The effect of ESG on value creation from Mergers and Acquisitions. What changed during the COVID-19 pandemic?

Abstract

Purpose: The purpose of this study is to investigate the relationship between environmental, social and governance (ESG) performance, and shareholder wealth in the context of Mergers and Acquisitions (M&As) before and during the COVID-19 pandemic.

Design/methodology/approach: We use a sample of 889 completed M&As announced by US firms between January 1, 2018 and July 31, 2020. Announcement abnormal returns are estimated employing an event study methodology and the relation of ESG performance to shareholder value creation is tested with univariate and multivariate cross-sectional regressions.

Findings: We provide evidence for a significant negative value effect of ESG performance for the shareholders of acquiring firms during the entire sample period. The negative effect appears to be stronger since the onset of the COVID-19 crisis. This suggests that, during the pandemic-driven economic turmoil, the costs of sustainability activities outweigh any possible gains, providing evidence in support of the overinvestment hypothesis.

Research limitations/implications: The results of the study have important implications for firms, investors and policy makers. Firms should be more cautious with regard to extensive investments in ESG activities, particularly during an economic turmoil. For shareholders, the results suggest that ESG engagement is not a resilience factor in an exogenous shock such as the COVID-19 pandemic. In terms of policy making, the sustainability disclosure framework should remain voluntary allowing firms to report material ESG-related issues. The main limitation of the study is related to data availability regarding ESG performance.

Originality/value: To the best of our knowledge, this is the first study that investigates the effect of ESG performance on shareholder value in the market for corporate control before and during the COVID-19 pandemic.

Keywords: Environmental, Social and Governance (ESG) performance, Mergers and Acquisitions, Abnormal Returns, US, Event Study

1. Introduction

There is growing research interest among scholars, managers and policy makers in the relationship between Corporate Social Responsibility (CSR) and financial performance. The existing empirical findings provide inconclusive evidence with regard to the effect of CSR on firm performance. Drawing on stakeholder theory (Freeman, 1984) that provides the basis for the alignment of interests between shareholders and other stakeholders, a strand of the literature suggests a positive impact of CSR on financial performance (Aouadi and Marsat, 2018; Awaysheh *et al.,* 2020; Fatemi *et al*., 2018; Jo and Harjoto, 2011; Lins *et al*., 2017; Mervelskemper and Streit, 2017;). In contrast, shareholder theory highlights the main corporate goal that is profit maximization and, from its perspective, CSR activities do not generally serve the interests of shareholders (Friedman, 1970). A number of studies provide evidence for shareholder theory, suggesting that CSR is negatively related to firm value (Barnea and Rubin, 2010; Brammer *et al*., 2008; Crisóstomo *et al*., 2011).

Mergers and acquisitions (M&As) constitute a major strategic decision for firms and may significantly affect shareholder value (Tampakoudis *et al*., 2018). The initial announcement and final completion of a merger deal affects the interests not only of shareholders but also the interests of various stakeholders, such as employees, customers, creditors, and the society, all of whom play a key role in the successful post-merger integration process. Therefore, the market for corporate control provides a suitable setting to investigate the value effects of CSR. Many studies examine the impact of CSR on shareholder value in the M&A context, providing mixed findings (Deng *et al*., 2013; Fatemi *et al*., 2017; Krishnamurti *et al*., 2020; Yen and André, 2019; Zhang *et al*., 2020).

The onset of the COVID-19 pandemic triggered a severe economic crisis with unprecedented effects on financial markets globally. During the first quarter of 2020 the S&P lost more than 30% from its peak in mid-February, while the increased uncertainty caused significant volatility in the stock prices of firms across all business sectors. In the wake of the pandemic-driven crisis, there were voices in favour of the potential benefits of the environmental, social and governance (ESG) performance of firms, suggesting that it could be an important resilience factor during a period of increased economic uncertainty (Albuquerque *et al*., 2020; Demers *et al*., 2020). Considering that many firms pursue M&A deals as a growth strategy intending to turn crisis into opportunity, the question that arises is related to whether ESG has the potential to create shareholder value in the market for corporate control during the pandemic-driven economic turmoil.

Our study intends to shed light on the relationship between ESG performance and acquirer wealth effects in the context of US M&As prior to and during the COVID-19 pandemic. To address the study objectives, we examine the wealth effects of 889 M&A deals announced by US firms from January 1, 2018 to July 31, 2020.We find an overall negative link between ESG performance and the economic impact of M&As; however, the examination of the results before and during the pandemic yields interesting findings. More specifically, we present robust evidence that during the pandemic ESG performance is associated with negative value effects for acquirer shareholders, which is consistent with the overinvestment hypothesis (Barnea and Rubin, 2010). We apply difference-in-differences analysis to identify possible differences between acquirers with different percentile scores. We find negative results for high-ESG acquirers (above the 75^{th} percentile), while for low-ESG acquirers (below the 25^{th} percentile) the announcement of a merger deal has positive implications for shareholders. For the period before the pandemic, the negative effect of ESG performance on acquirer excess returns is moderate. Hence, we reach the conclusion that the negative relationship between ESG and shareholder value observed in the entire period is mainly attributable to the COVID-19 pandemic. Evidently, after the outbreak of the pandemic, the market believes that ESG activities are costly investments which destroy shareholder value for acquiring firms. Methodologically, the results of the study are robust to a variety of model

specifications, different market portfolio proxies and different event windows employed for the estimation of the announcement abnormal returns.

Considering that limited attention has been paid to social and environmental dimensions of M&As (Aktas *et al.*, 2011; Gomes and Marsat, 2018), our study contributes to the debate focusing on the impact of ESG performance on the market reaction upon merger announcements. What sets our study apart from related studies (Deng *et al*., 2013; Fatemi *et al*., 2017; Krishnamurti *et al*., 2020; Yen and André, 2019; Zhang *et al*., 2020), is that we examine the effect of ESG on excess returns around the pandemic crisis. Our research approach allows us to study the implications of ESG in the market for corporate control in the most recent period and helps us to examine the evolution of such implications over economic cycles. Our paper also adds new evidence to the literature by employing an alternative measure of CSR performance. Unlike Deng *et al*. (2013) and Zhang *et al*. (2017), we use ESG score as a proxy for a firm's sustainability activities. This measure incorporates environmental and social aspects as well as issues related to corporate governance. To the best of our knowledge, our study is the first to explore the effects of ESG performance on M&As during the COVID-19 pandemic. Other studies focusing on this period investigate the effect of CSR on market value, volatility and operating performance (Albuquerque *et al*., 2020; Broadstock *et al*., 2020; Demers *et al*., 2020; Garel and Petit-Romec, 2020).

The rest of the paper is organized as follows. Section 2 provides the theoretical framework of CSR, reviews the relevant studies on the relationship between CSR and M&As, and presents the most recent studies with regard to the effect of CSR on firm performance during the COVID-19 pandemic. We provide a detailed analysis of the sampling procedure, the univariate statistical analysis, the multivariate regression models and the selection of key variables in Section 3. We present the empirical results and robustness tests in Section 4. Finally, Section 5 offers the main conclusions, policy implications, limitations and suggestions for further research.

2. Theoretical framework and literature review

2.1 Definition of CSR and underlying theory

CSR can be defined as: "*a socio-political movement which generates private self-regulatory initiatives, incorporating public and private international law norms seeking to ameliorate and mitigate the social harms of and to promote public good by industrial organisations"* (Sheehy, 2015, p. 639). This definition addresses the broad scope of CSR activities and brings to the fore the interests of shareholders as well as stakeholders such as employees, customers, suppliers, community, and society at large. Considering the multidimensional nature of CSR, the literature provides several alternative metrics for its measurement. A common proxy measuring CSR performance is the ESG score, which is believed to address the high complexity of measuring corporate sustainability and for this reason it is widely used in the CSR literature (e.g. Broadstock *et al*., 2020; Demers *et al*., 2020; Fatemi *et al*., 2017; Krishnamurti *et al*., 2020).

The following paragraphs analyse the theoretical basis for the incorporation (or not) of CSR-related activities into the organizational processes and outcomes, drawing from stakeholder theory and shareholder theory. Furthermore, both theories are examined in the context of the COVID-19 crisis.

2.1.1 Stakeholder theory

According to stakeholder theory (Freeman, 1984), firms should consider the effects of their actions upon various groups having an interest or a stake in the corporation. By providing the necessary resources to satisfy the interests of stakeholders, firms build strong relationships with them. As a result, stakeholders are more willing to contribute resources and effort to the

firm, which, in turn, increases shareholder value (Freeman *et al*., 2004; Jang *et al.*, 2019; Lee, 2008). Thus, in high-CSR firms the interests of shareholders and other stakeholders are in greater alignment. CSR policies can also lead to better communication between insiders (i.e. managers) and outsiders (i.e. stakeholders) mitigating potential conflicts of interest, which is consistent with the conflict resolution hypothesis (Jo and Harjoto, 2011). Furthermore, higher CSR engagement reduces reputational risk and decreases the level of information asymmetry, providing support for the reputation-building hypothesis (Cui *et al*., 2018).

Many studies find a positive association of CSR performance with firm performance, thus providing support for the stakeholder theory. For instance, Awaysheh *et al.* (2020) find better operating performance and higher valuations for high-CSR firms compared to low-CSR industry peers. Jo and Harjoto (2011) and Fatemi *et al*. (2018) also suggest that firm value is positively affected by CSR engagement and ESG performance, respectively. Lins *et al*. (2017) find that firms with high CSR ratings outperformed firms with low CSR in terms of stock returns during the 2008-2009 financial crisis. Mervelskemper and Streit (2017) show a significant positive effect of ESG performance on firm value, which is stronger when firms publish an ESG report. Similarly, Chijoke-Mgbame *et al.* (2019) and Alareeni and Hamdan (2020) argue that CSR/ESG disclosure is positively associated with firm performance. Aouadi and Marsat (2018) find that market value is related to the corporate social performance score for firms with certain characteristics such as large size, better operating performance and location in countries with greater press freedom. Finally, Huang (2019), reviewing 21 meta-analytical studies, finds a significant positive relationship between ESG performance and financial performance.

The outbreak of COVID-19 changed the business landscape, creating significant challenges and opportunities for firms across all sectors. Therefore, it would be useful to address the implications of stakeholder theory in the COVID-19 context. The pandemic crisis caused a dramatic increase in economic uncertainty and a lack of mutual confidence between firms and stakeholders (Baker *et al.*, 2020). Building and enhancing social capital through CSR investments increases firms' trustworthiness, fosters trust and cooperation, thus facilitating the interactions between stakeholders and firms (Lins *et al*., 2017). In the midst of the pandemic, firms that care for their employees, customers and communities rise above their competitors, inspiring confidence and cultivating loyalty. According to reciprocity theory (Dufwenberg and Kirchsteiger, 2004; Falk and Fischbacher, 2006), stakeholders are willing to help socially responsible firms in times of crisis, given that such firms behaved in a more ethical and sustainable manner in the past (Guiso *et al*., 2015; Servaes and Tamayo, 2013). Therefore, in line with stakeholder theory, CSR activities become particularly important during the pandemic-induced crisis, acting as insurance that pays off when the need for sustainability and trustworthiness is urgent.

2.1.2 Shareholder theory

Contrary to stakeholder theory, shareholder theory proposes that the main goal of a firm is to increase the wealth of shareholders (Friedman, 1970; Jensen 2001). By serving the interests of stakeholders, firms waste financial resources at the expense of shareholders; there is wealth transfer from shareholders to stakeholders (Deng *et al*., 2013). In fact, for some scholars, investment in CSR may be nothing more than a manifestation of managerial agency problems (Benabou and Tirole, 2010; Ferrell *et al.*, 2016), whereby managers are often willing to sacrifice money overinvesting in CSR activities to improve their reputation (Barnea and Rubin, 2010; Buchanan *et al.*, 2018). Besides, focusing extensively on sustainability performance is time-consuming and it may detract managers' attention from their core responsibilities.

Although the majority of empirical literature provides evidence in favour of stakeholder theory, more than a few studies document the opposite. For example, Auer and Schuhmacher (2016) find that an ESG-based investment strategy does not provide better performance in

comparison to passive investments, while, in certain industries and depending on the ESG criterion, investors experience lower returns than the passive benchmarks. Brammer *et al*. (2008) show a significant negative relationship between corporate social performance and stock returns in the UK. Barnea and Rubin (2010) provide evidence that firms overinvest in CSR, which in turn destroys shareholder value. Focusing on the Brazilian stock market, Crisóstomo *et al*. (2011) find a significant negative correlation between CSR and firm value. The negative influence of CSR on ROE of firms supports the theory by Friedman (1970) that the only responsibility of business is to maximize profits and returns for its shareholders. Similarly, Sekhon and Kathuria (2019) show that the effect of CSR on financial performance is either neutral (ROA, Net Profit Margin) or negative (ROE). Finally, Buchanan *et al*. (2018) suggest that the effect of CSR on firm value depends on the prevailing economic conditions and the level of institutional ownership.

Considering the new economic environment after the onset of COVID-19, shareholder theory provides a rational basis for a reduction in CSR investments. The speed at which coronavirus spread forced governments worldwide to implement several containment measures to protect public health. The imposed restrictions disrupted economic activity on a large scale, causing a sudden sharp shortfall in firms' revenue streams. Besides the unexpected revenue shock, firms faced the reluctance of lenders to provide funds, which further hampered their ability to cope with their fixed costs and debt obligations (Hasan *et al.*, 2020; Singh, 2020). DeVito and Gómez (2020) argue that, due to spillover effects of COVID-19, the average firm is expected to face dramatic difficulties regarding short- and long-term liquidity. As firms struggled to bridge liquidity gaps caused by the pandemic, the demand for bank lending soared to unprecedented heights (Li *et al*., 2020). Under these circumstances, a firm's financial flexibility proved to be a crucial factor in dealing with financial distress (Fahlenbrach *et al.*, 2020). A way to increase financial flexibility is to increase cash balances and this can be achieved by postponing investments and cutting costs (DeAngelo *et al.*, 2018). Thus, in line with shareholder theory, during the COVID-19 pandemic a reduction in social and environmental projects may be necessary to lower costs and improve financial performance. Additionally, a reduction in CSR activities will allow managers to devote more time to dealing with the business challenges brought on by COVID-19.

2.2 ESG performance and value creation in the M&A context

A strand of the literature examines the relationship between acquirer sustainability performance and shareholder wealth in the market for corporate control. More specifically, Deng *et al*. (2013) analyse 1,556 US mergers from 1992 to 2007 and provide evidence of a significant positive impact of acquirers' CSR performance on their announcement returns, long-term returns and operating performance. They also find that mergers by acquirers with high CSR performance are completed faster and are more likely to succeed than mergers by acquirers with low CSR performance. Using a sample of 1,752 US mergers during the period 1995-2013, Zhang *et al*. (2017) find that acquirers with stronger CSR ratings create shareholder value by minimizing socially irresponsible behavior rather than maximizing socially responsible activities, thus extending stakeholder theory. Analysing 1,310 merger transactions between 2002 and 2012, Zhang *et al*. (2020) observe positive abnormal returns for high-CSR acquirers upon the announcement of acquisitions, though the returns are negative when the acquisitions are hostile. Krishnamurti *et al*. (2020) also find significant positive announcement period excess returns for CSR-oriented acquirers for a sample of 776 Australian M&As between 2000 and 2016. In addition, they suggest that socially responsible firms are more likely to acquire targets with CSR-orientation, offer lower bid premiums, use cash over stock payment and make single bids. In contrast, Fatemi *et al*. (2017), examining 243 M&As of Japanese firms during the period 2000-2014, find that the ESG performance of acquirers has no explanatory power on their announcement abnormal returns. The results also indicate no long-term effects of mergers on acquirers' environmental, social and governance

performance. The authors argue that the market for corporate control in Japan may behave differently compared to the US or other western countries.

Yen and André (2019) consider a sample of 1986 mergers in 23 emerging market countries during the 2008-2014 period and show that the effects of CSR (measured by environmental and social ratings) on acquirer abnormal returns depend on the agency concerns addressed by the market. They find a significant positive relationship between CSR performance (measured by environmental rating) and abnormal returns for acquirers from countries with strong governance. This finding indicates that the quality of governance at country level can comfort CSR agency concerns raised by investors. However, firm-level governance mechanisms fail to mitigate these CSR agency problems. Finally, Aktas *et al*. (2011) investigate the impact of Socially Responsible Investments (SRI) on stock market performance upon M&As. Using a sample of 106 M&As during the period 1997-2007, they find a positive and significant effect of the target's social and environmental performance on acquirer gains. The results also show that firms that acquired SRI-aware targets managed to improve their social and environmental performance, suggesting the ability of acquirers to learn from the targets' SRI activities and practices. Other studies investigate the effects of ESG corporate performance on various M&A outcomes, such as acquisition premiums (Gomes and Marsat, 2018; Qiao and Wu, 2019), target selection and screening process (Gomes, 2019), target valuation (Chen and Gavious, 2015), deal-related uncertainty (Arouri *et al*., 2019), the level of investment in mergers (Krishnamurti *et al*., 2020), the potential for a firm to become either a target or an acquirer (Boone and Uysal, 2020) and the post-merger market valuation (Tampakoudis and Anagnostopoulou, 2020).

2.3 ESG performance and corporate outcomes during the COVID-19 pandemic

A handful of research studies investigate the effect of ESG performance on firm performance during the COVID-19 pandemic, providing inconclusive evidence. In particular, Broadstock *et al*. (2020) investigate the relationship between ESG performance and market returns for China's CSI300 benchmark index members during the pandemic-driven financial crisis. They find that ESG performance mitigates financial risk, and is positively and significantly associated with excess returns during the COVID-19 pandemic. The findings support the notion that high-ESG firms are relatively more resilient to the coronavirus crisis. Albuquerque *et al*. (2020) also support the resiliency of firms with high environmental and social (ES) performance during the COVID-19 crisis. They focus on the US stock market and find higher returns, lower volatility and higher operating profit margins for firms with higher ES ratings during the first quarter of 2020. In addition, Ding *et al*. (2020) utilize a dataset of more than 6,000 firms from 56 countries and examine the relationship between certain firm-specific characteristics and stock market reactions to events related to the COVID-19 pandemic. They find that the instances of stock price declines driven by COVID-19 were milder for firms with higher environmental, social, and CSR strategy scores, which suggests that these characteristics are significant factors for corporate immunity to the pandemic. Mattera *et al.* (2021) argue that long-term CSR strategies and a commitment to sustainable practices can contribute to firm performance during the COVID-19 crisis.

In contrast, Demers *et al*. (2020), examining the stock market performance of more than 1,500 US firms during the first semester of 2020, refute the argument that ESG is a significant stock price resilience factor during the pandemic. The authors provide robust evidence that the effect of ESG on market returns is not significant during the market plunge triggered by the pandemic in the first quarter of 2020, while it becomes significant and negative during the market recovery in the second quarter of 2020. Similarly, Garel and Petit-Romec (2020), considering a sample of French listed firms, do not provide evidence that corporate governance or CSR activities are associated with stock returns during the COVID-19 crisis. Finally, Folger-Laronde *et al*. (2020) argue that sustainability performance of Exchange Traded Funds (ETFs) does not safeguard resilience to the COVID-19 crisis, while Döttling and Kim (2020) find sharper declines on flows for mutual funds with high ESG ratings in the

US market. Evidently, there is no empirical evidence with regard to the effect of ESG performance on shareholder value creation in the context of M&As during the COVID-19 pandemic.

2.4 COVID-19 and the financial crisis of 2007-2008

The COVID-19 crisis appears to have some similarities to the global financial crisis of 2007-2008 in the sense that both triggered an economic and financial meltdown on a global scale. Both crises caused a dramatic stock market crash, a massive spike in uncertainty and a recession in the global economy (Baker *et al.*, 2020; IMF, 2020; Shehzad *et al.,* 2020). However, the global financial crisis represents an endogenous shock, as the collapse of the US housing market that quickly spread to the rest of the world resulted in a severe economic downturn. In contrast, the COVID-19 shock is purely exogenous to the global economy, similarly to other natural disasters such as floods, earthquakes or health crises, wars, terrorist attacks, revolutions and other unexpected events (Hasan *et al*., 2020; Oravský *et al*., 2020; Spatt, 2020). The COVID-19 crisis has several unique characteristics compared to other crises including a precise timeline, a unique and distinct cause, a more global scope, an accelerated pace, dependence on unpredictable non-economic factors and a significant role of social media in shaping public opinion (Borio, 2020; Yarovaya *et al*., 2020).

Empirical evidence on the value implications of sustainability activities during the global financial crisis is limited, yet some useful insights can be drawn from the related studies. Specifically, Lins *et al*. (2017) examine 1,673 non-financial US firms from August 2008 to March 2009 and find higher stock returns for firms with high CSR rating than those with low CSR ratings. They also find that high-CSR firms show higher profitability, sales growth and productivity compared to low-CSR firms during the crisis. Similarly, Gallego-Álvarez *et al*. (2014), analysing 855 multinational firms, argue that that there is a positive relationship between environmental and financial performance in times of economic crisis. In contrast, Hoang *et al*. (2020), investigating a sample of 361 US firms between 2007 and 2016, provide evidence for a negative relationship between environmental transparency and financial performance during the financial crisis. The results also indicate that during the meltdown the impact of positive developments in environmental performance on market valuation is different.

3. Data and Empirical Method

3.1 Merger sample

The M&A dataset was retrieved from Thomson Reuters. The dataset consists of 889 M&A deals announced by US firms between January 1, 2018 and July 31, 2020 that comply with the following criteria:

(1) The deal is completed before the end of the sample period.
(2) The acquirer is a US public firm listed on a major US stock exchange, such as Nasdaq, NYSE, or Amex.
(3) The target is a US public, private or subsidiary firm.
(4) The acquirer is included in the environmental, social and governance (ESG) database of Refinitiv.
(5) The acquirer has daily stock price data and financial statement information available from Datastream.

To avoid the effects of very small deals, we filter out those transactions with deal value less than $1 million (Alexandridis *et al*., 2013; Masulis *et al*., 2007; Moeller *et al*., 2004). We also exclude clustered mergers, where acquirers are involved in multiple bids within 3 days (i.e. the event window with the longest length), to isolate the effects from a specific merger bid

(Antoniou *et al*., 2007; Fuller *et al*., 2002). Finally, we omit firms from the utilities (SIC codes 4900-4999) and finance (SIC codes 6000-6999) industries because they are highly regulated (Deng *et al*., 2013; Fuller *et al*., 2002; Nguyen and Phan, 2017).

3.2 Methodology

We investigate the effect of ESG performance of M&A activities using both univariate and multivariate analyses. By means of univariate analysis, we estimate the abnormal returns of acquiring firms upon the announcement of merger deals and, then, we compare the excess returns between the sample firms considering their percentile ranking ESG score. Under the multivariate analysis, we regress the returns of acquirers against the main variable of interest, namely the ESG score, and a set of control variables that have proved to affect the gains of acquirers. We specifically focused our investigation of the effect of ESG performance on acquirers' gains on the periods before and during the pandemic.

3.2.1 Theoretical framework of data analysis

The estimation of abnormal returns for acquirers is done by applying an event study methodology (Brown and Warner, 1985; Fama *et al*., 1969). An event study is a statistical procedure that estimates the stock market reaction to new information related to a firm, such as M&As, earnings or dividend announcements, debt or equity issues, investment decisions and stock splits (Corrado, 2011; Mitchell and Netter, 1994). The new information may also be relevant to economy-wide events and, thus, is expected to affect stock prices in general. Examples of such events are market shocks, the passage of a legislative act, a new regulatory requirement and a change in interest rates. The validity of the estimated abnormal returns relies on certain conditions, which are market efficiency, unexpectedness of the event and non-existence of other events (McWilliams and Siegel, 1997). The measurement of the economic impact of new information requires the identification of the announcement date of the relevant event and the construction of a number of event windows surrounding the date of the event. The event windows starting before the announcement date intend to capture any information leakage about the event before its announcement, while those lasting a few days after incorporate the effects of the investment actions taken by investors after the event (Ahern and Sosyura, 2014; Cuypers *et al*., 2017).

3.2.2 Measurement of abnormal returns

The expected returns of acquirers are estimated using the market model, as shown in Eq. 1:

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

where, $\hat{R}_{it}$ is the expected return of firm i at day t,α_i is the intercept,β_i is the regression coefficient,$R_m$is the return of the market portfolio and ε_{it} is the error term. We use the S&P 500 as proxy for market portfolio. In the robustness analysis, we use two other proxies for the market portfolio, which are the Nasdaq Composite and the NYSE Composite.

The regression intercept and coefficient are estimated using the Ordinary Least Squares (OLS) method utilizing historical market data for a 250-day period (i.e. a year of daily trading data), beginning 21 days before the merger announcement. The estimated coefficients are replaced in the market model (Eq. 1) to calculate the expected returns for each firm. The abnormal return for a given firm in any time period is calculated deducting the estimated return from the realized return, as shown in Eq. 2.

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

where, AR_{it} is the abnormal return of firm i at day t, R_{it} is the realized return of firm i at day t and $\hat{R}_{it}$ is the expected return of firm i at day t calculated from Eq. 1.

The cumulative abnormal returns (CARs) are then calculated by aggregating the daily abnormal returns over the selected event window (t_1,t_2), as shown in Eq. 3.

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

We apply various event windows in order to measure the value effects of merger bids over different time periods. Based on the relevant literature, we apply nine event windows ranging from two to seven days in order to capture any information leakage and identify the time required for the incorporation of the new information into the stock prices. More specifically, we apply five event windows surrounding the announcement day (-3,3, -2,2, -2,1, -1,2 and -1,1); two pre-announcement event windows (-3,0 and -1,0) and two post-announcement event windows (0,3 and 0,1).

We test the statistical significance of the mean and median CARs by using the Patell *t*-test (Patell, 1976) and the Corrado rank test (Corrado, 1989), respectively.

3.2.3 Cross-sectional analysis

To further investigate the effect of ESG performance on acquirer gains, we control for a number of factors relating to firm-level characteristics and deal-related variables that have proved to have an effect on acquirer returns. Therefore, we estimate Eq. 4 as follows:

$$CAR_{i(t_1,t_2)} = a + \beta_i ESG\ score_i + \sum_{j=1}^{m} \lambda_j X_{ij} + \varepsilon_i \qquad i = 1 \ldots N \tag{4}$$

where, the dependent variable, $CAR_{i(t_1,t_2)}$, is the cumulative abnormal return of the acquirer from deal i for the period (t_1,t_2) as estimated in Eq. 3. The intercept a measures the excess returns after controlling for the effects of ESG performance and a set of m control variables included in vector X_{ij}. Vector λ_{ij} contains the estimated coefficients of all control variables.

ESG score reflects the acquirer's ESG performance, commitment and effectiveness based on the Refinitiv ESG database (formerly known as Thomson Reuters ASSET4 database), which has been used extensively in the literature (i.e. Albuquerque *et al*., 2020; Arouri *et al*., 2019; Demers *et al*., 2020; Ding *et al*., 2020; Fatemi *et al*., 2017; Yen and André, 2019). The scoring process is carried out considering more than 450 firm-level metrics on ESG aspects, collected from public data sources such as annual reports, company websites, CSR reports, stock exchange filings, NGO websites and news sources. The metrics are grouped into ten main themes which formulate the three pillar scores, which are the environmental, social and corporate governance. In particular, the environmental pillar score is estimated from metrics related to resource use, emissions and innovation; the social pillar score is calculated from metrics related to workforce, human rights, community and product responsibility; and the governance pillar score derives from metrics related to management, shareholders and CSR strategy. The metrics are industry-specific and are based on comparability, materiality and data availability. Following prior studies (i.e. Aouadi and Marsat, 2018; Cheng *et al*., 2014; Drempetic *et al*., 2019; Krishnamurti *et al*., 2020; Mervelskemper and Streit, 2017), we calculate the ESG score of a firm as the mean of the three pillar scores, namely the environmental, the social and the governance scores.

Following the merger literature, we control for firm characteristics and deal variables that have power in explaining acquirer abnormal returns. Therefore, we include in Eq. 4 the age of the acquirer to control for information asymmetry (Barbopoulos *et al*., 2012; Moeller *et al*., 2007), the return on assets to control for acquirer profitability (Andriosopoulos and Yang, 2015; Benson *et al*., 2015; Louis, 2005; Yen and André, 2019), the ratio of total debt to total

assets to control for acquirer leverage (Ge *et al.*, 2020; Hirsch and Walz, 2019; Zhang and Mauck, 2018), the beta coefficient to control for acquirer risk (Bozos *et al*., 2013; Brealey *et al*., 2019), the current ratio (ratio of current assets to current liabilities) to control for acquirer liquidity (Hu *et al*., 2020), the ratio of fixed assets to common equity to control for tangibility (Ang *et al*., 2019; Hu *et al*., 2020) and Tobin's q ratio to control for acquirer's growth opportunities (Dong *et al*., 2006; Elnahas and Kim, 2017; Servaes, 1991). Furthermore, we include in Eq. 4 variables related to the merger deal, which are the deal value (Alexandridis *et al*., 2013) and the relative deal size (Alexandridis *et al*., 2017; Humphery-Jenner and Powell, 2014; Moeller *et al*., 2004). We also use a set of dummy variables to control for intrastate acquisitions (Goergen and Renneboog, 2004; Moeller and Schlingemann, 2005), focused deals (i.e., bidder and target share the same 2-digit SIC code) (Akbulut and Matsusaka, 2010; Erdorf *et al*., 2013), listed targets (Arikan and Stulz 2016; Brander and Egan 2017; Netter *et al*., 2011) and cash-only deals (Fuller *et al*., 2002; Shleifer and Vishny, 2003; Travlos, 1987). Table 1 presents the summary statistics of all the above variables.

[Insert Table I here]

4. Results

The current study deals with the analysis of the relationship between ESG performance and shareholder value in the context of M&As, focusing particularly on the period after the advent of the COVID-19 pandemic. The following paragraphs analyse the results of the univariate analysis and the multivariate regression models, applied to address the study's perspectives.

4.1 Event study results

To investigate the effects of ESG performance on acquirers' gains, we split our initial sample into two sub-groups based on percentile rank scoring methodology. We compare the abnormal returns between firms with ESG scores above the 75th percentile and firms with ESG scores at or below the 75th percentile. Table 2 reports the CARs for US firms with respect to their ESG performance over the entire sample period and across multiple event windows. The abnormal returns for firms with the highest ESG performance (above the 75th percentile) are negative and statistically significant (at the 1% level) in all event windows. The losses for acquirers with high ESG scores vary from 0.16% to 0.80% indicating significant shareholder value destruction. In contrast, firms populating the first three quartiles present positive and statistically significant abnormal returns (at the 1% level mainly) across all event windows. The excess returns of the examined firms range from 0.54% to slightly below 1%, suggesting that M&A deals create significant value to their shareholders. Panel C of Table 2 shows that the abnormal returns for firms with ESG scores above the 75th percentile are more than 1% lower (except the 4-day event window) compared to firms with ESG scores at or below the 75th percentile, while the mean differences between the two groups are statistically significant (at the 1% or 5% level) in most event windows.

[Insert Table II here]

To further examine the wealth effects of M&A deals on acquirers that do not have strong ESG performance, we compare the abnormal returns between firms with ESG scores above the 75th percentile and firms with ESG scores below the 25th percentile. Table 3 presents the CARs for high (above the 75th percentile) and low (below the 25th percentile) ESG performers. The results for the former remain the same as in Table 2, while for low-ESG acquirers the abnormal returns are positive and statistically significant (at the 1% level) in all event windows. The gains for low-ESG acquirers vary from 1.71% to 2.48% indicating significant shareholder value creation. Panel C of Table 3 shows that the excess returns for the fourth-quartile firms are lower by around 2% to more than 3% compared to the first-quartile firms, while the mean differences between the two groups are statistically significant

across all event windows. In summary, the results of the univariate statistical analysis show that the gains to acquirers are negatively affected by their ESG performance.

[Insert Table III here]

4.2 Cross-sectional analysis of acquirers' gains

Given the significant value effect differences between the acquiring firms based on their ESG score, we proceed to explore the impact of ESG performance before and during the COVID-19 pandemic. Consistently with prior studies (Albulescu, 2020; Salisu *et al.*, 2020), we divide our sample into two sub-periods based on the WHO declaration of COVID-19 as a pandemic on March 11, 2020. To enhance the robustness of the results, we run the regression (Eq. 4) with: (i) all variables winsorized at 1st and 99th percentiles; (ii) robust standards errors; and (iii) industry dummies. In line with previous literature (i.e. Fotak and Lee, 2020; Stellner *et al*., 2015), we apply lagged values of all control variables to address potential endogeneity. We also use as dependent variable the acquirer 3-day CARs centered on the merger announcement day (i.e. -1,1), similarly to relevant studies (e.g., Deng *et al*., 2013; Alexandridis *et al*., 2017; Leung *et al*., 2019; Moeller *et al*., 2007). Table 4 presents the results of multivariate analysis that account for the effect of ESG performance along with several firm-specific and deal-related variables that are likely to have an effect on acquirers' abnormal returns.

The results show that ESG score is negatively related to acquirers' excess returns, which corroborates the findings from the univariate analysis. The results further show that acquirers improved their ability to implement value-enhancing merger transactions during the COVID-19 pandemic, since the coefficients of the dummy variable representing the COVID-19 pandemic are all positive and mainly statistically significant (models 2-7), while the coefficients of the dummy variable representing the period before the pandemic are negative and mainly statistically significant (models 8-10). However, M&As made during the COVID-19 pandemic by firms with high ESG performance are associated with negative wealth implications for acquirers' shareholders (models 3-7). In contrast, the interaction of the ESG score with the period before the pandemic appears positive and significant (models 9-10); however, considering the magnitude of the coefficients of the ESG score and the interaction of the ESG score with the period before the pandemic, the overall effect is negative, albeit moderate. In general, investors react differently to the announcement of M&As before and during the coronavirus crisis with respect to the ESG performance of acquiring firms.

The different market reaction to merger announcements before and during the pandemic may be attributable to the prevailing economic and financial conditions in the two periods, and the need of firms to respond to COVID-19. The outbreak of the pandemic-driven crisis caused a revenue shortfall for firms, which also had to deal with a contraction in credit supply from banks (Hasan *et al.*, 2020; Li *et al*., 2020; Singh, 2020). In order to increase liquidity and preserve financial flexibility in light of the current economic downturn, firms might postpone or cancel social and environmental investments. In this context, acquirers investing extensively in sustainability projects during the COVID-19 crisis experienced negative announcement returns. In addition, firms across industries were forced to adapt and adopt new business models, responding to the implications of the global pandemic. Specifically, firms gave priority to digital transformation, supply chain autonomy, safety and health in the organisation, faster innovation and social media marketing. Considering the sudden stop in revenue flow and the disruption in credit markets, the implementation of the necessary business changes may be financed with funds originally intended for CSR activities. Therefore, the benefits of sustainability activities may not outweigh the costs during the COVID-19 pandemic and, thus, high-ESG acquirers destroy shareholder value.

The findings also underline the importance of firm-specific and deal-related variables in determining excess returns to acquiring firms. Specifically, systematic risk, Tobin's Q,

industry relatedness and target listing status have a significant effect on acquirers' gains. The positive coefficient systematic risk indicates that firms with higher market risk are more able to exploit economic benefits from merger deals. The negative effect of Tobin's Q is in line with Dong *et al*. (2006), who conclude that acquirers with high valuations exhibit lower announcement returns as a result of their misvaluation. The fact that there is evidence of positive gains from focused deals suggests that the integration of firms belonging to the same industry may be easier and, thus, sufficient synergy gains can arise. Finally, our results support prior literature as regards the existence of a listing effect on merger deals (Arikan and Stulz, 2016; Brander and Egan, 2017; Netter *et al*., 2011). Acquirers realize negative abnormal returns from public offers, while the returns on private offers are positive, a fact that is attributable to information asymmetry (Officer *et al*., 2009).

[Insert Table IV here]

4.3 Single-Differences and Difference-in-Differences regressions

To further examine whether the excess returns of acquirers during the COVID-19 pandemic differ significantly based on ESG performance, we employ a difference-in-differences approach and estimate the following models.

$$CAR_{i(t_1,t_2)} = a + \beta_{1i}COVID\text{-}19 + \beta_{2i}Low\ ESG\ score_i + \beta_{3i}COVID\text{-}19 \times Low\ ESG\ score_i + \sum_{j=1}^{m} \lambda_j X_{ij} + \varepsilon_i$$

$$CAR_{i(t_1,t_2)} = a + \beta_{1i}COVID\text{-}19 + \beta_{2i}Medium\ ESG\ score_i + \beta_{3i}COVID\text{-}19 \times Medium\ ESG\ score_i + \sum_{j=1}^{m}$$

$$CAR_{i(t_1,t_2)} = a + \beta_{1i}COVID\text{-}19 + \beta_{2i}High\ ESG\ score_i + \beta_{3i}COVID\text{-}19 \times High\ ESG\ score_i + \sum_{j=1}^{m} \lambda_j X_{ij} + \varepsilon$$

Table 5 reports the results of the single-differences and the difference-in-differences regression models. The estimated coefficients of the single-differences regressions (models 1, 4 and 7) suggest that acquirers with low ESG scores (below the 25th percentile) have the potential to create value in the market for corporate control. With regard to acquirers with medium ESG scores (between the 25th and the 75th percentiles), the announcement of M&A deals neither creates nor destroys shareholder value, while for acquirers with high ESG performance (above the 75thpercentile) the implementation of mergers is associated with negative value effects. Furthermore, the estimated coefficients of the difference-in-differences regressions show that, during the COVID-19 pandemic, the direction of the effect of ESG performance on acquirer gains remains unchanged. In particular, for acquirers with high ESG scores, the estimated coefficients during the pandemic are statistically significant at high levels (at 1% or 5%) and present lower negative values compared to the entire period (models 8 and 9). For acquirers with low ESG scores, the estimated coefficients during the pandemic are significantly positive (at the 5% or 10% levels), having higher values than the entire period (models 2 and 3). Acquirers with medium ESG scores present constantly insignificant coefficients during the pandemic as well as the entire period (models 5 and 6). Overall, the results show the same sign pattern for the effect of ESG performance on shareholder value during the two periods yet its magnitude becomes stronger. These findings further support the notion that well-performing ESG acquirers failed to create shareholder value during the coronavirus crisis, consistently with Demers *et al*. (2020).

[Insert Table V here]

4.4 Robustness checks

To verify the validity of our main findings, we rerun the regression models to ensure that they are not dependent on the estimation model or/and the applied event windows. Thus, we estimate the acquirers' abnormal returns with the market model using different proxies for the market portfolio, namely the Nasdaq Composite and the NYSE Composite. We also use as dependent variable the CARs of acquirers calculated in three different event windows lasting from two to five days (i.e. -1,0, -2,1, -2,2). Table 6 reports the results of the cross-sectional regression analysis with robust standard errors and with industry dummies, applying alternative model specifications with regard to the applied event windows and market portfolios. The results of our analysis confirm the negative effect of the ESG score on the wealth effects of M&As announced during the COVID-19 pandemic, although acquirers are successful in generating overall wealth gains in that period. Similarly, the results concerning the significance of certain control variables remain unchanged.

[Insert Table VI here]

5. Conclusion

This paper provides new insights into the ongoing debate about the impact of ESG on performance outcomes in the market for corporate control. We focus on M&A deals announced by US firms in the period from 01/01/2018 to 31/07/2020 and examine the effect of ESG performance on shareholder wealth before and during the COVID-19 pandemic. Our results show overall negative value effects of ESG, which appear to be stronger during the pandemic-driven crisis. The latter observation provides evidence for the overinvestment hypothesis, suggesting that the market considers sustainability activities costly during an economic meltdown. The market rewards low-ESG acquiring firms, which experience significant positive announcement excess returns after the onset of the pandemic. Our findings are robust to alternative model specifications with regard to different event windows and market portfolio proxies.

The findings of this study have important implications for firms, investors and policy makers. For firms, investment in sustainability activities should be done with caution. The COVID-19 pandemic caused a large and unexpected revenue shock. In such a situation, firms can fund a cash flow shortfall internally, deferring or cancelling social and environmental projects. This could allow them to increase liquidity and improve the quality of their balance sheet during the turmoil. To facilitate shareholder wealth creation in the market for corporate control, managers should reallocate funds from ESG-related activities to other business activities. The coronavirus crisis brought to the fore the need for digital transformation, connected and autonomous supply chain ecosystems, new workplace safety measures, office space optimization, workforce reskilling, faster innovation, brand-building and customer retention. Considering the disruption in financial markets during the pandemic, the funds for planned sustainability projects can be diverted to finance the required investments amid the economic meltdown. From the investors' viewpoint, the results suggest that firms' high ESG engagement does not act as a resilience factor to adverse shocks such as the pandemic. This finding indicates that the cost of sustainability activities outweighs any possible gain and, thus, reductions in sustainability investments may be necessary during the COVID-19 crisis, in line with shareholder theory. Regulators and policy makers could also use the findings of this study as a basis for developing the appropriate sustainability framework. It is possible that, after an exogenous shock, firms may require greater flexibility for resource allocation and, thus, policy makers should recognize the need for businesses to adapt to the new economic conditions. Sustainability reporting for US firms is based on a wide range of voluntary standards provided by various international organizations such as the Global Reporting Initiative, the Carbon Disclosure Project, the Sustainability Accounting Standards Board and the United Nations Sustainable Development Goals. Recent research shows that 90% of firms in the S&P 500 publish a sustainability report, recording a steady increase in the volume of reporting and the contents of the reports since 2011, when the corresponding

percentage was just about 20% (G&A Institute, 2020). This indicates an ongoing tendency of firms to be more transparent and to meet the demands of stakeholders and investors. Therefore, policy makers should maintain the voluntary nature of sustainability disclosure, allowing firms to focus more on material issues that are deemed to be more relevant to their business in the context of the prevailing economic environment.

The study has some limitations that should be acknowledged. First, a number of M&A deals had to be excluded due to non-availability of ESG data. Second, the relationship between ESG performance and shareholder value was examined in relation to US firms, which limits the generalizability of the results. We also excluded financial firms and utilities. In addition, we examined the impact of ESG on the wealth of shareholders of acquiring firms only, without considering the value implications for target firms.

Future research could also examine the value implications of ESG on M&A performance in other, developed and emerging, countries. Widening the sample to include firms from Europe as well as from other countries like China and Japan would allow the formation of robust conclusions regarding the effect of sustainability investments on shareholder value creation. This could generate more evidence for policy and decision makers, which will provide the basis for the potential implementation of an ESG disclosure framework on a global scale. Furthermore, future studies should consider the effects of target firms' ESG performance on acquirer wealth gains. It would be equally important to examine the effect of the relative target/acquirer ESG performance, and determine whether the acquisition of firms with better performance is associated with wealth gains for acquirers. Finally, considering the high complexity of sustainability performance measurement, future research should investigate the effects of various ESG dimensions separately in order to identify the significant ones. Such an analysis will provide useful insights to firms so that they could step up efforts towards improving the financially material ESG metrics.

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