ARE ACQUIRERS WILLING TO PAY MORE FOR STRONG ESG PERFORMANCE?

A STUDY ON THE IMPACT OF ENVIRONMENTAL, SOCIAL AND GOVERNANCE PERFORMANCE ON EUROPEAN M&A PREMIUMS AND ON ITS RELATIVE IMPORTANCE FOR TWO ACQUIRER TYPES

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Abstract:

We examine whether environmental, social and governance (ESG) performance impacts European companies' deal premiums in 171 control bids during the past 10 years (2010-2019). Our sample consists of bids where an acquirer is seeking a majority stake of a public target firm for a transaction value exceeding USD 100 million. We test if ESG factors impact bid premiums by conducting a regression on the premium offered and the target firm's Refinitiv ESG score (range 0-100). Our findings reveal that the highest ESG overall score is associated with a 25.4 percentage point higher bid premium. We analyze each dimension of ESG separately and find that all factors are significant and positively associated with the bid premium, even after controlling for year, country and industry effects. In addition, we examine the differences in willingness to pay between two acquirer types and find that financial buyers on average pay less for firms with strong ESG performance in comparison to strategic buyers. This leads to the finding that ESG characteristics matter more to strategic buyers.

Keywords:

Mergers and Acquisitions, Takeover premium, ESG, CSR, Sustainability

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1. Introduction and Background

Mergers and acquisitions ("M&A") impose significant financial and reputational risks for an acquiring company. Numerous transactions in the past have failed due to material environmental, social and governance ("ESG") related issues overlooked during the due diligence phase (Bain & Company, Inc., 2020). To reduce this risk, acquirers can integrate ESG factors into their analysis when conducting due diligence on a target company. ESG performance refers to a company's overall performance, having considered all key issues that can affect the company's operations (PRI, 2018). A related concept is Corporate Social Responsibility ("CSR"), companies' voluntary integration of social and environmental aspects into their business model and into stakeholder interactions (Cheng et al., 2014). We acknowledge that academia has used different terms in the past when referring to the same broader idea of sustainability in the business context, hence, in this paper we use the terms CSR and ESG performance interchangeably.

Lack of responsible practices or weak ESG performance in a target company should be a critical concern to most M&A acquirers because it can at worst lead to increased costs, issues in integration or to the cancellation of the deal. From our sample of European takeover bids that took place between 2010 and 2019, we were able to identify several cases where ESG factors could have played an important role in the outcome of the transaction. A case in point is the merger between Portugal Telecom (the target) and Brazil's Oi (the acquirer) in 2014 where, post-bid announcement, news about misleading and inaccurate disclosures regarding the target's investments surfaced. Portugal Telecom had invested, without full board consultation, EUR 897 million in short-term commercial paper issued by a company[1] controlled by the firm's major shareholder. The investments were done after the target's assets were valued by the acquirer. Because of these investments, Portugal Telecom failed to disclose the nature and amount of credit risk it was exposed to while in an active merger process. (U.S. Securities and Exchange Commission, 2016). That this type of "self-dealing" transaction[2] (Johnson et al., 2000) could take place within the company without it surfacing could be a sign of the target's weak governance or even weak corporate culture.

To reduce the risk of a transaction failing, as in the case of Portugal Telecom, acquirers should closely assess a target company's ESG performance and CSR practices, as they could be associated with lower reputational risk and less information asymmetry (Cui et al., 2018) in merger negotiations. Moreover, some papers have suggested that CSR engagement represents a source of strategic assets that can improve a company's long-term competitiveness vis à vis competitors (Qiao and Wu, 2019). By acquiring a target with strong ESG performance ("high-ESG target"), the acquirer may be able to leverage the target's CSR-knowledge and practices and integrate them into their own business (Wickert et al., 2017). Target's ESG performance would, therefore, command a premium since it could ultimately improve the acquirer's long-term financial performance. However, the direction of the relationship between CSR and financial performance is not clear. CSR engagement could, for example, be undertaken by a high-quality target with financial slack that wishes to signal their quality to the acquirer through their CSR spending (Lys et al., 2015) in order to find a buyer for their business. In this case the potential M&A premium would reflect the target's financial strength and not ESG performance.

[1] Grupo Espírito Santo

[2] A self-dealing transaction is a type of "tunneling" activity, whereby controlling shareholders influence the company to make related party transactions or receive excessive compensations (Johnson et al. 2000).

The integration of ESG factors in the assessment of the target company can be problematic. Lack of standardization in sustainability-related disclosures and the multitude of data providers may complicate comparisons across companies. However, with the upcoming European Union ("EU") Taxonomy classification system[3] and the recent EU regulations on sustainability-related disclosures in the financial services sector (European Commission, 2020), it is likely that the integration of ESG factors in mergers and acquisitions, both in deal valuation and in overall risk assessment, will increase. Furthermore, in light of the current COVID-19 pandemic and the implications thereof for companies' human capital and overall operations, we expect that the management of ESG issues will become a greater priority for investors globally.

We hypothesize that target's ESG performance could represent an intangible asset if this performance generates long-term strategic benefits to the acquirer. In this case, target's ESG performance should be positively associated with the bid premium. The main purpose of this paper is to examine whether acquirers value target's ESG performance in M&A transactions and are willing to pay a premium for it. We define target's ESG performance as ESG scores (range 0-100) from the data provider Refinitiv[4]. The four scores analyzed are the ESG Overall, Environmental, Social and Governance scores. ESG Overall reflects a company's performance in each of the three ESG dimensions, accounting for industry relevance and country differences (Refinitiv Ltd, 2020). We test whether target's ESG performance is positively associated with its bid premium by running an ordinary least squares ("OLS") regression on the premiums offered in 171 transactions during 2009-2019, where a European public company was targeted by an acquirer seeking a majority stake. The findings from this first regression may have implications for both target companies wanting to create shareholder value and for buyers looking to sell their portfolio companies for profit.

In addition, we want to test whether two types of acquirers value target's ESG performance differently. Hence, we compare premiums offered by strategic buyers, acquirers that consolidate target companies into their own business and financial buyers, investors looking to create value by acquiring and selling companies (Gorbenko and Malenko, 2014). This analysis allows us to establish which type of acquirer values target's ESG performance relatively more. We hypothesize that financial buyers' value ESG factors relatively less compared to strategic buyers, that may achieve efficiency gains or synergies through the acquisition of a high-ESG target. The findings from the second regression can have implications for potential target companies looking to be acquired and to the extent that they should engage in ESG practices.

Our hypotheses are formulated as the following:

H1: *Target's ESG Performance is Positively Associated with the Bid Premium*

H2: *Financial Buyers Pay Less for Targets with Strong ESG Performance in Comparison to Strategic Buyers*

We find that all four ESG factors are significant and positively associated with bid premiums. Out of the four factors, the target firm's ESG Overall and Social scores have the largest impact

[3] "The Taxonomy Regulation (TR) (…) sets out the framework and environmental objectives for the Taxonomy, as well as new legal obligations for financial market participants, large companies, the EU and Member States. (…) The TR will be supplemented by delegated acts which contain detailed technical screening criteria for determining when an economic activity can be considered sustainable, and hence can be considered Taxonomy-aligned." (European Commission, 2020, p.3).

[4] Refinitiv is the former Financial and Risk business of Thomson Reuters and Refinitiv's ESG scores are a continuation and replacement of the Thomson Reuters ASSET4 database (Refinitiv Ltd, 2020).

on bid premiums. The results show that the highest ESG Overall score is associated with an increase of 25.36 percentage points in the premiums offered in 171 European control bids over the period of 2010 to 2019. This finding suggests that ESG performance is perceived as a source of long-term strategic assets by acquirers, in line with the *resource-based* view of CSR. Furthermore, after examining the differences in premiums offered by strategic and financial buyers, we find that financial buyers, on average, pay less for firms with strong ESG performance in comparison to strategic buyers. This leads to the finding that ESG characteristics matter more to strategic buyers, which could be linked to strategic buyers' efficiency gains in line with the *synergy hypothesis*.

1.1 Contribution

This study answers to the call by several researchers to explore how the different dimensions of target's ESG performance affect the acquirer's decision on bid price (see: Gomes and Marsat, 2018; Qiao and Wu, 2019). To our knowledge, most research in the field focuses either on transactions globally (Gomes and Marsat, 2018) or on a single country, such as Israel (Chen and Gavious, 2015). European transactions have not been analyzed separately. Considering the implications of the upcoming EU taxonomy and recent regulations on ESG disclosures, analyzing precedent transactions in the region could allow future research to make more meaningful comparisons once the assessment framework and disclosure standardization are fully in place. Moreover, we add a new layer to the analysis by looking at the four ESG factors' importance to two different acquirer types, strategic and financial buyers in the post-financial crisis era. This approach contributes to existing literature and is something that, to the best of our knowledge, has not been analyzed before.

1.2 Delimitation

Our study analyzes how the four factors of ESG; Overall, Environmental, Social and Governance performance, impact control bid premiums in the context of M&A transactions with European targets during 2010-2019 and aims to complement and extend the paper by Gomes and Marsat (2018). We use more recent data and instead of looking at global transactions, limit the research to Europe, where previous research on ESG factors' impact in the M&A context is scarce. Moreover, we only look at control bids for public target companies with a transaction value exceeding USD 100 million.

2. Related Literature

2.1 ESG Factors in Mergers and Acquisitions

Researchers from academia and asset management have analyzed the relationship between the ESG profile of companies and their financial risk and performance with varying and inconclusive results. The lack of consensus likely stems from differences in underlying ESG data, applied methodologies and variations in the measurement of variables (Alshehhi et al., 2018). However, a content analysis of 132 papers from top-tier journals finds that 78% of publications report a positive relationship between corporate sustainability and financial performance (Alshehhi et al., 2018), highlighting the significance of sustainability practices to corporations.

Existing literature mainly focuses on the impact of sustainability in M&A transactions from the acquirer's perspective. Earlier research has found that the stock market rewards acquirers for making socially and environmentally responsible investments (Qiao and Wu, 2019). Moreover, Deng et al. (2013) find that mergers by high-CSR acquirers have a higher

probability of success and a shorter time to completion. Furthermore, Wickert et al. (2017) identify a recent trend that some large multinational companies acquire high-CSR targets as a way of integrating CSR-related knowledge and practices into their own business. However, the authors note that the acquisition of a high-CSR target may sometimes be more symbolic. Li et al. (2020) find that strategic investments into green sectors or activities, even called "green M&A", can allow companies with high emissions to attain more access to resources, as well as, lesser financing constraints and tax liabilities. The authors suggest this effect could represent a regain of organizational and regulatory legitimacy.

In the field of mergers and acquisitions, some papers point towards no relationship between ESG performance and deal valuation. Chen and Gavious (2015) find that acquirers in M&A transactions are unaffected by the target firm's CSR rating after analyzing 134 Israeli M&A transactions. Other papers, however, find a positive association. Gomes and Marsat (2018) find that CSR is indeed valued by acquirers in M&A transactions and is positively associated with bid premiums for a sample of 588 global M&A transactions over the 2003-2014 period. Qiao and Wu (2019) make a similar finding – through examining 252 cross-border acquisitions between 1991 and 2016 they find that acquirers are more likely to pay a higher acquisition premium when acquiring a socially responsible target firm. The authors ascertain that the effect is weakened as institutional distance, cultural distance and the number of related acquisitions increase.

2.2 Strategic and Financial Buyers

Following Gorbenko and Malenko (2014), we define strategic buyers as companies in a type of business related to that of the target firm, such as competitors, suppliers or customers, typically looking for long-term acquisition opportunities that can provide operational synergies with their own business. Financial buyers are investors looking to generate high cash flows by acquiring undervalued targets, reorganizing them and selling them after the holding period. Most financial buyers operate as private equity ("PE") firms.

Traditionally, research papers have focused on ulterior motives, such as synergies and managerial empire building, as explaining the overpayments by strategic buyers relative to private equity acquirers. However, the difference in what public firms or strategic buyers are willing to pay for targets can also be linked to efficiency motives (Svetina, 2012).

Some researchers have, nonetheless, found an insignificant or nonexistent difference in premiums between the two acquirer types. For example, Fidrmuc et al. (2012) find that the takeover premium paid by financial buyers versus strategic buyers is not significantly different. Financial buyers have, however, been shown to win M&A auctions (Gorbenko and Malenko, 2014).

Moreover, several researchers have shown that strategic and financial buyers engage in transactions with different target and deal characteristics (see for example Fidrmuc et al., 2012; Svetina, 2012; Gorbenko and Malenko, 2014) leading to a potential selection bias in comparisons. Fidrmuc et al. (2012) show that private equity buyers tend to pursue targets with relatively high tangible assets, low market-to-book ratios and low research and development expenses, while strategic buyers pursue targets with growth prospects and high levels of intangible assets. Gorbenko and Malenko (2014) find that financial buyers tend to acquire targets with relatively higher recent cash flows than strategic buyers and pursue underperforming target firms with value generation potential through a reorganization.

3. Theoretical Framework

3.1 Purpose of CSR and ESG

3.1.1 Positive Views on CSR

There are several competing perspectives on corporate responsibility and sustainability. On the positive side of the spectrum, the *resource-based view* sees CSR as an intangible strategic asset that can give a company a sustained competitive advantage over competitors. The advantage could come in the form of improved financial performance, allowed by a more positive reputation. Strong ESG performance could also make the company attract top talent. In addition, an acquirer targeting a high-ESG company can more easily secure acquisition financing and better financing terms (Qiao and Wu, 2019). We therefore hypothesize that companies acquiring high-ESG targets should be able to see an improved post-acquisition financial performance.

Porter and Kramer (2011) introduced the concept of *creating shared value* ("CSV"), arguing that a firm's ethical behavior and its profits do not need to be mutually exclusive since their competitiveness and the surrounding society are inter-reliant. Similar to the CSV concept, the *stakeholder-based view* states that a company that is more engaged with all their stakeholders is better supported for their operations and this increase in support should lead to improved financial performance (Godfrey et al., 2009; Deng et al., 2013). In the event of negative company news, a company that has strong engagement with stakeholders could receive less severe negative reactions, thanks to the "goodwill" that CSR produces (Godfrey et al., 2009). We therefore expect that acquisitions of high-ESG target companies should be better supported by all stakeholders and should have a higher probability of success. The *institutional theory* proposes that a high-ESG company has more legitimacy and a better reputation in the eyes of their stakeholders (Qiao and Wu, 2019). We predict that this should lead to less asymmetric information between the acquirer and the target. Finally, the *signaling hypothesis* of CSR suggests that CSR expenditures are a signal of a company's financial prospects (Lys et al., 2015). It is possible that a financially strong target undertakes CSR expenditures in order to signal their "quality" to potential acquirers.

3.1.2 A Negative View on CSR

The most widespread negative argument against CSR engagement or ESG performance was put forward by Friedman (1970) who stated that the core of a company's purpose should simply be to create value for shareholders – firms should focus on what they are good at and serve their own self-interest, leading to an efficient allocation of resources and creation of wealth in society. This argument is linked to the *shareholder expense view* that sees CSR as a cost that is ultimately carried by the shareholders and predicts that CSR results in a competitive disadvantage (Deng et al., 2013). According to this view, CSR should be linked with a decrease in the post-acquisition operating performance of the acquirer and the takeover should be less supported by shareholders.

3.2 Takeover Premiums

3.2.1 General Theories of Takeover Premiums

Several theories (see e.g. Roll, 1986; Schwert, 1996) have been suggested when trying to explain the emergence of premiums in the context of mergers and acquisitions. A significant number of papers suggest synergies as the key driver of the price differential between target company's market price and the bid price offered by the acquirer. Synergies refer to the expected net benefit that the acquirer and the target can extract after combination. Synergies can for example be operational, in the form of cost savings, and financial, in the form of increased debt capacity. According to the *synergy hypothesis*, a bidder chooses a price and is willing to pay a premium over target's market value up to the level of expected net benefits from the business combination (Walkling and Edmister, 1985).

Another theory that is often linked to M&A premiums is the *agency cost theory* that highlights the inherent conflict of interest between the acquirer management and the company's shareholders. Agency cost theory has been suggested to lead to overpayments for the target by the acquirer (Schwert, 1996) and to acquirers taking on value-destroying acquisitions as a way of "empire building" for increased power and prestige (Jensen, 1986). Moreover, sometimes irrational behavior can explain premiums. The *hubris hypothesis* theorizes that the acquirer management is overconfident in their ability to correctly value the target firm (see Roll, 1986) and ends up paying too much. A connected theory, the *winner's curse,* can also be applied to explain a bid contest where the winner is the bidder with the highest bid and has likely overvalued the target company the most, hence the high bid premium (Varaiya and Ferris, 1987). Furthermore, *bargaining power* by both the target and the acquirer has been suggested to drive up bid prices and premiums. For example, an acquirer with a significant toehold in the target company pre-bid announcement can be able to bargain a lower price (Walkling and Edmister, 1985*)*.

3.2.2 Premium Measurement

Several studies explore the reasons for why M&A premiums appear and the ways to measure them. Schwert (1996) finds support for the *markup pricing hypothesis*, which implies an increase in the final bid price because of the runup in target firm's share price prior to the announcement. His findings show that around the 42nd trading day prior to bid announcement, target's cumulative average abnormal returns start to increase. Therefore, we measure the premium by dividing the bid price, as reported in Securities Data Company ("SDC") Platinum[5] database, by target's prevailing share price 42 trading days prior to the deal announcement. We expect this measure to be less confounded by potential leakage of information, in line with Schwert's (1996) findings. Other papers have also used 42 days to calculate the offer premiums (see for example Betton et al., 2014; Dionne et al., 2015).

3.2.3 Control Bids

A control premium occurs when an acquirer pays more for a controlling stake in a target firm than the target firm's market value prior to the deal announcement. A control premium, by definition, should equal the total value of the benefits that the acquirer can enjoy from holding a controlling stake. Control means that the owner can make decisions on important company matters because of its significant ownership stake and attached voting rights (Nenova, 2003).

[5] SDC is a major database for global M&A transactions and widely used in research in finance.

Hence, we focus on *control bids*, bids where the acquirer owns less than 50% of the target company and is seeking to acquire at least 50% of target shares, this definition follows Betton et al. (2014). Furthermore, if the acquirer is already a controlling shareholder in the target firm, they may not have the same incentives to accept or reject a bid as other non-controlling shareholders (Ayers et al., 2003), hence we exclude transactions where the acquirer already owns 50% of the shares.

4. Data

4.1 Data Retrieval

We look at completed and uncompleted European M&A transactions over the period 2010-2019. The M&A data is taken from SDC. Target firm financials and ESG scores were taken from Refinitiv. Refinitiv is the former Financial and Risk business of Thomson Reuters and Refinitiv's ESG scores are a continuation and replacement of the Thomson Reuters ASSET4 database, that has been widely used in finance research.

Criteria:

- Target Region: Europe
- Deal size: Exceeding USD 100 million
- Target has public status
- Percent of shares acquirer is seeking to purchase in the transaction at least 50% (control bids) and owned before the transaction less than 50%
- Excluded: financial firms, following standard practice
- Deal form: Merger, Acquisition of majority stake, Acquisition of remaining interest
    - Deal is not a mandatory tender offer, corporate reorganization, debt restructuring or spinoff
- Target and Acquirer need to be identifiable
- No subsequent bids of a given bid contest (as defined below)
- Payment consideration not contingent on an underlying asset price (such as the price of a commodity)

We only look at control bids on public targets since publicly traded firms disclose the bid premium offered by the acquirer. The deal size should exceed USD 100 million. We select this size group because Refinitiv (2020) mentions that companies with large market capitalizations tend to attract more media attention, potentially leading to biases when compared with smaller firms. Furthermore, the acquirer firm must be identifiable to be included in our sample. We look at both cash and stock-financed transactions. The bid must specify the terms of the proposal clearly enough so that the premium of the bid price relative to target's share price 42 trading days prior to bid announcement can be easily calculated, i.e. any bid price that is contingent on some uncertain, underlying asset price (such as a commodity derivative) will be removed from the sample. Stock-financed transactions' implied offers per share are valued based on the acquirer's share price in the last trading day prior to the announcement of the terms.

To measure ESG performance, we use Refinitiv's ESG database for the scores. We use "ESG Overall scores", that are calculated based on verifiable reported data in the public domain and provide a more comprehensive evaluation of a company's overall sustainability efforts (Refinitiv Ltd, 2020). In Refinitiv's methodology, the scores are based on relative performance within the firm's sector for the environmental and social dimensions and within the firm's

country of incorporation for the governance dimension. For each industry, key ESG issues are identified and materiality is defined as category weights. Companies are assessed based on their exposure to these issues and how well they manage them (Refinitiv Ltd, 2020). Moreover, we look at the three different dimensions of ESG; Environmental, Social and Governance scores, separately. For detailed descriptions of the scoring methodology, please see Appendix 1 and 2.

We download a list of M&A transactions in Europe and focus on countries belonging to the European Economic Area ("EEA") including United Kingdom and Switzerland. Our initial sample consists of 1,006 transactions. We remove two transactions that did not meet the criteria of being control bids and 75 transactions for which SDC did not have information on bid offers, leaving us with 929 transactions. Furthermore, we filter by deal form and only include mergers, acquisitions of majority interests and acquisitions of remaining interests, as control bids are typically categorized under these deal forms in the SDC database (889 remaining transactions). We follow standard practice and exclude targets that are financial firms from our sample and thereafter have 707 remaining transactions.

Subsequently, we pair target firms with Refinitiv's ESG data and remove the firms for which no such data is available, yielding a sample of 220 deals with ESG scores. Each ESG score is taken from the previous fiscal year-end prior to the acquisition announcement date. We include both completed and uncompleted deals in our sample. We then manually check each of the 220 transactions with basis in first-hand sources such as companies' press releases and stock market announcements, where we particularly look for announcement dates, offers per share and percentages of shares sought in the transaction. Thereafter, we exclude all mandatory tender offers because they can increase takeover costs and reduce competition for a target company (Rossi and Volpin, 2004), potentially leading to biased estimates of premiums. Also, corporate reorganizations, debt restructuring transactions and spinoffs are excluded since these do not meet the definition of a typical control bid. A total of 14 transactions are excluded in this step.

Because of the small sample size, we do not want to include several bids for the same target firm from the same bid contest, as this could skew the results. Thus, we choose to only look at the first transaction (by looking at the date announced as reported in the SDC database) for a given target company if there are no bids for the same target in the preceding 6 months. All subsequent control bids (20 transactions or bids in our sample) for the same target within 6 months of a previous bid are viewed as being part of the same "bid contest" and thus removed. We define a bid's length as the time between the announcement and either the completion or withdrawal date of the bid. This is consistent with the definition of an initial offer by Betton et al. (2014). However, for simplicity, we use the bid prices as reported by SDC and we acknowledge that they may not always be the first bid price by a given bidder but rather their final bid in that given contest.

Moreover, transactions for which stock-price or financial data is not available (7 transactions) are removed. We identified 6 companies for which the share price data in Eikon's data base was incorrect due to events such as stock splits, so these transactions were removed. Finally, one transaction is removed since the acquirer is undisclosed and, thus, the acquirer type (strategic or financial buyer) cannot be determined and one transaction where part of the offer price is contingent on a commodity derivative and, hence, uncertain. Our final sample consists of 171 transactions. The full data retrieval process is included in Appendix 3.

The final distribution of our sample is provided in tables 1, 2 and 3. 38.6% (66 of 171) of the bids in our sample took place between 2010 and 2014 and 61.4% (105 of 171) of the bids between 2015 and 2019. Increased M&A activity in recent years represents general industry trends (Bain & Company Inc., 2020). We also suggest that the number of ESG-rated companies in Europe has increased in the most recent period. We could identify a trend suggesting this from analyzing the underlying ESG data for all rated European companies in Refinitiv's database.

Table 1
Sample Distribution by Year

	Number of Deals	Proportion of Deals (%)	Avg. Premium (%)	Avg. ESG Overall Score	Avg. Environmental Score	Avg. Social Score	Avg. Governance Score
2010	15	8.77	36.42	37.12	35.79	39.36	36.78
2011	14	8.19	42.59	45.11	39.87	45.15	48.76
2012	11	6.43	34.76	48.27	49.37	49.28	45.70
2013	9	5.26	45.44	43.94	40.69	46.18	44.03
2014	17	9.94	30.18	49.38	46.08	49.41	52.66
2015	19	11.11	41.54	49.58	44.84	56.02	44.20
2016	17	9.94	42.49	51.02	51.63	57.94	43.50
2017	22	12.87	27.92	49.34	45.50	50.07	51.15
2018	19	11.11	32.84	53.38	43.31	55.54	56.98
2019	28	16.37	34.43	51.00	41.34	54.18	54.38
Total	171	100.00	36.86	47.81	43.84	50.31	47.81

The table presents summary statistics of the final sample of deals by year, average premium paid and the average ESG scores, where year refers to the year the deal was announced. The ESG Overall score, takes into account the Environmental, Social and Governance ESG dimensions. The scores can according to the ESG Refinitiv database vary between 0-100 and are collected at the previous fiscal year-end prior to the acquisition.

From Table 2 can be concluded that most of targets are UK-based (53.8%). Furthermore, the country that yields the highest average premiums in our sample is Portugal (56.7%), while the highest average ESG scores are also found in Portugal on the Overall and Social factors. However, the high numbers related to Portugal could be driven by outliers. The country with the highest average Environmental score is Spain (82.65), while Belgium yields the highest average Governance score (63.07). Table 3 shows that 64.3% of the targets operate in either the manufacturing or service industry. The highest average premium is found in the transportations and communications industry, while the utilities industry yields the highest average scores across all ESG factors.

Table 2
Sample Distribution by Target Country

	Number of Deals	Proportion of Deals (%)	Avg. Premium (%)	Avg. ESG Overall Score	Avg. Environmental Score	Avg. Social Score	Avg. Governance Score
Austria	1	0.58	5.00	25.00	0.00	38.67	27.00
Belgium	3	1.75	12.65	46.27	31.91	43.95	63.07
Cyprus	2	1.17	31.82	20.00	20.35	11.74	31.33
Denmark	2	1.17	24.13	50.90	45.64	53.09	56.24
Finland	5	2.92	44.80	51.63	38.83	58.63	53.20
France	11	6.43	16.47	62.38	59.43	62.62	61.53
Germany	13	7.60	34.89	50.20	41.96	51.51	53.08
Ireland	8	4.68	42.57	50.41	43.05	55.27	51.22
Italy	3	1.75	30.74	37.44	14.42	39.25	56.23
Luxembourg	1	0.58	43.93	29.86	15.53	32.43	50.85
Netherlands	11	6.43	48.67	51.27	49.23	51.10	55.04
Norway	2	1.17	-6.12	45.23	34.38	45.49	53.31
Poland	1	0.58	16.39	52.83	56.10	44.91	57.55
Portugal	2	1.17	56.68	73.19	77.02	85.60	46.35
Spain	2	1.17	6.74	69.74	82.65	77.54	45.46
Sweden	3	1.75	39.79	56.56	58.87	59.98	47.49
Switzerland	9	5.26	46.80	49.96	46.67	56.30	43.61
UK	92	53.80	37.70	45.91	42.29	48.71	45.49
Total	171	100	29.65	48.26	42.13	50.93	49.89

The table presents summary statistics of the final sample of deals by target country, average premium paid and average ESG scores. The ESG Overall score takes into account the Environmental, Social and Governance ESG dimensions. The scores can according to the ESG Refinitiv database vary between 0-100 and are collected at the previous fiscal year-end prior to the acquisition.

Table 3
Sample Distribution by Target Industry (2-Digit SIC Codes)

SIC-Code	Number of Deals	Proportion of Deals (%)	Avg. Premium (%)	Avg. ESG Overall Score	Avg. Environmental Score	Avg. Social Score	Avg. Governance Score
10-17	17	9.94	32.28	44.70	40.44	48.15	45-03
20-39	69	40.35	40.11	51.32	47.14	53.54	52.04
40-48	23	13.45	44.76	50.29	47.40	52.01	50.99
49	4	2.34	22.41	62.00	63.96	64.49	55.53
50-59	17	9.94	29.08	44.44	37.91	49.64	42.69
70-89	41	23.98	30.27	43.85	37.86	46.44	44.33
Total	171	100.00	33.15	49.43	45.79	52.38	48.43

The table presents summary statistics by target industry with basis in SIC-codes taken from the SDC Platinum database (each is defined below), average premiums paid for each industry and the average ESG scores for all industries. ESG Overall scores takes into account Environmental, Social and Governance ESG dimensions. The scores can according to the ESG Refinitiv database vary between 0-100, the scores are collected at the previous fiscal year-end prior to the acquisition.

Industry Description of SIC Codes:
10-17: Mineral industries and construction
20-39: Manufacturing
40-48: Transportation and communications
49: Utilities
50-59: Wholesale and retail trade
70-89: Service Industries

4.2 Control Variables

In order to control for other determinants of bid premiums we make limitations to our sample and construct variables to account for target, acquirer and deal characteristics. We refer to the financial variables at previous fiscal year-end prior to the announcement and the financial numbers are denoted in US dollars unless otherwise stated. See Appendix 4 for further information and expected impact of the control variables in the regression.

There are several factors known to impact bid premiums and we cannot account for all of them, but we follow Gomes and Marsat (2018) in our selection of control variables that control for target, acquirer and deal characteristics. However, we make a minor modification in the selection of variables in comparison to their study by leaving out the Shareholder Protection factor from our control variables because it was only found significant when specifically looking at cross-border transactions. Furthermore, using a sample of 528 European M&A transactions over the period 2000-2010, De La Bruslerie (2013, p.2106) concludes that "transactions develop in a homogenous regulatory context in the European Union countries; consequently, the external and institutional determinants weigh less." Moreover, we believe the potential effects of the Shareholder Protection factor will be controlled for using country fixed effects as well as through the Governance factor, which Gomes and Marsat (2018) did not include in their study. The Governance ESG score accounts for country-specific differences because "governance practices are more consistent within countries" (Refinitiv Ltd, 2020).

4.2.1 Target Characteristics

Size

We define Size as the natural logarithm of market value of equity in thousands of USD, taken at the end of the most recent fiscal year. Acquiring a controlling stake in a large, listed company requires more capital, so there should be less competition for such stakes and presumably the liquidity should be lower. Past research (see for example Comment and Schwert, 1995; Schwert, 2000; Betton et al., 2014) identifies a highly significant negative effect of target size on the deal premium and suggests that the higher integration costs associated with larger targets could explain some of that effect. A reverse effect is found in other papers when a ratio of target size to acquirer size is employed (Dionne et al. 2015). We expect Size to have a negative association with bid premiums.

Market to Book Ratio

We calculate the Market to Book ratio ("MTB") as market capitalization divided by net assets (total assets subtracted by total liabilities), taken at the end of the most recent fiscal year. MTB is expressed as a percentage. The MTB ratio is a proxy for target's growth prospects and could be positively associated with premiums if the acquirer can benefit from these new investment opportunities (Dionne et al., 2015). However, Comment and Schwert (1995) suggest that companies with low MTB ratios could also be undervalued by the market. Undervalued targets may attract some acquirers if they are a possible source of synergies when managed by the new acquirer. The authors find a negative effect of MTB on deal premiums. We expect MTB to have an ambiguous effect on bid premiums.

Leverage

We define leverage as total debt divided by total assets, taken at the end of the most recent fiscal year. The number is expressed as a percentage. Dionne et al. (2015) find a negative but

not statistically significant coefficient for target debt. The authors state that targets with high debt levels are less attractive and should therefore justify a lower premium. Target's leverage can also affect the acquirer's ability to finance the acquisition. On the other hand, leverage could also reflect monitoring activities undertaken by the target's creditors (De La Bruslerie, 2013). However, Ayers et al. (2003) find a positive and significant coefficient for target leverage. We expect Leverage to have an ambiguous effect on bid premiums.

Growth

We define Growth as the average growth in sales during the last three fiscal years prior to announcement. If a company does not have sales numbers for one of those three fiscal years, the average growth is calculated for the years that have reported numbers. Growth is expressed as a percentage. The effect of target's past sales growth on the deal premium could be ambiguous. Poorly managed firms with financial restrictions may have an inferior position in takeover negotiations, which could lead to a lower premium. On the other hand, a poorly managed firm where the acquirer can realize gains from, for instance, changing the management, could motivate a higher premium (Dionne et al., 2015). We expect Growth to have an ambiguous effect on bid premiums.

Runup

We define Runup as the logarithm of the ratio of the share price of the target on the day before the announcement to the share price 42 trading days prior to the announcement date. Runup is expressed as a percentage. Schwert (1996) identifies the markup price and shows that around the 42nd trading day prior to a bid announcement, target firm's cumulative average abnormal returns start to rise. These 42 trading days prior to bid announcement are viewed as the runup period. The average runup in target firm's share price is about half of the premium paid in successful takeovers while the other half is the increase in the price post-bid announcement ("markup"). Betton et al. (2014) report that the 42-day runup is positive and significant on the 1% level on deal premiums. We expect Runup to have a positive association with bid premiums.

Liquidity

We define Liquidity as current assets divided by current liabilities, taken at the end of the most recent fiscal year. The number is expressed as a percentage. Target's liquidity has been shown to have a positive association with bid premiums. Ayers et al. (2003) find a positive but not significant coefficient for target's liquidity and state that this is in line with earlier research by e.g. Comment and Schwert (1995) and Schwert (2000). We expect Liquidity to have a positive association with bid premiums.

Research and Development

We define Research and Development ("R&D") as research and development expenditures divided by total assets, taken at the end of the most recent fiscal year. The number is expressed as a percentage. R&D is a valuable intangible asset, as Laamanen (2007) shows that target's R&D investment-to-market ratios and R&D growth rate have a significant, positive coefficient on deal premiums. Even so, target firms with high R&D investments carry the risk of mispricing and of losing a competitive advantage, for example because of financial constraints forcing the target firm to discontinue an R&D project (Lin and Wang, 2016). We expect R&D to have a positive association with bid premiums.

Return on Equity

We define Return on Equity ("ROE") as net income before extra items divided by common shareholder's equity, taken at the end of the most recent fiscal year. The number is expressed as a percentage. Profitability measures target's overall performance and can even be used to assess the quality and effectiveness of target's management in creating shareholder value (see for example Varaiya, 1987). Conforming to the *synergy hypothesis*, an undermanaged firm can be a source of synergies if it is better led under the acquirer's management, resulting in a negative association with bid premiums. Profitability is, on the other hand, also a measure of target's profit and cash flow generation ability, so the association could be positive (see for example Ayers et al., 2003). We expect ROE to have an ambiguous effect on bid premiums.

Capital Expenditures

We define Capital Expenditures ("Capex") as capital expenditures divided by total assets, taken at the end of the most recent fiscal year. Gomes and Marsat (2018) mention that capital expenditures could affect potential takeover synergies such as cost-reduction synergies through optimization of production capacity. The authors find a negative coefficient for capital expenditures. On the other hand, capital expenditures decrease the amount of free cash flows generated by the target firm so the coefficient could be negative if the acquirer is a financial buyer with a preference for companies with high recent cash flows (Gorbenko and Malenko, 2014) and better debt repayment capability. We expect Capex to have an ambiguous effect on bid premiums.

4.2.2 Acquirer and Deal Characteristics

Blockholder

We add a dummy variable called Blockholder that is equal to one if the acquirer holds more than 5% of the shares in the target firm prior to the deal announcement. The pre-acquisition ownership in target is calculated as the difference between the percentage of shares acquired in the transaction and the percentage of shares owned after the transaction by the acquirer, as reported by SDC. Because of reduced information asymmetry, blockholders are expected to offer lower premiums than buyers without significant pre-bid ownership ("toeholds") in the target firm. Dionne et al. (2015) find that premiums paid by uninformed buyers, buyers without toeholds, are about twice as high as those by informed buyers and the difference is highly significant. Moreover, acquiring firm's toehold in the target firm has been linked to increased bargaining power and lower premiums, shown by Walkling and Edmister (1985). We expect Blockholder to have a negative association with bid premiums.

Hostile Transaction

We add a dummy variable called Hostile that is equal to one if SDC defines the transaction as hostile. Hostile transactions have been shown to drive up acquisition bids. A transaction that is perceived as threatening to some of the target shareholders is referred to as a hostile transaction, whereas a friendly transaction is perceived to benefit both the target and the acquirer (Schwert 2000), for instance through synergies. Schwert (2000) finds evidence that hostile takeovers may be used as a bargaining strategy by both the acquirer and the target to improve their position in negotiations. The acquirer may be able to get target shareholders to pressurize the management by announcing their intentions publicly and the target may be able to attract more bidders by announcing the hostile offer, likely driving up the premium. We expect Hostile to have a positive association with bid premiums.

Cash

We add a dummy variable called Cash that is equal to one if the transaction is fully paid in cash. We define "fully paid in cash" as the percentage of cash, as reported by SDC, being over 97% if the payment method of the transaction consists of cash and/or dividends. Ayers et al. (2003) find that cash offers are associated with higher premiums than stock offers and suggest that shareholders demand a higher premium as compensation for having to pay immediate capital gains taxes that could have otherwise been deferred if the payment method was all-stock. Moreover, the positive relationship between full cash payment and deal premiums has been shown in a sample of European transactions by De La Bruslerie (2013). The author links this to the contractual approach of M&A terms, meaning that the payment method and the deal premium are jointly set and agreed on. Contrary to the above-mentioned papers, Betton et al. (2014) report a negative, though not significant, coefficient for Cash on offer premiums. We expect Cash to have a positive association with bid premiums.

Competing Bidders

We add a dummy variable called Competing that is equal to one if there were competing bidders for a specific target, as reported by SDC. Early research (e.g. Comment, Schwert 1995; Walkling and Edmister, 1985) finds a positive association between the existence of competing bidders and deal premiums and the returns to target shareholders. Work by Roll (1986) provides a *hubris hypothesis*, implying that bidders in bid contests act irrationally and want to win no matter the price. Another related explanation to increased premiums in bid contests is the *winner's curse theory*, that the bidder who bids the highest tends to win (Varaiya, Ferris 1987). We expect Competing to have a positive association with bid premiums.

Crossborder Transaction

We add a dummy variable called Crossborder that is equal to one if SDC has defined the transaction as cross-border, meaning that the target and acquirer are from different nations. Asymmetric information may affect premiums cross-border transactions because of the difficulty of valuing a foreign target and assessing its intangible assets across the borders. Cross-border transactions can, however, also be a source of synergies (Lim et al., 2016). The acquirer may be able to reap potential cost advantages in the target country or to gain access to new markets, therefore motivating a premium. Moreover, the level of corporate governance and shareholder protection in the acquirer and target country have been shown to impact deal premiums. Bid premiums can be higher in target countries with strong shareholder protection as the acquirers have to compensate for target shareholders who may get weaker protection and corporate governance post-transaction (Rossi and Volpin, 2004). We expect Crossborder to have a positive association with bid premiums.

Horizontal Transaction

We add a dummy variable called Horizontal that is equal to one if the acquirer and target have the same primary SIC codes, as reported by SDC, meaning that they operate in the same industry. By operating in the same industry, the target and acquirer could reap potential operational synergies, which could motivate the higher premium (Walkling and Edmister, 1985). However, De La Bruslerie (2013) finds that industry relatedness does not have a significant impact on deal premiums. We expect Horizontal to have a positive association with bid premiums.

Financial Buyer

For the second regression we add the variable Financial Buyer "FB", which is a dummy equal to one when the acquirer is a financial buyer. We use SDC's data item "Buyside Financial Sponsor Activity" to determine this. Moreover, the combined FB and ESG variable "FB x ESG" is added to the regression, indicating the incremental effect of the ESG score on financial buyers. Gorbenko and Malenko (2014) find that financial buyers on average pay less for targets than strategic acquirers. This could be linked to the *synergy hypothesis*, that strategic acquirers pay more for targets when they can extract synergies (Walkling and Edmister, 1985). However, Fidrmuc et al. (2012) do not find a significant difference in the takeover premium paid by financial buyers versus strategic buyers. We therefore examine whether the type of acquirer, strategic or financial, is associated with bid premiums. Furthermore, Gorbenko and Malenko (2014) find that financial buyers target companies that are different from those targeted by strategic acquirers. Therefore, we will investigate to which acquirer type the target's ESG performance matters more. We expect FB to have an ambiguous effect on bid premiums.

4.3 Data Validation

Since Refinitiv's data is not based on consensus numbers, their assessment of companies' ESG performance can be subjective and involve human error. To validate our Refinitiv ESG ratings we use two methods. Firstly, we download CSR ratings for our sample from CSRHub, a third-party data provider that aggregates CSR and ESG data from socially responsible investing research firms, indices, publications, "best of" and "worst of" lists, non-governmental organizations, crowd sources and government agencies and creates consensus ratings for over 17,000 companies (CSRHub). The individual consensus ratings and percentile rankings that CSRHub calculates for each company are compared to the whole company universe in CSRHub's database. Because the individual company ratings aren't compared to industry or country-peers, but instead to CSRHub's company universe, they aren't fully comparable to Refinitiv's percentile scores that benchmark each company against their industry- and country-peers. Refinitiv's scoring methodology could yield less biased comparisons across companies since country and industry effects have been shown to affect companies ESG scores (Deng et al., 2013).

We match the target companies from our final sample with ratings from CSRHub. Out of the 171 control bids 141 transactions could be paired with CSRHub's Overall CSR ratings. Ratings were taken for each target company from the most recent calendar-year before the deal announcement. The correlation between Refinitiv's ESG Overall scores and CSRHub's Overall CSR ratings for our sample is around 60% and the difference can most likely be explained by the difference in the benchmarking method. See Appendix 5 for further comparison of the two data providers.

Secondly, we take a random sample of 5 firms from our dataset and investigate the sources of the ESG data from Refinitiv. Refinitiv allows you to look at all the data entries and investigate that the numbers reported in their database match the numbers reported by the companies. The sampled ESG data entries in Refinitiv's database for the 5 firms matched the numbers reported by the companies in their annual reports.

4.4 Limitations

Our sample includes several limitations. Firstly, we limit the analysis to control bids on public targets in order to measure the M&A premiums and only look at deals valued at over USD 100 million. Furthermore, our sample is not balanced in terms of industries, countries nor acquirer

types. In fact, 40.4% of our sample consists of manufacturing companies, shown in table 3 and 53.8% of the target firms are UK-based, as depicted in Table 2. In addition, only 35 of the 171 control bids in our sample were made by financial buyers. Our sample could also suffer from sample selection bias, for example due to a lack of ESG data, like other research in the field (see Gomes and Marsat, 2018; Qiao et al., 2019). Secondly, an obvious limitation since we are looking at control bids is that the bid offers include a so-called control premium (Nenova, 2003) that cannot be estimated with any generally acceptable model, which in turn, makes the explanation of the variance in deal premiums more difficult. Thirdly, we consider the ESG Overall, Environmental, Social and Governance scores as single composite indicators, however they each cover many aspects that have differential impacts on bid premiums. Also, we are only analyzing the target firm's ESG score and not the acquirer's. Finally, our underlying ESG data includes inherent biases that cannot be overcome before ESG disclosures in filings are standardized, allowing for more consistent assessment of companies' ESG performance. The lack of standardization complicates objective analysis since the rating agencies rely on survey and disclosure data from companies.

5. Hypotheses and Method

5.1 Hypotheses

We have decided on hypotheses that provide us with two different perspectives on the potential importance of ESG performance for bid premiums. Firstly, we test whether a target's ESG performance is positively associated with the bid premium. Secondly, we want to explore whether two types of acquirers value target's ESG performance differently. We compare premiums offered by strategic and financial buyers in order to establish which type of acquirer values target's ESG performance more. Through the hypotheses we can assess the extent to which target characteristics, such as ESG performance, acquirer characteristics and deal characteristics impact the premiums offered in European M&A transactions.

The first hypothesis we want to explore is whether there is a positive relationship between a target's ESG score and the bid premium offered by the acquirer. In this field, research suggests opposing results; Chen and Gavious (2015) find no relationship between deal valuations and target's sustainability, while Gomes and Marsat (2018) find a positive relationship between M&A premiums and CSR performance. This yields our first hypothesis:

H1: Target's ESG Performance is Positively Associated with the Bid Premium

Having explored whether ESG scores impact bid premiums, we furthermore want to study whether there is a discrepancy between how different acquirer types value ESG. Gorbenko and Malenko (2014) find that strategic buyers on average pay a higher premium for targets than financial buyers. We wish to add another layer to their analysis and study whether the ESG factor plays a role in determining how different acquirers value targets. Specifically, we wish to examine whether financial buyers, such as private equity investors, are willing to pay less for firms with strong ESG performance versus strategic buyers. This yields our second hypothesis:

H2: Financial Buyers Pay Less for Targets with Strong ESG Performance in Comparison to Strategic Buyers

5.2 Method

The two hypotheses are tested through ordinary least squares ("OLS") regressions. For an OLS regression to be relevant for research, according to the Gauss-Markov Theorem, the data must fulfill all of the following five assumptions: 1) linearity between dependent and independent variables – established using the Ramsey Reset Test, 2) no multicollinearity – using a variance inflation factor ("VIF") test, 3) residuals need to be normally distributed – through the Jarque-Bera test, 4) independence or lack of autocorrelation in residuals – through the Breusch-Godfrey test, and lastly 5) homoscedasticity in residuals – established through the Breusch-Pagan test. Through the tests mentioned, we find the following:

1. Linearity: The Ramsey Reset test shows no linearity between the dependent and independent variables.
2. Multicollinearity: A VIF-test has been conducted to check for multicollinearity, which showed no multicollinearity in the data.
3. Normally Distributed Residuals: The Jarque-Bera test shows that the residuals are not normally distributed.
4. Autocorrelation: Through the Breusch-Goodfrey test, we find that the residuals are autocorrelated.
5. Homoscedasticity: The Breusch-Pagan test shows that the data is heteroscedastic.

Please find results of the statistical tests in Appendix 6. Due to the outcome of the tests, not all five criteria are fulfilled for the OLS regression to be relevant for our analysis. This means that there is a risk of extreme values in our data set, which could have a significant impact on the results. The results could be biased and therefore not allow for meaningful interpretation. In order to reduce the impact of biased values, robust standard errors will be used for all regressions, making the models more conservative and reliable.

Given that we have a relatively small sample of 171 observations, we consider that outliers may affect our results. We account for the potential outliers by winsorizing the top and bottom 1% of the observations, in order to decrease the impact of extreme values on the sample. Moreover, potential unobserved heterogeneity will be addressed by taking year, country and industry fixed effects into account in all regressions. We follow Deng et al. (2013) in including industry fixed effects. The relevance of industry fixed effects in M&A transactions is due to mergers often clustering by industry, and consequently, CSR is affected by the specific industry cluster. Significant differences between low-CSR and high-CSR industry clusters were found, which need to be accounted for in the regressions when analyzing ESG's impact in the M&A context (Deng et al., 2013). The same is likely to be true for year and country fixed effects, as their effects in previous research have been positive and significant in describing premiums (Gomes and Marsat, 2018).

Lastly, two-stage least-squares ("2SLS") regressions are applied on the main regression. Firstly, with ESG Overall as the endogenous variable and, secondly, with ESG Overall and the combined FB x ESG variable as endogenous variables, to further address any potential endogeneity-issues, following Gomes and Marsat (2018).

6. Results

6.1 Hypotheses

Hypothesis 1: Target's ESG Performance is Positively Associated with the Bid Premium

Table 4 shows the summary statistics. The average bid premium is 36.14% with a standard deviation of 26.83%, this is consistent with previous research and in line with the findings of Gomes and Marsat (2018). The ESG Overall score, comprised of the underlying factors Environmental, Social and Governance, has an average of 48.30 on a scale of 0-100 with a standard deviation of 19.72%, slightly lower than the results yielded by the authors.

Table 4
Summary Statistics

	μ	Median	σ	Min	Max
Premium	0.3614	0.3359	0.2683	-0.1834	1.2173
Overall	0.4830	0.4955	0.1972	0.0408	0.9031
Environmental	0.4376	0.4383	0.2490	0	0.9582
Social	0.5096	0.5158	0.2322	0.0136	0.9544
Governance	0.4850	0.4853	0.2157	0.0433	0.9445
Size	14.7607	14.7483	1.3011	11.4288	18.2519
MTB	2.1182	2.1582	13.1215	-151.0458	61.9936
Leverage	0.2641	0.2316	0.1886	0	1.3229
Growth	0.1366	0.0156	1.2439	-0.2393	16.2241
Runup	0.0275	0.0299	0.1351	-0.4186	0.5190
Liquidity	1.5217	1.2827	1.1860	0.2919	9.9796
R&D	0.0159	0	0.0421	0	0.3070
ROE	0.0036	0.1020	1.0664	-13.4884	1.1430
Capex	0.0495	0.0393	0.0397	0.0014	0.2581
Blockholder	0.0819	0	0.2750	0	1
Hostile	0.0409	0	0.1987	0	1
Cash	0.5614	1	0.4977	0	1
Competing	0.1345	0	0.3422	0	1
Crossborder	0.7836	1	0.4130	0	1
Horizontal	0.2515	0	0.4351	0	1

The table shows summary statistics of the final sample of n=171 observations; the mean, median, standard deviation, minimum value and maximum value of the variables used in the first regression.

Of the four ESG factors, Social has the highest mean and median at 50.96 and 51.58. In Table 4 four significant outliers are observed by looking at the maximum value of Leverage, the minimum value of ROE and the minimum and maximum values of MTB. The extreme values related to the Leverage and ROE variables are results of the outliers having negative book values of equity due to negative retained earnings, yielding exceptionally low ROE and high Leverage numbers.[6] The minimum value of MTB has a negative book value of equity and,

[6] Transactions 1223 (Britvic) and 912 (Kabel Deutschland)

therefore, greater liabilities than assets, making the ratio significantly negative.[7] Conversely, the maximum MTB outlier has a low book value of equity and could be a result of overvaluation.[8] To account for these extreme values, we winsorize 1% of the observations.

To assess the marginal impact of ESG on premiums, we run the following regression:

$$\begin{aligned} Premium_i = {} & \beta_0 + \beta_1 ESG_i + \beta_2 Size_i + \beta_3 MTB_i + \beta_4 Leverage_i + \beta_5 Growth_i + \beta_6 Runup_i \\ & + \beta_7 Liquidity_i + \beta_8 R\&D_i + \beta_9 ROE_i + \beta_{10} Capex_i \\ & + \beta_{11} Blockholder_i + \beta_{12} Hostile_i + \beta_{13} Cash_i + \beta_{14} Competing_i \\ & + \beta_{15} Crossborder_i + \beta_{16} Horizontal_i + Year\ Effects + Country\ Effects \\ & + Industry\ Effects + \varepsilon_i \end{aligned} \quad (1)$$

Table 5 shows the results of the regression. Our study finds that the ESG Overall variable is positively associated with bid premiums on the 5% level and that the highest ESG Overall score is associated with an increase in premiums offered by 25.36 percentage points.

In order to better understand the link between ESG performance and bid premiums, we study the different dimensions of ESG to explore whether differences can be found in the different dimensions' impact on bid premiums. We therefore run the same regression with the different ESG dimensions to get a comprehensive view of ESG's marginal impact on premiums. Our research shows that the Social ESG variable is significant on the 5% level, and the Environmental and Governance variables on the 10% level. This is in line with previous research; however, it differs from the findings of Gomes and Marsat (2018), who concluded that Overall, Environmental and Social variables were each significant at the 1% level. The differing results can be due to our relatively small sample size.

Given that our sample mainly consists of cross-border deals, it is evident that the Social factor is of greatest importance of the underlying dimensions. Qiao and Wu (2019) show that target's CSR is positively associated and significant with deal premiums for a sample of 252 cross-border transactions and that an acquirer is more likely to pay a higher premium when the cultural and institutional difference is smaller. Gomes and Marsat (2018) found that the positive incremental impact of social performance was significant for cross-border transactions. Considering that around 3/4 of our European sample consists of cross-border transactions, our results seem reasonable and in line with the authors. The remaining control variables are also to a great extent in line with both papers.

As all the ESG dimensions are significant and have a positive association with the dependent variable premium, this leads us to the conclusion that our first hypothesis is supported.

[7] Transaction 1137 (Actelion)
[8] Transaction 1160 (De La Rue Plc.)

Table 5
ESG and Bid Premiums

	Overall (1)	Environmental (2)	Social (3)	Governance (4)
ESG	0.2536**	0.1350*	0.2324**	0.1877*
Size	-0.0470*	-0.0397	-0.0490*	-0.0383
MTB	0.0008	0.0009	0.0007	0.0009
Leverage	0.2089	0.2178	0.2274	0.1785
Growth	-0.0050	-0.0057	-0.0065	-0.0042
Runup	1.0010***	1.0128***	1.0205***	0.9749***
Liquidity	0.0161	0.0151	0.0191	0.0153
R&D	0.8236*	0.8345*	0.8217*	0.7086
ROE	0.0285***	0.0276***	0.0311***	0.0250**
Capex	0.0834	-0.0390	0.0726	0.0563
Blockholder	-0.2266***	-0.2292***	-0.2180***	-0.2262***
Hostile	0.0530	0.0664	0.0481	0.0588
Cash	0.0596	0.0515	0.0534	0.0595
Competing	0.0087	0.0140	0.0138	0.0062
Crossborder	0.0139	0.0229	0.0123	0.0226
Horizontal	0.0275	0.0234	0.0280	0.0184
Intercept	0.8178*	0.7992	0.7962	0.7481
Year effects	yes	yes	yes	yes
Country effects	yes	yes	yes	yes
Industry effects	yes	yes	yes	yes
Observations	171	171	171	171
Prob > F	0.0000	0.0000	0.0000	0.0000
Adjusted R-squared	0.3387	0.3245	0.3441	0.3319

The table presents estimation effects of ESG on acquisition bid premiums. *, **, and *** refer to significance at the 10%, 5%, and 1% confidence levels, respectively.

Hypothesis 2: Financial Buyers Pay Less for Targets with Strong ESG Performance in Comparison to Strategic Buyers

In the second hypothesis we compare two acquirer types and their potential impact on premiums offered in relation to ESG scores. We differentiate between financial buyers ("FB") and strategic buyers ("SB"), in order to investigate the hypothesis that financial buyers pay less for targets with strong ESG performance than strategic buyers.

We conduct a summary on ESG scores depending on acquirer type (financial buyers or strategic buyers) as depicted in Table 6. From Table 6 it is evident that FB on average acquire firms with slightly lower ESG scores – which can be seen from a lower mean (44.22) with a standard deviation of 20.73% in comparison to that of SB (49.34) with a standard deviation of 19.19%. Comparing the medians, it is even more evident that strategic buyers pursue target firms with higher ESG scores as the median is 51.19 in comparison to financial buyers with a median of 44.10.

Table 6
ESG Summary Statistics Based on Acquirer Type

	Financial Buyers n=35					**Strategic Buyers** n=136				
	μ	Md	σ	Min	Max	μ	Md	σ	Min	Max
ESG Overall Score	44.22	44.10	20.73	4.08	87.51	49.34	51.19	19.39	5.47	90.31

The table shows summary statistics; the mean, standard deviation, minimum value and maximum value of the ESG Overall scores for targets acquired by the two acquirer types Financial Buyers and Strategic Buyers. The scores can according to the ESG Refinitiv database vary between 0-100 and is collected at the previous fiscal year-end prior to announcement.

Table 7 shows the acquirer summary statistics, where several differences in characteristics are noticeable. On average strategic buyers offer a higher premium (37.66%) in comparison to financial buyers (29.96%). Of the four ESG factors, the biggest difference is noticed in the Environmental variable, with strategic buyers on average pursuing targets with a 7-percentage point higher score. Moreover, the size of the target is slightly larger when acquired by a strategic buyer than a financial buyer.

Table 7
Summary Statistics based on Acquirer Type

	Financial Buyers n=35					Strategic Buyers n=136				
	μ	Md	σ	Min	Max	μ	Md	σ	Min	Max
Premium	0.30	0.26	0.21	-0.10	0.74	0.38	0.35	0.28	-0.28	1.22
Overall	0.44	0.44	0.21	0.04	0.88	0.49	0.51	0.19	0.05	0.90
Environmental	0.38	0.39	0.26	0	0.87	0.45	0.45	0.25	0	0.96
Social	0.46	0.45	0.23	0.22	0.95	0.52	0.53	0.23	0.01	0.95
Governance	0.47	0.52	0.22	0.08	0.94	0.49	0.48	0.21	0.04	0.91
Size	14.56	14.62	0.90	12.61	17.77	14.81	14.77	1.38	11.43	18.25
MTB	2.03	1.99	3.49	-8.10	15.45	2.14	2.27	14.62	-151.03	61.99
Leverage	0.30	0.24	0.17	0.06	0.78	0.25	0.23	0.19	0	1.32
Growth	0.09	0.05	0.19	-0.16	0.58	0.15	0.01	1.39	-0.24	16.22
Runup	0.02	0.01	0.12	-0.27	0.33	0.03	0.03	0.14	-0.42	0.52
Liquidity	1.11	0.99	0.45	0.37	2.27	1.63	1.33	1.29	0.29	9.98
R&D	0.01	0	0.05	0	0.25	0.02	0	0.04	0	0.31
ROE	0.04	0.09	0.18	-0.63	0.32	-0.01	0.11	1.19	-13.49	1.14
Capex	0.05	0.04	0.04	0.01	0.20	0.05	0.04	0.04	0.01	0.26
Blockholder	0.11	0	0.32	0	1	0.07	0	0.26	0	1
Hostile	0	0	0	0	0	0.05	0	0.22	0	1
Cash	0.80	1	0.41	0	1	0.50	0.50	0.50	0	1
Competing	0.20	0	0.41	0	1	0.12	0	0.32	0	1
Crossborder	0.66	1	0.48	0	1	0.82	1	0.39	0	1
Horizontal	0.03	0	0.17	0	1	0.31	0	0.46	0	1

The table shows summary statistics; the mean, median, standard deviation, minimum value and maximum value of variables used in the second regressions. The summary statistics refer to the targets of the acquisitions and are divided into the two different acquirer types; Financial Buyers and Strategic Buyers.

Having shown that strategic buyers on average both pursue firms with higher ESG scores as well as offer higher premiums for firms in comparison to financial buyers, it is crucial for the second hypothesis to further investigate whether there is a positive association between the two – whether strategic buyers are willing to pay a higher premium for higher ESG-rated firms in comparison to financial buyers. Therefore, we run the second regression, with Premium as our dependent variable, with the same independent variables as in hypothesis 1. However, in this regression we investigate whether the acquirer type affects the bid premium, and therefore add the dummy variable "FB", that is equal to 1 if the acquirer is a financial buyer and 0 if it is a strategic buyer. Moreover, we add the combined ESG and FB variable "FB x ESG" in order to capture any incremental impact of ESG performance for financial buyers.

We run the following second regression:

$$\begin{aligned} Premium_i = {} & \beta_0 + \beta_1 FB_i + \beta_2 ESG_i + \beta_3 (FB\ x\ ESG)_i + \beta_4 Size_i + \beta_5 MTB_i + \beta_6 Leverage_i \\ & + \beta_7 Growth_i + \beta_8 Runup_i + \beta_9 Liquidity_i + \beta_{10} R\&D_i + \beta_{11} ROE_i + \beta_{12} Capex_i \\ & + \beta_{13} Blockholder_i + \beta_{14} Hostile_i + \beta_{15} Cash_i + \beta_{16} Competing_i \\ & + \beta_{17} Crossborder_i + \beta_{18} Horizontal_i + Year\ effects + Country\ Effects \\ & + Industry\ Effects + \varepsilon_i \end{aligned} \quad (2)$$

Table 8 shows the results of the regression. What can be determined is that neither the FB variable nor the combined FB x ESG variable are significant in the model, except in the Governance score regression, where the interaction term between Governance ESG and FB is significant at the 10% level.

Table 8
Acquirer Type and Bid Premiums

	Overall (1)	Environmental (2)	Social (3)	Governance (4)
FB	0.0507	-0.0463	0.0006	0.1088
ESG	0.3128**	0.1398	0.2542**	0.2693**
FB x ESG	-0.2493	-0.0568	-0.1340	-0.3705*
Size	-0.0473*	-0.0387	-0.0486*	-0.0339
MTB	0.0009	0.0009	0.0007	0.0010
Leverage	0.2155	0.2264	0.2368*	0.1801
Growth	-0.0058	-0.0064	-0.0073	-0.0044
Runup	0.9853***	1.0008***	1.0124***	0.9335***
Liquidity	0.0130	0.0116	0.0167	0.0126
R&D	0.7428*	0.8196*	0.7731*	0.5049
ROE	0.0272***	0.0274***	0.0304***	0.0224**
Capex	0.1009	0.0135	0.0842	0.0163
Blockholder	-0.2211***	-0.2228***	-0.2133***	-0.2250***
Hostile	0.0315	0.0516	0.0305	0.0320
Cash	0.0732	0.0640	0.0638	0.0818
Competing	0.0173	0.0204	0.0235	0.0096
Crossborder	0.0141	0.0170	0.0115	0.0152
Horizontal	0.0134	0.0126	0.0161	-0.0027
Intercept	0.7940	0.7755	0.7686	0.6771
Year effects	yes	yes	yes	yes
Country effects	yes	yes	yes	yes
Industry effects	yes	yes	yes	yes
Observations	171	171	171	171
Prob > F	0.0000	0.0000	0.0000	0.0000
Adjusted R-squared	0.3425	0.3237	0.3436	0.3468

The table shows the estimation effects of acquirer type on bid premiums. *, **, and *** refer to significance at the 10%, 5% and 1% confidence levels, respectively. FB refers to the dummy variable "Financial Buyer", while FB x ESG refers to the combined effect of the dummy FB and the ESG score for each dimension – Overall, Environmental, Social and Governance.

However, the FB x ESG variable has a negative effect on premiums in all regressions, suggesting that if the acquirer is a financial buyer, there is likely a negative relationship between the two. Our results can be interpreted as premiums decreasing by 24.93 percentage points when the acquirer is a financial buyer and seeing to the highest possible ESG Overall score. This leads us to the conclusion that the second hypothesis is supported – financial buyers on average pay less for firms with strong ESG performance in comparison to strategic buyers.

6.2 Addressing Potential Endogeneity

Since past literature fails to reach a consensus on the direction of the relationship between ESG performance and financial performance (Alshehhi et al., 2018), we realize that our explanatory variable, ESG Overall, may be endogenous and the OLS estimate a biased estimate of the causal effect of ESG performance (Soytas et al., 2019). Endogeneity means that a variable (ESG Overall) is correlated with other variables in the model or with the error term and could be a result of unobservable omitted variable bias (Deng et al., 2013). It could be the case that companies that are highly attractive command a premium because they are financially strong,

allowing them to invest more in ESG practices and disclosures. There is also a possibility that the ESG performance of a certain firm is impacted by other aspects outside of the firm, such as the ESG performance of firms operating within the same industry or country (Gomes and Marsat, 2018). When analyzing the results of the regressions, we need to make sure that our outcomes are not results of reverse causality, which would imply endogeneity in our ESG variable (Cheng et al., 2014).

To control that the ESG measure is not a proxy for other unobserved factors, we estimate instrumental variable ("IV") regressions and run a two stage least squares ("2SLS") on the regressions, in line with Gomes and Marsat (2018). While OLS estimates are derived from all of the natural variation in a variable across the sample, IV estimates are only derived from the variation attributable to the instrument. Instrumental variables yield consistent parameter estimates, meaning that they converge to the population parameters as sample size is increased, whereas OLS estimates aren't consistent when sample size grows if there is endogeneity in the given variable (Angrist and Krueger, 2001).

According to the key assumptions relating to an instrumental variable regression, we need to select an instrumental variable that determines the assumed endogenous independent variable (ESG Overall) but only affects the dependent variable (Premium) through its effect on the independent variable *(*also known as the *exclusion restriction*). Furthermore, the IV should have a strong relationship with the endogenous variable. We henceforth assume that ESG Overall is the endogenous variable. For the second model we use two endogenous variables, ESG Overall and FB x ESG, as they are both tied to the ESG Overall variable. Gomes and Marsat (2018) state that "a firm's CSR performance is impacted by the CSR performance of other firms within the same industry-country pair, and by the CSR performance of other firms in the same country over time." Therefore, we follow Cheng et al. (2014) and Gomes and Marsat (2018) when selecting the two instrumental variables; country-year mean of ESG scores and country-industry mean of ESG scores, computed using the entire Refinitiv ESG database.

To assess whether the chosen IV:s are sufficient, we run a first-stage regression on ESG Overall, the IV:s and all the control variables and conclude that both IV:s are significant and positively associated with the endogenous variable. This result proposes that the instruments explain any potential differences in ESG Overall. Moreover, we have controlled that the correlation between the instruments and ESG Overall is sufficient, as well as performed tests on the strength of the two instruments used. This was done through an IV regression on our dependent variable with ESG Overall as the endogenous variable. The first-stage regression gives us F-statistics on both instruments that are larger than 10, implying that the instruments are valid estimators of ESG Overall and that the IV regression is likely to yield robust results.

The second-stage results of our 2SLS tests are shown in Table 9 for the first and second hypotheses or models. What can be concluded from model 1 is that ESG Overall is positively associated with premiums, which was also the case when previously running the regression with ESG Overall as an exogenous variable.

Table 9
ESG and Bid Premiums using 2SLS

	Model 1	Model 2
	Second Stage Overall	Second Stage Overall & FB x ESG
ESG	0.9019	0.8975
FB	-	-0.0065
FB x ESG	-	-0.0498
Size	-0.0889*	-0.0877
MTB	0.0013	0.0013
Leverage	0.2347*	0.2383*
Growth	0.0013	0.0009
Runup	0.9850***	0.9798***
Liquidity	0.0141	0.0127
R&D	1.0830*	1.0613
ROE	0.0301*	0.0306
Capex	0.5395	0.5346
Blockholder	-0.2399***	-0.2373***
Hostile	0.0058	-0.0008
Cash	0.1034	0.1081
Competing	-0.0304	-0.0267
Crossborder	-0.0336	-0.0346
Horizontal	0.0543	0.0485
Year effects	yes	yes
Country effects	yes	yes
Industry effects	yes	yes
Intercept	1.1026**	1.0860*
Observations	171	171
Prob > chi2	0.0000	0.0000
R-squared	0.3893	0.3999

The table presents estimation effects of ESG on bid premiums, with the use of instrumental variables and two-stage least-square (2SLS) regression for both models. Only the second-stage results are reported. *, **, and *** refer to significance at the 10%, 5%, and 1% confidence levels, respectively.

In model two, the second stage of the regression shows that ESG Overall is positively associated with premiums while the interaction term between ESG and FB is negatively associated with premiums, which was also concluded in our second hypothesis. Given that our results are in line with the original regressions, albeit at lower significance levels, this would lead us to the conclusion that our results do not suffer from endogeneity. Although, it is worth mentioning that our IV regressions yield higher effects of ESG on Premiums, suggesting that the explanatory power of our OLS tests is lower than expected and that the ESG Overall score in fact yields a higher positive association with Premiums (Soytas et al., 2019). This implies that our first hypothesis is even more strongly supported than previously concluded, ESG performance and premiums are positively associated even after addressing endogeneity.

However, Angrist and Krueger (2001) point out that IV estimates are not unbiased and give the most reliable results when working with large samples. An unbiased estimator's sampling

distribution would be centered around the parameter, no matter the size of the sample. Considering our sample is rather small, consisting of only 171 transactions, the IV estimates generated by the 2SLS regressions may be biased. Finally, the amount of bias in IV estimates also depends on how well the key assumptions are met and we cannot control for how well we meet the exclusion restriction.

6.3 Robustness Tests

For robustness purposes, we follow Gomes and Marsat (2018) and conduct additional tests using only cash-deals and only completed deals, in order to assess whether our results can be concluded as robust.

In our paper we consider deals that are both cash-only and stock financed. Our sample consists of 96 transactions that are cash-only, accounting for 56.14% of the total sample. When running the regressions on the first hypothesis with cash-only financed deals, we find that ESG is positively associated with premiums in all regressions, indicating that no conclusions need altering under this specification. Only the Environmental dimension is, however, significant under the altered specifications, which could suggest that particularly in cash-only deals ESG factors are not as important when explaining the premium offered. When running the cash-only regression on the second hypothesis, all ESG dimensions are positive, while the interaction term FB x ESG variable is negative, implying that our finding in the original second hypothesis is supported – financial buyers offer a lower premium for strong ESG performance in comparison to strategic buyers.

The second robustness test is conducted using only completed deals, as our final sample includes both successful and unsuccessful deals. 118 observations are completed deals, i.e. 69% of the total sample. The results remain virtually the same as in the original regressions, with some minor modifications, as some variables become more significant (Hostile and Competing), while others lose significance (Blockholder) under the altered specifications. Even though the ESG variables cannot be concluded as significant when only looking at completed deals, they are all positively associated with premiums. In the second hypothesis, the interaction term between ESG and FB remains negative under the altered conditions. Thus, we reason that no conclusions need altering and that our results are robust.

6.4 Interpretation

From our analysis we find that all four ESG variables are positively associated and significant in explaining bid premiums for our sample of control bids for European targets over the time period 2010-2019. The finding that ESG factors have a positive association with premiums is in line with Gomes and Marsat (2018), although our ESG variables are at lower significance levels compared to their regression. Our finding is also more or less in line with Qiao and Wu (2019) who find that the CSR variable was positively associated with premiums, and significant at the 10% level. Their positive association was however very low, ranging from 0.001 to 0.005 in their different models. The differences between their findings and ours could be explained by the different samples and data sources used, as they used KLD (today owned by MSCI) and we used Refinitiv. Also, they could be explained by the different focal time periods, as they examined a time period of 1993-2015. Referring to the discussions in the introduction section of this paper, we suggest that the quality and magnitude of ESG data was inferior in the years preceding 2010's to the most recent period and that this could have impacted their results negatively.

Looking at the control variables, we find that Growth is negative in our study, while Gomes and Marsat (2018) find a positive coefficient. A possible reason for this is that companies in our sample might be poorly managed and acquirers could be attracted to them as they could realize gains through acquiring these companies (Dionne et al., 2015). Runup is exceptionally high in our results in comparison to the study by Gomes and Marsat (2018), but at the same significance levels. R&D is in our sample significant and high, while they find the coefficients to be negative, a possible reason for this discrepancy in results might be that acquirers in our sample value intangible assets more in comparison to the sample of Gomes and Marsat (2018). Our sample may for example consist of relatively more strategic buyers who prefer targets with high intangible assets (Fidrmuc et al., 2012).

Furthermore, a large difference between the two studies can be found in the Capex variable that is positive in our sample, while negative in Gomes and Marsat's (2018) study. A possible explanation for this is the fact that most of the companies in our sample operate within manufacturing and are likely to have high capital expenditures in new machineries or the like. Therefore, it is likely that Capex yields a higher coefficient in our sample than in Gomes and Marsat's (2018), as their distribution of industries was more balanced and skewed towards the service industry. Finally, the remaining control variables are in line with Gomes and Marsat (2018), although some at lower significance levels. When comparing our regressions with Gomes and Marsat (2018), we yield higher adjusted R-squared values with each of the regressions using ESG Overall, Social, Environmental and Governance factors. The adjusted R-squared values suggest that our sample is better described by the variables than their sample. It could, however, also be the result of our sample being more homogenous, given our limitations considering region, deal value and deal form.

The fact that ESG performance is positively valued in control bids by acquirers in our sample can be explained by several prevailing theories in finance. That acquirers offer a higher premium for high-ESG targets supports the *resource-based view* that CSR engagement or strong ESG performance is a source of competitive advantages, allowing the acquirer to improve their corporate image and reputation, attract future talent, as well as, secure more external financing (Qiao et al., 2019). Acquirers could also target high-CSR companies in order to increase the likelihood of the acquisition being successful and the post-acquisition integration process being smoother as high-ESG companies' stakeholders tend to be more supportive of the company's operations and the interests of such stakeholders tend to align better together (Deng et al., 2013). This interpretation conforms to the *stakeholder view* of CSR. Furthermore, strong ESG performance being linked to higher bid premiums could reflect target's lower reputational risk for an acquirer, in line with the *institutional theory*. A contrasting explanation is that strong ESG performance of a target could be a sign of its financial strength as the companies with additional cash may be incentivized to invest in ESG initiatives in order to signal their quality to potential acquirers (Lys et al., 2015). In this case the target's financial strength and prospects would be valued by acquirers understanding the signal, and not the target's ESG performance.

Out of the three ESG dimensions, the coefficient of the Social factor is the most significant (at the 5% level) in explaining bid premiums. There are several possible explanations for this. Firstly, the social dimension of a target firm's ESG performance could be viewed as a proxy for the firm's culture and its compatibility with the acquirer's culture could make the pre- and post-acquisition process smoother and increase integration (Deng et al., 2013). Secondly, Gomes and Marsat (2018) find that the incremental impact of the social dimension is only significant for cross-border transactions and suggest that cultural and regulatory differences

can make the valuation of target's assets and the relationship management with foreign stakeholders more difficult. Considering that 134 of the 171 transactions in our sample are cross-border, although most of them within Europe, our results seem to support their suggestions.

The results of the second hypothesis, that financial buyers are willing to pay less for targets with strong ESG performance in comparison to strategic buyers, seem to align with the findings of Gorbenko and Malenko (2014). Firstly, we show that financial buyers, on average, are willing to pay less for targets. This finding supports the *synergy hypothesis*, that strategic acquirers can extract benefits from a high-ESG target, for example in the form of better stakeholder engagement and, hence, increased financial performance. Financial buyers would not be able to extract such synergies from target's ESG performance and would therefore assign a lower bid price. Furthermore, Gorbenko and Malenko (2014) find that the valuations of financial buyers are negatively associated with the intangibles of the target. Our results conform with their finding if ESG performance is perceived as an intangible asset, since the incremental impact of ESG on financial buyers is negative.

As a concluding remark, we suggest caution in interpreting the results because the firms in our final sample differ from the firms that we omitted from our original dataset from SDC because they lacked data on ESG performance or on some of the other variables. In fact, the median enterprise value, as reported by SDC, for the firms in our final sample is around USD 3.9 billion and value of total assets USD 3.2 billion. The comparable numbers for the omitted observations are only around USD 0.6 billion and USD 0.6 billion. This could be a sign of wealthier firms having the resources to invest in ESG initiatives, whereas, smaller firms without such resources are omitted from the sample. When taking this potential bias into account, our findings appear to support the *signaling theory* of CSR engagement.

7. Conclusion

The results of our analysis show that acquirers value target firms' ESG performance and that there is a positive association between ESG performance and bid premiums. Our findings are robust after controlling for country, year and industry fixed effects and after controlling for the endogenous relationship between the ESG Overall score and bid premiums. In addition, we find that target's ESG Overall and Social factors are the most significant, a possible explanation being that our sample mostly consists of cross-border deals, for which social factors such as human capital and stakeholder networks have been shown to be important. Furthermore, we find that different acquirer types value ESG differently, as financial buyers, on average, are willing to pay less for targets with strong ESG performance.

Our findings can be applied in many contexts. Firstly, one implication of our results for the shareholders of listed European companies is the potential upside that they can gain in a public takeover situation. Our study suggests that target companies can create significant wealth for shareholders through improved ESG performance by, for instance, investing more in sustainability initiatives and increasing their disclosures. This value creation could be increased by as much as 25.36 percentage points for shareholders in a potential public takeover. Secondly, smaller companies looking to be acquired may even benefit from the positive link between ESG performance and bid premiums. By becoming more sustainable, they could become more attractive targets and thereby increase the probability of being acquired for a premium. Thirdly, the findings suggest that companies who efficiently integrate environmental, social and governance aspects into their operations are valued higher by

acquirers in M&A transactions. Financial buyers may benefit from this observation by improving their portfolio companies' ESG performance during the holding period and, thereby, realize higher valuation multiples at exit.

Given the relevance of ESG factors in mergers and acquisitions, as highlighted by the empirical evidence, as well as the upcoming EU taxonomy, we suggest that companies' environmental, social and governance performance will play an even more important role in Europe, going forward. Future research on the area could further analyze the subcomponents of each ESG dimension and how they impact deal valuations across different industries. Moreover, the impact of the acquirer's ESG performance on bid premiums and on target's willingness to accept the bid could be an area of future research.

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9. Appendix

Appendix 1: Rating Methodology of Refinitiv ESG Ratings

Refinitiv's ESG scores are calculated for approximately 9,000 companies globally and for around 1,000 companies the scores exist all the way from fiscal year 2002. Over 450 company-level ESG metrics are calculated by Refinitiv, out of which, 186 of the most comparable and material per industry field are used in the company's assessment and scoring. These metrics are grouped into 10 category scores for each company for the following categories: Resource use, Emissions, Innovation, Workforce, Human rights, Community, Product responsibility, Management, Shareholders and CSR strategy.

The 10 categories fall under the three dimensions of ESG – the Environmental, Social and Governance pillars but each category score is weighted differently, depending on the importance of the category for the industry in question. In other words, the pillar scores are relative sums of the different weighted category scores. These 10 category weights for each industry are updated and calculated dynamically in Refinitiv's database. The ESG scores are calculated based on relative performance within the company's sector (TRBC industry group) for the Environmental and Social pillars and within the firm's country of incorporation for the Governance pillar. Refinitiv uses a percentile rank scoring methodology i.e. the data provider is not rating the companies and determining what "good" performance is, instead, the data determines each company's relative performance.

Environmental: Resource use, Emissions, Innovation

Social: Workforce, Human rights, Community, Product responsibility

Governance: Management, Shareholders and CSR strategy

The final overall ESG score aggregates the 10 category scores and varies between 0 and 100. If the company scores between 0 and 25, it is in the bottom quartile of its peer group and if it scores between 75 and 100, it is in the top quartile of its peer group.

The database is updated on a continuous basis according to corporate reporting and, for instance, when new companies are added. The data for the existing companies is refreshed every week, meaning the relative ESG scores are recalculated. Scores will however be marked as "definitive" for all historical years, except for the 5 most recent years, and these are not refreshed.

(Refinitiv Ltd, 2020)

Appendix 2: Description of Refinitiv ESG Categories (taken from Refinitiv)

Pillar score	Category Score	Definition
Environmental Score	Resource Use Score	The Resource Use Score reflects a company's performance and capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management
	Emissions Reduction Score	The Emission Reduction Score measures a company's commitment and effectiveness towards reducing environmental emissions in the production and operational processes.
	Innovation Score	The Innovation Score reflects a company's capacity to reduce the environmental costs and burdens for its customers, thereby creating new market opportunities through new environmental technologies and processes or eco-designed products.
Social Score	Workforce Score	The Workforce Score measures a company's effectiveness towards job satisfaction, a healthy and safe workplace, maintaining diversity and equal opportunities and development opportunities for its workforce.
	Human Rights Score	The Human Rights Score measures a company's effectiveness towards respecting the fundamental human rights conventions.
	Community Score	The Community Score measures the company's commitment towards being a good citizen, protecting public health and respecting business ethics.
	Product Responsibility Score	The Product Responsibility Score reflects a company's capacity to produce quality goods and services integrating the customer's health and safety, integrity and data privacy
Governance Score	Management Score	The Management Score measures a company's commitment and effectiveness towards following best practice corporate governance principles.
	Shareholders Score	The Shareholders Score measures a company's effectiveness towards equal treatment of shareholders and the use of anti-takeover devices
	CSR Strategy Score	The CSR Strategy Score reflects a company's practices to communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes.

Appendix 3: Data Retrieval Process

Data Retrieval:

1. Initially 3,544 transactions downloaded from SDC out of which 1,006 transactions are considered the starting sample of European transactions
    - Europe defined as the following: European Economic Area + UK + Switzerland
    - After excluding transactions that either do not meet our criteria under "4. Data" or are missing bid prices on SDC: 929 transactions remaining
2. Filter by deal form and keep the following forms; Acq. majority interest, Acq. remaining interest and Merger. 889 transactions remaining
3. Filter by target industry sector, remove financial firms. 707 transactions remaining
    - Excluded:
        - Commercial Banks
        - Credit Institutions
        - Insurance
        - Investment & Commodity Firms
        - Real Estate, Mortgage Bankers & Brokers
4. Download Refinitiv ESG scores for the target companies: 220 transactions out of 707 with ESG scores
5. Manual review of all 220 transactions (see explanation below)
6. Remove mandatory tender offers, corporate reorganizations, debt restructuring transactions and spinoffs since they do not meet our definition of control bids (14 transactions): 206 transactions remaining
7. We leave the first transaction (by looking at the date announced as reported in the SDC database) for a given target company if there are no bids for the same target in the preceding 6 months. All subsequent control bids for the same target within 6 months of a previous bid are viewed as being part of the same "bid contest" and thus removed (20 transactions). 186 transactions remaining
8. We remove transactions for which we have no share-price data (13 transactions). We also remove transactions that lack data on any of the variables in the regression (listwise exclusion) - one transaction (deal number 696) with an undisclosed acquirer and unknown acquirer industry is eliminated because it does not meet our criterion of being identifiable. We also remove transactions where part of the offer per share is contingent on a commodity derivative since this complicates the calculation of a premium (transaction number 1013 is removed).
9. The final sample consists of 171 transactions

The last step in our data retrieval was a manual review of the final sample of transactions using press releases and other official company or regulatory documents. We checked for the accuracy of the following items:

- RIC tickers
- Target and Acquirer names
- Bid prices
- Announcement Dates
- Industry and Acquirer Type – whether Strategic or Financial acquirer
- Deal synopsis – whether the transaction is a traditional merger or acquisition and not any of the above-mentioned excluded transaction types (e.g. spinoff)

Appendix 4: Description of Variables

Variable	Definition	Data source	Expected sign	Found sign	Significant
Premium (Dependent variable)	bid price per share/share price on trading day -42 prior to announcement	SDC and Reuters Fundamentals ("RF") via Eikon			
ESG		Refinitiv			
I. Overall			+	+	Yes (<0.05)
II. Environmental			+	+	H1: Yes (<0.1) / H2: No
III. Social			+	+	Yes (<0.05)
IV. Governance			+	+	Yes (<0.1)
Size	ln (market value of equity at previous fiscal-year end)	RF	-	-	Yes (in H1 and H2 reg with Overall and Social)
Market to Book	market value of equity/net book value	RF	+/-	+	No
Leverage	total debt/total assets	RF	+/-	+	No (Yes in H2 reg with Social)
Growth	average sales growth in past 3 years	RF	+/-	-	No
Runup	ln (share price on trading day -1 prior to announcement/share price on trading day -42)	RF	+	+	Yes
Liquidity	current assets/current liabilities	RF	+	+	No
Research and Development	R&D expenditures/total assets	RF	+	+	Yes (except in H1 & H2 reg with Governance)
Return on Equity	net income/common equity	RF	+/-	+	Yes
Capital Expenditures	capital expenditures/total assets	RF	+/-	+/-	No
Blockholder	dummy=1 if acquirer held >5% of target shares prior to announcement	SDC	-	-	Yes
Hostile Transaction	dummy=1 if bid reported as "Hostile" by SDC	SDC	+	+	No
Cash	dummy=1 if the transaction consideration is fully in cash	SDC	+	+	No
Competing Bidder	dummy=1 if SDC reports that there were competing bidders	SDC	+	+	No
Cross-Border Transaction	dummy=1 if acquirer and target from different nations	SDC	+	+	Yes
Horizontal Transaction	dummy=1 if acquirer and target have different SIC codes	SDC	+	+	No
Financial Buyer	Dummy=1 if acquirer is defined as financial buyer	SDC	+/-	+/-	No
H1 refers to the first hypothesis and H2 to the second hypothesis.					

Appendix 5: Comparison of Refinitiv and CSRHub[13]

Data provider	Refinitiv	CSRHub
Sources	• Company sources: Annual reports, company websites • Non-governmental organizations, stock exchange filings, CSR reports, Media sources	• Third-party sources: Investing research firms, indexes, publications, "best of"/"worst of" lists, non-governmental organizations, crowd sources, government agencies
Data base size	• ~9,000 companies with scores • Global • Scores since 2002	• ~9,000 companies with full scores, ~19,000 companies with partial scores and • Global • Scores since 2008
Validity	• Allows for investigation of underlying data points and sources	• Allows for investigation of underlying data points and sources
Process and Methodology	• Collection of data points, standardizing the data across companies into measures (e.g. *"TR.AnalyticCo2")* • Relative percentile ranking applied at measure level • Measures are grouped into 10 categories (e.g. *"Emission Category"*), relative percentile ranking applied at category level • Category weights based on e.g. materiality[14] applied to each category score and ESG, Environmental (E), Social (S) and Governance (G) scores are sums of the weighted category scores • E and S score and Controversies score calculated through benchmarking within industry and G score within country, *ESG Combined score* calculated by discounting *ESG score* for controversies • **Scoring:** percentile rank scores 0-100 (%) and letter grades D- to A+	• Collection of data points from third-party sources • Grouping data points from the several sources into 12 subcategories (e.g. *"Energy & Climate Change")* or special issues (e.g. *"testing on animals")* • Normalizing the data by analyzing eventual variations and adjusting for potential biases • Weighting each data source based on the data's credibility and quality, as estimated by CSRHub • Producing consensus scores for each subcategory that are then aggregated into 4 category scores • "Average user"[15] weights applied to each category score and Overall CSR rating is the sum of weighted category scores • Scores are removed for companies if there isn't enough data • Platform allows for benchmarking against the entire CSRHub company database • **Scoring:** scores 0-100 scale and percentile rank scores 0-100 (%)
Database updates	• Database updates in line with corporate reporting • Data is refreshed weekly and scores recalculated for the latest 5 fiscal years with changes to the database (e.g. when new companies, controversy events and company restatements added)	• Scores are reviewed monthly (human review) for any potential problems that have been missed or for outliers
Scores and categories	• Main scores: *ESG*, *ESG Controversies*, *ESG Combined* • 3 pillar scores; *Environmental*, *Social*, *Governance* • 10 categories	• Main scores: *CSR Rating, CSR Ranking (%)* • 4 category scores; *Employee*, *Environment*, *Community*, *Governance* • 12 subcategories

[13] All information aggregated from the two data providers' websites and public reports. For links to the websites, see section "8. References".
[14] Materiality represents a theme's relative importance to an individual industry group (Refinitiv, 2020).
[15] The category weights represent weights by an average user of platform and have been calculated by CSRHub by studying their users' profile settings (CSRHub.com).

Appendix 6: Summary of Statistical Tests

1. The results of the Ramsey Reset test shows whether there is linearity in the model. Given that our test statistic is 0.9952, we cannot reject the hypothesis of no omitted variables, which implies that we might have omitted variables in our dataset. This indicates that it is unlikely that linearity between the dependent and independent variables can be established.

2. Results of the variance-inflation factor (VIF) test shows that all variables are well below the cut-off level of 10. The highest (Size) has a VIF of 1.68, the lowest (Growth) at 1.04 and a mean VIF for all variables of 1.24, which implies that our dataset does not suffer from multicollinearity.

Variable	VIF	1/VIF
SIZE	1.68	0.596825
CASH	1.49	0.673031
HORIZONTAL	1.47	0.682459
LEVERAGE	1.45	0.689513
OVERALL	1.37	0.731009
RD	1.33	0.750189
LIQUIDITY	1.28	0.778668
FB	1.22	0.822601
CROSSBORDER	1.20	0.830931
CAPEX	1.16	0.862278
ROE	1.10	0.910324
BLOCKHOLDER	1.09	0.917959
MTB	1.09	0.918959
RUNUP	1.07	0.933197
COMPETING	1.07	0.937329
HOSTILE	1.06	0.942124
GROWTH	1.04	0.963282
Mean VIF	1.24	

3. The Jarque Bera test of normally distributed residuals is performed through a skewness-kurtosis test, where the chi-squared test statistic is 0.0000, which implies that we can reject the null-hypothesis of normality in residuals at all significance levels. This gives us the result that residuals are not normally distributed.

4. Breusch-Godfrey test shows us whether there is likely to be autocorrelation in the dataset. With a chi-squared test statistic of 0.0000, we can reject the null hypothesis at all levels, which means we cannot show that there is no serial correlation in the data. This means that the data is likely to suffer from autocorrelation.

5. Finally, the Breusch-Pagan test is performed to measure potential heteroskedasticity in residuals. We find that with a chi-squared statistic of 0.0110, the null hypothesis of constant variance (homoskedasticity) can be rejected at the 5% significance level. This means that the data is likely to be heteroskedastic.