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ESG disclosure and ESG performance of seeking-buyer companies

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We examine the ESG practices of companies that publicly seek a buyer. Our focus is on whether these companies increase ESG disclosure and performance before the 'seeking-buyer' announcement and whether these actions influence the acquisition outcome. Based on a sample of US seeking-buyer firms for the period 2000–2021, we find that seeking-buyer status is positively related to ESG disclosure but not ESG performance. We do not observe that ESG disclosure and performance are associated with the likelihood of being acquired. Our results are consistent with deals being based on targets' financial characteristics, especially when buyers lack a shared understanding of disclosed ESG information and when this information is not supported by ESG performance.

Keywords: ESG disclosure; ESG performance; M&A; seeking-buyer firms; machine learning
JEL: C45, G34, G41, M14, M40

1. Introduction

Involvement in environmental, social and governance (ESG) activities has become increasingly important in making investment decisions in financial markets (Christensen et al. 2022). Prior research indicates that engaging in ESG practices may improve a company's value creation (Gregory et al. 2014, Li et al. 2018, Dhaliwal et al. 2012), lift financial performance (Li et al. 2018, Nekhili et al. 2021), lead to lower cost of equity and debt (Dhaliwal et al. 2011, Eliwa et al. 2021, Erragragui 2018), improve firms' competitive advantage (Shrivastava 1995, Russo and Fouts 1997) and help establish long-term relations with stakeholders (Donaldson and Preston 1995, Rezaee 2016, Tregidga and Laine 2022).

Given these benefits, ESG engagement has also gained attention in the context of corporate acquisitions. Several studies investigate the impact of firms' engagement in ESG activities on the outcomes of M&A deals (e.g. Aktas et al. 2011, Bose et al. 2021, Boone and Uysal 2020, Deng et al. 2013, Fairhurst and Greene 2022). This research reports that involvement in ESG practices

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leads to better announcement returns (Deng et al. 2013), higher takeover premiums (Gomes and Marsat 2018), and improved value creation for shareholders in the context of M&A (Aktas et al. 2011). Companies are more often considered as targets when they have high or low levels of CSR (corporate social responsibility, CSR, often used interchangeably with ESG) performance (Gomes 2019, Fairhurst and Greene 2022). ESG engagement has also been considered a mitigating factor for the diversification discount in cross-border acquisitions (Kim et al. 2022) that may influence the choice of a target firm in leveraged buyouts (Onukar 2021).

Prior studies investigating involvement in ESG activities in corporate acquisitions focus on cases when the buyer initiates the deal and takes ownership of another entity's share capital, equity interests or assets, or when two companies combine to form a new enterprise together. In practice, a significant proportion of M&A deals are initiated by target firms, a phenomenon that has been largely overlooked in prior research. Issuing a so-called 'seeking-buyer announcement' to facilitate a sale process has become more common over time (Murdock 2010). Search-for-buyer cases may account for up to 38.7% of deals where the original reported date is disclosed (Mulherin and Simsir 2015).

We study whether companies openly seeking a buyer have a higher propensity to engage in ESG activities since they have the time and incentives to exercise changes related to involvement in ESG practices. We build our assumptions on two theories – legitimacy theory (Ashforth and Gibbs 1990, Dowling and Pfeffer 1975, Eliwa et al. 2021) and signalling theory (Dhaliwal et al. 2011, Macias et al. 2011, Wong and Zhang 2022). According to legitimacy theory, firms aim to operate within the bounds and norms of their societies (Deegan and Unerman 2011), attempting to ensure that their activities are perceived by external parties as being legitimate. Hence, firms may be more involved in ESG activities showing better ESG performance because they aim to enhance legitimacy in the eyes of stakeholders (Deephouse 1996, Suchman 1995). If better ESG performance is followed by improved ESG disclosure, then building on signalling theory, companies engaged in ESG initiatives can reduce information asymmetry, lessen uncertainty, influence share price response (Ramchander et al. 2012) and improve trust among different stakeholders (Feng et al. 2022, Dunn and Sainty 2009).

The percentage of firms reporting sustainability information from 2006 to 2016 increased from less than 10% to more than 80% in Europe and to more than 60% in the US[1] (Stolowy and Paugam 2018). This number has increased in Europe following the introduction of the Non-Financial Reporting Directive in 2018 and the Corporate Sustainability Reporting Directive in 2024, both of which apply to large EU companies. In comparison, in the US, the Securities and Exchange Commission recently ended its defence of disclosure rules related to climate issues for public companies, leaving companies to rely on voluntary sustainability reporting. In such an environment, companies may engage in higher ESG disclosure that is not supported by genuine ESG performance. These actions convey misleading signals about a company's ESG commitment (see Talpur et al. 2024 for review), especially taking into consideration the existing difficulties in understanding ESG information (Christensen et al. 2022, Kimbrough et al. 2022).

In this study, we examine whether disclosed ESG information is related to the ESG performance of seeking-buyer companies to assess whether they 'window dress' their annual reports or

[1]Existing US Generally Accepted Accounting Principles (GAAP) require relatively few aspects of ESG information to be disclosed in 10-K filings over our observation period (e.g., asset retirement obligations, environmental remediation liabilities, etc.), and a significant part of ESG-related information remains voluntary and unregulated in the US market (De Villiers and Marques 2016, Fatemi et al. 2018, Clarkson et al. 2020). Therefore, there are significant differences in the levels and nature of ESG information voluntarily disclosed by US companies.

genuinely invest in ESG activities. Our assumptions are based on the idea that seeking-buyer firms initiate deals themselves and therefore have the time and incentives to engage in ESG activities to make themselves more attractive to potential buyers. We also investigate whether involvement in ESG activities of seeking-buyer firms impacts the outcome of the M&A deal and whether the buyers take into consideration involvement in ESG activities of target firms while making the final decision about the deal.

Our findings suggest that seeking-buyer firms disclose more ESG information than a matched control group. Yet, we do not observe higher ESG performance for the seeking-buyer sample in comparison to matched controls. Moreover, our results show that seeking-buyer companies are characterised by lower ESG performance in comparison to their peers. Therefore, this indicates that firms seeking a buyer enhance ESG disclosure when preparing for the official announcement but not ESG performance. Our results also do not suggest that there is a significant relationship between enhanced ESG disclosure before the announcement and the likelihood of being acquired. In other words, the likelihood of companies being acquired is not higher for seeking-buyer companies with enhanced ESG disclosure. Building on previous literature, our results indicate that acquiring companies consider seeking-buyers' involvement in ESG disclosure as ineffective (Bénabou and Tirole 2010, Masulis and Reza 2015), as a 'window dressing' strategy (Macias et al. 2011, Delmas and Burbano 2011), or as social activities that promote managers' personal reputations as good citizens (Barnea and Rubin 2010, Cheng et al. 2023) rather than genuine involvement in valuable ESG. Moreover, acquiring companies are likely more focused on financial characteristics of seeking-buyer companies when making the decisions (Datta et al. 2001, Harrison et al. 2014) as these characteristics are easy to understand and analyse (Christensen et al. 2022).

Our contribution to the literature is twofold. First, building on the results of previous research on companies' involvement in ESG activities in the context of M&As (see, e.g. Aktas et al. 2011, Deng et al. 2013, Gomes and Marsat 2018, Gomes 2019, Boone and Uysal 2020), by examining ESG disclosure and performance in seeking-buyer firms, we add to our understanding of the motives behind involvement in ESG activities in M&As. We show that seeking-buyer companies are involved in increased ESG disclosure compared to our matched sample, but this is not supported by higher ESG performance.

Secondly, we contribute to previous research analysing the role of ESG activities in M&A deals without finding evidence that enhanced ESG disclosure is associated with the likelihood of being acquired. Based on our findings the probability of acquisition of seeking-buyer firms is related to financial characteristics, particularly leverage and 3-average sales growth, bringing us to the conclusion that acquirers pay more attention to and consider more important financial performance indicators (Aktas et al. 2010, Datta et al. 2001, Harrison et al. 2014), rather than ESG practices that are harder to assess, verify and analyse.

2. Literature review and hypotheses development

2.1. *Seeking-buyer firms*

In most previous literature on mergers and acquisitions, acquiring firms are predominantly assumed to be deal initiators. However, for various reasons companies may wish to sell themselves, their assets or change ownership, initiating the announcement to search for a buyer. While the information that a company is open to bids is often conveyed 'behind closed doors' and is communicated only to a limited number of potential buyers (Boone and Mulherin 2008), some companies prefer to make a public announcement of their intentions (Anagnostopoulou and Tsekrekos 2013, Anagnostopoulou and Tsekrekos 2015). This may be due to strategic reasons, leverage, growth or distress (see Murdock and Madura 2011, Aktas et al. 2010) indicating that the board of directors has clear intentions to sell the company (Mulherin and Simsir 2015).

Prior research documents the existence of earnings management in financial statements by targets that are seeking-buyers (e.g. Anagnostopoulou and Tsekrekos 2015, Macias et al. 2011, Murdock 2010). Anagnostopoulou and Tsekrekos (2015, p. 352) explain that seeking-buyer companies have 'the time, motivation and opportunity to influence their reported numbers in a way that can affect the contractual outcome of their scope'. This contrasts with bidder-initiated deals which naturally deprive the target firm of an opportunity to undertake any accounting-related manipulation to influence contractual outcomes. However, according to Erickson and Wang (1999), the party that is aware of its intentions long before the deal is more motivated and hence, more likely to engage in manipulations (Anagnostopoulou and Tsekrekos 2015).

One reason seeking-buyer firms might engage in earnings management is to present a more appealing picture of management performance and company value. This can help reduce the expected cost of future debt (DeFond and Jiambalvo 1994) or make the firm more appealing to potential buyers by hiding inefficiencies or shaping public perception to secure a higher bid price (Alexandridis et al. 2010, Anagnostopoulou and Tsekrekos 2015).

In this case, in line with some results seeking-buyer companies behave similarly to companies preparing for an IPO that have been observed engaging in earnings management characterised by high accruals (Teoh et al. 1998, Alhadab et al. 2015). Similarities are also observed for companies going through a seasoned equity offering (SEO) as managers of these companies overstate earnings to look more appealing on the market (Kothari et al. 2016, Cohen and Zarowin 2010). In this paper we investigate whether seeking-buyer companies are also more involved in involvement in ESG activities, such as ESG performance and ESG disclosure, and how these actions influence their acquisition outcome.

2.2. *Involvement of seeking-buyer firms in ESG activities*

The growing emphasis on ESG practices has captured the attention of both academia and industry in recent years (e.g. Schaltegger and Burritt 2010, Cho et al. 2012, Cho et al. 2015). Companies increasingly view ESG activities not merely as compliance measures but as strategic initiatives that contribute to their competitive advantage. As such, these initiatives are often recognised as integral components of a firm's strategic assets (McWilliams and Siegel 2011). Given that seeking-buyer firms have time and incentives to create a positive financial impression of the firm and its performance before the announcement (Anagnostopoulou and Tsekrekos 2013, Anagnostopoulou and Tsekrekos 2015), we assume that these companies may also have opportunities and motives to improve their ESG performance and ESG disclosure in order to create a better image for a potential buyer.

According to legitimacy theory, companies are expected to act in accordance with societal norms (García-Sánchez et al. 2021, MacLean and Behnam 2010). Legitimate ESG performance involves measurable changes and improvements in practices and outcomes related to environmental, social, and governance factors. If a company performs in a legitimate way, it starts to meet social expectations of shareholders, customers and other stakeholders (Kostova and Zaheer 1999, Moser and Martin 2012, Baldini et al. 2018). Higher ESG performance can help companies to experience positive abnormal returns (Takahashi and Yamada 2021) and solve the conflicts between managers and stakeholders more easily (Jo and Harjoto 2012, El Ghoul et al. 2017). As seeking-buyer companies have time before the announcement, they are expected to undertake real actions in order to perform in a responsible way trying to improve their legitimacy before the deal.

While it may appear intuitive that ESG performance should be positively linked to ESG disclosure, existing research offers no clear consensus on the nature of this relationship. Some authors report that ESG disclosure is closely linked to ESG performance (Cui et al. 2018, Cho et al. 2013), suggesting that companies with strong ESG performance are more inclined to signal their achievements to the market through increased disclosure (Melloni et al. 2017). In this case ESG disclosure serves as a straightforward signal to stakeholders that companies act in a more responsible way and have a higher ESG performance (Dhaliwal et al. 2011).

However, prior research also indicates that ESG disclosure and ESG performance are not always positively associated and, in this case, higher ESG disclosure serves primarily as a presentational tool rather than reflecting substantive actions (Schaltegger and Burritt 2010). Furthermore, since ESG disclosure is voluntary, some companies reveal only selected ESG information that presents them in a better light (Holder-Webb et al. 2009, Pinnuck et al. 2021). Therefore, the link between ESG performance and ESG disclosure of seeking-buyer firms is unclear.

Given the evidence from Anagnostopoulou and Tsekrekos (2013; 2015) that seeking-buyer firms have time, incentives and opportunity to manipulate their earnings, we expect that these companies will engage in ESG disclosure to send positive signals to potential buyers. This is akin to seeking-buyer companies using 'greenwashing' behaviour in ESG disclosure in order to enhance their firm's reputation and appear to market participants in a better light than they deserve (Christensen et al. 2021, Seele and Gatti 2017). Therefore, from the perspective of signaling theory, these companies will try to formulate a positive impression towards external parties and build a positive image for stakeholders as not all stakeholders have evidence of reliability of signals and real ESG performance (Cohen and Dean 2005, Jones and Murrell 2001, Neu et al. 1998). In particular, in the situation of seeking-buyer companies, when there is a significant gap in information between managers and stakeholders, managers may intentionally mislead stakeholders to appear legitimate while advancing their own or the organization's interests (Sauerwald and Su 2019). These actions can be explained by the fact that signaling about higher involvement in ESG disclosure may lead to better outcomes creating a more positive image before the announcement. For instance, this may lead to reductions the cost of equity and cost of debt, better analyst coverage (Dhaliwal et al. 2012, Dhaliwal et al. 2011, Eliwa et al. 2021) and higher firm value (Cho et al. 2012).

To summarise, as ESG performance and ESG disclosure are multifaced strategies, they may be used by seeking-buyer companies to legitimize their operations and signal their value to stakeholders, or to signal a positive image to stakeholders and influence societal appraisal in order to enhance the firm's reputation and public image in the eye of the market participants (Christensen et al. 2021).

Building on this discussion, we propose the following hypotheses:

H1.1: Seeking-buyer firms report higher ESG performance before the 'seeking-buyer' announcement date.

H1.2: Seeking-buyer firms have higher levels of ESG disclosure before the 'seeking-buyer' announcement date.

2.3. *Seeking-buyers' involvement in ESG activities as a factor in completing an M&A deal*

Prior research documents that a firm's involvement in ESG activities is valuable for potential buyers (Aktas et al. 2011, Deng et al. 2013). Higher ESG performance enhances a firm's

legitimacy by fostering a positive corporate image, generating revenue opportunities, and is associated with more predictable earnings and lower risks (e.g. Brooks and Oikonomou 2018, Kimbrough and Louis 2011, Kim et al. 2012). Involvement in ESG is also considered to be an important factor for shareholder value creation (Buchanan et al. 2018, Dimson et al. 2015, Aktas et al. 2011). Companies excelling in ESG activities tend to benefit from a lower cost of equity and debt (Dhaliwal et al. 2011, Eliwa et al. 2021), experience positive abnormal returns (Aktas et al. 2011, Dimson et al. 2015), and are better equipped to resolve conflicts between managers and stakeholders (Dhaliwal et al. 2012).

As discussed, companies involved in ESG practices also tend to have higher voluntary disclosure of these activities (e.g. Dhaliwal et al. 2011, Bilyay-Erdogan et al. 2024) as high-ESG performers signal their quality to the market to positively influence future expectations (Clarkson et al. 2008, Lys et al. 2015). The information disclosed about ESG practices is considered an important means of communication between top managers and stakeholders (Dhaliwal et al. 2011, Dhaliwal et al. 2012, Roberts 2003). Companies with a more aggressive approach towards ESG disclosure are better at enforcing contracts in cross-border acquisitions, therefore, implying that ESG disclosure serves as a conduit for forming mutual trust among stakeholders (Kim et al. 2022). As involvement in ESG activities improves a firm's reputation and transparency (Tsang et al. 2023), which can be beneficial during the M&A process, management has an opportunity to lower or mitigate the information asymmetry problem by behaving in a socially responsible way and revealing voluntary non-financial disclosure to stakeholders (Cui et al. 2018, Cho et al. 2015). Therefore, involvement in ESG activities – disclosure and performance – can be used by seeking-buyer firms as a valuable factor for attracting an acquiring company to initiate an M&A deal and increase the likelihood of being acquired.

Despite these reports, engagement in ESG activities are treated by some as unfavourable. For example, Brown et al. (2006) and Kruger (2015) find that managers engaging in corporate philanthropy benefit themselves at the expense of shareholders. Moreover, engagement in ESG may lead to an increase in agency costs if managers over-promote their personal reputation as good citizens at shareholders' expense (Barnea and Rubin 2010, Cheng et al. 2023). Managers engaged in time-consuming CSR activities can lose focus from their core managerial responsibilities (Jensen 2002). This discussion leads to the expectation that seeking-buyer companies engaging in ESG actions involves using resources for unjustified and unproductive purposes related to insider-initiated corporate philanthropy (Bénabou and Tirole 2010, Masulis and Reza 2015) – activities that are not valuable for finding a buyer.

Further, some consider ESG activities as greenwashing (Ashforth and Gibbs 1990). For instance, Hemingway and Maclagan (2004) report that ESG practices are often used to cover up corporate misbehaviour. Therefore, ESG disclosure may 'camouflage' real practices to maintain legitimacy (Eliwa et al. 2021, Michelon et al. 2016) and to 'influence perceptions regarding the future financial prospects of the firm, … , rather than to genuinely attempt to reduce environmental or social damage' (Brammer and Pavelin 2006, p. 1169). As ESG information is difficult to understand and verify (Christensen et al. 2022, Kimbrough et al. 2022), involvement of seeking-buyer companies in ESG activities may negatively influence the likelihood of acquisition.

Given these competing views, our next hypothesis is expressed in null form:

H2: There is no relationship between the likelihood of being acquired and ESG performance and disclosure.

3. Empirical models

3.1. *Involvement of seeking-buyer companies in ESG activities*

In order to test whether seeking-buyer firms are more involved in ESG activities (ESG disclosure and ESG performance) than their industry peers, we estimate the following regression equations:

$$\begin{aligned} ESGDisclosure_{it} = {} & \beta_0 + \beta_1 SeekingBuyer_i + \beta_2 lnSizeFirm_{it-1} + \beta_3 ROA_{it-1} + \beta_4 Leverage_{it-1} \\ & + \beta_5 lnAgeFirm_{it-1} + \beta_6 EarningsManagement_{it-1} \\ & + \beta_7 lnDocumentLength_{it-1} + \gamma_t + \mu_i + \varepsilon_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} ESGPerformance_{it} = {} & \beta_0 + \beta_1 SeekingBuyer_i + \beta_2 lnSizeFirm_{it-1} + \beta_3 ROA_{it-1} + \beta_4 Leverage_{it-1} \\ & + \beta_5 lnAgeFirm_{it-1} + \beta_6 EarningsManagement_{it-1} + \gamma_t + \mu_i + \varepsilon_{it} \end{aligned} \quad (2)$$

The dependent variable in Equation (1) is one of the two ESG disclosure measures – machine learning disclosure score (*ML ESG_D*) or Bloomberg disclosure score (*Bloomberg ESG_D*). The ESG performance variable in model (2) is measured with the help of LSEG performance score (*LSEG ESG_P*). The independent variable *SeekingBuyer* in both models is equal to 1 if the company has issued a seeking-buyer announcement during the years 2000–2021 and 0 otherwise.

Following prior literature, we include a series of controls for firm-specific characteristics. Firm size (variable *lnSizeFirm*) is an important factor for involvement in ESG activities, both disclosure and performance, because larger companies tend to be more visible and are more likely to be engaged in sustainable practices to prove their legitimacy (Lee et al. 2025, Simnett et al. 2009, Drempetic et al. 2020, Michelon et al. 2020). We further control for return on assets (variable *ROA*) and leverage (variable *Leverage*), as Hussain et al. (2018) and Michelon et al. (2020) claim that more profitable companies have more resources for sustainable development, therefore, there should be a positive link between profitability and ESG practices. Firms with high levels of debt face monitoring expenses and often seek to lower these costs by enhancing the amount of ESG information they disclose (Dhaliwal et al. 2011). Moreover, leveraged companies in general are more likely to face additional disclosure demands from debt holders (Huang et al. 2022). Next, we control for company age (variable *lnAgeFirm*), since older firms are more likely to have the resources to be involved in ESG projects and activities (Al-Shaer et al. 2024, Huang et al. 2022). Furthermore, we control for document length (*lnDocumentLength*) in model (1) with ML measure as the dependent variable, as we observe an increasing trend in the overall length of 10-K forms over the years. This variable is not included in the model with Bloomberg ESG disclosure score. Finally, we control for earnings management calculated with the help of the modified Jones model (Dechow et al. 1995) (*EarningsManagement*), in response to prior research findings that indicate a negative link between company's involvement in earnings management and ESG disclosure (Christensen 2016, Kim et al. 2012). All the models also include time – and industry-fixed effects based on 2-digit SIC codes. The variables are described in detail in Appendix A.

We include *t*-1 controls in all our models. By employing lagged values of these controls, we aim to mitigate potential endogeneity issues. Furthermore, we hypothesise that the control variables affect the dependent variable primarily through their values in the previous period. Thus, using t-1 values is deemed more appropriate for our analysis.

3.2. *Involvement in ESG activities and the acquisition outcome*

To test our hypotheses H2 of whether the involvement of seeking-buyer firms in ESG activities leads to a higher likelihood of being acquired, we estimate the following logit regression model:

$$\begin{aligned} AcquisitionOutcome_{it} = {} & \beta_0 + \beta_1 ESG_{it-1} + \beta_2 lnSizeFirm_{it-1} + \beta_3 ROA_{it-1} + \beta_4 Leverage_{it-1} \\ & + \beta_5 lnAgeFirm_{it-1} + \beta_6 EarningsManagement_{it-1} \\ & + \beta_7 lnDocumentLength_{it-1} + \beta_8 SalesGrowth_{it-1} + \varepsilon_{it} \end{aligned} \quad (3)$$

The above equation includes all the ESG-related terms. In practice, we evaluate separate models that include the ESG disclosure variable, the ESG performance variable, and their combination, in addition to a baseline model without the ESG term. The main explanatory variable is one of the measures reflecting involvement in ESG activities – disclosure or performance before the official announcement, and the dependent variable is *AcquisitionOutcome* – equal to 1 if a seeking-buyer company was acquired in 2 years after issuing an official announcement. We incorporate the same firm-specific attributes as utilised in our preceding model linking them to the seeking-buyer firm's status (e.g. Dhaliwal et al. 2011, Drempetic et al. 2020, Huang et al. 2022, Hussain et al. 2018, Michelon et al. 2020, Simnett et al. 2009). Additionally, a company's financial characteristics – specifically, profitability and leverage – directly influence the likelihood of an acquisition (Anagnostopoulou and Tsekrekos 2015, Deng et al. 2013, Masulis et al. 2007). Higher profitability may influence different deal outcomes (Datta et al. 2001, Deng et al. 2013, Levi et al. 2014), while higher leverage may add additional pressure on managers to perform well, making them spend more time and energy on making the deal a success (Jensen 1986). Moreover, targets with higher leverage usually show higher eagerness to sell and close the deal faster (Aktas et al. 2010), which makes controlling for these characteristics important in our study.

4. Data and sample selection

4.1. *ESG disclosure and performance proxies*

Prior studies have highlighted inconsistencies in the measurement of ESG metrics, as evidenced in the works of Berg et al. (2022), Christensen et al. (2022), Kimbrough et al. (2022), and Serafeim and Yoon (2023). In light of this, our research employs a comprehensive approach to evaluate the engagement of companies' ESG practices. This approach includes the use of several proxies, of both disclosure and performance, to provide a more comprehensive assessment.

We employ the Bloomberg ESG disclosure score as our first proxy to gauge a firm's engagement in ESG disclosure, a metric that has been validated and utilised in previous research (e.g. Buchanan et al. 2018, Christensen et al. 2022, Li et al. 2018). This disclosure score is based on information that companies provide through annual reports, sustainability reports, corporate websites, and other sources. It ranges from 0.1 for companies with the minimum amount of disclosed ESG information to 100 for firms that disclose the complete set of indicators included in the Bloomberg ESG disclosure score.

However, Kimbrough et al. (2022) claim that ESG information provided by managers directly can decrease the existing disagreement in ESG indexes created by third parties such as Bloomberg. Moreover, as the Bloomberg ESG disclosure score does not directly reflect the amount of ESG-related information in companies' reports, we draw insight from Li et al. (2021) to construct a purely reporting-based measure of ESG disclosure. Li et al. (2021) used an ML textual approach, namely a word embedding model, to build a measure for corporate culture and we use a similar approach to create a proxy for ESG disclosure from annual reports.

Word embedding language models (Mikolov et al. 2013a, 2013b) can be used to make dictionaries more objective. This approach uses neural networks to model words or phrases with low-dimensional vectors (usually 100–300 elements) so that they preserve the semantic information of words. The networks are trained using extensive textual datasets, in our case 10-K forms, to efficiently learn word representations. This learning process focuses on predicting a central word based on surrounding words or vice versa, as established by Mikolov et al. (2013a). In the resulting vector space, words and phrases that frequently appear in similar contexts within 10-K forms exhibit proximate representations. This proximity in representation reflects their contextual and semantic associations, effectively quantifying these relationships. It represents words and phrases in a manner that aligns closely with human understanding, thereby, facilitating a more intuitive interpretation of text. Consequently, this objective, data-driven method yields improved dictionaries tailored for 10-K forms, when compared to purely researcher-designed subjective dictionaries (Bhatia et al. 2022).

We briefly outline the process of constructing our machine learning model, with a more comprehensive description available in Li et al. (2021). The training dataset of the language model comprises 162,155 10-K forms sourced from the SEC EDGAR database (https://www.sec.gov/edgar/). Initially, we preprocess this data by removing extraneous elements such as HTML tags, and substituting numerical values with a designated symbol (#). Subsequently, we employ a pre-trained deep-learning algorithm from the spaCy library (www.spacy.io) to identify and label named entities within the text. These entities are annotated with the tag 'NER' followed by the entity type. The same model is also utilised to detect and categorise 'noun chunks ' – phrases comprising nouns and their related words. In the final phase, we apply the word2vec neural network architecture, as described by Mikolov et al. (2013a), to develop word embedding representations for the identified phrases in the 10-K documents. This modelling is executed using the Gensim library (www.radimrehurek.com/gensim/). The developed model is then utilised to identify 100 phrases that are contextually similar to our preselected seed words in 10-K forms, addressing each dimension of ESG independently. The phrases are presented in Appendix B. For the environmental dimension, the seed words are 'environmental' and 'sustainability'; for the social dimension, 'social' and 'our people'; and for governance, 'governance' and 'our_governance'. We compute the count of these identified words/phrases in the 10-K forms of both the target companies and their industry peers. This calculation serves as a metric for assessing the extent of ESG disclosure. Given our observation of an increasing trend in the overall length of 10-K reports, we opt for an absolute measure, as the relative measure could potentially misrepresent the actual extent of ESG disclosure.

Nevertheless, all textual analysis methods have limitations, as is the case with our ML measure (Lewis and Young 2019). While the vector space model, which encapsulates the semantic information of phrases, enhances the objectivity of our measure, the initial selection of seed words by researchers introduces a potential source of error. The ML-augmented dictionary might be biased right from the start if the seed words are inappropriately chosen. Therefore, the selection of these seed words necessitates particular attention. To mitigate this issue, we rigorously validated the chosen seed words through a consensus among all co-authors of this paper and an external accounting expert. Additionally, we established the robustness of our measure by juxtaposing the ML-derived results with those obtained from a manual coding of twenty 10-K forms, employing Cohen's Kappa as a statistical measure of agreement. This coding was performed by a seasoned accounting expert. The resultant Kappa value of 0.48 suggests a reasonably high level of reliability for our measure, particularly considering the inherent ambiguity in ESG factors.

Our third measure aims to estimate the ESG performance of companies. Although Michelon et al. (2020) claim that investors are more concerned about ESG disclosure rather than the real implementation of ESG performance, we anticipate the performance to be an important factor in

M&A deals of seeking-buyer firms. Our proxy of ESG performance is the LSEG ASSET4 rating that reflects environmental, social and governance performance metrics (e.g. Cheng et al. 2014, Dyck et al. 2019, Eliwa et al. 2021). LSEG's ESG framework goes beyond mere disclosure by incorporating advanced analytics and peer benchmarking, enabling a comprehensive evaluation of a company's real-world ESG impact in comparison to its industry peers (www.lseg.com). They incorporate both qualitative and quantitative data, including third-party verification and on-the-ground performance metrics. LSEG's ESG assessment is dynamic by nature, which involves regular updates and adjustments based on evolving standards and practices, ensuring that the focus remains on measurable and progressive ESG performance, rather than static or outdated disclosures. Each company gets a score from 0 to 100, where 0 is the worst ESG performance, while 100 characterises the best ESG performance.

4.2. *Sample*

We acquire the data of all US firms that officially announced seeking a buyer during the period of 2000–2021 from the LSEG Eikon M&A database (www.lseg.com). The database defines a seeking-buyer firm as a case 'where the target company has announced plans to seek out a buyer or buyers for its assets or the company itself'. We only keep publicly listed firms in the sample due to data availability constraints for private companies.

To be included in our sample, a seeking-buyer company needs to meet two requirements: the company needs to have issued a 10-K form (available in the SEC Edgar database) in the same fiscal year as the official announcement date, and its financial data needs to be available in LSEG Datastream. The final sample of seeking-buyer companies includes 246 individual deals. The industry distribution of the deals based on primary SIC codes (US Securities and Exchange Commission 2021) is provided in Table 1. The manufacturing sector has the highest representation, 70.9% with 175 companies. This is followed by transportation and public utilities at 13.0% (32 companies), services industry at 10.1% (27 companies), wholesale and retail trade at 2.4% (6 companies), and mining at 2.4% (6 companies).

4.3. *Descriptive statistics*

Table 2 provides descriptive statistics for the main variables. We use propensity score matching (PSM) to obtain a sample of matched companies for further comparative analysis (Cram et al. 2009, Kothari et al. 2005). The matched sample is used for Equations (1) and (2). The objective of PSM is to construct a matched sample that is similar in observable firm characteristics related to the likelihood of participating in a deal. Consistent with prior accounting studies employing matching procedures (e.g. Armstrong et al. 2010, Lennox et al. 2012), we include firm-level financial variables that capture size, performance, and liquidity, which are expected to

Table 1. Industry distribution of seeking-buyer companies.

Industry distribution	No. of companies	%
Mining	6	2.4%
Manufacturing	175	70.9%
Transportation and public utilities	32	13.0%
Wholesale and Retail Trade	6	2.4%
Services	27	10.1%
Total	246	100.00%

Table 2. Descriptive statistics.

Variable	Full sample			Seeking-buyer sample			Matched sample			Welch's t-test	
	Obs. (1)	Mean (2)	Std. Dev (3)	Obs (4)	Mean (5)	Std. Dev (6)	Obs (7)	Mean (8)	Std. Dev (9)	Diff. (5)-(8)	*p*-value
ESG Variables											
Bloomberg ESG_D	276	44.222	13.589	147	46.798	13.412	129	41.226	13.026	5.572	***
ML ESG_D	366	0.006	0.005	159	0.007	0.006	207	0.005	0.004	0.002	***
LSEG ESG_P	443	37.787	31.106	235	43.041	30.732	208	31.845	30.510	11.20	***
Firm Characteristics											
lnSizeFirm	479	15.730	2.822	246	16.490	2.140	233	14.911	3.258	1.580	***
ROA	479	5.844	38.782	246	13.053	29.546	233	−1.824	46.168	14.877	***
Leverage	479	0.286	0.196	246	0.298	0.179	233	0.273	0.210	0.025	-
lnAgeFirm	479	1.599	0.318	246	1.634	0.320	233	1.562	0.312	0.073	**
EarningsManagement	479	−0.028	0.107	246	−0.029	0.114	233	−0.027	0.097	−0.002	-
AverageSalesGrowth	427	26.799	70.219	220	24.373	58.648	207	27.752	73.757	−3.378	-
lnDocumentLength	366	12.731	0.817	159	12.953	0.586	207	12.568	0.899	0.385	***
AcquisitionOutcome				246	0.199	0.400					

The descriptive statistics of the ESG variables for the 'Seeking-buyer' sample and the matched sample. Due to unequal variances, Welch's t-test values are reported in the last column. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. All variables are described in Appendix A.

influence both deal participation and post-deal outcomes. The data requirements are the same as for the seeking-buyer companies: availability of financial data and 10-K filings with the SEC. The data for the matched companies are year-matched to each deal using financial variables including *Size-Firm, CurrentLiabilities, MV, EBIT*, and *Sales*, without replacement.[2] The variables are explained in detail in Appendix A. The final sample includes 233 matched companies.

The 'seeking-buyer' companies in our sample generally have higher Bloomberg ESG and ML ESG disclosure scores, and LSEG ESG performance scores compared to companies in the matched sample. 'Seeking-buyer' companies also have higher average total assets, ROA, and are older. There is no significant difference in the leverage, sales growth and discretionary accruals of the two samples.

Table 3 presents the correlations for the variables. There is a strong positive correlation between the Bloomberg ESG disclosure score and the LSEG ESG performance score, suggesting similar tendencies in these scores. However, the ML ESG disclosure score shows weaker and mixed correlations with the other two. Company size is positively correlated with Bloomberg and LSEG ESG scores but negatively correlated with the ML ESG disclosure score. Company age also shows a positive, albeit weaker, relationship with Bloomberg and LSEG ESG scores. Leverage, on the other hand, has very weak correlations with all ESG scores, indicating minimal influence. The earnings management variable is negatively correlated with ESG scores, suggesting companies engaged in higher earnings management have lower ESG disclosure and performance.

5. Results

5.1. *Involvement of seeking-buyer companies in ESG activities*

We estimate Equations (1) and (2) with least squares regression. The results are provided in Table 4. The independent variable, SeekingBuyer, is significant and positive, with ESG disclosure measured through the machine learning technique (variable *ML ESG_D*). At the same time according to our results there is a significant and negative relationship between seeking-buyer status and ESG performance (the dependent variable *LSEG ESG_P*). Therefore, in line with our assumptions supported by the signalling theory, ESG disclosure becomes a tool for companies that are seeking for a buyer to signal transparency without increase of their actual ESG performance. In other words, seeking-buyers tend to have higher ESG disclosure and lower ESG performance than their matched industry peers that can be considered as a 'cheap talk' or 'window dressing' to signal their positive image to stakeholder (Eliwa et al. 2021, Hummel and Schlick 2016). Therefore, hypothesis H1.1 is rejected. The results support our proposition that seeking-buyer firms increase their ESG disclosures as a strategic measure before the announcement. This result also aligns with previous research suggesting that companies with lower ESG performance often engage in higher levels of ESG disclosure as a way to mask their actual practices (e.g. Walker and Wan 2012, Duchin et al. 2025, Yusupova et al. 2025).

5.2. *Involvement in ESG activities and the likelihood of being acquired*

To test our second set of hypotheses, we estimate Equation (3) as a pooled logistic regression model. We report the regression results of the relationship between seeking-buyers' involvement

[2]We estimate the propensity scores using the following logistic regression model, specifying Year as an exact match criterion: $SeekingBuyer_i = \beta_0 + \beta_1 SizeFirm_{it} + \beta_2 CurrentLiabilities_{it} + \beta_3 MV_{it} + \beta_4 EBIT_{it} + \beta_5 Sales_{it} + \beta_6 Year$. All the variables are described in Appendix A.

Table 3. Correlations.

	ML ESG_D	Bloomberg ESG_D	LSEG ESG_P	Leverage	lnSizeFirm	lnAgeFirm	ROA	Earnings Management	Average Sales Growth	Acquisition Outcome	lnDocument Length
ML ESG_D	1.000										
Bloomberg ESG_D	−0.182	1.000									
LSEG ESG_P	0.086	0.795	1.000								
Leverage	0.160	0.134	−0.074	1.000							
lnSizeFirm	−0.218	0.580	0.579	0.016	1.000						
lnAgeFirm	−0.127	0.083	0.138	−0.126	0.242	1.000					
ROA	−0.190	0.066	0.187	−0.175	0.400	0.337	1.000				
EarningsManagement	0.179	−0.041	0.011	−0.034	−0.031	−0.095	−0.056	1.000			
AverageSalesGrowth	−0.223	−0.035	0.001	−0.177	0.094	−0.084	0.403	−0.111	1.000		
AcquisitionOutcome	0.028	−0.044	−0.098	0.083	−0.251	−0.159	−0.178	−0.070	0.003	1.000	
lnDocumentLength	−0.130	0.268	0.030	0.223	0.521	−0.213	−0.135	−0.068	−0.081	−0.304	1.000

Correlations of the ESG variables and control variables for the ‘Seeking-buyer’ sample. All variables are described in Appendix A.

Table 4. The ESG practices of Seeking-Buyer companies compared to peers.

Variables	ML ESG_D	Bloomberg ESG_D	LSEG ESG_P
SeekingBuyer	0.0013***	0.2095	−2.9713***
	(0.0004)	(0.8646)	(0.9801)
lnSizeFirm	0.0002***	4.3114***	8.7276***
	(0.00005)	(0.3241)	(0.4564)
Leverage	0.0011	1.3007	3.7289
	(0.0009)	(3.4589)	(4.3093)
lnAgeFirm	−0.0016**	0.5966	6.1297***
	(0.0007)	(3.1879)	(1.6855)
ROA	−1.7e-6	−0.0523**	−0.0580***
	(4.4e-6)	(0.0229)	(0.0216)
EarningsManagement	0.0016	6.2997	9.9200**
	(0.0023)	(3.9758)	(3.9478)
lnDocumentLength	0.0005**		
	(0.0002)		
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	368	293	447
R-sq	0.0609	0.5325	0.5617

This table presents the results of the analysis of the ESG activities of the 'Seeking-buyer' companies from least squares regressions, where the dependent variable is one of the ESG scores (ML ESG disclosure score, the Bloomberg ESG disclosure score or LSEG performance ESG score). All the variables are described in Appendix A. Standard errors are clustered and are reported below the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

in ESG practices, both disclosure and performance, and the acquisition outcome in Table 5. We also report a base model excluding the ESG variables in the first two columns of the table, to study the relationship between the financial variables and the acquisition outcome.

We do not find any statistically significant association between any of the ESG metrics and the likelihood of being acquired. Consequently, we are unable to reject hypotheses 2. Our assumption here is that these results reflect acquirers considering ESG disclosure by seeking-buyer firms as 'cheap talk' or 'window dressing' (Delmas and Burbano 2011, Macias et al. 2011), when unsupported by clear ESG performance outcomes. Indeed, our results reflect that in the base model there is a positive and significant association between financial characteristics including average sales growth and leverage, and the acquisition outcome, indicating that these factors are considered most important in acquisition decisions. This is consistent with the results of previous research finding that financial characteristics are positively related to deal outcomes (Harrison et al. 2014, Datta et al. 2001, Aktas et al. 2010). On the other hand, the association between firm size and the acquisition outcome negative, consistent with earlier findings that larger firms present a more formidable defence against takeovers due to the increased resource requirements necessary for their acquisition (Masulis et al. 2007).

6. Additional analysis

6.1. *Robustness tests*

To further investigate the contrasting roles of ESG performance and disclosure in characterizing seeking-buyer companies, we repeat the analysis for the Bloomberg measures using a 2SLS model to reduce endogeneity concerns. This analysis utilises logit regression where the dependent variable is binary, indicating whether a firm is a part of the seeking-buyer sample or not. The main explanatory variable, 'ESG hat', is estimated using 2SLS as an instrumental variable

Table 5. ESG practices and acquisition.

Dependent variable	Acquisition Outcome											
Independent variables	Base		LSEG ESG_P		ML ESG_D		Bloomberg ESG_D		ML ESG_D and LSEG ESG_P		Bloomberg ESG_D and LSEG ESG_P	
ESG Disclosure							−0.0090	−0.0097	−17.4212	−15.0223	−0.0391	−0.0392
							(0.0315)	(0.0343)	(80.8232)	(80.6310)	(0.0502)	(0.0506)
ESG Performance			0.0014	0.0039	−20.3736	−7.0960			0.0114	0.0117	0.0243	0.0242
			(0.0126)	(0.0132)	(69.3109)	(69.9133)			(0.0238)	(0.0240)	(0.0318)	(0.0323)
lnSizeFirm	−0.1986*	−0.2163*	−0.2125	−0.2544	−0.4136**	−0.4370**	−0.0665	−0.0605	−0.6786	−0.6860*	−0.2757	−0.2747
	(0.1193)	(0.1221)	(0.1921)	(0.1979)	(0.2003)	(0.1780)	(0.2063)	(0.2100)	(0.4143)	(0.3919)	(0.3133)	(0.3194)
ROA	−0.0020	−0.0027	−0.0021	−0.0031	0.0094	0.0023	−0.0008	−0.0003	0.0127	0.0108	−0.0009	−0.0008
	(0.0088)	(0.0086)	(0.0090)	(0.0088)	(0.0062)	(0.0115)	(0.0191)	(0.0199)	(0.0079)	(0.0164)	(0.0200)	(0.0077)
Leverage	0.8525*	0.9458*	0.8361	0.9030	1.0577	1.3086	0.9747**	0.9573**	1.0181	1.0645	0.7095	0.7073
	(0.4919)	(0.5083)	(0.5616)	(0.5881)	(0.8497)	(0.9002)	(0.4377)	(0.4160)	(1.0521)	(1.0405)	(0.4833)	(0.4617)
lnAgeFirm	−1.4882	−1.2977	−1.5101	−1.3537	−0.8728	−0.5066	−1.1943	−1.2243	0.3946	0.4429	−1.7230	−1.7264
	(1.0405)	(1.0654)	(1.0600)	(1.0820)	(1.4962)	(1.4002)	(1.3371)	(1.3884)	(1.9634)	(1.8207)	(1.3071)	(1.3435)
Earnings-Management	0.1127	0.0928	0.1158	0.1006	0.0137	0.0145	0.1426	0.1436	0.0092	0.0089	0.1134	0.1136
	(0.1200)	(0.1220)	(0.1204)	(0.1223)	(0.2135)	(0.2139)	(0.1302)	(0.1316)	(0.1908)	(0.1893)	(0.1348)	(0.1348)
lnDocumentLength					−0.0785	−0.0433			0.4707	0.4847		
					(0.03607)	(0.3610)			(0.7321)	(0.7041)		
AverageSales-Growth		0.0022**		0.0023**		0.0057		−0.0010		0.0017		−0.0001
		(0.0009)		(0.0009)		(0.0072)		(0.0076)		(0.0093)		(0.0077)
N	152	152	152	152	95	95	106	106	92	92	103	103
Pseudo R^2	0.084	0.101	0.084	0.102	0.161	0.168	0.062	0.062	0.151	0.151	0.087	0.087

This table presents the results of the analysis of the likelihood of subsequent acquisition of the 'Seeking-buyer' companies from logit regressions, where the dependent variable equals 1 if the firm was acquired within two years and 0 otherwise. The main explanatory variables are the ESG variables, such as ESG Disclosure and ESG Performance. We additionally add to all the models a 3-year rolling average of sales growth as a financial characteristic of sample companies. All variables are described in Appendix A. Standard errors are clustered by industry, and are reported below the coefficients. The Pseudo R-squared is McFadden's. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

to mitigate potential endogeneity issues. The chosen instrument is the year a company's ESG score was first reported in the Bloomberg database (Chen and Xie 2022), where an earlier year would instrument higher ESG disclosure and be negatively correlated with the Bloomberg ESG disclosure variable. We test the first hypothesis with the equation:

$$\widehat{SeekingBuyer}_{it} = \hat{\beta}_0 + \hat{\beta}_1 ESGDisclosure_{it-1} + \hat{\beta}_2 lnSizeFirm_{it-1} + \hat{\beta}_3 ROA_{it-1} + \hat{\beta}_4 Leverage_{it-1} + \hat{\beta}_5 lnAgeFirm_{it-1} + \hat{\beta}_6 EarningsManagement_{it-1} \quad (4)$$

The empirical results are provided in Table 6. The key finding is that the 'ESG hat' variable has a negative and statistically significant relationship at 10% level with a firm being in the seeking-buyer category. This suggests that higher ESG disclosure, as measured and instrumented in this study with an *earlier* year of being reported in the database, hence resulting in a negative coefficient, is associated with an increased likelihood of a firm being categorised as actively seeking a buyer. Thus, the results support the findings of described earlier in section 5.1.

6.2. *Cluster analysis*

To gain further insight into the ESG performance and disclosure behaviour of seeking-buyer companies, we conduct a k-means clustering analysis. We cluster separately the seeking-buyer companies and the control group based on their LSEG ESG and ML ESG scores, dividing both groups into two clusters. This analysis provides more information about how companies choose to enhance their ESG disclosure or performance, and whether there is a group of companies where higher values of both variables coincide.

Figure 1 displays the clustering results along with the centres of each cluster, represented by an x-symbol. The x-axis of the figure represents ML ESG disclosure values, while the y-axis represents LSEG ESG performance.

Table 6. 2-stage least squares: ESG practices of the 'Seeking-buyer' companies.

	Year of Bloomberg ESG_D
ESG hat	−0.9897*
	(0.5583)
lnSizeFirm	5.0649*
	(2.6271)
ROA	−0.0570
	(0.0366)
Leverage	9.0133*
	(4.6720)
lnAgeFirm	1.1645
	(1.0581)
EarningsManagement	−5.4065
	(2.4580)
N	224
Pseudo R^2	0.122

This table presents the results of the analysis of the ESG practices of the 'Seeking-buyer' companies from logit regressions, where the dependent variable equals 1 if the firm is from the seeking-buyer sample, and 0 otherwise. The main explanatory variable 'ESG hat' is estimated as a 2-stage least squares instrument variable to address endogeneity. The instrument variable used is the year the company's ESG score is first reported in the Bloomberg database. All variables are described in Appendix A. Standard errors are reported below the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

The figure shows that, while there are clear high- and low-performance clusters in both groups, the differences in ESG disclosure between the clusters are more pronounced for the control (matched sample) group. In this group, there is a more distinct high-high (Cluster 1) and low-low (Cluster 0) cluster. In the seeking-buyer sample, on the other hand, there appear to be high disclosure–high performance (Cluster 1) and high disclosure–low performance (Cluster 0) clusters. This clustering supports our previous observation that ESG disclosure is particularly pronounced within the seeking-buyer companies, regardless of their ESG performance. Moreover, according to the figure, both, seeking-buyer companies with low and high ESG performance, disclose approximately the same amount of ESG information supporting our assumptions based on the signaling theory.

As a robustness test for the acquisition outcome models, we include a *Cluster* dummy variable to replace the ESG score variable in Equation (3). The Cluster variable takes a value of 1 if the company belongs to the high ESG performance–high ESG disclosure cluster, and 0 if it belongs to the low ESG performance–high ESG disclosure cluster, as both clusters in the seeking-buyer sample exhibit high ESG disclosure. The results of the analysis are presented in Table 7.

We find no statistically significant relationship indicating a different likelihood of acquisition between these two clusters.

6.3. *Involvement in ESG activities and market response*

To further analyse the role of ESG activities of a seeking-buyer firm on the deal outcome, we investigate the relationship between involvement in ESG activities and market response.

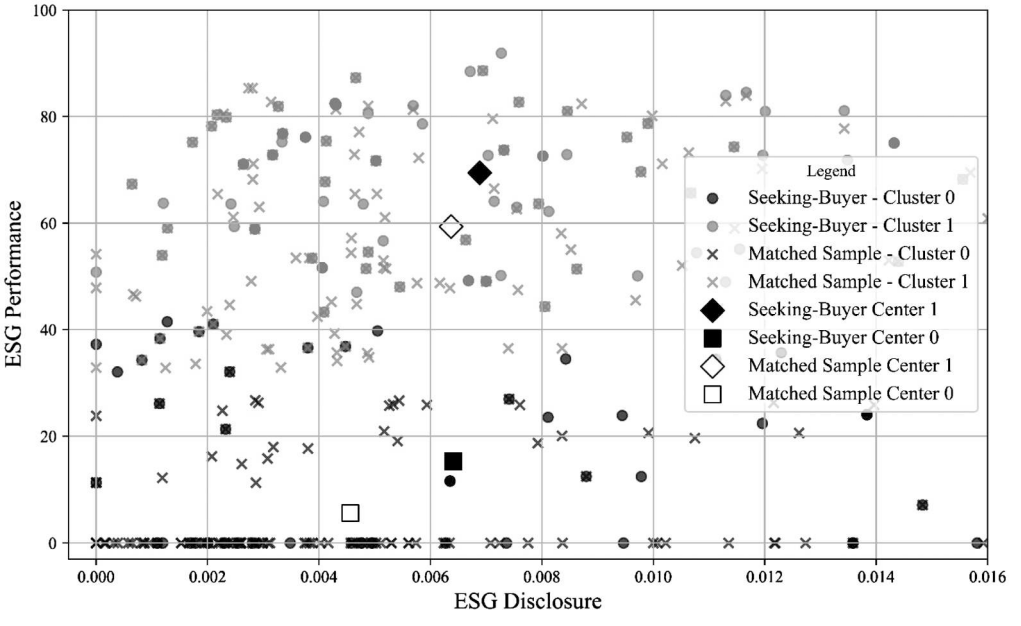

Figure 1. Cluster Analysis: ESG Disclosure and ESG performance. Note: The seeking-buyer group and the control group are clustered with the k-means clustering ML-method based on their LSEG ESG_D and ML ESG_P scores, dividing both groups into two clusters. The plot presents these two clusters for both samples and their cluster centres.

Table 7. ESG practices and acquisition outcomes: cluster analysis.

	ESG performance and disclosure clustering	
	(1)	(2)
Cluster (high ESG performance and disclosure)	1.3884	1.3744
	(1.3756)	(1.4066)
lnSizeFirm	−0.7176**	−0.8281***
	(0.3089)	(0.3081)
ROA	−0.0025	−0.0152
	(0.0056)	(0.0125)
Leverage	0.1258	0.5072
	(1.0635)	(1.0644)
lnAgeFirm	−0.9096	−0.4965
	(2.0798)	(1.8721)
EarningsManagement	−5.7211*	−5.9120*
	(3.1711)	(3.1236)
AverageSalesGrowth		0.0109
		(0.0090)
N	134	134
Pseudo R^2	0.221	0.241

This table presents the results of the analysis of the likelihood of subsequent acquisition of the 'Seeking-buyer' company from logit regressions, where the dependent variable equals 1 if the firm was acquired within two years and 0 otherwise. The main explanatory variable is 'Cluster' taking value of 1 if the company belongs to the high disclosure-high performance cluster achieved by k-means clustering the LSEG ESG_*P* variable and ML ESG_D variable, and 0 otherwise. All variables are described in Appendix A. Standard errors are clustered by industry and reported below the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Previous studies indicate that management gleans insights from market responses to their company's stock prices, particularly during M&A processes (Luo 2005, Kau et al. 2008, Aktas et al. 2011). This learning extends to ESG activities, where market reactions are shaped by firms' involvement in these activities, impacting stock prices (Hsu et al. 2019, Serafeim and Yoon 2023). While positive corporate social performance can decrease investor information asymmetry and enhance share price response (Cui et al. 2018, Ramchander et al. 2012), the potential rise in agency costs could lead to adverse market reactions (Jensen 2002, Kruger 2015). Consequently, the impact of seeking-buyer's involvement in ESG practices on market responses needs further empirical investigation.

To shed light on this question, we test whether seeking-buyer firms' involvement in ESG practices – disclosure and performance – affects share price response to the seeking-buyer announcement. For that purpose, we employ the following regression model:

$$CAR_{it} = \gamma_0 + \gamma_1 ESG_{it-1} + \gamma_2 lnSizeFirm_{it-1} + \gamma_3 ROA_{it-1} + \gamma_4 Leverage_{it-1} + \gamma_5 lnAgeFirm_i + \gamma_6 lnMV_{it-1} + \gamma_7 Beta_{it-1} + \delta_t + \mu_i + \varepsilon_{it} \quad (5)$$

where the dependent variable is the market response to the release of a seeking-a-buyer announcement, and the main explanatory variable, ESG, is one of the proxies for a firm's involvement in ESG activities – disclosure or performance. Following previous studies, our control variables are firm size (variable *lnSizeFirm*) (Deng et al. 2013, Hussain and Shams 2022), ROA (variable *ROA*) (Deng et al. 2013, Fairhurst and Greene 2022), leverage (variable

Leverage) (Deng et al. 2013, Hussain and Shams 2022), firm age (variable *lnAgeFirm*) (Tunyi 2021), market value (variable *lnMV*) (Fairhurst and Greene 2022) and beta (variable *Beta*) (Hackbarth and Morellec 2008). We make similar justifications for the control variables as discussed in Section 3.

Table 8 presents the mean abnormal returns of seeking-buyer firms by high and low ESG activity. The first row reflects the mean abnormal return for all firms, which is close to zero. The columns represent the mean abnormal returns for firms within the highest quartile and for firms within the lowest quartile in each ESG variable, indicated by the row titles. As can be seen from the Table 8, companies with low ESG activity are consistently characterised by higher abnormal returns in all cases.

We estimate Equation (5) using pooled regression where CAR is measured as the signed cumulative abnormal return calculated over (–1, +1) days window around company-issued

Table 8. Mean cumulative abnormal returns.

Variable	CAR (−1,+1)	
	Mean	
All firms	−0.05%	
	High ESG firms	Low ESG firms
LSEG ESG_P	0.13%	0.48%
ML ESG_D	−1.34%	1.92%
Bloomberg ESG_D	0.63%	2.38%

The table reports CAR(−1,+1) around the announcement date for the sample and firms with the highest and the lowest involvement in ESG practices. Companies in the highest 25% of each ESG measure are assigned as 'High ESG' and companies in the lowest 25% are assigned as 'Low ESG', the first column indicates the ESG measure that determines the subsample.

Table 9. Effect of ESG practices on the market response of the SB announcement.

	LSEG ESG_P	ML ESG_D	Bloomberg ESG_D
ESG	−0.0009	−0.0181	0.00001
	(0.0013)	(1.9839)	(0.0019)
lnSizeFirm	0.0124	0.0229	0.0160
	(0.0119)	(0.0498)	(0.0215)
ROA	−0.0010	0.0001	−0.0005
	(0.0009)	(0.0008)	(0.0007)
Leverage	−0.1475	−0.2440*	−0.1712
	(0.1516)	(0.1416)	(0.1642)
lnAgeFirm	−0.0439	−0.0778	−0.0461
	(0.0631)	(0.0507)	(0.0583)
lnMV	0.0108	−0.0301	−0.0050
	(0.0157)	(0.0519)	(0.0094)
Beta	0.0140	0.0253*	0.0142
	(0.0252)	(0.0137)	(0.0134)
N	127	91	88
R^2	0.0881	0.1410	0.1982

The main explanatory variable is one of the firm's proxies for involvement in ESG practices. All the variables are defined in Appendix A. All regressions control for year and industry fixed effects. Standard errors are clustered, and are reported below the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

announcement calculated by adding the market-adjusted return of the firm on those dates (Alexandridis et al. 2010). Table 9 presents the results of estimating the regression model (5).

Our analysis reveals that none of the ESG disclosure or performance metrics is significantly associated with market responses to announcements of seeking-buyers. These findings suggest that the market lacks a consistent approach to interpreting information related to both ESG performance and ESG disclosure. This ambiguity presents challenges in informed financial decision-making, as highlighted by recent studies (Berg et al. 2022, Christensen et al. 2022, Kimbrough et al. 2022). The lack of clarity in the market's evaluation of ESG factors underscores the need for more refined tools and frameworks for assessing ESG impacts on corporate valuation.

7. Conclusions

Existing literature exploring the relationship between a company's engagement in ESG activities and the outcomes of M&A is relatively scarce and has examined the effect of ESG involvement on announcement returns (Deng et al. 2013), takeover premiums (Gomes and Marsat 2018), empire building (Gul et al. 2020) and acquisition decisions (Bose et al. 2021, Boone and Uysal 2020). Furthermore, all the existing studies have been focused on M&A deals where acquiring companies initiated the deals (e.g. Aktas et al. 2011, Alexandridis et al. 2010).

We extend academic literature by examining the involvement in ESG disclosure and performance of firms that officially issue an announcement that they seek a buyer. Consistent with previous research, (e.g. Anagnostopoulou and Tsekrekos 2013, Anagnostopoulou and Tsekrekos 2015) we observe that seeking-buyer firms have both time and motives to increase ESG disclosure, as these actions may help improve the company's image on the market and send positive signals to potential buyers.

Our results reflect that seeking-buyer companies disclose more ESG information in comparison to size and performance matched peers based on a ML-based ESG disclosure score, however, their ESG performance is lower than for the matched sample. Consequently, we cannot conclude that seeking-buyer companies enhance their ESG performance by undertaking responsible actions in a legitimate way. We also observe that seeking-buyer companies tend to disclose more ESG information that is unsupported by actual ESG performance, which aligns more closely with signalling theory and reflects their desire to create a positive image in the market (Delmas and Burbano 2011, Baldini et al. 2018, Eliwa et al. 2021, Hummel and Schlick 2016).

Furthermore, we do not find evidence that enhanced ESG disclosure is associated with the likelihood of being acquired. This indicates that acquiring companies do not base their acquisition decisions on the higher amount of ESG information revealed by the seeking-buyers. We therefore conjecture that buyers consider ESG disclosure of seeking-buyer companies as 'window dressing' (Macias et al. 2011, Delmas and Burbano 2011), as a waste of time and resources (Bénabou and Tirole 2010, Masulis and Reza 2015), or as social activities aiming to promote managers' personal reputation as good citizens (Barnea and Rubin 2010, Cheng et al. 2023). Less surprisingly, our results indicate that financial characteristics of seeking-buyer companies play an important role in M&A deals. Leverage and average sales growth are significantly associated with the likelihood of being acquired (Aktas et al. 2010, Datta et al. 2001, Harrison et al. 2014). Financial characteristics of seeking-buyer companies are clearer and more straightforward to evaluate when making acquisition decisions, compared to ESG activities, which can be more complex to understand and interpret (Berg et al. 2022, Christensen et al. 2022, Kimbrough et al. 2022). Some support for these conclusions can also be seen in the results of the CAR models.

Our conclusions about the motivations and preferences of acquiring firms must be interpreted with caution, given that we do not control for the specific interests of buyers in

ESG issues, or whether there are ESG-driven motivations behind the acquisition decisions. The lack of association between ESG performance and the likelihood of acquisition does not necessarily imply a disinterest in ESG dimensions per se, but rather reflects a complex interplay of ESG and financial considerations. Indeed, the statistical significance of financial outcomes, such as sales growth and leverage, suggests that these factors carry considerable weight in acquisition decisions.

Finally, we acknowledge that the scope of this research was limited to examining the involvement of seeking-buyers in ESG practices, and the impact of these practices on the likelihood of acquisition. Expanding the analysis to include other dimensions of M&A transactions – such as deal value, payment methods, and the resultant synergy between the acquiring and acquired firms – would enable a more holistic examination of M&As.

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