



## M&A activity as a driver for better ESG performance

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### ABSTRACT

This paper examines whether mergers and acquisitions (M&A) operations impact firms' performances on triple ESG pillars (environment, social, and governance) using a large panel covering 41 countries and 12 economic sectors between 2002 and 2020. We provide evidence that M&A deals have a positive impact on the ESG score of firms. However, this improvement in the ESG score is not attained immediately, and there is no impact on the ESG score in the year in which the deal is agreed upon. However, an M&A deal appears to be significant in increasing ESG performance when the year following the transaction is considered on its own. Similar results are obtained when considering each of the three pillars – environmental, social, and governance. This paper contributes to both the M&A and sustainability literature by exploring a new topic that addresses the relationship between the two. Policy implications for authorities, regulators, managers, and other stakeholders are also outlined.

### 1. Introduction

Mergers & acquisitions (M&A) activities have a long tradition, particularly in Europe and the United States. [Martynova and Renneboog \(2006\)](#) identify waves of such activity going back to the early 1900s. Over recent decades, the number of M&A deals has been increasing. The literature on M&As has focused mainly on firm size, barriers to operations, regulatory issues raised by such concentrations, strategic motivations, implementation and postmerger integration challenges, and cultural issues (e.g., [Caiazza and Volpe, 2015](#); [Hoi et al., 2013](#); [Segal et al., 2021](#); [Steigenberger, 2017](#)).

Recently, sustainability issues, including corporate social responsibility (CSR), have increasingly become issues of vital importance in the academic literature, with a focus on both determinants (e.g., [Arizkuren-Eleta et al., 2013](#); [Matten and Moon, 2008](#); [Sikka, 2010](#); [Miotto, G., & Rom, 2017](#); [Rasche et al., 2020](#)) and consequences (e.g., [Benitez et al., 2020](#); [Carroll, 2015](#); [Huseynov and Klamm, 2012](#); [Kotler and Lee, 2008](#); [Lee, 2008](#); [Martos-Pedrero et al., 2019](#); [Matos et al., 2020](#); [McWilliams et al., 2006](#); [Moon and Vallentin, 2019](#)). Research on this topic has been growing consistently over the years (Carrol, 2021) as countries embrace the sustainable development goals (SDGs) proposed by the United Nations (UN) ([Filho et al., 2019](#); [Kastrinos and Weber, 2020](#); [Vila, Miotto & Rodriguez, 2021](#); [Vila et al., 2021](#)) and reflected in the European Green Deal. The European commitment to promoting a

sustainable economy by becoming the first climate-neutral continent is paramount. This resolve to adopt new public policies encourages firms to move towards more substantial engagements with CSR ([Lo and Liao, 2021](#); [Nirino et al., 2021](#)). The adoption of a proposal for a Corporate Sustainability Reporting Directive by the [European Commission \(2021\)](#) in April 2021 represents another milestone on the road towards the environmental sustainability of firms. Increasing disclosure requirements are expected to force organizations to change. Their relationships with the banking sector and financial markets will be affected by targeting key performance indicators (KPIs) and ratios in compliance with the directive taxonomy. M&A activity may play an active role in achieving these targets.

In the specific case of M&As, environmental, social, and governance (ESG) scores, as a measure of CSR behaviour, have become a critical factor in facilitating M&A operations ([Franklin, 2019](#)). Firms engaged in M&A deals now take a much greater interest in their ESG scores and how stakeholders perceive their sustainable actions. It is now established that sustainability and CSR are relevant issues in considering the motivation behind and the success of mergers and acquisitions (M&As) as perceived by investors ([Gillan et al., 2021](#), [Pineiro-Chousa et al., 2021](#)). Other studies focus on the impact of CSR on M&As (e.g., [Aktas et al., 2011](#); [Boone & Uysal, 2018](#); [Gomes and Marsat, 2018](#); [Qiao and Wu, 2019](#)). For example, some scholars report that M&As involving firms with stronger CSR engagement are of greater benefit to both shareholders and

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stakeholders (e.g., Aktas et al., 2011; Boone & Uysal, 2018; Gomes and Marsat, 2018).

Surprisingly, very little literature has analysed the impact of M&A deals on firms' sustainability and, more specifically, on firms' ESG performance (Gillan et al., 2021). Only a few papers have focused on the impact that M&A deals have on acquirers' CSR and ESG performance (e.g., Tampakoudis and Anagnostopoulou, 2020). In contrast to these studies, our paper assesses whether M&A operations impact a firm's sustainability performance by deconstructing ESG into its three components. We examine whether firms are more likely to strengthen ESG performance after a successful M&A deal – an outcome posited as exclusively derived from the deal. We use the ESG scores as the dependant variable, including the overall score and the score for each pillar. Our methodology analyses the ESG score before and after the deal and controls for firm variables, such as size, profitability, and leverage. In addition, firm and year fixed effects are used. We collected data from the Refinitiv database covering 1722 unique firms that had successfully concluded at least one M&A between 2005 and 2018, amounting to 3941 deals. The full sample is composed of 14,595 observations. For each firm, we have data for at least one year before and one year after the M&A, giving a total of 8843 firm-year observations in our more restricted sample, which covers the period from 2004 to 2019, in a total of 41 countries and 12 economic sectors.

This approach aims to strengthen our general understanding of the impact of M&As on ESGs, thus helping firms to better structure such deals and regulators in order to analyse and supervise the consequences of M&A activity more effectively.

Our findings show that M&A deals tend to increase firms' ESG scores. By analysing the timing of this association, we conclude that this effect is not immediately observable – it is not verified in the year of the deal but in the following year. This means that firms more likely to engage in such deals become increasingly concerned about their business's sustainability and how stakeholders perceive such actions. Nevertheless, this can result from deeper scrutiny by the general public and authorities because M&A deals are always subjected to substantial scrutiny. This is particularly relevant when the intention is to combine existing players into a very large firm (Blonigen and Pierce, 2016). Our results are not incompatible with this effect since we found that larger firms perform better in terms of ESG.

This paper is organised as follows. Section 2 presents the literature review. The data and methodology are described in Section 3, and the results are described in Section 4. Section 5 draws the study's conclusions and provides some policy implications.

## 2. Literature review

Sustainability has been becoming increasingly important in public policies, consumer concerns, and amongst investors and in capital markets (Nirino et al., 2016). An increasing number of firms are incorporating sustainability issues into their investment decisions, reflecting their shareholders' and customers' concerns. This type of firm has attracted growing attention from investors (Gillan et al., 2021; Khan et al., 2016). According to McKinsey (2017), some of the world's largest institutional investors integrate sustainability into their investment decision processes. For instance, BlackRock, the world's largest asset management firm, affirmed that sustainability would be the new standard for investing, building portfolios, and managing risk by firms (BlackRock, 2020). Reiser and Tucker, (2019) declared that the market offered many sustainable funds whose growth had overtaken that of traditional funds.

The definition of sustainability presented in the fundamental Brundtland Report by the UN (1987) was based on "the ability of firms to respond to their short-term financial needs without compromising their (or others') ability to meet their future needs" (Bansal and Desjardine, 2014, p. 71). It recognised the need to manage resources, giving proper consideration to both the present and the future (Bansal and Desjardine,

2014) and affording due importance to all stakeholders (Garriga, 2014). Later, Elkington (1994) presented an integrated approach – the "triple-bottom line" – that incorporates economic, environmental, and social dimensions into this concept (see also Elkington, 2018). More recently, and reflecting the interest of markets and investors, specific sustainability ratings emerged in line with this approach: firms were assessed on environmental, social, and governance (ESG) criteria, giving rise to a global sustainability rating (Porter et al., 2019).

ESG scores are used to measure firms' sustainability performance, measured in the environmental (E), social (S), and governance (G) dimensions; by doing so, ESG captures the engagement of firms in CSR. The link between ESG and CSR is documented in the literature. For example, in a recent paper, Nirino et al. (2021) found that firms use ESG practices to enhance financial performance by reducing the negative impact of corporate controversies.

There are several different ESG rating agencies (for a critical perspective, see Berg et al., 2019) that compute and publish these ratings based on reported information in the three pillars (e.g., RobecoSAM Corporate Sustainability Assessment, Sustainalytics' ESG Risk Ratings, MSCI ESG Ratings, Bloomberg ESG Disclosure Scores, FTSE Russell's ESG Ratings, Thomson Reuters ESG Scores). According to Amel-Zadeh and Serafeim (2018), the most frequent motivation for practitioners' use of ESG data is its relevance to investment performance and appraisal, followed by clientele demand, fund strategy, and ethical considerations. On the other hand, Amel-Zadeh and Serafeim (2018) report several limitations to using ESG information, such as the lack of reporting standards and, consequently, the lack of comparability amongst different agencies. Nevertheless, these scores are a commonly used measure of corporate sustainability in academic empirical research (e.g., Del Giudice and Rigamonti, 2020; Drempetic et al., 2019; Duque-Grisales and Aguilera-Caracul, 2019; Rajesh, 2020).

Recent studies report that ESG plays a pertinent role in M&A activity. It has now been established that investors view sustainability and corporate social responsibility as relevant factors when considering the motivation and financial success of mergers and acquisitions. Authors such as Aktas et al. (2011), Boone and Uysal (2020) and Gomes and Marsat (2018) report that M&A activity that involves firms in stronger CSR engagement has greater benefits for both shareholders and stakeholders.

The link between CSR and M&As might be explained by a reputational effect (Carrol & Brown, 2018). Firms with higher levels of CSR engagement and subsequent ESG ratings are expected to have higher levels of reputation and financial performance and, consequently, are more attractive for potential bidders (Maung et al., 2020). In fact, firms with lower levels of reputation are usually outside the M&A market – or at least have difficulty accessing it – because acquirers want to avoid potential negative spillovers from the deal (Boone and Uysal, 2020). These results are consistent with Krishnamurti et al., (2019), who reported that bidders with CSR concerns tend to target firms with similar CSR activities, avoiding firms with lower sustainability performance.

Lack of support from financial institutions may also explain this difficulty in accessing the M&A market because they are inclined to avoid association with firms of low reputation and inferior ESG ratings. This behaviour would be consistent with the well-known endeavours of tier-1 financial advisers and investment banks to maintain their reputational levels when engaged in M&A deals (Chuang, 2017).

In terms of profitability, higher CSR levels in M&As seem to be associated with greater long-term profitability and higher success rates (Yen and André, 2019). For example, Gomes and Marsat (2018) reported that bid premiums are lower when firms with high CSR are involved because the market perceives the operation as being less risky and with a lower level of information asymmetry. This effect is more evident in cross-border operations.

Similarly, Arouri et al. (2019) report that M&As between similar CSR-level firms are perceived by the market as less uncertain, leading to lower spreads between bids and market prices. In contrast, Qiao and Wu

(2019) report that, in cross-border deals, acquirers will pay higher acquisition premiums for deal targets with higher CSR values, raising a degree of uncertainty about the relationship's true nature. The authors state that this impact is moderated by institutional and cultural distance. Overall, these results support the claim that CSR and ESG engagement is a driver of M&As.

Although most studies have focused on the impact of CSR on M&As (e.g., Aktas et al., 2011; Boone and Uysal, 2020; Gomes and Marsat, 2018; Qiao and Wu, 2019), this is not a one-way process but a bidirectional one. However, only a few studies have focused on the impact that M&As have on acquirers' CSR and ESG performance (e.g., Tampakoudis and Anagnostopoulou, 2020). M&A transactions have also been used to impact ESG performance, as reported by Tampakoudis and Anagnostopoulou (2020), who found that acquirers that incorporate targets with higher ESG ratings are likely to have higher postmerger ratings.

Understanding this bidirectional relationship is the purpose of our study because it is relevant in assessing the success of M&As and in helping regulators and firms in future M&A operations exercise sounder supervision.

We assess the implications of the M&A deals on the acquiring firms' ESG scores, giving consideration to the institutional characteristics (country of origin) and the characteristics of the acquiring firm (size, debt, profitability, liquidity, and tangibility). These variables are commonly associated with the impact of M&A operations on firm performance (Carnes et al., 2019; González-Torre et al., 2020; Nadarajah et al., 2018; Rossi and Harjoto, 2020; Song et al., 2021). In line with other studies (Torre et al., 2020), we deconstruct the ESG score (the primary dependant variable) into each of its three pillars (environmental, social, and governance) to capture different perspectives on the impact of M&As.

### 3. Sample and methodology

We collected data from the Refinitiv database. Our initial sample consisted of 1722 unique firms that had successfully concluded at least one M&A in the period 2005 to 2018. All firms in our sample were defined as acquirers in the deal. As several firms in our sample were acquirers in more than one M&A deal, we covered a total of 3941 transactions. Firms in the financial sector were excluded, as were firms that did not have data for all the control variables. We extended our data period beyond the initial period to account for data in the years surrounding the deal. For each firm, we have data for a minimum of one year before and one year after the M&A, giving us a total of 14,595 firm-year observations in the full sample. The final sample covers the period from 2002 to 2020 in 41 countries and 12 economic sectors.<sup>1</sup>

### 4. Dependant variable measures

We use four different measures of ESG, all coming from Refinitiv Eikon. First, we use the combined ESG score, which captures all of its pillars. Then, we use each score singly, namely, environmental, social, and governance. All measures range from 0 to 100. The environmental (28.7%), social (45.1%), and governance (26.1%) pillar scores set the ESG score, which is then added to the ESG controversies score to compute the combined score. The ESG controversies score measures a firm's exposure to environmental, social, and governance controversies and adverse events reflected in global media. The score is computed based on 23 ESG controversy topics. Examples of controversies include strikes, child labour, consumer complaints, product quality, tax fraud, earnings restatements, and auditor early departures. In recent years, the ESG score from Refinitiv has been used intensively in the academic literature (e.g., Demers et al., 2021; Matos et al., 2020). We present

descriptive statistics on the ESG scores per country in Table 1. The ESG variables reveal that most South American firms are superior to all other regions in their ESG combined scores (average 59.2), while North American countries rank last in the average score for the 2002–2020 period (36.7%). This is complemented in Fig. 1 with a visual representation. For each country, the average score of acquirer firms in M&A deals is computed for the year of the transaction, from 2002 to 2020. The data are collapsed to capture the average score of all companies on the buy side in deals in the selected countries over the period under analysis. Firms headquartered in the US comprise approximately 52.4% of our sample, and in the deal year, their firms exhibit below-average ESG scores.

The reasoning for using a large panel is twofold. First, it is important to account for the cross-country imbalances in ESG matters stretching over an extensive period. Restricting our research to a single country would not yield significant variability in the dependant variables to assess the impact of a structural shift in the firm's organization through M&As. Second, we would be unable to capture differences in institutional settings that influence a firm's incentives for ESG investment using a single country.

The evolution of the ESG scores in the period 2002 to 2020 is

**Table 1**  
Summary statistics by country.

Country	N	ESG combined score	Environmental score	Governance score	Social score
Australia	279	43.7	33.0	58.8	45.6
Austria	18	46.8	50.2	46.2	44.2
Belgium	139	47.6	45.5	54.9	48.0
Bermuda	65	39.8	25.7	60.0	37.4
Brazil	84	52.9	57.2	57.5	65.3
Canada	1031	38.3	29.4	52.4	37.9
Cayman Islands	12	30.0	5.8	65.6	35.1
Chile	10	60.5	63.4	81.0	47.5
China	30	33.3	11.5	62.7	21.9
Colombia	10	59.4	55.4	56.6	68.7
Denmark	188	48.4	46.2	48.7	50.6
Finland	101	50.4	54.5	57.6	53.2
France	578	56.1	60.5	55.2	61.8
Germany	428	54.4	56.0	55.6	62.3
Gibraltar	5	41.7	31.6	50.0	42.1
Hong Kong	47	37.5	24.2	58.3	34.8
India	46	55.0	37.7	60.6	61.7
Israel	55	46.0	33.2	62.9	52.0
Italy	70	50.3	43.6	56.5	54.8
Japan	551	52.4	56.9	62.8	46.8
Luxembourg	64	51.6	47.3	50.2	63.5
Malaysia	12	34.6	44.8	26.0	34.3
Mexico	47	63.8	68.5	55.0	70.2
Monaco	4	16.8	9.4	21.2	19.7
Netherlands	267	53.1	50.4	57.5	60.4
New Zealand	21	40.0	35.4	57.4	34.7
Norway	70	54.8	58.4	60.1	59.6
Papua New Guinea	12	43.3	34.6	49.9	46.7
Portugal	15	71.9	72.0	64.8	80.8
Republic of Ireland	241	43.7	35.1	51.1	48.9
Russia	25	43.1	41.2	64.7	32.3
Singapore	11	49.0	39.0	66.4	45.3
South Africa	18	47.9	50.9	39.1	62.3
South Korea	97	58.5	67.8	68.9	62.9
Spain	159	57.9	59.2	49.9	68.3
Sweden	323	54.3	51.0	50.4	62.1
Switzerland	308	50.0	47.0	55.1	57.3
Taiwan	47	59.4	52.1	75.2	56.6
Thailand	38	59.1	54.2	63.1	62.2
United Kingdom	1422	47.6	42.7	55.6	51.3
United States of America	7647	38.7	28.1	48.9	43.0

<sup>1</sup> The year 2020 includes 98 companies with fiscal year differing from calendar year.

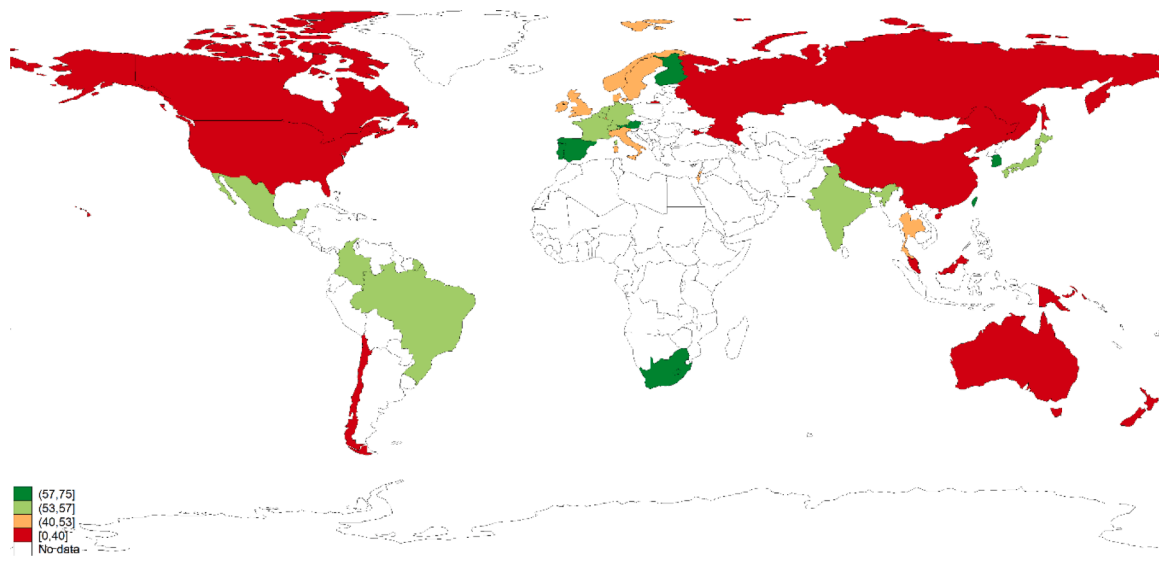


Fig. 1. Average ESG Combined Score per country in the year of the deal, Source: Data from Refinitiv Eikon, including the period 2002–2020. The table is computed from the ESG combined score of each acquirer in the year of the deal. After, the score is averaged by country. The scales for the colour coding were derived automatically to show equally weighted scales.

presented in Fig. 2. The focus on corporate governance was on the rise in the early 2000s, and the average scores evolved slowly. Stakeholder theory gained traction in the last two decades, encompassing the firm’s broader perspective. Surprisingly, the rise in firms’ social focus almost doubled and, in 2020, surpassed the governance metric. In fact, aligned with the expanding importance of sustainability issues, the environmental and social scores have assumed a key role in measuring the level of firm sustainability (Garcia et al., 2019). The new environmental targets outlined in 2014 by the Paris Agreement may have exerted an impact on firms’ environmental scores.

4.1. Methodology

To assess the implications of the M&A deals on the acquiring firms’ ESG scores, we estimate the following OLS specification with robust standard errors for firm *i* and year *t* in the period between 2002 and 2020:

$$ESG_{it} = Deal_{it} \times T_t + Controls'_{it}\beta + \theta_i + \delta_t + \epsilon_{it} \tag{1}$$

The dependant variables are the outcome variables ESG combined score and its three pillars, as described in the previous section. The *Deal* variable is binary and equals one from the deal year onwards and zero otherwise. *T* is the time indicator that equals one for the selected period.

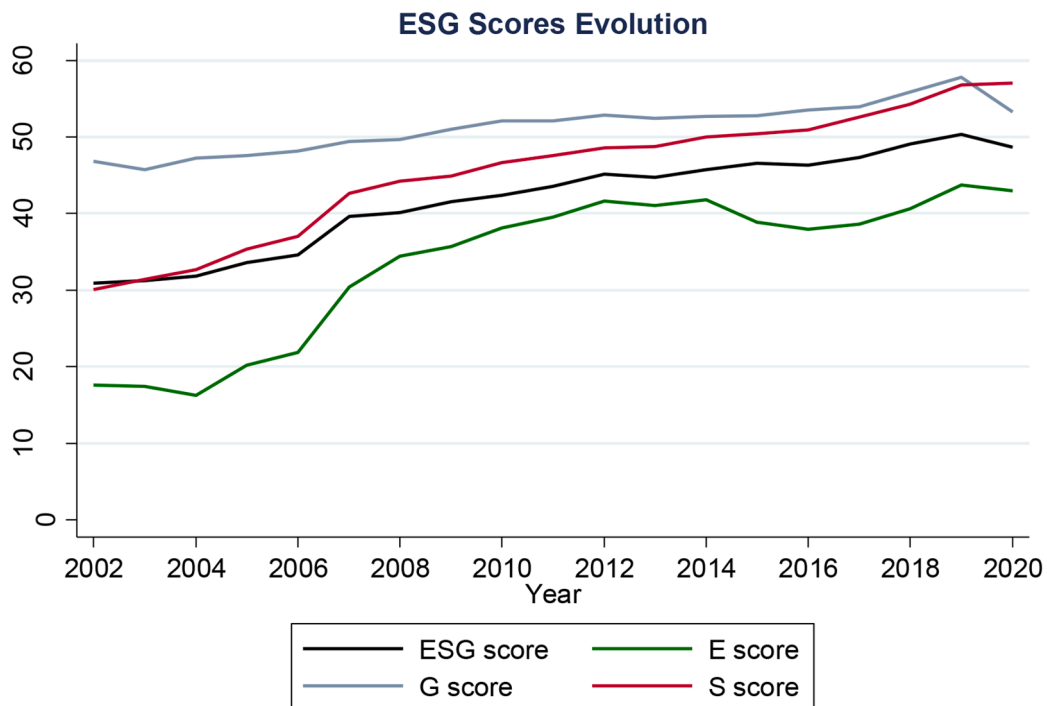


Fig. 2. ESG score evolution (average by country 2002–2020), Source: Data from Refinitiv Eikon.

$T$  is not accounted for in the base estimation, which means that the *Deal* variable always takes the value of one from the year of the deal onwards. Further analysis restricts the treatment effect to  $T0$  and  $T1$ , the year of the deal, and the year after. This approach captures the treatment effect only in the year of the deal for  $T0$  and only for the year after ( $T1$ ) to accommodate a lag effect on absorbing the target firm. This approach for capturing a lag effect is frequently followed in the finance literature (Barros et al., 2021; Duarte and Barros, 2018).  $\theta_i$  and  $\delta_i$  are the fixed effect specifications for firm and year, respectively. The option for fixed-effect specification is to control cross-country variability in the institutional setting, as supported by the Hausman test (Wooldridge, 2010). *Controls* is a vector containing the following control variables:

- *Size* is the logarithm of total assets, as in other studies (Sharma et al., 2020; Utz, 2019). Larger firms are expected to exhibit higher ESG scores for three main reasons (Carnes et al., 2019; González-Torres et al., 2020; Song et al., 2021). First, the scale allows investment in areas that would otherwise be harmful to the firm’s performance. Second, size brings greater visibility from outsiders, and firms have incentives to mitigate reputational risks that are more likely to increase exposure. Third, larger firms are expected to allocate resources more efficiently.
- *Leverage* is the debt-to-equity ratio to control for a firm’s leverage (Rossi and Harjoto, 2020; Sharma et al., 2020; Utz, 2019) because leverage is likely to be lower in better-governed firms (Nadarajah et al., 2018).
- *ROE* is the firm’s return on equity measured as net income to book value of the equity. Investment in ESG may allow cost reductions (Carroll, 2015). Managers use ESG strategically to serve and improve firms’ bottom-line performance (Kotler and Lee, 2008; Lee, 2008; McWilliams et al., 2006).
- *Current Ratio* is the ratio of current assets to current liabilities and is our measure of liquidity. Working capital and cash holdings have been stressed in the corporate governance literature (Rossi and Harjoto, 2020). In particular, cash holdings are considered a proxy for agency costs (Rossi et al., 2018) because of the potential over-investment in capital expenditure and acquisitions due to holding excess cash (Harford et al., 2008).
- *Tangibility* captures the firm’s capital intensity and is computed as property, plant, and equipment scaled by total assets (Matos et al., 2020; Özcan, 2020).

We performed several diagnostic tests on our data. The dependant variable residuals fulfil the nonnormality test, assuring a BLUE estimator (see Fig. 3 for ESG combined scores). The normal density distribution in the central figure contrasts with the kernel density estimate drawn from the figure’s actual distribution on the left-hand side. On the right-hand side of the figure, the standardized normal probability plot (*pnorm*) clearly shows the normality of the ESG combined score with minimal deviations from the diagonal line. We found no evidence of multicollinearity on our independent variables. To account for possible heteroskedasticity, robust standard errors are clustered at the firm level. The Wald test shows all regressors to be statistically significant in the

model.

## 5. Results

### 5.1. Descriptive statistics

Table 1 provides the summary statistics of all variables used in our sample. The governance score exhibits a higher variability. Firms exhibit, on average, debt to equity of 0.86 and high levels of liquidity – current ratio. On average, firms’ ROE is 10.0% with relevant variability. This average return is consistent with the compounded annual growth rate of 8.4% from 2002 to 2020 for the S&P 500 index, the world’s benchmark on stock returns.

#### Table 2.

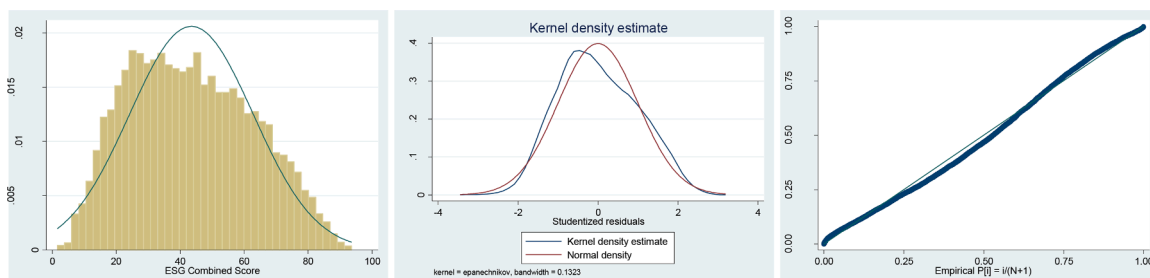
Correlation analysis is presented in Table 3. The four proxies for ESG are highly correlated, as expected. This preliminary analysis supports the view that larger firms deliver better scores (Carnes et al., 2019; González-Torres et al., 2020; Sharma et al., 2020; Song et al., 2021; Utz, 2019). The harmful effect of cash holdings is also highlighted in the statistically negative correlation with the ESG scores (Harford et al., 2008; Rossi and Harjoto, 2020; Rossi et al., 2018).

### 5.2. The impact of M&A operations on firms’ ESG performance

Table 4 presents the results for the global ESG score. When considering all the periods for each firm (that is, the years before and after the M&A deal), we find evidence that M&A deals positively impact the ESG score of firms, even when controlling for firm and year effects. There is some evidence that firms planning these types of deals are more concerned with ESG aspects. The merger of the two firms can deliver greater efficiency and provide more sustainable resources (González-Torres et al., 2020). Furthermore, firms involved in M&A deals are more likely to undergo greater scrutiny, both by authorities, such as regulators and governments, and by the public (Carnes et al., 2019). This could incentivise these firms to take a more sustainable and responsible path and disclose a larger amount of more useful information (Song et al.,

**Table 2**  
Summary Statistics.

	N	Mean	Std. Dev.	p25	Median	p75
ESG Combined Score	14,595	43.512	19.363	27.697	42.212	58.198
Environmental Score	14,595	36.445	29.917	5.569	33.848	62.479
Governance Score	14,595	52.129	22.612	34.256	53.565	70.314
Social Score	14,595	47.309	23.606	27.755	44.849	66.088
<i>Controls:</i>						
Size	14,595	22.875	1.959	21.626	22.577	23.846
Leverage	14,595	0.862	30.076	0.245	0.561	1.053
ROE	14,595	0.100	6.208	0.074	0.169	0.277
Current Ratio	14,595	1.856	1.566	1.095	1.500	2.140
Tangibility	14,595	0.262	0.226	0.088	0.187	0.376



**Fig. 3.** Diagnostic tests on the ESG combined score.

**Table 3**  
Correlation matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) ESG combined score	1.000								
(2) Environmental score	0.815*	1.000							
(3) Governance score	0.652*	0.436*	1.000						
(4) Social score	0.835*	0.754*	0.408*	1.000					
(5) Size	0.398*	0.506*	0.305*	0.385*	1.000				
(6) Leverage	-0.004	-0.003	-0.007	0.007	0.003	1.000			
(7) ROE	0.007	0.009	0.015*	0.005	0.005	-0.163*	1.000		
(8) Current Ratio	-0.136*	-0.153*	-0.096*	-0.128*	-0.187*	-0.013	0.006	1.000	
(9) Tangibility	-0.028*	0.054*	0.056*	-0.045*	0.106*	-0.013	-0.010	-0.130*	1.000

\*  $p < 0.1$ .

**Table 4**  
Results: ESG combined score.

	(1)	(2)	(3)
	<i>All Period</i>	<i>T = 0</i>	<i>T = 1</i>
Deal <sub>i</sub>	1.11*** (0.307)		
Deal × T0		-0.048 (0.25)	
Deal × T1			0.683*** (0.257)
Size	11.195*** (0.506)	11.384*** (0.502)	11.282*** (0.508)
Leverage	-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)
ROE	-0.009 (0.02)	-0.01 (0.02)	-0.009 (0.02)
Current ratio	-0.102 (0.141)	-0.116 (0.142)	-0.108 (0.141)
Tangibility	-10.803*** (3.481)	-11.382*** (3.487)	-11.228*** (3.474)
Constant	-209.985*** (11.768)	-213.693*** (11.691)	-211.545*** (11.803)
Observations	14,595	14,595	14,595
Adj R <sup>2</sup>	0.182	0.181	0.181
F-stat	98.078	94.021	99.399
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

Robust standard errors are in brackets, and the symbols \*, \*\*, and \*\*\* represent significant levels of 10%, 5%, and 1%, respectively.

2021). This can help them overcome some of the habitual barriers and difficulties associated with an M&A deal. However, this improvement in the ESG score is not immediate. In the year of the operation, there was no impact on the ESG. Only when the year after the deal is considered does the M&A appear to be significant. The results of sustainability strategies are often not evident in the short term (Kwon et al., 2018; Tampakoudis and Anagnostopoulou, 2020). Comparable results were also found in the literature on M&As and CSR. As Arouri et al. (2019) asserted, the CSR of acquirers is a critical determinant of how market participants assess the outcome of M&As worldwide.

Similar results are shown in Table 5, where the environmental score of ESG is the sole consideration. For the entire period of our sample and for each firm, the deal appears to positively impact the environmental score. We also found similar results for the social score shown in Table 7 and the governance score in Table 6. Likewise, we found no effect from the year of the deal but a positive effect from the year after the deal, except in the case of the governance score. This has been an important trend in the market, with successful M&A deals generating additional financial values that contribute to firms' environmental performance (Franklin, 2019).

Concerning our control variables, we found evidence that large firms tend to have a higher ESG score and higher scores in the three dimensions (environmental, social, and governance). This could result from scale economies, helping firms achieve greater efficiency and become more responsible and sustainable. One could also argue that

**Table 5**  
Results: environmental score.

	(1)	(2)	(3)
	<i>All Period</i>	<i>T = 0</i>	<i>T = 1</i>
Deal <sub>i</sub>	1.799*** (0.44)		
Deal × T0		-0.236 (0.339)	
Deal × T1			1.034*** (0.341)
Size	17.347*** (0.709)	17.66*** (0.705)	17.498*** (0.712)
Leverage	-0.009* (0.005)	-0.009* (0.005)	-0.009* (0.005)
ROE	-0.007 (0.02)	-0.008 (0.02)	-0.007 (0.02)
Current ratio	-0.128 (0.191)	-0.151 (0.193)	-0.139 (0.191)
Tangibility	-12.257*** (4.804)	-13.254*** (4.821)	-12.961*** (4.802)
Constant	-357.609*** (16.435)	-363.709*** (16.366)	-360.364*** (16.515)
Observations	14,595	14,595	14,595
Adj R <sup>2</sup>	0.225	0.223	0.224
F-stat	114.659	111.49	116.425
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

Robust standard errors are in brackets, and the symbols \*, \*\*, and \*\*\* represent significant levels of 10%, 5%, and 1%, respectively.

large firms are subject to greater scrutiny by authorities and the public (Liang and Renneboog, 2017; Udayasankar, 2008). They tend to provide more information and be more concerned about stakeholder views (Pérez, 2015). This could act as a strong incentive for firms to behave in a more responsible and sustainable way. However, we should consider the possibility that this is a flaw in the score itself. Drempetic et al. (2019) found that large firms have better ESG scores, raising the possibility that the score itself gives large firms an advantage of greater resources. It is also important to note that large firms are predisposed to allocate more resources to providing ESG data. Increasing amounts of data can give these firms an advantage (Baldini et al., 2018).

Typically, firms with higher leverage levels tend to disclose more information, including ESG, because they undergo greater scrutiny by financial institutions (Dalal and Thaker, 2019). However, we found no evidence that more leveraged firms have better ESG scores and components with the exception, albeit weak, of the environmental score. We also found evidence that tangibility negatively impacted the ESG score, reflected mainly in the environmental and social scores.

## 6. Discussion and contribution

This paper explores the relationship between M&A operations and firms' ESG performances by separating out the three ESG pillars using a large panel of firms that were successfully engaged in 3941 deals in 41 countries and in 12 economic sectors between 2002 and 2020. The

**Table 6**  
Results: social score.

	(1)	(2)	(3)
	<i>All Period</i>	<i>T = 0</i>	<i>T = 1</i>
Deal	1.245*** (0.376)		
Deal × T0		-0.133 (0.291)	
Deal × T1			1.091*** (0.301)
Size	14.187*** (0.564)	14.402*** (0.561)	14.236*** (0.566)
Leverage	0.002 (0.004)	0.002 (0.004)	0.002 (0.004)
ROE	-0.003 (0.015)	-0.003 (0.015)	-0.003 (0.015)
Current ratio	-0.25 (0.164)	-0.266 (0.164)	-0.254 (0.163)
Tangibility	-13.428*** (4.14)	-14.106*** (4.152)	-13.839*** (4.13)
Constant	-273.712*** (13.082)	-277.917*** (13.026)	-274.454*** (13.132)
Observations	14,595	14,595	14,595
Adj R <sup>2</sup>	0.212	0.211	0.212
F-stat	119.237	116.994	123.307
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

Robust standard errors are in brackets, and the symbols \*, \*\*, and \*\*\* represent significant levels of 10%, 5%, and 1%, respectively.

**Table 7**  
Results: governance score.

	(1)	(2)	(3)
	<i>All Period</i>	<i>T = 0</i>	<i>T = 1</i>
Deal	0.965** (0.387)		
Deal × T0		0.003 (0.346)	
Deal × T1			0.459 (0.347)
Size	7.514*** (0.554)	7.677*** (0.551)	7.609*** (0.556)
Leverage	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)
ROE	0.009 (0.021)	0.009 (0.021)	0.009 (0.021)
Current ratio	0.069 (0.192)	0.057 (0.194)	0.062 (0.193)
Tangibility	-0.536 (4.14)	-1.024 (4.131)	-0.933 (4.128)
Constant	-120.117*** (12.813)	-123.315*** (12.78)	-121.892*** (12.867)
Observations	14,595	14,595	14,595
Adj R <sup>2</sup>	0.055	0.054	0.054
F-stat	33.632	32.765	33.321
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

Robust standard errors are in brackets, and the symbols \*, \*\*, and \*\*\* represent significant levels of 10%, 5%, and 1%, respectively.

results show that firms tend to perform better in terms of ESG following an M&A, although this improvement in the ESG score is not attained immediately. Globally, the data gathered support the claim that corporations have increasingly engaged in socially responsible corporate behaviour because their ESG ratings have increased over time in the period under consideration.

Our analysis did not find a statistically significant association with the year of the deal, and this result holds when considering each of the three pillars – environmental, social, and governance. However, M&A transactions appear to be significant in increasing ESG performance in the year following the deal for the environmental and social components. This means that through the process of M&As, sustainability

issues are becoming increasingly relevant, providing support for the existence of a bidirectional relationship between M&As and CSR, as suggested earlier. Finally, this study finds that the results on the governance pillar are somewhat inconclusive, suggesting that the governance score does not appear to improve over the years as a consequence of a firm's structural changes following an M&A deal.

Our study also yields findings regarding firm size. Controlling for M&A activity size is associated with ESG ratings. Larger firms are associated with higher ESG ratings in all pillars. The relationship is strong and significant in all models. Arguably, this might be a consequence of more substantial scrutiny given that larger firms already operate under intense scrutiny from stakeholders, financial markets, governments, media, and society as a whole (Stanny and Ely, 2008). Moreover, such large firms are likely to display a greater willingness and to have a more substantial amount of resources to invest in their corporate sustainability.

The theoretical implications put forward by our results are twofold. First, the study contributes to a growing stream of literature aimed at understanding what drives firms' ESG scores (Arizkuren-Eleta et al., 2013; Matten and Moon, 2008; Miotto and Rom, 2017; Rasche et al., 2020; Sikka, 2010) by shedding light on how a firm's structural changes can affect sustainability performance. In fact, the literature to date has placed its primary focus on corporate actions and characteristics that are not disruptive of the way companies operate their businesses, such as the personal characteristics of managers (Arizkuren-Eleta et al., 2013), firms' communication strategy (Miotto and Rom, 2017), firm size and whether they are publicly listed (Rasche et al., 2020), tax avoidance behaviour (Hoi et al., 2013; Sikka, 2010), and characteristics at the country level comparing US firms and European firms (Matten and Moon, 2008). M&A activity inevitably changes the company's organisational structure. The fact that any M&A deal takes time to secure operational and financial synergies and, hence, to deliver better ESG performance should not preclude us from considering that one motivation for an M&A deal is likely to be centred on a strategy to increase sustainability performance.

Second, the study contributes a better understanding of the plethora of motivations for M&A deals (Martynova and Renneboog, 2006; Steigenberger, 2017). Previous literature has linked M&A activity with the potential of strategic synergies (Ficery et al., 2007; Rozen-Bakher, 2018), growth in size (Owen and Yawson, 2010), diversification benefits (Akbulut and Matsusaka, 2010), financial synergies (Leland, 2007), organizational culture (Teerikangas and Vary, 2006), impact from a monetary union (Coourdacier et al., 2009), political and regulatory stability (Lee, 2018), quality of accounting standards and level of shareholder protection (Rossi and Volpin, 2004), and quality of institutions (Di Guardo et al., 2016). We would add that changes in ESG performance are a determinant of M&A activity that should be included in future research on mergers and acquisitions. Increasing sustainability with M&As may be achieved through several changes: diversification into other business sectors; increase in size to dilute the short-term costs of sustainability investment; acquisition of businesses that are already engaged in one of the six sustainable objectives of the unified EU green classification system/taxonomy (climate change migration, climate change adaptation, sustainable use of water and marine resources, circular economy, pollution prevention, healthy ecosystem) are examples of these channels, to name but a few. Exploring such channels is a challenge to be addressed in the academic literature.

Our study also carries certain managerial implications. The proposal for a Corporate Sustainability Reporting Directive (European Commission, 2021) aligns with our findings. Pressure on firms to attain sustainability targets starting in 2022 will compel managers to take action. Our results bring to light that M&A activities may serve as a means to surpass the hurdle of achieving the required KPI on turnover, CAPEX, and OPEX, as earmarked in the taxonomy of the proposed directive. Furthermore, M&A activity appears to be effective in shaping companies' environmental and social scores one year after the deal, which

arguably offers an avenue to quickly attain the required targets. Regulators and antitrust authorities involved in M&As should pay greater attention to sustainability issues, considering the new regulatory landscape on sustainability.

Our findings have revealed a drop in the evolution of the governance components of the ESG score after 2014, bouncing back to the level of previous years in 2019. While this effect is controlled in our sample through country effect specifications, a limitation of our study is that we have not explored this further. Considering that our data relate to firms on the buy side of M&A deals, studying the mechanisms (ownership structure, board structure, and compensation structure) of the corporate governance of these firms (Wahab and Holland, 2012) confined to the same period is a recommendation for future research.

Our results are also relevant to regulators since the analysis of M&A deals should focus not only on their impact on markets and competition but also on corporate performance, measured not solely on the basis of the players' financial results. The positive impact on sustainability indicators (measured by the ESG rating) should be considered, reducing a (possible) negative effect on market concentration. In addition, since firms aiming to grow by mergers or acquisitions are more active in improving the sustainability of their operations, they could also be more receptive to the disclosure of information. Consequently, other stakeholders, particularly shareholders, and the general public will benefit from this greater openness.

This study spans an extensive period, ending with a disruptive event affecting most businesses worldwide – the COVID-19 pandemic. Considering the avalanche of regulatory changes in sustainability being prepared by the European Commission, future studies should look at whether deviations in the sustainability performance of firms are driven either by the exogenous effect of the pandemic or by the pressure exerted through future sustainability regulations at the European level.

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