Title: The effect of mergers and acquisitions on ESG performance and market value: Evidence from EU acquirers

Abstract: This study explores the effect of environmental, social and governance (ESG) performance on market value and performance in the context of mergers and acquisitions (M&A). We examine whether acquisition of targets with better ESG performance can help acquirers to increase their own ESG performance, and whether the market values the increased ESG performance positively. Moreover, we explore whether the acquisition of targets with better ESG performance affects the market value of acquirers. For this study, we utilize a sample of 100 European M&As between 2003 and 2017, for which matching data on the ESG performance of both the target and acquiring firms are available. Our results show that the post-merger ESG performance of the acquirer increases following the acquisition of a target that has higher ESG performance than that of the acquirer in the pre-merger stage, while the post-merger market value of the acquirer increases following an increase in the acquirer's post-merger ESG performance in relation to its pre-merger ESG performance. Finally, we provide partial evidence of a positive relationship between the post-merger market value of the acquirer and the acquisition of a target with higher ESG performance than itself in the pre-merger stage.

Keywords: environmental, social and governance (ESG) performance, mergers and acquisitions (M&As), socially responsible investment (SRI) market value.

1 Introduction

Addressing environmental, social and governance (ESG) issues gradually became a top priority among companies worldwide during the last twenty years. This is evident not only in the considerable resources that companies devote to addressing ESG issues (Lokuwaduge & Heenetigala, 2017), but also in the increased number of ESG reporting frameworks that offer guidelines to corporations on how to report ESG performance, and the numerous rating agencies providing data on the ESG performance of companies. Moreover, the rapid development of the socially responsible investment (SRI) market during the last two decades led to the integration of ESG criteria into mainstream asset management (Cellier & Chollet, 2016) and the use of ESG scores in SRI ratings (Wallis & Klein 2015). According to the Global Sustainable Investment Alliance (2018), the total assets committed to SRI strategies reached $30.7 trillion globally at the start of 2018, a 34% increase since 2016. Based on the same research, the value of assets managed after screening for negative ESG-related issues based on specific ESG criteria reached $19,77 trillion, while the value of assets that integrate ESG-related factors in the financial analysis reached $17,54 trillion.

The rationale behind both SRI and the adoption of ESG-related corporate practices can be found in the vast academic literature on the relationship between corporate social responsibility (CSR), corporate value and corporate performance from the perspective of stakeholder theory (Freeman, 1984; Porter & Krammer, 2006). According to this body of literature, firms that adopt CSR or sustainability policies increase their reputations (Arouri, Gomes & Pukthuanthong, 2019) and financial performance (Eccles, Ioannou & Serafeim, 2014; Martínez-Ferrero & Frías-Aceituno, 2015), enhance their market value (Kaspereit & Lopatta, 2016; Yadav, Han & Rho, 2016), gain better access to equity financing (El Ghoul, Guedhami, Kwok & Mishra, 2011; Cheng, Ioannou & Serafeim, 2014) and reduce risk (Arouri et al., 2019; Weber, Fenchel & Scholz, 2008; Weber, Scholz & Michalik, 2010). Nevertheless, despite the rapid increase in SRI, the results of the empirical research on the financial performance of SRI investments are mixed. Wallis and Klein (2015), in an extended meta-analysis of 53 studies examining the performance of SRI compared to conventional investments, show that most studies (15) find that SRI funds perform equally relative to conventional investments, 14 studies show that SRI outperforms conventional investment, and 6 studies show a negative relationship between SRI and conventional investments. In view of these contradictory results, the debate on whether SRI enhances or destroys corporate value, and consequently, whether it positively or negatively affects corporate performance, is still open.

In this study, we focus on a major corporate investment decision, namely mergers and acquisitions (M&A), to contribute to the discussion on the effect of SRI on corporate value and performance. M&A occur when one company (the bidder, acquirer or acquiring firm) takes over another company's (the target) assets and liabilities (DePamphilis, 2009) or when a new company forms based on the assets and liabilities of both original companies (Fikru & Insall, 2016). We examine SRI in the M&A framework because they constitute the most important external growth corporate strategy (Bauer & Matzler, 2014), allowing firms to expand to new markets, gain access to resources and increase efficiency, thereby creating corporate value (Haleblian et al., 2009). Along these lines, many companies often choose to acquire firms with superior ESG performance in order to enhance their own corporate value, and consequently their corporate performance (Deng, Kang & Low, 2013; Aktas, de Bodt & Cousin, 2011; Bereskin, Byun, Officer & Oh, 2018). In this study, we examine the effect of acquiring targets with better ESG performance in relation to the acquirer in the pre-merger stage on the market value of the acquirer in the post-merger stage. Moreover, we examine the ESG performance of acquirers as a determining factor of enhanced corporate performance by testing whether an increase in the acquirers' ESG performance leads to an increase in their market value. Finally, our study examines ESG performance as a value-enhancing antecedent in the context of M&A. Specifically, we test whether acquisition of targets with higher ESG performance than itself in the pre-merger stage positively impacts the ESG performance of the acquirer in the post-merger stage. Since increased ESG performance is generally accepted as a corporate value enhancing factor, a significant relationship between the ESG performance of the targets in the pre-merger stage and the ESG performance of the acquirers in the post-merger stage would imply that firms can use M&A as a strategy to increase ESG performance, and thereby enhance corporate value. We use ESG performance, calculated based on the available ESG scores provided by Thompson Reuters, as a proxy for CSR performance (or sustainability). We collected ESG data for both the acquirers and targets during the period between 2003 and 2016. The sample consists of 100 M&A deals between EU firms for which ESG scores are available for both the targets and acquirers.

This research draws on the literature on the relationship between CSR, corporate value and corporate performance (Eccles et al., 2014; Martínez-Ferrero & Frías-Aceituno, 2015; Kasperite&Lopatta, 2016; Fatemi, Fooladi & Tehranian, 2015; Krüger, 2015; Cellier & Chollet, 2016; El Ghoul et al., 2011) and the literature on the effect of CSR on M&A (Qiao & Wu; 2019; Gomes & Marshat, 2018; Boone & Uysal, 2018; Atkas et al., 2011; Deng et al., 2013; Arouri et al., 2019; Yen & André, 2019; Fatemi, Fooladi & Garehkoolchian, 2017; Krishnamurti, Shams,

Pensiero & Velayutham, 2019). Most studies that examine the effect of CSR on M&A focus either on the CSR effect on the acquirer's market performance; that is, whether acquirers with increased CSR awareness achieve higher merger announcement returns (Deng et al., 2013; Krishnamurti et al., 2019; Yen & Andre, 2019), or on the CSR effect on the target's bidder premiums; that is, whether targets receive enhanced premiums for being CSR aware (Qiao& Wu, 2019; Gomes &Marshat, 2018).

Our aim is to contribute to the research on the effect of SRI on corporate value and performance by examining whether firms that acquire more ESG-aware targets enhance their own ESG performance as well as their market value. To our knowledge, the only study that investigates the effect of CSR on acquiring and target firms is that by Atkas et al. (2011). The authors use Innovest's Intangible Value Assessment (IVA) ratings to measure environmental and social performance, which is a seven-point (CCC to AAA) rating scale. In our study, we use the Thomson Reuters scores, which are based on a numerical 0-100 scale, making the CSR measurement more sensitive and precise when calculating the ESG variables. Boone and Uysal (2018) and Krishnamurti et al. (2019) also explore the relationship between acquirers and targets in the CSR context, but focus mainly on the M&A attractiveness; that is, whether CSR-aware firms have a higher chance of participating in M&A deals, either as targets or acquirers, or on M&A matching, specifically whether acquirers choose targets with similar CSR performance. Finally, the M&A literature mainly addresses the short-term effects of CSR on bid announcements in terms of the market value of acquirers (Aktas et al., 2011; Arouri et al., 2019; Yen & André, 2019; Krishnamurti et al., 2019). Our study focuses on the long-term effects of acquiring ESG-aware targets on the acquirers' market value.

Our empirical analysis shows that both the market value and ESG performance of the acquirer increase in the post-merger stage following the acquisition of a target with higher ESG performance than that of the acquirer in the pre-merger stage. Moreover, we find that the post-merger market value of the acquirer increases following an increase in the acquirer's post-merger ESG performance in relation to its pre-merger ESG performance. We can interpret our empirical results as evidence supporting the rationale behind SRI. The implications of this study are significant for managers, investors and policy makers. Firms should adopt ESG practices and promote ESG information disclosure, which they can achieve by acquiring firms that already implement such practices and are more ESG aware. We also recommend that investors pay more attention to ESG performance when making investment decisions, since acquiring ESG-aware targets positively affects both ESG and corporate

performance. Finally, policy makers should also encourage both the adoption of ESG practices and ESG transparency.

This rest of the paper is structured as follows. Section 2 summarises the previous studies on the relationship between ESG performance, firm value and M&As. We provide a detailed explanation of the methodology, variables, models, dataset and sampling, as well as the research hypotheses, in Section 3. In Section 4, we present the empirical results along with the related interpretations and discussions. Finally, Section 5 offers our main conclusions, limitations and suggestions for future research.

2 Literature Review and Hypothesis Development

2.1 ESG Performance and Corporate Performance

The evolution of the SRI market during the last decades increased the need for both ESG reporting and the development of widely accepted metrics to measure ESG performance. ESG metrics are important in the SRI field because they can be used as a proxy for measuring sustainability performance (Widyawati, 2019). One could argue that ESG performance is the codified manifestation of CSR and corporate sustainability, and that ESG reporting emerged as a means to address the high complexity of measuring CSR and corporate sustainability. Moreover, empirical research shows that stakeholders place a higher value on a company's ESG performance when the firm publishes the information in the form of an ESG report (Mervelskemper & Streit, 2017), while companies that publish ESG reports report higher stock market returns than their counterparts who do not publish ESG reports (Weber, 2014). Nevertheless, the boundaries between CSR, sustainability and ESG performance are relatively vague, as the majority of studies often use ESG reporting data available from various ESG rating agencies to measure either corporate sustainability or CSR. For example, Gomes and Marshat (2018), Yen and Andre (2019), Fatemi et al. (2017) and Krishnamurti et al. (2019) use the Thomson Reuters Asset4 database to measure CSR. Qiao and Wu (2019), Boone and Uysal (2018), Deng et al. (2013), Bereskin et al. (2018) and El Ghoul et al. (2011) use the KLD database for CSR, while Xie et al. (2019) and Yu et al. (2018) use the Bloomberg ESG database to measure ESG performance.

Based on the close conceptual relationship between CSR, sustainability and ESG performance, we draw our theoretical framework from the literature on the relationship between CSR, corporate value and corporate performance. The neoclassical paradigm of shareholder theory

(Friedman, 1970; Jensen, 2002) views CSR activities as additional costs as a result of agency problems caused by managers seeking to promote their personal interests at the expense of shareholders' wealth. According to this school of thought, CSR should have a negative effect on corporate value and corporate performance, a finding that is partially confirmed in some studies. For example, Krüger (2015) shows that investors respond negatively to positive CSR news unless the firm has a history of poor stakeholder relations, in which case, CSR has an offsetting effect and is positively valued by the market. Additionally, Cellier and Chollet (2016) argue that some dimensions of CSR have a positive impact on market value, while others have a negative one. Finally, regarding M&A announcements, Yen and André (2019) show that the effect of acquirers' pre-merger CSR performance on overseas deals depends directly on the CSR cost concerns of investors; if investors perceive CSR costs as an agency problem, then they assign a negative market value.

On the other hand, proponents of stakeholder theory (Freeman, 1984; Porter & Krammer, 2006) suggest that behaving in an ethical manner increases corporate value and performance, and that when corporations act in the best interest of all stakeholder, they ultimately act in the best interest of shareholders. Along those lines, corporate practices related to CSR, sustainability or ESG performance should have a positive impact on corporate performance. For instance, Eccles et al. (2014) examine the corporate performance of 180 US firms from 1993 to 2009 and report that firms which voluntarily adopt sustainability policies exhibit better corporate performance than their counterparts that do not adopt such policies, in terms of both market value (i.e. stock market performance) and accounting value. In a similar study focusing on the 600 largest European companies for the years 2001 to 2011, Kaspereit and Lopatta (2016) also report a positive relationship between corporate sustainability and market value, while Martínez-Ferrero and Frías-Aceituno (2015) further validate this relationship by showing a two-directional positive relation between CSR and financial performance, a finding that suggests a symbiotic relationship between corporate performance and CSR. Complementary to the findings above are the studies by Xie et al. (2019), Yu et al. (2018) and Weber (2014), which examine the relationship between ESG performance and financial performance. The first two studies use large samples of companies worldwide and report a positive relationship between ESG practices and financial performance, while Weber (2014) detects a similar positive effect of ESG reporting on financial performance for large Chinese firms. This study also finds a significant effect of ESG performance on the market value of acquirers in the post-M&A stage. Based on the discussion above, our first hypothesis is formulated as follows:

Hypothesis 1: The post-merger market value of the acquirer increases following an increase in the acquirer's post-merger ESG performance in relation to its pre-merger ESG performance.

2.2 ESG Performance and M&A

The M&A literature focuses mainly on the financial implications of bid announcements in terms of the cumulative abnormal returns (CARs) of targets and acquirers (Bauer & Matzler, 2014; Fatemi et al., 2017; Erel, Liao & Weisbach, 2012; Alexandridis, Petmezas & Travlos, 2010; Ang & Cheng, 2006). The empirical findings suggest positive and statistically significant excess returns for targets, while the results for acquirers are inconclusive since the returns are either negative or insignificant. With regard to the long-term effects of M&A, some studies find negative or insignificant returns for both the target and acquiring firms (Fatemi et al., 2017; Ang & Cheng, 2006; Kwoka & Pollitt, 2010).

Prior studies examine the effect of CSR on M&A from the perspectives of both targets and acquirers. For the former, recent studies find that enhanced CSR practices increase the premium acquirers offer (Qiao & Wu, 2019; Gomes & Marshat, 2018). This happens because firms perceive the acquisition of CSR-aware firms as a value enhancing strategy, and they are thus willing to pay a higher bid to acquire them, a finding that supports the rationale behind SRI. For acquirers, previous studies explore whether CSR-aware acquirers receive higher merger announcement returns (Deng et al., 2013; Krishnamurti et al., 2019) or reduce uncertainty and risk (Arouri et al., 2019). Finally, a few studies examine whether acquiring a CSR-aware target affects either the CSR practices or financial performance of the acquirer (Atkas et al., 2011), or whether CSR-aware firms are more likely to become either targets or acquirers (Boone & Uysal, 2018). Our study investigates the effect of CSR on acquirers utilizing ESG performance as a proxy for CSR performance. Therefore, we propose the following hypothesis:

Hypothesis 2: The post-merger market value of the acquirer increases following the acquisition of a target that has higher ESG performance than itself in the pre-merger stage.

Finally, the strategic management literature reports on studies on the incentives that encourage firms to engage in M&A activities; that is, the M&A antecedents (Haleblian, Devers, McNamara, Carpenter & Davison, 2009; Bauer & Matzler, 2014). Among them, value creation, especially in the form of increased corporate efficiency (Kwon et al., 2018) and access to

corporate resources (Cheng & Yang, 2017) are regarded as the main drivers behind managerial decisions to engage in business consolidations. As we discussed above, enhanced ESG performance is often positively related to increased corporate performance, a finding that would make ESG performance a strong value creation factor (Hypothesis 1). Consequently, it is important to examine whether M&A impact the ESG performance of acquirers and whether firms can use such acquisitions as a strategy to increase its own ESG performance.

Moreover, firms can create value with M&A mainly through the long-term transfer of capabilities, which requires the integration of the organisational structures and corporate cultures of both the acquirer and the target (Haspeslagh & Jemison, 1991; Angwin & Meadows, 2015). We can examine this transfer of capabilities by exploring the relationship between the target's ESG performance in the pre-merger stage and the acquirer's ESG performance in the post-merger stage. In this study, we examine whether acquiring targets with higher pre-merger ESG performance can help acquirers increase their own ESG performance. The only study that investigates a similar relationship is that by Atkas et al. (2011), who show that the environmental and social performance of acquirers increases following the acquisition of SRI-aware targets, suggesting that the former are able to learn and incorporate the SRI practices of the latter. Based on the discussion above, we formulate our last research hypothesis:

Hypothesis 3: The post-merger ESG performance of the acquirer increases following the acquisition of a target that has higher ESG performance than that of the acquirer in the pre-merger stage.

3 Research Design

In this study, we explore the rationale behind SRI in the M&A framework. Specifically, we test whether an increase in the post-merger ESG performance of the acquirer in relation to its pre-merger ESG performance leads to an increase in post-merger corporate value in terms of market value (H_1). Moreover, we examine whether the post-merger market value of the acquirer increases following the acquisition of a target that has higher ESG performance than itself in the pre-merger stage (H_2). Finally, we examine whether the post-merger ESG performance of the acquirer increases following the acquisition of a target with higher ESG performance than itself in the pre-merger stage (H_3). Figure 1 presents a graphical illustration of our research hypotheses.

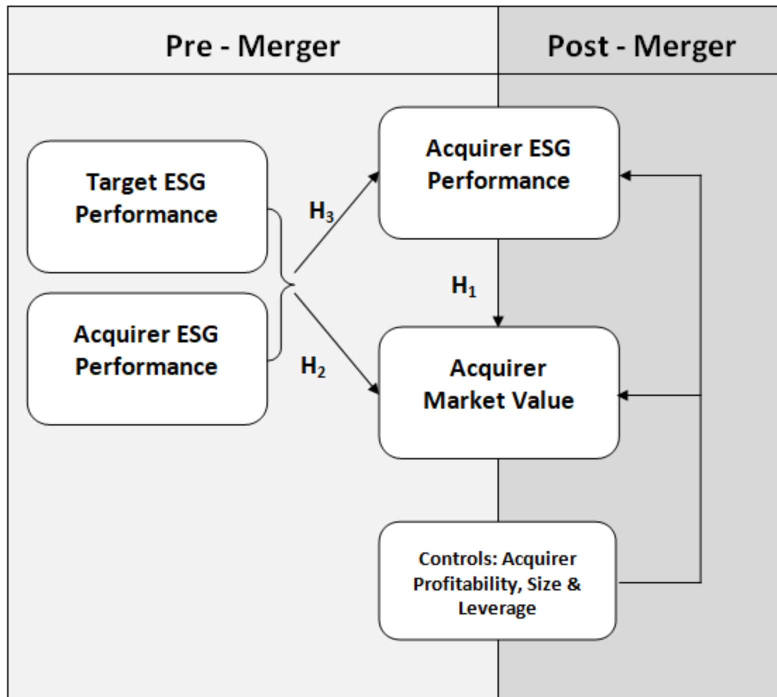

Figure 1: Research model

Based on the above, we develop the following three dependency models:

$$\Delta_{ACQ\ MV} = f(\Delta_{ACQ\ ESG}, \Delta_{ACQ\ PROF}, \Delta_{ACQ\ SIZE}, \Delta_{ACQ\ LEV}) \qquad (1)$$

$$\Delta_{ACQ\ MV} = f(\frac{TARGET}{ACQ}ESG, \Delta_{ACQ\ PROF}, \Delta_{ACQ\ SIZE}, \Delta_{ACQ\ LEV}) \qquad (2)$$

$$\Delta_{ACQ\ ESG} = f\left(\frac{TARGET}{ACQ}ESG, \Delta_{ACQ\ PROF}, \Delta_{ACQ\ SIZE}, \Delta_{ACQ\ LEV}\right) \qquad (3)$$

We test the models empirically using a linear regression analysis and estimations based on the ordinary least squares (OLS) methodology. Table 1 provides the definitions and estimation methods for all variables in models (1), (2) and (3).

TABLE 1 Definition and estimation methods for the variables

Variable	Symbol	Definition/Estimation
$\frac{\text{Target}}{\text{Acquirer}}$ ESG Performance	$\frac{\text{TARGET}}{\text{ACQ}}$ ESG	This variable shows the relative ESG performance of the target companies. For each M&A, we calculate the ratio of the target's ESG score to the acquirer's ESG score the year before the M&A. The ESG data are from Thomson Reuters.
$\Delta_{\text{Acquirer Market Value}}$	Δ_{ACQMV}	Market value is estimated by Tobin's Q. Tobin's Q is the market value of equity plus the book value of preferred stock and debt divided by the book value of total assets. The data are from Worldscope. For each M&A, we calculate the change in market value as the difference between the acquirer's market value in the years after and before the M&A divided by the acquirer's market value the year before the M&A.
$\Delta_{\text{AcquirerESGPerformance}}$	Δ_{ACQESG}	This variable shows the change in the acquirer's ESG performance. The ESG data are from Thomson Reuters. For each M&A, we calculate the change in the acquirer's ESG score as the difference between acquirer's ESG score in the years after and before the M&A divided by the acquirer's ESG score the year before the M&A.
$\Delta_{\text{AcquirerProfitability}}$	Δ_{ACQPROF}	Profitability is the return on assets ratio reported by Worldscope. For each M&A, we calculate the change in profitability as the difference between the acquirer's profitability in the years after and before the M&A divided by the acquirer's profitability the year before the M&A.
$\Delta_{\text{AcquirerSize}}$	Δ_{ACQSIZE}	Size is the natural logarithm of the book value of assets reported by Worldscope. For each M&A, we calculate the change in size as the difference between the acquirer's size in the years after and before the M&A divided by the acquirer's size the year before the M&A.
$\Delta_{\text{AcquirerLeverage}}$	Δ_{ACQLEV}	Leverage is the total liabilities/total assets ratio. The data are from Worldscope. For each M&A, we calculate the change in the leverage ratio as the difference between the acquirer's leverage ratio in the years after and before the M&A divided by the acquirer's leverage ratio the year before the M&A.

3.1 Variable Measurement and Description

3.1.1 ESG Performance

The development of SRI strategies during the recent years increased the demand for information regarding firms' ESG performance. Sustainability and CSR rating institutions provide this type of information to the market by gathering ESG-related data and synthesizing it into an overall metric that investors can use to make SRI decisions (Schäfer, 2005). Regarding sustainability indicators, Rahdari and Rostami (2015) identify forty-one CSR and sustainability rating systems and indexes at the international and national levels. However, the most generally accepted rating systems among academics are RobecoSAM Corporate Sustainability, CDP Climate, Water & Forests Scores, Bloomberg ESG Performance Scores, FTSE Russell's ESG Ratings and Thompson Reuters ESG Performance Scores (SustainAbility, 2019).

Following previous studies (Gomes & Marshat, 2018; Arouri et al., 2019; Yen & André, 2019; Fatemi et al, 2017; Krishnamurti et al., 2019), we obtain data on ESG performance from Thomson Reuters. By conducting a content analysis of annual reports, company and NGO websites, stock exchange filings, CSR reports and news sources, Thomson Reuters calculates the ESG scores of more than 7,000 companies globally with time series data going back to 2002 (Thomson Reuters, 2019).

We collected ESG performance data for both acquiring and target firms engaged in M&As between 2003 and 2017. A main research objective is to examine whether the acquisition of a target with better ESG performance can enhance the acquirer's ESG performance. For our analysis, we calculate the relative ESG performance of targets and the ratio of the change in acquirers' ESG performance. We calculate the relative ESG performance of targets as the ratio of the target's ESG score to the acquirer's ESG score the year before the M&A announcement:

$$\frac{Target}{Acquirer}ESGPerformance=\frac{TargetESGScore_{t-1}}{AcquirerESGScore_{t-1}}$$

We calculate the change in ESG performance for acquirers as the ratio of the difference between the acquirer's ESG scores in the years after and before the merger announcement to the acquirer's ESG score the year before the M&A announcement.

$$\Delta_{AcquirerESGPerformance}=\frac{AcquirerESGScore_{t+1}-AcquirerESGScore_{t-1}}{AcquirerESGScore_{t-1}}$$

We focus on the long-term effects of the target's ESG performance on the acquirer's performance, considering that the results of sustainability practices represented by the respective ESG scores, are not evident in the short-term. Thus, we assume that acquirers require at least one year to fully integrate the ESG practices acquired from targets.

3.1.2 Acquirer Market Value

The vast academic literature on the financial implications of M&A focuses on the short-term stock market performance (Bauer & Matzler, 2014; Fatemi et al., 2017; Aktas et al., 2011). However, when examining the effect of sustainability on firm value, it is important to adopt a long-term perspective, since the results of sustainability strategies are often not evident in the short term (Kwon et al., 2018). For example, Deng et al. (2013) show that compared to low CSR acquirers, high CSR acquirers realize higher merger announcement returns and larger increases in long-term post-merger operating performance. In this study, we examine the long-term effects of ESG performance on firms after M&A transactions.

We use Tobin's Q as a proxy to measure the acquirer's market value. Tobin's Q is a common indicator of market value (Busch &Hoffman, 2011; Wang, Li & Gao, 2014; Xie et al., 2019; Kwon et al., 2018; Yu et al., 2018), and other consider it as an indicator of intangible assets (Busch and Hoffman, 2011) since it reflects market expectations, reputational effects and financial risks (Wang et al., 2014; Busch and Hoffman, 2011). Therefore, a high Tobin's Q suggests that the firm has higher growth potential, increased resources and makes better investment decisions (Kwon et al., 2018). Following Chung and Pruitt (1994), we calculate Tobin's Q as the market value of equity plus the book value of preferred stock and debt divided by the book value of total assets.

We examine hypotheses 2 and 3 on the relationship between the acquirer's post-merger value, the increase in the acquirer's ESG performance and the acquisition of a target with higher ESG performance than itself by calculating the change in Tobin's Q as the ratio of the difference between the acquirer's Tobin's Q in the years after and before the merger announcement to the acquirer's Tobin's Q the year before the M&A announcement.

$$\Delta_{AcquirerMarketValue}=\frac{AcquirerTobin'sQ_{t+1}-AcquirerTobin'sQ_{t-1}}{AcquirerTobin'sQ_{t-1}}$$

3.1.3 Control variables

To test the validity of our results, we utilize firm size, leverage and profitability as control variables. Regarding firm size, several studies use total assets as an indicator (Brammer & Pavelin, 2008; Martínez-Ferrero & Frías-Aceituno, 2015; Fatemi et al., 2017; Aktas, deBodt & Cousin, 2011; Kwon et al., 2018; Yu et al., 2018). We also use total assets as a proxy for firm size. A common control variable of sustainability disclosure is leverage (Andrikopoulos & Kriklani, 2013; Kwon et al., 2018; Bereskin et al., 2018; Eccles et al., 2014). Regarding the measurement of leverage, prior studies use several indicators, such as total debt to market value (Fatemi, et al., 2017) or total liabilities to total assets (Kwon et al., 2018; Bereskin et al., 2018; Eccles et al., 2014). In line with many previous studies, we use total liabilities to total assets as a proxy for corporate leverage. Finally, with regard to corporate profitability, the main measures are the return on assets (ROA) (Kwon et al., 2018; Bereskin et al., 2018; Eccles et al., 2014; Yu et al., 2018) and the return on equity (ROE) (da Silva Monteiro & Aibar-Guzmán, 2010; Galani et al., 2012; Andrikopoulos & Kriklani, 2013). Therefore, we use ROA to control for corporate profitability. For all three control variables, we calculate the change ratio following the formula we use to calculate the change ratio of the acquirer's market value. Table 1 presents the definition and estimation method for all variables used in our analysis.

3.2 Data Sources and Sampling Procedure

We obtained the information on M&A deals from Thomson Reuters. The initial sample consisted of 1,112 takeover bids announced by European firms between 01/01/2003 and 31/12/2017. The deals that remained in the sample meet the following criteria. First, the acquirer and the target are listed firms and their headquarters are located in the EU, Switzerland or Norway. Second, the transaction was completed before the end of the sample period. Third, the acquirer has financial statement information at the year-end prior to the deal announcement available from Worldscope. Fourth, both the acquirer and the target are included in the Thomson Reuters ESG databases. To avoid the effects of very small transactions, we exclude transactions with deal values less than $1m and deal ratios[1] below 1%. Sixth, we omit buybacks, exchange offers and recapitalisations. Finally, we exclude all acquiring and target firms from the financial industry (SIC codes 6000-6999) due to the highly

[1]We calculate the deal ratio as the ratio of the deal value to the acquirer's market capitalisation one month before the merger announcement.

regulated nature of the industry. This selection process resulted in 100 deals that satisfy the criteria and remain in the sample.

For example, in 2004, *Vinci SA* acquired *Autoroutes du Sud de la France*. The reported ESG score of the target in the year before the M&A event was 67.72 while the reported ESG score of the acquirer was 46.33. The market value of the acquirer the year before the M&A event, measured with Tobin's Q, was 0,663 based on the data available in WorldScope. One year after the event, the acquirer's reported ESG score was 62.23 and its market value was 0,916.

4 Results

4.1 Descriptive Statistics and Bivariate Results

Table 2 presents the descriptive statistics of the variables we used in our analysis (models 1, 2 and 3). To enhance the robustness of our results, we winsorize all variables at the 5th and 95th percentiles. Table 2 shows a similar variation in the ESG performance for both the acquiring and target firms. The mean pre-merger target/acquirer ESG performance is 0.972, implying that on average, bidders acquire targets with lower ESG scores. The mean change in the acquirer's ESG performance is 0.070, suggesting a 7% improvement in the mean ESG score for acquirers one year after the M&A. Acquirers significantly increase their size the year after the merger (43.9%) as well as their leverage, albeit at a lower rate (5.9%). In contrast, the market value and profitability of acquirers decrease by approximately 11% the year after the deal announcement.

TABLE 2 Descriptive statistics for all variables

	Mean	**Median**	**SD**	**Minimum**	**Maximum**
$\frac{\text{TARGET}}{\text{ACQ}}\text{ESG}$	0.972	0.937	0.288	0.330	1.580
Δ_{ACQMV}	-0.106	-0.110	0.280	-0.642	0.507
Δ_{ACQESG}	0.070	0.032	0.191	-0.430	0.620
Δ_{ACQPROF}	-0.111	-0.075	0.671	-1,45	1,48
Δ_{ACQSIZE}	0.439	0.227	0.519	-0.200	1,773
Δ_{ACQLEV}	0.059	0.006	0.181	-0.222	0.660

This table reports the descriptive statistics for the variables used in our analysis (models 1, 2 and 3). All variables are winsorized at the 5th and 95th percentiles. For more a detailed description of each variable, see Section 3.1 and for the definition of each variable, see Table 1.

Table 3 reports the bivariate correlations between the dependent, independent and control variables. The relative pre-merger target/acquirer ESG performance is highly correlated with the acquirer's ESG performance, while the profitability, size and leverage of the acquirers are highly correlated with their market value. On the contrary, we find no significant relationship between the acquirer's ESG performance and the control variables.

TABLE 3 Correlation matrix

	$\frac{TARGET}{ACQ}ESG$	Δ_{ACQMV}	Δ_{ACQESG}	$\Delta_{ACQPROF}$	$\Delta_{ACQSIZE}$	Δ_{ACQLEV}
$\frac{TARGET}{ACQ}ESG$	1					
Δ_{ACQMV}	0.051	1				
Δ_{ACQESG}	0.415**	0.184	1			
$\Delta_{ACQPROF}$	-0.038	0.480**	-0.084	1		
$\Delta_{ACQSIZE}$	0.034	-0.424**	-0.091	-0.215*	1	
Δ_{ACQLEV}	0.205*	-0.427**	-0.016	-0.289**	0.113	1

This table depicts the Pearson's correlations for the variables in our analysis (models 1, 2 and 3). ** and * indicate significance at the1% and 5% levels, respectively.

4.2 Regression Analysis

Before proceeding to the estimation of the OLS regression models, we check certain statistical assumptions, such as normality, homoscedasticity, multicollinearity and autocorrelation. Regarding normality, we apply the Kolmogorov-Smirnov test (Table 4), which indicates that some of the variables are normally distributed (market value, target ESG and profitability), while some others do not follow a normal distribution (acquirer ESG, size and leverage). The lack of normality for the latter may be due to the sample size and the existence of significant variation. To alleviate heteroscedasticity concerns, we apply the method of transforming variables using the logarithms of the values rather than the actual values (e.g. we use the natural logarithm of total assets as a proxy for firm size), while as a measure of autocorrelation in the residual regression analysis, we apply the Durbin–Watson test. The values of the Durbin–Watson test are around 2 (+/- 0.5), suggesting the absence of autocorrelation in the regression residuals. Finally, we use the variance-inflation factors (VIFs) and tolerance factors to test multicollinearity. The estimated models show tolerance factors between 0,833 and 0,979 and VIFs between 1,021 and 1,141, indicating the absence of multicollinearity.

Regarding the explanatory power of our models, the adjusted R^2values are 0.428, 0.414 and 0.174 for models 1, 2 and 3, respectively. These values are in the same order as in similar studies in the field. For instance, El Ghoul et al. (2011) report R^2 values between 0.164 and 0.477, while Xie et al. (2019) and Yu et al. (2018) obtain R^2 values ranging between 0.285-0.365 and 0.155-0.204, respectively. Table 4 presents the estimation results of our models.

Table 4: Regression results

	Model (1)		Model (2)		Model (3)	
Dependent variables	Δ_{ACQMV}		Δ_{ACQMV}		Δ_{ACQESG}	
Constant	-0.010		-0.118		-0.191***	
$\frac{TARGET}{ACQ}ESG$			0.138*		0.292***	
Δ_{ACQESG}	0.266**					
$\Delta_{ACQPROF}$	0.145***		0.135***		-0.037	
$\Delta_{ACQSIZE}$	-0.161***		-0.174***		-0.044	
Δ_{ACQLEV}	-0.447***		-0.504***		-0.137	
Adjusted R^2	0.428		0.414		0.174	
Durbin-Watson	1,888		1,818		1,876	
Collinearity Statistics	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
$\frac{TARGET}{ACQ}ESG$			0.957	1.044	0.957	1.044
Δ_{ACQESG}	0.979	1.021				
$\Delta_{ACQPROF}$	0.872	1.147	0.883	1.133	0.883	1.133
$\Delta_{ACQSIZE}$	0.939	1.065	0.951	1.052	0.951	1.052
Δ_{ACQLEV}	0.913	1.096	0.877	1.141	0.877	1.141
Normal Distribution Statistics	$\Delta_{ACQ\ MV}$	$\frac{TARGET}{ACQ}ESG$	$\Delta_{ACQ\ ESG}$	$\Delta_{ACQ\ PROF}$	$\Delta_{ACQ\ SIZE}$	$\Delta_{ACQ\ LEV}$
Kolmogorov-Smirnov Z	0.540	1,189	1,287*	0.879	1,625***	1,859***

This table reports the results of the cross-sectional OLS regression analysis and the diagnostic statistics for models 1, 2 and 3. All variables are winsorized at the 5th and 95th percentiles. For more a detailed description of each variable, see Section 3.1, and for the definition of each variable, see Table 1. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

The regression analysis results show that the relationship between the change in the post-merger market value of acquirers and the change in their post-merger ESG performance is positive and statistically significant at the 5% level (Table 4, Model 1), which allows us to accept Hypothesis 1. This finding is in line with previous studies supporting the value enhancing CSR model proposed by stakeholder theory (Eccles et al., 2014; Kaspereit &

Lopatta, 2016; Martínez-Ferrero & Frías-Aceituno, 2015; Yu et al., 2018; Xie et al., 2019; Yadav et al., 2016; Fatemi et al., 2015). Moreover, the significant positive effect of ESG performance on market value allows us to conclude that enhancing corporate ESG performance can be considered a strong M&A value antecedent.

Furthermore, the effect of the relative target/acquirer ESG performance on acquirer market value is positive and statistically significant at the 10% level (Table 4-Model 2), which allows us to partially accept Hypothesis 2. That is, we find some evidence that the market value of the acquirer increases following the acquisition of a target with higher ESG performance. This result contributes to the debate on the corporate value-enhancing effect of SRI and is in line with results reported by Atkas et al. (2011). Moreover, it complements the results reported by Deng et al. (2019), Arouri et al. (2019) and Krishnamurti et al. (2019), who show that CSR-aware acquirers receive higher merger announcement returns and lower uncertainty and risk. However, as with many studies on the relationship between CSR practices and corporate value, it is difficult to draw clear conclusions regarding the effect of a particular dimension of the targets' relative ESG performance on acquirers' corporate performance. As Cellier and Chollet (2016) suggest, some dimensions of CSR have positive effects on corporate performance, while others may have negative ones. This could explain the weak significance level of our results regarding the relationship between target/acquirer ESG performance and acquirer market value, considering that we utilize an aggregate ESG rating instead of individual ratings to measure the different dimensions of ESG performance. Future research could elaborate more on this limitation of our study.

Finally, the results of our analysis provide conclusive evidence that the relative target/acquirer ESG performance has a positive and statistically significant effect on the change in the acquirer's pre- and post-merger ESG performance at the 1% level (Table 4-Model 3), which allows us to accept Hypothesis 3. Therefore, the acquisition of targets with higher ESG performance than that of acquirers in the pre-merger stage helps acquirers increase their own ESG performance in the post-merger stage. This finding suggests that the acquirer can integrate the target's ESG practices into its own ESG in the post-merger stage and that acquirers are positive and open to accepting and incorporating ESG practices into their core business when acquiring targets with better ESG performance. Our results are in line with Atkas et al. (2011), who show that the environmental and social performance of acquirers increases following the acquisition of SRI-aware targets**.**

5 Conclusion

The rapid development of SRI strategies during the last twenty years attracted academic interest, which mainly focuses on the relationship between SRI and corporate performance, and specifically whether SRI enhances or destroys corporate value. In this study, we analyse M&As to contribute to this debate. We explore ESG performance as an M&A antecedent and corporate value driver. Our results are in line with Friedman's stakeholder theory, which supports the corporate value enhancing nature of CSR and corporate sustainability. We provide evidence of a positive relationship between the acquisition of a target with higher ESG performance than itself in the pre-merger stage and an increase in the acquirer's post-merger market value in relation to its market value before the M&A. Moreover, we detect a strong effect of the pre-merger relative target/acquirer ESG performance on the acquirer's post-merger ESG performance. Finally, we show that enhanced ESG performance positively affects the market value of acquirers.

Our results are of particular interest to business managers, investors and policy makers. For managers, we provide evidence supporting SRI as a value-enhancing strategy. Therefore, investing in ESG-aware firms or acquiring ESG-aware targets could positively impact corporate performance. Additionally, since we find evidence that enhanced ESG performance positively affects market value, firms that wish to enhance investor confidence should consider adopting ESG practices and promoting ESG information disclosure, especially by following specific ESG reporting guidelines. As previous studies demonstrate, ESG performance is valued more when it is published in a form of ESG reports (Mervelskemper & Streit, 2017). Furthermore, since acquiring ESG-aware targets positively impacts both the acquirer's ESG performance and its market value, companies that wish to acquire ESG-related resources, such as a specific type of technology (i.e. clean energy technology) or some specialized knowledge of sustainability practices, should consider M&A as an effective expansion strategy. Additionally, companies that wish to participate in M&A should also consider raising their own ESG performance, as this would make them a more attractive target in the market for corporate control. Finally, policy makers should promote the adoption of ESG practices and encourage firms to disclose information about their ESG performance. Along these lines, they should take sustainability criteria into account when making decisions on public procurement programs, as this would enhance the adoption of ESG-related practices in the private sector.

This study aimed to expand the existing academic research on the relationship between SRI, M&A, ESG performance and corporate performance. The main limitation of our research is the lack of ESG data availability for both targets and acquirers. Our intention to match target and acquirer ESG scores inevitably limited the number of M&A events we could include in our analysis, which in turn limits the generalizability of the results. Future research should elaborate on the relationships we examine here, either by exploring specific ESG dimensions or practices and their effect on corporate performance, or by using self-reported measures based on managers' perceptions of the value gained from the acquisition of targets with superior ESG performance.