MSCI constructs their own ESG ratings, which differ from the Refinitiv ESG ratings. Therefore, the measure of the dependent, as well as the independent variable differs between these studies. Furthermore, the study of Piperni (2021) focussed on US acquirers and had a different time frame (1998-2017). This time frame also includes the financial crisis of 2007-2008 which could have influenced the results, especially as prior research indicated the positive effect of the 2007-2008 financial crisis on the influence of CSR ratings (Lins et al., 2017). Furthermore, the study of Zheng et al. (2023) found acquirers' ESG performance to have a significant positive impact on buy and hold abnormal returns, return on equity and return on assets, or, in other words, long-term M&A performance. This study focusses on announcement CARs of acquirers, which is short-term M&A performance, and thus measures M&A performance in a different way. Moreover, Zheng et al. (2023) only focussed on deals announced by Chinese acquirers and utilises the Sino-Securities Index (SSI) ESG Rating Database for ESG scores. As the measure of M&A performance and these other factors differ, the differing results can be explained. The same applies to the study of Feng (2021), who found no significant effect between ESG ratings of acquirers and M&A performance measured as ROA of acquirers and stock price changes from 3 months before the announcement to 1 month after the completion. Furthermore, Fatemi et al. (2017) found no significant relation between ESG ratings of Japanese acquirers and announcement CARs, but argued that the market for corporate control in Japan can behave differently from western countries and the United States. As this study focusses on western and Chinese countries, but not on Japanese countries, the different results can be explained.

Lastly, deviations from prior significant findings of Krishnamurti et al. (2021), Deng et al. (2013), and Yen & André (2019) can be explained due to their focus on CSR performance of acquirers. The CSR scores are constructed by different companies using different measures, so that ESG and CSR scores can differ for a company. Therefore, even though CSR and ESG scores are alike and in literature the terms are often used interchangeably, these different findings can be attributable to the different measures.

On the other hand, the results of this study match the findings of Tampakoudis et al. (2021), who also examined the influence of ESG ratings of acquirers on CARs around the announcement date for a period which included the Covid-19 pandemic. Tampakoudis et al. (2021) found, against expectations, that ESG ratings of acquirers negatively affected announcement CARs before and during the Covid-19 pandemic. Moreover, they found the period before the Covid-19 pandemic to positively influence the effect of ESG ratings on CARs. However, this influence was not strong enough to make the effect of ESG on CARs positive. Therefore, they found ESG ratings to negatively influence CARs before and during the Covid-19 pandemic, while the Covid-19 pandemic negatively influenced investment behaviour of investors. Contrary to the findings of Tampakoudis et al. (2021) this study did not find a significant effect of the Covid-19 pandemic on the influence of ESG ratings on CARs. This result can be explained through the time frame on which Tampakoudis et al. (2021) focussed. Their study focussed on deals announced between 1 January 2018 and 31 July 2020. Therefore their sample of the Covid-19 pandemic is much smaller. As explained before, the influence of the pandemic on businesses and the stock market was the largest during the first period of the Covid-19 pandemic, with the biggest influence being in the first few months, as the start of the pandemic entailed a shock effect which can be observed in the 2020 stock market crash. At the start of the pandemic, nothing was clear about the impact of the crisis and the future of the world. Announcing an M&A deal during these first few months might therefore be observed differently compared to deals announced later in the pandemic.

Regarding the pillar score results, Zheng et al. (2023) found that the S, and G components were significantly positively related to buy and hold abnormal returns, ROA, and ROE 1 year after the deal, while the E component was insignificantly negatively related. Although this study also finds insignificant results for E scores, it finds the opposite relationship regarding S scores and no

significant results regarding G scores. However, as stated before, Zheng et al. (2023) focused on long-term M&A performance instead of short term M&A performance. This could explain why their results differ. The same applies to the findings of Huang (2023) and Caiazza et al. (2021), who found all the pillar scores to positively affect long-term performance. Since no studies focused on short-term M&A performance, no perfect comparison can be made.

Apart from that, regarding the influence of the Covid-19 pandemic on the effect of the pillar scores on M&A performance, prior research found the Environmental and Social pillar to positively influence abnormal stock returns during the Covid-19 pandemic, while Governance scores had an insignificant effect (Albuquerque et al., 2020; Broadstock et al., 2021). This is in line with the findings of this study, except for the result regarding the influence of the Covid-19 pandemic on the influence of Environmental scores. For Environmental scores the opposite effect was found. It must be noted that prior research did not examine the effect of the pillar scores on M&A performance, but merely on stock performance (Albuquerque et al., 2020; Broadstock et al., 2021). Therefore these studies are no perfect comparison material, but are the only studies that can partly be compared. The differing results can thus be justified.

5.3 Conclusion, contribution, limitations & recommendations for further research

This study contributes to literature by evincing the relationship between ESG performance of acquirers and short-term M&A performance. Moreover, it analyses if the Covid-19 pandemic influenced this relationship. In contrast to prior research, it also investigates the influence of the ESG pillar scores of acquirers on short-term M&A performance, and demonstrates how the Covid-19 pandemic influenced this relationship. No existing literature has yet analysed the influence of acquirers' pillar scores on short-term M&A performance. By doing so, this study is able to give recommendations on what factors of ESG to improve in order to increase short-term M&A performance. The key findings of this study are the following. Firstly, ESG performance of acquirers negatively affects short-term M&A performance. This effect is however very small. Moreover, the Covid-19 pandemic did not significantly influence the aforementioned relationship. Furthermore, acquirers' Social scores negatively affect short-term M&A performance, while Environmental and Governance scores do not lead to a significant effect.

Although, this effect is also very small. Lastly, the Covid-19 pandemic negatively influenced the effect of Environmental scores on short-term M&A performance, while it positively influenced the effect of Social scores on short term M&A performance. The Covid-19 pandemic did not significantly influence the effect of Governance scores on M&A performance.

This study involves a number of limitations and therewith recommendations for future research. Firstly, this study only focusses on short-term M&A performance in the form of shareholder wealth gains of acquirers. However, it is also important to find out how ESG scores and its components affect long-term performance, especially as results for long-term performance might differ. Acquiring firms might be more interested in improving long-term deal performance than short-term deal performance. Moreover, the focus can also be on the value implications for target firms, as this study gives no insight on that. This will give a more complete picture of the potential benefits or negative sides of ESG performance related to M&As.

Secondly, due to data availability, only ESG scores of acquiring firms were taken into account in this study. However, ESG scores of target firms and the interplay between acquirers' and targets' ESG scores might also play an important role. It can be argued that acquiring target firms with superior ESG scores might positively affect M&A performance, due to increased post-deal ESG performance or increased stakeholder trust. Therefore, to fully grasp the influence of ESG performance on M&A performance, ESG scores of both firms should be taken into account.

Thirdly, ESG data is only available for relatively large companies. Therefore the data sample consists of relatively large companies, which induced the exclusion of a large number of deals announced during the sample period. Including smaller companies into the data sample would allow the drawing of more robust conclusions. Since the ESG database of Refinitiv keeps expanding every year, future research could include companies more diverse in size.

Lastly, the Refinitiv ESG score is a complex score that relies on many different measures. Other scores created by other rating agencies are constructed in a different way, however not less complex, and thus may give different results for the same company. Due to the availability of ESG score databases, only the Refinitiv ESG score is used in this study. Future research can take into account multiple ESG ratings and compare the impact of those ratings. Moreover, it can be

analysed which of the available ESG scores best reflects the company's ESG performance, such that the best available scoring can be used.

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7 Appendices

Appendix A

Table 3: Description of all variables

Variable Name	Measurement	Source
Dependent Variables		
$CAR_{t-1,t+1}^i$	The cumulative abnormal announcement returns for the acquiring firm from day t -1 until day t + 1, where t is the day the deal was announced	Refinitiv
$CAR_{t-2,t+2}^i$	The cumulative abnormal announcement returns for the acquiring firm from day t - 2 until day t + 2, where t is the day the deal was announced. This variable is only used in Robustness check 1	Refinitiv
$CAR_{t-5,t+5}^i$	The cumulative abnormal announcement returns for the acquiring firm from day t -5 until day t + 5, where t is the day the deal was announced. This variable is only used in Robustness check 1	Refinitiv
Independent variables		
<i>ESG</i>	The Refinitiv ESG score of the acquiring firm	Refinitiv
<i>E_Score</i>	The Refinitiv Environmental pillar score of the acquiring firm	Refinitiv
<i>S_Score</i>	The Refinitiv Social pillar score of the acquiring firm	Refinitiv
<i>G_Score</i>	The Refinitiv Governance pillar score of the acquiring firm	Refinitiv
Interaction terms		
<i>ESG * COVID</i>	The interaction term of the acquiring firms Refinitiv ESG score and a dummy variable which accounts for if the deal was announced during the Covid-19 pandemic	
<i>E_Score * COVID</i>	The interaction term of the acquiring firms Refinitiv Environmental pillar score and a dummy variable which accounts for if the deal was announced during the Covid-19 pandemic	
<i>S_Score * COVID</i>	The interaction term of the acquiring firms Refinitiv Social pillar score and a dummy variable which accounts for if the deal was announced during the Covid-19 pandemic	
<i>G_Score * COVID</i>	The interaction term of the acquiring firms Refinitiv Governance score and a dummy variable which accounts for if the deal was announced during the Covid-19 pandemic	
Control variables		
<i>ROA_AQ</i>	The acquiring firm's Return on Assets	Refinitiv
<i>SIZE_AQ</i>	the acquirer's firm size, proxied by the natural log of its total assets	Refinitiv
<i>LEV_AQ</i>	The acquiring firm's leverage, measured as book value of debt divided by book value of total assets	Refinitiv

<i>TOBQ_AQ</i>	The acquiring firm's Tobin's Q, calculated as total market value of the firm divided by the book value of the total assets	Refinitiv
<i>RELSIZE</i>	The merger's relative size, proxied by the deal value divided by acquirers size	Refinitiv & Orbis M&A
<i>DEALSIZE</i>	The deal size, measured as the natural logarithm of the deal value	Orbis M&A
<i>CASH</i>	A dummy variable for cash only deals, which has a value of 1 if the deal is fully financed by cash and a value of 0 if the deal is not fully financed by cash	Orbis M&A
<i>STOCK</i>	A dummy variable for stock deals, which has a value of 1 if the deal is at least partially financed by shares and a value of 0 if the deal is not (partially) financed by shares	Orbis M&A
<i>CBA</i>	A dummy variable for cross-border acquisitions, which has a value of 1 if the deal is a cross-border deal and a value of 0 if the acquirer and target both are from the same country	Orbis M&A
<i>GENBOARD_AQ</i>	The percentage of females in the board of the acquiring firm	Refinitiv
<i>COVID</i>	A dummy variable to account for the Covid-19 pandemic, which has a value of 1 if the deal is announced between 11-03-2020 and 31-12-2022 and a value of 0 if the deal is announced between 01-01-2015 and 11-03-2020	Orbis M&A
<i>COUNTRY</i>	A dummy variable to account for the country in which the acquirer resides in. A dummy variable is added for the following countries, in which case it gets a value of 1 if the acquirer resides in the country and a value of 0 if the acquirer does not reside in the country: Austria, Belgium, China, Cyprus, Denmark, Finland, France, Germany, Gibraltar, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States of America	Orbis M&A
<i>INDUSTRY</i>	A dummy variable to account for the industry in which the acquirer operates. The divisions applied in the Standard Industrial Classification (SIC) will be used as a proxy for the acquirer's industry. A dummy variable is added for the following industries, in which case it gets a value of 1 if the acquirer operates in the industry and a value of 0 if the acquirer does not operate in the industry: Agriculture, forestry and fishing, Construction, Manufacturing, Mining, Public administration, Retail trade, Services, Transportation, communications, electric, gas and, sanitary service, Wholesale trade.	Orbis M&A
<i>CURRENT_AQ</i>	The acquiring firm's current ratio. This variable is only used in Robustness check 3	Refinitiv
<i>CASHRATIO_AQ</i>	The acquiring firm's cash ratio, calculated as cash divided by total assets. This variable is only used in Robustness check 3	Refinitiv
<i>DE_AQ</i>	The acquiring firm's Debt to Equity ratio. This variable is only used in Robustness check 3	Refinitiv
<i>ROE_AQ</i>	The acquiring firm's Return on Equity. This variable is only used in Robustness check 3	Refinitiv

Table 3 represents the description of all the variables used in the different analyses, as well as the databases used to gather the data.

Appendix B**Table 4: Breusch-Pagan test of first model for heteroscedasticity***studentized Breusch-Pagan test*

data: reg
BP = 917.45, df = 45, p-value < 2.2e-16

Table 4 represents the test results of the Breusch-Pagan test for the first model, including the effect of ESG on CAR.

Table 5: Breusch-Pagan test of second model for heteroscedasticity*studentized Breusch-Pagan test*

data: reg2
BP = 918.38, df = 49, p-value < 2.2e-16

Table 5 represents the test results of the Breusch-Pagan test for the second model, including the effect of ESG pillar scores in CAR.

Appendix C

Table 6: Descriptive statistics

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Pctl. 25</i>	<i>Pctl. 75</i>	<i>Max</i>
CAR	5718	0.75	6.4	-43	-1.8	2.9	67
ESG	5718	47	22	1.1	30	65	96
E_Score	5718	38	28	0	13	63	99
S_Score	5718	48	26	1.2	26	70	99
G_Score	5718	53	22	0.66	36	71	99
ROA_AQ	5718	6.3	12	-153	3	10	235
SIZE_AQ	5718	22	1.7	16	21	23	27
LEV_AQ	5718	0.29	0.18	0	0.16	0.39	2
TOBQ_AQ	5718	1.7	1.7	0.0045	0.67	2.1	53
RELSIZE	5718	0.12	0.51	0.000005	0.0072	0.095	21
DEALSIZE	5718	18	2	14	17	20	25
CASH	5718	0.35	0.48	0	0	1	1
STOCK	5718	0.17	0.37	0	0	0	1
CBA	5718	0.47	0.5	0	0	1	1
GENBOARD_AQ	5718	22	14	0	12	33	86
YEAR	5718	2019	2	2015	2017	2020	2022
COVID	5718	0.36	0.48	0	0	1	1

Table 6 represents the descriptive statistics for each variable. It reports the number of observations, the mean, the standard deviation, the minimum and maximum value of each variable, as well as the lowest and highest quartile.

Table 7: descriptive statistics with winsorized variables

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Std.Dev.</i>	<i>Min</i>	<i>Pctl. 25</i>	<i>Pctl. 75</i>	<i>Max</i>
CAR	5718	0.7	4.4	-7.8	-1.8	2.9	11
ESG	5718	47	22	1.1	30	65	96
E_Score	5718	38	28	0	13	63	99
S_Score	5718	48	26	1.2	26	70	99
G_Score	5718	53	22	0.66	36	71	99
ROA_AQ	5718	6.6	6.4	-6.8	3	10	21
SIZE_AQ	5718	22	1.7	16	21	23	27
LEV_AQ	5718	0.29	0.18	0	0.16	0.39	2
TOBQ_AQ	5718	1.6	1.1	0.21	0.67	2.1	4.5
RELSIZE	5718	0.082	0.12	0.00079	0.0072	0.095	0.45
DEALSIZE	5718	18	2	14	17	20	25
CASH	5718	0.35	0.48	0	0	1	1
STOCK	5718	0.17	0.37	0	0	0	1
CBA	5718	0.47	0.5	0	0	1	1
GENBOARD_AQ	5718	22	14	0	12	33	86
YEAR	5718	2019	2	2015	2017	2020	2022
COVID	5718	0.36	0.48	0	0	1	1

Table 7 represents the descriptive statistics for each variable. The variables CAR, ROA_AQ, TOBQ_AQ, and RELSIZE have been winsorized at the 1st and 99th percentile. The table reports the number of observations, the mean, the standard deviation, the minimum and maximum value of each variable, as well as the lowest and highest quartile.

Appendix D**Table 8: number of deals conducted per country**

Country	Observations
<i>Austria</i>	21
<i>Belgium</i>	35
<i>China</i>	1193
<i>Cyprus</i>	2
<i>Denmark</i>	63
<i>Finland</i>	75
<i>France</i>	200
<i>Germany</i>	138
<i>Gibraltar</i>	2
<i>Greece</i>	3
<i>Hungary</i>	7
<i>Ireland</i>	101
<i>Italy</i>	93
<i>Luxembourg</i>	28
<i>Malta</i>	15
<i>Netherlands</i>	70
<i>Norway</i>	48
<i>Poland</i>	41
<i>Portugal</i>	9
<i>Spain</i>	98
<i>Sweden</i>	201
<i>Switzerland</i>	104
<i>Turkey</i>	17
<i>United Kingdom</i>	665
<i>United States of America</i>	2489

Table 8 represents the number of deals announced per country of the acquirer. 'Country' includes the different countries. 'Observations' includes the number of announced deals.

Appendix E**Table 9: number of deals conducted per year**

<i>Year</i>	<i>Observations</i>
2015	530
2016	572
2017	726
2018	802
2019	887
2020	942
2021	1053
2022	206

Table 9 represents the number of deals announced per year. 'Year' includes the different years. 'Observations' includes the number of announced deals.

Appendix F**Table 10: number of deals conducted per industry**

Industry	Observations
<i>Agriculture, Forestry and Fishing</i>	224
<i>Construction</i>	118
<i>Manufacturing</i>	2797
<i>Mining</i>	234
<i>Public Administration</i>	5
<i>Retail trade</i>	266
<i>Services</i>	1265
<i>Transportation, Communications, Electric, Gas and</i>	616
<i>Sanitary service</i>	
<i>Wholesale trade</i>	193

Table 10 represents the number of deals per industry. 'Industry' includes the different industries. 'Observations' includes the number of announced deals.

Appendix G**Table 11: correlation matrix**

	CAR	ESG	E_Score	S_Score	G_Score	ROA_AQ	SIZE_AQ	LEV_AQ	TOBQ_AQ	REL SIZE	DEAL SIZE	CASH	STOCK	CBA	GENBOARD_AQ	COVID
CAR	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ESG	-.06	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
E_Score	-.08	.87	1	.	.	.	.	.	.	.	.	.	.	.	.	.
S_Score	-.04	.92	.75	1	.	.	.	.	.	.	.	.	.	.	.	.
G_Score	-.03	.72	.48	.47	1	.	.	.	.	.	.	.	.	.	.	.
ROA_AQ	-.06	.09	.14	.04	.09	1	.	.	.	.	.	.	.	.	.	.
SIZE_AQ	-.16	.54	.58	.47	.35	.10	1	.	.	.	.	.	.	.	.	.
LEV_AQ	-.01	.06	.07	.06	.04	-.06	.27	1	.	.	.	.	.	.	.	.
TOBQ_AQ	-.03	-.07	-.12	-.02	-.07	.34	-.26	-.31	1	.	.	.	.	.	.	.
REL SIZE	.13	-.15	-.21	-.08	-.12	-.13	-.28	-.04	.06	1	.	.	.	.	.	.
DEAL SIZE	.04	.34	.28	.35	.21	-.06	.45	.17	-.12	.51	1	.	.	.	.	.
CASH	-.09	-.14	-.07	-.18	-.07	.15	.08	.02	.06	-.20	-.14	1	.	.	.	.
STOCK	.04	-.16	-.17	-.13	-.14	-.23	-.22	-.08	.02	.43	.16	-.33	1	.	.	.
CBA	-.04	-.17	-.11	-.21	-.09	-.01	-.02	-.03	.00	.01	-.06	.10	.07	1	.	.
GENBOARD_AQ	.03	.46	.36	.42	.38	.03	.12	-.03	.02	-.03	.14	-.16	-.04	-.12	1	.
COVID	.00	.03	.03	-.01	.07	.02	-.11	-.09	.09	.00	-.10	-.04	.07	.05	.16	1

Table 11 represents the correlation matrix of all of the included variables.

Appendix H**Table 12: GVIF table first model, including ESG**

	GVIF	Df	GVIF^{1/(2*Df)}	Interacts With
ESG	3.032795e+00	3	1.203115	COVID
ROA_AQ	1.443223e+00	1	1.201342	--
SIZE_AQ	3.848654e+00	1	1.961799	--
LEV_AQ	1.247726e+00	1	1.117016	--
TOBQ_AQ	1.534962e+00	1	1.238936	--
RELSIZE	2.795975e+00	1	1.672117	--
DEALSIZE	3.461846e+00	1	1.860604	--
CASH	1.353223e+00	1	1.163281	--
STOCK	1.496934e+00	1	1.223492	--
CBA	1.247178e+00	1	1.116771	--
GENBOARD_AQ	1.641100e+00	1	1.281054	--
COVID	3.032795e+00	3	1.203115	ESG

Table 12 represents the GVIF results of the first model, including independent variable ESG

Table 13: GVIF table second model, including pillar scores

	GVIF	Df	GVIF^{1/(2*Df)}	Interacts With
E_Score	6.848509e+01	3	2.022706	COVID
S_Score	7.200423e+01	3	2.039669	COVID
G_Score	1.066181e+01	3	1.483560	COVID
ROA_AQ	1.469567e+00	1	1.212257	--
SIZE_AQ	3.941273e+00	1	1.985264	--
LEV_AQ	1.248146e+00	1	1.117204	--
TOBQ_AQ	1.571582e+00	1	1.253628	--
RELSIZE	2.806068e+00	1	1.675132	--
DEALSIZE	3.467154e+00	1	1.862029	--
CASH	1.354919e+00	1	1.164010	--
STOCK	1.506443e+00	1	1.227372	--
CBA	1.249348e+00	1	1.117742	--
GENBOARD_AQ	1.685315e+00	1	1.298197	--
COVID	5.276136e+00	7	1.126144	E_Score, S_Score, G_Score

Table 13 represents the GVIF results of the second model, including the pillar scores as independent variables.

Appendix I**Table 14: OLS regression results cumulative abnormal returns (-1 , +1) on ESG, including country and industry dummies**

	<i>Dependent variable:</i> ----- CAR
<i>ESG</i>	-0.012*** (0.004)
<i>ROA_AQ</i>	0.010 (0.012)
<i>SIZE_AQ</i>	-0.422*** (0.061)
<i>LEV_AQ</i>	0.418 (0.368)
<i>TOBQ_AQ</i>	-0.242*** (0.065)
<i>RELSIZE</i>	1.424 (0.985)
<i>DEALSIZE</i>	0.210*** (0.048)
<i>CASH</i>	-0.334*** (0.125)
<i>STOCK</i>	-0.627*** (0.219)
<i>CBA</i>	-0.081 (0.126)
<i>GENBOARD_AQ</i>	0.001 (0.006)
<i>COVID</i>	-0.392 (0.319)
<i>INDUSTRY_Agriculture, Forestry and Fishing</i>	-1.935*** (0.481)
<i>INDUSTRY_Construction</i>	0.254 (0.505)
<i>INDUSTRY_Manufacturing</i>	0.288 (0.331)

<i>INDUSTRY_Mining</i>	-0.116 (0.458)
<i>INDUSTRY_Public Administration</i>	-1.683 (1.788)
<i>INDUSTRY_Retail trade</i>	1.023** (0.417)
<i>INDUSTRY_Services</i>	0.403 (0.345)
<i>INDUSTRY_Transportation, Communications, Electric, Gas and Sanitary service</i>	-0.157 (0.361)
<i>COUNTRY_Austria</i>	-1.534 (1.395)
<i>COUNTRY_Belgium</i>	-0.340 (1.202)
<i>COUNTRY_China</i>	-0.112 (1.075)
<i>COUNTRY_Cyprus</i>	-2.280 (1.493)
<i>COUNTRY_Denmark</i>	0.791 (1.209)
<i>COUNTRY_Finland</i>	1.242 (1.141)
<i>COUNTRY_France</i>	0.523 (1.099)
<i>COUNTRY_Germany</i>	0.084 (1.114)
<i>COUNTRY_Gibraltar</i>	0.335 (2.868)
<i>COUNTRY_Greece</i>	0.169 (2.608)
<i>COUNTRY_Hungary</i>	1.952 (1.761)
<i>COUNTRY_Ireland</i>	0.751 (1.123)
<i>COUNTRY_Italy</i>	0.455 (1.125)
<i>COUNTRY_Luxembourg</i>	0.767 (1.314)
<i>COUNTRY_Malta</i>	0.609 (1.429)

<i>COUNTRY_Netherlands</i>	-0.462 (1.154)
<i>COUNTRY_Norway</i>	1.229 (1.233)
<i>COUNTRY_Poland</i>	-1.748 (1.180)
<i>COUNTRY_Portugal</i>	-1.536 (1.367)
<i>COUNTRY_Spain</i>	0.438 (1.113)
<i>COUNTRY_Sweden</i>	1.172 (1.116)
<i>COUNTRY_Switzerland</i>	-0.003 (1.106)
<i>COUNTRY_United Kingdom</i>	0.602 (1.073)
<i>COUNTRY_United States of America</i>	-0.026 (1.065)
<i>ESG:COVID</i>	0.009* (0.005)
<i>Constant</i>	6.705*** (1.509)

<i>Observations</i>	5,718
<i>R2</i>	0.072
<i>Adjusted R2</i>	0.065
<i>Residual Std. Error</i>	4.219 (df = 5672)
<i>F Statistic</i>	9.792*** (df = 45; 5672)
<i>Note:</i>	* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 14 represents the OLS regression with robust standard errors of CAR (-1, +1) on ESG. Industry and country dummy variables are included in this table.

Appendix J**Table 15: OLS regression results of cumulative abnormal returns (-1 , +1) on ESG pillar scores, including country and industry dummies**

<i>Dependent variable:</i>	

<i>E_Score</i>	0.004 (0.004)
<i>S_Score</i>	-0.016*** (0.005)
<i>G_Score</i>	-0.001 (0.003)
<i>ROA_AQ</i>	0.013 (0.012)
<i>SIZE_AQ</i>	-0.400*** (0.061)
<i>LEV_AQ</i>	0.419 (0.368)
<i>TOBQ_AQ</i>	-0.237*** (0.066)
<i>RELSIZE</i>	1.486 (0.983)
<i>DEALSIZE</i>	0.206*** (0.048)
<i>CASH</i>	-0.346*** (0.125)
<i>STOCK</i>	-0.667*** (0.220)
<i>CBA</i>	-0.095 (0.126)
<i>GENBOARD_AQ</i>	-0.001 (0.006)
<i>COVID</i>	-0.683* (0.359)
<i>INDUSTRY_Agriculture, Forestry and Fishing</i>	-1.856*** (0.479)
<i>INDUSTRY_Construction</i>	0.244 (0.505)

<i>INDUSTRY_Manufacturing</i>	0.320 (0.332)
<i>INDUSTRY_Mining</i>	-0.158 (0.460)
<i>INDUSTRY_Public Administration</i>	-1.746 (1.810)
<i>INDUSTRY_Retail trade</i>	1.038** (0.419)
<i>INDUSTRY_Services</i>	0.405 (0.345)
<i>INDUSTRY_Transportation, Communications, Electric, Gas and Sanitary service</i>	-0.147 (0.362)
<i>COUNTRY_Austria</i>	-1.386 (1.400)
<i>COUNTRY_Belgium</i>	-0.287 (1.204)
<i>COUNTRY_China</i>	-0.211 (1.078)
<i>COUNTRY_Cyprus</i>	-2.452* (1.353)
<i>COUNTRY_Denmark</i>	0.801 (1.205)
<i>COUNTRY_Finland</i>	1.246 (1.143)
<i>COUNTRY_France</i>	0.596 (1.101)
<i>COUNTRY_Germany</i>	0.067 (1.116)
<i>COUNTRY_Gibraltar</i>	0.393 (2.868)
<i>COUNTRY_Greece</i>	0.184 (2.636)
<i>COUNTRY_Hungary</i>	1.968 (1.759)
<i>COUNTRY_Ireland</i>	0.751 (1.124)
<i>COUNTRY_Italy</i>	0.451 (1.125)

<i>COUNTRY_Luxembourg</i>	0.795 (1.315)
<i>COUNTRY_Malta</i>	0.502 (1.415)
<i>COUNTRY_Netherlands</i>	-0.441 (1.153)
<i>COUNTRY_Norway</i>	1.227 (1.237)
<i>COUNTRY_Poland</i>	-1.762 (1.181)
<i>COUNTRY_Portugal</i>	-1.429 (1.352)
<i>COUNTRY_Spain</i>	0.551 (1.114)
<i>COUNTRY_Sweden</i>	1.168 (1.116)
<i>COUNTRY_Switzerland</i>	-0.019 (1.106)
<i>COUNTRY_United Kingdom</i>	0.634 (1.074)
<i>COUNTRY_United States of America</i>	-0.063 (1.066)
<i>E_Score:COVID</i>	-0.021*** (0.007)
<i>S_Score:COVID</i>	0.026*** (0.007)
<i>G_Score:COVID</i>	0.006 (0.007)
<i>Constant</i>	6.442*** (1.539)

<i>Observations</i>	5,718
<i>R2</i>	0.075
<i>Adjusted R2</i>	0.067
<i>Residual Std. Error</i>	4.215 (df = 5668)
<i>F Statistic</i>	9.364*** (df = 49; 5668)
<i>Note:</i>	* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 15 represents the OLS regression with robust standard errors of CAR (-1, +1) on ESG pillar scores). Industry and country dummy variables are included in this table.

Appendix K**Table 16: Robustness check 1, OLS regressions of three and eleven day CARs on ESG and pillar scores.**

	Dependent variable:			
	(1) 5-day CAR	(2) 11-day CAR	(3) 5-day CAR	(4) 11-day CAR
<i>ESG</i>	-0.008 (0.007)	-0.012 (0.008)		
<i>E_Score</i>			0.010* (0.006)	0.008 (0.008)
<i>S_Score</i>			-0.020*** (0.007)	-0.021** (0.009)
<i>G_Score</i>			-0.001 (0.005)	-0.004 (0.007)
<i>ROA_AQ</i>	0.022 (0.014)	0.041** (0.019)	0.022 (0.015)	0.045** (0.019)
<i>SIZE_AQ</i>	-0.663*** (0.086)	-0.650*** (0.110)	-0.642*** (0.088)	-0.627*** (0.112)
<i>LEV_AQ</i>	0.596 (0.562)	0.324 (0.733)	0.575 (0.562)	0.293 (0.733)
<i>TOBQ_AQ</i>	-0.237*** (0.074)	-0.338*** (0.098)	-0.224*** (0.075)	-0.342*** (0.099)
<i>RELSIZE</i>	0.186 (0.890)	0.563 (1.034)	0.207 (0.891)	0.556 (1.035)
<i>DEALSIZE</i>	0.388*** (0.067)	0.394*** (0.086)	0.387*** (0.067)	0.390*** (0.086)
<i>CASH</i>	-0.513*** (0.177)	-0.233 (0.237)	-0.525*** (0.177)	-0.264 (0.237)
<i>STOCK</i>	-0.709** (0.338)	-1.012** (0.427)	-0.760** (0.340)	-1.082** (0.429)
<i>CBA</i>	-0.090 (0.189)	0.022 (0.246)	-0.106 (0.188)	-0.001 (0.246)
<i>GENBOARD_AQ</i>	-0.015* (0.009)	-0.007 (0.011)	-0.016* (0.009)	-0.006 (0.011)
<i>COVID</i>	-0.292 (0.511)	-0.617 (0.670)	-0.643 (0.582)	-0.830 (0.757)

<i>INDUSTRY_Agriculture, Forestry and Fishing</i>	-2.681*** (0.740)	-4.477*** (0.919)	-2.624*** (0.743)	-4.428*** (0.924)
<i>INDUSTRY_Construction</i>	-0.129 (0.703)	1.040 (0.906)	-0.164 (0.704)	1.049 (0.909)
<i>INDUSTRY_Manufacturing</i>	0.114 (0.473)	0.302 (0.601)	0.146 (0.476)	0.352 (0.602)
<i>INDUSTRY_Mining</i>	0.427 (0.662)	0.363 (0.891)	0.344 (0.663)	0.375 (0.888)
<i>INDUSTRY_Public Administration</i>	-2.104 (1.693)	-3.952** (1.667)	-2.056 (1.652)	-4.080** (1.597)
<i>INDUSTRY_Retail trade</i>	0.955 (0.592)	1.478* (0.774)	0.986* (0.595)	1.537** (0.777)
<i>INDUSTRY_Services</i>	0.077 (0.492)	0.613 (0.631)	0.130 (0.495)	0.586 (0.634)
<i>INDUSTRY_Transportation, Communications, Electric, Gas and Sanitary service</i>	-1.038** (0.529)	-1.205* (0.683)	-1.023* (0.530)	-1.187* (0.683)
<i>COUNTRY_Austria</i>	-2.446 (1.961)	-0.425 (1.966)	-2.351 (1.966)	-0.347 (1.979)
<i>COUNTRY_Belgium</i>	0.572 (1.514)	0.957 (1.751)	0.602 (1.512)	0.907 (1.771)
<i>COUNTRY_China</i>	0.468 (1.340)	0.315 (1.577)	0.261 (1.350)	0.213 (1.605)
<i>COUNTRY_Cyprus</i>	1.605 (2.938)	-3.502 (2.370)	1.450 (2.791)	-3.185 (2.297)
<i>COUNTRY_Denmark</i>	1.552 (1.477)	1.077 (1.791)	1.553 (1.476)	1.056 (1.805)
<i>COUNTRY_Finland</i>	2.152 (1.431)	1.902 (1.717)	2.106 (1.433)	1.793 (1.734)
<i>COUNTRY_France</i>	1.647 (1.374)	2.049 (1.617)	1.669 (1.375)	2.044 (1.634)
<i>COUNTRY_Germany</i>	1.516 (1.396)	1.013 (1.658)	1.503 (1.397)	1.027 (1.676)
<i>COUNTRY_Gibraltar</i>	-0.169 (3.843)	-1.351 (4.197)	-0.144 (3.844)	-1.239 (4.204)
<i>COUNTRY_Greece</i>	0.236 (2.577)	0.066 (2.289)	0.250 (2.573)	0.157 (2.289)
<i>COUNTRY_Hungary</i>	3.308 (3.329)	2.186 (2.475)	3.304 (3.323)	2.139 (2.509)

<i>COUNTRY_Ireland</i>	1.528 (1.380)	0.857 (1.632)	1.486 (1.381)	0.786 (1.648)
<i>COUNTRY_Italy</i>	2.010 (1.408)	1.987 (1.664)	1.999 (1.408)	1.938 (1.681)
<i>COUNTRY_Luxembourg</i>	2.176 (1.592)	2.321 (2.089)	2.260 (1.590)	2.389 (2.112)
<i>COUNTRY_Malta</i>	1.183 (2.081)	0.638 (2.910)	1.053 (2.047)	0.661 (2.873)
<i>COUNTRY_Netherlands</i>	0.303 (1.518)	0.757 (1.779)	0.332 (1.519)	0.761 (1.791)
<i>COUNTRY_Norway</i>	2.260 (1.631)	2.860 (2.002)	2.264 (1.634)	2.844 (2.014)
<i>COUNTRY_Poland</i>	-1.300 (1.647)	-1.479 (1.797)	-1.340 (1.648)	-1.498 (1.814)
<i>COUNTRY_Portugal</i>	-1.342 (1.692)	-1.362 (2.725)	-1.258 (1.676)	-1.239 (2.706)
<i>COUNTRY_Spain</i>	1.768 (1.379)	1.951 (1.655)	1.876 (1.381)	2.007 (1.673)
<i>COUNTRY_Sweden</i>	2.306 (1.408)	2.330 (1.661)	2.311 (1.407)	2.296 (1.676)
<i>COUNTRY_Switzerland</i>	0.451 (1.377)	0.763 (1.594)	0.442 (1.377)	0.780 (1.610)
<i>COUNTRY_United Kingdom</i>	1.375 (1.329)	1.553 (1.560)	1.375 (1.330)	1.619 (1.579)
<i>COUNTRY_United States of America</i>	0.508 (1.317)	0.849 (1.538)	0.482 (1.318)	0.833 (1.556)
<i>ESG:COVID</i>	0.009 (0.008)	0.008 (0.011)		
<i>E_Score:COVID</i>			-0.018* (0.010)	-0.029** (0.014)
<i>S_Score:COVID</i>			0.023** (0.011)	0.043*** (0.015)
<i>G_Score:COVID</i>			0.006 (0.010)	-0.006 (0.014)
<i>Constant</i>	8.481*** (2.046)	7.639*** (2.537)	8.387*** (2.085)	7.564*** (2.595)
<i>Observations</i>	5,718	5718	5718	5718
<i>R2</i>	0.057	0.049	0.058	0.050
<i>Adjusted R2</i>	0.049	0.042	0.050	0.042

<i>Residual Std. Error</i>	6.310 (df = 5672)	8.204 (df = 5672)	6.308 (df = 5668)	8.199 (df = 5668)
<i>F Statistic</i>	7.597*** (df = 45; 5672)	6.440*** (df = 45; 5672)	7.145*** (df = 49; 5668)	6.129*** (df = 49; 5668)

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 16 represents the OLS regressions with robust standard errors of CAR (-2, +2), and CAR (-5, +5) on ESG and ESG pillar scores. Industry and country dummy variables are included in this table. Model 1 represents the OLS regression of 5 day CARs on ESG. Model 2 represents the OLS regression of 11 day CARs on ESG. Model 3 represents the OLS regression of 5 day CARs on ESG Pillar scores. Model 4 represents the OLS regression of 11 day CARs on ESG Pillar Scores. All model are regressed with robust standard errors.

Appendix L**Table 17: Robustness check 2: OLS regressions of cumulative abnormal returns (-1 , +1) on ESG and pillar scores, pre-Covid sample**

	Dependent variable:	
	(1)	(2)
	----- CAR	
<i>ESG</i>	-0.010 (0.006)	
<i>E_Score</i>		0.005 (0.005)
<i>S_Score</i>		-0.017** (0.007)
<i>G_Score</i>		-0.001 (0.005)
<i>ROA_AQ</i>	0.009 (0.017)	0.006 (0.017)
<i>SIZE_AQ</i>	-0.476*** (0.092)	-0.458*** (0.092)
<i>LEV_AQ</i>	0.417 (0.552)	0.395 (0.551)
<i>TOBQ_AQ</i>	-0.121 (0.088)	-0.094 (0.089)
<i>RELSIZE</i>	0.734 (0.993)	0.765 (0.992)
<i>DEALSIZE</i>	0.258*** (0.071)	0.257*** (0.070)
<i>CASH</i>	-0.393** (0.185)	-0.398** (0.184)
<i>STOCK</i>	-0.738** (0.373)	-0.775** (0.375)
<i>CBA</i>	-0.306 (0.207)	-0.310 (0.207)
<i>GENBOARD_AQ</i>	-0.011 (0.009)	-0.011 (0.009)
<i>INDUSTRY_Agriculture, Forestry and Fishing</i>	-0.144 (0.980)	-0.155 (0.980)

<i>INDUSTRY_Construction</i>	0.397 (0.759)	0.388 (0.759)
<i>INDUSTRY_Manufacturing</i>	0.473 (0.522)	0.529 (0.528)
<i>INDUSTRY_Mining</i>	0.664 (0.741)	0.606 (0.745)
<i>INDUSTRY_Public Administration</i>	-6.618*** (0.588)	-6.274*** (0.603)
<i>INDUSTRY_Retail trade`</i>	1.124* (0.645)	1.198* (0.647)
<i>INDUSTRY_Services</i>	0.383 (0.540)	0.488 (0.543)
<i>INDUSTRY_Transportation, Communications, Electric, Gas and Sanitary service</i>	-0.388 (0.576)	-0.340 (0.575)
<i>COUNTRY_Austria</i>	-2.905 (1.911)	-2.807 (1.923)
<i>COUNTRY_Belgium</i>	-0.300 (1.248)	-0.297 (1.253)
<i>COUNTRY_China</i>	-1.221 (1.112)	-1.514 (1.136)
<i>COUNTRY_Denmark</i>	-0.372 (1.419)	-0.369 (1.421)
<i>COUNTRY_Finland</i>	0.362 (1.216)	0.297 (1.225)
<i>COUNTRY_France</i>	0.180 (1.152)	0.179 (1.161)
<i>COUNTRY_Germany</i>	-0.313 (1.157)	-0.319 (1.165)
<i>COUNTRY_Gibraltar</i>	-0.670 (2.872)	-0.683 (2.875)
<i>COUNTRY_Greece</i>	-0.521 (2.590)	-0.518 (2.600)
<i>COUNTRY_Hungary</i>	1.442 (2.057)	1.439 (2.047)
<i>COUNTRY_Ireland</i>	-0.341 (1.181)	-0.406 (1.189)
<i>COUNTRY_Italy</i>	-0.030 (1.141)	-0.059 (1.146)

<i>COUNTRY_Luxembourg</i>	-0.276 (1.328)	-0.171 (1.341)
<i>COUNTRY_Malta</i>	-0.908 (1.724)	-1.069 (1.704)
<i>COUNTRY_Netherlands</i>	-1.504 (1.323)	-1.476 (1.330)
<i>COUNTRY_Norway</i>	-0.346 (1.232)	-0.328 (1.242)
<i>COUNTRY_Poland</i>	-2.562* (1.321)	-2.595* (1.326)
<i>COUNTRY_Portugal</i>	-2.431 (1.831)	-2.322 (1.806)
<i>COUNTRY_Spain</i>	0.042 (1.151)	0.121 (1.160)
<i>COUNTRY_Sweden</i>	0.030 (1.197)	0.097 (1.204)
<i>COUNTRY_Switzerland</i>	-1.094 (1.131)	-1.102 (1.138)
<i>COUNTRY_United Kingdom</i>	-0.279 (1.089)	-0.318 (1.099)
<i>COUNTRY_United States of America</i>	-1.082 (1.073)	-1.129 (1.082)
<i>Constant</i>	7.950*** (1.962)	7.798*** (2.014)
<i>Observations</i>	3,655	3655
<i>R2</i>	0.042	0.043
<i>Adjusted R2</i>	0.031	0.032
<i>Residual Std. Error</i>	5.258 (df = 3612)	5.256 (df = 3610)
<i>F Statistic</i>	3.760*** (df = 42; 3612)	3.707*** (df = 44; 3610)
<i>Note:</i>	* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$	

Table 17 represents the OLS regressions with robust standard errors of CAR (-1, +1) on ESG and ESG pillar scores for the pre-Covid sample. The pre-Covid sample consists of all deals announced between 01-01-2015 and 11-03-2020. Industry and country dummy variables are included in this table. Model 1 represents the OLS regression of CAR on ESG. Model 2 represents the OLS regression of CAR on ESG Pillar scores.

Appendix M**Table 18: Robustness check 2: OLS regressions of cumulative abnormal returns (-1 , +1) on ESG and pillar scores, Covid sample**

	<i>Dependent variable:</i>	
	(1)	(2)
	----- CAR	
<i>ESG</i>	-0.019* (0.010)	
<i>E_Score</i>		-0.017* (0.009)
<i>S_Score</i>		0.002 (0.010)
<i>G_Score</i>		-0.003 (0.008)
<i>ROA_AQ</i>	0.006 (0.020)	0.008 (0.020)
<i>SIZE_AQ</i>	-0.544*** (0.142)	-0.523*** (0.143)
<i>LEV_AQ</i>	0.119 (1.010)	0.164 (1.013)
<i>TOBQ_AQ</i>	-0.306*** (0.086)	-0.313*** (0.087)
<i>RELSIZE</i>	-0.363 (1.505)	-0.396 (1.506)
<i>DEALSIZE</i>	0.437*** (0.107)	0.433*** (0.107)
<i>CASH</i>	-0.651** (0.272)	-0.661** (0.275)
<i>STOCK</i>	-0.262 (0.506)	-0.265 (0.506)
<i>CBA</i>	-0.096 (0.283)	-0.086 (0.283)
<i>GENBOARD_AQ</i>	0.002 (0.013)	0.001 (0.013)
<i>INDUSTRY_Agriculture, Forestry and Fishing</i>	-2.728*** (0.872)	-2.708*** (0.869)

<i>INDUSTRY_Construction</i>	1.246 (1.113)	1.276 (1.115)
<i>INDUSTRY_Manufacturing</i>	0.769 (0.690)	0.804 (0.688)
<i>INDUSTRY_Mining</i>	-0.868 (0.950)	-0.799 (0.957)
<i>INDUSTRY_Public Administration</i>	-0.900 (1.845)	-0.990 (1.908)
<i>INDUSTRY_Retail trade</i>	1.302 (0.908)	1.256 (0.912)
<i>INDUSTRY_Services</i>	0.890 (0.723)	0.763 (0.720)
<i>INDUSTRY_Transportation, Communications, Electric, Gas and Sanitary service</i>	-0.145 (0.780)	-0.169 (0.781)
<i>COUNTRY_Austria</i>	2.152 (1.541)	2.291 (1.581)
<i>COUNTRY_Belgium</i>	1.801 (1.814)	1.895 (1.847)
<i>COUNTRY_China</i>	4.295*** (1.389)	4.408*** (1.417)
<i>COUNTRY_Cyprus</i>	2.977** (1.490)	2.994** (1.509)
<i>COUNTRY_Denmark</i>	6.036*** (1.645)	6.059*** (1.651)
<i>COUNTRY_Finland</i>	6.515*** (1.661)	6.615*** (1.674)
<i>COUNTRY_France</i>	4.566*** (1.431)	4.657*** (1.449)
<i>COUNTRY_Germany</i>	4.921*** (1.685)	4.870*** (1.709)
<i>COUNTRY_Ireland</i>	5.261*** (1.570)	5.324*** (1.582)
<i>COUNTRY_Italy</i>	5.477*** (1.597)	5.495*** (1.612)
<i>COUNTRY_Luxembourg</i>	7.625** (3.477)	7.499** (3.490)
<i>COUNTRY_Malta</i>	6.029*** (1.417)	6.068*** (1.452)

<i>COUNTRY_Netherlands</i>	4.143*** (1.580)	4.161*** (1.593)
<i>COUNTRY_Norway</i>	7.740*** (2.329)	7.699*** (2.355)
<i>COUNTRY_Poland</i>	4.047** (1.803)	3.978** (1.845)
<i>COUNTRY_Portugal</i>	3.689** (1.469)	3.826*** (1.483)
<i>COUNTRY_Spain</i>	5.145*** (1.524)	5.241*** (1.545)
<i>COUNTRY_Sweden</i>	6.158*** (1.458)	6.177*** (1.474)
<i>COUNTRY_Switzerland</i>	4.191*** (1.494)	4.173*** (1.515)
<i>COUNTRY_United Kingdom</i>	5.233*** (1.379)	5.364*** (1.400)
<i>COUNTRY_United States of America</i>	4.785*** (1.354)	4.748*** (1.375)
<i>Constant</i>	1.305 (2.704)	0.753 (2.771)
<i>Observations</i>	2,063	2063
<i>R2</i>	0.108	0.109
<i>Adjusted R2</i>	0.090	0.090
<i>Residual Std. Error</i>	5.879 (df = 2022)	5.878 (df = 2020)
<i>F Statistic</i>	6.114*** (df = 40; 2022)	5.876*** (df = 42; 2020)
<i>Note:</i>	* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$	

Table 18 represents the OLS regressions with robust standard errors of CAR (-1, +1) on ESG and ESG pillar scores for the Covid sample. The Covid sample consists of all deals announced between 11-03-2020 and 31-12-2022. Industry and country dummy variables are included in this table. Model 1 represents the OLS regression of CAR on ESG. Model 2 represents the OLS regression of CAR on ESG Pillar scores.

Appendix N

Table 19: correlation table of model with other control variables

	CA R	ES G	E_ Score	S_ Score	G_ Score	RO E_AQ	SIZ E_AQ	TO BQ_AQ	CU RRENT _AQ	CA SHRATI O_AQ	DE _AQ	RE LSIZE	DE ALSIZE	CA SH	ST OCK	CB A	CO VID
CA R	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ES G	-05	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
E_ Score	-08	.87	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
S_ Score	-04	.92	.75	1	.	.	.	.	.	.	.	.	.	.	.	.	.
G_ Score	-03	.72	.48	.47	1	.	.	.	.	.	.	.	.	.	.	.	.
RO E_AQ	-08	.14	.19	.08	.11	1	.	.	.	.	.	.	.	.	.	.	.
SIZ E_AQ	-15	.54	.58	.47	.35	.20	1	.	.	.	.	.	.	.	.	.	.
TO BQ_AQ	-02	-06	-11	-02	-08	.14	-25	1	.	.	.	.	.	.	.	.	.
CU RRENT _AQ	.04	-17	-24	-12	-09	-20	-28	.23	1	.	.	.	.	.	.	.	.
CA SHRATI O_AQ	.01	-20	-21	-17	-14	-12	-25	.30	.49	1	.	.	.	.	.	.	.
DE _AQ	-03	.01	.04	-02	.03	.07	.24	-27	-18	-29	1	.	.	.	.	.	.
RE LSIZE	.10	-13	-18	-08	-11	-13	-22	.07	.20	.12	-06	1	.	.	.	.	.
DE ALSIZE	.04	.34	.28	.35	.21	-01	.45	-11	-02	-14	.11	.44	1	.	.	.	.
CA SH	-09	-14	-07	-18	-07	.12	.08	.05	-05	.07	.07	-17	-14	1	.	.	.
ST OCK	.06	-16	-17	-13	-14	-22	-22	.02	.13	.11	-08	.42	.16	-33	1	.	.
CB A	-04	-17	-11	-21	-09	-02	-02	.00	-03	.07	.00	.01	-06	.10	.07	1	.
CO VID	.02	.03	.03	-01	.07	.02	-11	-10	.02	.11	-06	.00	-10	-04	.07	.05	1

Table 19 represents the correlation matrix of all of the included variables in the model with the other control variables..

Appendix O**Table 20: Robustness check 3: OLS regressions of cumulative abnormal returns (-1 , +1) on ESG and pillar scores, other control variables**

	<i>Dependent variable:</i>	
	----- CAR	
	(1)	(2)
ESG	-0.013** (0.006)	
E_Score		0.006 (0.005)
S_Score		-0.020*** (0.006)
G_Score		-0.002 (0.004)
ROE_AQ	-0.001 (0.004)	-0.001 (0.004)
SIZE_AQ	-0.543*** (0.078)	-0.522*** (0.078)
TOBQ_AQ	-0.196*** (0.062)	-0.186*** (0.063)
CURRENT_AQ	-0.077 (0.087)	-0.080 (0.087)
CASHRATIO_AQ	0.394 (1.060)	0.248 (1.067)
DE_AQ	0.180 (0.394)	0.180 (0.394)
RELSIZE	0.405 (0.831)	0.426 (0.833)
DEALSIZE	0.321*** (0.058)	0.318*** (0.058)
CASH	-0.436*** (0.153)	-0.449*** (0.154)
STOCK	-0.563* (0.296)	-0.612** (0.298)
CBA	-0.159 (0.164)	-0.178 (0.164)

<i>COVID</i>	0.165 (0.433)	-0.204 (0.486)
<i>INDUSTRY_Agriculture, Forestry and Fishing</i>	-1.782*** (0.609)	-1.696*** (0.609)
<i>INDUSTRY_Construction</i>	0.802 (0.650)	0.797 (0.650)
<i>INDUSTRY_Manufacturing</i>	0.571 (0.415)	0.608 (0.417)
<i>INDUSTRY_Mining</i>	0.280 (0.599)	0.231 (0.601)
<i>INDUSTRY_Public Administration</i>	-1.969 (1.744)	-2.008 (1.746)
<i>INDUSTRY_Retail trade</i>	1.242** (0.523)	1.256** (0.525)
<i>INDUSTRY_Services</i>	0.535 (0.434)	0.537 (0.435)
<i>INDUSTRY_Transportation, Communications, Electric, Gas and Sanitary service</i>	-0.257 (0.461)	-0.252 (0.462)
<i>COUNTRY_Austria</i>	-2.197 (1.523)	-2.083 (1.531)
<i>COUNTRY_Belgium</i>	-0.304 (1.213)	-0.314 (1.215)
<i>COUNTRY_China</i>	-0.435 (1.084)	-0.602 (1.092)
<i>COUNTRY_Cyprus</i>	-2.641* (1.434)	-2.794** (1.288)
<i>COUNTRY_Denmark</i>	0.969 (1.259)	0.918 (1.254)
<i>COUNTRY_Finland</i>	1.299 (1.170)	1.213 (1.173)
<i>COUNTRY_France</i>	0.554 (1.094)	0.540 (1.096)
<i>COUNTRY_Germany</i>	0.371 (1.146)	0.301 (1.149)
<i>COUNTRY_Gibraltar</i>	0.081 (2.868)	0.113 (2.869)
<i>COUNTRY_Greece</i>	0.224 (2.576)	0.228 (2.604)

<i>COUNTRY_Hungary</i>	2.251 (2.001)	2.195 (1.990)
<i>COUNTRY_Ireland</i>	0.575 (1.142)	0.510 (1.144)
<i>COUNTRY_Italy</i>	0.683 (1.146)	0.609 (1.146)
<i>COUNTRY_Luxembourg</i>	1.108 (1.456)	1.108 (1.459)
<i>COUNTRY_Malta</i>	0.369 (1.423)	0.206 (1.410)
<i>COUNTRY_Netherlands</i>	-0.569 (1.213)	-0.598 (1.214)
<i>COUNTRY_Norway</i>	1.353 (1.328)	1.269 (1.334)
<i>COUNTRY_Poland</i>	-1.576 (1.304)	-1.640 (1.303)
<i>COUNTRY_Portugal</i>	-1.442 (1.435)	-1.368 (1.419)
<i>COUNTRY_Spain</i>	0.765 (1.129)	0.839 (1.131)
<i>COUNTRY_Sweden</i>	1.152 (1.127)	1.072 (1.127)
<i>COUNTRY_Switzerland</i>	-0.255 (1.114)	-0.306 (1.115)
<i>COUNTRY_United Kingdom</i>	0.466 (1.075)	0.445 (1.077)
<i>COUNTRY_United States of America</i>	-0.118 (1.068)	-0.201 (1.070)
<i>ESG:COVID</i>	0.002 (0.007)	
<i>E_Score:COVID</i>		-0.027*** (0.009)
<i>S_Score:COVID</i>		0.027*** (0.009)
<i>G_Score:COVID</i>		0.004 (0.008)
<i>Constant</i>	7.588*** (1.790)	7.471*** (1.813)

<i>Observations</i>	5,718	5718
<i>R2</i>	0.062	0.064
<i>Adjusted R2</i>	0.054	0.056
<i>Residual Std. Error</i>	5.472 (df = 5671)	5.467 (df = 5667)
<i>F Statistic</i>	8.148*** (df = 46; 5671)	7.793*** (df = 50; 5667)
<i>Note:</i>	* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$	

Table 20 represents the OLS regressions with robust standard errors of CAR (-1, +1) on ESG and ESG pillar scores including different control variables than the main regressions. Industry and country dummy variables are included in this table. Model 1 represents the OLS regression of CAR on ESG. Model 2 represents the OLS regression of CAR on ESG Pillar scores.